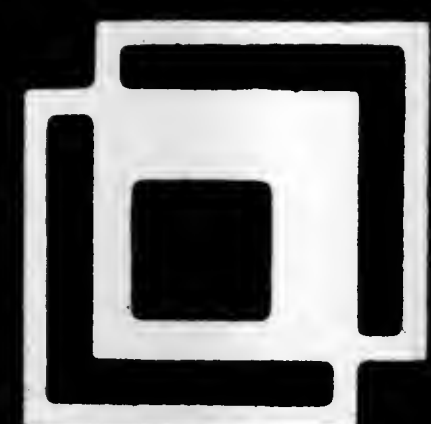


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OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL NO 1039

FEBRUARY

1984

MICRO PHOTO DIVISION



BELL & HOWELL

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Vol. 1039 Number 1

OFFICIAL GAZETTE

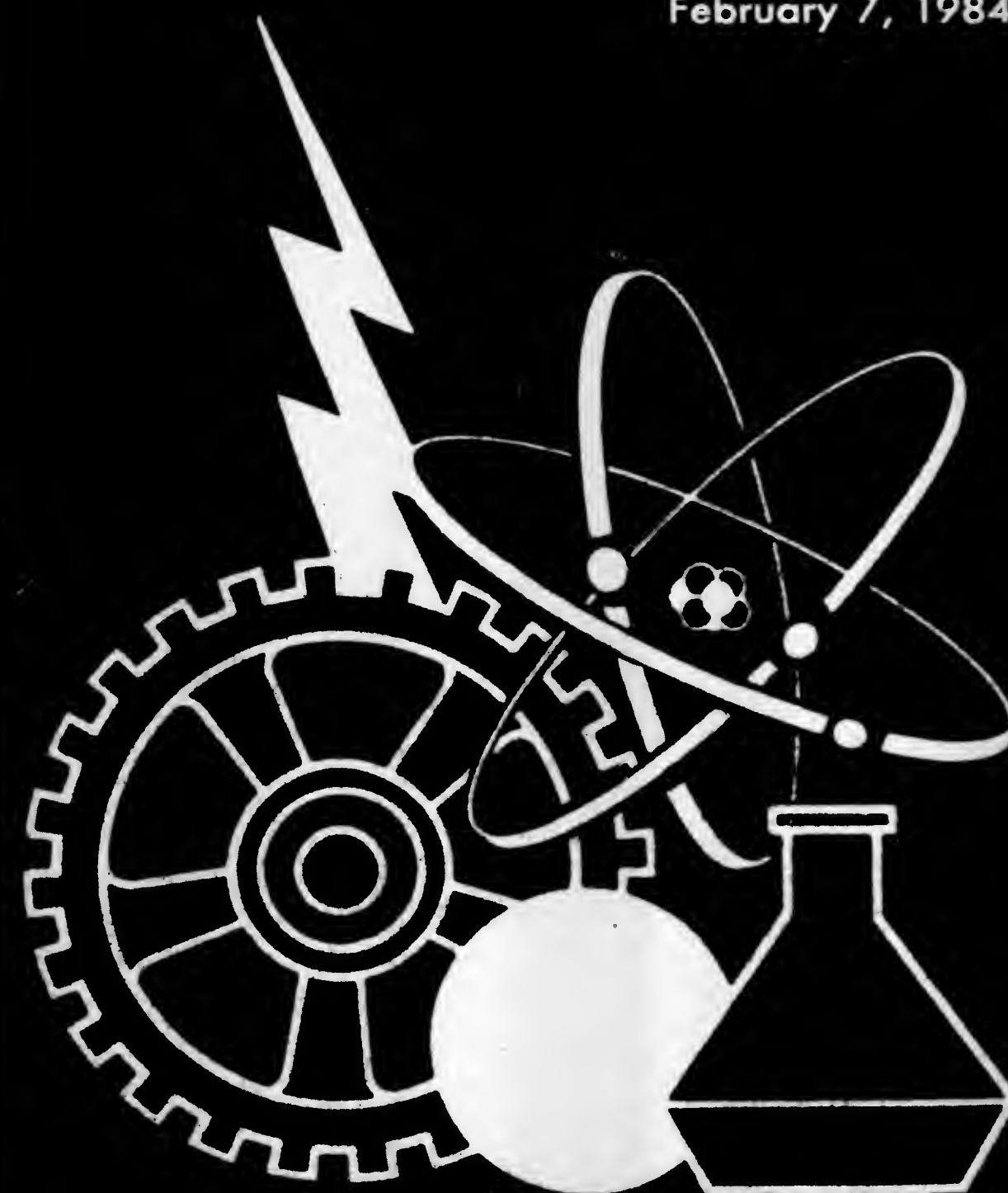
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UNITED STATES PATENT AND TRADEMARK OFFICE



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PATENTS

February 7, 1984



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Office

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CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1039 OG 2
Reissue Applications Filed	1039 OG 2
Request for Reexamination Filed	1039 OG 2
National Inventors Day	1039 OG 2
Errata	1039 OG 2
Trademark Exposition	1039 OG 2
Adverse Decisions in Interference	1039 OG 3
Patent Certificates of Correction	1039 OG 4
Reference Collections of U.S. Patents Available for Public Use in	
Patent Depository Libraries	1039 OG 5
Condition of Patent Applications	1039 OG 6
Reexaminations	1
Defensive Patent Publication (103,901)	3
Reissue Patents Granted (31,515)	5
Plant Patents Granted (5,188)	7
Patents Granted	
General and Mechanical (4,429,419)	9
Chemical (4,430,089)	237
Electrical (4,430,518)	359
Design Patents Granted (272,484)	443
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 47
Index of Applicants of Defensive Publications	PI 50
Classification of	
Patents (Including Reissues and Reexaminations)	PI 51
Designs, Plants and Defensive Publications	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs, Plants and Applicants of Defensive Publications	PI 56
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at \$1.00 each; PLANT PATENTS in color, \$8.00 each; copies of TRADEMARKS at \$1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. The search fee for the European Patent Office was changed as of Jan. 22, 1983 and was announced at 1025 O.G. 27 on Dec. 28, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The current schedule of PCT fees is as follows:

Transmittal fee	\$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	295.00
Basic Supplemental Fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

Nov. 14, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,303,873, Re. S.N. 553,478, Filed Nov. 18, 1983, Cl. 318/301, RESET WINDUP LIMITING, Royal R. Hawkins, Owner of Record: Honeywell, Inc., Rockford, Ill., Attorney or Agent: James A. Wanner, Ex. Gp.: 217

4,352,266, Re. S.N. 554,524, Filed Nov. 23, 1983, Cl. 56/11.3, LAWN MOWER BRAKE AND CLUTCH DEVICE, Ronald B. Lloyd, et al., Owner of Record: Outboard Marine, Waukegan, Ill., Attorney or Agent: Bayard H. Michael, et al., Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,287,404, Reexam. No. 90/000,485, Requested: Jan. 6, 1984, Cl. 219/69W, ELECTRODE FOR ELECTRICAL DISCHARGE MACHINING, Danielle Convers, et al., Owner of Record: Requester, Attorney or Agent: Hauke and Patalidis, Ex. Gp.: 213, Requester: Ateliers des Charmilles, S.A., Geneva, Switzerland

National Inventors Day

The Patent and Trademark Office, the National Council of Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc. will sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 11, 1984 from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 12, 1984 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 12, at 2:00 p.m.

In order to assemble exhibits it will be necessary to close the Search Room on Friday, Feb. 10, 1984 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

Dec. 27, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

Errata

The following registration numbers were inadvertently canceled in the "Trademark Registrations Canceled, Section 8" section of the Official Gazettes listed below:

1,004,336	TM 153	Sept. 1, 1981
1,020,498	TM 116	Feb. 9, 1982
1,048,501	TM 452	Feb. 15, 1983
1,054,611	TM 331	May 17, 1983
1,054,612	TM 331	May 17, 1983

Consequently, the above-identified registrations are still active.

Jan. 9, 1984. MARK M. NEWMAN,
Director, Trademark
Examining Operation.

Errata

The following registration numbers were inadvertently renewed in the "Trademark Registrations Renewed," section of the Official Gazettes listed below:

728,369	TM 443	May 18, 1982
756,140	TM 375	Oct. 18, 1983
754,552	TM 375	Oct. 18, 1983
757,394	TM 375	Oct. 18, 1983
757,862	TM 245	Oct. 11, 1983

Consequently, the above-identified registrations are not renewed.

Jan. 9, 1984. MARK M. NEWMAN,
Director, Trademark
Examining Operation.

Trademark Exposition

The Patent and Trademark Office is holding its Second Annual National Trademark Exposition in the Tourist Information Center (formerly the "Great Hall" and the Patent Office Search Room) in the Herbert C. Hoover Bldg. (Main Commerce), 14th St. and Constitu-

FEBRUARY 7, 1984

U.S. PATENT AND TRADEMARK OFFICE

1039 OG 3

tion Ave., N.W., Washington, D.C., on Saturday and Sunday, July 7th and 8th, 1984.

There will be a \$100.00 fee for exhibitors. Parties wishing to exhibit should contact Peter Harab, at (703) 557-5237.

Dec. 16, 1983. MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,830,764, Donald E. Hudgin and Thomas Zawadzki, DEGRADABLE HYDROCARBON POLYMERS, Interference No. 99,900, decided June 15, 1983, claims 5, 6, 15, 17, 18 & 19.

Patent No. 4,072,668, Max S. Amoss, Michael W. Monahan and Wylie W. Vale, Jr., LH-RH ANALOGS, Interference No. 100,186, decided Aug. 24, 1983, claim 5.

Patent No. 4,075,492, Douglas P. Boyd and Michael Goitein, FAN BEAM X- OR GAMMA-RAY 3-D TOMOGRAPHY, Interference No. 100,325, decided Aug. 22, 1983, claims 1-4, 6, 7, 9-15 & 18.

Patent No. 4,140,939, Robert P. Bonazoli, Stephen F. Kimball, III, and Lewis H. Palmer, III, TUNGSTEN HALOGEN LAMP FOR HEADLIGHTS, Interfer-

ence No. 100,401, decided June 21, 1983, claims 1, 2 & 3.

Patent No. 4,145,669, Richard V. Babcock, John L. Pack and Richard L. Hundstad, CATHODE ELECTRODE CONFIGURATION FOR GAS LASER SYSTEM, Interference No. 100,557, decided June 29, 1983, claim 1.

Patent No. 4,175,136, Lucien Nedelec, Daniel Frechet and Claude Dumont, N-PHENETHYL-N-PROPYL-3,4-DIHYDROXY-PHENETHYL-AMINES AND SALTS THEREOF, Interference No. 100,626, decided Sept. 1, 1983, claims 1-7.

Patent No. 4,197,554, Guenther Meusburger and Karlheinz Horninger, MONOLITHICALLY INTEGRATED CIRCUIT ARRANGEMENT COMPRISING ONE-TRANSISTOR-STORAGE ELEMENTS, Interference No. 100,905, decided Nov. 30, 1983, claims 1-11.

Patent No. 4,208,094, Walter John Tomlinson, III and Richard Edward Wagner, OPTICAL SWITCH, Interference No. 100,924, decided Nov. 17, 1983, claims 1-16.

Patent No. 4,264,439, Leonard J. Lefevre and Tetsuo Sato, SEPARATION OF ANION AND CATION EXCHANGE RESINS IN A MIXED RESIN BED, Interference No. 100,941, decided Nov. 2, 1983, claims 1, 4-9 & 14.

Patent No. 4,333,010, William H. Miller, DOSE CALIBRATOR LINEARITY EVALUATION, Interference No. 101,040, decided Oct. 14, 1983, claims 1, 7 & 8.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 7, 1984

Re. 31,209	4,390,802	4,408,706	4,414,280
4,242,254	4,391,199	4,409,762	4,414,760
4,269,836	4,393,480	4,409,817	4,415,372
4,317,027	4,393,500	4,410,070	4,415,423
4,322,490	4,393,559	4,410,299	4,415,609
4,324,725	4,395,518	4,410,376	4,416,065
4,338,932	4,396,290	4,410,505	4,416,093
4,345,316	4,396,614	4,410,547	4,416,267
4,347,287	4,398,674	4,410,584	4,416,590
4,349,332	4,399,146	4,410,701	4,416,715
4,353,418	4,400,018	4,410,864	4,416,761
4,364,250	4,400,040	4,411,047	4,416,904
4,367,129	4,400,169	4,411,072	4,416,905
4,367,310	4,400,750	4,411,145	4,417,102
4,369,677	4,401,170	4,411,180	4,417,247
4,376,264	4,401,761	4,411,701	4,417,339
4,378,245	4,402,005	4,411,741	4,417,477
4,378,707	4,403,515	4,411,791	4,417,581
4,381,301	4,404,139	4,412,033	4,417,585
4,381,548	4,404,623	4,412,087	4,417,670
4,382,776	4,405,624	4,412,772	4,418,082
4,382,810	4,405,645	4,412,791	4,418,126
4,386,305	4,405,708	4,412,896	4,418,149
4,386,610	4,405,995	4,413,788	4,418,402
4,386,615	4,406,137	4,413,826	4,419,134
4,386,852	4,406,605	4,413,877	4,420,503
4,387,448	4,406,832	4,414,017	
4,390,139	4,407,146	4,414,100	
4,390,285	4,408,591	4,414,195	

1039 OG 4

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of Cleveland Public Library	(513) 369-6936
	Columbus: Ohio State University Libraries	(216) 623-2870
	Toledo/Lucas County Public Library	(614) 422-6286
Oklahoma	Stillwater: Oklahoma State University Library	(419) 255-7055 Ext. 212
Pennsylvania	Cambridge Springs: Alliance College Library	(405) 624-6546
	Philadelphia: Franklin Institute Library	(814) 398-2098
	Pittsburgh: Carnegie Library of Pittsburgh	(215) 448-1321**
	University Park: Pattee Library, Pennsylvania State University	(412) 622-3138
Rhode Island	Providence Public Library	(814) 865-4861
South Carolina	Charleston: Medical University of South Carolina	(401) 521-7722 Ext. 226
Tennessee	Memphis & Shelby County Public Library and Information Center	(803) 792-2372
Texas	Austin: McKinney Engineering Library, University of Texas	(901) 725-8876
	College Station: Sterling C. Evans Library, Texas A & M University	(512) 471-1610
	Dallas Public Library	(409) 845-2551
	Houston: The Fondren Library, Rice University	(214) 749-4176
Washington	Seattle: Engineering Library, University of Washington	(713) 527-8101 Ext. 2587
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(206) 543-0740
	Milwaukee Public Library	(608) 262-6845
		(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

1039 OG 5

PATENT EXAMINING CORPS
RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal- lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac- ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Op- tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Composi- tions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin- kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor- mation Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Gener- ation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel- laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

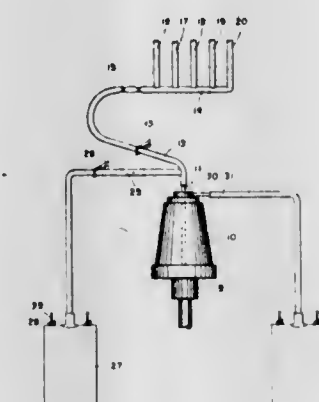
Patents Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

FEBRUARY 7, 1984

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in *italics* indicates additions made by reexamination.

B1 3,634,228 (158th)
STERILE WASHING METHOD AND APPARATUS
Allen Latham, Jr., Jamaica Plain, Mass., assignor to Cryogenic
Technology, Inc., Waltham, Mass.
Reexamination Request No. 90/000,307, Dec. 14, 1982.
Reexamination Certificate for Patent No. 3,634,228, issued Jan.
11, 1972, Ser. No. 868,533, Oct. 22, 1969.
Int. Cl.³ B04B 15/00
U.S. Cl. 210—636



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 8-10 is confirmed.

Claims 1, 5, and 11 are determined to be patentable as amended:

Claims 2-4, 6, 7, and 12, dependent of amended claims, are determined to be patentable.

New claims 13-18 are added and determined to be patentable.

1. An apparatus for processing a liquid by treatment with another treating liquid *within a fluid-tight vessel while maintaining the interior of the apparatus in a sterile condition* [] comprising in combination:

- (a) a source of said liquid and a source of said treating liquid;
- (b) an internally [sterilizable] *sterilized* fluid-tight vessel having a sterile gas entrapped therein; said sterile gas comprising a gaseous means for enabling transfer of liquid and separate fluid inlet and fluid-discharge means;
- (c) a first fluid conduit providing fluid communication between said inlet means of said vessel and said source of said liquid and said source of treating liquid;
- (d) a first flexible-wall pouch in fluid communication with said first fluid conduit through a second fluid conduit;
- (e) means to selectively control the flow of fluid in said first and second conduits; and
- (f) a second flexible-wall pouch *constituting the only item in fluid communication with said discharge means of said vessel through a third fluid conduit, said third fluid conduit constituting the only path of fluid communication to or from said second flexible-wall pouch.*

B1 3,720,760 (159th)
METHOD FOR DETERMINING THE PRESENCE OF REAGIN-IMMUNOGLOBULINS (REAGIN-IG) DIRECTED AGAINST CERTAIN ALLERGENS, IN AQUEOUS SAMPLES
Hans H. Bennich, Uppsala; Stig G. O. Johansson, Storrreta, and Lelf E. Wide, Uppsala, all of Sweden, assignors to Pharmacia, Inc., Piscataway, N.J.
Reexamination Request No. 90/000,199, May 14, 1982.
Reexamination Certificate for Patent No. 3,720,760, issued Mar. 13, 1973, Ser. No. 758,131, Sep. 6, 1968.
Int. Cl.³ G01N 33/60
U.S. Cl. 436—513

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-24 is confirmed.

Claims 25 and 26 are determined to be patentable as amended:

1. An *in vitro* method for analyzing a body fluid so as to obtain an indication as to the amount of reagin-immunoglobulins therein that are reactive with one or more allergens capable of producing allergic reactions in humans and animals which method comprises:

- (a) contacting an aqueous sample derived from body fluid with a water-insoluble polymer to which is attached at least one test allergen by bonds capable of withstanding normal washing procedures,
 - (b) continuing the contacting set forth in step (a) for a long enough time to allow reaction between said polymer attached test allergen and any reagin-immunoglobulins in the aqueous sample of body fluid that are reactive therewith,
 - (c) contacting the product of step (b) with antibodies that have atoms or groups capable of emitting radiation for labelling purposes and which antibodies are reactive with the reagin-immunoglobulins that would be reactive with the test allergen,
 - (d) separating the product of step (c) into a liquid phase and a solid phase, and
 - (e) measuring the radiation emitted from at least one of the phases separated in step (d).
26. [Reagin-Ig] *Substantially pure reagin-Ig which has been labelled with a radioactive isotope of iodine.*

B1 4,034,210 (160th)
CREDIT CARD CARRIERS AND METHODS OF MANUFACTURE
James E. Hill, Prospect Heights; Baesley I. Dahlstrom, Des Plaines, and Robert D. Fisher, Melrose Park, all of Ill., assignors to Dynetics Engineering Corporation, Wheeling, Ill.
Reexamination Request No. 90/000,269, Oct. 13, 1982.
Reexamination Certificate for Patent No. 4,034,210, issued Jul. 5, 1977, Ser. No. 615,112, Sep. 19, 1975.
Int. Cl.³ G06K 19/00
U.S. Cl. 235—487

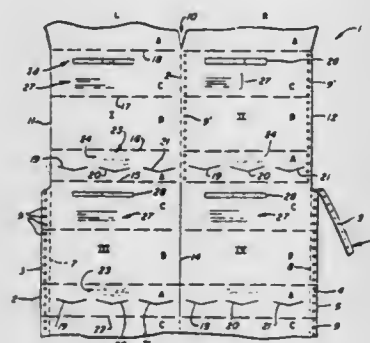
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 55, and 63 are determined to be patentable as amended:

Claims 2-54, 56-62, and 64-65, dependent on amended claims, are determined to be patentable.

1. Improved credit card carriers for retaining cards without glue during automated credit card issue and mailing operations by automated credit card insertion machines comprising in operative combination:

- a. a web of sheet material having a pair of substantially parallel side edges, a top edge and a bottom edge;
- b. a plurality of foldable panels defined in said sheet material by fold lines disposed medially of, and substantially parallel to, said top and said bottom edges, the dimension between said top edge and said adjacent fold line, between said bottom edge and said adjacent fold line, and between said fold lines, defining the width, respectively, of each of said panels;
- c. a plurality of means for receivingly engaging credit cards disposed in at least one of said panels so that at least one



edge of each of said cards is cooperatively engaged between adjacent panels;

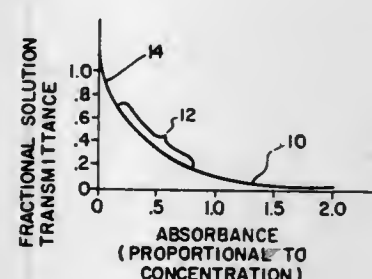
d. at least one of said plurality of panels, adjacent said panel having said receivingly engaging means, having a width, as compared to, respectively,

i. the length of said credit card when said credit card is disposed in said receivingly engaging means in a vertical orientation, and

ii. the width of said credit card when said credit card is disposed in said receivingly engaging means in a horizontal orientation, sufficient to engage an edge of said card between at least two adjacent panels folded one onto the other adjacent one of said fold lines without substantially binding said adjacent panels; and

e. [d.] said panels being operatively adapted to retainingly wedge trap said cards when folded with said cards disposed between said panels by the cooperation of said receivingly engaging means and the engagement of at least one edge of said cards between adjacent panels to prevent said cards from becoming canted or loose in the folded carrier.

B1 4,059,405 (161st)
METHOD AND APPARATUS FOR ANALYSIS OF CONSTITUENT CARRIED IN FIBROUS MEDIUM
 Lester A. Sodickson, Newton, Mass., and Franklin Lim, Richmond, Va., assignors to Damon Corporation, Needham Heights, Mass.
 Continuation-in-part of Ser. No. 243,068, Apr. 11, 1972, abandoned and a continuation-in-part of Ser. No. 498,646, Aug. 19, 1974, abandoned.
 Reexamination Request Nos. 90/000,171, Mar. 1, 1982 and 90/000,312, Jan. 12, 1983.
 Reexamination Certificate for Patent No. 4,059,405, issued Nov. 22, 1977, Ser. No. 715,855, Aug. 19, 1976.
 Int. Cl.³ G01N 21/24, 33/16, 21/64, 35/00
 U.S. Cl. 436-44



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 31, 32 and 36 is confirmed.

Claim 25 having been finally determined to be unpatentable, is cancelled.

Claims 1, 2, 5, 13, 14, 16, 18, 21-23, 26-29 and 33-35 are determined to be patentable as amended:

Claims 3-4, 6-12, 15, 17, 19, 20, 24 and 30, dependent on an amended claim, are determined to be patentable.

New claims 37-39 are added and determined to be patentable.

1. In the constituents analysis of sample material on a porous medium, by reaction in a liquid state with reactants to produce a constituent-manifesting reaction product and wherein the medium is absorbent to the sample in liquid state, the improvement comprising the steps of

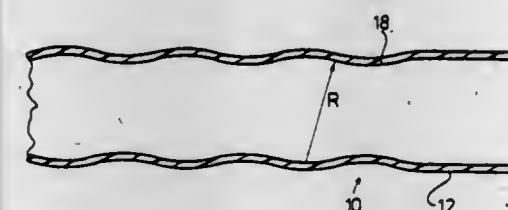
- A. producing said reaction product within said porous medium at said analysis site with only an optically-thin concentration,
- B. illuminating said analysis site with incident electromagnetic radiation,
- C. sensing, from a field of view coincident with said analysis site, electromagnetic radiation that is resultant from said incident radiation and responsive to both the background response of said medium to said illumination and the concentration of said reaction product, and
- D. producing a sample-measuring signal in response to a differential function of said product-responsive sensed radiation and radiation resultant from incident radiation on said field of view and responsive to said background response of said medium at said analysis site and to said sample material and said reagents prior to said product-producing reaction.

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 7, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet. Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T103,901
WAVE WALLED PIPE
 Manfred A. A. Lupke, 35 Ironshield Crescent, and Gerd P. H. Lupke, 46 Stornoway Crescent, both of Thornhill, Ontario, Canada (L3T 3K7)
 Filed May 5, 1981, Ser. No. 260,708
 Int. Cl.³ F16L 11/06
 U.S. Cl. 138-122
 1 Sheets Drawing. 9 Pages Specification



T103,902
DRILLING FLUID UTILIZING GRANULAR STARCH FOR FLUID LOSS CONTROL
 Norman K. Dart, 905 Dee Lee La., Mt. Zion, Ill. 62549, and James E. Eastman, 345 S. Westdale Ave., Decatur, Ill. 62522
 Filed Nov. 1, 1982, Ser. No. 438,089
 Int. Cl.³ C09K 7/00; C13L 1/00; E21C 7/06, 7/08
 U.S. Cl. 252-8.5 C

No Drawing. 25 Pages Specification
 An improved aqueous drilling fluid having low fluid loss and effective viscosity control is obtained by the addition of a cold-water-swelling granular corn starch material which consists essentially of substantially intact, partially swollen granules which appear nonbirefringent under a polarizing microscope and which have a cold-water solubility of at least 50%. The improved drilling fluids exhibit better controlled fluid loss and viscosity stability at temperatures up to 250° F. than do drilling fluids containing most present commercially available starch-based fluid loss control agents.

T103,903
FLOORING FELT COMPOSITIONS AND METHOD FOR PREPARING THE SAME
 Conrad J. Campbell, Skyline Orchard, Box 164, Hockessin, Del. 19707, and William D. Willis, 4636 Bailey Dr., Limestone Acres, Wilmington, Del. 19808
 Continuation of Ser. No. 394,048, Jun. 30, 1982, abandoned.
 This application Jun. 3, 1983, Ser. No. 500,718
 Int. Cl.³ D21H 1/38, 5/12; D21F 11/00
 U.S. Cl. 523-206

No Drawing. 25 Pages Specification
 Flooring felt compositions having dimensional and thermal stability and resistance to water and high humidity as well as the necessary mechanical properties to provide satisfactory backing for the thermoplastic vinyl resins ordinarily used as floor coverings can be prepared by forming an anionic aqueous fiber dispersion of from about 4 to about 55% and preferably from about 8 to about 35% of water dispersible spurted polyolefin fibers, from about 2 to about 30% of wood pulp fibers, from about 2 to about 20% water dispersible glass fibers, from about 1 to about 10% of an anionic polyacrylamide resin, from about 0 to about 50% of an inorganic filler, from about 5 to about 25% of an anionic, elastomeric polymeric binder and from about 1 to about 10% of a cationic resin (all percentages of the above components are by weight, based on the dry weight of flooring felt composition) and then passing the resulting dispersion through a paper making machine to form a fibrous sheet material.

REISSUES

FEBRUARY 7, 1984

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,515

FIBER OPTIC CONNECTOR

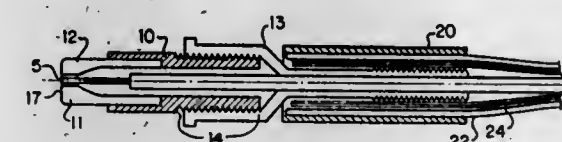
Earl R. Heldt, Monta Vista, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Original No. 4,114,979, dated Sep. 19, 1978, Ser. No. 792,375, Apr. 29, 1977. Continuation-in-part of Ser. No. 731,068, Oct. 8, 1976, abandoned. Application for reissue Sep. 18, 1980, Ser. No. 188,403

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

9 Claims



8. A fiber optic cable sleeve of resilient material having a D-shaped inside diameter for accepting a plurality of fiber optic cable ferrules inserted therein, said D-shaped inside diameter axially aligning said ferrules by snugly fitting and applying a force orthogonal to the longitudinal axis of said inserted ferrules.

Re. 31,516

FILMSTRIP METERING DEVICE FOR A CAMERA

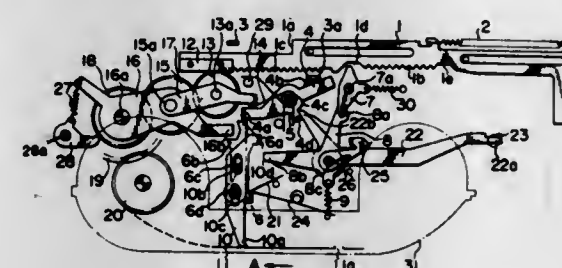
Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 4,107,715, dated Aug. 15, 1978, Ser. No. 839,814, Oct. 6, 1977. Continuation of Ser. No. 716,232, Aug. 20, 1976, abandoned. Application for reissue Aug. 13, 1980, Ser. No. 177,614

Int. Cl.³ G03B 17/42

U.S. Cl. 354—206

12 Claims



12. A camera in which a film cartridge may be inserted, the cartridge containing a film wind-up gear and a filmstrip which is wound-up by the rotation of said wind-up gear, the camera comprising:

a manually operable wind-up member mounted on the camera for movement for supplying film wind-up force;
transmission means mechanically connected to said wind-up member for transmitting the film wind-up force from said wind-up member to said wind-up gear, said transmission means including a fixed gear capable of being operatively coupled with said wind-up gear for rotating the same, a displaceable gear rotatable by the film wind-up force from said wind-up member and meshing said fixed gear and a swingable mounting member coaxially arranged with said fixed gear and mounting said displaceable gear for rotation, said mounting member being swingable so that said displaceable gear displaces along the periphery of said fixed gear, and said transmission means being of the construction wherein the rotation of said displaceable gear without the displacement causes the rotation of said fixed gear while the displacement of said displaceable gear causes said transmission means to be disconnected from said wind-up member such that the film

Re. 31,517

METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD EMPLOYING PHENYL METHYL SULFONYL FLUORIDE AND POLYETHYLENE GLYCOL

Aurora L. Fernandez de Castro, 54657 David Dr., Elkhart, Ind. 46514

Original No. 3,984,532, dated Oct. 5, 1976, Ser. No. 611,669, Sep. 9, 1975. Continuation-in-part of Ser. No. 419,623, Nov. 28, 1973, Pat. No. 3,919,407. Application for reissue Sep. 15, 1978, Ser. No. 943,251

The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.

Int. Cl.³ G01N 33/54, 33/56; C12Q 1/34, 1/44

U.S. Cl. 436—539

2 Claims

1. In a method for measuring plasma renin activity in a sample of plasma comprising adding ethylene diamine tetraacetic acid, adding inhibitor to inhibit Angiotensin I destruction, incubating at about 37° C. to release Angiotensin I from the plasma sample, adding ¹²⁵I labeled Angiotensin I while adding antibody, incubating the labeled mixture sample and antibody and adding a material to separate free Angiotensin I from Angiotensin I bound to antibody prior to determining the amount of Angiotensin I that improvement consisting of:
adding phenyl methyl sulfonyl fluoride as the inhibitor;
adjusting the pH from 5 to 7.5 after adding the inhibitor;
incubating the labeled mixture of sample and antibody for 1 to 2 hours at about 23° C. to 30° C. after the incubation at 37° C. to yield Angiotensin I for measurement;
separating the free Angiotensin I from the Angiotensin I bound to antibody with polyethylene glycol in 0.01 Molar Tris hydroxymethyl aminomethane at pH 7 in a concentration of 12% to 18% based on the total medium, in the presence of about 100 μl to 250 μl of serum or any equivalent material containing similar quantities of immunoglobulins to aid precipitation of immunoglobulins in the plasma; and,
said incubating and separating steps being carried out one after the other, allowing for the optimal yield of Angiotensin I to be obtained in the same day that the sample is received and minimizing time dependent errors occurring therein.

Re. 31,518

**DYNAMICALLY PARTIALLY CURED
THERMOPLASTIC BLEND OF MONOOLEFIN
COPOLYMER RUBBER AND POLYOLEFIN PLASTIC**
William K. Fischer, Meaford, Canada, assignor to Uniroyal,
Inc., New York, N.Y.
Original No. 3,806,558, dated Apr. 23, 1974, Ser. No. 171,328,
Aug. 12, 1971. Application for reissue May 1, 1978, Ser. No.
901,400

Int. Cl.³ C08L 23/26, 23/32, 23/36, 23/16

U.S. Cl. 525—194

13 Claims

5. A method of making a thermoplastic elastomeric blend comprising dynamically working and shearing from 60 to 80 parts by weight of a rubbery copolymer of at least two different alpha-monoolefins, one of which is ethylene, with at least one copolymerizable polyene, in admixture with correspondingly 40 to 20 parts by weight of a polyolefin resin selected from the group consisting of polyethylene and polypropylene, at a temperature of from 160° F. to 550° F. in the presence of a curative for from 3 to 20 minutes to produce a gel content in the blend of from 60 to 93% measured in cyclohexane at 73° F., the partial cure thus imparted to the blend being insufficient to render the blend unprocessable, and substantially exhausting the action of the curative so that the thus partially cured blend has little or no tendency for further advancement of cure to take place subsequently.

Re. 31,519

LEAD-IN SEAL AND LAMP UTILIZING SAME
John C. Sobieski, Gates Mills, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Original No. 4,110,657, dated Aug. 29, 1978, Ser. No. 776,850,
Mar. 14, 1977. Application for reissue Nov. 12, 1982, Ser. No.
441,187

Int. Cl.³ H01J 5/36

U.S. Cl. 313—332

12 Claims



1. A seal comprising an envelope of vitreous material, a conductive foil seal member, an elongated electrical conductor positioned to have an end thereof axially spaced from an edge of said foil seal member, and a conductive foil tab member extending substantially axially between and interconnecting said foil seal member and said elongated conductor, said foil seal member being hermetically sealed in said material of the envelope, said tab member being provided with a double bend to provide an angled intermediate region joining first and second end regions thereof which lie in parallel planes, said first end region overlapping and being attached to a region of said foil member and said second end region overlapping and being attached to the end region of said elongated conductor.

PLANT PATENTS

GRANTED FEBRUARY 7, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,188

PLANT OF THE ARACEAE FAMILY

Robert J. Coody, Rte. 1, Box 136, Fort Lawn, S.C. 29714

Filed May 20, 1982, Ser. No. 380,062

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—88

1 Claim

1. The new and distinct variety of the Araceae family as described and illustrated and which combines the following principal distinguishing characteristics:

- (1) a plant specimen which in size is generally smaller than those of the 'Mauna Loa' variety of the *Spathiphyllum* species,
- (2) foliage that includes leaf blades which are variegated and provided with a basic chlorophyllous field that contains streaks and blotches which in colors are generally lighter than those of the basic chlorophyllous field and which also vary in color, pattern and size within the leaf blades and from one leaf blade to the next, and
- (3) an inflorescence with a spathe that shortly after initial expansion is provided with variegated blades which have a basic achlorophyllous field that contains chlorophyllous streaks and blotches and merges distally in the spathe with a chlorophyllous tip area which extends proximally in the leaf blade further than that of the 'Mauna Loa' variety of the *Spathiphyllum* species, the spathe coloration changing as the spathe matures to provide variegated blades that have a basic chlorophyllous field which contains chlorophyllous and nearly achlorophyllous streaks and blotches that are generally lighter in color than those found in the basic chlorophyllous field.

PATENTS

GRANTED FEB. 7, 1984

ERRATA

For CLASS	See PATENT NO.
604-073	4,429,693
123-198	4,429,853
384-094	4,429,854
254-018	4,429,857
254-134	4,429,858
502-162	4,430,252
502-185	4,430,253
502-243	4,430,254
381-097	4,430,527
330-149	4,430,619

PATENTS

GRANTED FEBRUARY 7, 1984

GENERAL AND MECHANICAL

4,429,419

SAFETY GARMENT

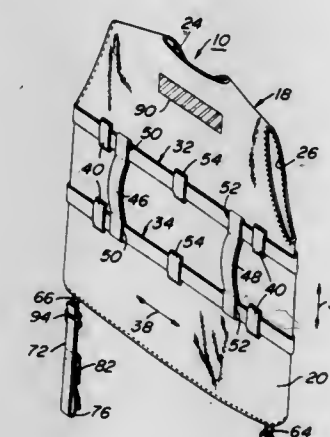
Robert Z. Snyder, 1141 Harriett Rd., Huntingdon Valley, Pa. 19006

Filed Jan. 15, 1982, Ser. No. 339,620

Int. Cl.³ A41D 1/04; A41F 9/00, 19/00

U.S. Cl. 2—102

15 Claims



1. A safety garment adapted to be worn by a driver of a vehicle, comprising:

- (a) a vest member substantially encompassing the torso of said driver;
- (b) a first belt member encircling said vest member;
- (c) a second belt member encircling said vest member, said second belt member being vertically displaced from said first belt member;
- (d) hand grip means coupled to said first and second belt members for providing a hand grip for a passenger located to the rear of said driver; and,
- (e) means for vertically constraining displacement of said first and second belt members on said vest member, said vertical constraining means including a plurality of belt loop members fixedly secured to said vest member, each of said first and second belt members passing through at least one of said belt loop members.

4,429,420

COWBOY HAT

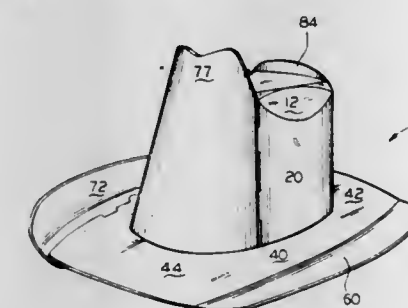
Natalie A. Wolff, Arlington, Tex., assignor to Container Corporation of America, Chicago, Ill.

Filed Jun. 21, 1982, Ser. No. 390,310

Int. Cl.³ A42B 1/00

U.S. Cl. 2—175

5 Claims



1. A cowboy hat formed from a single sheet of paperboard which is cut and scored, said hat comprising:

- a flat top portion having side edges;
- a generally rectangular-shaped crown section;
- a first elliptical-shaped crown connecting portion foldably joined between one side edge of said top portion and said rectangular-shaped crown section;
- a generally crescent-shaped crown section;
- a second elliptical-shaped crown portion foldably joined

between the other side edge of said top portion and said crescent-shaped crown section;

interconnecting panels foldably joined to ends of said crescent-shaped crown section;

a C-shaped brim section including a central portion, an upper crescent-shaped portion and a lower crescent-shaped portion;

said central portion of the C-shaped brim section being foldably joined to said rectangular-shaped crown section;

an arcuate-shaped brim section foldably joined to said crescent-shaped crown section;

first interlocking means formed on said upper and lower portion of said C-shaped brim section and said arcuate-shaped brim section;

second interlocking means formed on said rectangular-shaped crown section and said interlocking panels;

a first brim extension of an arcuate shape being foldably joined to said C-shaped brim section; and

a second brim extension of an arcuate shape being foldably joined to said arcuate-shaped brim section.

4,429,421

METHOD OF IMPLANTING AN INTRAOCULAR LENS

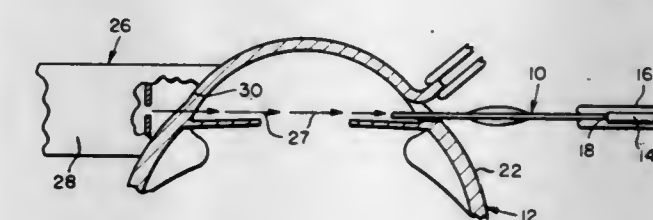
Chauncey F. Levy, 1 Surrey La., Pittsford, N.Y. 14534

Filed Feb. 3, 1982, Ser. No. 345,330

Int. Cl.³ A61F 1/16, 9/00; A61B 17/00

U.S. Cl. 3—13

5 Claims



1. Method of implanting an intraocular lens or the like in an eye comprising the steps of making an incision in the eye to admit the lens, directing light into the lens through an edge thereof thereby to cause the edges of the lens to glow, and inserting the lens through the incision into the interior of an eye chamber while continuing to direct light into the lens.

4,429,422

FLOW CONTROL DEVICE

Oliver N. Wareham, 4 Castlereagh Crescent, Sylvania Waters, N.S.W. 2224, Australia

Filed Oct. 9, 1981, Ser. No. 310,299

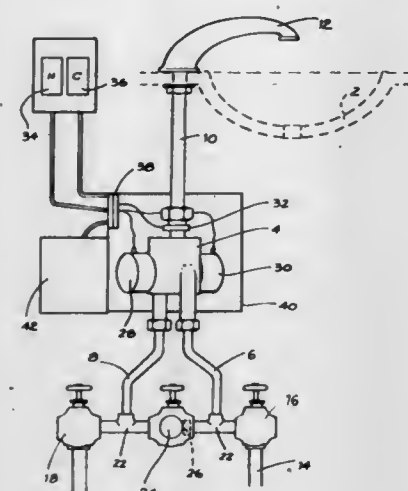
Int. Cl.³ E03C 1/05

U.S. Cl. 4—192

17 Claims

1. A liquid flow control device for delivering from a hot water supply and a cold water supply either cold water or hot water mixed with cold water, said flow control device comprising a chamber having a first inlet, a second inlet and a discharge outlet for connection to a sink delivery fitting, means connecting said first inlet to said cold water supply means for connecting said second inlet to said hot water supply, means for connecting said first inlet to said second inlet by a breech pipe, a one way valve interposed in said breech pipe for preventing the transfer of hot water to said first inlet while permitting transfer of cold water to said second inlet, a solenoid operated valve which stops and starts the flow of water through said first inlet into said chamber, a solenoid operated

valve which stops and starts the flow of water through said second inlet into said chamber, and switch means for control-



4,429,423

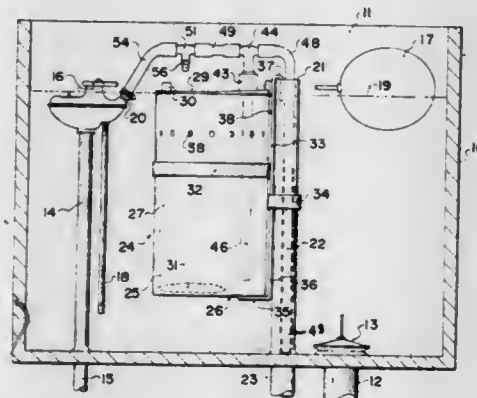
COMBINATION WATER SAVER AND DISINFECTANT DISPENSER

Marius H. Syrenne, 1604-9th Ave. North, Saskatoon, Saskatchewan, Canada S7K 3A1

Continuation-in-part of Ser. No. 249,493, Mar. 31, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 501,846
Int. Cl.³ E03D 9/03

U.S. Cl. 4-225

1 Claim



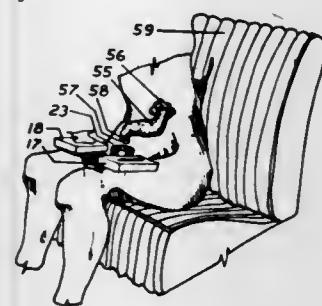
1. In a toilet assembly which includes a water tank connected to a water supply, an inlet assembly controllable by a float valve component, a toilet bowl operatively connected to said tank, an overflow pipe extending upwardly into the tank and connected to the bowl and having an outlet conduit operatively connected to the inlet assembly and to the overflow pipe for communicating water from said inlet assembly to the overflow pipe for replacing the water seal in the bowl after the flushing action, a disinfectant holding container, means to detachably secure said container within the tank, venturi means in said outlet conduit and an extractor conduit means extending from the outlet conduit downstream of the venturi downwardly into the container to adjacent the base thereof whereby water with said container is extracted from the container by water passing through the outlet conduit to said overflow pipe; the improvement comprising means for filling the container from the water within the tank, siphoning means provided by an extension portion of said outlet conduit so as to extend to a position below said extractor conduit means whereby to increase the flow of water from said container to said overflow pipe, and an opening in the outlet conduit arranged above said water level of the tank when operatively full, upstream of said venturi and downstream of said inlet assembly.

4,429,424
OSTOMY COLLECTOR-ORGANIZER DEVICE
Nelson D. Waldner, 8782 Sea Spray Dr., Huntington Beach, Calif. 92646

Filed Jun. 24, 1982, Ser. No. 391,532
Int. Cl.³ A47K 11/00

U.S. Cl. 4-479

5 Claims



1. A portable, stable, collector-organizer device for receiving body waste through the drain opening of an ostomy collector bag, comprising:

- an open container having compartments for storing receptacles adapted to receive and collect body waste from the drain opening, lids for closing the receptacles, and wiping towels and tissues for cleaning and wiping the drain opening;
- front, rear and side walls enclosing the container;
- a support pad positioned forwardly of the front wall and centrally of the device, the pad being adapted to support the receptacle;
- means for releasably securing the receptacle on the pad; and,
- upwardly extending arms from the walls terminating in horizontal support platforms;

the device being adapted, when in use, to be stabilized and secured: i. along the sidewalls between a user's legs when seated; and, ii. by the platforms resting upon the top of the user's legs; whereby, the user is enabled to insert the drain opening of the ostomy collector bag into the discharge receptacle and thereby drain the contents of the ostomy collector bag into the receptacle.

4,429,425
SWIMMING POOL COVER OR DOME BEAD CONSTRUCTION

Donald H. Weir, and Donald E. Dahowski, both of York, Pa., assigns to Fox Pool Corporation, York, Pa.

Filed Aug. 4, 1982, Ser. No. 404,997
Int. Cl.³ E04H 3/16, 3/18

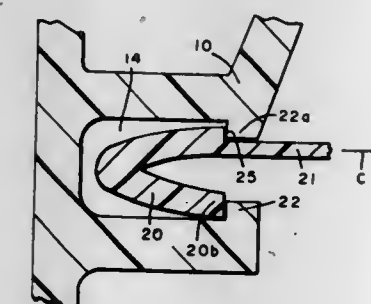
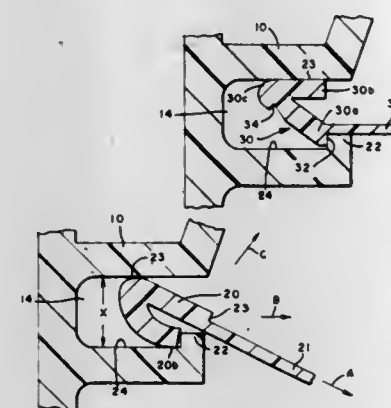
U.S. Cl. 4-503

5 Claims

1. In combination, a swimming pool cover provided with a peripheral bead to hold said cover in position, said bead being adapted to be inserted into a longitudinal bead holding channel member said channel member being open in the direction facing the pool and being provided with at least one vertical retaining lip contiguous to the channel opening to engage a mating face on said bead, said channel member being positioned contiguous to the swimming pool coping, and said bead characterized in having:

- a cross section resembling a hook-like configuration which is insertable horizontally into said channel,
- a transverse dimension which extends substantially across the entire vertical dimension of said channel,

(c) the free end of said hook-like configuration abutting against the vertical retaining lip of said channel, and



(d) having a longitudinal dimension which increasingly resists withdrawal of the bead from the channel as the bead is rotated from a horizontal position.

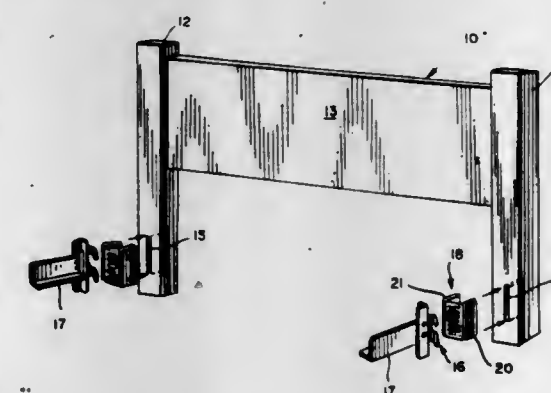
4,429,426
BRACKET FOR SECURING A MATTRESS SUPPORTING MEMBER TO A BEDPOST

Kenneth H. Gutner, Highland Park, Ill. 60035

Filed Oct. 13, 1981, Ser. No. 310,880
Int. Cl.³ A47C 19/00

U.S. Cl. 5-288

6 Claims



1. A bracket for securing a mattress-supporting member to a bedpost comprising a generally rectangular unitary metal element having a central planar portion and an integral return-bend flange along two opposing sides, each of said flanges projecting perpendicularly away from said central planar portion and providing spaced apart walls adapted to receive the hook means of a bedrail, a pair of spaced apart hook supporting means connecting said walls of each flange and integrated therewith to facilitate insertion of either of said flanges into an elongated slot of a bedpost and means in said central planar portion for securing said bracket to a bed end board.

4,429,427

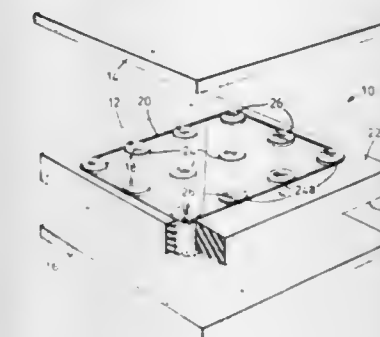
SEATING CUSHION

Joseph Sklar, Toronto, Canada, assignor to Sklar-Peppler Inc., Whitby, Canada

Filed Apr. 19, 1982, Ser. No. 369,462
Int. Cl.³ A47C 27/20, 27/05, 27/07

U.S. Cl. 5-474

2 Claims



1. A seat cushion comprising:

- a main body panel of cushion type foam material having a pair of oppositely disposed seating faces, a plurality of spring mounting passages opening through said main body panel in a seating area thereof, said passages extending perpendicularly between said seating faces, said passages including perimeter passages located along the perimeter of the seating area, and inboard passages located inwardly from the perimeter of the seating area,
- a plurality of perimeter compression springs mounted one within each of said perimeter passages and a plurality of inboard compressions springs mounted one within each inboard passage,
- a resiliently flexible retainer member extending about the perimeter of said seating area, along one of said seating faces, said retaining member being secured to and held fast and taut with respect to one end of each perimeter spring which is located in each perimeter passage whereby upon the removal of a seating load, the retaining member will restore the perimeter compression springs to the perpendicular position, said resiliently flexible retainer member being free of attachment to the inboard springs whereby the inboard springs are independently compressible, and,
- a pair of facing panels, on said facing panels being disposed in a face-to-face relationship with respect to each seating face of said main body panel.

4,429,428
FLUID EJECTED AND RETRACTED TUBE CLEARANCE TESTER

Steven G. Van Dyk, 45-631 Kapunahala Rd., Kaneohe, Hi. 97644

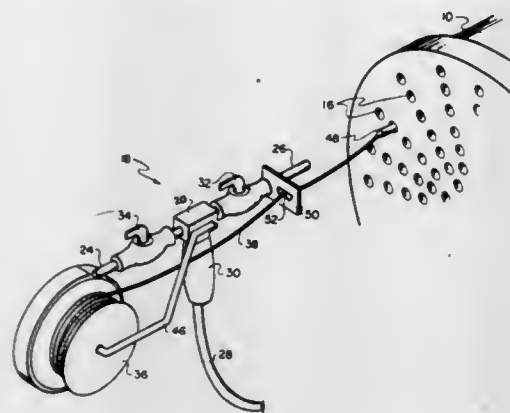
Filed Oct. 26, 1981, Ser. No. 314,806
Int. Cl.³ B08B 9/02

U.S. Cl. 15-352

7 Claims

1. A tube blockage tester or blockage eliminator comprising: a manifold having a forward end and a rearward end; a nozzle at each end of the manifold, one of the nozzles being directed forwardly and the other nozzle being directed rearwardly; the manifold being adapted to receive a fluid pressure supply line; valve means mounted in the manifold for selectively controlling pressurized fluid to the nozzles; a reel with a line reeled thereon, said reel having vanes; means mounting the reel on the manifold aft of the manifold with the vanes of the reel in the path of the rearward nozzle so that when fluid is ejected from the rearward nozzle the reel will wind the line thereon; a probe which is capable of slipping into the tube; and the line being connected to the probe; and a resilient hose connected to the forward nozzle, said hose

being capable of sliding into said tube after the probe is inserted therein so that the line can be projected into or withdrawn from the tube past said resilient hose when fluid is ejected into the tube or ejected onto the vanes of the reel, respectively;



whereby, upon connecting the fluid pressure line to the manifold, the forward nozzle can be operated by the valve means to force the probe through the tube and the rearward nozzle can be operated to retract the probe by winding the line on the reel.

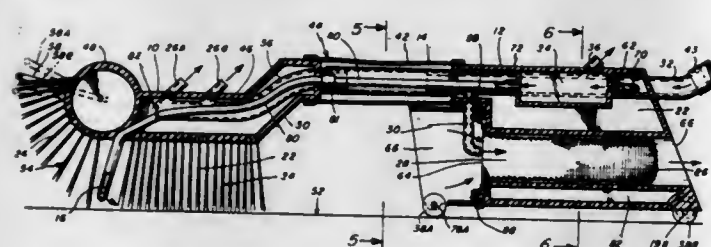
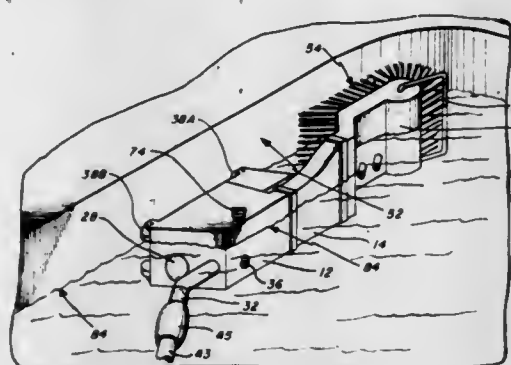
4,429,429

DEVICE FOR CLEANING SWIMMING POOL SIDEWALL
Rod H. Altschul, 53 Countryside Rd., Newton Centre, Mass. 02159

Filed Aug. 12, 1981, Ser. No. 292,159
Int. Cl.³ E04H 3/20

U.S. Cl. 15—50 R

33 Claims



1. A device for cleaning the sidewall of a swimming pool in the region of the waterline comprising:
 - cleaning means for removing dirt from the waterline region of the sidewall of the pool, said waterline region including at least a portion of the sidewall which is above the waterline;
 - floatation means for providing sufficient positive buoyancy to maintain said cleaning means at said waterline region of the pool;
 - propulsion means for advancing the cleaning means horizontally along the water surface and along the sidewall of the

pool at the waterline, thereby to clean the sidewall at said waterline region;
said cleaning means further comprising scrubbing means adapted to engage the pool sidewall in wiping contact and to clean the pool sidewall in response to advancement of the device along the sidewall.

4,429,430

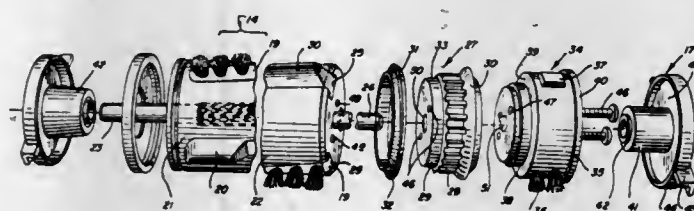
VACUUM CLEANER BEATER BRUSH STRUCTURE
John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 11, 1982, Ser. No. 338,665

Int. Cl.³ A46B 7/10

U.S. Cl. 15—182

28 Claims



22. A vacuum cleaner beater brush structure comprising:
 - a dowel carrying a beater brush;
 - a sprocket having teeth adapted to be driven by a cog belt;
 - a carrier provided with brush tufts;
 - means for securing the carrier to one end of the dowel with said sprocket retained therebetween;
 - an axle extending from said dowel through said secured sprocket and into said carrier; and
 - bearing means journaling the axle within said carrier.

4,429,431

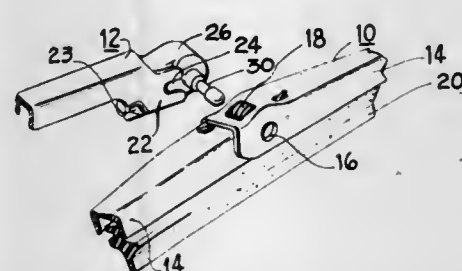
WINDSHIELD WIPER ARM TO BLADE CONNECTOR
Bronislaus S. Graczyk, Buffalo, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,461

Int. Cl.³ B60S 1/40

U.S. Cl. 15—250.32

9 Claims



1. An adaptor for detachably coupling a windshield wiper arm to a windshield wiper blade of the type having a transverse opening for receiving a cantilever pivot pin mounted on the arm tip to the end of a windshield wiper arm of the type which includes an arm tip including a web portion having spaced depending ears, said spaced depending ears having at least one open ended slot adapted to receive a transverse pin laterally spanning the central portion of the wiper blade; said adaptor comprising a unitary body having opposite parallel external side faces of a width to fit snugly between the spaced depending ears of the arm, said unitary body having a generally flat top surface, said parallel side faces including elevated portions engageable with said slots to firmly fix the adaptor body in position between the depending ears, said elevated surfaces forming recesses complementary to the shape of an engageable in nested relationship with said depending ears, said body including a nose portion having a cantilever pin projecting substantially perpendicular to the side faces and insertable and retainable in a transverse opening of a wiper blade.

4,429,432

SANITIZER ATTACHMENT FOR A MOBILE FLOOR CLEANER

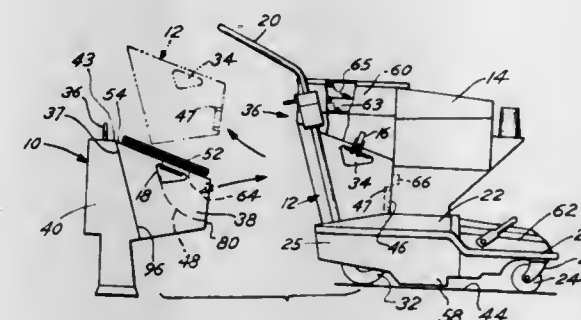
William M. Copeland, Hoffman Estates; Roland A. Blomgren, Glen Ellyn, and Robert L. Shallenberg, Wheaton, all of Ill., assignors to ServiceMaster Industries, Inc., Downers Grove, Ill.

Filed May 26, 1981, Ser. No. 266,798

Int. Cl.³ A47L 9/00

U.S. Cl. 15—320

10 Claims



10. In an improved mobile floor cleaner of the type that has a forward and a rearward end and that includes (i) a vacuum cleaner for delivering debris gathered from a floor-like surface to an air stream, (ii) at least one cleaner filter, and (iii) a rearwardly extending handle for guiding the floor cleaner, the improvement comprising, in combination:

- (a) a spray nozzle rigidly mounted on the floor cleaner below the handle and directed downwardly toward the floor behind the floor cleaner, the spray nozzle providing means for combining fluid and gas and generating a fluid and gas spray;
 - (b) a fluid reservoir mounted in the housing and including a receptacle for the receipt of pressurized gas;
 - (c) a fluid line connecting the fluid reservoir to the spray nozzle;
 - (d) a housing having an upper end nearest the handle and a lower end adjacent the floor, the housing being rigidly secured to the rearward end of the floor cleaner, surrounding the spray nozzle, and terminating at the lower end in a shroud including a flexible skirt abutting the floor, the shroud providing means for confining the spray from the spray nozzle to a predetermined portion of the floor behind and substantially in the path of the floor cleaner as the floor cleaner advances;
 - (e) a pressurized gas source including means for supplying pressurized gas, a central connector, a supply line for delivering gas from the supply means to the central connector, a first conduit for delivering gas from the central connector to the spray nozzle, a second conduit for delivering gas from the central connector to the fluid reservoir, and a pressure regulator for regulating the pressure of the gas delivered by the second conduit to the reservoir;
- gas control means for increasing or decreasing the pressure of the gas delivered to the spray nozzle by the first conduit;
- liquid valve control means for starting the fluid and gas spraying action of the spray nozzle when the pressure of the gas delivered by the first conduit rises above a predetermined value and stopping the spraying action when the pressure drops below a predetermined value;
- an attachment filter attached to the housing;
- first receiving means for receiving the air stream from the vacuum cleaner and delivering the air stream to the attachment filter; and
- second receiving means for receiving the air stream from the attachment filter and delivering the air stream to the cleaner filter.

4,429,433

SURFACE CLEANING MACHINE WITH SQUEEGEE ASSEMBLY

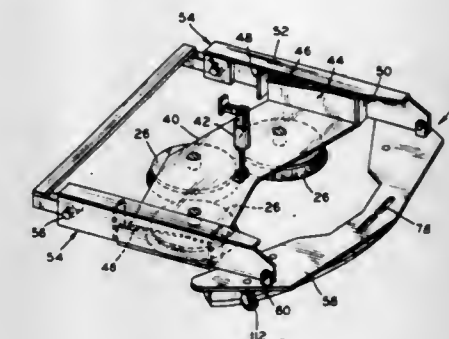
Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Aug. 27, 1982, Ser. No. 412,101

Int. Cl.³ A47L 11/16, 11/202

U.S. Cl. 15—320

20 Claims



1. A surface cleaning machine comprising a frame, wheel means for supporting said frame above the surface, a cleaning solution tank carried by said frame, a recovery tank carried by said frame, a plurality of scrubbing disc brushes for scrubbing the surface with cleaning solution from said cleaning solution tank, mounting means for said disc brushes, a squeegee assembly located behind said disc brushes for collecting cleaning solution deposited on the surface, exhaust means communicating with said squeegee assembly and with said recovery tank for supplying solution from said squeegee assembly to said recovery tank, lifting means for substantially simultaneously raising and lowering said disc brushes and said squeegee assembly, said squeegee assembly having a squeegee supporting member connected to said lifting means, said squeegee supporting member having a downwardly-extending wall, a front squeegee blade adjacent said wall, a rear squeegee blade, spacing means between said front and rear squeegee blades, clamping band means extending along the rear squeegee blade on the side opposite said spacing means, and means engagable with at least an end portion of said clamping band means for moving said clamping band means lengthwise and toward said downwardly-extending wall to hold said front and rear squeegee blades in position relative to said wall and said supporting member.

4,429,434

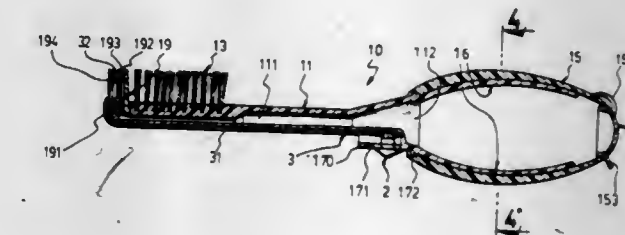
TOOTHBRUSH

Peng Sung-shan, P.O. Box 19-252, Taipei, Taiwan
Filed Jan. 27, 1982, Ser. No. 343,096

Int. Cl.³ A47L 5/02

U.S. Cl. 15—341

4 Claims



1. A novel toothbrush comprising: a row of gum-massaging plastic bars on each one of two sides of a brush bristle section seat; a suction and fluid jet pipe at the front end of said bristle section seat, an enclosed fluid channel at the center of said toothbrush handle body, the said suction and jet pipe being connected to said fluid channel, said channel leading to the distal end of said toothbrush handle body; a squeeze bulb connected to the said distal end, and a partially closed channel

on the back of said handle body for enclosing a tooth-picking flexible member controlled by a slidable push button; said partially closed channel leading to an aperture at one side of the said suction and jet pipe; the operation of said toothbrush being characterized by massaging the gums with the two rows of plastic bars, by removing the food residues caught in the gaps between teeth with the suction fluid and jet forces generated by pressing the squeeze bulb applied to the said gaps while the nozzle of said suction and fluid jet pipe is contacting the said gaps, by making the tooth-brushing action more comfortable without hurting or bloodying the gums with the said bars, and by picking out the food residues tightly caught at the gaps between teeth with a pointed end of said tooth-picking member which is extended out by means of sliding the push button, in addition to achieving normal tooth-brushing purposes with the toothbrush bristles.

4,429,435

HEAT STRIP HOLDER FOR SKEWER STICKS

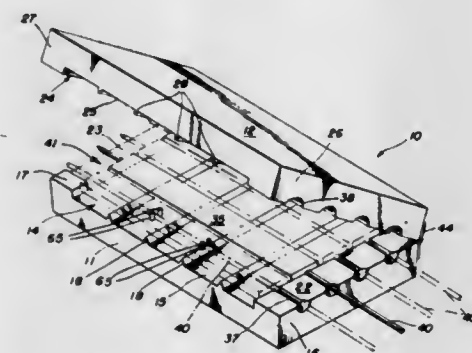
James F. Walls, Box 181, Smyrna, Tenn. 37167

Filed Jan. 26, 1982, Ser. No. 343,018

Int. Cl.³ A47J 43/28

U.S. Cl. 17-1 S

10 Claims



1. A meat holder for supporting elongated strips of meat for skewering with elongated skewer sticks, comprising:

- a base including an elongated lower cavity having a bottom surface, and an end wall, and adapted to receive lengthwise at least one elongated meat strip,
- an elongated cover member having a bottom face and opposite end portions, an upper cavity opening through said bottom face, said cover member being adapted to engage said base in closed position to register said upper and lower cavities in opposing, coextensive relationship, for receiving lengthwise therebetween at least one elongated meat strip,
- a plurality of longitudinally spaced, transversely extending, lower ribs in said lower cavity, said lower ribs projecting toward said cover member in closed position,
- a plurality of longitudinally spaced, transversely extending, upper ribs in said upper cavity projecting toward, spaced from, and opposing said corresponding lower ribs, in said closed position of said cover member,
- at least one stick hole extending longitudinally through said end wall,
- said stick hole having a longitudinal skewer axis extending between the corresponding opposed, spaced apart lower and upper ribs, so that in the closed position of said cover member, said upper ribs terminate above said skewer axis and said lower ribs terminate below said skewer axis,
- said stick hole being adapted to receive an elongated skewer stick therethrough and to guide said skewer stick substantially coaxially of said skewer axis and between said corresponding upper and lower ribs for longitudinal penetration of a substantially straight elongated strip of meat held lengthwise between said upper and lower ribs, so that said stick is substantially confined within the penetrated strip of meat.

4,429,436
ANGULAR HOLDER FOR CLAMPING A HARROW TINE TO A SUPPORTING ROD

Finn U. H. Jensen, Vemmelv, Denmark, assignor to Kongskilde Koncernselskab A/S, Soro, Denmark

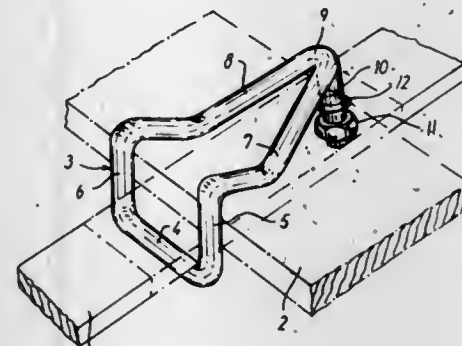
Filed Feb. 5, 1982, Ser. No. 346,270

Claims priority, application Denmark, Feb. 19, 1981, 740/81

Int. Cl.³ A44B 21/00

U.S. Cl. 24-3 D

4 Claims



1. In a clamping holder for clamping a tine shaft (1) to a supporting rod (2) extending transversely to the tine shaft (1) wherein a hole (12) is located in the tine shaft (1) adjacent a first lateral edge of the supporting rod (2), the combination comprising

first leg means including a generally horizontal bottom member (4) adapted to engage the tine shaft (1) and a pair of generally vertical, parallel branch members (5 and 6) adapted to engage a second lateral edge of the supporting rod (2),

said branch members (5 and 6) extending from opposite ends of said bottom member (4) to define a generally U-shaped element,

second leg means including a pair of extensions (7 and 8) extending from the branch members (5 and 6), respectively, in parallel relation to the tine shaft (1),

said extensions (7 and 8) converging toward each other and being joined together at a converged joint (9) remote from said branch members (5 and 6),

a generally vertical threaded bolt (10) integrally joined to the converged joint (9) and adapted to extend across the first lateral edge of the supporting rod (2),

said threaded bolt (10) adapted to extend through the hole (12) in the tine shaft (1),

a nut (11) being tightened on said threaded bolt (10) against the tine shaft (1), and

said threaded bolt (10) being initially inclined so as to be pressed against the first lateral edge of the supporting rod (2) upon tightening of said nut (11).

4,429,437

ASSEMBLAGES OF FASTENERS

Joseph R. Paradis, Holden, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 109,578, Jan. 4, 1980, Pat. No. 4,304,743.

This application Nov. 16, 1981, Ser. No. 321,987

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.³ A44B 9/00; B29C 17/02

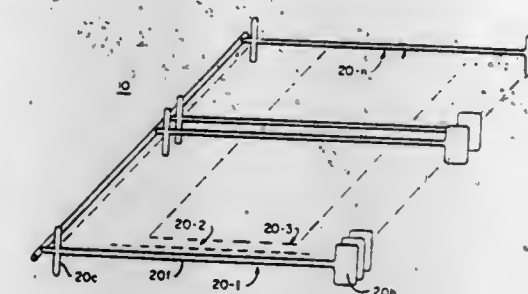
U.S. Cl. 24-150 FP

12 Claims

1. A product produced in accordance with a method of manufacturing an assemblage of fasteners, comprising the steps of

- molding the assemblage as a set of connected individual

fasteners, each including an end member which is joined by a filament, and



(b) stretching the individual fasteners simultaneously while subjecting them to controlled heating directed along their filaments from an external source.

4,429,438

SLIDE FASTENER STRINGER

Kiyoshi Takeshima, Namerikawa, and Yoshinori Masuda, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

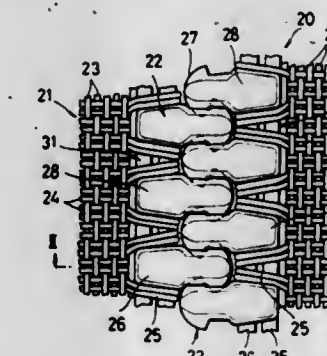
Filed Jul. 27, 1981, Ser. No. 287,131

Claims priority, application Japan, Aug. 1, 1980, 55-106615

Int. Cl.³ A44B 19/00

U.S. Cl. 24-401

5 Claims



1. A slide fastener stringer comprising:

- a continuous coupling element molded of a single material and having a plurality of laterally spaced scoops, each of said scoops including a coupling head and a pair of first and second legs extending from said coupling head in a common direction and contacting each other at respective distal ends thereof, each of said legs having a portion reduced in width progressively in a direction from said coupling head leading to said distal end;
- said element further having a series of first connecting portions extending between two adjacent ones of said first legs, each of said second connecting portions extending between two adjacent ones of said second legs, said first connecting portions being staggered relative to said second connecting portions, each of said connecting portions being fully interrupted only between every second pair of said legs, and
- a woven stringer tape formed with a plurality of warp threads and a weft thread, said weft thread having a plurality of loops disposed along the longitudinal edge of said stringer tape and extending around alternate ones of said first and second connecting portions, thereby securing said coupling element to said longitudinal tape edge.

4,429,439

GARMENT EXPANDER

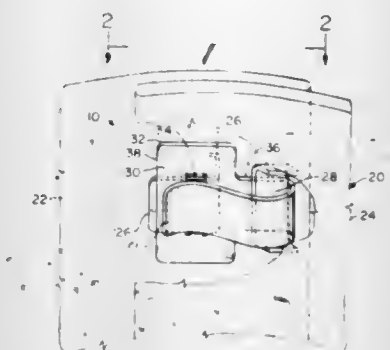
Edward F. Waugh, 8508 Harris Ave., Baltimore, Md. 21234

Filed Jan. 17, 1983, Ser. No. 458,474

Int. Cl.³ A44B 13/00

U.S. Cl. 24-573

6 Claims



1. In a system for extending waistband fastening of trousers, the improvement comprising: said trousers being of the type having at the waistband fly opening a hook protruding inwardly from the inner surface of a lefthand flap and an eye protruding outwardly from the outer surface of a righthand flap for engaging the hook to hold the right hand and left hand flaps together, when hooked; means for connecting said hook and eye when said hook and eye are not engaged to each other and are at a distance from each other caused by waistband extension, including: the means for connecting being a unitary member of sheet material, a first portion of said unitary member forming a bridge for engaging said hook, and a second portion of said unitary member forming a loop for engaging said eye within said loop.

4,429,440

STRUT CLIP

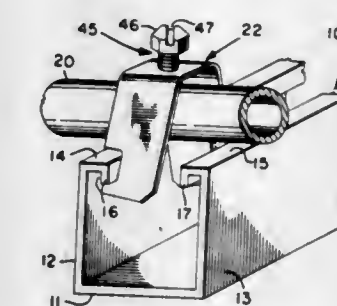
Raymond S. Laughlin, Cuyahoga Falls, and Edward J. Lynch, Jr., Akron, both of Ohio, assignors to Erico Products, Inc., Cleveland, Ohio

Filed Apr. 19, 1982, Ser. No. 369,463

Int. Cl.³ F16L 3/10

U.S. Cl. 24-486

14 Claims



1. A clip comprising a metal strip of uniform width throughout its length, an aperture adapted to hold a fastener in the center of said strip, the ends of said strip being bent in the same direction along parallel lines extending at an acute angle to the length of the strip and symmetrical with the aperture to form legs extending angularly oppositely and symmetrically but generally parallel with respect to the axis of the aperture, and notch means in each lateral edge diagonally opposite each other whereby the clip may be engaged against a structural element and the like to support a conduit or the like thereagainst.

4,429,441

METHOD AND APPARATUS FOR MANUFACTURING A HOOKED FASTENER PART FOR HOOK-AND-LOOP FASTENERS

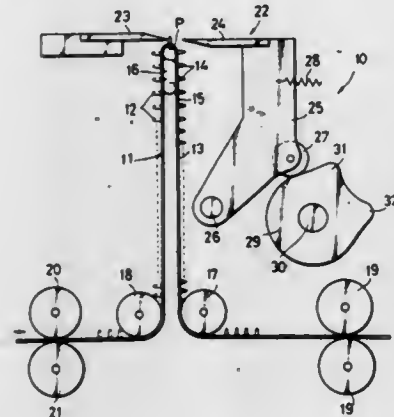
Hissai Nishiyama, Hayahoshi, and Takao Kanada, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Dec. 24, 1981, Ser. No. 334,253

Claims priority, application Japan, Dec. 29, 1980, 55-186254; Dec. 29, 1980, 55-186255

Int. Cl.³ D06C 13/08

U.S. Cl. 26—9

15 Claims



1. A method of manufacturing a hooked fastener part for hook-and-loop fasteners, comprising the steps of:
 - (a) feeding a continuous base of sheet material, having a number of successive rows of laterally spaced loops projecting from one surface of the base, in a longitudinal direction along an arcuate path with said loops directed away from the center of said arcuate path;
 - (b) introducing said rows of loops, successively into a given reciprocating path of a cooperating pair of cutting members relatively movable toward and away from each other along said reciprocating path; and
 - (c) cutting each loop of one of said rows on one of its legs at two different points by reciprocating said cutting members two times while said one row of loops is in said reciprocating path of said cutting members along said arcuate path.

4,429,442

METHOD OF PRODUCING A LEAD-ACID BATTERY UTILIZING VIBRATIONAL ENERGY

Brian J. Thomas, Shirley, England, assignor to Lucas Industries Limited, Birmingham, England

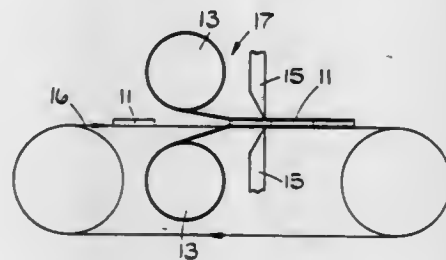
Filed Sep. 30, 1980, Ser. No. 192,274

Claims priority, application United Kingdom, Oct. 2, 1979, 7934142

Int. Cl.³ B23P 13/00

U.S. Cl. 29—2

8 Claims



1. A method of producing a lead-acid battery plate including a carrier supporting a paste containing oxides of lead, comprising the steps of:
 - (a) supplying the paste to the carrier,
 - (b) contacting (an exposed surface) of the paste on the carrier with a layer of fibrous material, and
 - (c) supplying vibrational energy to the fibrous layer so as to

cause the paste to impregnate the fibrous layer and thereby secure the fibrous layer to the plate.

4,429,443

MACHINE TOOL

Rolf Köblin, Martin-Luther-Str. 12, Mosbach-Neckarelz; Wolfgang Keller, Flurstrasse 16, Mosbach-Diedesheim, and Erich Wittmann, Gördelerstr. 136, 7100 Heilbronn, all of Fed. Rep. of Germany

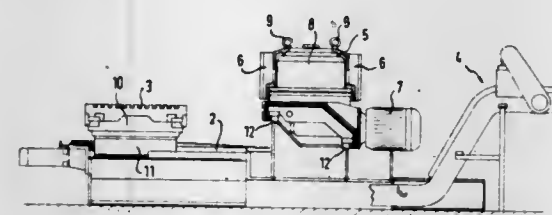
Division of Ser. No. 132,441, Mar. 21, 1980, abandoned. This application Jul. 12, 1982, Ser. No. 397,397

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934395; Dec. 18, 1979, 2950934

Int. Cl.³ B23B 39/20

U.S. Cl. 29—26 A

15 Claims



1. A machine tool comprising:
 - support means for a workpiece;
 - a machine turret having a tool carrier unit with a plurality of spaced apart mounts for carrying a plurality of tools, including at least one driven tool, associated with a machining sequence, said tool carrier unit being indexable to a plurality of stations to bring each of said plurality of mounts in turn to a working station, said machine turret further comprising:
 - a base unit with a first face-toothed index ring;
 - a second face-toothed index ring on said tool carrier unit, said tool carrier unit being engageable with said base unit and said second face-toothed index ring being complementary to and engageable with said first face-toothed index ring;
 - clamping means movable relative to said base unit between a first position in which said first and second face-toothed index rings are firmly clamped one against the other and a second position in which said first and second face-toothed index rings are free of one another;
 - bearing means between said tool carrier unit and said base unit to permit relative rotary indexing therebetween when said carrier unit is in said second position;
 - a tool drive within said base unit and coupling means for releasably coupling said tool drive to a driven tool positioned at said working station; drive means comprising a pinion gear journaled in said base unit and an annular ring gear attached to said tool carrier unit for rotating said tool carrier unit relative to said base unit when in said second position to index said tool carrier unit to each of said plurality of stations in accordance with said machining sequence;
 - quick release connections means for releasably attaching said carrier unit to said clamping means thereby enabling said carrier unit together with any tools mounted thereon to be rapidly exchanged; and
 - means for producing relative movement between said support means and said machine turret to effect machining of a workpiece supported by said support means; wherein said bearing means comprises a ball bearing having first and second races, wherein said clamping means comprises a central support column axially movable relative to said base unit and having an upper end carrying one of said first and second races, wherein the other of said first and second races is connected to said tool carrier unit via said quick release connection means, and wherein said ring gear is provided on the race connected to said tool carrier unit.

4,429,444

CORK EXTRACTOR

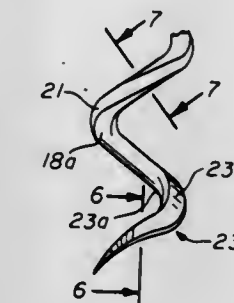
Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.

Division of Ser. No. 17,598, Mar. 5, 1979, Pat. No. 4,291,597, which is a continuation-in-part of Ser. No. 925,365, Jul. 17, 1978, Pat. No. 4,276,789. This application Mar. 19, 1981, Ser. No. 245,584

Int. Cl.³ B23P 13/00

U.S. Cl. 29—33 F

5 Claims



1. A method of forming a corkscrew comprising:
 - a. forming a helix from a wire;
 - b. removing material from one end portion of said wire to form a pointed tip portion, said material being removed from surfaces of said tip portion which are generally upwardly facing when said helix is disposed vertically with said tip portion lowermost; and
 - c. leaving the downwardly facing surfaces of said tip portion substantially on lead with the downwardly facing surfaces of said helix.

4,429,445

MACHINE FOR REMOVING BURRS FROM PIPE

Claude B. Fuminier, Pont-a-Mousson, France, assignor to Pont-a-Mousson S.A., Nancy, France

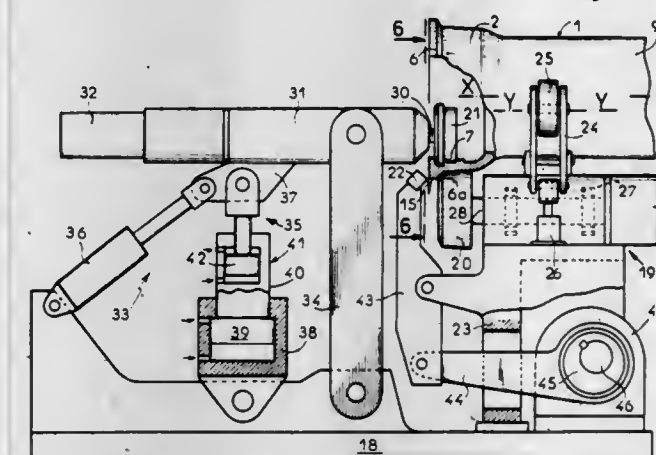
Filed May 18, 1981, Ser. No. 264,330

Claims priority, application France, May 30, 1980, 80 12054

Int. Cl.³ B23P 23/04; B21D 19/04

U.S. Cl. 29—33 T

11 Claims



1. A machine for removing burrs from or trimming sockets of cast-iron pipes, comprising: a machine frame (18), means for supporting a pipe (1) above said frame and for rotating the pipe about its longitudinal axis, two pressing rollers (20, 21) having profiles which individually follow the respective inner and outer profiles of a region of the socket (2) to be trimmed, and displacement means for radially clamping the two rollers against opposite sides of the region of the socket to be trimmed and for subsequently releasing the rollers from the socket, an outer one (20) of said rollers being fixedly mounted to said machine frame and comprising part of said supporting means, said displacement means including a pivoted quadrilateral structure, means mounting an inner one (21) of said rollers on a first side of said structure, second and third sides of said

structure adjacent said one side comprising, respectively, a link member (34) and a force-calibrating hydraulic jack (41), and a diagonally oriented jack (36) pivotally disposed between said machine frame and an intersection point of said first and third structure sides.

4,429,446

ROLL FOR A ROLLING MILL

Rolf Lehmann, Rudolfstetten, Switzerland, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

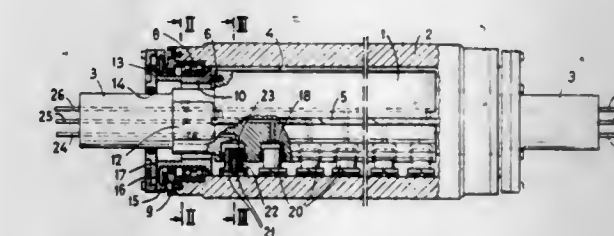
Filed Apr. 5, 1982, Ser. No. 365,365

Claims priority, application Switzerland, May 6, 1981, 2943/81

Int. Cl.³ B21B 29/00

U.S. Cl. 29—116 AD

3 Claims



1. A roll for a rolling mill comprising:
 - a stationary roll support;
 - a substantially tubular-shaped roll shell mounted for rotation about said stationary roll support;
 - said rotatable tubular-shaped roll shell and said stationary roll support cooperating with one another so as to define therebetween a hydrostatic pressure chamber;
 - means operatively associated with said roll support for sealing said pressure chamber;
 - pressurized fluid medium source means communicating with said pressure chamber for infeding a pressurized fluid medium to said pressure chamber;
 - substantially punch-like support elements provided between the stationary roll support and said rotatable roll shell and located essentially in a plane of symmetry of said pressure chamber;
 - means operatively associated with said roll support defining at least one source of pressurized fluid medium for infeding a pressurized fluid medium to said punch-like support elements;
 - said punch-like support elements being arranged at a side of said stationary roll support which faces away from said pressure chamber; and
 - said pressure chamber being located on the side of said seal means opposite said punch-like support elements.

4,429,447

BEARING CUP INSTALLING TOOL

Marvin A. Davis, Faribault, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed Aug. 16, 1982, Ser. No. 408,152

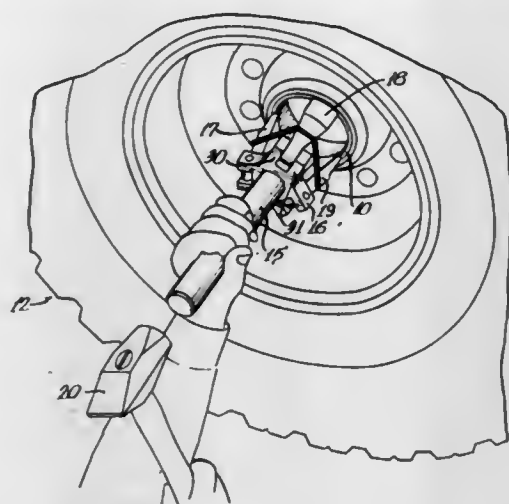
Int. Cl.³ B25B 27/14

U.S. Cl. 29—275

6 Claims

1. A tapered bearing cup installing tool comprising, a cross head, a driving handle connected to said cross head and extending from one side thereof, said handle and cross head having abutting force-transmitting surfaces, a tubular adjusting screw threaded into the cross head and extending outwardly from the side thereof opposite said driving handle, at least three jaws pivotally mounted on said cross head and extending from the same side of the cross head as the adjusting screw and disposed in a circular array with the adjusting screw at the center, spring means engaging said jaws and urging the jaws toward said adjusting screw, each of said jaws having a bearing cup engaging notch at a free end thereof, a disc on the adjusting screw and inclined surfaces on the inner faces of the jaws whereby movement of the adjusting screw lengthwise of the

cross head pivots the jaws against the action of the spring means and varies the effective diameter defined by the bearing



4,429,448

MOUNTING DEVICE FOR A BICYCLE HUB

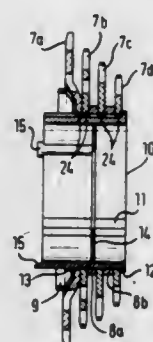
Hans Butz, Schwabheim, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Nov. 16, 1981, Ser. No. 321,524

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 8031759[U]

Int. Cl.³ B25B 27/14

U.S. Cl. 29—281.5

22 Claims



1. A mounting device for use in mounting a plurality of annular members such as chain wheels onto a driving member of a drive hub of a bicycle and the like, comprising an axially extending mounting sleeve having a first axial end, a second axial end and an outer and an inner circumferentially extending peripheral face located between said first and second ends, means arranged on said mounting sleeve for effecting centering of said sleeve relative to a drive hub and means for effecting angular positioning of annular members on said sleeve and means for alignment corresponding to a torque transmitting profile on the drive hub, first axial abutment means provided on said outer peripheral face at said mounting sleeve adjacent the first axial end of said mounting sleeve and a second axial abutment means provided on said outer peripheral face of said mounting sleeve adjacent the second axial end of said mounting sleeve, said first abutment means being deflectable so that members temporarily pre-assembled on said outer peripheral face of said mounting sleeve between said first and second abutment means may be axially slid over said first abutment means onto a drive hub when said means for centering align said mounting sleeve relative to the drive hub.

4,429,449 ASSEMBLY AND DISASSEMBLY OF ROLLER SKATE COMPONENTS

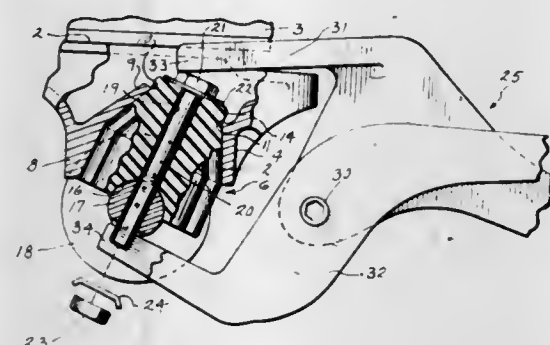
Edward Balstad, P.O. Box 90, Cambridge, Wis. 53523

Filed Jul. 13, 1981, Ser. No. 282,375

Int. Cl.³ B23P 11/02, 19/00

U.S. Cl. 29—446

1 Claim



1. A method of securing a roller skate axle and foot plate together wherein the axle is transversely seated across the outer end portion of a resilient cushion block which extends axially into a socket formed in the foot plate, and wherein a threaded bolt extends axially through the cushion block and with the free end portion of the bolt remote from the bolt head extending through the transverse central portion of said axle, the steps comprising:

- applying a squeezing force between said bolt head and the portions of said axle on either side of said bolt to compress said cushion block against said socket and deform the outer end portion of said block axially inwardly along said bolt,
- freely threading a nut onto the said free end portion of said bolt until said nut is adjacent said axle,
- and then releasing said squeezing force so that the outer end portion of said cushion block springs axially outwardly along said bolt to a partially deformed state so that said block causes said seated axle to biasingly bind said nut to said bolt.

4,429,450

METHOD OF MAKING STRUCTURAL BEARINGS

William E. Reeve, Hemingford Grey, England, assignor to Dixon International Limited, Cambridge, England

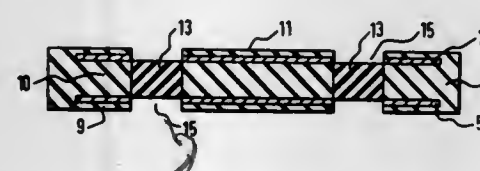
Filed Aug. 24, 1982, Ser. No. 410,948

Claims priority, application United Kingdom, Aug. 26, 1981, 8126010

Int. Cl.³ B23P 11/02

U.S. Cl. 29—451

5 Claims



1. A method of manufacturing a modular element for a bridge bearing or other structural bearing comprising: providing a press having relatively movable upper and lower members, the lower member having one or more upstanding posts or pins; positioning on the lower member, successively, one or more rubber sheets, a lower metal plate, one or more rubber sheets, an upper metal plate and one or more rubber sheets, the one or more posts or pins extending through holes in the metal plates and the rubber sheets and locating the metal plates to prevent lateral movement thereof; operating the press to move the upper and lower members together and to subject the rubber sheets to pressure and subjecting the rubber sheets to heat to effect vulcanization of the rubber and to bond the rubber to the metal plates whereby an intermediate layer of

rubber is formed between the two metal plates and upper and lower layers of rubber are formed respectively above and below the upper and lower plates, the rubber deforming around and bonding to the edges of the metal plates, whereby the plates become completely encased in rubber; removing the resulting modular element from the press; and inserting a vulcanized rubber plug into the or each of the holes left by the one or more posts or pins and retaining said plug therein.

4,429,452

METHOD OF MANUFACTURING FIELD-EFFECT TRANSISTORS WITH SELF-ALIGNED GRID AND TRANSISTORS THUS OBTAINED

Didier Meignant, Emerainville, France, assignor to U.S. Philips Corporation, New York, N.Y.

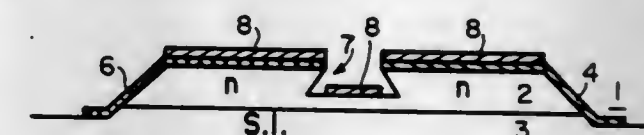
Filed Dec. 4, 1981, Ser. No. 327,374

Claims priority, application France, Dec. 24, 1980, 80 27423

Int. Cl.³ H01L 21/28, 21/308

U.S. Cl. 29—571

17 Claims



7. A method according to claim 6, wherein said third metal layer is formed of titanium, platinum, and gold deposited in order.

4,429,453

PROCESS FOR ANODIZING SURFACE OF GATE CONTACT OF CONTROLLED RECTIFIER HAVING INTERDIGITATED GATE AND EMITTER CONTACTS

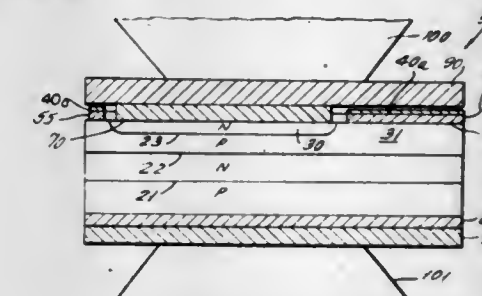
James H. Hauck, Hermosa Beach; Anders Nilarp, and Thomas J. Roach, both of Rancho Palos Verdes, all of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Filed Apr. 6, 1981, Ser. No. 251,267

Int. Cl.³ H01L 21/283

U.S. Cl. 29—591

6 Claims



4,429,451

HAND TOOL FOR APPLYING ELECTRICAL CONNECTORS

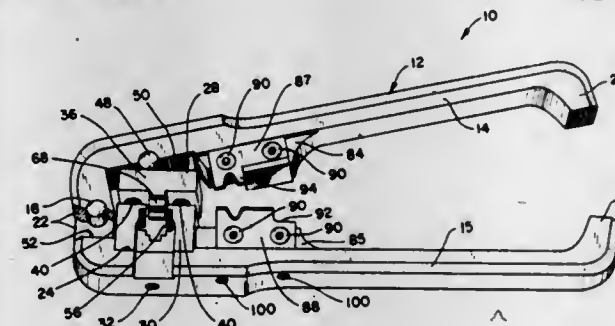
Henry R. Angelico, 355 Fairwood Rd., Bethany, Conn. 06525

Filed Jan. 16, 1981, Ser. No. 225,855

Int. Cl.³ H01R 43/04

U.S. Cl. 29—566.4

11 Claims



1. A telephone plug hand tool for securing a telephone connector plug to a multiple lead telephone line, comprising a handle with a pair of opposed handle members having a pivot connection at a forward end thereof and hand operable toward each other for closing the handle, a unitary preassembled jaw module assembly detachably secured to the handle between said handle members just rearwardly of said pivot connection, said module being adapted for movement into and out of an open position for receiving a telephone connector plug and being adapted to be maintained in its preassembled condition during said movement into and out of said open position, said module including a telephone connector plug support jaw and an aligned connector setting jaw operatively associated for relative linear movement toward and away from said open position, jaw mounting means for mounting the jaws for relative linear movement thereof for opening and closing the jaw module and for detachably securing one of the jaws to one of the handle members, and biasing means for biasing the jaws apart as the handle members move apart, the support jaw having a contoured telephone plug connector locating pocket to locate and support a multiple lead telephone plug connector of established design in operative alignment with the connector setting jaw and the connector setting jaw being contoured for setting a said telephone plug connector mounted within the pocket of the support jaw to a multiple lead telephone cord upon closure of the jaw module, the other handle member having an actuator for sliding engagement with the other jaw for drivably closing the jaw module against the bias of the biasing means when the handle is closed.

1. The process of manufacture of a high power semiconductor device comprising the steps of:

- forming an interdigitated emitter region and gate region which terminate adjacent opposite sides of an elongated junction extending over one surface of a semiconductor wafer;
- forming a first metal layer atop the full area of said one surface;
- anodizing the upper surface of said first metal layer;
- removing said first metal layer from a thin elongated region spanning across said junction at said one surface to define separate emitter and gate region contacts;
- forming a photoresist mask over the portion of said one surface exposed by the removal of said thin elongated region of metal removed from said first metal layer and over the portions of said first metal layer atop said gate region;
- removing the anodizing from the portions of said first metal layer which are exposed by said photoresist mask;
- forming a second metal layer atop the full area of said first metal layer and atop said photoresist mask;
- sintering said second metal layer into said first metal layer to define an emitter contact of thickness equal to the combined thickness of said first and second metal layers; and decomposing said photoresist mask during said sintering step;
- removing the region of said second metal layer from atop said photoresist mask to define a gate contact having a thickness defined by the thickness of said first layer and covered by said anodized layer;

and applying the flat surface of a rigid conductive expansion plate electrode to the upper exposed surface of said second metal layer, with said flat surface physically spaced from the upper surface of said anodized layer on said gate contact.

4,429,454

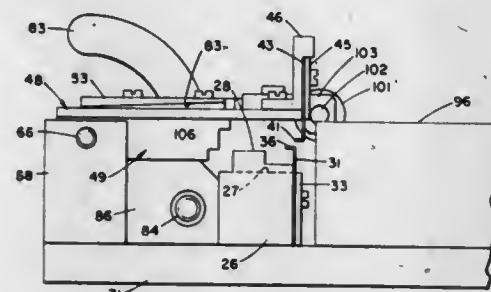
CONNECTOR TERMINAL SPREADER

Alfred P. Broyer, Hopatcong, N.J., and David R. Dines, Oklahoma City, Okla., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,948
Int. Cl.³ H01R 43/00; H05K 3/36

U.S. Cl. 29-747

13 Claims



1. A connector terminal spreader, which comprises:
a nest for supporting a connector;
a first fixed spreader member extending toward the nest;
a block;
a slide mounted on the block;
a second spreader member mounted on the slide;
means for pivotally mounting said block and said slide to position said second spreader member in alignment with said nest; and
means for moving said slide to advance said second spreader member toward the nest.

4,429,455

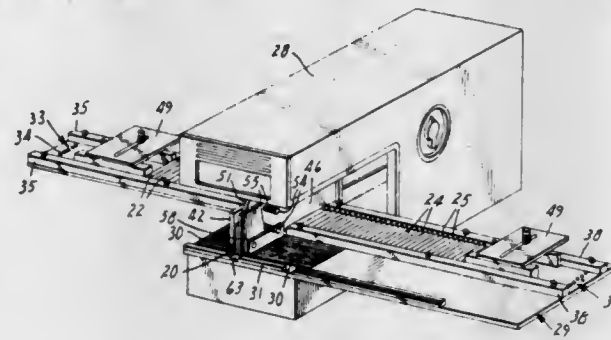
CONNECTOR APPLICATION MACHINE

David C. Roeker, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 3, 1982, Ser. No. 345,334
Int. Cl.³ H01R 43/04

U.S. Cl. 29-749

5 Claims



1. A machine for applying two part electrical connectors having insulation displacement contact elements to multiconductor flat cables, comprising:

a central application station having a multiconductor flat cable path with means for locating a multiconductor flat cable widthwise to position the conductors thereof at predetermined positions,
a body magazine extending to one side of said application station for holding a multiplicity of connector bodies,
a cover magazine extending to the opposite side of said application station for holding a multiplicity of connector covers,
said body and cover magazines being in side-to-side alignment and lying behind said multiconductor flat cable path

with one magazine above and one below the plane of said flat cable path at said application station,
a pre-application station between said body magazine and said cover magazine and in front-to-back alignment with said application station,

means for urging connector bodies and connector covers in said magazines serially into said pre-application station,
support and guide means extending from said pre-application station to said application station for supporting and guiding a body and a cover from said pre-application station to said application station; said support and guide means including a pair of spaced plates, one of which has its lower edge turned inward through an acute angle toward the opposing plate to define an inclined edge for supporting and guiding the upper connector part from said pre-application station to said application station, said plates being spaced to support the upper connector part between them on said inclined edge and being resiliently movable apart to permit the upper connector part to be pushed past said inclined edge, and

means at said application station extending between said connector guide and support plates for pushing an upper connector part past said inclined support edge and for pressing a connector body and cover together with a flat cable between them to electrically connect the contact elements to the conductors of the flat cable.

4,429,456

APPARATUS FOR INSERTING ELEMENTS INTO A WORKPIECE

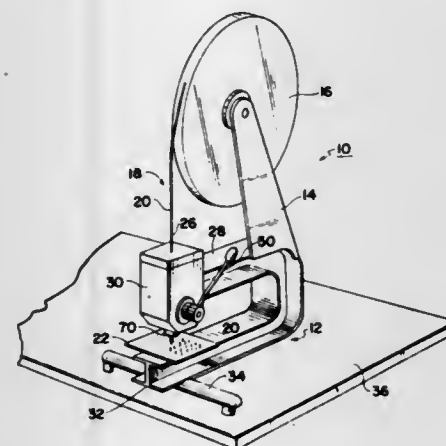
Irwin Zahn, 300 E. 33rd St., New York, N.Y. 10016

Filed Feb. 1, 1982, Ser. No. 344,623

Int. Cl.³ B23P 19/00; A43D 69/12; B27F 7/00

U.S. Cl. 29-798

11 Claims



1. Apparatus for inserting elements into a workpiece; said apparatus comprising:

reciprocating feeding means movable between first and second positions for sequentially advancing a supply strip of integrally connected preformed elements toward said workpiece; and
actuating means cooperating with said reciprocating feeding means for rotating said reciprocating feeding means when said reciprocating feeding means has reached its said second position.

4,429,457

PROCESS FOR MANUFACTURING A PRINTED CIRCUIT BOARD

Yoshiyasu Noguchi, Musashino; Shoji Yokokoji, Sayama; Shozo Saito, and Kiketsu Hasegawa, both of Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

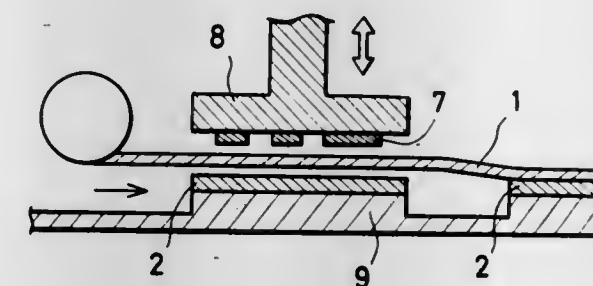
Filed Oct. 19, 1981, Ser. No. 312,820

Claims priority, application Japan, Oct. 22, 1980, 55-147853

Int. Cl.³ H05K 3/34

U.S. Cl. 29-840

17 Claims



1. A process for manufacturing a printed circuit board comprising the steps of:

coating one side of a flat supporting film with a soldering flux which can adhere to the supporting film at room temperature and which can be activated so as to be readily adhesive through the application of heat and pressure;
attaching the supporting film to a printed circuit board so as to bring the flux-coated surface of the supporting film in contact with a soldering surface of the printed circuit board;
applying heat and pressure to a non-coated surface of the supporting film so as to transfer the flux to the printed circuit board;
separating the support film from the flux coated soldering surface; and
soldering electronic parts onto flux coated portions of the printed circuit board.

4,429,458

METHOD FOR MAKING COMPOSITE ELECTRICAL CONTACT WELDED IN SITU TO SUPPORTING METAL, AND APPARATUS THEREFOR

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki, Kogyo K.K. of Tokyo, Japan

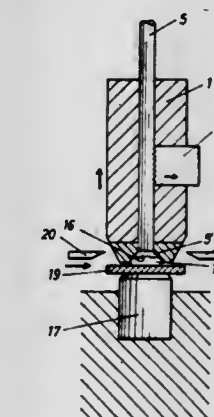
Filed Dec. 18, 1980, Ser. No. 217,860

Claims priority, application Japan, Dec. 29, 1979, 54-170893

Int. Cl.³ H01R 43/02

U.S. Cl. 29-879

5 Claims



1. A method of making a composite electrical contact having a metallic contact portion and a metallic base portion cold welded to the contact portion, said composite electrical contact being welded to a metal support, said method comprising:

positioning a wire of a first metallic material for the contact

portion and a wire of a second metallic material for the base portion coaxially in alignment,
cold welding together the confronting ends of said wires by subjecting them to pressure between a punch and die along their axial directions thereby to form a composite contact,

positioning said composite contact onto a metal support so as to make the base portion of the contact abut against a desired site on said support immediately after said cold welding,

placing said composite contact and the metal support between a pair of charged electrodes, one of which comprises said punch, and

resistance welding said contact to said support while restraining the cold welded ends of said wires in a recess in one of the confronting ends of said electrodes, and in such manner that the resistance heat between the electrodes, which welds the contact to the metal support, anneals the contact and releases any stress which was produced when said confronting ends of said wires were cold welded.

4,429,459

ELECTRICAL TERMINAL WITH CAVITY COMPENSATOR

James E. Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 17, 1981, Ser. No. 274,607

Int. Cl.³ H01R 4/48

U.S. Cl. 29-881

3 Claims



1. A method of fixing a terminal of the type having an intermediate section (31) between a post (21) and a contact structure (23) and an aperture (37) in the intermediate section (31) with a lance (43) extending outwardly therefrom into a housing (51), the method comprising the steps of:

a. providing the intermediate section (31) with tapered sides (33, 35) which are resilient into and away from the aperture (37);
b. inserting the terminal into the housing (51) with the narrowest end of the intermediate section (31) entering the cavity (53) first so that the lance (43) in encountering a wall (47) of the cavity (53) can be deflected towards the aperture (37) as required by the cavity dimension; and
c. further inserting the terminal into the housing so that as the tapered sides (33, 35) of the intermediate section (31) encounter opposing walls (55-57) of the cavity (53), the tapered sides (33, 35) are compressed into the aperture (37) so that the aperture size is reduced and the lance (43) becomes locked against further movement towards the aperture (37).

4,429,460

ADJUSTABLE WIRE CUTTING PLIERS

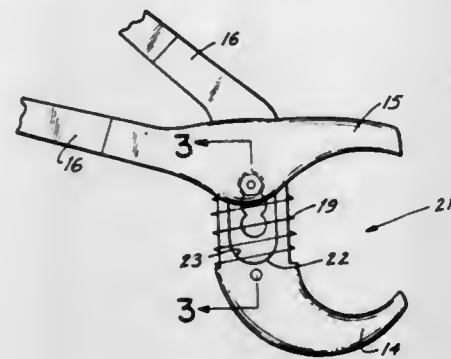
Lee Hill, Box 22, Golconda, Nev. 89414, and George Spector, New York, N.Y., assignors to Lee Hill, Golconda, Nev.

Filed Jun. 14, 1982, Ser. No. 387,787

Int. Cl.³ B26B 13/14

U.S. Cl. 30—90.1

2 Claims



1. An adjustable wire cutting pliers, comprising in combination, a pair of crossing levers pivotally secured together by a bolt set through a hole and slot at intermediate portions thereof, a pair of jaws formed at one end of said levers, and a pair of handles formed at an opposite end, a compression coil spring around one said lever urging against the other said lever so to spread said jaws apart, and means to adjust said bolt set in said slot to either one of six pivot positions.

4,429,461

DEVICE FOR CUTTING VINYL SHEET FLOORING

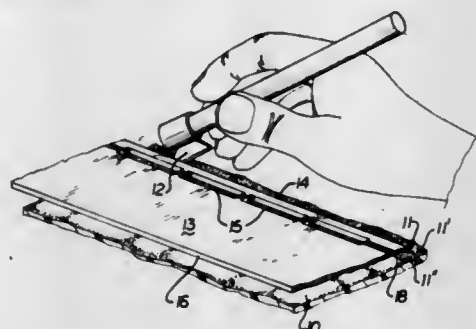
Joseph J. Glavic, 3247 Potomac Dr., Brunswick, Ohio 44212

Filed May 20, 1982, Ser. No. 380,086

Int. Cl.³ B25H 7/00

U.S. Cl. 30—289

8 Claims



1. An implement for cutting grouted-tile-pattern vinyl sheet floor covering ("linoleum roll stock") longitudinally along a line in linearly continuous simulated grouting in the linoleum's surface, said implement comprising,

- (a) a laminar, elongated, generally rectangular metal, combined visual gauge and guide member having a thickness in the range from about 0.020" (inch) to about 0.25" thick,
- (b) a continuous marginal portion defined by an exterior edge of said member and aligned outer edges of plural longitudinally spaced apart rectangular apertures in said member, said marginal portion having a thickness corresponding to the minimum width of grouting in said tile-pattern of a first roll-portion of said linoleum roll stock, so as to enable a boundary of said grouting to be visible within said apertures, and,

- (c) manually operable blade means to be guided in contact with said exterior edge so as to cut along a line in said linearly continuous grouting, leaving a predetermined portion of said grouting, which enables said first roll-portion to be abutted to a second roll-portion of said linoleum, so as to maintain a predetermined uniform width of said continuous grouting and match the overall grouted-tile-pattern without showing the joint.

4,429,462

VARIABLE STIFFNESS RULE BLADE, RULE EMPLOYING SAME, AND METHOD OF MAKING SAME

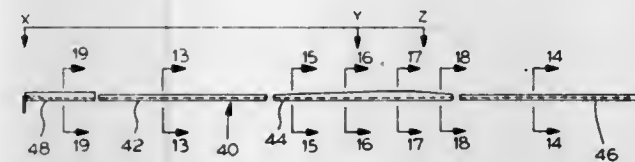
Edward C. Ruffy, Portland, and Carl C. Stoutenberg, Burlington, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sep. 30, 1982, Ser. No. 430,730

Int. Cl.³ G01B 3/02

U.S. Cl. 33—138

25 Claims



1. A coillable rule blade having greater standout length comprising an elongated strip of resiliently deflectable metal having a substantially uniform width in its coiled flattened state and, in its uncoiled state, a concavo-convex cross section along substantially its entire length with the arc opening in the direction of coiling, said blade being relatively free from stresses and relatively stable in the extended position, said cross section having a central segment of arcuate configuration defined by a radius R and having a depth H , the length of said blade being comprised of three portions, a first portion adjacent one end thereof with a depth H_1 and radius R_1 , a second portion extending from said first portion with a depth H_2 and a radius R_2 , and a third portion extending from said second portion to adjacent the other end thereof with a depth H_3 and a radius R_3 , said second portion having a depth H_2 greater than the depth H_1 and H_3 of said first and third portions and a radius R_2 less than the radii R_1 and R_3 of said first and third portions, said second portion extending for a portion of the length of said blade which includes the normal breakpoint for a blade of said width and of a uniform cross section corresponding to the depth H_1 and radius R_1 of said first portion and which extends beyond said normal breakpoint towards said other end of said blade to provide greater standout length.

4,429,463

MACHINIST ELECTRO-MECHANICAL DYNAMIC DATUM POINT LOCATOR TOOL

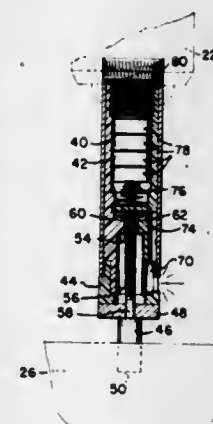
Bruce R. Angell, 17216 195th Pl. N.E., Woodinville, Wash. 98072

Filed Oct. 21, 1981, Ser. No. 313,288

Int. Cl.³ G01B 5/25

U.S. Cl. 33—169 C

9 Claims



1. A machinist's electro-mechanical dynamic datum point locator tool, indicating variable to continuous appearing light signals at the circumference of the locator tool, during the tool's spring held tip's eccentric to concentric rotational work-piece contacts while rotating in the collet of a mill head of a machine tool, comprising:

- (a) a small cylinder or tool barrel for placement, for example, in an adjustable chuck or collet in a mill head of a milling

machine, wherein the small cylinder is a subassembly comprising, in turn:

- (i) a conductive tubular sleeve;
 - (ii) a hollow insulating body closely fitted within the tubular sleeve and made in two longitudinal halves which when assembled define several chambers and a disc like abutment to receive the electro-mechanical means;
 - (iii) a conductive externally threaded metal cap threaded down into the top of this interior insulating sleeve; and
 - (iv) a non conductive bottom collar having a circumferential space to receive the light emitting diode, a lower central opening to receive the depending tip assembly, and a formed top for placement into both the lower end of the conductive tubular sleeve and the hollow insulating body, following the earlier insertion of the insulating body together with the electro-mechanical means into the conductive tubular sleeve;
- (b) a tip assembly flexibly supported and depending from the small cylinder for eccentric preplacement rotation, continuing less eccentric rotation, and final concentric rotation immediately adjacent an edge of a workpiece held in place on the bed of the milling machine;
- (c) a light emitting diode supported in the small cylinder at its circumference to emit light from a small area of the small cylinder, whenever the initially eccentrically placed tip assembly touches an edge of a workpiece, and as the edge of the workpiece is moved closer to being in line with the centerline of the millhead of the milling machine and the tip assembly is reactively moved progressively toward its concentric rotating position then this light emitting diode stays on longer during this return movement of this tip assembly, until its spot source of light at its circumference is continuously turned on and by virtue of its speed of rotation the light appears to an observing machinist as a continuous ring of light or halo of light indicating to him that the center line of the chuck or collet and the mill head of the milling machine is only away from the edge of the workpiece by a distance equal to one half of the diameter of the cylindrical tip of the tip assembly of this locator tool; and
- (d) electro-mechanical means to complete a potential circuit through the locator tool from its small cylinder, through the light emitting diode, and on to the cylindrical tip, which circuit is ultimately completed through the work-piece and the milling machine.

4,429,464

ROUNDNESS CALIBRATION STANDARD

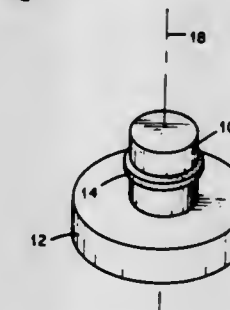
Brice M. Burrus, 6620 Wachese La., Knoxville, Tenn. 37912

Filed Jan. 29, 1982, Ser. No. 343,804

Int. Cl.³ G01B 5/28

U.S. Cl. 33—174 Q

1 Claim



1. In a roundness calibration standard formed on its perimeter with (1) a cylindrical surface and (2) an out-of-round calibration surface, the improvement comprising: said calibration surface being a cylindrical surface with a radius of curvature greater than the radius of curvature of the remainder of the perimeter of said calibration standard.

4,429,465

APPARATUS FOR MEASURING A BELT CONSTRUCTION AND METHOD OF MAKING SUCH APPARATUS

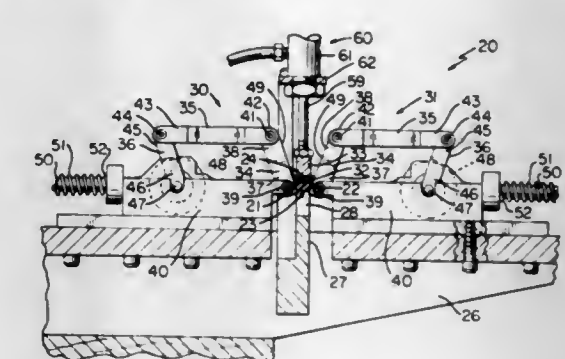
James D. Hill, Jr., Turnback Township, Lawrence County; David L. Alexander, Springfield, and Thomas W. Brooks, Nixa, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 29, 1982, Ser. No. 362,722

Int. Cl.³ G01B 5/24

U.S. Cl. 33—174 E

26 Claims



1. In an apparatus for measuring the angle of at least one side surface of an endless power transmission belt construction of the V-belt type wherein said belt construction has a top surface and a bottom surface with a pair of opposed non-parallel side surfaces therebetween, said apparatus having a first part against which said belt construction is adapted to be disposed in a belt construction measuring position thereof and having a second part pivotally mounted to pivot on an axis thereof and being adapted to be pivotally disposed against said one side surface to indicate the angle thereof by the relation of its pivoted position relative to a reference means when said belt construction is against said first part in said measuring position thereof, said apparatus having moving means operatively interconnected to said second part to tend to move the same toward said belt construction in a direction substantially transverse to said axis thereof when said belt construction is in said measuring position thereof the improvement wherein said apparatus has an angle indicating output device having a rotatable input member and wherein said second part comprises a plurality of pivotally interconnected links, one of said links having opposed ends, one of said opposed ends of said one link being pivotally mounted to said apparatus on said axis and the other of said opposed ends of said one link being pivotally mounted to said apparatus on said axis and the other of said opposed ends being pivoted to another of said links, said one link being adapted to be pivotally disposed against said one side surface of said belt construction, said links being interconnected to said angle indicating output device through said rotatable input member to operate said output device in relation to the pivoted position of said one link, and wherein said other link is pivotally interconnected to a third link of said plurality of links, said third link being secured to said input member of said device.

4,429,466

LAYOUT COMBINATION TOOL

Wilbur Leonard, 6200 SW. 17th St., Margate, Fla. 33068

Filed Nov. 9, 1981, Ser. No. 319,734

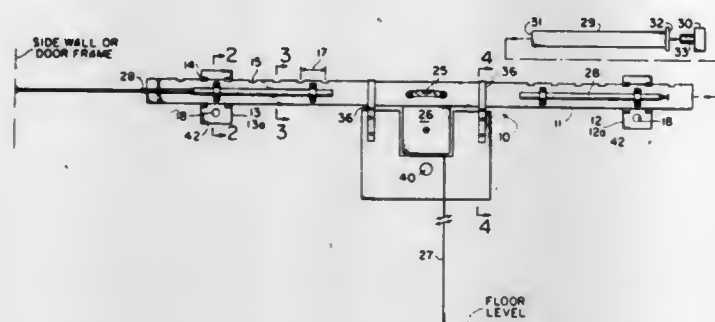
Int. Cl.³ G01B 3/30

U.S. Cl. 33—180 R

11 Claims

1. Layout apparatus adapted to aid in the installation of a towel bar, a sanitary paper holder, a soap dish, a toothbrush holder, and other like devices on a wall comprising: elongated frame means, a pair of template pieces oppositely disposed along the length of said frame means, said template pieces having a substantially rectangular shape, a third template piece attached to said frame means having a substantially rectangular shape, measuring means attached to said frame means for position-

ing said layout apparatus relative to a horizontal reference line,
leveling means attached to said frame means positioning said layout apparatus against a substantially flat vertical surface; and,
said oppositely disposed template pieces comprising flat plates having a rectangular shape with the horizontal



centerline of said template pieces being aligned below a lower edge of said frame means such that a first outline of said frame means and said template pieces in combination with a second outline of said frame means and template pieces when rotated 180° and realigned with said first outline is an outline of a substantially complete towel bar including brackets.

4,429,467

APPARATUS FOR MEASURING TOE-IN OF A MOTOR VEHICLE WHEEL

Yoichi Murata, Nagoya; Ryozi Kishishita, Toyota, and Tadao Nakata, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

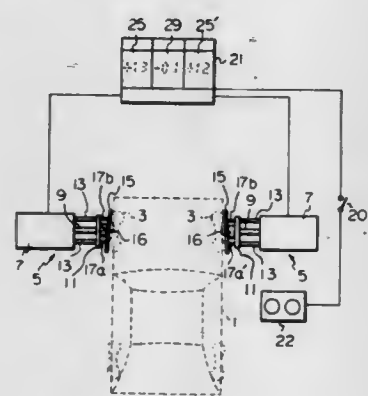
Filed Jun. 2, 1981, Ser. No. 269,719

Claims priority, application Japan, Jun. 10, 1980, 55-79854[U]

Int. Cl.³ G01B 5/24

U.S. Cl. 33—203

6 Claims



1. Apparatus for measuring toe-in of a pair of left and right wheels of an automotive vehicle, the apparatus including a pair of units adapted to be positioned on opposite sides of a vehicle adjacent to corresponding wheels to be measured for toe-in, wherein each unit comprises:

- an elongated contact member, the length of which corresponds approximately to the outer diameter of a tire on a wheel to be measured;
- means for supporting the contact member with its longitudinal axis substantially horizontal and approximately parallel to the longitudinal axis of a vehicle being inspected, at a level corresponding approximately to the center of an adjacent wheel of the vehicle;
- drive means for moving the support means toward and away from the adjacent wheel;
- means for pivotally connecting the contact member to the support means to permit the contact member to uniformly contact front and rear laterally outermost side wall portions of a tire on said wheel adjacent to the respective ends

of the contact member when the support member is moved toward the wheel by the drive means;
sensor means for detecting displacement of the horizontal axis of the contact member from a datum line parallel to the longitudinal axis of a vehicle being inspected, the sensor means comprising a pair of sensors carried by the support means and contacting the contact member at two longitudinally spaced points for providing signals indicating lateral displacement of said points from said datum line and means for calculating the difference between the displacement signals from said pair of sensors; and
indicator means responsive to the sensor means for displaying a transverse displacement corresponding to a toe-in value for the wheel when the contact member contacts the front end rear side wall portions of a tire thereon.

4,429,468

SEE-THROUGH TYPE TELESCOPE SIGHT MOUNT FOR FIREARMS

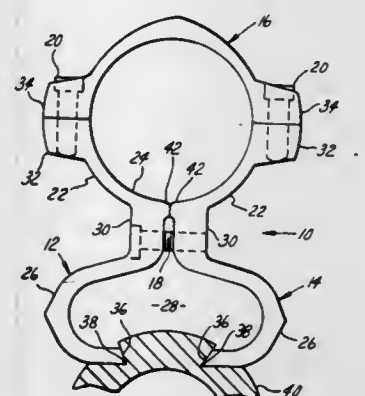
Ivan Jimenez, and Irving N. Rubin, both of 5555 Treadwell, Wayne, Mich. 48184

Filed Dec. 2, 1981, Ser. No. 326,635

Int. Cl.³ F41G 1/38

U.S. Cl. 33—245

7 Claims



1. In a see-through type telescope sight mount system for a firearm the combination comprising a pair of mounting members, said pair of mounting members comprising respective first portions each defining a corresponding portion of a receptacle for the body of a telescope sight, said pair of mounting members further comprising respective second portions each defining a corresponding portion of a see-through, said second portions having respective free distal ends via which the mounting members operatively mount on a firearm, said pair of mounting members still further comprising respective third portions each joining the corresponding first and second portions of its own mounting member, means joining said first portions together opposite said third portions for securely clamping the body of a telescope sight, control coupling means operatively coupling said pair of mounting members between the respective third portions for controlling the span of the free distal ends of the second portions while the telescope sight remains securely clamped, and means operatively disposed between said pair of mounting members on at least one of said first portions opposite said joining means for spacing said third portions apart and providing a fulcrum about which said control coupling means is effective to control the span of the free distal ends of the second portions by pivotal action of said second portions about said fulcrum, said control coupling means being disposed between the fulcrum and said second portions.

4,429,469

DIRECTION DETECTION APPARATUS

Noboru Tsushima, Morioka; Makoto Tomoyori, Iwate, and Masatoshi Harumatsu, Tamayama, all of Japan, assignors to Alps Electric Co., Ltd., Japan

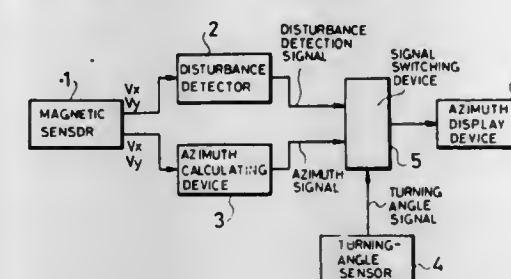
Filed Nov. 12, 1981, Ser. No. 320,523

Claims priority, application Japan, Nov. 13, 1980, 55-159897

Int. Cl.³ G01C 17/28

U.S. Cl. 33—361

5 Claims



1. A direction detection apparatus for an automobile which includes a display means to show the direction of movement of the automobile, the direction apparatus further comprising a magnetic sensor means for sensing a geomagnetic azimuth and for producing an output signal in accordance with said azimuth, a turning-angle sensor means for dynamically sensing the turning angle of said automobile and producing an output signal in accordance with said turning angle, a magnetic-disturbance detector means for detecting a magnetic disturbance on the basis of the signal output of the said magnetic sensor means and producing a disturbance output signal upon said disturbance, and an automatic signal switching means for applying either the magnetic sensor means output signal or the turning-angle sensor means output signal to the said display device in accordance with said disturbance output signal from said magnetic-disturbance detector means.

4,429,470

INCLINOMETER

Noboru Watanabe, Tokyo, and Hiroshi Iiyama, Yokosuka, both of Japan, assignors to Jeco Co., Ltd., Kawasaki, Japan

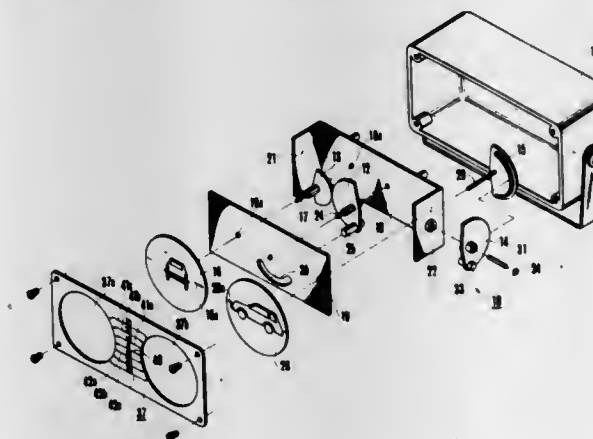
Filed Jan. 4, 1982, Ser. No. 336,628

Claims priority, application Japan, Jan. 13, 1981, 56/3427[U]

Int. Cl.³ G01C 9/16

U.S. Cl. 33—395

5 Claims



1. An inclinometer of the type wherein inclinations in the fore and aft and left and right directions of a vehicle are displayed independently, characterized by comprising:
first and second parallel shafts supported by a frame with a predetermined spacing;
a scale board mounted on a front surface of said frame;
a first display member mounted on a front end of said first shaft for displaying a rolling angle of said vehicle on which said inclinometer is mounted;
a second display member mounted on a front end of said

second shaft for displaying a pitching angle of said vehicle;
a first detecting means, coupled with said first shaft, including a rolling weight of detecting a rolling angle of said vehicle relative to the gravitational direction, said rolling weight being rotatable on an axis parallel to the axis on which said first shaft rotates;
a second detecting means, coupled with said second shaft, including a pitching weight for detecting a pitching angle of said vehicle relative to the gravitational direction, said pitching weight being rotatable on an axis perpendicular to the axis on which said second shaft rotates; and
a common scale provided on said scale board and positioned between said first and second display members for displaying said rolling angle and said pitching angle as said display members rotate adjacent the common indices of said scale in response to their respective detecting means.

4,429,471

FLUIDIZED BED AIR DISTRIBUTOR

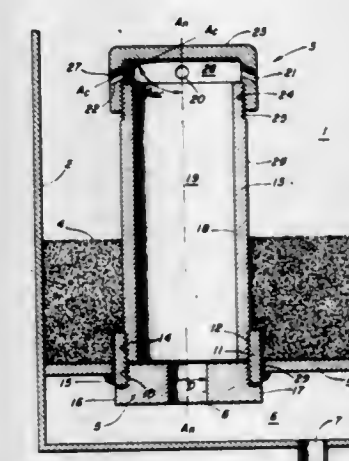
Stephen L. Goodstine, Windsor, and Glen D. Jukkola, Glastonbury, both of Conn., assignors to Conoco Inc., Wilmington, Del.

Filed Dec. 10, 1981, Ser. No. 329,545

Int. Cl.³ F26B 3/08, 17/10

U.S. Cl. 34—10

17 Claims



1. A gas distributor comprising:

- a nipple,
- a cap,
- and a bushing, wherein said cap is provided with at least one gas distribution passage, and said nipple includes a central nipple passage and said bushing includes a central bushing passage,
- said cap being attached to a first end of said nipple said bushing being attached to a second end of said nipple
- said nipple being cylindrical, said central nipple passage being cylindrical,
- said bushing being cylindrical said central bushing passage being cylindrical, said central nipple passage and said central bushing passage being connected in fluid flow communication, the diameter of said central bushing passage being smaller than the diameter of said central nipple passage, whereby the flow of fluid into said central nipple passage is restricted by said smaller diameter of said central bushing passage.

4,429,472

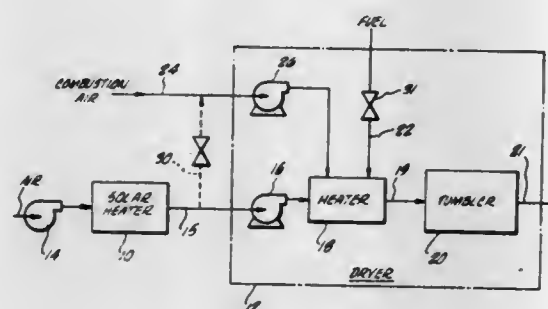
SOLAR DRYER

Richard W. Dodelin, 4430 Jewell St., San Diego, Calif. 92109; Darrell W. Hurst, San Diego, and George R. Osos, Costa Mesa, both of Calif., assignors to Richard W. Dodelin, San Diego, Calif.

Filed Mar. 16, 1981, Ser. No. 243,740
Int. Cl.³ F26B 3/04

U.S. Cl. 34-48

10 Claims



1. A method for drying fabrics comprising the steps of:
 - (a) selecting a solar heater capable of directly heating air;
 - (b) placing fabrics to be dried in a drying zone and tumbling the drying zone;
 - (c) during a first period of time partially drying the fabrics by the steps of:
 - (i) passing air through the solar heater to heat the air to a first temperature greater than ambient;
 - (ii) further heating the air in a non-solar heater to a second temperature of at least about 300° F.; and
 - (iii) introducing the further heated air to the tumbling drying zone containing fabrics; and
 - (d) during a second period of time immediately after the first period of time, cooling the drying zone and further drying the fabrics by the steps of:
 - (i) passing air through the solar heater to heat the air to a temperature greater than ambient; and
 - (ii) without further heating the air that has passed through the solar heater, introducing the air that has passed through the solar heater to the drying zone.

4,429,473

ATTRACTIVE LADIES HEELED SHOE

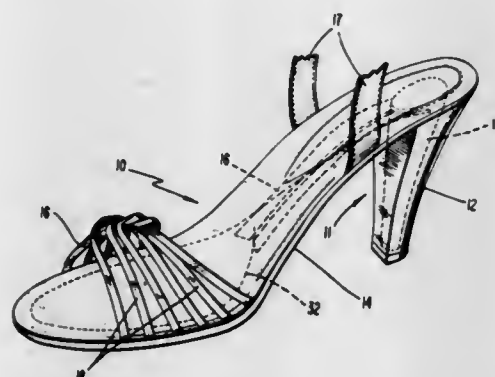
Kenneth Blumenstein, 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Continuation-in-part of Ser. No. 66,043, Aug. 13, 1979. This application Sep. 17, 1981, Ser. No. 303,023

Int. Cl.³ A43B 3/12, 13/12

U.S. Cl. 36-11.5

8 Claims



1. An attractive, sleek, comfortable, light weight ladies shoe comprising a hard molded, plastic unitary body forming an elevated heel, a shank and an outer sole; said body having a load bearing upwardly directed face and a flange extending upwardly approximately at right angles to the face and from the periphery of the outer sole; a resilient foam plastic soft cushion layer having a thickness of approximately one-quarter

inch and an upper face as well as a bottom face bearing against the load bearing face of the body; a sheet of material covering the upper face of the cushion layer and secured to the upper face of the body underneath of the cushion; an upper secured in place between the upwardly directed face of the body and the bottom face of the cushion layer; the flange extending above a load bearing face of the sole by approximately three-eighths of an inch so an upper surface of the sheet material is approximately coplanar with but slightly above an upper edge of the flange and the cushion layer, sheet of material and upper are held and captured in place by the flange and embedded in the body.

4,429,474

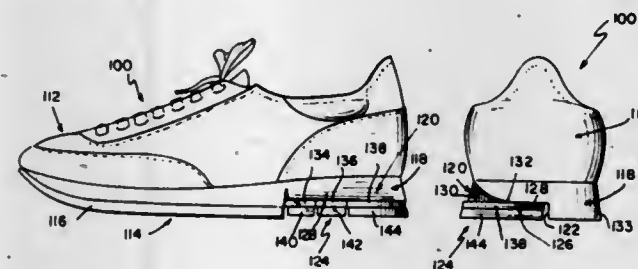
ADJUSTABLE MECHANICALLY CUSHIONED LATERAL BORDER OF THE HEEL FOR A SHOE

Robert D. Metro, 848 Roxbury La., Noblesville, Ind. 46060
Continuation-in-part of Ser. No. 313,454, Oct. 21, 1981. This application Dec. 31, 1981, Ser. No. 336,419

Int. Cl.³ A43B 21/36

U.S. Cl. 36-36 A

8 Claims



1. In a shoe including an upper portion and a lower portion having a sole and a heel area, the heel area having lateral and rear borders and spring-loaded means for cushioning the heel area, the improvement wherein the heel area includes a generally planar surface near the center of the heel area and an arcuate surface extending laterally outwardly and upwardly therefrom, the spring-loaded means includes at least one flexible cushioning member extending laterally generally parallel to the planar surface of the heel area, the planar and arcuate surfaces of the heel area providing a fulcrum at the lateral border for flexion of a distal portion of the cushioning member to produce a cushioning effect, and adjustment means for varying the cushioning effect of the spring-loaded means at the lateral border, the adjustment means including at least one elongated slot in the cushioning member and means received in the slot for securing the cushioning member to the heel area, the slot allowing the cushioning member to be moved laterally relative to the fulcrum at the lateral border of the heel area to change the spring constant of the distal portion thereof.

4,429,475

ARTICLE OF FOOTWEAR

Douglas W. Bensley, 1385 Commissioners Road West, London, Ontario, Canada

Division of Ser. No. 100,586, Dec. 5, 1979, Pat. No. 4,326,313. This application Apr. 27, 1981, Ser. No. 257,685

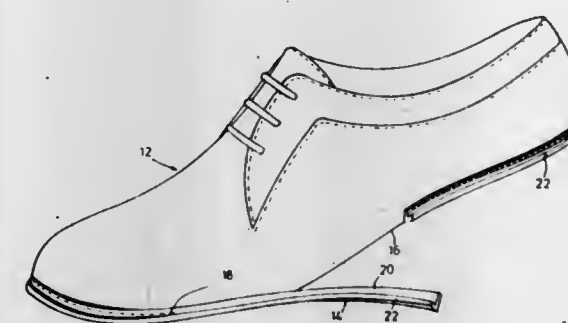
Int. Cl.³ A43B 23/00

U.S. Cl. 36-45

5 Claims

1. An article of footwear comprising a pre-formed upper having a peripheral lower edge portion, a connecting strip attached to said lower edge portion and surrounding the upper, said connecting strip having a profiled section providing a projecting extension, a pre-formed ring-like welt member

having an inner surface in snapping engagement with the projecting extension of the connecting strip, and a pre-formed



sole and heel unit having an upper peripheral surface adhered to a lower surface of the welt member.

4,429,476

SELF-IMMERSING JET PUMP

Anthony W. Wakefield, Wakefield House, Stamford, Lincolnshire, PE9 1BE, England

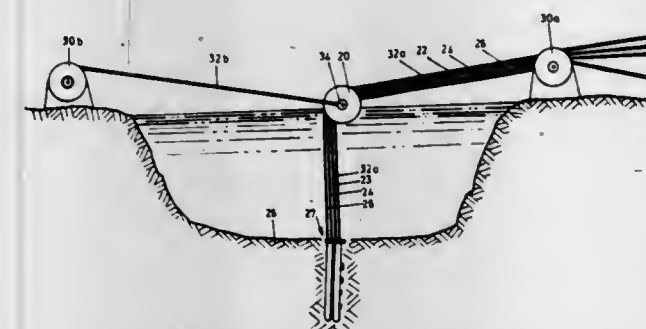
Filed Jun. 8, 1981, Ser. No. 271,214

Claims priority, application South Africa, Jun. 9, 1980, 80/3430

Int. Cl.³ E02F 3/88

U.S. Cl. 37-62

7 Claims



1. A dredging apparatus for dredging material from a deposit, said apparatus comprising a jet pump, a float, a winch, adapted to be mounted on land adjacent to the material to be dredged, a cable connecting the winch to said float, for controlling the position of said float, and a plurality of hoses originating at a location remote from said float, said jet pump including means for receiving and for discharging fluid and including nozzles through which said fluid will be discharged to erode material surrounding said jet pump, said float comprising a body with means for supporting said hoses wherein said hoses are adapted to convey fluid to and from said jet pump respectively, and wherein said floating body has a curved surface with a radius of curvature sufficient to accommodate flexure of said hoses and has a buoyancy sufficient to overcome the downward drag of said hoses.

4,429,477

PORTABLE DITCHER AND EXCAVATING ELEMENTS THEREFOR

Bernard O. Tice, St. Marys, and Gene E. Bailey, Parkersburg, both of W. Va., assignors to Ditcher Saw Company, St. Marys, W. Va.

Filed Jul. 28, 1980, Ser. No. 172,653

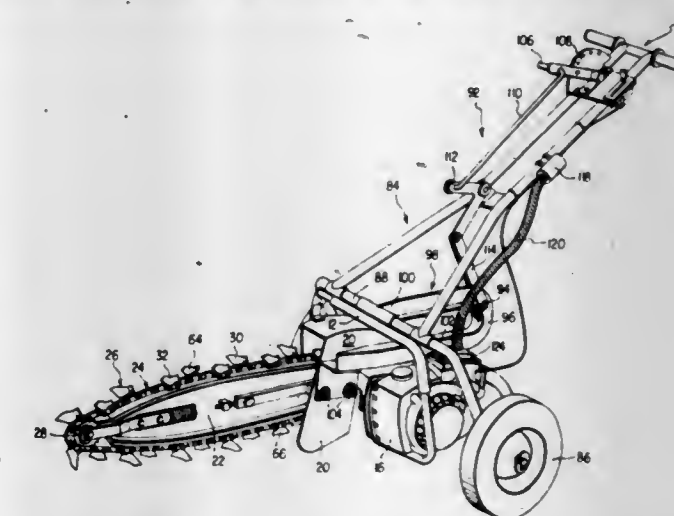
Int. Cl.³ E02F 5/06

U.S. Cl. 37-80 R

7 Claims

1. A portable trencher having a cutter bar supporting an excavating chain run in driving engagement with a power transmission unit rigid with said cutter bar and including operator support handles fore and aft of said unit; a plurality of

right hand teeth secured to one side of said chain in alternating relation with a plurality of left hand teeth secured to the other side of said chain; said right and left hand teeth being mirror images of one another; each of said teeth including a straight, upper mounting portion and a lower earth engaging portion; said lower earth engaging portion including a forward excavating portion extending laterally outward of said chain and mounting portion to terminate in a leading excavating point defining the lateral most extent of the tooth outwardly of said



chain; the trailing end of said lower earth engaging portion of each of said teeth extending laterally inwardly of said upper mounting portion to terminate in a plane of the following inner chain link; an additional right hand tooth secured to the said other side of said chain and an additional left hand tooth secured to said one side of said chain; and, in combination with said trencher, a two-wheeled dolly; and means, including one of said operator support handles, for stably mounting said trencher on said dolly for trenching operations.

4,429,478

VARIABLE INFORMATION SIGN

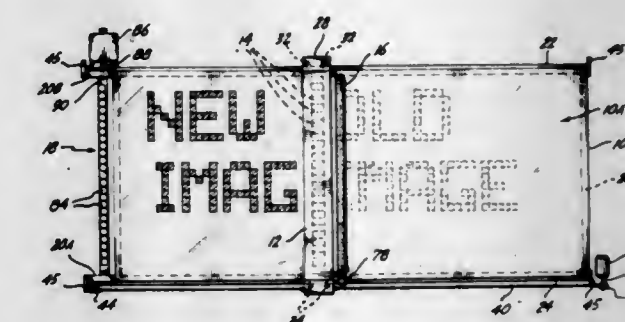
James Bruce-Sanders, 4184 Rose Crescent, West Vancouver, B.C., Canada (V7V 2N8)

Filed Jun. 26, 1981, Ser. No. 277,707

Int. Cl.³ G09F 19/06

U.S. Cl. 40-447

28 Claims



1. A variable information sign comprising:
 - a display member having a smooth and substantially nonporous display surface;
 - a plurality of print modules disposed in proximity to said display member and facing said display surface, each said print module including a pad of porous material containing a dry erase ink and being selectively-actuatable to bring said pad into contact with said display surface so as to print an image in the form of a matrix of discrete areas of ink thereon;
 - erase means disposed in proximity to said display member and facing said display surface for wiping said display surface to remove any image thereon; and,
 - means for producing relative motion between said display member and said plurality of print modules and between

said display member and said erase means, said plurality of print modules and said erase means being arranged so that upon said relative motion, any previously-printed images are first removed from said display surface by said erase means and an image of information desired to be displayed is thereafter formed on said display surface as said plurality of print modules are selectively actuated.

4,429,479

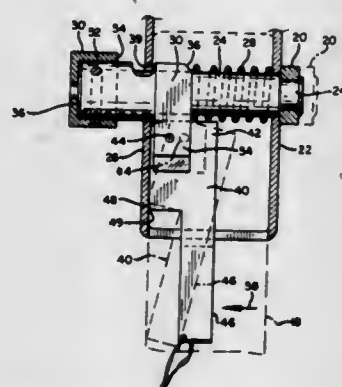
MAGAZINE LATCH RELEASE MECHANISM

David A. Johnson, 133 Eulalona Ct., Klamath Falls, Ore. 97601, assignor to J.F.S., Inc., Salem, Ore.

Filed Apr. 26, 1982, Ser. No. 371,959

Int. Cl.³ F41C 27/00

U.S. Cl. 42—6



1. In a repeating firearm having a receiver defining a location for a removable magazine and including laterally spaced-apart generally upright walls extending rearwardly of said location, and also having a magazine latch mechanism including a laterally extending axially slidable shaft mounted in said receiver and carrying a catch attached thereto, a magazine latch release mechanism, comprising:

- (a) biasing means for urging said shaft axially toward a first wall of said receiver;
- (b) sleeve means surrounding said shaft and extending through said first wall; and (c) lever means for moving said shaft axially away from said first wall, said lever means having an upper end pivotally attached to said sleeve means, a lower end extending downwardly beneath said receiver, and fulcrum means located intermediate said upper and lower ends for acting against an interior surface of said first wall of said receiver for moving said shaft axially away from said first wall in response to movement of said lower end toward said first wall.

4,429,480

DIVING SPEAR

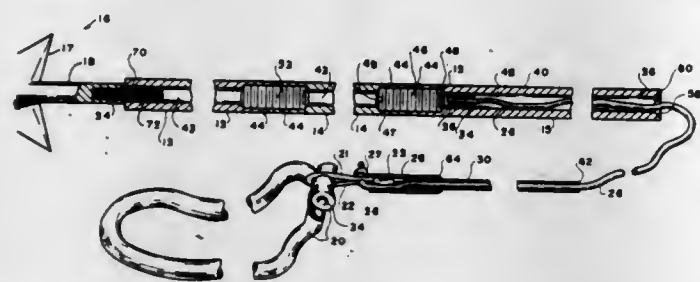
Rodney C. Stude, 8163 E. Mineral Dr., Englewood, Colo. 80110

Filed Mar. 24, 1982, Ser. No. 361,450

Int. Cl.³ A01K 81/04

U.S. Cl. 43—6

13 Claims



1. A diving spear with increased range capabilities for use in underwater fishing and the like comprising:

- (a) elongate shaft means for mounting a spear head having a forward end and an aft end said aft end comprising an elongate bore therein;
- (b) flexible string means insertable in said bore for increasing the range of said spear and comprising a first end and a

second end said first end of said string means operably attached within said bore;

- (c) stretchable elastic thrusting means for providing longitudinal thrust to said shaft means operably attached to said second end of said string means and comprising an unstressed state and an elastically stressed state;

and

- (d) holding means for immobilizing a portion of said thrust means relative to said elongate shaft means in said thrust means stressed state.

4,429,481

SPIN-CASTING ROD WITH LURE JERKING ASSEMBLY

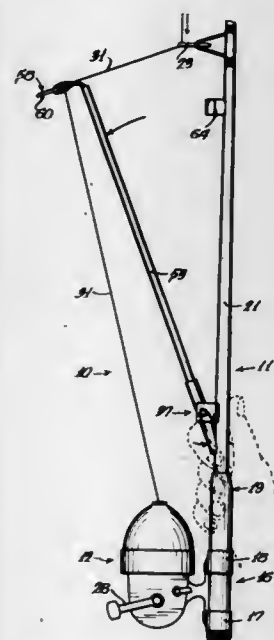
David H. Handa, 4 N. 525 Route 83, Bensenville, Ill. 60106

Filed Oct. 16, 1981, Ser. No. 312,006

Int. Cl.³ A01K 87/00, 97/00

U.S. Cl. 43—19.2

12 Claims



7. A fishing rod reel assembly for line and lure fishing, comprising: a main rod having a plurality of line guides spaced along its length including a butt guide, a reel seat connected to the rod, a line casting reel connected to the reel seat, and a substantially straight jerk rod means for imparting intermittent motion to the line payed-out from the reel, said jerk rod means having a top guide at the end thereof positioned between the butt guide on the main rod and the reel, said jerk rod means being pivotally mounted on the reel side of the main rod about an axis between the top guide and the reel for movement between a first position substantially and closely adjacent and parallel to the main rod with the jerk rod means top guide coaxially aligned with the butt guide so the jerk rod means does not hinder line movement in its first position, and a second position where the top guide is substantially misaligned with respect to the butt guide, said jerk rod means having a handle extending from the pivotal axis thereof toward the reel for manipulation by the fisherman's hand while on the main rod.

4,429,482

SIMULATED FISH SKIN AND FISHING LURE

James A. Honse, 211 Anita Forte Dr., Swansboro, N.C. 28584

Continuation-in-part of Ser. No. 42,412, May 25, 1979, Pat. No. 4,307,531. This application Oct. 13, 1981, Ser. No. 310,963

The portion of the term of this patent subsequent to Dec. 29,

1998, has been disclaimed.

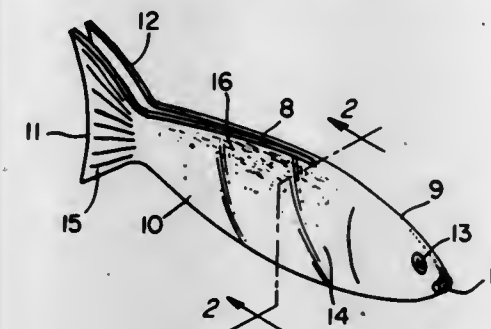
Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.32

5 Claims

1. A simulated fish skin lure consisting of two body halves with each half consisting of a single outer layer of clear plastic material and a single inner layer of a flexible reflective mate-

rial, said halves being joined together to form a joined forward portion and a split rear portion, the halves of the forward



portion form a single unitary head and the halves of the rear portion form a split tail.

4,429,483

AUTOMATIC RAT KILLING DEVICE

Hideaki Murakami, 724-3 Koikecho, Hamamatsushi, Shizuoka-ken, Japan

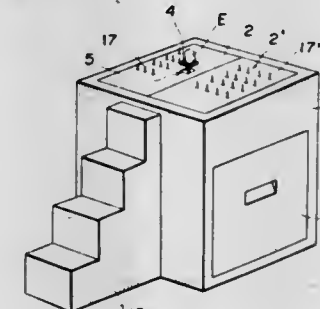
Filed Mar. 17, 1982, Ser. No. 358,909

Claims priority, application Japan, Apr. 25, 1981, 56-62756

Int. Cl.³ A01M 23/06

U.S. Cl. 43—70

3 Claims



1. An automatic rat killing device comprising:

- (a) a box having an opening at its top and a stairway leading to its top;
- (b) a pair of closure plates pivotally mounted at their one ends on said box for movement between horizontal positions where said pair of closure plates are mated together at their other ends to close said opening and vertical positions where said pair of closure plates are separated apart to open said opening;
- (c) a solenoid mounted on said box and having a stop lever normally engaged with said closure plates to hold them in their horizontal positions;
- (d) a container removably mounted at the lower portion of said box, said container holding a viscous liquid;
- (e) a bait support member for holding a bait;
- (f) a detector connected to said bait support member for generating a detecting signal when a rat touches said bait, said solenoid being energized in response to said detecting signal to move said stop lever out of engagement with said closure plates so that said closure plates are pivotally moved to their vertical positions to open said opening, thereby causing the rat to fall into said viscous liquid in said container; and
- (g) a returning mechanism mounted on said box and operable to return said closure plates from their vertical to horizontal positions, upon returning of said closure plates to their horizontal positions said solenoid being de-energized to return said stop lever to its initial position to cause said stop lever to engage said closure plates, thereby holding them in their horizontal positions.

4,429,484

ANIMAL SNARE SUPPORT

Ardell M. Grawe, Box 167, Rte. 2, Breckenridge, Minn. 56520

Filed Jul. 26, 1982, Ser. No. 402,091

Int. Cl.³ A01M 23/34

U.S. Cl. 43—87

6 Claims



1. An animal snare support for use with an animal snare which includes a length of flexible snare wire having an anchored end and a loop end portion, a snare lock encompassing a first loop end portion and a second intermediate portion of the snare wire to form a snare loop in between, means to prevent the first loop end portion of the snare wire from escaping from the snare lock, the lock and snare wire being so constructed that the intermediate portion of the snare wire runs freely through the snare lock in direction to close the snare loop, the animal snare support including:

- an elongate shank;
- support means to affix a first end portion of said shank in fixed relation to the ground;
- a substantially horizontal bar having a first end portion integral with a second end portion of the shank;
- an elongated, hollow, snare support collar attached with respect to a second end portion of said bar and encompassing a portion of the flexible snare wire between the snare lock and the anchored end of snare wire, said collar being provided with an opening therethrough which has an axis lying at an acute angle above horizontal measured from the anchored end of the snare wire toward the loop end; and
- anchor means for preventing the anchored end of the snare wire from escaping from the support collar; and
- the relationship between the snare support collar encompassed portion of the flexible snare wire being such that the axis of the snare wire within and slightly beyond the snare support collar is held at an angle above horizontal in direction toward the loop end portion of the wire.

4,429,485

TRAP SETTING DEVICE

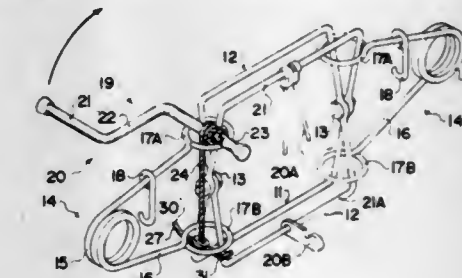
Norman Dubray, Box 72, Oak River, Manitoba, Canada R0K 1T0

Filed Mar. 29, 1982, Ser. No. 362,768

Int. Cl.³ A01M 23/28

U.S. Cl. 43—97

7 Claims



7. A method of setting traps of the conibear type comprising the steps of engaging a ring engaging member secured to the

distal end of a cord and cable, through the top ring of one of a hairpin type spring of said conibear trap and then through the bottom ring thereof, positioning said ring engaging member to prevent disengagement thereof from said bottom ring, engaging the windlass portion of a hand crank across the top ring with the cord or cable extending upwardly from the ring engaging member, through said bottom ring, and through said top ring and being secured to said windlass portion, rotating said crank with said windlass portion acting as a fulcrum across said upper ring, thereby winding said cord or cable upon said windlass portion and drawing said rings together and then detachably locking the arms carrying the rings, in the closed position, and then repeating the process on an opposite hairpin type spring.

4,429,486

CONSTRUCTION AND METHOD FOR MODELS WITH INTERLOCKING TAB/SLOT ASSEMBLY

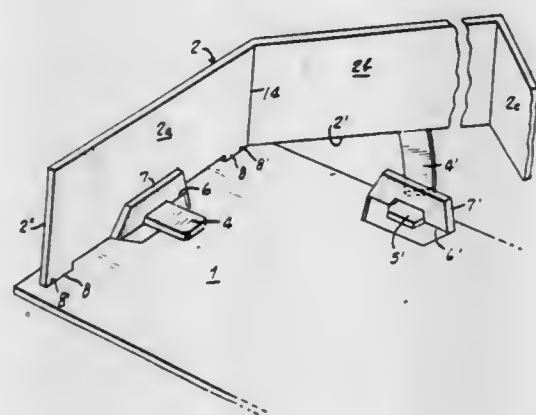
Arne Bjornstad, Vagsbygd, Norway, assignor to Minilife A/S, Kristiansand, Norway

Continuation of Ser. No. 305,325, Sep. 24, 1981. This application Dec. 6, 1982, Ser. No. 447,011

Int. Cl.³ A63H 33/16

U.S. Cl. 46—21

20 Claims



1. Construction set for a model house of the type having individual components of a thin foldable material such as sheets of cardboard provided with tabs and slots which in assembly are intended to interlock to hold the components together, comprising:

a first sheet member provided with at least two fold-up tabs, each having a slot arranged at its root, and at least one slot formed directly in said sheet member adjacent one of said fold-up tabs;

a second sheet member, the latter being foldable such that corners providing at least three walls can be formed therefrom upon folding;

tongue means, on the first wall and on at least one other of said three walls, extending from one of the two edges of said second sheet member which are common to said walls for respective engagement in said fold-up tab slots in said first sheet member;

a projection on the first of said three walls located on said one common edge thereof to one side of and spaced from said tongue means for engagement with said direct slot in said first sheet member, said tongue means in the assembled state of said sheet members being disposed in said fold-up tab slots and bent at right angles relative to said projection which is disposed in said direct slot holding the folded walls of said second sheet member substantially perpendicular to the first sheet member.

4,429,487 BALL WHIRLING TOY AND METHOD OF EXERCISE USING SAID TOY

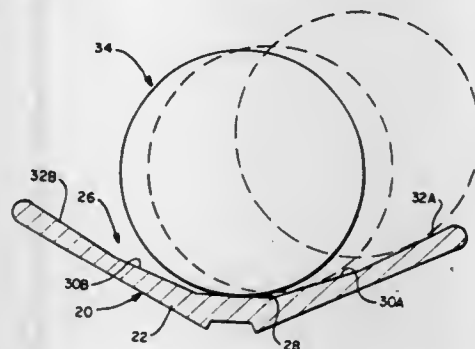
Ottilia Z. Taylor, San Carlos, and Janos J. Lazar, Redwood City, both of Calif., assignors to Injection Mold Partners, Ltd., San Rafael, Calif.

Continuation-in-part of Ser. No. 175,077, Aug. 4, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 285,005

Int. Cl.³ A63H 33/00

U.S. Cl. 46—43

7 Claims



1. A ball whirling toy comprising: means defining an annular track having a radially inwardly facing concave surface, said surface consisting of a plurality of distinct, directly adjacent side-by-side annular surface segments greater in number than two, each of which has a substantially straight cross-section extending at an obtuse angle with any directly adjacent surface segment such that the overall cross-section of the radially inwardly facing concave surface is substantially wider than it is deep; a ball sized to fit on said track in tangential relationship with any one of said surface segments, said surface segments consisting of a central segment extending in a direction parallel with the axis of said track, a pair of intermediate surface segments on opposite sides of and directly next to said central segment and a pair of outer surface segments on the otherwise free sides of and directly next to said intermediate segments; and handle means connected with said track defining means, whereby said ball may be placed on said track and said handle means moved in predetermined ways to cause said ball to move around said track on any one of said surface segments or from said one segment to a next adjacent segment depending upon the particular movement of said handle means and the orientation of said track and whereby said ball is capable of moving across all of said segments and off of the track unless this is prevented by the appropriate manipulation of said handle means.

4,429,488

ELECTRIC VEHICLE WITH MAGNETIC ATTRACTION TO TRACKWAY

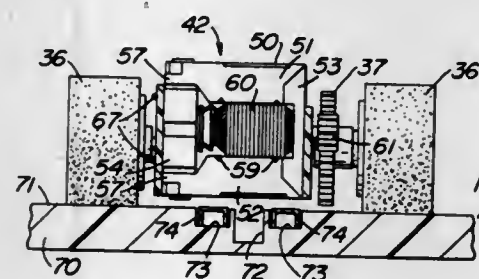
John A. Wessels, 125 Campanita Ct., Monterey Park, Calif. 91754

Filed Oct. 13, 1981, Ser. No. 310,807

Int. Cl.³ A63H 18/12

U.S. Cl. 46—257

2 Claims



1. A model vehicle for movement along a track having a pair of magnetically permeable rails, said vehicle comprising a non-magnetic chassis, track-engagable running gear on said

chassis, a motor carried by said chassis in driving relation with said running gear and positioned on said chassis for location above said rails when said running gear is engaging said track, said motor comprising a yoke, magnet holders in said yoke, an armature rotatable about a horizontal axis transverse to said rails and within said yoke between said magnet holders, and magnets in said holders for magnetically effecting rotation of said armature, said yoke and magnet holders being non-magnetic so that said motor is essentially non-magnetic except for said armature and magnets, whereby magnetic flux from said magnets is not constrained, for increased magnetic coupling of said magnets with said rails to increase force by said chassis toward the track.

4,429,489

BOX-SHAPED CONTAINER FOR USE AS A COLD FRAME

Artur Fischer, Weinhalde 34, D-7244 Tumligen 3, Fed. Rep. of Germany

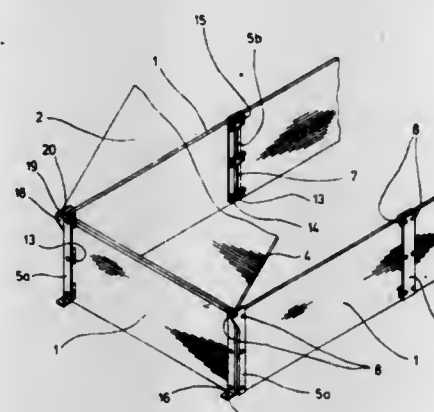
Filed Mar. 22, 1982, Ser. No. 360,637

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115355

Int. Cl.³ A01G 9/06

U.S. Cl. 47—18

11 Claims



1. A box-shaped container for use as a cold frame, comprising a plurality of side wall panels; a cover, said side wall panels and said cover being formed as hollow transparent panels made of plastics and including face panels and cavity-forming ribs extending between said face panels, said side wall panels being formed with bores; and connecting means to connect adjacent side wall panels to each other, said connecting means each including a connecting element having two faces abutting against respective ends of the side wall panels, portions connected to and extending at right angles from said stop faces, said portions being formed with holes arranged in assembly in alignment with said bores, stud pins each having a circumferential groove and inserted into the respect hole and extended into the respective bore, and a locking element having a slot and locked on the respective stud so that pin said slot engages the circumferential groove of the respective stud pin.

4,429,490

DOOR CONTROL SWITCHING DEVICE

Richard L. Zunkel, Princeton, Ill., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 1, 1982, Ser. No. 353,622

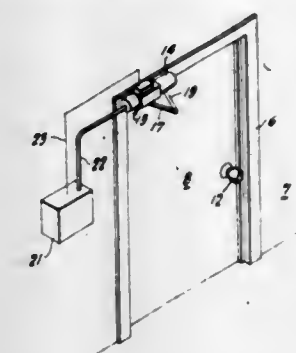
Int. Cl.³ E05F 15/10

U.S. Cl. 49—32

10 Claims

1. In a door control switching device for a door panel hinged to rotate in a door frame and having a shaft rotatable about an axis and interconnected with said panel and said frame for rotation of said shaft into rotary positions corresponding to the rotary positions of the door panel in the door frame and having means incorporating a controlling switch contact for rotating said panel relative to said frame, the combination of a hub projecting eccentrically from said shaft, an arm having opposite ends, and means disposing one of said ends frictionally

engaging said hub for movement of one of said ends in an orbital path relative to said shaft axis and disposing the other of said ends freely alongside said switch for arcuate movement



4,429,491

DOOR OPERATOR APPARATUS

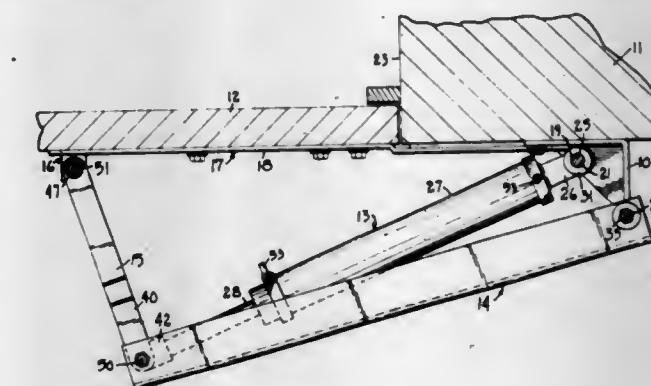
James A. Bruns, Grand Rapids, Minn., assignor to Abe W. Mathews Engineering Co., Hibbing, Minn.

Filed Oct. 13, 1981, Ser. No. 310,505

Int. Cl.³ E05F 11/24

U.S. Cl. 49—340

6 Claims



1. A mechanism for operating a panel rotatably mounted to a frame, comprising:

(a) actuator means, attached at one end to the frame, for providing a linear pulling and pushing force;

(b) means for linking said actuator means to the panel; and

(c) means for transferring the linear force of said actuator means into an opening and closing force for said panel, said transferring means including a first elongated member pivotally attached at one end thereof to said frame, said linking means including a second elongated member pivotally connected at one end thereof to the panel, said actuator means being pivotally attached at a second end to second ends of said first and second elongated members so as to form a common pivot point.

4,429,492

DOOR COORDINATOR

William B. Imhoff, Springdale, Conn., assignor to Leigh Products, Inc., New Haven, Conn.

Continuation-in-part of Ser. No. 342,750, Jan. 26, 1982,

abandoned. This application Sep. 23, 1982, Ser. No. 422,169

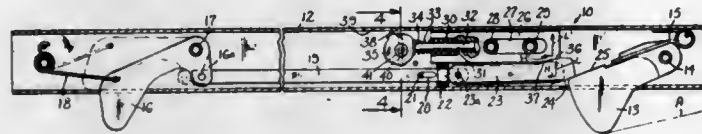
Int. Cl.³ E05C 7/05

U.S. Cl. 49—367

8 Claims

1. A system for coordinating the closing of a pair of doors oppositely hinged to a frame, one door being active and the other inactive, comprising a housing member adapted to be mounted to the door frame, a first holding lever pivotally

mounted to said housing adjacent one end thereof and extending from said housing to hold the active door open until the inactive door closes, a second lever pivotally mounted in said housing and positioned to be engaged by the inactive door adjacent the free end thereof, a rod having a free end pivotally connected to said second lever and extending to a position to prevent inward movement of said first lever whereby when the inactive door engages said second lever and pivots said second lever said rod is retracted from engagement with said holding lever to permit said active door to close,



means biasing said second lever toward an extending position, a member slideable in said housing and in contact with the free end of said rod to normally prevent movement of said rod toward said second lever, and means biasing said member into engagement with the free end of said rod,

said free end of said rod having engagement with said holding lever such that when sufficient force is applied to said holding lever it will force said rod toward said second lever over the bias of said biasing means on said slideable member.

4,429,493

ASTRAGAL HOUSING SEAL AND LOCK

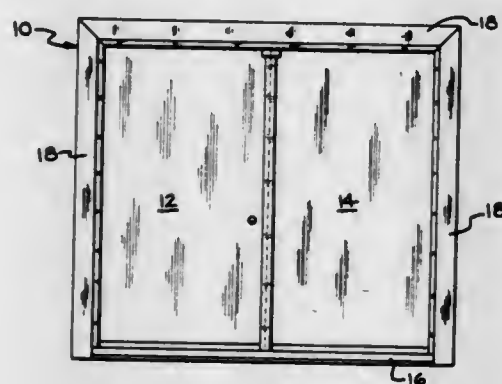
William R. St. Aubin, Perrysburg, Ohio, assignor to LST Corporation, Sylvania, Ohio

Filed Sep. 27, 1982, Ser. No. 424,220

Int. Cl.³ E05C 7/04

U.S. Cl. 49-367

14 Claims



1. An improved astragal for use in a double door assembly having an active door and a relatively inactive door, such doors being pivotally mounted over a sill in a surrounding frame and having their free vertical edges adjacent one another, said astragal comprising: a vertically extending mullion housing positioned between the free vertical edges of such doors, said mullion housing being attached to such relatively inactive door, and a vertically extending slide section mounted on said mullion housing of such inactive door and adjacent the sealing sides of such inactive door and such active door, when such active door is in the closed position, said slide section being vertically movable relative to said mullion housing between a locked position and an unlocked position.

4,429,494 WINDOW, ESPECIALLY FOR INSTALLATION IN AN INCLINED ROOF

Klaus Kornerup, Birkerød, Denmark, and Per B. Christensen, Puerto del Carmen Lanzarote, Canary Islands, assignors to V. Kann Rasmussen Holding A/S, Soborg, Denmark

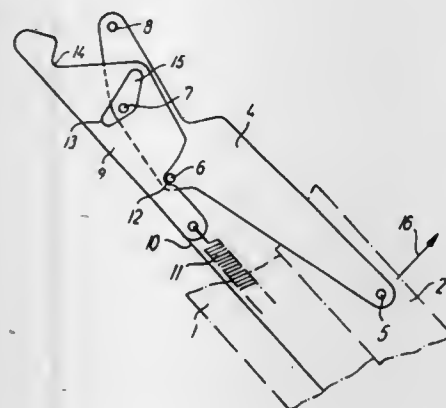
Filed Sep. 17, 1982, Ser. No. 419,328

Claims priority, application Denmark, Dec. 8, 1981, 5421/81

Int. Cl.³ E05F 1/10

U.S. Cl. 49-386

3 Claims



1. A window, especially for installation in an inclined roof, comprising a main frame, a secondary frame element top-hinged therein, and a frame element lifting lever inserted therebetween and having one end pivotally connected with a side member of the secondary frame element or the main frame while its other end is pivotally and displaceably connected with the associated side member of the main frame or the secondary frame element, respectively, and is urged by a spring for displacement along said side member in a direction away from the hinge point between the main frame and the secondary frame element, said other end of the secondary frame element lifting lever presenting at least two pivot points having different distances from the pivot point at the first mentioned end of the lever and being, moreover, located so as to successively becoming operative during the opening of the window to successively increasing the effective length of the lever.

4,429,495

DOOR FOR BUILDINGS

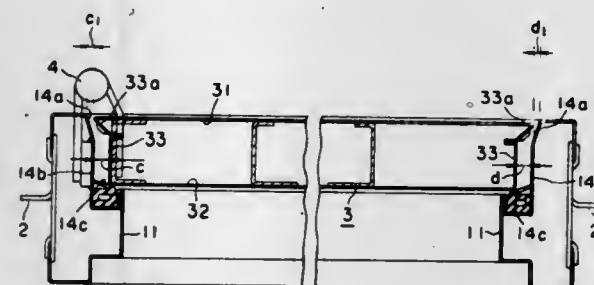
Kiyomi Aoki, Yokohama, Japan, assignor to Mitsui Metal Processing Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,494

Int. Cl.³ E06B 3/00

U.S. Cl. 49-501

9 Claims



1. A door for buildings, said door being provided with a lock and hung within a door frame so as to swing on hinges fastened to the door and the door frame, said door frame being fixed in a doorway in a building wall, wherein the outside panel of said door is larger in area than the inside panel thereof, the four edge faces of said door are provided on their outside portions with acute-angled projecting portions, the outside portions of the inner faces of said door frame are inclined toward the outside,

clearances of at least 6 mm each between said inner faces of said door frame and the inner portions of said edge faces of said door are provided, and said clearances between said inner faces of said door frame and said edge faces of said door decrease toward the outside.

4,429,496

METHOD AND APPARATUS FOR ACTIVE CONTROL OF FLEXIBLE STRUCTURES

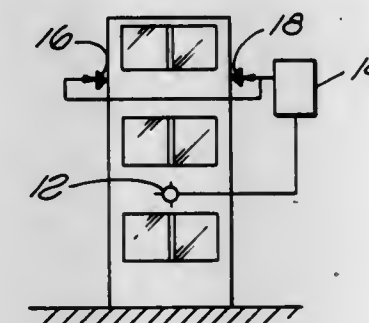
Sami F. Masri, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Dec. 24, 1980, Ser. No. 219,699

Int. Cl.³ F16M 13/00; E04H 9/02

U.S. Cl. 52-1

11 Claims



1. A method for minimizing the stress to, and/or deformation of, a flexible structure subjected to a dynamic environment comprising the steps of:

- (a) selecting a threshold state for said structure;
- (b) sensing the state of said structure in response to said dynamic environment;
- (c) transmitting the value of at least one corrective energy pulse only when the state of said structure exceeds said threshold; and
- (d) applying at least one corrective pulse to said structure within one period of its lowest mode of vibration to disorganize the buildup of the amplitude of harmonic vibrations therein.

4,429,497

PIPE SUPPORT SYSTEM

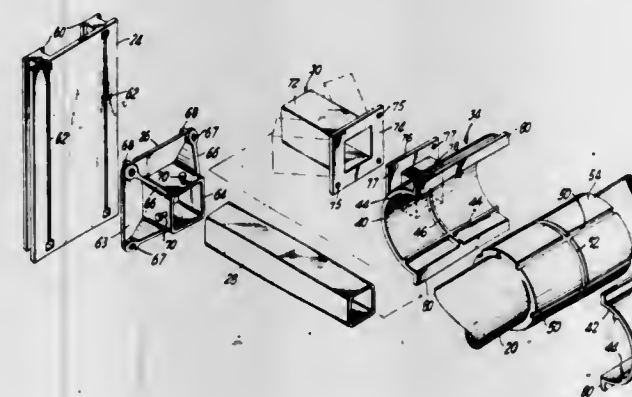
Peter A. DiBernardi, 1 Cindy Dr., St. James, N.Y. 11780

Filed Apr. 10, 1981, Ser. No. 252,875

Int. Cl.³ E04F 19/00

U.S. Cl. 52-27

21 Claims



1. A pipe support for securing pipes to a structural element, such as a wall, to prevent the movement of the pipes relative to said structural element, said pipe support system comprising: a generally cylindrical pipe, with a portion of the outer surface of said pipe including at least one axial engaging means and at least one circumferential engaging means formed on said pipe outer surface portion; a generally cylindrical clamp, with the inside diameter of said clamp substantially corresponding to the outside diameter of

said pipe and with the inner surface of said clamp including at least one complimentary axial engaging means and at least one complimentary circumferential engaging means formed on said clamp, said pipe being receivable within said clamp such that each said complimentary axial engaging means and axial engaging means are aligned and interlocked, and each said complimentary circumferential engaging means and circumferential engaging means are aligned and interlocked to prevent said pipe from shifting in both the axial and radial directions substantially without welding said clamp to said pipe; and means for rigidly connecting said clamp to said structural element whereby said pipe is supported and prevented from moving relative to said structural element.

4,429,498

ATMOSPHERIC RESISTANT DOORS

William V. Pitt, P.O. Box 7622, Waco, Tex. 76710

Continuation of Ser. No. 259,355, Apr. 30, 1981, Pat. No.

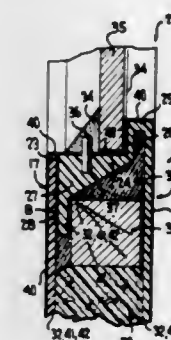
4,374,693. This application Sep. 30, 1982, Ser. No. 429,661

The portion of the term of this patent subsequent to Jan. 17, 1997, has been disclaimed.

Int. Cl.³ E06B 3/54

U.S. Cl. 52-204

11 Claims



1. A door which is resistive to chemical attack and to high moisture environments and has a relatively impermeable homogeneous surface finish and low surface porosity comprising a pair of one-piece, integral, molded, generally parallel flat plates each including top, bottom and a pair of side edges, said edges of each plate collectively defining an outer peripheral edge of each plate, said outer peripheral edges being disposed in generally aligned relationship, each plate being constructed of a completely cured admixture of unfoamed polymeric resin and reinforcing material resistant to corrosive and/or high humidity environments, said plates being disposed in generally spaced parallel relationship and defining therebetween an interior chamber, each plate having an outer exterior surface devoid of exteriorly exposed reinforcing material means for securing said plates to each other generally at said outer peripheral edges, first and second means wholly inboard of each associated peripheral edge for defining first and second openings in and through said first and second plates, respectively; said first means including a pair of walls of said first plate disposed generally normal to each other and defining a continuous corner, said pair of walls having exterior surfaces devoid of exteriorly exposed reinforcing material, a window seated in said opening, means for securing said window so seated in said opening, and means for securing one of said pair of walls to said second plate.

4,429,499

REINFORCED BRICK ASSEMBLY

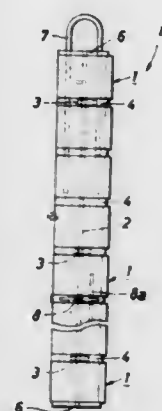
So Kato, Seto, Japan, assignor to Kunishiro Co., Ltd., Japan
Filed Mar. 16, 1981, Ser. No. 244,018

Claims priority, application Japan, Jun. 30, 1980, 55-90591[U]; Jun. 30, 1980, 55-90592[U]; Jun. 30, 1980, 55-90593[U]

Int. Cl.³ E04C 3/10

U.S. Cl. 52-228

3 Claims



1. A reinforced brick assembly comprising:
 - a plurality of brick units;
 - said brick units being stacked in a horizontal and a vertical dimension to form a brick panel;
 - mortar between adjacent ones of said brick units in said brick panel;
 - a plurality of holes in said brick units;
 - at least one of said plurality of holes in at least some of said brick units being aligned with a hole in a vertically adjacent brick unit;
 - the aligned holes being aligned through at least said vertical dimension of said brick panel;
 - a vertical steel bar passing in the vertical dimension completely through all of said aligned holes;
 - mortar in said aligned holes surrounding said vertical steel bar;
 - a first support plate at a bottom of said brick panel;
 - a second support plate at a top of said brick panel;
 - a first end of said vertical steel bar passing through said first support plate and a second end of said vertical steel bar passing through said second support plate;
 - means on said first and second ends outside said first and second support plates for prestressing said vertical steel bar in said mortar;
 - at least one horizontal steel bar in said mortar between at least one vertically adjacent pair of horizontal rows of said brick units;
 - a support means in said mortar between first and second vertically adjacent brick units;
 - an upper half leg on said support means passing vertically upward into a hole in said first brick unit;
 - a lower half leg on said support means passing vertically downward into a hole in said second;
 - and mortar in said holes surrounding said upper and lower half legs.

4,429,500

BUILDING LOGS WITH WEATHERTIGHT JOINTS

Johann H. Farmont, 433 Golden Gate Ave., Belvedere, Calif. 94920

Filed Oct. 10, 1980, Ser. No. 195,949

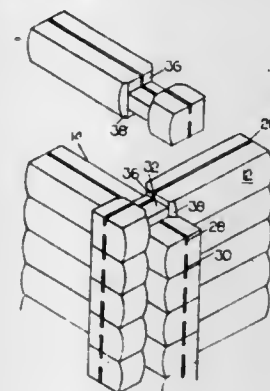
Int. Cl.³ E04B 1/10

U.S. Cl. 52-233

3 Claims

1. A building log comprising:
 - a length of timber having outer and inner side surfaces, and generally planar top and bottom surfaces;
 - a segment of said length adjacent one end thereof being cut in at top and bottom and both sides to a reduced cross

section adapted to receive at top and bottom, like segments of other timbers disposed normal thereto; transition surfaces between both side surfaces and said reduced cross-section disposed at 45° to said side surfaces; a pair of parallel, tapered tongues along one of said planar surfaces and a pair of complementary tapered grooves along the other of said planar surfaces; fingers extending from an end of said length with spaces therebetween adapted to receive like fingers extending from an adjacent length;



- a metal plate having a plurality of pointed projections depending from the bottom surface thereof in areas adjacent both ends thereof only leaving the top surface of said metal plate in said end areas unobstructed for driving said pointed projections into said timber length and said adjacent length; and
- a further plurality of pointed projections extending upward from said metal plate intermediate said end areas thereof to penetrate the bottom surface of a log supported thereon.

4,429,501

ATRIUM BUILDING STRUCTURE

Jean Y. de Brabant, 8 Chelsea Pl., Montreal, Quebec, Canada H3G 2J9

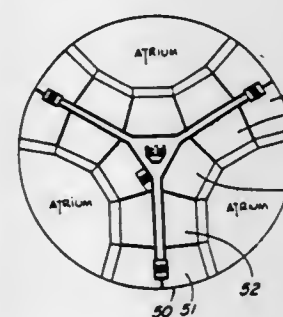
Continuation-in-part of Ser. No. 380,879, May 21, 1982. This application Jul. 14, 1982, Ser. No. 398,002

Claims priority, application Canada, Jul. 23, 1981, 382360

Int. Cl.³ E04H 1/00

U.S. Cl. 52-236.2

4 Claims



1. A multi-story exterior atria building comprising:
 - a multi-story habitable space which in horizontal section includes at each story,
 - a central area, and
 - three radially extending spokes surrounding said central area and symmetrically extending outwardly from said central area,
 - each of said radially extending spokes being habitable and having,
 - an outer end wall, and
 - a pair of side walls extending in a generally radial direction and each of said side walls having at least one transparent portion;
 - the inner ends of adjacent side walls of each successive pair

of spokes being joined to form in horizontal section a shallow U;
a transparent circumferential wall extending between each pair of joined side walls at the outer ends thereof throughout the height of said multi-story building to define thereby an exterior atrium such that three exterior atria extend about said multi-story building; and
the walls of the shallow U's being so constructed and oriented in relation to one another as to provide from within the habitable space, through any one of the transparent portions of said side walls, a view of substantially the whole area of the adjoining atrium and a broad view of the outdoors through the transparent circumferential wall while providing only an oblique view of other portions of the same U thereby substantially minimizing the visual exposure thereof.

4,429,502

TRANSIT SHELTER

Joseph E. Kinnebrew, IV, 13300 Beckwith Dr., NE., Lowell, Mich. 49331

Filed Mar. 18, 1981, Ser. No. 245,159

Int. Cl.³ E04C 3/30

U.S. Cl. 52-263

34 Claims



1. An elongated rib for defining the frame of a shelter which includes at least one panel, said rib comprising:
 - an elongated mullion having a hollow, box-like configuration, said mullion defining an exterior surface joined to a central protrusion, said protrusion defining a panel abutment surface, and said mullion further including a connector element extending from said protrusion;
 - an elongated plate having lateral edges;
 - fastener means engaging said plate for securing said plate to said connector element, one of said lateral edges of said plate and said mullion defining a slot for receipt of a panel, said mullion and plate being dimensioned so that a panel is held under pressure within said slot, said mullion further defining another panel abutment surface oriented substantially normal to said panel abutment surface;
 - another elongated plate, said mullion including another connector element and said another plate and said mullion defining another panel receiving slot extending generally normal to said a slot; and
 - additional fastener means engaging said another elongated plate for securing said another plate to said another connector element of mullion.

4,429,503

INSULATED PANEL

William H. Holliday, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 53,228, Jun. 29, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,896

Int. Cl.³ E04B 1/32; E04G 11/04

U.S. Cl. 52-410

8 Claims



1. In a panel structure for heat insulating vessels, said panel structure comprising a plurality of surface panels, heat insulation material, means for fastening said surface panels to one another and means for fastening said panel structure to said vessel, the improvement wherein said means for fastening said surface panels to one another comprises stitching fasteners, said stitching fasteners being out of direct thermal contact with said vessel and said stitching fasteners having their heads directly exposed to outside air and wherein said means for fastening said panel structure to said vessel consists of mounting fasteners, said mounting fasteners being in direct thermal contact with said vessel and said mounting fasteners being entirely located beneath the outside surface of said panel structure such that said mounting fasteners are not directly exposed to outside air, said mounting fasteners providing the sole direct thermal contact link between said vessel and said surface panels, whereby heat losses from said vessel through said panel structure by means of said stitching fasteners and said mounting fasteners are reduced to a minimum and easy access to said vessel through said panel structure is provided.

4,429,504

FIBER BLANKET INSULATION MODULE

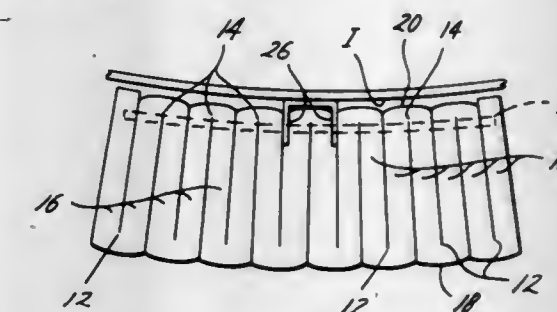
Mack A. Hounsel, and Carlisle O. Byrd, Jr., both of Houston, Tex., assignors to Manville Service Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 245,946, Mar. 20, 1981, Pat. No. 4,381,634. This application Oct. 8, 1981, Ser. No. 309,594

Int. Cl.³ E04B 1/80

U.S. Cl. 52-506

15 Claims



1. An insulating module adapted for mounting adjacent an arcuate surface in a furnace or the like, said module comprising:
 - (a) a block of refractory ceramic fiber having an inner surface exposed to the high temperature environment of said furnace, an outer surface to be mounted adjacent an inner surface of the furnace; and
 - a plurality of side surfaces extending between said inner and outer surfaces;
 - (b) suspension means extending over some portion of said outer surface of said block and having suspension arm means extending into said block, said suspension arm means having at least one aperture therein;
 - (c) support means mounted within said block and extending

through the at least one aperture in said suspension arm means;
(d) at least one of the above named block surfaces being arcuate, the curvature thereof generally conforming to that of the arcuate surface adjacent to which it is to be mounted.

4,429,505

FIXING DEVICE FOR FASTENING OBJECTS ON HOLLOW BOARDS

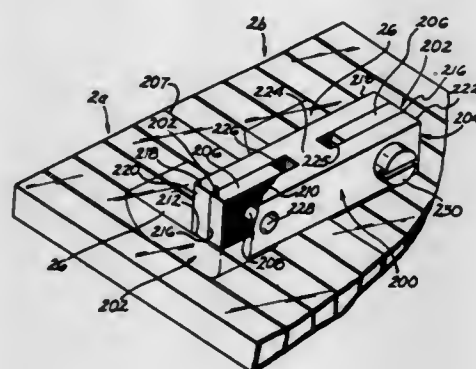
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,310

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034129; Oct. 23, 1980, 3039917; Nov. 8, 1980, 3042282
Int. Cl.³ E04C 1/16

U.S. Cl. 52—583

6 Claims



1. A fixing device for connecting objects to a hollow board having a plurality of spaced cells defined by transversely spaced first and second panels which are joined to one another through a plurality of spaced webs therein between, the fixing device comprising: a connecting member for fastening objects thereto; at least one elongated support member for disposing within said boards said support member, said support member having first and second opposed ends and said connecting member being arranged substantially perpendicular to one of said opposed ends, wherein a pull-out force acting on said connecting member due to said objects supported thereby is substantially received by said supporting member when said device is disposed in said board; and a holding member having a web, a pair of parallel spaced elongated leg members extending from said web, said connecting member having a plate-like shape with a pair of parallel spaced slots therein, said slots being adapted to matingly receive said pair of leg members of the holding member therein.

4,429,506

INTERLOCKING BUILDING BLOCK

Eugene R. Henderson, 3502 The Alameda, Baltimore, Md. 21218

Filed Apr. 8, 1982, Ser. No. 366,729

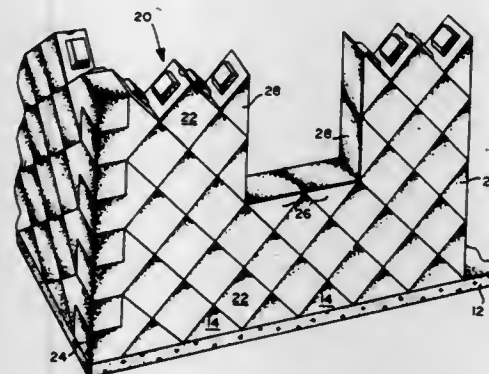
Int. Cl.³ E04B 1/00

U.S. Cl. 52—589

6 Claims

1. An interlocking block construction, comprising:
(a) a solid wide building block having a flat front face and a parallel flat matching aligned rear face extending parallel to and spaced from the front face,
(b) two identical rectangularly-shaped upwardly-extending upper flat faces extending rearwardly and perpendicular from the front face along each top edge,
(c) the upper flat faces being angularly inclined toward each other and meeting along the line of intersection which forms an upper central peak extending rearwardly and perpendicular to the front face,
(d) each upper flat side face having a matching solid laterally thick block interlocking element approximately one-third the width of the block extending upwardly therefrom which is centrally located on the upper side face and accurately

spaced from the front and rear faces as well as the upper peak of the block to provide solid lateral strength,
(e) each block interlocking element including two flat upwardly-facing inwardly inclined side pilot surfaces of the same width and length which extend parallel to the front face and are angularly inclined toward each other so as to provide centering and guide action,
(f) the block interlocking element having a flat top support face extending between the inclined pilot surfaces and parallel to the upper flat side face,
(g) the block interlocking element also including an upwardly facing stop face connecting the two separately engaging pilot surfaces and inclined at a slightly greater angle than 90° to the upper peak whereby a complementary surface of an adjacent block can be accurately guided into position and supported on the upper flat face,



(h) the vertically disposed front face has two equally downwardly inclined lower edges which meet at a central lower apex in direct vertical alignment with the upper apex,
(i) a flat lower side face extending rearwardly and perpendicular from the front face at each lower edge and angularly inclined toward each other meeting along a lower line of intersection extending rearwardly and perpendicular to the front face,
(j) each flat lower side face having a centrally disposed receiving cavity which complements the block interlocking element on the opposite side of the upper peak and identically spaced from the plain of the adjacent upper side face, and,
(k) the lower extending flat surface of each cavity being sufficiently spaced and inclined to permit vertical placement of the block without contacting the lower most surface of the interlocking element on a lower course when the blocks are vertically assembled.

4,429,507

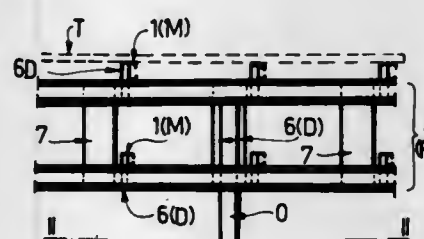
UNIVERSAL BUILDING FRAME

Zoltan Czenthe, Budapest, Hungary, assignor to Csongrad Megyei Tanács Eptolpari Vallalat, Hódmezővásárhely, Hungary

Continuation of Ser. No. 90,109, Nov. 1, 1979, which is a continuation of Ser. No. 944,795, Sep. 22, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 232,401
Int. Cl.³ E04H 12/00

U.S. Cl. 52—650

11 Claims



1. In a light-weight modular metallic frame for a building having vertical columns including column elements supporting

a substantially horizontal assembly of beam elements, the improvement wherein: each beam element is perforated and is channel-shaped in transverse cross-section;
the beam elements form a lattice of mutually parallel main beams and mutually parallel auxiliary beams non-coplanar with and perpendicular to the main beams;
the main beams are spaced apart by a predetermined horizontal distance corresponding to a first modular length; each main beam comprises two beam elements in a parallel, spaced apart and back-to-back relationship and secured to a vertical column extending in the space between said elements;
the main beams are arranged in vertically spaced-apart parallel pairs to form double Vierendeel girders and; each auxiliary beam comprises at least one beam element connected to a main beam;
the perforations in all of said beam elements are at a regular spacing which is an integral fraction of said first modular length; and
said double Vierendeel girders, said auxiliary beams, and said main and auxiliary beams are connected by channel-shaped perforated, upright elements extending perpendicularly to the main beams, with fastening elements passed through the perforations.

4,429,508

ANCHORING DEVICE FOR METAL ROOF

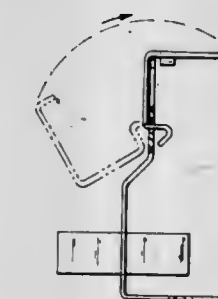
Charles B. Sizemore, Rte. 10 Mesa Dr., Kingsport, Tenn. 37663

Filed Oct. 19, 1981, Ser. No. 312,691

Int. Cl.³ E04B 1/38

U.S. Cl. 52—713

6 Claims



1. An anchoring device for slidably attaching a metal roof to a structured member comprising,
(A) A galvanized sheet metal stationary member comprised of a base portion and an upward depending portion attached to the base portion,
(1) the base portion having at least one hole therein adapted to secure the stationary member to the structural member,
(2) the upward depending portion oriented at an angle of approximately 90° to the base portion of the stationary member, the upward depending portion having therein a slot, the long axis of the slot residing in a plane parallel to the base portion of the stationary member, the top edge of the upward depending portion being parallel to the long axis of the slot, the top edge having a notch therein,
(B) A galvanized sheet metal slidable member adapted to be attached to a metal roof and slide on the stationary member, the slidable member being comprised of a top portion, a downward depending portion and an engaging portion,
(1) the top portion having a downward depending punched projection adapted to allow the slidable member to slide along the top edge of the upward depending portion of the stationary member by positioning the upward depending portion in juxtaposition to the downward depending portion of the slidable member, the projection being of size and shape to pass through the notch in the top edge of the upward depending portion of the stationary member,

(2) the downward depending portion attached to the top portion at an angle of approximately 90°,
(3) an engaging portion attached to the lower edge of the downward depending portion, the engaging portion having a length substantially less than the length of the slot, the engaging portion comprised of,
(a) a first piece oriented approximately 90° from the downward depending portion and projecting away from the plane in which the downward depending portion resides so as to be on the same side of the plane as the top portion,
(b) a second piece attached to the first piece and depending toward the plane in which the downward depending portion resides, the width of the second piece being sufficient to position the edge of the second piece in slidable engagement with the upper depending portion of the stationary member and also sufficient to position the downward depending portion of the slidable member and the upward depending member of the stationary member in parallel relationship and in juxtaposition,
wherein the notch in the top edge of the upward depending portion of the stationary member is positioned such that the downward depending punched projection of the top portion of the slidable member passes through the notch when the engaging portion of the slidable member is positioned at the end of the slot.

4,429,509

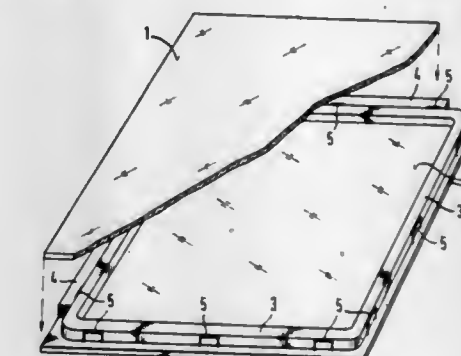
MULTIPLE GLASS PANE WITH IMPROVED JOINTS OF PLASTIC MATERIALS

Joël Vachet, St. Germain du Plain; Justin Bruandet, Chalon sur Saone, and Jacques Fremeaux, Bougival, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France
Filed Mar. 8, 1982, Ser. No. 355,480

Claims priority, application France, Mar. 10, 1981, 81 04706
Int. Cl.³ E06B 3/24

U.S. Cl. 52—788

17 Claims



1. A multiple glass pane consisting of glass sheets held together at a certain distance from each other by joints of plastic materials, comprising spacer pieces of a height equal to the distance between the glass sheets, inserted between the glass sheets and embedded in the joints, characterized in that each spacer piece is a piece practically without thickness, of small length compared to the dimensions of the glass pane and deformable in the direction of its height by a load of not more than 3 kg.

4,429,510

DEVICE FOR SHAPING A FILM OF HEAT-RETRACTABLE PLASTICS MATERIAL

Jacques Thimon, Tresserve, France, assignor to S.A. Thimon, Aix-les-Bains, France

Filed May 5, 1981, Ser. No. 260,727

Claims priority, application France, May 6, 1980, 80 10066
Int. Cl.³ B65B 53/02

U.S. Cl. 53—167

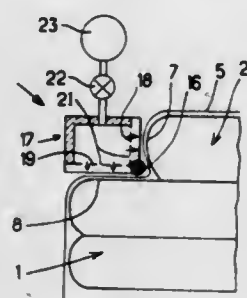
5 Claims

1. In a device for shaping a film of heat-retractable plastics

material in the zone of the lateral spaces of a pallet-less, multi-layer load having a layer of smaller area than the area of the adjoining layer thereby forming spaces around said smaller layer defined by the faces of right-angled dihedrons including an angle therebetween with vertical and horizontal faces, comprising:

mobile shaping elements to be applied against said film of heated and soft plastic material covering the faces of each dihedron defining said spaces for gripping while said film is soft;

each shaping element consisting of a shaper bar having a periphery dimensioned to fit at least partially in said angle



and forming part of a box-like chamber for blowing cool air, the shaper bar being disposed along the edge of said chamber facing the angle of the dihedron and said chamber having vertical and horizontal air-permeable faces which are adjacent the shaper bar extending respectively opposite the faces of the dihedron, the interior of said chamber being connected, via a valve, to a source of air under pressure; and

means for displacing each shaper bar in the direction of the vertical and horizontal faces of said dihedron, to engage said bar with the film in the angle of the dihedron between said smaller layer and said adjoining layer of said load.

4,429,511

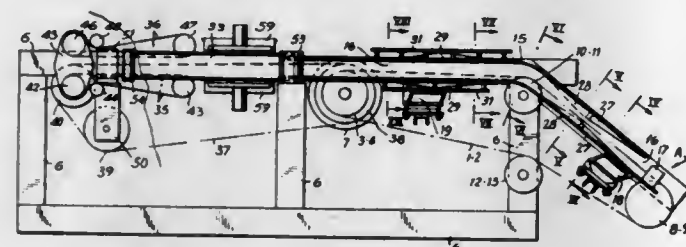
FINISHING DEVICE FOR PACKAGING CONTAINERS
Bruno Paoli, Fornacette, Italy, assignor to International Paper Company, New York, N.Y.

Filed Sep. 15, 1981, Ser. No. 302,392

Int. Cl.³ B65B 7/04

U.S. Cl. 53—379

7 Claims



1. A device for the finishing of filled and sealed packaging containers which are at least approximately of parallelepipedal shape and having the usual four protruding terminal flaps, comprising moving means for producing continuous movement along a sliding track of the containers which are received in a cadenced manner from a feed source, the sliding track includes an upper plate and a lower plate spaced apart from said upper plate, a plurality of stationary weakening and bending elements of said flaps of the containers, disposed in series along a portion of said track, said elements being attached in opposite positions parallel to each other, the positions being located at respectively the lower plate and the upper plate, said elements bending the flaps of each container from their horizontal position, first in one direction and then in the opposite direction with a consequent effect of weakening their base, thereafter folding them against the upper and lower surfaces of

the container and means for attaching said flaps to the sides of the container.

4,429,512

TRAY-LOADING MACHINE

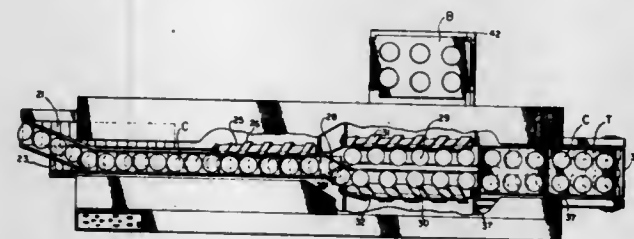
Alexander A. Pegon, Jr., Norristown, Pa., assignor to Diversified Eastern, Inc., Trexlertown, Pa.

Filed Jan. 23, 1981, Ser. No. 227,582

Int. Cl.³ B65B 35/44, 35/46

U.S. Cl. 53—534

10 Claims



1. An apparatus for loading containers into a carrier tray having individual rows of cutouts for receiving the containers comprising:

infeed means for introducing a flow of containers into the apparatus;

feed-control means for receiving the flow of containers, for spacing the containers at a uniform predetermined distance from each other within a flow line and for discharging the spaced containers;

at least first and second parallel feed lines downstream from said feed-control means;

gate means for sequentially directing containers discharged from the feed-control means to either said first or said second feed lines;

said first feed line including a first feed-control screw and said second feed line including a second feed-control screw, the first and second feed-control screws having different pitches and cooperating to advance the containers in each feed line so that a container is discharged from the end of each feed line simultaneously, the discharged containers being laterally aligned in a transverse row;

container conveyor means for receiving and advancing the aligned row of containers discharged from the first and second feed lines; and

tray conveyor means underlying the container conveyor means for receiving and conveying carrier trays, said tray conveyor means being synchronized with said container conveyor means whereby each of said aligned rows of containers reach the discharge end of said container conveyor means simultaneously with a row of cutouts in a tray so that the row of containers fall downwardly directly into said row of cutouts in said tray.

4,429,513

APPARATUS FOR ENCLOSING OBJECTS

Hans Beckers, Monchen-Gladbach, and Klaus Vollmer, Viersen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

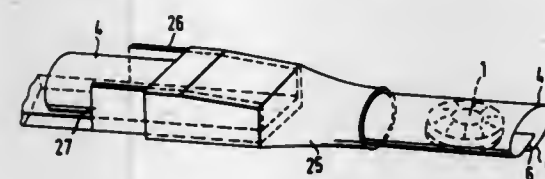
Filed Jul. 21, 1981, Ser. No. 285,682

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030915

Int. Cl.³ B65B 9/06

U.S. Cl. 53—547

3 Claims



1. In an improved apparatus for enclosing solid objects with

a sheet of packaging material into a tight wrapping including means for feeding the solid objects to be wrapped in an evenly spaced manner to an input end of a tube forming and guiding means for dispensing a flexible packaging material from a supply reel into said tube forming and guiding means which shapes the flexible packaging material into a tube surrounding said solid objects and carries said solid objects to an outlet end of said tube forming and guiding means, means for cutting the shaped tube formed about the solid objects into uniform lengths, and means for twisting the ends of the cut shaped tubes to securely enclose the solid objects with the tube, the improvement comprising a collar of elastic material secured to and surrounding an output end of said tube forming and guiding means through which said solid objects enclosed in a formed tube of packaging material passes, said collar of elastic material has a smaller cross section than the cross section of said solid objects and surrounds the wrapped objects as they pass through so that said tube of packaging material is formed to tightly fit around said solid objects as said solid objects leave the output end of said collar of elastic material.

4,429,514

ROTATABLE STRETCHING APPARATUS WITH PRESTRETCHING MECHANISM

William G. Lancaster, Louisville, and Patrick R. Lancaster, III, Anchorage, both of Ky., assignors to Lantech, Inc., Louisville, Ky.

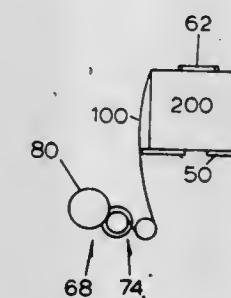
Continuation-in-part of Ser. No. 96,384, Nov. 21, 1979, Pat. No. 4,302,920. This application Apr. 15, 1981, Ser. No. 254,415

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ B65B 11/02

U.S. Cl. 53—556

33 Claims



1. Apparatus for making a unitary package using a single web of stretchable plastic film material to form an overwrap comprising a frame, a load support means and a film dispensing means connected to said frame, said film dispenser means being adapted to hold a film roll and said load support means being adapted to hold a load, means to provide relative rotational movement between said load support means and said film dispenser means causing a film web to be pulled downstream from the film roll and wrapped around a load placed on said load support means, and film stretching means engaging said film web from said film roll upstream of said load support means; said film stretching means being driven by engagement of said film web moving downstream and comprising means to hold two roller assemblies adjacent each other, each roller assembly comprising bearing means and a roller member mounted to said bearing means, one of said roller assemblies being positioned upstream from the other roller assembly and including a drive roller member mounted to rotate coaxially with said upstream roller, said drive roller member having a circular cross-section and an outer surface which engages a surface of the downstream roller assembly to drive the upstream roller at a lesser speed than the rotational speed of the downstream roller so that the film web is stretched before it passes the downstream roller assembly.

4,429,515

SELF PROPELLED LAWN MOWER

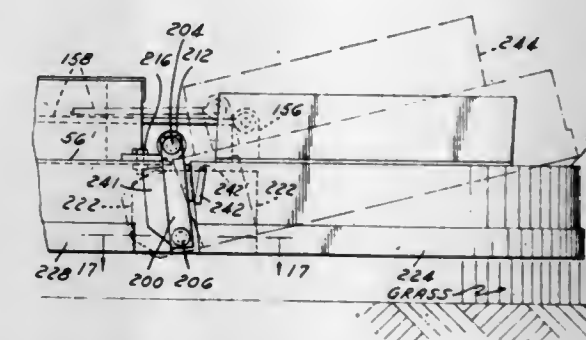
Robert D. Davis, Jr., 627 Andrew, Jackson, Mich. 49202, and James S. Schucker, 54 Massolt, Clawson, Mich. 48017

Continuation-in-part of Ser. No. 229,200, Jan. 28, 1981. This application Dec. 11, 1981, Ser. No. 329,769

Int. Cl.³ A01D 35/26

U.S. Cl. 56—6

14 Claims



1. An improved mower deck for attachment to a tractor comprising a central deck, at least one wing deck attached to the central deck, a plurality of vertically mounted blade spindles in the mower deck each rotatably supporting a cutting blade, at least one of said spindles being in the wing deck, a pair of links attaching the wing deck to the central deck, one end of each link being pivotally attached to the central deck and the other end of each link being pivotally attached to the wing deck, stop means to limit upward angular rotation of the wing deck about the pivotal attachments to the wing deck, said stop means located substantially below the axis of the pivotal attachments to the central deck, said stop means disengageable upon movement of the wing deck above and over the central deck.

4,429,516

MULTI-ROW CROP HARVESTING ATTACHMENT

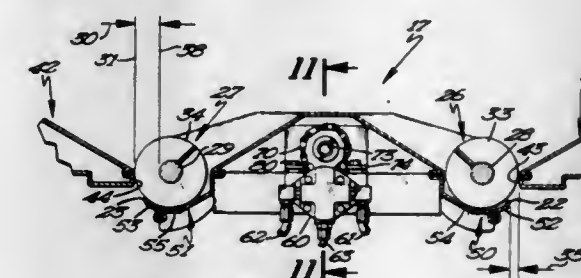
Leland E. Erickson, Forman, N. Dak. 58032

Filed Oct. 14, 1981, Ser. No. 311,459

Int. Cl.³ A01D 45/00, 57/22

U.S. Cl. 56—95

20 Claims



1. A multi-row crop harvesting attachment for use in combination with a combine, comprising:

(1) a main frame for traversing in a longitudinal direction of movement a field having a rowcrop;

(2) two or more drive sections, mounted on said main frame and aligned transversely to the longitudinal direction of movement of the frame, each drive section comprising: a guide edge located at each of the outer transverse boundaries of the drive section, each guide presenting a smooth outer surface parallel to the longitudinal direction of movement of the frame and allowing rearward longitudinal movement of rowcrop stalks thereagainst; an auger, having a shaft and flighting, located near and associated with each of the guide edges of the drive section, each auger having a flighting reach at least as great as the thickness of rowcrop stalks, the outer boundary of each auger's flighting extending transversely outward beyond said associated guide edge by a distance greater than said

thickness of rowcrop stalks and the outer boundary of each auger's shaft extending no further outward than the guide edge with which it is associated; journal means coupled with each end of said augers for facilitating rotation of the augers; and drive means for rotating the augers so as to cause rowcrop stalks to move rearward;

- (3) one or more platform sections, each platform section mounted on said main frame between two drive sections and aligned with said drive sections transversely, each platform section comprising a guide edge located at each of the outer transverse boundaries of the platform section, each guide edge presenting a smooth outer surface being parallel to the longitudinal direction of movement of the frame and allowing longitudinally rearward movement of rowcrop stalks thereagainst, each platform section guide edge being in substantial opposition to the guide edge of the adjacent drive section, each of said platform section guide edges spaced transversely substantially the thickness of rowcrop stalks from the opposing drive section's guide edge, thereby forming a flightway for rearwardly moving rowcrop stalks;
- (4) two divider sections, one divider section mounted on said main frame adjacent to and aligned transversely with a drive section having a guide edge not in opposition to any platform section's guide edge, and the other divider section mounted on said main frame adjacent to and aligned transversely with the other drive section having a guide edge not in opposition to any platform section's guide edge, each divider section comprising a guide edge located at one of its outer transverse boundaries, said guide edge presenting a smooth outer surface being parallel to the longitudinal direction of movement of the frame and allowing longitudinally rearward movement of rowcrop stalks thereagainst, each divider section's guide edge being in substantial opposition to the guide of said respective adjacent drive section, said divider section's guide edge spaced transversely approximately the thickness of rowcrop stalks from the respective opposing drive section's guide edge, thereby forming a flightway for rearwardly moving rowcrop stalks.

4,429,517

HARVESTING HEADER WITH ADJUSTABLE DRAPER FOR LEFT, RIGHT OR CENTER DELIVERY

Howard R. Lohrentz, Hesston, and Cecil L. Case, Newton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Oct. 6, 1981, Ser. No. 309,081

Int. Cl.³ A01D 35/14, 57/20

U.S. Cl. 56—181

9 Claims



1. In a harvesting header having a pair of transverse crop conveyor sections shiftable laterally in opposite directions relative to a frame of the header between cooperating positions for alternative left, right and center delivery of crops severed by the header during advancement thereof, the improvement comprising:

- a shifter operably coupled with one of said sections for effecting said lateral shifting thereof;
- a releasable latch connecting the other of said sections with said one section for causing conjoint lateral shifting of both sections as a unit when said one section is operated by the shifter; and
- means for selectively releasing said latch to permit individual shifting of the one section by said shifter as said other section remains stationary, said other section having no means for shifting the same in

either lateral direction except when coupled with said one section by said latch.

4,429,518

BLADE STRUCTURE, PARTICULARLY FOR ROTATING GRASS SHAVING MACHINES

Luisa Fedeli, Via del Gracchi, 26, 20100 Milano, Italy

Continuation of Ser. No. 334,369, Dec. 24, 1981, abandoned.

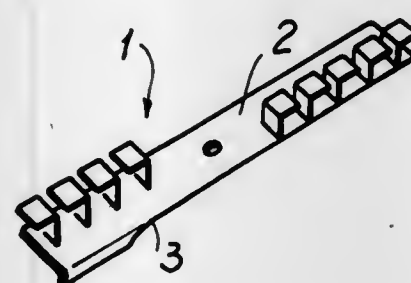
This application Mar. 18, 1983, Ser. No. 476,397

Claims priority, application Italy, Jan. 14, 1981, 19124 A/81

Int. Cl.³ A01D 55/18

U.S. Cl. 56—295

5 Claims



1. In a lawn mower which comprises a blade structure comprising an elongated body, rotating about an axis substantially perpendicular to the ground and provided, at the operative edges thereof, with cutting members for cutting grass, a container for collecting the cut grass, and at the edges opposite to said operative edges, a plurality of lugs, the improvement wherein said lugs consist of a combination assembly of first parallel, vertically extending, unsharpened portions extending perpendicularly to the plane of rotation of the blade and coplanar, horizontally extending portions connected to said first portions extending parallel to the plane of rotation of said blade and coplanar with respect to each other, said lugs directing the chopped grass into said container.

4,429,519

FORMING CABLE CORE UNITS

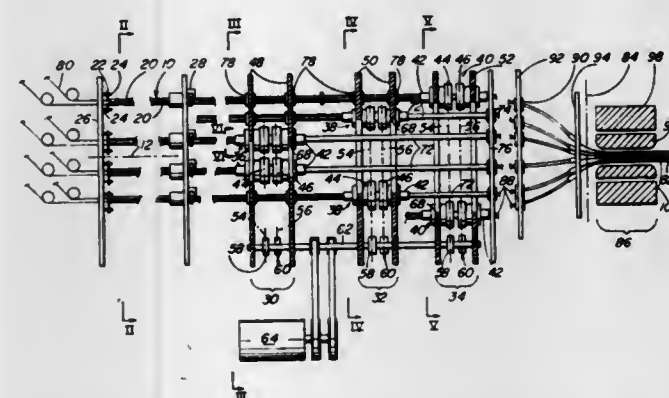
John N. Garner, Kingston; Jean M. Roberge, Pointe Claire, and Oleg Axiuk, Pinecourt, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 30, 1982, Ser. No. 413,175

Int. Cl.³ H01B 13/04

U.S. Cl. 57—293

10 Claims



1. Apparatus for forming a cable core unit from a plurality of wire units each of at least two stranded together wires comprising:

- a plurality of wire guide means, each for the wires of one of the units, each guide means having a longitudinal axis extending in a wire pass direction, being rotationally flexible, and defining individual feedpaths for the two wires of its unit to maintain the wires separate as they proceed to one of at least a first and second twisting stations disposed

downstream of the guide means with a second twisting station downstream of the first station;

each guide means terminating at its respective station in a twisting means which is rotatable at its station around the feedpaths of the guide means to effect a rotational twist to the guide means and thus of the feedpaths around the axis; rotating means to rotate the twisting means in each station and effect rotational twisting of each guide means and its feedpaths for a plurality of revolutions about its axis alternately in one direction and then in the other to introduce and impose an alternating twist in the wires and hold the wires separate as they move towards the twisting means;

a stranding station downstream of the twisting stations with at least a section of the feedpaths for wires of some wire units being curved and of fixed orientation between each twisting station and the stranding station to cause convergence of the feedpaths of wires for each wire unit with the wires for other wire units as they approach the stranding station and to enable the wire units to combine together to form the cable core unit; and

separation tube means to prevent the wires for each wire unit from stranding together before they reach the stranding station, said separation tube means being rotatable with the twisting means and extending in curved configuration along the curved feedpath sections, with flexibility to enable the tube means to be maintained in its curved configuration along said fixed path section during rotation of the tube means in said alternating directions and with torsional rigidity to avoid build-up and retention of twist.

4,429,520

APPARATUS FOR STRANDING AT LEAST TWO WIRES TOGETHER

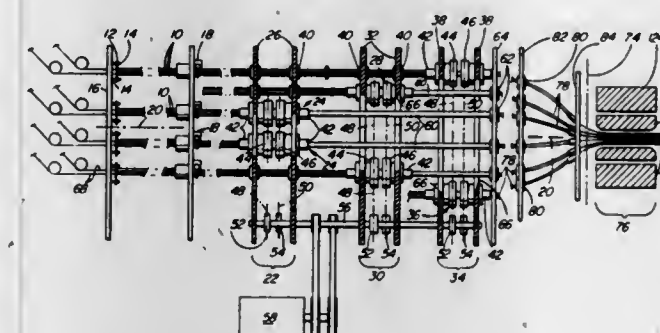
John N. Garner, Kingston, and Jean M. Roberge, Pointe Claire, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 30, 1982, Ser. No. 413,176

Int. Cl.³ H01B 13/04

U.S. Cl. 57—293

9 Claims



1. Apparatus for stranding a unit of at least two wires together comprising:

- wire guide means extending in a wire pass direction, downstream to a twisting station to define individual feed paths for wires and prevent the wires from twisting together as they move along the guide means to the twisting station, the guide means being rotatably flexible about a longitudinal axis to provide torsional twist in the guide means;
- a twisting means in the twisting station and connected to the wire guide means, the twisting means having means to rotate it alternately, in one direction and then the other and for a plurality of revolutions, to rotate the guide means at the twisting station and place torsional twist in the guide means alternately in one direction and then the other about said longitudinal axis;
- a stranding means in a stranding station downstream along the feedpaths from the twisting station with at least a section of the feedpaths for wires being curved and of fixed orientation between the twisting and stranding stations; and
- means extending between the twisting and stranding stations to prevent the wires, after passage through the twisting

means, from stranding together before they reach the stranding station, said strand prevention means comprising a wire separation tube which is curved to extend along the fixed curved section of path and defines the individual feed paths for the wires, said separation tube being rotatable around an axis of rotation which coincides with the fixed curved path section and with a speed and direction of rotation the same as the twisting means, and the tube having flexibility to enable the tube to be maintained in its curved configuration along said fixed curved path section and torsional rigidity to avoid build-up and retention of twist.

4,429,521

DEVICE FOR SZ-STRANDING BY USING A TUBE STORE

Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,423

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122473

Int. Cl.³ D07B 3/00, 7/00

U.S. Cl. 57—294

13 Claims



1. In a device for SZ-stranding, said device including means for guiding and storing elements being SZ stranded, said means including a tube store having a stranding surface and being mounted in a frame for rotation on its axis, at least one stranding disk associated with said tube store and means for rotating said tube and disk in a reversing fashion, the improvements comprising sleeve means being disposed to extend over and cover a portion of the stranding surface of said tube store and support means for mounting said sleeve means in the frame so that it does not rotate at the same speed as the tube store.

4,429,522

OPEN-END SPINNING MACHINE

Frantisek Ferkl; Antonin Cap; Milos Vecera; Josef Skala; Václav Kopriva; Michal Blasko, all of Usti nad Orlici; Karel Pavek, Hnatnice; Milan Chrték, Ceska Trebova, and Jan Blasko, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Mar. 17, 1982, Ser. No. 358,887

Claims priority, application Czechoslovakia, Apr. 13, 1981, 2773-81

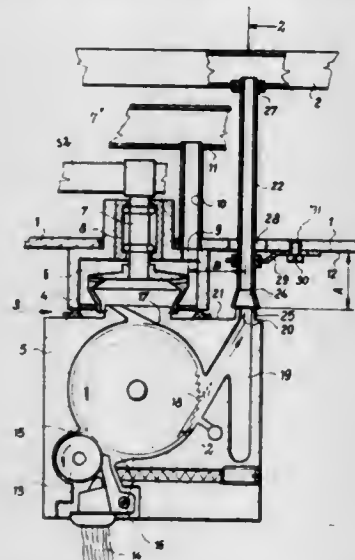
Int. Cl.³ D01H 7/888

U.S. Cl. 57—301

4 Claims

1. In an open-end spinning machine having a frame, a central air withdrawing duct disposed on one side of the frame, a plurality of spinning units disposed on the other side of the frame, each spinning unit having a spinning housing with a spinning rotor and a technological air withdrawing aperture, and a fiber separating housing with a sliver opening cylinder and an associated cleaning aperture with an impurity withdrawing duct the outlet of which communicates via a connecting tube with the central air withdrawing duct, the improvement wherein the outlet of the impurity withdrawing duct extends toward the outer wall of the fiber separating housing and has an inner height dimension substantially corresponding to the inner height dimension of the cleaning aperture, said latter height dimension being given by the width of the sliver opening cylinder, the connecting tube having a conically flared inlet facing the outlet of the impurity withdrawing duct in the outer wall of the fiber separating housing and having in

the plane of the inlet of the connecting tube a larger inner cross-section than the outer cross-section of the outlet of the impurity withdrawing duct, there being provided a gap for additionally sucking in air between said inlet of the connecting tube and the outlet, the end plane of the outlet of said impurity withdrawing duct on the fiber separating housing being spaced a distance from the plane in which the operating air withdraw-



ing aperture lies in the spinning housing which is larger than the axial spacing between said outlet and said aperture, whereby to prevent an unwanted interaction of air flows in the opened and inoperative condition of the spinning unit and to insure a continuous withdrawal of impurities from the cleaning aperture of the fiber separating housing into the central air withdrawing duct.

4,429,523

PROCESS FOR MAKING FASCIATED SPUN YARN

Koji Kajita, Omihachiman; Takashi Nakayama, and Seiichi Yamagata, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

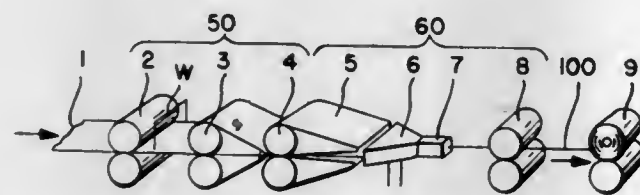
Filed Jul. 7, 1982, Ser. No. 396,063

Claims priority, application Japan, Jul. 8, 1981, 56-105707

Int. Cl.³ D01H 5/28; D02G 3/22

U.S. Cl. 57—328

6 Claims



1. A process for making a fasciated spun yarn, wherein a bundle of fibers, drafted in a drafting zone having a pair of back rollers, a pair of second rollers and a pair of front rollers, is twisted and detwisted by false twisting means while being overfed between the pair of front rollers and a pair of delivery rollers, characterized in that the width W (mm) of said bundle of fibers measured just upstream of the nip point of a pair of second rollers of said drafting zone and a yarn count N (Nm) of said spun yarn are set to satisfy the following relationships:

$$60/\sqrt{N} \leq W \leq 170\sqrt{N}, \text{ and}$$

in that the overfeed ratio is set to be equal to or lower than 5%.

4,429,524

FALSE-TWIST DEVICE

Manfred Kress, Sömmersdorf, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

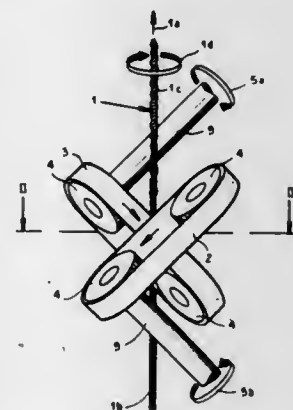
Filed Mar. 23, 1982, Ser. No. 360,912

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112426; Mar. 28, 1981, 3148911

Int. Cl.³ D02G 1/04

U.S. Cl. 57—336

11 Claims



2. A device for imparting a false twist to a yarn, comprising: a pair of endless driven belts having crossing juxtaposed stretches with said yarn passing between said stretches at the crossing region; and magnetic means for pressing said stretches of said belts against said yarn and toward one another in said region.

4,429,525

REPAIRING A ROLLER CHAIN

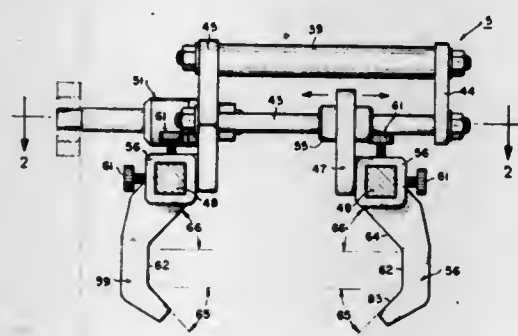
Ron K. Doak, 15021 Kimberley La., Houston, Tex. 77079

Filed Feb. 25, 1982, Ser. No. 352,493

Int. Cl.³ B21L 21/00

U.S. Cl. 59—7

7 Claims



1. A method for applying tensioning forces to a roller chain, comprising: mounting a separate yoke transversely across each one of two longitudinally-spaced portions of said chain for engaging the peripheral edges of the links thereof; and reducing the distance between said yokes to thereby relax the portion of the chain disposed between said yokes.

4,429,526

SUSPENSION CHAIN HEAD FOR MECHANICALLY ASSEMBLED SLING CHAIN SYSTEMS

Friedhelm Rehbein, Menden-Oesbern, Fed. Rep. of Germany, assignor to Firma August Thiele, Iserlohn-Kalthof, Fed. Rep. of Germany

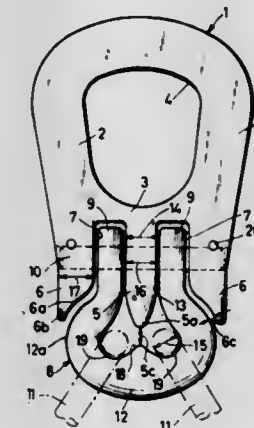
Filed Dec. 10, 1981, Ser. No. 331,127

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048863

Int. Cl.³ F16G 15/04

U.S. Cl. 59—93

13 Claims



1. A suspension chain head for mechanically assembled sling chain systems, comprising a substantially U-shaped suspension member having two legs and a web having a central portion and two lateral fork portions arranged mirrorsymmetrical at opposite sides of said central portion so as to form two parallel slots therebetween; and a connecting member pivotably mounted on said web of said suspension member and arranged for receiving chains of a predetermined thickness, said connecting member having two legs received in said slots of said suspension member and a bracket connecting said legs of said connecting member with one another, said legs and said bracket of said connecting members being dimensioned corresponding to an inner width of a link of the chains to be suspended, said legs of said connecting member extending parallel to one another and inwardly so that said bracket is omega-shaped, said connecting member having a receiving opening having a width greater than the thickness of the chains to be suspended, said central portion of said web of said suspension member having a thickness at most equal to the thickness of the chains to be suspended, and said fork portions of said web of said suspension member having a thickness at least the thickness of said central portion of said web of said suspension member.

4,429,527

TURBINE ENGINE WITH COMBUSTOR PREMIX SYSTEM

J. Michael Teets, 12104 Gardenway G-7, Palm Beach Gardens, Fla. 33410

Filed Jun. 19, 1981, Ser. No. 275,157

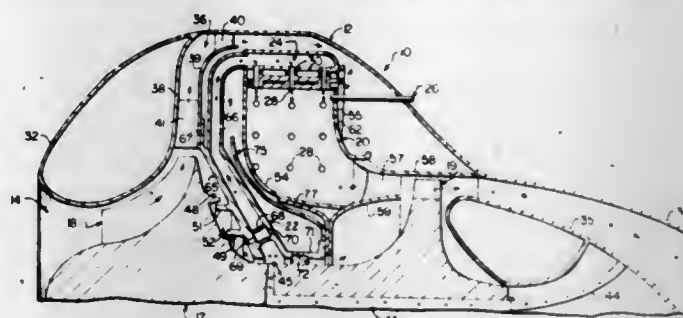
Int. Cl.³ F02C 7/224

U.S. Cl. 60—39.06

17 Claims

12. A method of combustoring an air and fuel mixture in a turbine engine, comprising the steps of atomizing the fuel, mixing compressed air with the atomized fuel, passing the atomized fuel-compressed air mixture between a compressor and combustion chamber to cool the compressor, vaporizing the fuel in the atomized fuel-compressed air mixture,

passing the vaporized fuel-compressed air-mixture through tubes having ports in walls thereof, passing additional compressed air through the ports,



mixing the additional compressed air with the vaporized fuel-compressed air mixture in the tubes, and igniting the resultant mixture.

4,429,528

EMERGENCY FUEL SYSTEM

Robert B. Matthews, Chandler's Ford, and Guy E. Davies, Fareham, both of England, assignors to Plessey Overseas Limited, Ilford, England

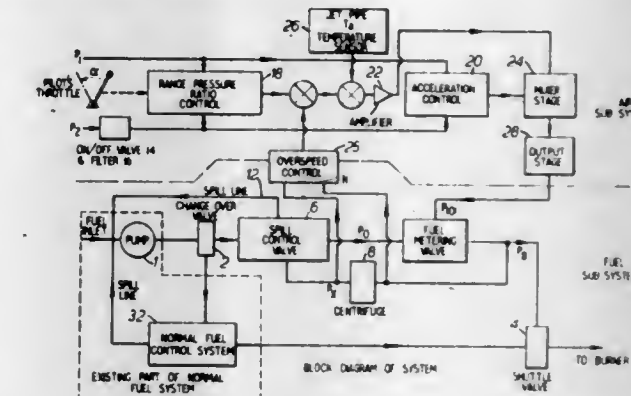
Filed Jan. 22, 1981, Ser. No. 227,268

Claims priority, application United Kingdom, Jan. 22, 1980, 8002144

Int. Cl.³ F02C 9/28

U.S. Cl. 60—39.281

9 Claims



4,429,529

HYDRAULIC CONTROL SYSTEM HAVING RECIPROCATING PUMP AND HANDLE OPERATED ROTATING VALVE

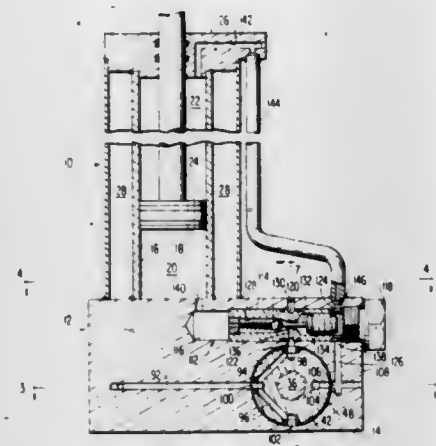
Lambertus J. Sonneborn, Oldenzaal, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Nov. 20, 1981, Ser. No. 323,391

Int. Cl.³ F01B 29/08; F15B 11/08

U.S. Cl. 60—433

12 Claims



1. A compact rotating hydraulic drive comprising:
 - a housing;
 - a cam shaft in said housing for both linear translational and rotational movement;
 - at least one pumping cam mounted on said cam shaft;
 - at least one pumping unit comprising a pumping piston mounted in said housing for linear reciprocation, said pumping piston being operatively controlled by said at least one pumping cam such that rotation of said at least one pumping cam causes linear reciprocation of said pumping piston;
 - a valve spool mounted on said cam shaft but rotatable relative to said cam shaft;
 - first means selectively operable upon linear translation of said cam shaft to rotate said valve spool back and forth between a first angular position and a second angular position;
 - a first path of fluid communication connecting said at least one pumping unit to said valve spool;
 - a second path of fluid communication in said valve spool connecting said first path of fluid communication to a load when said valve spool is in its first angular position;
 - a third path of fluid communication in said valve spool connecting said first path of fluid communication to a load when said valve spool is in its second angular position; and
 - a fourth path of fluid communication in said valve spool for returning hydraulic fluid to tank when said valve spool is in its first or second angular position.

4,429,530

HERMETICALLY SEALED TRANSMISSION SYSTEM FOR A FREE PISTON STIRLING ENGINE

William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Feb. 3, 1982, Ser. No. 345,312

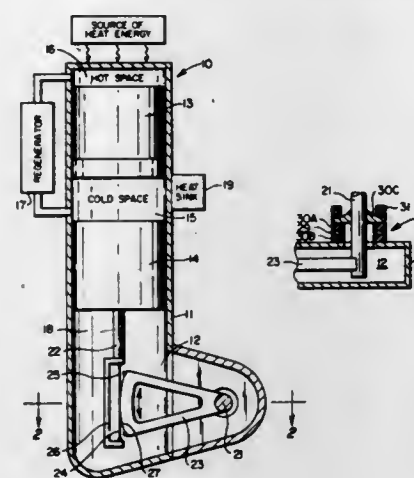
Int. Cl.³ F02G 1/04

U.S. Cl. 60—520

11 Claims

1. In a free piston Stirling cycle engine provided with a housing that defines a gas-containing chamber variably partitioned by a displacer and a linearly reciprocative power piston, said power piston being accessible from a position outside said gas-containing chamber through a passageway formed in said housing, that improvement which comprises:
 - (a) a drive shaft extending through said passageway and mounted for rotationally reciprocative movement around its longitudinal axis;
 - (b) means located within the housing for transmitting me-

- chanical energy between said power piston and said drive shaft; and
- (c) a torsionally flexible seal surrounding a portion of said



drive shaft and including an intermediate layer of reinforcing material bonded to relatively opposing layers of elastic material to form a gas-tight barrier between said drive shaft and said housing.

4,429,531

MASTER CYLINDER FOR BRAKE OR CLUTCH

Norbert Spielmann, Ebern, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

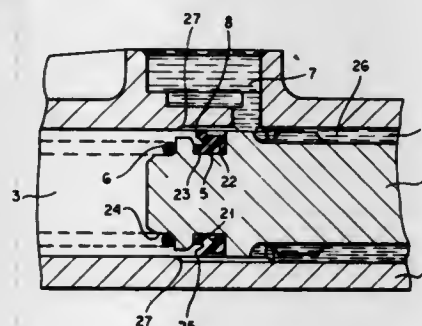
Filed Mar. 22, 1982, Ser. No. 360,649

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111411

Int. Cl.³ B60T 11/22

U.S. Cl. 60—588

9 Claims



1. An actuating cylinder for a hydraulic device, comprising:
 - a cylinder body formed with a slightly stepped cylinder bore having a large diameter step and a small diameter step, the small diameter step being connectable to a device to be actuated;
 - means including an equalization port and a fluid reservoir opening laterally into said bore;
 - a piston axially shiftable in said bore and formed with a seal engaging the wall of said bore, said wall being formed with at least one groove reaching from said large diameter step into said small diameter step past said seal in a rest position of said piston.

4,429,532

APPARATUS AND METHOD FOR TEMPORARILY CONVERTING A TURBOCHARGED ENGINE TO A COMPRESSOR

Stanislav Jakuba, West Hartford, Conn., assignor to The Jacobs Manufacturing Company, Bloomfield, Conn.

Filed Apr. 21, 1981, Ser. No. 256,093

Int. Cl.³ F02B 37/00

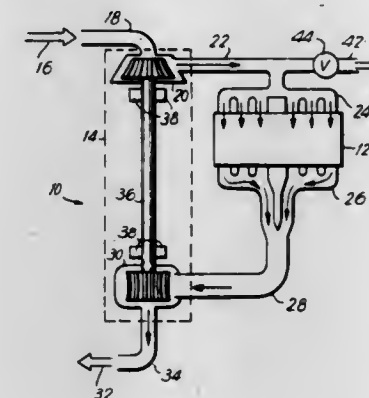
U.S. Cl. 60—600

8 Claims

1. Apparatus for providing compressed air from a turbocharged internal combustion engine of a stationary vehicle,

said engine being of the compression ignition type and having a plurality of cylinders and intake and discharge manifolds; said apparatus comprising:

- (a) a compression release engine brake connected to at least one of the engine cylinders;
- (b) means for temporarily activating the compression release engine brake on some of the engine cylinders to load the



engine, thereby to increase the flow of fresh air into the turbocharger over and above that required for engine operation;

- (c) means for temporarily reducing the flow of fuel to the braked cylinders; and
- (d) means for withdrawing from the turbocharger-intake manifold fluid circuit at least some of the excess air compressed by the turbocharger.

4,429,533

SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH TWO CONTROLLABLE EXHAUST GAS TURBOCHARGERS

Hans Dinger, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU-Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

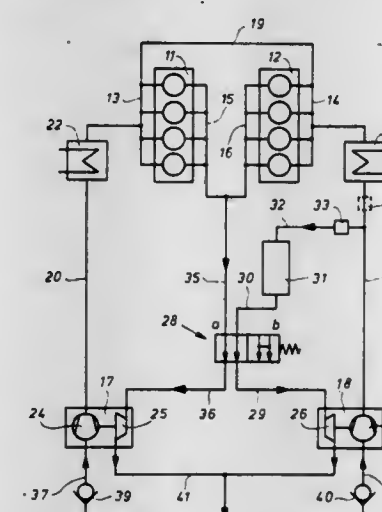
Filed Jul. 6, 1981, Ser. No. 280,201

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046874

Int. Cl.³ F02B 37/00

U.S. Cl. 60—606

10 Claims



1. An internal combustion engine comprising means for providing a supply of supercharging air for the engine, and an auxiliary combustion chamber means for improving the acceleration characteristic of the engine, characterized in that the means providing a supply of supercharging air includes at least two exhaust gas turbocharger means, each of the turbocharger means includes a compressor means and a turbine means, each of the compressor means is provided with an intake means, a check valve means being arranged in each of the intake means, means for supplying all of the exhaust gases from the engine to only one of the turbocharger means during an idling or partial load operation of the engine so that the compressor means of

4,429,534

METHANOL FUELED SPARK IGNITION ENGINE

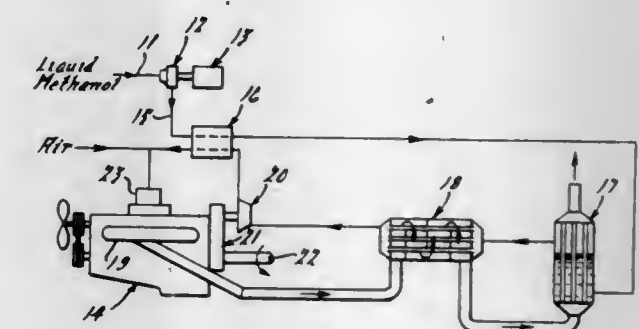
John R. Joy, Brighton, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Jul. 26, 1982, Ser. No. 401,823

Int. Cl.³ F01K 23/14

U.S. Cl. 60—618

1 Claim



1. A methanol fueled spark ignition engine comprising,
 - a liquid methanol supply line,
 - a liquid methanol fuel pump in said line for pressurizing the methanol therein,
 - a heat exchanger having a liquid fuel inlet connected to the outlet from said pump and a liquid fuel outlet,
 - a vapor generator having a liquid fuel inlet connected to the fuel outlet of said heat exchanger and a vapor outlet,
 - a catalytic reactor for decomposing methanol vapor to hydrogen and carbon monoxide having a methanol vapor inlet connected to the outlet of said vapor generator and a decomposed methanol vapor outlet,
 - an expander connected to the outlet of said catalytic reactor,
 - a spark ignition engine having an output shaft and an exhaust system, said exhaust system leading from said spark ignition engine to said catalytic reactor thence to said vapor generator whereby liquid methanol leaving said heat exchanger will be further heated and vaporized in said vapor generator and additionally heated and decomposed in said catalytic reactor to form hydrogen and carbon dioxide,
 - a carburetor for said spark ignition engine having an inlet for the induction of air and decomposed methanol vapor and a conduit leading from the outlet of said expander to said heat exchanger thence to the inlet of said carburetor whereby air will be mixed with said hydrogen and carbon dioxide for induction into said spark ignition engine to support combustion therein,
 - said expander having an output shaft coupled to the output shaft of said spark ignition engine.

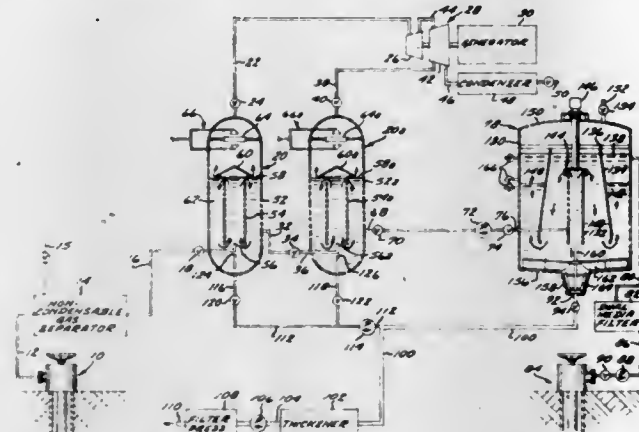
4,429,535

GEOHERMAL PLANT SILICA CONTROL SYSTEM John L. Featherstone, El Centro, Calif., assignor to Magma Power Company, Los Angeles, Calif.

Filed Aug. 13, 1980, Ser. No. 177,632
Int. Cl.³ F03G 7/00

U.S. Cl. 60—641.5

12 Claims



1. The method of reducing silica scaling in a geothermal energy system which has a geothermal brine flow path comprising a production well providing a flow stream of high temperature, high dissolved silica content geothermal brine and heat extraction means, which comprises:

- establishing a zone in said heat extraction means in which said geothermal brine stream undergoes a substantial decrease in temperature,
- continuously introducing into said zone the geothermal brine flow stream from said production well,
- continuously flashing a portion of said geothermal brine stream into steam and removing such steam for power generating purposes,
- providing particulate material capable of seeding silica precipitation thereon,
- introducing said particulate material into said zone so as to seed the precipitation of dissolved silica from said brine, whereby silica which precipitates in said zone will be primarily in suspended, particulate form rather than in the form of scaling,
- said zone being of sufficiently large cross-section to slow down the flow rate of said geothermal brine stream as said stream passes through said zone so as to allow sufficient time for the silica precipitation reaction to occur,
- circulating an unflashed portion of said geothermal brine stream through said zone a plurality of times under thermal power provided by the effects of said flashing, and
- combining the geothermal brine stream so circulated with the continuous geothermal brine flow stream being introduced into said zone.

4,429,536

LIQUEFIED NATURAL GAS-REFRIGERANT ELECTRICITY GENERATING SYSTEM

Reikichi Nozawa, To-7-204, Tamagawa Jyutaku, Somechi, Chohfu-shi, 182, Japan

Continuation-in-part of Ser. No. 973,735, Dec. 28, 1978, Pat. No. 4,330,998. This application Nov. 23, 1981, Ser. No. 323,509

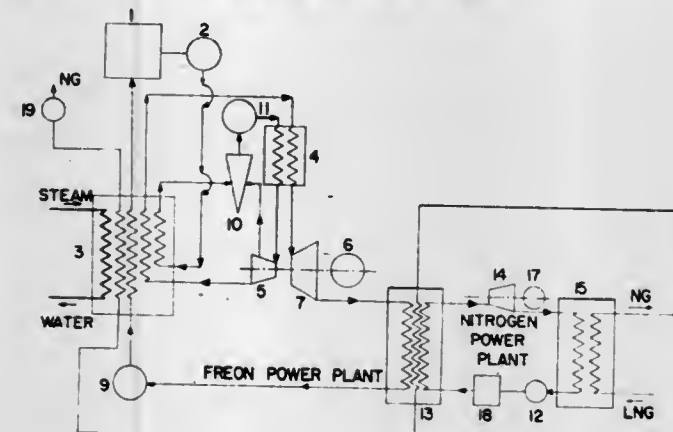
Claims priority, application Japan, Dec. 29, 1977, 52-159500
Int. Cl.³ F01K 23/04

U.S. Cl. 60—655

17 Claims

1. A method for generating power and for gasifying a liquefied gas, the method including the steps of circulating a refrigerant as a working fluid in a closed circuit through a storage tank, a compressor, heating means including a first heat exchanger, a high pressure gas turbine, reheating means, a low pressure gas turbine, a second heat exchanger, a pump, and a heater, said second heat exchanger condensing the working fluid and gasifying said liquefied gas, said first heat exchanger absorbing

exhaust heat from an industrial plant and heating both the working fluid and the gasified product of said liquefied gas, said gas turbines serving to extract mechanical power from the working fluid and being connected with electrical generators to produce electric power, the method also including the steps of conducting said liquefied gas and its produced gas in an open circuit through said second heat exchanger, said first heat exchanger and a pump withdrawing the produced gas,



the method being characterized in that the working fluid has its critical temperature above the temperature of the exhaust gas of said industrial plant and has its freezing point below the entrance temperature of said liquefied gas in said second heat exchanger, and in that the working fluid in the circuit is maintained to experience temperatures well below the temperature of its substantial decomposition even in the presence of oil, water, iron and copper.

4,429,537

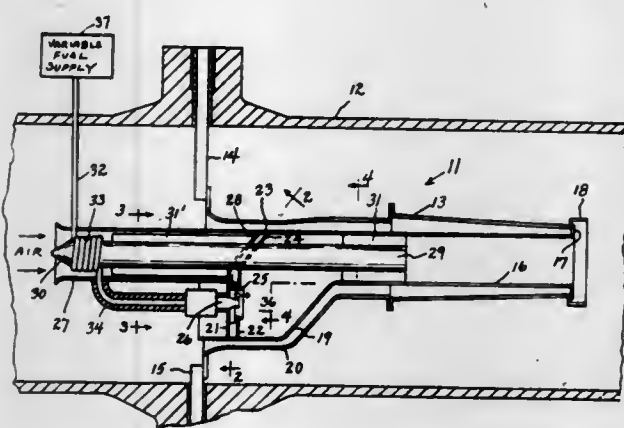
HEAT PIPES TO REDUCE ENGINE EXHAUST EMISSIONS

Donald F. Schultz, Middleburg Heights, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 30, 1981, Ser. No. 229,693
Int. Cl.³ F23R 3/32; F02C 7/10

U.S. Cl. 60—730

9 Claims



1. A combustor comprising casing means having an air receiving conduit open adjacent one end portion of the casing means to receive air, said casing means having an opposite exit end portion and having an intermediate combustion space, heat pipe means mounted longitudinally in said casing means and being positioned at the radial outermost region of and extending alongside said combustion space for inhibiting quenching of combustion gases, said heat pipe means being arranged in heat-transmitting relationship with said conduit for preheating incoming air, means to guide the heated air into said combustion space, fuel discharge nozzle means radially disposed from said heat pipe and mounted in said combustion space, fuel

supply means, and fuel conduit means connecting said supply means to said nozzle means and including heat transfer means in heat-transmitting relationship with the heat pipe means for preheating the fuel, said heat transfer means comprises a coiled portion of said fuel conduit means engaged on said heat pipe means whereby the fuel and air are heated separately before being mixed.

4,429,538

GAS TURBINE COMBUSTOR

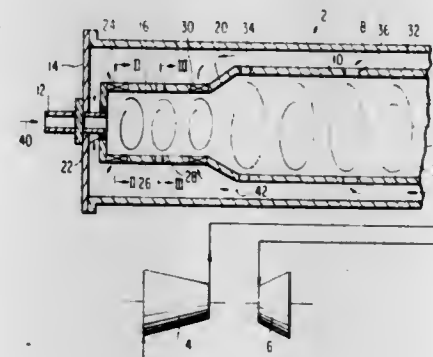
Isao Sato; Yohji Ishibashi; Yoshimitsu Minakawa; Takashi Ohmori; Zensuke Tamura; Yoshihiro Uchiyama, and Ryoichi Ohshima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 234,015

Claims priority, application Japan, Mar. 5, 1980, 55-26630
Int. Cl.³ F02C 3/14

U.S. Cl. 60—748

21 Claims



1. A gas turbine combustor comprising:
- a combustion inner-pipe means for defining a head combustion chamber means and a rear combustion chamber means having a diameter larger than a diameter of the head combustion chamber means,
 - a combustor outer-pipe means for covering said combustor inner-pipe means,
 - fuel nozzle means disposed at an end part of the head combustion chamber means for supplying fuel to said combustion inner-pipe means,
 - a first group of port means disposed at the end part of the head combustion chamber means around said fuel nozzle means for feeding air into said combustor inner-pipe means, said first group of port means being disposed such that air entering through said port means has a component of velocity directed axially of the combustor inner pipe means,
 - a second group of port means disposed in a side wall of said head combustion chamber means at a position near said fuel nozzle means for feeding air into said combustor inner-pipe means,
 - a third group of port means disposed in the side wall of the head combustion chamber means at a position near to the rear combustion chamber means for feeding air into said combustor inner-pipe means, and
 - a fourth group of port means disposed in the side wall of the head combustion chamber means at a position intermediate of said second and third groups of port means for feeding air into said combustion inner-pipe means,
- the second, third and fourth groups of port means all being so arranged that air entering through the port means has a component of velocity directed radially into said combustor inner pipe means, said first, second, and third groups of port means are arranged so that air entering through them additionally has a component of velocity directed circumferentially around said combustor inner-pipe means to impart a swirl to fluid within said combustor inner-pipe means and said fourth group of port means are arranged so that air entering through them has no substantial compo-

nent of velocity directed circumferentially around said combustor inner-pipe means.

4,429,539

HEAT EXCHANGERS FOR VUILLEUMIER CYCLE HEAT PUMPS

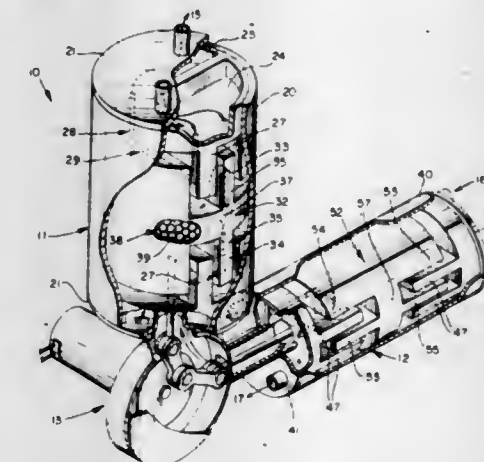
James W. Leach, Raleigh, N.C., assignor to Vought Corporation, Dallas, Tex.

Filed Oct. 7, 1982, Ser. No. 433,316

Int. Cl.³ F25B 9/00

U.S. Cl. 62—6

32 Claims



1. A heat pump comprising:
- (a) a pair of chambers and a plurality of elements extending within said chamber elements;
 - (b) a working fluid disposed in said chambers;
 - (c) a displacer means positioned in each of said chambers that is movable within said chambers, each of said displacer means having: a wall that divides said respective chambers into a first zone and a second zone, a regenerator material housed therein, a plurality of elements extending outwardly from and in proximity to said elements extending within said respective chamber, and at least one passageway communicating through said displacer means and through said respective regenerator material for said working fluid to flow therethrough between said zones;
 - (d) drive means suitably supported for reciprocally moving both of said displacer means in their said respective chambers between said respective zones of said chambers;
 - (e) means for maintaining said first respective zone of each of said chambers at a cool temperature; and
 - (f) means for maintaining said second respective zone of one of said chambers at a temperature that is higher than the temperature of said first respective zone and the second respective zone of said other chamber at a temperature that is lower than the temperature of said first respective zone.

4,429,540

MULTIPLE-STAGE PUMP COMPRESSOR

Francis L. Burnham, Orangeburg, S.C., assignor to Orangeburg Technologies, Inc., Orangeburg, S.C.

Continuation-in-part of Ser. No. 242,242, Mar. 10, 1981, Pat. No. 4,347,045. This application Aug. 30, 1982, Ser. No. 412,925

Int. Cl.³ F25D 17/02; F04B 25/00

U.S. Cl. 62—188

25 Claims

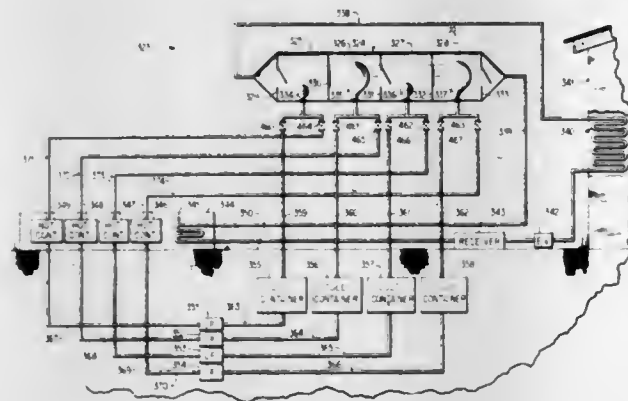
1. A cooling system for cooling an enclosure comprising:
- a compressor utilizing a pump system comprising a multiple-stage pump utilizing a plurality of pumping stages for pumping a first fluid through said multiple-stage pump raising the temperature and pressure of said first fluid, said multiple-stage pump further comprising a plurality of check valves, one of said plurality of check valves being located on the input and output of said multiple-stage pump and between each of said plurality of pumping

stages, wherein each of said plurality of pumping stages comprises:

- (1) a pressure chamber operable to hold said first fluid;
- (2) a flexible member within said pressure chamber operable, when expanded by a vapor from a second fluid, to exert pressure against said first fluid and to force said first fluid from said pressure chamber through the one of said plurality of check valves between said pressure chamber and the next pressure chamber of the next subsequent pumping stage of said plurality of pumping stages or said output, if said pressure chamber is within the last of said plurality of pumping stages, when said pressure within said pressure chamber exceeds the next pressure in said next pressure chamber or said output; and
- (3) wherein said second fluid is one of a plurality of vaporizable fluids, a different vaporizable fluid being utilized within said flexible member of each said pressure chamber,

and wherein each of said flexible members is connected to a vapor pressure control means which is operative to cause said flexible member to expand or contract at a given time, said vapor pressure control means comprising:

- (i) a cold container connected to said flexible member and operative, by use of a cooling means, to keep said second fluid cold;



- (ii) a hot container connected to said flexible member and operative, by use of a heating means, to keep said second fluid hot;
 - (iii) a cold container control means connected to said cold container operative to open or close the connection between said cold container and said flexible member; and
 - (iv) a hot container control means connected to said hot container operative to open or close the connection between said hot container and said flexible member; and wherein said cooling system further comprises a condensate pump connected between said cold container and said hot container and operative to pump said second fluid from said cold container to said hot container, and a condensate pump control means connected between said cold container and said condensate pump and operative to sense the level of said second fluid in said cold container and to activate said condensate pump;
- b. condensing means connected to said pump system through which said first fluid flows, which condenses said first fluid and removes heat from said first fluid; and
 - c. evaporating means within said enclosure connected to said pump system and said condensing means and operative to cool said enclosure.

4,429,541 APPARATUS FOR CONTROLLING OPERATION OF REFRIGERATOR

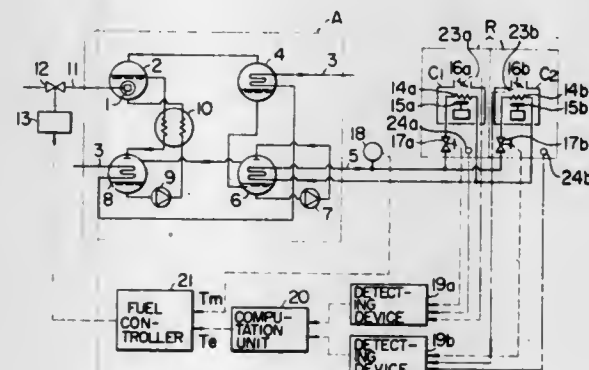
Kohji Kamejima; Yozo Hibino; Junichi Ootsumi, all of Ibaraki; Hideki Tanaka, Kudamatsu, and Morio Tamura, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 29, 1982, Ser. No. 343,859

Claims priority, application Japan, Feb. 2, 1981, 56-12900

Int. Cl.³ F25D 17/02; F25B 15/00; F24F 3/00

U.S. Cl. 62—201

8 Claims



1. In a refrigerator having a capacity control mechanism adapted to control the capacity of said refrigerator in such a manner that the temperature of cold water supplied to a plurality of individual controllable air conditioners coincides with a predetermined set temperature value, an apparatus for controlling the operation of said refrigerator comprising:
- a plurality of overload detecting devices, each of which is adapted to detect the loading condition of a respective one of said air conditioners, which in turn constitutes the load on said refrigerator, and to produce an overload signal that is indicative of whether or not the respective one of said air conditioners is overloaded;
- a cold water temperature computation unit adapted to calculate the set temperature value of the cold water in accordance with the overload signals coming from said overload detecting devices and to produce a signal corresponding to the calculated set temperature value;
- a cold water temperature detector adapted to detect the temperature of said cold water; and
- a control means adapted to determine the difference between the measured cold water temperature derived from said cold water temperature detector and said set temperature value of the cold water temperature derived from said cold water temperature computation unit and to control the capacity control mechanism of said refrigerator in accordance with said difference.

4,429,542 METHOD OF FREEZING FERTILIZED OVA, SPERMATOZOA OR THE LIKE AND APPARATUS THEREFOR

Nobuo Sakao, and Yasuo Kuraoka, both of Sapporo, Japan, assignors to Hoxan Corporation, Sapporo, Japan
Filed Aug. 2, 1982, Ser. No. 404,400

Claims priority, application Japan, Aug. 10, 1981, 56-124996; Aug. 10, 1981, 56-124997; Sep. 16, 1981, 56-137410[U]; Nov. 18, 1981, 56-184815; Jan. 14, 1982, 57-3761[U]; Mar. 12, 1982, 57-34839[U]

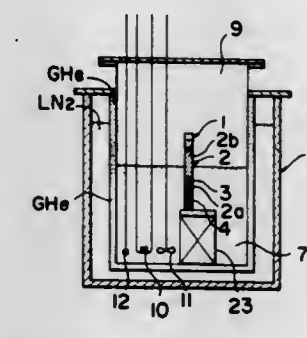
Int. Cl.³ F25D 25/00

U.S. Cl. 62—62

4 Claims

4. A method of freezing fertilized ova, spermatozoa and the like comprising the steps of:
- containing articles to be frozen in a lower segment of a buffer solution in a tube,
- cooling an upper segment of said buffer solution so that the upper segment of said buffer solution becomes lower in temperature than said lower segment of said buffer solu-

tion containing the articles to be frozen with a refrigerant, thereby freezing the upper segment of said buffer solution to produce crystalline nuclei, cooling the crystalline nuclei so that the nuclei are grown to the lower segment of said buffer solution to freeze the lower segment of said buffer solution, thereby freezing the articles to be frozen,



measuring the maximum liquid temperature of the upper segment of said buffer solution when the crystalline nuclei are produced in the upper segment of said buffer solution, and automatically controlling the cooling temperature of the lower segment of said buffer solution to the vicinity of the measured temperature.

4,429,543 ICE MAKER

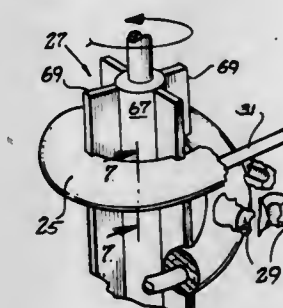
Harry C. Fischer, 1819 Adrean Pl., P.O. Box 5377, Sun City Center, Fla. 33570

Filed Aug. 13, 1982, Ser. No. 407,788

Int. Cl.³ F25C 1/12

U.S. Cl. 62—73

10 Claims



1. Ice-making apparatus which comprises evaporator means including a helical tubing section, elongated drive means located adjacent said helical tubing section, means for supplying water to the exterior surface of said helical tubing section, means for supplying refrigerant to said evaporator means so that evaporation takes place within said helical section causing the freezing of a helix of ice on the exterior surface of said helical tubing section, means for heating said tubing section above the freezing point of water to free said ice helix from its bond to said evaporator helical tubing section following discontinuation of supply of refrigerant thereto, and means for causing said drive means to rotate said ice helix and fracture the leading end of said helix into smaller ice pieces at a discharge point.

4,429,544 REFRIGERANT STORAGE SYSTEM FOR A HEAT PUMP

William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 30, 1982, Ser. No. 430,904

Int. Cl.³ F25B 43/02

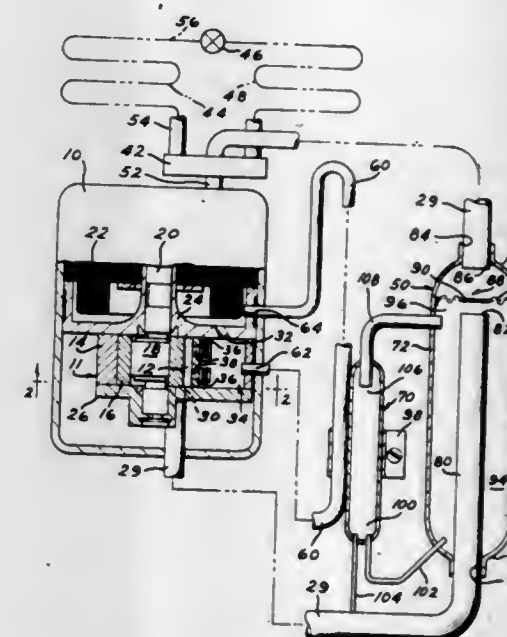
U.S. Cl. 62—84

8 Claims

1. The method of managing the refrigerant charge in a refrigeration system by storing liquid refrigerant and introducing

it in gaseous form back into the system a compressor comprising:

accumulating a mixture of liquid refrigerant and oil in an accumulator positioned in the suction line of the system; separating gaseous refrigerant from liquid refrigerant in said accumulator and introducing the gaseous refrigerant into the system compressor;



introducing the remaining mixture of liquid refrigerant and oil in said accumulator to a reservoir; heating said reservoir to boil out refrigerant in gaseous form; and introducing the gaseous refrigerant to the accumulator for introduction into the system compressor; and introducing the oil in the reservoir to the compressor.

4,429,545 SOLAR HEATING SYSTEM

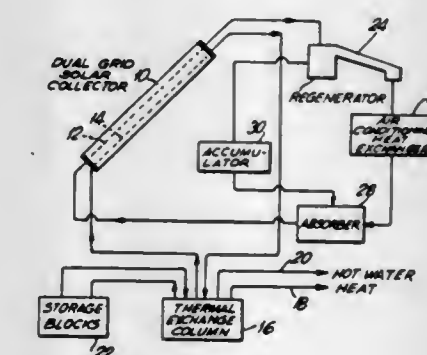
Alfred Steinberg, Riverdale, N.J., assignor to Ocean & Atmospheric Science, Inc., Dobbs Ferry, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,208

Int. Cl.³ F25B 27/00, 27/02

U.S. Cl. 62—235.1

40 Claims



1. A solar heating system, comprising:
- solar collector means comprising heat absorber means for absorption of solar radiation and two separate riser grid systems containing respective flow mediums therein, for being heated by the solar radiation absorbed;
- heat exchange means coupled to a first of said riser grid systems for extracting the heat from the flow medium therein to provide a heating fluid;
- regeneration means coupled to the first of said riser grid systems for distillation of the flow medium therein to extract a component therefrom for further utilization; and
- at least one of said two separate riser grid systems comprising a plurality of parallel tubes interconnected at their respective lower and upper ends by respective manifolds, said solar collector means including a heat absorber com-

prising a sheet of heat-absorption material formed into strips and woven, basket-fashion across the tubes of said at least one riser grid system.

4,429,546

HEAT TRANSFER IN GAS COMPRESSION

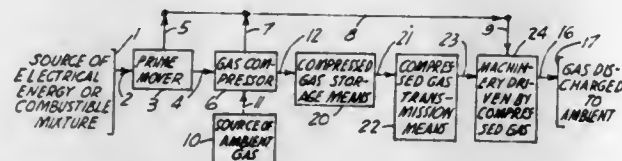
Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada H3H 1T1, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada H3R 1K3

Filed Mar. 14, 1983, Ser. No. 474,969

Int. Cl.³ F25B 27/02

U.S. Cl. 62—238.1

5 Claims



1. A gas compression system which comprises a prime mover driving a gas compressor, and storage means for said compressed gas, and transmission means for said compressed gas from said storage means, and an output load, which consists of apparatus driven by said compressed gas, and heat transfer means, which transfers substantial amounts of heat rejected from said prime mover and said compressor to said gas at said output load.

4,429,547

ARRANGEMENT IN A HEAT PUMP PLANT

Eric Granryd, Täby, Sweden, assignor to AB Thermia-Verken, Arvika, Sweden

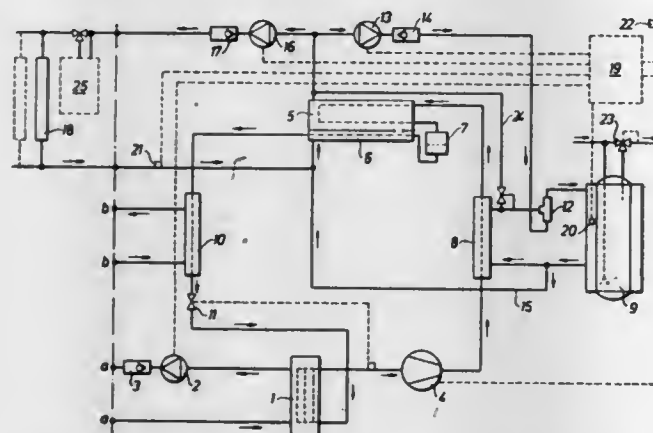
Filed Mar. 10, 1982, Ser. No. 356,620

Claims priority, application Sweden, Mar. 20, 1981, 81017683

Int. Cl.³ F25B 27/02

U.S. Cl. 62—238.6

6 Claims



1. A heat pump of the type including an evaporator, a compressor, a condenser, said condenser having a built-in subcooler and an expansion valve forming a refrigerant circuit, further comprising:

- a water heating pump having one end connected to said condenser heating medium outlet side;
- an ejector having first, second and third ports, said first port connected to a remaining end of said water heating pump through a non-return valve;
- a hot gas heat exchanger connected between the compressor and condenser inlet, said heat exchanger having a heating medium side with an outlet connected to said ejector second port, and an inlet;
- a second subcooler connected between an outlet of said built-in subcooler and said expansion valve, said second subcooler having a heating medium side connected to a separate heating circuit; and
- a domestic water heater having an inlet connected to said

ejector third port, and an outlet connected to said hot gas heat exchanger inlet and said built-in subcooler inlet.

4,429,548

COVER FOR REFRIGERATED DISPLAY CASES

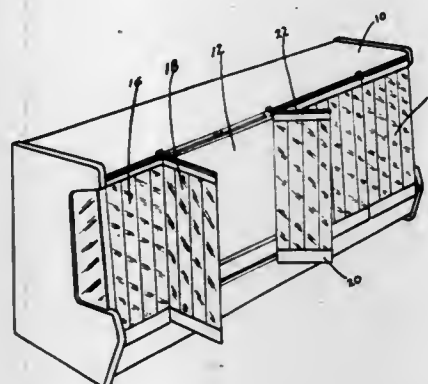
Richard C. Layne, 1312 King Ave., Apt. 4, Columbus, Ohio 43212

Filed Dec. 7, 1981, Ser. No. 328,415

Int. Cl.³ A47F 3/04

U.S. Cl. 62—255

6 Claims



1. An improved refrigerated, upright type display case cover for providing an easily deformable barrier over the display case access opening, said cover being of the type having a plurality of flexible, transparent strips mounted to said display case in substantially side by side relationship and extending across said access opening, wherein the improvement comprises: said strips attached together in groups to form panels which are movably mounted at one end along a relatively higher edge of said opening, extend parallel to each other across a relatively lower edge and are held across said opening by gravitational force and wherein the relatively higher end of each panel of strips are mounted to an arm which is hingedly mounted to said relatively higher edge.

4,429,549

ICE-CREAM FREEZER

Peter P. M. Randolph, P.O. Box 399, Gormley, Ontario, Canada L0G 1L0

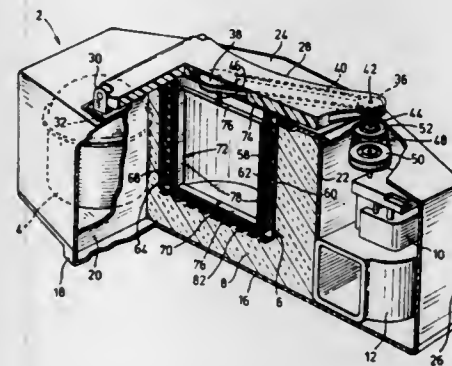
Continuation-in-part of Ser. No. 123,033, Feb. 20, 1980,

abandoned. This application Mar. 25, 1981, Ser. No. 247,591

Int. Cl.³ A23G 9/00

U.S. Cl. 62—342

11 Claims



10. In apparatus for preparing ice-cream and other frozen confections comprising an integral refrigeration unit including a vertical cylindrical evaporator, a cylindrical freezing container removably lockable against rotation within the evaporator, paddle means removably located for rotation relative to the freezing container about a vertical axis, and a motor rotating the paddle means, the improvement wherein no mechanical locking of the container within the evaporator is provided but the container is locked to the evaporator by frozen moisture therebetween during a freezing cycle, the clearances between

the container and the evaporator being small enough for the former to be locked by frozen moisture, when the apparatus is operated, and wherein selectively operable defrosting means are associated with the evaporator whereby such frozen moisture may be melted to release the container.

4,429,550

SWEEP MECHANISM

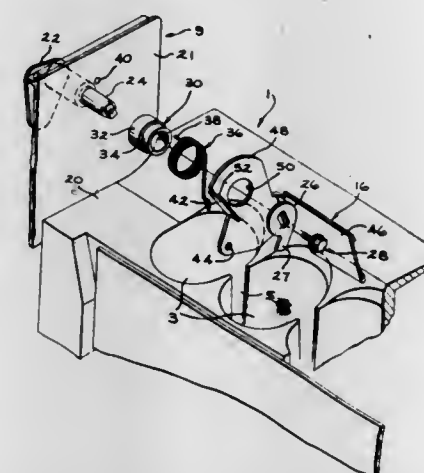
Bruce B. Latter, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 16, 1982, Ser. No. 388,807

Int. Cl.³ F25C 5/02

U.S. Cl. 62—353

5 Claims



1. An icemaker comprising a freezer mold having an ice piece forming cavity, ice ejecting means including means to release the ice piece from the cavity and a pad mechanism for raising the ice piece from said cavity to a position above the top of said cavity, a sweep pivotally supported above said mold for movement from a first position rearward to said cavity to a second position overlying said cavity for engaging and sweeping the raised ice piece from said mold; motor driven positive mechanical drive means for rotating a drive element in one direction and then in the opposite direction; a torsion spring arranged to store energy during movement of the sweep from its first position to its second position; means mechanically coupling the drive element in one direction of rotation to the sweep to positively drive the sweep and move the sweep from the first position to the second position; and means coupling the torsion spring to the sweep to return the sweep to its first position upon release of the stored energy when the drive element is rotated by the motor driven positive mechanical drive means in its opposite direction.

4,429,551

AUGER TYPE ICEMAKER

Akio Hizume, Nagoya, Japan, assignor to Hoshizaki Electric Co., Ltd., Toyooka, Japan

Filed Apr. 29, 1982, Ser. No. 373,139

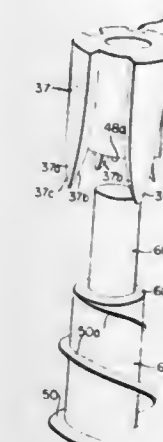
Int. Cl.³ F25C 1/14, 5/14

U.S. Cl. 62—354

4 Claims

1. An auger type icemaker comprising a refrigeration cylinder having an evaporator disposed therearound and a water inlet connected thereto in fluid communication with the interior of said cylinder to form slush ice on the inner surface of said cylinder, an auger including a rotary shaft rotatably disposed in said cylinder and a coiled scraper blade fixedly mounted around said shaft to scrape off and guide the slush ice upwardly, and an extrusion head having a lower end surface, fixedly mounted at the upper end of said cylinder with a plurality of axially downwardly and radially outwardly extending bosses disposed around the periphery of said extrusion head to form ice compressing passages between the adjacent bosses, said passages receiving the scraped slush ice from said auger

and discharging the scraped slush ice therefrom after being compressed therein while passing therethrough, each of said bosses having means, including an extension of a predetermined axial length positioned below said lower end surface of said extrusion head and over a portion of said auger, for pre-



venting the scraped slush ice from rotating together with said auger, the portion of said auger over which said extensions are positioned being sufficiently smaller in diameter than the other portions of said auger, so that interference by said extensions with said portion of said auger is avoided.

4,429,552

REFRIGERANT EXPANSION DEVICE

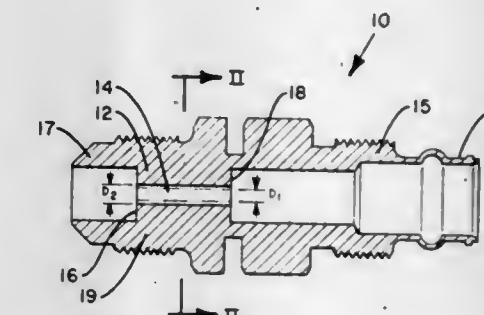
Wayne R. Reedy, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,141

Int. Cl.³ F25B 41/06

U.S. Cl. 62—528

5 Claims



1. A refrigerant expansion device for use in a vapor compression refrigeration system, said refrigerant expansion device comprising:

a body portion having an opening therethrough to provide a refrigerant flow restriction when said body portion is connected in the refrigerant flow path of the refrigeration system, said body portion made of a conditioned shape memory alloy to provide a first selected refrigerant flow restriction when the temperature of the refrigerant flowing through the device is equal to or less than a predetermined transformation temperature, and to provide a second selected refrigerant flow restriction when the temperature of the refrigerant flowing through the device is greater than the predetermined transformation temperature.

4,429,553

CAM-SUPPORT CARRIAGE FOR A KNITTING MACHINE

Louis Frund, Monthey, and Rémy Bruggmann, Fontanivent, both of Switzerland, assignors to Atelier de Construction Stelger S.A., Vionnaz, Switzerland

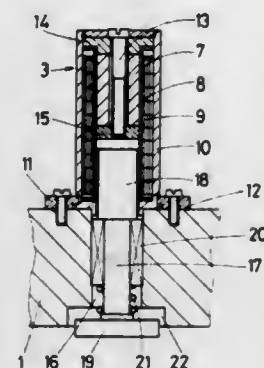
Filed May 22, 1981, Ser. No. 266,212

Claims priority, application Switzerland, Jun. 13, 1980, 4558/80

Int. Cl.³ D04B 7/00

U.S. Cl. 66—78

5 Claims



1. A cam-support carriage for a knitting machine comprising, a plurality of control devices for each controlling an individual respective knitting cam, and each having a knitting cam, each controlling device comprising means for controlling actuation of said knitting cam to a projected working position and for controlling actuation of said knitting cam to a retracted, non-working position, said means comprising permanently magnetized magnetizable means having a coercive field and energizable means receptive of control current pulses of opposite polarities to change the magnetization and coercive force of the coercive field of said magnetizable means for selectively alternately rendering the magnetizable means effective to control actuation of the knitting cam to said working position from said retracted non-working position and for rendering the magnetizable means selectively effective to control actuation of said knitting cam back to said retracted, non-working position as a function of the change of coercive force of the magnetic coercive field continuously generated by said magnetizable means.

4,429,554

BILATERAL KEY FOR CYLINDER LOCK

Noel Litvin, and Abraham I. Scherz, both of Leiva 4675, Buenos Aires, Argentina

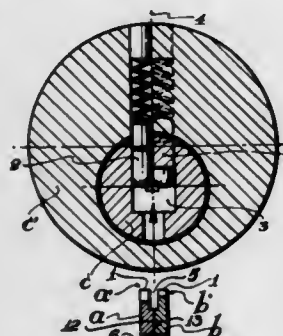
Filed Sep. 29, 1981, Ser. No. 306,897

Claims priority, application Argentina, Apr. 8, 1981, 282463

Int. Cl.³ E05B 27/06

U.S. Cl. 70—358

4 Claims



1. A bilateral key for a cylinder lock which has more than one row of tumbler pins, thereby requiring a key having a number of generally parallel tumbler operating edges corresponding to the number of rows of tumblers with a plurality of

depressions formed therein for displacing the tumbler pins to the lock combination position, said key comprising:

- (a) at least first and second blade components, each of said blades having an exterior end and an operative end, each of said blades also defining along one edge thereof, an operating edge for selectively displacing tumbler pins in a cylinder lock;
- (b) a means for detachably securing said blades together;
- (i) said means providing for displacement of the blades for selectively and differentially cutting a plurality of projections and recesses in each of the operating edges;
- (ii) said means also securing said blades together in a side by side relationship with the respective operating edges adjacent one another;

whereby said operating edges may be separated for selectively and differentially cutting the edges and secured together to form a bilateral key to cooperatively displace rows of tumbler pins in a cylinder lock when inserted therein.

4,429,555

REVOLVING CYLINDER LOCKS

Michael A. Salsbury, South Godstone, England, assignor to Multikey Ltd., England

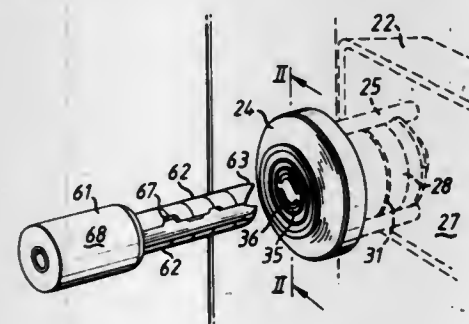
Filed Apr. 1, 1981, Ser. No. 249,809

Claims priority, application United Kingdom, Apr. 2, 1980, 8011094

Int. Cl.³ E05B 29/00, 19/14

U.S. Cl. 70—366

16 Claims



1. A revolving cylinder lock comprising a cylindrical barrel mounted coaxially in a cylindrical passage for rotation about the axis thereof characterised by a cylindrical cavity extending partly into the wall of the passage and partly into the barrel with its axis parallel the axis of the barrel and spaced from the axis of the barrel by a distance not less than the radius of the barrel and not greater than the radius of the passage wall, a cylindrical pin coaxially mounted in the cavity for rotation therein and divided into two parts along a cylindrical surface containing the pin axis and having a radius of curvature not less than that of the barrel and not greater than that of the passage, returning means operatively associated with the pin to urge the pin towards an angularly displaced position about its axis in which the axis of the cylindrical dividing surface is displaced from coincidence with the barrel axis and unlocking means operable angularly to displace the pin about its axis to bring the axis of the cylindrical dividing surface into coincidence with the axis of the barrel against the effect of the returning means.

4,429,556

LOCK MECHANISM

Raymond V. Kambic, Joliet, Ill., assignor to Brink Locking Systems, Inc., Plainfield, Ill.

Filed Aug. 13, 1981, Ser. No. 292,397

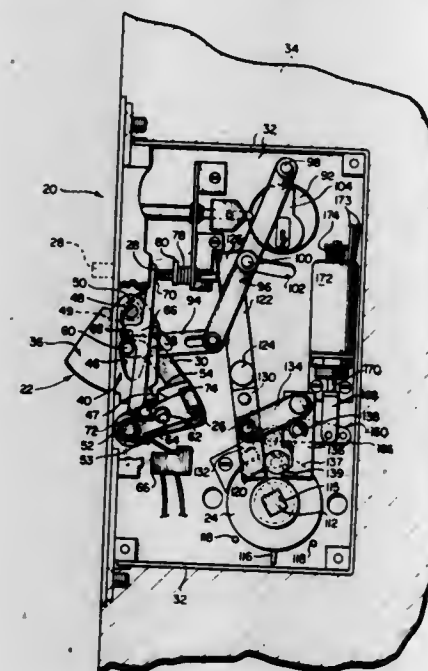
Int. Cl.³ E05B 55/06

U.S. Cl. 70—149

33 Claims

1. A knob control arrangement for a lock assembly of the type including a housing and a lock mechanism, associated with said housing and including latch means, a cam member, and link means interconnecting the cam member and the latch

means, said knob control arrangement including: a knob hub mounted with respect to the lock assembly housing for relative movement, and adapted to have a knob member operably engaged therewith, said knob hub being mounted juxtaposed said cam member interiorly of said housing, such that the knob hub can move relative to said cam member; means for selectively connecting and disconnecting said knob hub with respect to said cam member, such that when connected said knob hub and said cam member will be joined for joint movement,



and a knob member engaged with the knob hub and said knob hub will be in an active condition whereby said operation thereof will produce movement of said cam member and correspondingly, the operation of said lock mechanism; however, when said knob hub and said cam member are not coupled for joint movement, a knob engaged with said knob hub and said knob hub will be in a passive condition, and can move relative to said cam member and said housing without producing operation of said locking mechanism.

4,429,557

KEY HOLDER

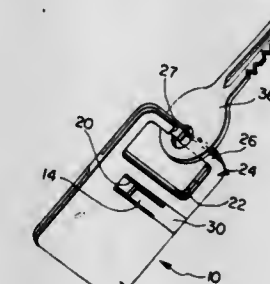
Joseph A. Morrone, III, Westerly, R.I., assignor to Adecon, Inc., Warwick, R.I.

Filed Dec. 23, 1981, Ser. No. 333,667

Int. Cl.³ A47G 29/10

U.S. Cl. 70—456 R

12 Claims



1. A holder for keys and the like comprising a pair of substantially flat plates, and means slidably interconnecting said plates to each other in abutting, face-to-face relation; said plates each having generally aligned ring-like portions, a passage extending through each of said ring-like portions, said plates being relatively slidable between a first position wherein said passages are out of registry and hence access to the interior of said ring-like portions is prevented and a second position wherein said passages are in registry and access to said ring-like portions is permitted, said interconnecting means

comprising resilient integrally struck tongue members on each plate, said tongue members resiliently overlapping each other to maintain said plates slidably assembled to each other.

4,429,558

METHOD OF AND APPARATUS FOR FABRICATION OF SPIRAL FIN

Hiroya Murakami; Mitsuhiro Takasaki; Osamu Yamada, all of Yokohama; Atsuya Kamada, Kamakura, and Katsuyoshi Hori, Kure, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

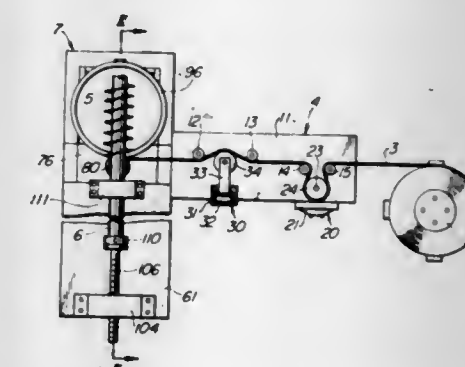
Filed Apr. 15, 1981, Ser. No. 254,285

Claims priority, application Japan, Apr. 15, 1980, 55-48720

Int. Cl.³ B21D 11/08, 43/00; B21C 37/22; B23P 15/26

U.S. Cl. 72—17

7 Claims



1. A method of fabricating a spiral fin in which a strip of material having a rectangular cross section is rolled and bent by a pair of rolls while being wound on a tube to form a spiral fin, wherein the method comprises imparting a tension to the strip being drawn between the pair of rolls, and controlling the amount of tension imparted to the strip so that a speed at which the strip is drawn between the rolls is substantially equal to a speed at which an outer edge portion of the spiral fin is rolled so as to reduce a compressive force applied to a portion of the strip corresponding to the outer edge of the spiral fin.

4,429,559

STRIP PROCESSING APPARATUS

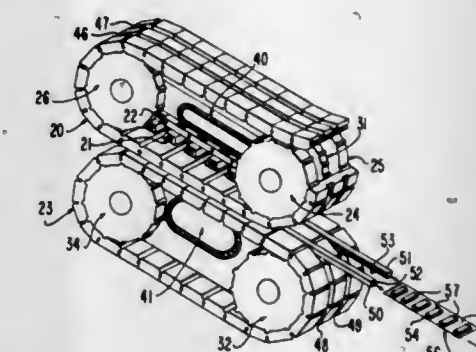
Gaston D. dePuglia, 13 Seascope Ct., Brookings, Oreg. 97415, and Greg A. Huber, 1701 Fortune Dr., Unit L, San Jose, Calif. 95131

Filed Jan. 26, 1982, Ser. No. 342,629

Int. Cl.³ B21D 43/00

U.S. Cl. 72—186

22 Claims



1. An apparatus for processing a strip of material comprising: a plurality of tool means interconnected in an endless chain, for shaping predetermined parts of said strip of material; a plurality of follower means interconnected in an endless chain, for forcing said tool means against said predetermined parts of said strip of material; a plurality of die means interconnected in an endless chain which cooperate with said tool means, for shaping said predetermined parts of said strip of material;

a plurality of stripping means interconnected in an endless chain for stripping said strip of material from said tool means after said shaping of said strip of material by said tool and die means;
means for transporting said strip of material between said stripping means and said die means; and
means for moving said tool, said follower, said stripping and said die means in a recirculating fashion relative to said strip of material as said strip of material is being transported therebetween.

4,429,560

APPARATUS FOR MAKING A TRANSITION PLATE FOR A MINE ROOF TRUSS

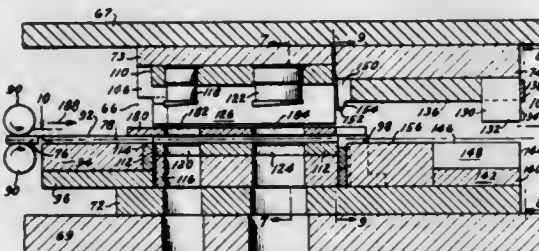
Charles W. Schaeffer, Lebanon, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 19, 1981, Ser. No. 323,322

Int. Cl.³ B21D 28/14, 28/26

U.S. Cl. 72—328

1 Claim



1. Apparatus for making a transition plate for a mine roof truss from a strip of metal comprising

(1) a die set having first and second stations and means to initially feed and position said strip in said first station and thereafter feed and position said strip in said second station, (2) said first station including

(a) means to bend the sides of said strip downwardly at substantially a right angle to the plane of said strip, (b) means to shear a notch in both sides of the trailing portion of said strip, and (c) means to pierce a first hole adjacent the leading portion of said strip and a second hole adjacent the trailing portion of said strip,

(3) said second station including (a) means to bend the leading portion of said strip into a substantially "M" shape, (b) means to shear said strip transversely at the trailing portion of said strip adjacent said notches, and (c) means to bend the trailing portion of said strip adjacent said notches downwardly at substantially a right angle to the plane of said strip,

(4) stripper plate means in said first station for stripping said bending means, said shearing means, and said piercing means of said first station from said strip,

(5) stripper plate means in said second station for stripping said bending means and said shearing means of said second station from said strip, and

(6) means directly below said trailing end strip shearing means to lift the trailing portion of said strip in said second station upwardly in an inclined position prior to removing said strip from said second station.

4,429,561

MANDREL FOR COLD FORGING INTERNALLY PROFILED TUBES OR CYLINDERS

Ivan O. Ramnsten, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Jan. 22, 1982, Ser. No. 341,666

Claims priority, application Sweden, Feb. 3, 1981, 8100772

Int. Cl.³ B21J 13/02

U.S. Cl. 72—478

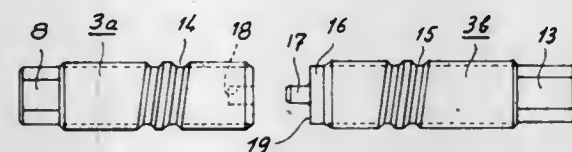
4 Claims

1. A mandrel receivable in a tubular cold forging blank for cooperation with forging hammers which repeatedly radially

inwardly impact against the exterior of the blank, all around it and along its length, to form the blank into a substantially tubular product that has an internal radially inwardly projecting circumferential rib intermediate its ends and has an internal thread that extends axially from one of its ends to said rib, said mandrel being characterized by:

A. said mandrel having a concentric reduced diameter portion intermediate its ends that defines a circumferential groove in the mandrel whereby said rib is formed;

B. said mandrel comprising two axially separable parts which abuttingly engage one another at said reduced



diameter portion thereof to be removable from the product in axially opposite directions;

C. One of said parts of the mandrel having an external thread which defines said internal thread and which extends along that mandrel part from said reduced diameter portion of the mandrel; and

D. said one mandrel part, along the length of said external thread thereon, being of taperingly decreasing diameter in the direction towards said reduced diameter portion, to be readily removable from the product by rotation relative to it.

4,429,562

AUTO BODY DENT REMOVING PULLER AND ANCHOR

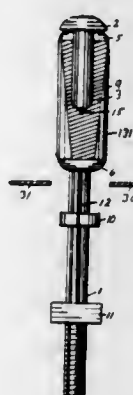
John V. Hultquist, 10500 Westminster St., Apt. #13, Garden Grove, Calif. 92643

Filed Apr. 7, 1981, Ser. No. 251,952

Int. Cl.³ B21D 1/12

U.S. Cl. 72—479

7 Claims



1. A dent pulling tool comprising:

(a) an elongated shank having a head at one end larger than the diameter of said shank, wherein the other end of said shank is adapted to be attached to handle means;

(b) a cylinder mounted on said shank, said cylinder having an opening extending therethrough from one end of said cylinder to the other end, said cylinder having slots extending from opposite ends on opposite sides thereof in a manner and at a depth such that a transverse opening is defined which extends transversely through said cylinder; wherein said shank extends through said cylinder and said slots are dimensioned to receive said shank when said cylinder is oriented parallel to said shank; and wherein said transverse opening is sufficiently large to enable said cylinder to be tilted perpendicular to said shank,

(c) a lever slidably mounted on said shank between an outward position and an inward position,

(d) a first rod connected at one end to said lever and at its other end to said cylinder,

(e) a second rod secured to said shank, wherein said cylinder is pivoted from a first position parallel to said shank to a second position perpendicular to said shank by means of said first rod when said lever is moved from its outward position to its inward position, and wherein said cylinder is pivoted from its said perpendicular position to its said parallel position by means of one end of said cylinder being urged against said second rod when said lever is moved to its outward position.

4,429,563

MECHANICAL SNUBBER APPARATUS

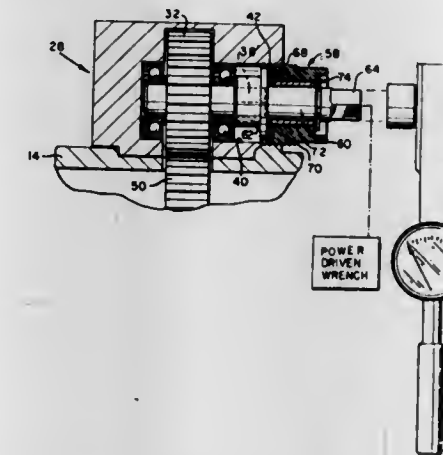
Harry E. Sulzer, Telford, Pa., assignor to Anchor/Darling Industries, Inc., Radnor, Pa.

Filed Oct. 30, 1981, Ser. No. 316,846

Int. Cl.³ G01M 19/00

U.S. Cl. 73—11

5 Claims



1. An apparatus for testing the operation of a mechanical snubber having first and second sections engaged one with the other, the first section including linear motion input means and the second section including a drive gear coupled to motion limiting means, the apparatus comprising:

a tester housing adapted to be coupled to the snubber; and actuator gear means rotatably supported by the tester housing, said actuator gear means being engageable with the drive gear and being adapted for engagement by test means for driving the actuator gear means to rotate the drive gear for testing the operation of the motion limiting means.

4,429,564

VIBRATION TYPE DENSITY METER

Kyoichi Ikeda; Motoyoshi Ando, and Kinji Harada, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,175

Claims priority, application Japan, Jan. 23, 1981, 56-8892[U]; Jan. 23, 1981, 56-8893[U]

Int. Cl.³ G01N 9/00

U.S. Cl. 73—32 A

9 Claims

1. A probe for use with a vibration type density meter for measuring density of a specimen fluid, said probe comprising a cylindrical resonator means having two flanges at each end thereof, at least one of said ends being open for introducing said specimen fluid into said resonator means; a cover means rigidly fixed to said two flanges and in surrounding relation to said resonator means, said cover means and said resonator means

jointly defining therebetween a chamber, said chamber being filled with a gas kept at a predetermined pressure; means for



exciting said resonator means; and means for detecting a circumferential mode of oscillations of said resonator means.

4,429,565

KNOCKING DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

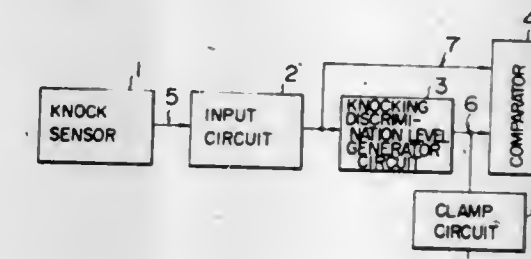
Hiroo Utsumi; Yukio Sakakibara; Teruyoshi Ito, all of Kariya; Toshiharu Iwata, Aichi; Jun Ohta, Nagoya; Kiyokane Kazi, Toyota; Osamu Hori, Toyota, and Mitsuyuki Banno, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Apr. 7, 1981, Ser. No. 252,001

Claims priority, application Japan, Apr. 9, 1980, 55-48002[U]; Int. Cl.³ G01L 23/22

U.S. Cl. 73—35

6 Claims



1. A knocking detecting apparatus for an internal combustion engine comprising:

knocking detector means for detecting a factor of knocking in the internal combustion engine and generating an output signal,

generating means for generating a discrimination signal in response to the output signal of said knocking detector means,

limiting means for limiting the discrimination signal from said detector means below a predetermined value at a high speed of said engine so as to enable the detection of a trace knock, and

comparator means for comparing the output signal from said knocking detector means and the said discrimination signal limited by said limiting means to generate a pulse signal indicative of a knocking.

4,429,566

PIPING LEAKAGE DETECTION METHOD AND APPARATUS

Richard A. Armell, Montrose, Scotland, and John G. Misselbrook, Hawridge Common, Nr. Chesham, England, assignors to Boc-Newsco Limited, London, England and Drexel Oil Field Service (HK) Limited, Hong Kong, Hong Kong

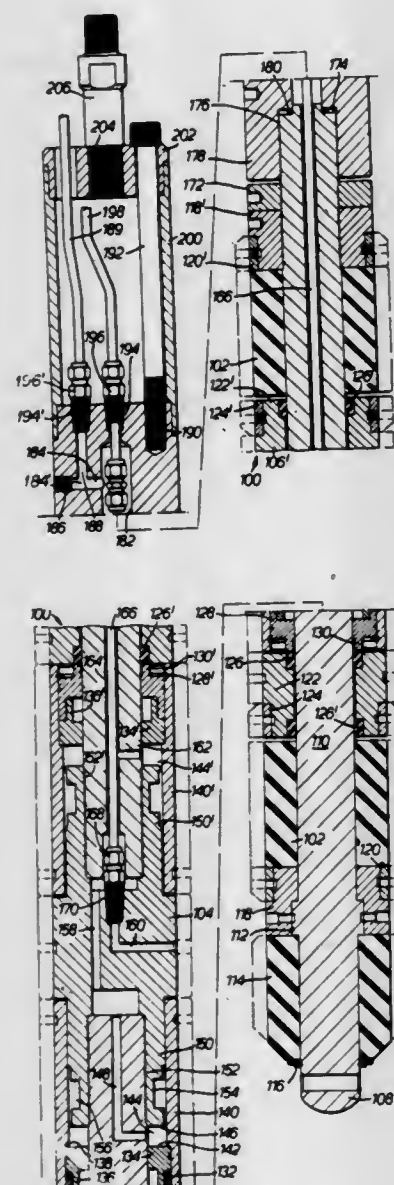
Filed Aug. 12, 1980, Ser. No. 177,468

Claims priority, application United Kingdom, Aug. 13, 1979, 7928076

Int. Cl.³ G01M 3/22

U.S. Cl. 73—40.7

16 Claims



1. A method of testing for leaks in tubing and tube joints comprising the steps of:

- locating within the tubing to be tested a tool having spaced resilient seals so that the seals are positioned one on each side of the joint or section of tubing to be tested;
- actuating the tool by a pressure fluid so that the seals are deformed so as to maintain a constant pressure against the internal surface of the tubing;
- passing gaseous search fluid at a different pressure less than that of the seal-actuating pressure fluid through the tool and into an annular space between the tool and the internal surface of the joint or section of tubing to be tested;
- substantially containing any said gaseous search fluid which may have leaked from the joint or section of tubing; and
- detecting quantitatively the presence of any contained said search fluid on the outside of the joint or section of tubing under test whereby the detecting of a leak can be effected.

4,429,567

APPARATUS FOR TESTING CIGARETTES OR THE LIKE

Franz P. Koch, Schwarzenbek; Adolf Helms, Hamburg; Wolfgang Siems, Hamburg, and Peter Brand, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

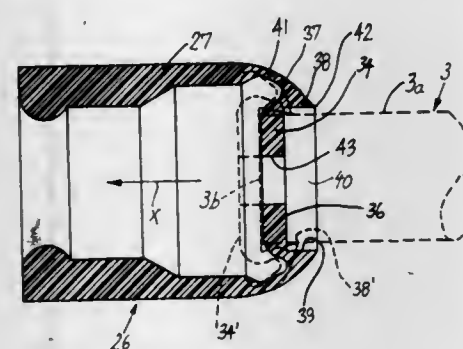
Filed Nov. 2, 1981, Ser. No. 317,419

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041217

Int. Cl.³ G01M 3/00

U.S. Cl. 73—49.8

17 Claims



1. In an apparatus for testing cigarettes or analogous rod-shaped articles, the combination of an article transporting conveyor; at least one sealing element movable in synchronism with said conveyor and including a partition and an elastic tubular section adjacent to and defining with said partition a socket for one end of an article on said conveyor, said section having an internal surface surrounding said socket and being contractible as a result of deformation and attendant reduction of the inner diameter of said section in response to displacement of said partition in a predetermined direction; and means for effecting a relative movement between said conveyor and said sealing element so as to introduce one end of an article on said conveyor into said socket and to thereupon cause the thus introduced end of the article to move said partition in said direction whereby said internal surface sealingly engages the external surface of the article.

4,429,568

CLOSURE PLUG ASSEMBLY FOR PRESSURE TESTING LIQUID DRAIN AND VENT PLUMBING PIPE SYSTEMS

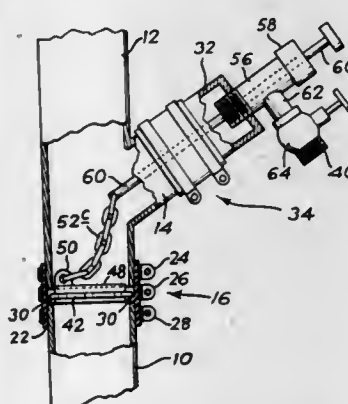
Richard N. Sullivan, 7911 SE. 82nd Ave., Portland, Oreg. 97266

Filed Apr. 30, 1982, Ser. No. 373,324

Int. Cl.³ G01M 3/04

U.S. Cl. 73—49.8

3 Claims



1. A closure plug assembly for the pressure testing of liquid drain and vent plumbing systems having a Y or T test section with a test opening, the test assembly comprising:

- a cap sub-assembly,
- sealing means for releasably securing the cap sub-assembly across the test opening in sealed relation thereto,
- plug means removably insertable in the plumbing system adjacent the test opening for damming the flow of liquid

upstream from the test opening, the plug means comprising a rigid perforate plate insertable in and dimensioned to span the pipe of the plumbing system downstream from the test opening in sealed relation thereto, and an imperforate plate superimposed on the perforate plate and dimensioned to seal the perforations therein, and support means supporting the plates in the pipe,

- link means connected to the imperforate plate for removing the same at the conclusion of the testing operation, and
- valved port means in the cap sub-assembly for filling the plumbing system with test liquid under pressure during the testing operation.

4,429,569

DEVICE FOR TESTING THE SHORE-HARDNESS OF RUBBER-LIKE ARTICLES

Erich Frank, Bad König; Walter Scheuermann, Erbach, and Georg Volk, Breuberg, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

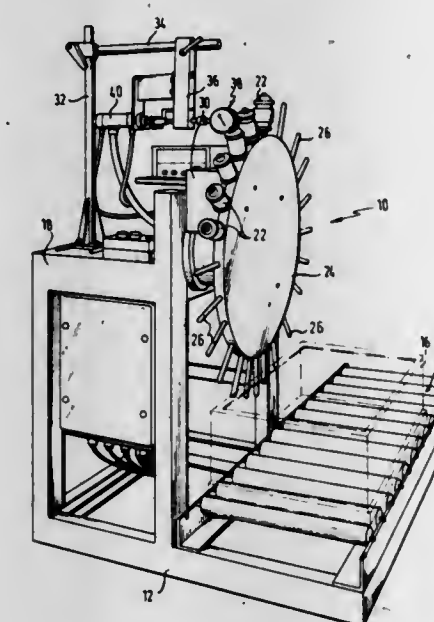
Filed Apr. 13, 1982, Ser. No. 367,896

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115814

Int. Cl.³ G01N 3/42

U.S. Cl. 73—81

5 Claims



1. Device for testing the Shore-hardness of rubber-like bodies comprising

- a measuring head with a movable penetrator which can be positioned onto the surface of the rubber-like body for testing the Shore-hardness,
- a rotatable circular plate disposed in a vertical plane,
- a plurality of spaced mounting elements disposed at the circumference of the circular plate for holding said rubber-like bodies during rotation of the circular plate to bring each said body to the measuring head for testing and away from the head after testing,
- an adjustable mounting arrangement which is movable to adapt to rubber-like bodies of different dimensions, for holding the measuring head in position adjacent the rubber-like body for testing Shore-hardness, and
- an actuating device connected to the measuring head for actuating said movable penetrator, wherein the mounting elements are pins and the rubber-like bodies are hollow, and where said pins for holding the hollow rubber-like bodies protrude radially from the circumference of the circular plate.

1039 O.G.—3

4,429,570

INJECTION TIMING TRANSDUCER

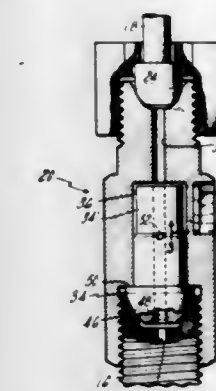
David V. Tinder, Dearborn, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 25, 1981, Ser. No. 306,049

Int. Cl.³ G01M 15/00; G01L 7/08; F02P 17/00

U.S. Cl. 73—119 A

12 Claims



1. An injection timing transducer for use with the fuel delivery system of a compression ignition engine, said fuel delivery system supplying pressurized pulses of fuel from pumping means to injecting means for injection into the engine via a fuel flow path, the transducer comprising:

- a housing member insertable in the fuel flow path in sealed relation therewith, said housing member including a bore extending longitudinally therethrough in flow registry with said flow path for maintaining continuity of said flow path, said bore being of a first diameter for one portion of its length and being of a relatively larger second diameter along a second portion of its length longitudinally adjacent to and downstream of said one portion, said bore including a chamber in fluid communication with said flow path, a section of said member being sufficiently thin-walled adjacent to said chamber therein for transmitting pressure pulsations in the fuel therethrough to a relatively external sensor mount position;
- an insert member positioned within part of said second portion of the length of said bore in said housing member, said insert member including an outside diameter intermediate said first and said second diameters of the housing member bore to define a substantially annular portion of said bore including said chamber; and
- sensing means mounted on said housing member at said sensor mount position for sensing said pressure pulsations and for providing electrical signals indicative thereof.

4,429,571

COMPOUND LIQUID FLOW METER

Donald J. Kullmann; William G. Karjalainen, and Rodney G. Harris, all of Tallahassee, Ala., assignors to Neptune Water Meter Company, Tallahassee, Ala.

PCT No. PCT/US80/00763, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03700, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 13, 1980, Ser. No. 358,842

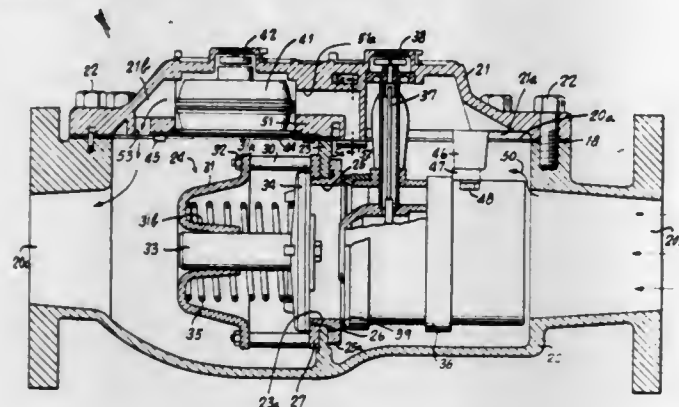
Int. Cl.³ G01F 7/00

U.S. Cl. 73—197

4 Claims

- A compound liquid flow meter including:
 - a casing open along one side and having at one end and inlet adapted for connection to a supply conduit and at its opposite end an outlet adapted for connection to a discharge conduit;
 - a cover closing the open side of the casing;
 - a main flow path through the casing including:
 - a turbine meter supported by the cover and having a characteristic of accuracy over a first range of flow rates greater than a predetermined rate and of rapid acceleration in response to increasing flow; and

2. a main valve controlling the flow through the turbine meter;
- d. an auxiliary flow path extending from the inlet to the outlet and including:
 1. a low flow measuring meter supported by the cover and having a characteristic of accuracy over a second range of flow rates lower than and overlapping said first range of flow rates;
 2. an auxiliary valve supported by the cover and controlling the flow through said low flow meter;
 wherein the improvement comprises:



- e. a transverse wall in said casing between the inlet and the outlet, said wall having an aperture therein;
- f. means supporting said main valve on the downstream side of the wall so that the main valve controls the flow through the aperture;
- g. spring means biasing the main valve to closed position;
- h. means sealing the downstream end of the turbine meter to the upstream side of the wall at the periphery of said aperture; and
- i. a transverse wall in the cover abutting the transverse wall in the casing, said cover transverse wall having an aperture therethrough forming part of said auxiliary flow path.

4,429,572

METHOD AND APPARATUS FOR THE DETERMINATION OF THE DENSITY OF LIGHT HYDROCARBONS MIXTURES

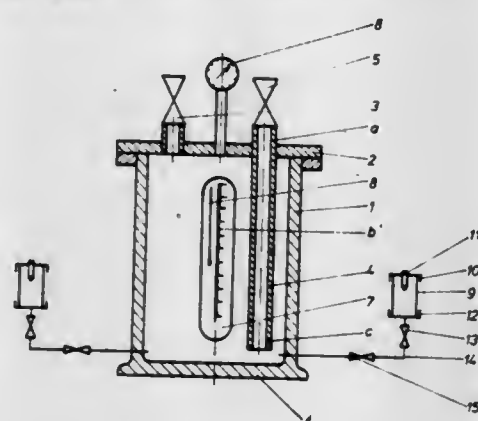
Iuliu M. Cucuiat, Gabriel Holdis, and Valentin E. Hanculescu, all of Cimpina, Romania, assignors to Institutul de Cercetari si Proiectari Pentru Petrol si Gaze, Cimpina, Romania

Filed Aug. 3, 1981, Ser. No. 289,145

Int. Cl.³ G01N 9/04

U.S. Cl. 73-433

2 Claims



1. A method to aid in the determination of the density of a light hydrocarbon mixture which comprises the following steps:

- (a) thermostating the light hydrocarbon mixture in a large thermostatted vessel at a temperature at which said mixture is liquid in said thermostatted vessel below a level of the surface of the liquid mixture;
- (b) connecting said large thermostatted vessel simulta-

- neously to a plurality of small containers of known mass and of a known volume at said temperature;
- (c) transferring a portion of said thermostatted light hydrocarbon mixture from said large vessel below said level to said small containers until said small containers are filled with the light hydrocarbon mixture in liquid form, said small containers being thermostatted to said temperature;
- (d) venting any vapor present in said small containers during the filling to thereof ensure complete filling with the light hydrocarbon mixture entirely in liquid form;
- (e) disconnecting the small thermostatted containers from the large thermostatted vessel and determining the mass of the small containers and the light hydrocarbon mixture; and
- (f) relating the mass of the small containers and the light hydrocarbon mixture to the density of the light hydrocarbon mixture at a given reference temperature.

4,429,573

COMMON RESONATOR PASSIVE LASER ACCELEROMETER AND GYRO

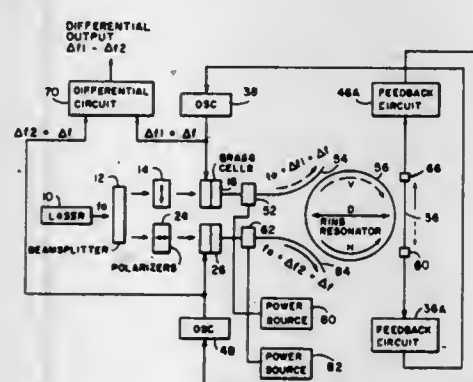
Clifford G. Walker, 915 Weatherly Rd., Huntsville, Ala. 35803

Filed Jun. 29, 1982, Ser. No. 393,279

Int. Cl.³ G01C 19/58, 21/00; G01P 15/08

U.S. Cl. 73-510

7 Claims



1. A common resonator accelerometer and gyro comprising: a laser for generating a beam of coherent light, polarizing means for providing respective first and second orthogonally polarized light beams output, a beamsplitter disposed between said laser and said polarizing means for coupling light therebetween, first and second photodetectors, photoelastic optical waveguide means disposed between said polarizing means and said photodetectors for providing an optical path therebetween, stress transfer means disposed adjacent to said waveguide means for subjecting said waveguide means to acceleration stress forces, modulating means disposed between said polarizing means and said waveguide means for modulating said laser light coupled to said waveguide means, and first and second feedback circuits responsive respectively to said first and second photodetectors for providing a variable feedback to said modulating means, said variable feedback being an output signal indicative of acceleration and rotational stress forces and said waveguide means comprising at least first and second input waveguides, an output waveguide, and a ring resonator waveguide therebetween.

4,429,574

MASS MEASURING SYSTEM

Robert C. Barry, 1 Tarlton Ct., Mantua, N.J. 08051, and Gary Rachfalski, 206 Lincoln Ave., Collingswood, N.J. 08108

Filed Oct. 29, 1981, Ser. No. 316,507

Int. Cl.³ G01G 3/16

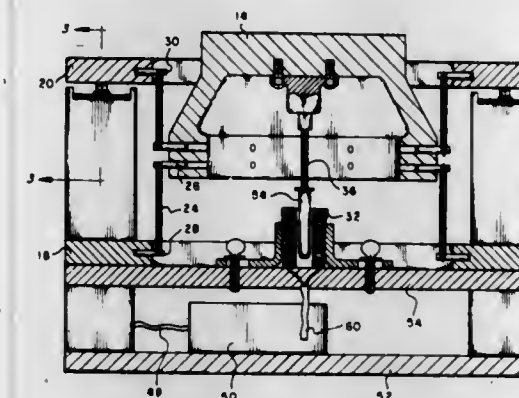
U.S. Cl. 73-580

8 Claims

1. A mass measuring apparatus comprising: a base member; a support means including a substantially horizontal surface for supporting a sample mass to be measured, said support

means being substantially circular in horizontal cross section, the mass of said support means being distributed so that it increases radially outwardly from the center thereof at a rate greater than the square of the distance from the center;

spring means connecting said support means to said base member so as to allow substantially only vertical vibrating motion of said support means relative to said base member;



- first transducer means for generating an electrical output signal in response to and representative of said vibratory motion of said support means;
- second transducer means coupled to said support means for vibrating the same in response to said signal to thereby sustain said vibratory motion of said support means;
- electronic circuit means including means for evaluating said signal and for generating a mass signal in response thereto representing the mass of said sample.

4,429,575

METHOD FOR INSPECTING A NON-METALLIC OBJECT BY MEANS OF IMPACT ELASTIC WAVES AND ITS APPARATUS

Tameyuki Akishika, No. 4384, Totsuka-machi, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

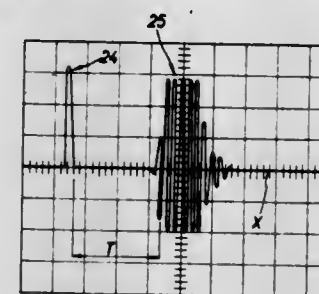
Filed Sep. 3, 1981, Ser. No. 298,959

Claims priority, application Japan, Apr. 24, 1981, 56-62063

Int. Cl.³ G01N 29/04

U.S. Cl. 73-598

5 Claims



1. Method for inspecting a non-metallic object by means of impact elastic waves comprising: propagating impact elastic waves into the non-metallic object by giving a mechanical impact to an impact plate mounted on the non-metallic object; receiving selectively a frequency exceeding several MHz out of the impact elastic waves immediately by a thickness piezoelectric element; detecting and memorizing electrically a generating time of the impact elastic waves by converting into pulse signals a specified higher frequency extracted from the selectively received frequency exceeding several MHz; receiving selectively by a deflection piezoelectric element a frequency exceeding several KHz out of the elastic waves propagated into the non-metallic object and reflected from

an opposite boundary thereof or from any foreign matter contained therefrom;

detecting and memorizing electrically the propagated and reflected impact elastic waves by converting into pulse signals a specified higher frequency extracted from the selectively received frequency; and

the memorized generating time of the impact elastic waves being compared with a receiving time of the reflected impact waves, thereby a thickness of the non-metallic object being measured or any foreign matter contained therein being detected.

4,429,576

ULTRASONIC INSPECTION APPARATUS

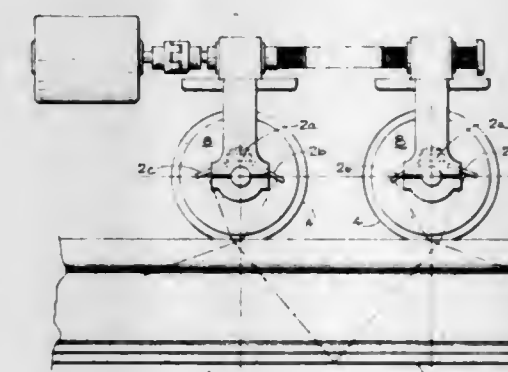
James R. Norris, New Fairfield, Conn., assignor to Dapco Industries, Inc., Ridgefield, Conn.

Filed Aug. 3, 1981, Ser. No. 289,209

Int. Cl.³ G01N 29/04

U.S. Cl. 73-636

19 Claims



19. In an apparatus for inspecting a test piece and indicating an unacceptable condition therein, including means for transmitting a test signal into said test piece, for receiving an associated response signal reflected back thereto, and for generating a defect signal when the character of said response signal indicates an unexpected condition in said test piece; means for moving said transmitting-receiving means relative to said test piece; means for generating a control signal at each of a plurality of predetermined intervals of distance of said movement of said transmitting-receiving means; means for pulsing said transmitting-receiving means to sequentially generate test signals at a frequency independent of generation of said control signals; and principal counter means for counting said control signals in response to generation of defect signals and being reset to an initial value in response to the absence of defect signals, said principal counter means further producing an alarm signal when it accumulates a count of said control signals that exceeds a predetermined amount in response to generation of sufficient defect signals during said movement of said transmitting-receiving means over a predetermined distance to confirm the presence of an abnormal condition that is unacceptable; the improvement comprising:

resetting means for resetting said principal counter means only in the absence of generation of defect signals during movement of said transmitting-receiving means over a distance at least equal to the maximum distance during which a defect signal may not be generated from an unacceptable abnormal condition.

4,429,577

ULTRASONIC TRANSDUCER SYSTEM WITH FLUID APPLICATOR

Paul D. Sorenson, Blaine, and Dale A. Dickson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 3, 1982, Ser. No. 414,702

Int. Cl.³ G01N 29/00

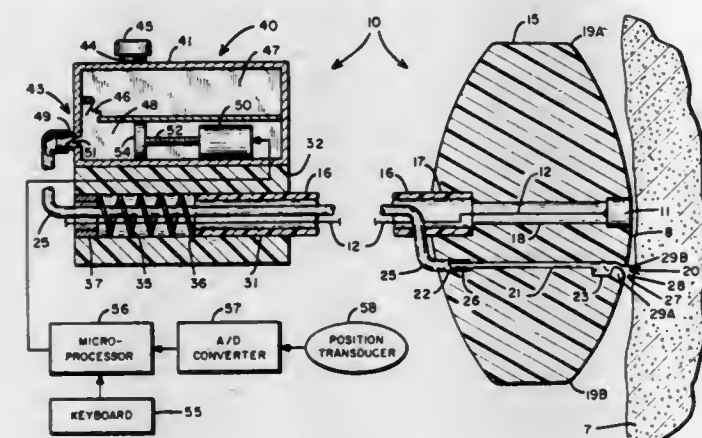
U.S. Cl. 73-644

6 Claims

1. An ultrasonic transducer system for scanning a body, the

system including a module of the type having a transducer for converting electrical energy to a beam of ultrasonic energy and for converting received ultrasonic energy to electrical signals and a means for conducting electrical energy to said transducer, said transducer being supported in a housing, the system characterized by:

a source of acoustic coupling fluid;



means connected to said source and located on the exterior of said housing for dispensing said fluid;
means responsive to movement of said means for dispensing along the transducer/body interface for producing a signal representative of said movement; and
means responsive to said signal for controlling the flow of fluid between said source and said means for dispensing.

4,429,578

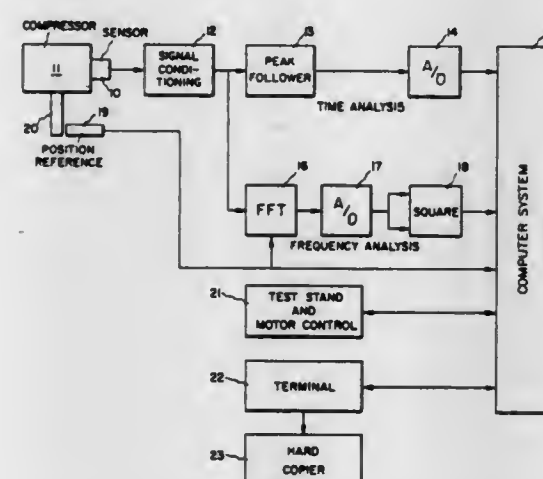
ACOUSTICAL DEFECT DETECTION SYSTEM
Bernard Darrel, and Joseph Czechowski, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,293

Int. Cl.³ G01H 1/00; G01M 7/00; G01N 29/04

U.S. Cl. 73-659

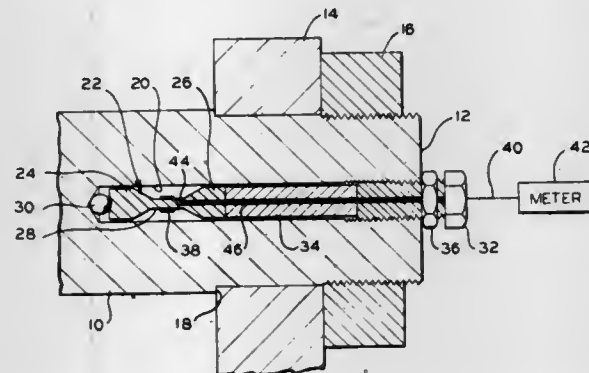
15 Claims



1. A nonintrusive method of detecting internal defects in moving devices which have repetitive movements comprising: generating a sensor signal corresponding to the vibrations of said device during at least one cycle of movement; analyzing said sensor signal in real time to produce a time signature related to device position that is the envelope of said signal, and to produce a set of frequency signatures related to device position that are the separate power spectra for fractions of a cycle; and comparing said signatures with those of an acceptable device to identify abnormalities in vibration.

4,429,579
TIE ROD TENSION SENSOR
Donald F. Wilhelm, Maumee, Ohio, assignor to Helm Instrument Co., Inc., Maumee, Ohio
Filed Oct. 26, 1981, Ser. No. 314,987
Int. Cl.³ G01B 7/18; G01L 1/22
U.S. Cl. 73-768

7 Claims



1. A load sensor for measuring the tension forces applied to a rod, the rod having an elongated axially-extending bore formed in one end thereof, comprising:

a ball adapted to be inserted in the bore for contacting a closed end thereof;
a sensing member adapted to be inserted in the bore having two end portions each tapering towards a narrower central shaft portion between said end portions, one of said end portions being countersunk to receive a portion of said ball;

strain gauge means attached to said central shaft portion for measuring the amount of force applied thereto;

a spacer adapted to be inserted in the bore for contacting the other of said end portions of said sensing member; and
pre-loading means engageable with the rod and said spacer for compressing said sensing member by a predetermined amount, whereby the tension applied to the rod will be measured as a decrease in the pre-loaded compression force applied to said sensing member.

5. A method of measuring the tension forces applied to a rod including the steps of:

a. forming an elongated axially-extending bore in one end of the rod;
b. inserting a sensing member into the bore, said sensing member including strain gauge means for measuring the amount of force applied thereto;
c. inserting a spacer into the bore so as to contact said sensing member;
d. inserting a pre-loading means into the bore and compressing said sensing member and said spacer by a predetermined amount; and
e. measuring the tension applied to the rod as a change in resistivity of said strain gauge means indicating a decrease in the pre-loaded compression force applied to said sensing member.

4,429,580

STRESS TRANSDUCER FOR FABRICS AND FLEXIBLE SHEET MATERIALS

Rene B. Testa, Demarest, N.J., and Wasslef M. Boctor, Rego Park, N.Y., assignors to Rene B. Testa, Demarest, N.J.

Filed Feb. 9, 1982, Ser. No. 347,366

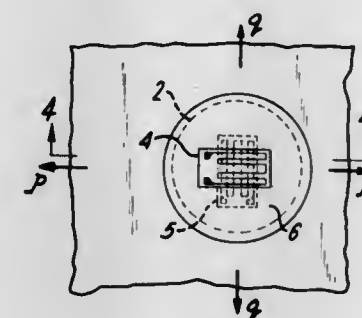
Int. Cl.³ G01B 7/18

U.S. Cl. 73-768

11 Claims

1. A transducer assembly for measuring stress in material, comprising transducer means mounted in an opening in said

material and bonded substantially continuously about said opening such that said transducer means comprises an inclu-



sion relative to said material for directly sensing stresses which develop therein.

4,429,581

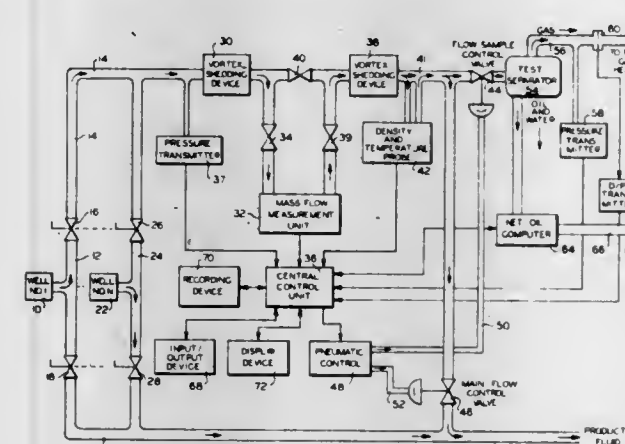
MULTIPHASE FLOW MEASUREMENT SYSTEM
Robert E. Furruga, New Orleans, assignor to Baker CAC, Inc., Belle Chasse, La.

Filed May 26, 1981, Ser. No. 267,276

Int. Cl.³ G01F 13/00; E21B 47/00

U.S. Cl. 73-861.04

10 Claims



1. An apparatus for determining a total flow rate for each of a plurality of fluid components of a production fluid mixture from a subterranean well, comprising: means coupled to an outlet of the well for measuring a total mass flow rate of the production fluid mixture; means coupled to receive a sample portion of the production fluid mixture for measuring a sample flow rate for each one of the fluid components in said sample portion of the production fluid mixture; and means responsive to said mass flow rate measurement means and said sample flow rate measurement means for determining the total flow rate of each one of the fluid components.

4,429,582

VORTEX SHEDDING FLOWMETER CIRCUIT WITH ANALOG AND PULSE OUTPUT SIGNAL

William L. Thompson, Chardon, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 10, 1981, Ser. No. 329,531

Int. Cl.³ G01F 1/32

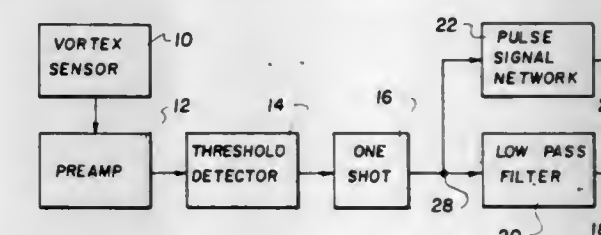
U.S. Cl. 73-861.22

4 Claims

1. A vortex shedding flowmeter circuit arrangement comprising:

a vortex sensor for generating a vortex shedding frequency signal;
pulse means for generating a fixed width pulse with a frequency equal to the vortex shedding frequency signal, connected to said vortex sensor;
a low pass filter for generating an analog signal which is proportional in level to the vortex shedding frequency

signal, connected to said pulse means for receiving the fixed width pulse; and
an output stage connected to said pulse means and low pass filter for selectively receiving at least one of said fixed width pulse and analog signal, a two wire transmission line connected to said output stage, and power supply means connected to said two wire transmission line including an



amplifier having a negative and a positive input and an output proportional to a difference between a value at the positive and negative input, and feedback means connected between the amplifier output and its negative input for adjusting the amplifier output to equal a current sensed in said transmission line, said positive input of said amplifier connected to receive at least one of said fixed width pulse and analog signal.

4,429,583

LIQUID UPTAKE AND DISCHARGE APPARATUS
Mitsuo Watanabe; Shigeyuki Kimura; Hideki Konishi, all of Tokyo; Yasuhiro Tsuji, and Kiyoshige Wakabayashi, both of Saitama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha and Japan Spectroscopic Co., Ltd., both of Tokyo, Japan

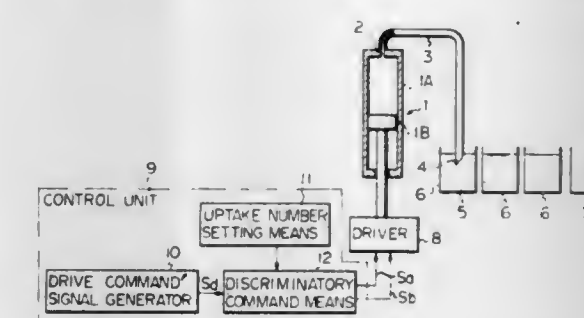
Filed Mar. 26, 1982, Ser. No. 362,161

Claims priority, application Japan, Mar. 31, 1981, 56-47368

Int. Cl.³ G01F 11/06

U.S. Cl. 73-864.12

19 Claims



1. An apparatus for taking up and discharging liquid, which comprises at least one piston cylinder which functions to take up and discharge liquid, a drive unit for actuating said piston cylinder, and a control unit for controlling said drive unit, said control unit including signal generating means for generating a drive command signal in response to which said piston cylinder executes a liquid uptake or discharge operation, setting means for setting the number of liquid uptake operations to be executed by said piston cylinder, and discriminatory command means for producing an uptake command signal in response to the drive command signal until the number of said drive command signals arriving from said signal generating means reaches the number of liquid uptake operations set by said setting means, and for producing a discharge command signal in response to the drive command signal when the number of said drive signals exceeds said set number of liquid uptake operations.

4,429,584

MICROPROCESSOR CONTROLLABLE AUTOMATIC SAMPLER

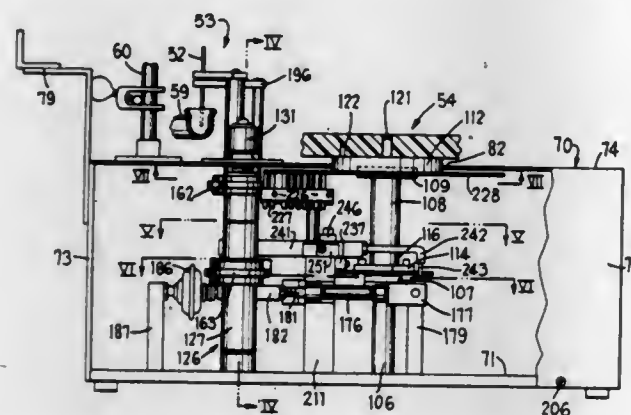
William F. Beyer; Harry S. Dankert, both of Kalamazoo, and James C. English, Schoolcraft, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 1, 1981, Ser. No. 326,445

Int. Cl.³ G01N 35/06

U.S. Cl. 73-864.21

15 Claims



1. An apparatus for automatically establishing fluid communication between probe means and a plurality of containers presented in a controlled sequence to a sampling position, comprising:

rack means adapted to hold said containers for movement into and out of said sampling position;
hollow probe means supported by probe holding means and movably thereby into and out of said sampling position; and

drive means connected to said rack means and to said probe holding means for effecting and controlling said movements thereof, said drive means including a first pressure fluid operated motor actuable for moving said probe means into and out of said sampling position for communication with containers thereat, and a second pressure fluid operated motor actuable for causing said rack means to move a desired one of said containers to said sampling position, said first and second pressure fluid operated motors being actuable independently of each other from a common source of pressure fluid, said first motor comprising a first pressure fluid cylinder actuable to move said probe means vertically, said first pressure fluid cylinder having a casing upstanding within said housing and a piston rod vertically reciprocable by pressure fluid, said second motor comprising a second pressure fluid cylinder with a casing horizontally extending from and supported on a vertical pivot axis fixed on said housing and a piston rod extending generally tangentially of said first pressure fluid cylinder and operatively connected to said first pressure fluid cylinder, and means for horizontally moving both said probe means and rack means for shifting said probe means between said sampling position and a rinse position, and for advancing said rack means to bring another container to said sampling position.

4,429,585

TRACTION DRIVE FOR TRAVELING TORCH OR THE LIKE

Gerald B. Grant, Denton, and Robert A. Brune, Jr., Austin, both of Tex., assignors to Victor Equipment Company, Denton, Tex.

Filed Apr. 3, 1981, Ser. No. 250,632

Int. Cl.³ F16H 15/16, 15/68

U.S. Cl. 74-191

2 Claims

1. A drive means for driving a wheeled carriage at a plurality of respective speeds comprising:

a housing;
a plurality of at least three wheels carrying said housing; said wheels including at least one driving wheel;

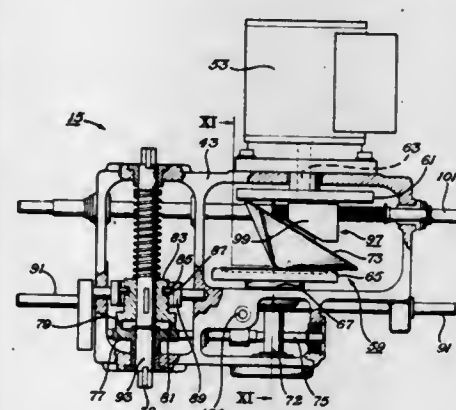
a constant speed power means having a power input shaft and carried by said housing;

a two stage, three friction element, variable speed traction drive transmission consisting essentially of:

a first power input disc in said housing and connected with said power input shaft so as to be driven therewith; said first power input disc having a substantially planar surface to facilitate movement of a traction cone therealong;

a second power output traction disc in said housing and having an output shaft; said second power output traction disc having a substantially planar surface to facilitate movement of a traction cone therealong; said second power output traction disc having its planar surface substantially parallel with said planar surface of said first power input disc;

a traction cone disposed angularly intermediate and engaging said first and second power input and output



discs along, respectively, the base and the conical portion such that movement of said traction cone along the respective planar surfaces of the respective discs will move the respective points of contact with said respective power input and output traction discs and vary the speed of said output shaft over a wide range with respect to said power input shaft; and

means for moving said traction cone with respect to said substantially parallel and planar surfaces of said first and second power input and output disc for effecting the respective speeds; said means defining a track substantially parallel to said parallel surfaces such that said traction cone can be moved easily along said parallel surfaces; and

an automatic wear-adjusting means, comprising a spring biasing said two parallel surfaces of said two discs toward each other so as to maintain frictional engagement with said traction cone.

4,429,586

DOUBLE-OBLIQUE-TOOTHED TWO-STAGE SPUR WHEEL DRIVE

Maximilian Dopfer, Sonthofen, and Günther Heldrich, Burgberg-Ortwang, both of Fed. Rep. of Germany, assignors to BHS-Bayerische Berg, Hütten-und Salzwerke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,159

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940323

Int. Cl.³ F16H 57/00, 1/12, 1/20, 37/06

U.S. Cl. 74-410

5 Claims

1. A double oblique toothed two stage spur wheel drive comprising:

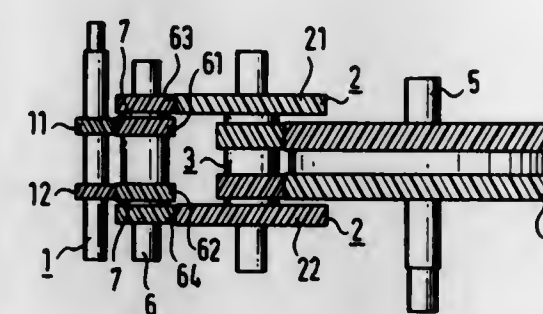
a first stage including:

a first dual pinion assembly (1) composed of a coaxial pair of pinion gears (11, 12) having oppositely directed oblique teeth,

a first coaxial intermediate gear pair (61, 62) driven by said first dual pinion (1) and a second intermediate gear pair (63, 64) coaxial with the first intermediate gear pair (61,

62) and driven thereby, said first and second intermediate gear pairs being of the same diameter and gearing geometry,

a first coaxial gearwheel pair (2) driven by said second intermediate gear pair (63, 64) and



a second stage including:

a second dual pinion assembly (3) composed of a coaxial pair of pinion gears coaxial with said first gearwheel pair (2) and driven thereby, and at least one second gearwheel (4) meshing with and driven by said second pinion (3).

4,429,587

ATTITUDE INSENSITIVE LUBRICATION SYSTEMS

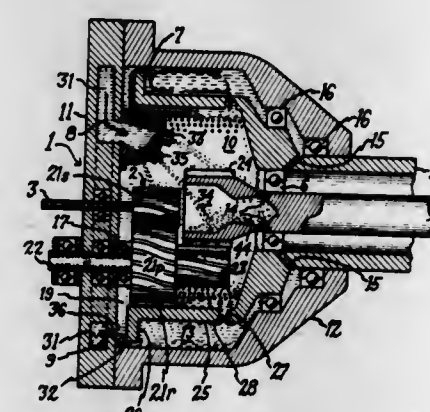
George A. Finn, III, Dalton, Mass.; James E. Kuneman, Liverpool, N.Y., and Keith E. Lawrence, Lanesborough, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1981, Ser. No. 301,101

Int. Cl.³ F16H 57/04; F01M 9/00

U.S. Cl. 74-467

6 Claims



1. In a gearbox, an improved lubrication system comprising: a centrifugal pump component composed of the combination of:

(a) a rotating drumlike element of the included gear train surrounding other active gear train elements and receiving lubricant centrifugally discharged by rotation of those other elements,

(b) the portion of the gearbox casing surrounding said rotating portion and

(c) the annular space defined between said drumlike element and said portion constituting a lubricant collection reservoir and a dynamic annulus within said casing partially separated from each other by a portion of said drumlike element which also imparts a circular flow of lubricant in said dynamic annulus, said drumlike element also having a plurality of fluid flow passages there through to cause said drumlike portion to act as a centrifugal separator to deaerate a contained lubricant and to fill and pressurize said collection reservoir with deaerated lubricant when said gear train is operating to cause said dynamic annulus to be charged with lubricant under pressure;

an additional pressurized reservoir separated from said dynamic annulus by portions of said casing;

at least one flow diverter in said casing for shunting flow of a contained fluid lubricant from said dynamic annulus to

said additional pressurized reservoir as flow of said lubricant in said annulus is caused by rotation of said gear train elements;

one or more fluid dispensers inside said casing having at least one fluid spray outlet fed from said additional pressurized reservoir, said outlets metering and directing flow of said lubricant to elements of said gear train; and
flow paths in said gear train for continued flow of fluid dispensed from said outlets to critical elements in response to rotational forces;
whereby said dynamic pump and other rotating elements set up fluid flow patterns which overcome gravitational forces to provide flow patterns irrespective of attitude.

4,429,588

STEERING WHEEL FOR A MOTOR VEHICLE, PARTICULARLY FOR A TRACTOR

Horst Emunds, Bochum; Manfred Hoyer, Bergisch Gladbach, and Walter Vogel, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

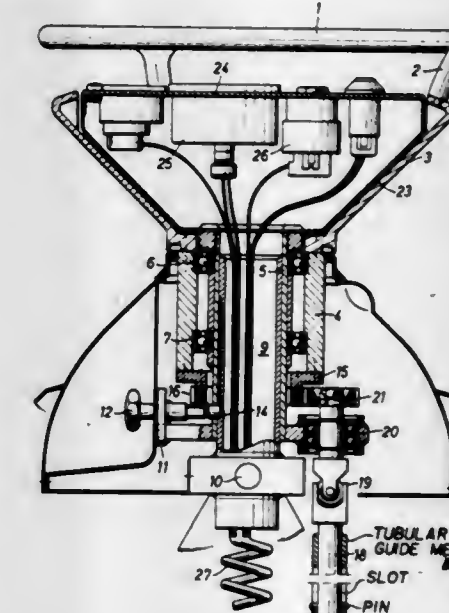
Filed Feb. 19, 1981, Ser. No. 236,126

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007726

Int. Cl.³ B62D 1/18, 1/20

U.S. Cl. 74-484 R

4 Claims



1. A steering device for a motor vehicle, comprising in combination:

a steering wheel rim;

steering wheel spokes connected to said rim;

a steering shaft;

a dish-shaped part which is arranged between said spokes and said steering shaft to effect operative connection thereof, said dish-shaped part serving as a transfer member for the rotary movements which serve for the steering, said dish-shaped part having sides which extend at an acute angle to a radial plane passing through said part so that said dish-shaped part tapers toward said steering shaft;

a support received within said dish-shaped part;

a stationary plate connected to said support and arranged in, and spaced from, said rim for receiving indicator instruments;

a fixed part on which said dish-shaped part is rotatably journaled;

a first gear rigidly connected with said dish-shaped part; and
a second gear fixedly connected to said steering shaft, said first gear meshing directly or indirectly with said second gear, said support for said stationary plate being an inner dish-shaped part which is mounted to that side of said sleeve facing said rim, said inner dish-shaped part con-

forming in shape to the shape of said first mentioned dish-shaped part and being installed therein so as not to contact therewith, that part of said inner dish-shaped part remote from said sleeve supporting said stationary plate as a termination of said inner dish-shaped part.

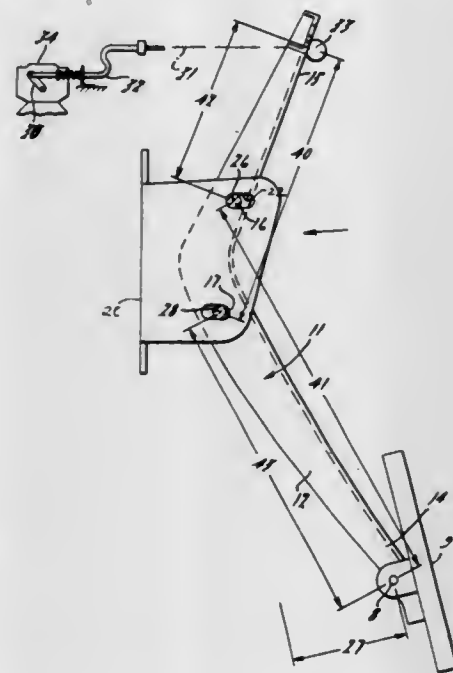
4,429,589

DUAL RATIO ACCELERATOR PEDAL ASSEMBLY
Raymond Stocker, West Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 1, 1982, Ser. No. 394,210
Int. Cl.³ G05G 1/14

U.S. Cl. 74-513

13 Claims



9. A dual ratio accelerator arm assembly, comprising:
- (a) an accelerator arm having a force applying portion at one extremity and a load receiving portion operatively engaging the engine's throttle at the other extremity;
 - (b) first and second pivot pins carried by said arm at longitudinally spaced locations along said arm; and
 - (c) bracket for operably supporting said arm, said bracket having means defining a pair of pivot pin receptacles, each receptacle being respectively associated with one of said pins, said receptacles being arranged so that upon application of a force to said arm at said force applying portion, the arm will be moved through a first arc with said first pivot pin engaging a side of a first receptacle associated therewith to constitute a first fulcrum for said arm, and further movement of said arm through a second arc causing said second pivot pin to engage a side of the other receptacle to constitute a second fulcrum for said arm while said first pin undergoes lost motion within said first receptacle.

4,429,590

PARKING BRAKE ACTUATOR MECHANISM
Leonard F. Kopich, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1981, Ser. No. 247,727
Int. Cl.³ G05G 5/06

U.S. Cl. 74-535

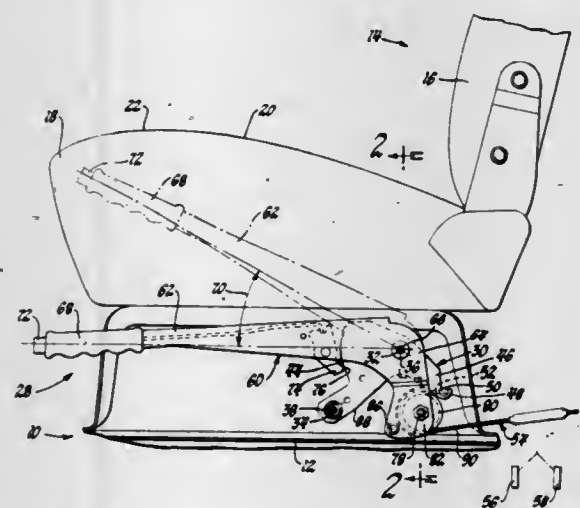
3 Claims

1. In a motor vehicle having a vehicle operator seat including a seat upper surface defining the seat level, and a hand operated parking brake actuating mechanism mounted along one side of the seat and below seat level, said parking brake actuating mechanism comprising:

- a fixed mounting bracket having an arcuate sector, an arm providing means for attaching one end of a flexible cable thereto, and a first pivot point;
- a brake lever handle assembly pivotally mounted on said bracket at said first pivot point for generally vertical planar pivoted movement alongside said seat and only

within an arc wherein the handle assembly remains below the level of the seat upper surface throughout the arc, said handle assembly including:

a lever arm including a hand grip adapted to be moved arcuately about said first pivot point by the vehicle operator to apply and release a parking brake, said lever arm having an established length between said hand grip and said first pivot point, means for selectively latching and releasing said handle assembly by engagement and disengagement with said arcuate sector, said handle assembly further having a second arm movable arcuately about said first pivot point with said lever arm and having a second pivot point thereon and an established length between said first and second pivot points which is less than said lever arm established length, a pulley rotatably mounted on said second arm at said second pivot point to provide a mechanical advantage established by the relationship of the length



of said lever arm between said hand grip and said first pivot point to the lesser length of said second arm between said first and second pivot points; and a flexible tension force transmitting brake actuating cable having one end secured to said fixed bracket by said attaching means, said cable passing around an arcuate substantially semi-circular portion of said pulley and extending tangentially therefrom to a cable output portion adapted to be operatively connected to the parking brake, said cable output portion moving linearly to apply the parking brake for a distance equal to at least twice the arcuate distance moved by said second pivot point when said lever arm is moved arcuately to apply the parking brake so that full travel of said cable output portion for full parking brake application is obtained by movement of said lever arm within said arc wherein said brake lever handle assembly remains below the level of the seat upper surface, whereby to facilitate unencumbered entry and exit to and from the vehicle operator seat over said brake lever handle assembly by the vehicle operator.

4,429,591

DRIVE SHIFTING APPARATUS FOR VALVE CONTROL AND THE LIKE

Howard W. Zuch, Sugar Land, and Paul Weber, Alvin, both of Tex., assignors to Eim Company, Inc., Missouri City, Tex.

Continuation of Ser. No. 20,167, Mar. 13, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,322

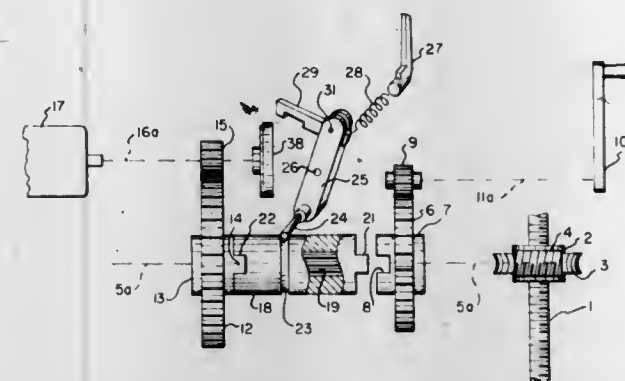
Int. Cl.³ F16H 35/00; F16K 31/02

U.S. Cl. 74-625

8 Claims

1. Drive shifting apparatus for a valve control and the like comprising motor means, a motor input member, a hand input member, an output member, a clutch member shiftable between a position coupling the motor input member to the output member and a position coupling the hand input member

to the output member, spring means urging the clutch member to the position coupling the motor input member to the output member independently of operation of the hand input member, cam means driven by the motor means, said cam means being mounted on an axis separate from the axial mounting of the clutch member and driven directly from the motor means, and



latch means engaging the cam means when the clutch member is shifted to position coupling the hand input member to the output member, said latch means being disengaged by operation of the cam means whereby motor operation restores the clutch member to position coupling the motor input member with the output member.

4,429,592

VALVE OPERATOR

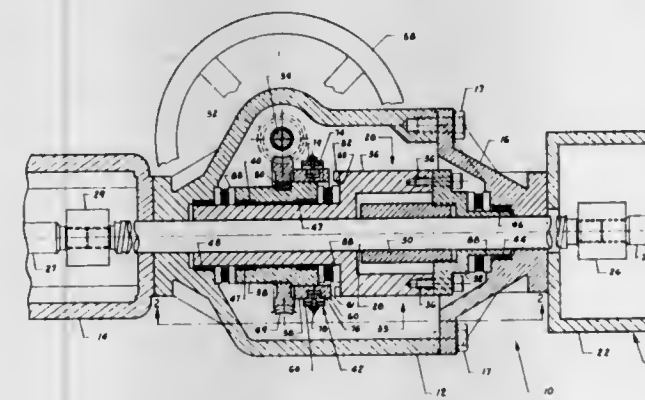
Thomas E. Stevenson, Willoughby Hills, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 5, 1981, Ser. No. 270,948

Int. Cl.³ F16K 31/14

U.S. Cl. 74-625

8 Claims



1. A valve operator comprising a frame, a valve actuating shaft mounted for stroking within said frame, including at least a portion which defines a ball screw, first drive means in constant engagement with and operable to stroke said shaft, second drive means operable to stroke said shaft and being selectively engageable with said shaft in any operative position thereof including a ball nut in constant engagement with said shaft having a clutch output member attached to said ball nut, means for selectively driving said ball nut to stroke said shaft, a clutch input member normally disengaged from said clutch output member, engaging means operable to engage said input member with said output member, first manually operable means attached to said input member and operable to rotate said input member, and means connected to said engaging means to move said engaging means between a first position wherein said input and output members are disengaged and a second position wherein said input and output members are engaged.

4,429,593

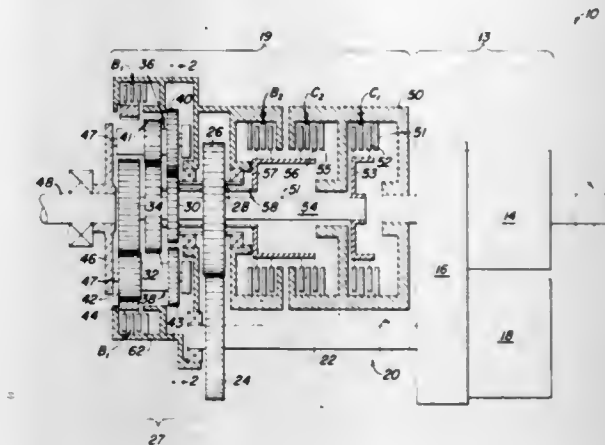
FULL RANGE HYDROMECHANICAL TRANSMISSION
Richard A. Michael, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 25, 1980, Ser. No. 172,364

Int. Cl.³ F16H 47/04, 37/06, 57/10

U.S. Cl. 74-687

15 Claims



8. An improved full range hydromechanical transmission for connection to a driven input shaft, comprising:

(a) a reversible, variable speed, hydrostatic drive unit including:

- (i) a variable displacement drive section connected to and driven by said driven input shaft,
- (ii) a bi-directional fixed displacement driven section, and
- (iii) manifold means interconnecting said variable displacement drive section and said bi-directional fixed displacement driven section for directing a fluid medium therebetween;

(b) a compound planetary gear set having input and output ends comprising three sun gears coaxially aligned with each other and the input shaft including a first sun gear adjacent the input end, a third sun gear adjacent the output end and a second sun gear between the first and third sun gears; a first set of cluster gears with each cluster gear having a first planet gear and a second planet gear, each of said first planet gears meshing with said first sun gear having a diameter unequal to the diameter of the second planet gears, and each of said second planet gears meshing with said second sun gear; a second set of cluster gears with each cluster gear having a third planet gear and a fourth planet gear, each of said fourth planet gears meshing with one of said first planet gears and each of said third planet gears meshing with said third planet sun gear; a ring gear meshing with said third planet gears; and a rotatable carrier rotatably supporting said first and second sets of cluster gears;

(c) a rearwardly extending rotatable output shaft securely attached to said rotatable carrier;

(d) rotatable means connecting said bi-directional fixed displacement driven section to said first sun gear comprising an auxiliary shaft connected to and driven by said bi-directional fixed displacement driven section, a first gear mounted on said auxiliary shaft, and a second gear coaxially attached to said first planet sun gear and meshing with said first gear;

(e) selectively engageable means for connecting said driven input shaft to said third sun gear;

(f) selectively engageable means for connecting said driven input shaft to said second sun gear;

(g) selectively engageable means for preventing rotation of said ring gear; and

(h) selectively engageable means for preventing rotation of said second sun gear.

4,429,594

PLANETARY SPEED REDUCER

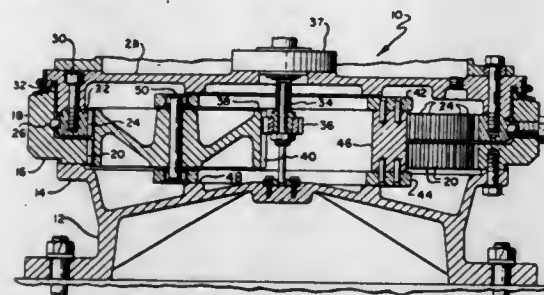
Werner H. Heller, West Valley, N.Y., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Apr. 27, 1981, Ser. No. 257,928

Int. Cl.³ F16H 3/44

U.S. Cl. 74-788

9 Claims



1. A planetary speed reducer, comprising:
 - a gear casing;
 - a first ring gear fixedly mounted with respect to said casing;
 - a second ring gear rotatably mounted with respect to said casing;
 - said ring gears having different numbers of teeth, different pitch diameters, equal internal diameters and equal base pitches;
 - a sun gear rotatably mounted with respect to said casing;
 - at least one planetary gear having a common set of teeth for simultaneous mating engagement with said first and second ring gears and with said sun gear; and wherein said first and second ring gears have an addendum difference that is equal to one-half their difference in pitch diameters.

4,429,595

MOTION TRANSMITTING DEVICE

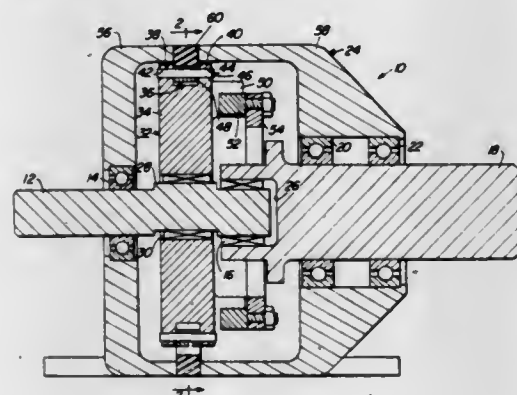
Roger P. Butterfield, Freeville, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 23, 1980, Ser. No. 199,788

Int. Cl.³ F16H 1/28

U.S. Cl. 74-804

3 Claims



1. A motion transmitting device comprising:
 - an input shaft and a coaxial output shaft;
 - an eccentric connected to said input shaft;
 - a circular carrier supported by and rotatable about said eccentric such that its periphery follows an orbital path upon rotation of said eccentric;
 - a fixed internal gear surrounding said carrier, said gear having a plurality of equally spaced teeth defined between spaces having a shape of a part of an ovoid, the defining pitch circle of said teeth being concentric with the axes of said shafts;
 - a plurality of equally spaced engaging means supported by said carrier with at least a portion of each being freely rotatable about its support axis, each engaging means sequentially engaging each of said teeth defining spaces and rolling on at least a portion of the defining surface

thereof, the number of teeth being greater than the number of engaging means by at least one; some of said engaging means being in torque transmitting engagement with the teeth for substantially an arc of 90° of said gear at any given time; said gear teeth form being determined by plotting equal radii from a set of points representing the support axis of an engaging means at different positions occupied within a tooth space, the X-Y coordinates of the engaging means support axis being generated by the equations

$$X = E \cos C + F \cos \left(\left[\frac{A}{B} - 1 \right] \times C \right)$$

$$Y = E \sin C - F \sin \left(\left[\frac{A}{B} - 1 \right] \times C \right)$$

where

A = the number of gear teeth
 B = the number of engaging means
 E = the eccentricity of the input shaft
 F = the pitch radius of the carrier
 C = the angle of the engaging means relative to the eccentricity and joining the plotted points; and coupling means between the carrier and the output shaft for translating orbital motion from said carrier to rotary motion to said output shaft.

4,429,596

ROTARY STEEL FILING APPARATUS FOR SHARPENING SAW CHAINS

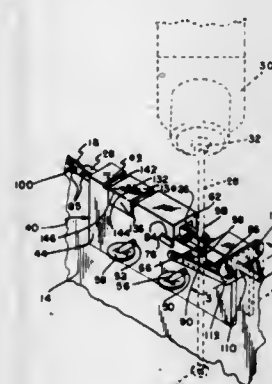
Albert A. Southard, R.R. #3, Council Grove, Kans. 66846

Filed Jan. 22, 1982, Ser. No. 341,771

Int. Cl.³ B23D 63/10, 63/16

U.S. Cl. 76-36

15 Claims



1. Apparatus for sharpening a saw chain comprising a channel-shaped body that includes an elongated horizontally extending web having laterally spaced depending flanges adapted to receive therebetween an upper horizontal portion of a chain saw bar having a saw chain entrained thereabout, penetration limiting means carried by the body and adapted to engage a chain saw bar to limit upward movement of the latter whereby clearance between a saw chain and the web is assured, means carried by the body for releasably holding a chain saw bar disposed between the flanges against relative movement, said body having a window recess in the top thereof affording a view of space between the flanges from above, with said recess being bounded as to its lowermost extent by horizontal coplanar surfaces of the flanges spaced vertically below the vertical extent of the web, and saw chain engaging means disposed in the space between the flanges adjacent the lowermost extent of the window recess for limiting lateral movement of a saw chain between the flanges, and said surfaces being provided with means facilitating guidance of a sharpening tool in the sharpening of a saw chain tooth.

4,429,597

HYDRAULIC TORQUE WRENCH

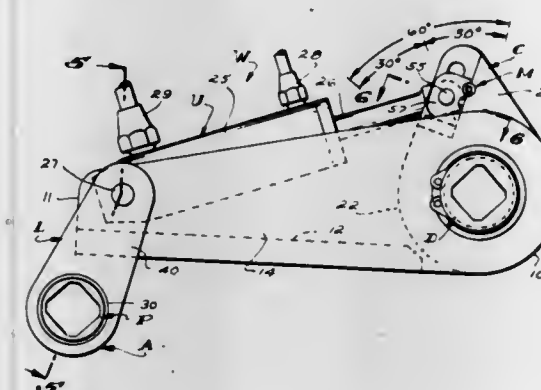
Bosko Grabovac, Arcadia, and Ivan N. Vuceta, Walnut, both of Calif., assignors to Consolidated Devices, Inc., City of Industry, Calif.

Filed Jan. 8, 1982, Ser. No. 338,068

Int. Cl.³ B25B 13/00

U.S. Cl. 81-57.39

13 Claims



1. A power torque wrench comprising an elongate rigid frame with front and rear ends and with laterally outwardly, upwardly and downwardly disposed sides, an elongate laterally extending output shaft with opposite ends rotatably carried by the frame at the front end portion thereof with its opposite ends accessible at opposite sides of the frame, a torque transmitting work engaging part at a selected one end of the shaft and projecting laterally outwardly from one side of the frame, power operated drive means carried by the frame and engaged with the shaft to rotate the shaft and said part; an elongate reaction anchoring means with an inner end pivotally connected with the rear end portion of the frame, an outer end spaced from the frame and including an elongate laterally extending axially shiftable and rotatable post on an axis parallel with and spaced from the shaft, support structure engaging parts at the ends of the post and projecting laterally outwardly from and accessible at the opposite sides of the frame.

4,429,598

REVERSIBLE WRENCH

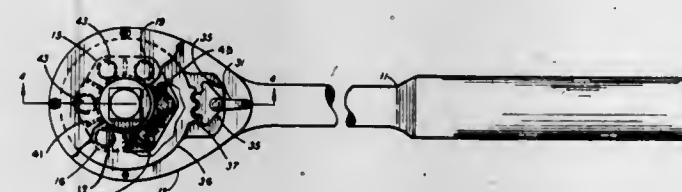
Howard F. Tucker, 53 Fall Clove, R.D. 1, Delancey, N.Y. 13752

Filed Nov. 12, 1981, Ser. No. 320,294

Int. Cl.³ B25B 13/00

U.S. Cl. 81-59.1

3 Claims



1. A reversible wrench comprising:
 - a handle having an enlarged body at one end with a cavity therein having a polygonal cross section, said polygonal cross-section including a plurality of pairs of contiguous flat side walls, each pair of contiguous flat surfaces forming an outwardly extending apex, said enlarged body having two outside flat parallel surfaces;
 - a drive member located within said cavity;
 - a plurality of rollers disposed between said drive member and said cavity, the number of rollers being equal to the number of pairs of contiguous flat side walls forming apexes;
 - a selector means including a flat ring rotatably mounted on one outside surface of said enlarged body with a plurality of separators rigidly secured thereto and extending between

said cavity and said drive member, said selector further including a lever means for rotating said flat ring; pairs of spring means located on opposite sides of said separators, each separator being located between two of said plurality of rollers; and means for retaining said drive member, rollers, selector and spring means affixed to said handle.

4,429,599

ONE WAY SCREWDRIVER

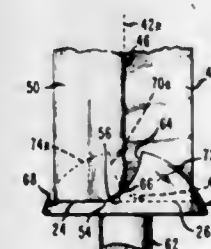
James A. La Sante, Sr., 733 Revere Ave., Bronx, N.Y. 10465

Filed Jan. 3, 1983, Ser. No. 455,324

Int. Cl.³ B25B 15/00

U.S. Cl. 81-436

6 Claims



1. A bit for bi-directional driving one-way fasteners comprising a longitudinally extending shank terminating in a flat front face disposed in a plane substantially normal to the axis of said shank, two longitudinally extending and diametrically opposed flutes provided in said shank and extending forwardly into intersecting relation with said front face, each of said flutes including first and second surfaces, said first surfaces respectively forming at the intersection with said front face first shoulders, a pair of second shoulders, a pair of third surfaces, each of said pair of third surfaces extending angularly between said front face and each of said second shoulders, said front face having first and second axes of symmetry disposed at right angles to each other and intersecting each other at the longitudinal axis of said shank, one of said first shoulders lying along a line positioned on one side of said second axis and disposed above and substantially parallel to said first axis, the other of said first shoulders lying along a line positioned on the other of said second axis and disposed below and substantially parallel to said first axis, one of said second shoulders lying along a line substantially coincident with said second axis and disposed above said first axis, the other of said second shoulders lying along the line substantially coincident with said second axis and disposed below said first axis, whereby said front face includes two sector-shaped and diametrically opposed wings and a narrow connecting bridge, said pair of third surfaces being disposed in said opposed wings.

4,429,600

TAMPER-PROOF SCREW ASSEMBLY

Bulent Gulistan, 20568 Pinnacle Way, Malibu, Calif. 90265

Filed Jun. 21, 1982, Ser. No. 390,245

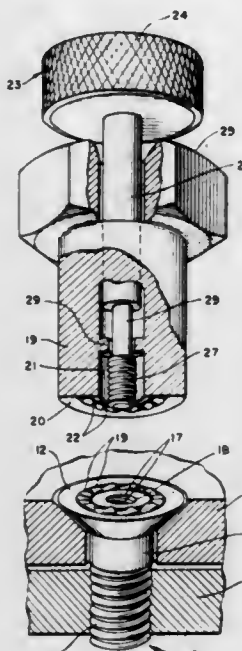
Int. Cl.³ B25B 15/00

U.S. Cl. 81-461

6 Claims

1. A tamper proof screw assembly, including in combination:
 - (a) a screw having a flat head defining first and second engaging means;
 - (b) a torquing member having a flat bottom defining a third engaging means positioned to cooperate with said second engaging means when positioned over said head, said second and third engaging means comprising annular arrays of teeth respectively, the teeth having symmetrical sloping sides so that when engaged and a turning torque is applied in either direction, the teeth tend to cam each other out of engagement; and
 - (c) an axial force applying member having a fourth engaging means for engaging said first engaging means on said flat

head in a manner to apply an axial force on said torquing member to hold said second and third engaging means together and thereby prevent any camming out of engagement



of said second and third engaging means to enable torque to be transferred from said torquing member to said screw when securing or removing the screw.

4,429,601

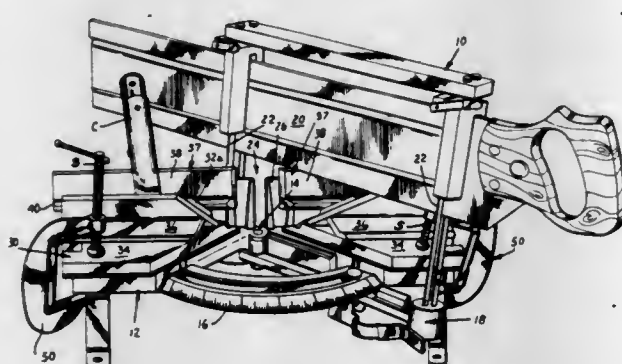
METHOD OF MITERING MOLD AND THE LIKE

Elizabeth C. Taylor, 1989 Queens Way, NE., Atlanta, Ga. 30341
Division of Ser. No. 105,031, Dec. 19, 1979, Pat. No. 4,346,636.
This application Feb. 24, 1982, Ser. No. 351,824

Int. Cl.³ B27G 5/02

U.S. Cl. 83—13

10 Claims



1. In a method of supporting a decorative mold and the like having a mold face and cutting said mold along a predetermined line, such as back-mitering a strip of mold, on a substantially flat base having a saw thereon which may be set as to angularity of cut and controlled during sawing to move in a predetermined path, the steps comprising:

supporting a profile support means which comprises a profile support member having a profile face with length and width corresponding to the length and width of the portions of the mold face and the like,

providing a means for supporting said profile support means at a predetermined, preselected angle on said base including the angle at which a mold is installed, retaining said profile support means in position on said base and causing said profile support means to support the mold at the angle corresponding to the angle of installation,

placing said mold coextensively into engagement with the profile face of the profile support member and maintaining said engagement,

positioning the top of the mold adjacent to and supporting same by an upper part of the profile support member and

the bottom of said mold against said profile support member at a location toward said base spaced from said upper part, cutting said mold while retaining said profile support member and said mold in engagement during cutting, and removably retaining said profile support means on said flat base.

4,429,602

METHOD OF CROSSCUTTING A WEB AND STACKING THE CUT SHEETS, AND IMPACT-TYPE CROSSCUTTER FOR WEBS WITH SHEET STACKER

Hilmar Vits, Leichlingen, Fed. Rep. of Germany, assignor to Vits-Maschinenbau GmbH, Langenfeld, Fed. Rep. of Germany

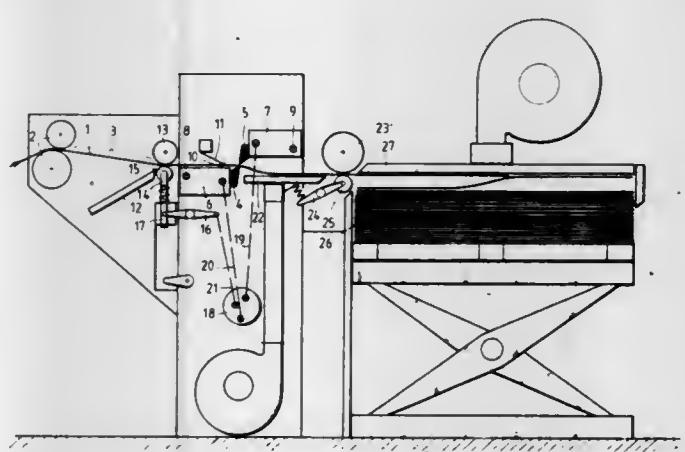
Filed Aug. 24, 1981, Ser. No. 295,278

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033245; May 29, 1981, 3121414

Int. Cl.³ B26D 7/00; B65H 35/04

U.S. Cl. 83—24

21 Claims



1. A method of crosscutting a web and stacking the resultant sheets which comprises continuously feeding said web toward a cutter, decelerating the feed of said web at the cutting point for the duration of the cutting operation, while continuing the feed toward said cutter at the same rate whereby a back-up occurs in the feed direction, cutting said web, causing the new head end of the web so formed upon said cutting to overlap the tail end of the resultant cut sheet on the conveying path, conveying said sheet to a sheet stack, after said cut sheet is moved onward to said sheet stack at normal conveying speed increasing the conveying speed of the web toward said cutter until the web portion which has backed up ahead of the cutting point has been stretched taut and caused to overlap the tail end of the cut sheet.

4,429,603

ROTARY ENVELOPE CUTTING METHOD

William A. Chapman, Jr., Hubbardston, and John J. Crowley, Ware, both of Mass., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 198,464, Oct. 20, 1980, abandoned. This application May 14, 1982, Ser. No. 378,279

Int. Cl.³ B31B 19/14

U.S. Cl. 83—37

7 Claims

1. A method of converting rectangular sheet material blanks to envelope configuration using rotary cutter rolls, said method comprising the steps of:

A. Cutting a first series of first proportioned rectangular sheets from a continuous web supply;

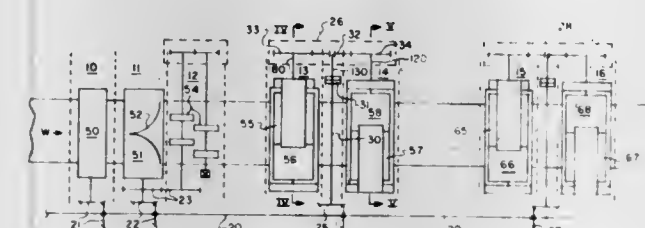
B. Serially transporting said first rectangular sheets along a laterally fixed feed path;

C. Cutting opposite side top end corners of said first rectangular sheets with respective first and second cutting knives to form a top flap and top edges of symmetric side flaps;

D. Cutting opposite side bottom end corners of said first rectangular sheet with respective third and fourth cutting knives to form bottom edges of said symmetric side flaps and an integral bottom and back flap which, when folded, extends from the bottom end of an envelope to the top end;

E. Changing the lateral cutting position of said cutting knives relative to said fixed feed path, said first and third knives on one side of said feed path and said second and fourth knives on the other side thereof;

F. Cutting a second series of second proportioned rectangular sheets from a continuous web supply;



G. Cutting opposite side top end corners of said second rectangular sheets with said respective first and second cutting knives to form a top flap and top edges of asymmetric side flaps; one of said side flaps forming an integral back flap which, when folded, extends across the back of an envelope substantially from side to side; and,

H. Cutting opposite side bottom end corners of said second rectangular sheet with said third and fourth cutting knives to form bottom edges of said asymmetric side flaps and a bottom flap.

4,429,604

FILL NOTE GENERATION SYSTEM FOR MICROCOMPUTER CONTROLLED ORGAN

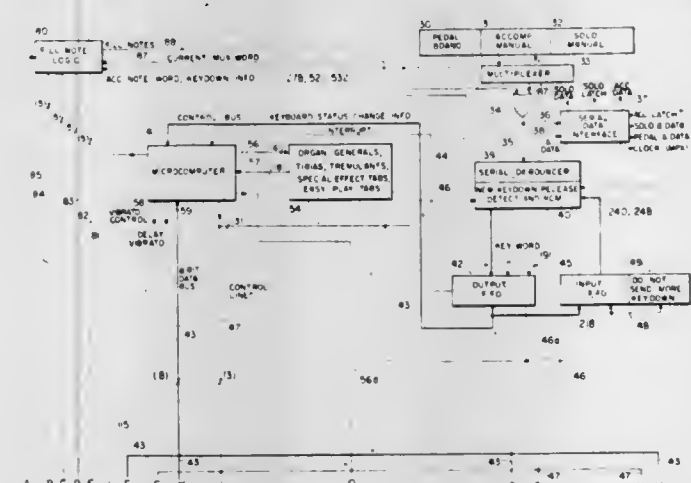
Gary A. Eck, Jasper, and Gary R. Fritz, Ferdinand, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 22, 1981, Ser. No. 276,067

Int. Cl.³ G10H 3/06

U.S. Cl. 84—1.17

27 Claims



1. An electronic keyboard musical instrument comprising: a keyboard having a plurality of playing keys actuating respective keyswitches and comprising a solo portion customarily played by the right hand and an accompani-

ment portion customarily played by the left hand, each of the keys of said keyboard corresponding to at least one note having a particular pitch and octave value,

multiplexer means for scanning the keyswitches of the solo portion of the keyboard and generating on an output a serial time division multiplexed solo data stream comprising a plurality of time slots corresponding to the keys of the solo portion of the keyboard and keydown signals in time slots corresponding to depressed ones of the keys of the solo portion,

a plurality of independently controllable accompaniment tone generator-keyer means each capable of independently generating any one of a plurality of the tones corresponding to the keys of the accompaniment portion of the keyboard, there being fewer accompaniment tone generator-keyer means than keys of the accompaniment portion of the keyboard,

assignment means interposed between the accompaniment portion of said keyboard and said plurality of accompaniment tone generator-keyer means and responsive to the actuation of keys on the accompaniment portion of the keyboard for capturing one or more of said tone generator-keyer means and transmitting one or more control signals to assign said captured tone generator-keyer means to generate respective tones corresponding to the notes associated with an actuated key or keys on the accompaniment portion of the keyboard, and

fill note generator means responsive to the tone assignments of the captured accompaniment tone generator-keyer means by said assignment means and responsive to the occurrence in the solo data stream of a keydown signal corresponding to the first scanned actuated key in the solo portion of the keyboard for inserting keydown signals in time slots of the solo data stream corresponding to the respective pitches of tones produced by at least some of the assigned accompaniment tone generator-keyer means and lying within the next octave following the time slot of said first scanned actuated key, and tone producing means responsive to the solo data stream for producing tones corresponding to the keydown signals in the solo data stream.

4,429,605

ELECTRONIC MUSICAL INSTRUMENT

Kiyomi Takauji, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

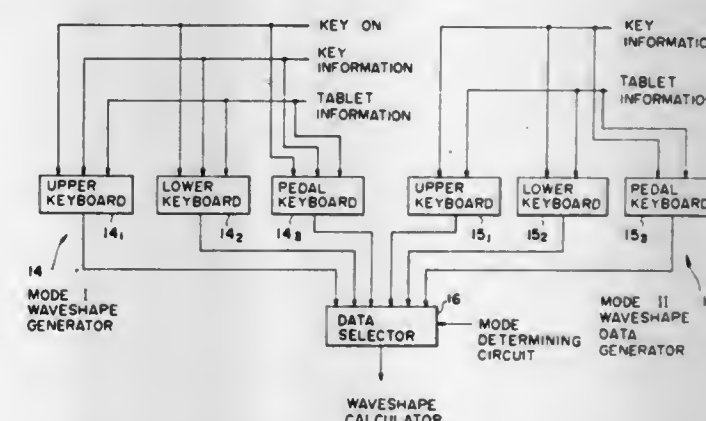
Filed Oct. 28, 1981, Ser. No. 315,982

Claims priority, application Japan, Oct. 28, 1980, 55-151123

Int. Cl.³ G10H 1/08, 1/36, 7/00

U.S. Cl. 84—1.17

1 Claim



1. An electronic musical instrument which is provided with a plurality of keyboards, each having a plurality of keyswitches, a plurality of tone select switches and an assignor for detecting and assigning the on-off state of the key switches and the tone select switches and in which the amplitude value at each sampling point is computed by a Fourier calculation

method to obtain a desired waveshape with the output from the assignor, the electronic musical instrument comprising: first means for synthesizing a waveshape which undergoes variations with time after the depression of one of the key switches;

second means for synthesizing, for a newly depressed one of the key switches and a key switch already depressed by a change in the on-off state of one of the tone select switches, a waveshape which does not undergo variations with time after the new key depression; and

means for controlling the first and second means so that the first means repeatedly carries out a waveshape calculation and so that the second means carries out a waveshape calculation upon occurrence of one of the depression of another one of the key switches and change in the on-off state of the tone selected switches.

4,429,606

ELECTRONIC MUSICAL INSTRUMENT PROVIDING AUTOMATIC ENSEMBLE PERFORMANCE

Eiichiro Aoki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

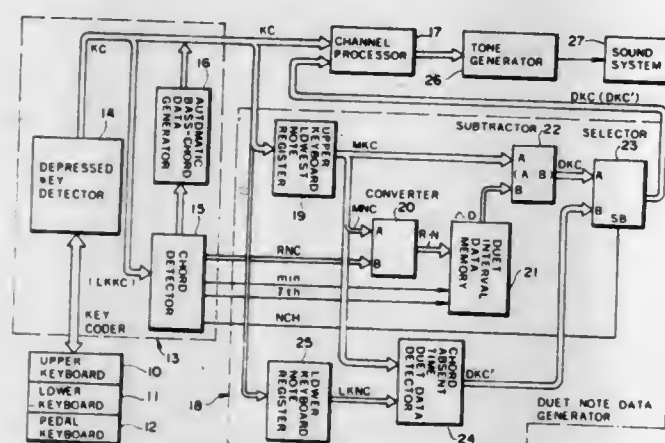
Filed Jun. 22, 1982, Ser. No. 390,952

Claims priority, application Japan, Jun. 30, 1981, 56-100459

Int. Cl.³ G10H 1/02, 1/38

U.S. Cl. 84—1.17

4 Claims



1. An electronic musical instrument comprising:

a first keyboard section having first keys respectively for playing notes and producing first key identifying signals each representing a depressed key among said first keys;

a second keyboard section having second keys respectively for playing notes and producing second key identifying signals each representing a depressed key among said second keys;

a chord detector connected to said second keyboard section detecting a chord being played on said second keyboard section according to said second key identifying signals and producing a chord identifying signal;

an ensemble note data generator connected to said first keyboard section and said chord detector for producing an ensemble note data signal which represents a note which is apart from the note being played on said first keyboard section by a note interval determined from the detected chord and the played note on said first keyboard section according to a predetermined logic; and

a tone generator means for generating tones of notes represented by said first key identifying signal, said second key identifying signal and said ensemble note data signal.

4,429,607 LIGHT BEAM MUSICAL INSTRUMENT

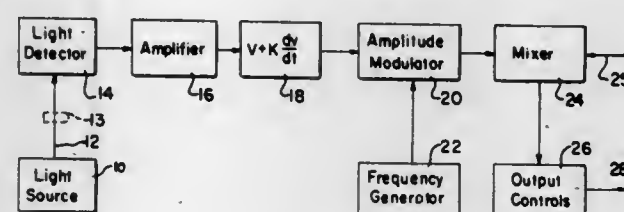
Frank Meno, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Mar. 30, 1982, Ser. No. 363,411

Int. Cl.³ G10H 1/34, 1/46

U.S. Cl. 84—1.18

13 Claims



1. A light beam musical instrument comprising:

at least one light source,

at least one light detector positioned for receiving light from the light source and converting variations therein to electric signals,

a signal sensitive amplifier which amplifies electrical signals in accordance with signal variations and is wired to receive electrical signals from the detector,

said signal sensitive amplifier having means for transforming a signal received from said light detector into a transformed signal which is related to both the extent of interruption or reflection of a light beam from said light source and the rapidity of such interruption or reflection action,

modulator means for receiving output signals from said signal sensitive amplifier,

a frequency generator electrically connected to said modulator means,

a speaker operatively associated with said modulator means, and

said modulator means include an amplitude modulator for receiving output from said signal sensitive amplifier.

4,429,608

STRINGED MUSICAL INSTRUMENT TOP

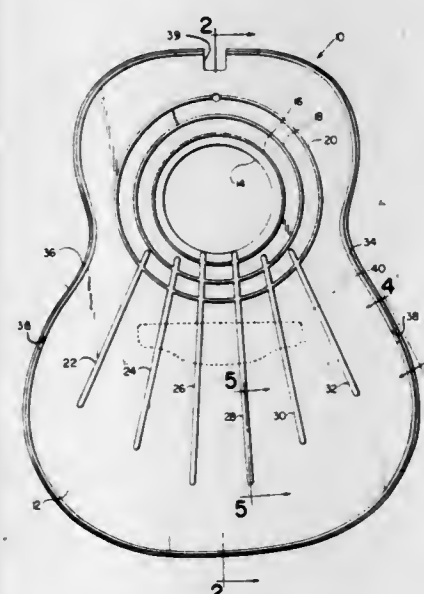
Charles H. Kaman, Prattling Pond Rd., Farmington, Conn. 06032, and C. William Kaman, II, 201 Riverside Dr., Morgan-ton, N.C. 28655

Filed Jul. 20, 1981, Ser. No. 285,070

Int. Cl.³ G10D 3/02

U.S. Cl. 84—291

17 Claims



1. A stringed musical instrument top comprising a single piece of plastic material defining a relatively thin sounding board having a sound hole therethrough between its upper and lower ends, a plurality of integral reinforcing ribs projecting from the inner surface of said sounding board, said reinforcing

ribs including a plurality of annular ribs surrounding said sound opening and a plurality of rectilinear ribs extending longitudinally of said sounding board between said sound hole and said lower end, each of said rectilinear ribs intersecting at least one of said annular ribs.

4,429,609

PITCH ANALYZER

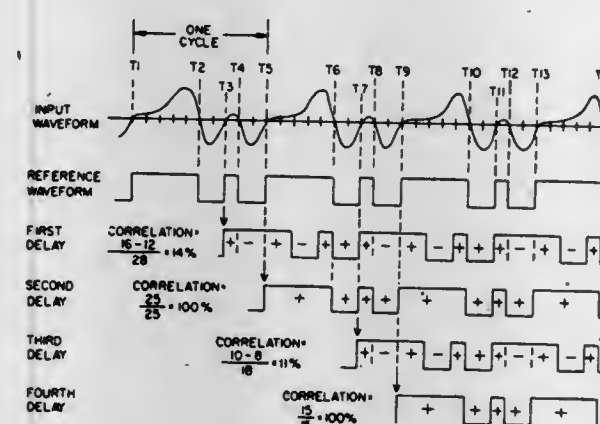
David J. Warrender, 2685 Burnside Rd., Sebastopol, Calif. 95472

Continuation-in-part of Ser. No. 330,681, Dec. 14, 1981. This application Feb. 3, 1982, Ser. No. 345,441

Int. Cl.³ G10G 7/02; G01R 23/02

U.S. Cl. 84—454

15 Claims



1. A device for determining the pitch of an audio input signal comprising:

means responsive to said audio input signal for generating a reference waveform having transitions corresponding to the zero crossings of said audio input signal whereupon said reference waveform includes a first transition of a given sense and a plurality of succeeding transitions of the same given sense at a corresponding plurality of time intervals relative to said first transition;

means for determining the correlation between said reference waveform and each of a plurality of effectively delayed waveforms, each of which corresponds to said reference waveform delayed by one of said time intervals;

means for selecting a subset of said plurality of time intervals, each member of which yields an effectively delayed waveform having a correlation above a predetermined threshold; and

means responsive to said subset of time intervals for determining a characteristic period for said reference waveform.

4,429,610

SHELL RELOADER

Robert W. Mantel, N80 W23090 Plainview Rd., Sussex, Wis. 53089

Filed Dec. 7, 1981, Ser. No. 327,775

Int. Cl.³ F42B 33/12

U.S. Cl. 86—36

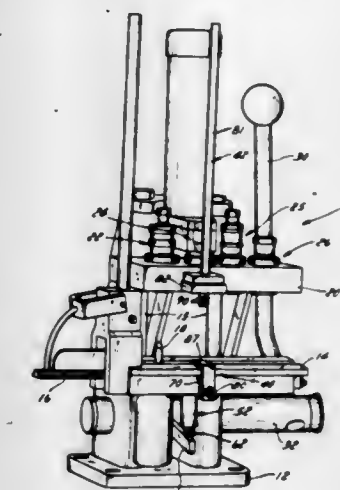
8 Claims

1. In an automatic shell reloader of the type having a fixed platen and a movable die platen with a slide in the fixed platen to move used shell casings in a step-by-step manner to a number of dies on the die platen; the improvement comprising

a primer cap storage reservoir on the fixed platen, a primer cap slide assembly mounted for reciprocal motion on the fixed platen, and

a primer cap storage assembly mounted on said die platen above said reservoir, said primer cap slide assembly being positioned to move the bottom primer cap in said reservoir to an opening in the fixed platen below a shell casing on the fixed platen, said primer cap storage assembly including a storage tube and

means at the lower end of said storage tube for retaining primer caps in the tube, means mounted on said storage reservoir in a position to release said retaining means on the end of the storage tube and allow the bottom primer cap in the tube to drop into



the reservoir when the die platen is moved toward the fixed platen, and guard means on said primer cap slide assembly to block the space above the reservoir when said slide assembly is moved into the platen.

4,429,611

AIRBORNE MISSILE LAUNCHER

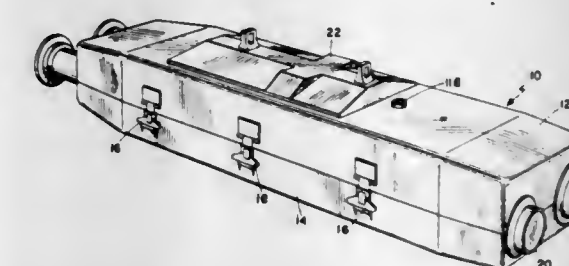
Delbert J. Oldham, Chino, and John A. Karish, Alta Loma, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jan. 29, 1982, Ser. No. 344,097

Int. Cl.³ F41F 3/04

U.S. Cl. 89—1.816

25 Claims



16. An airborne missile launcher for air launching of man-portable tube-launched missiles, said launcher comprising: a central support frame including attachment means for attachment to an aircraft; clamp means for releasably clamping a plurality of missile containing launch tubes to said support frame; electronic control means mounted on said support frame and including electrical connecting means for automatic interconnection with electronic means in said launch tubes upon clamping said launch tubes in place;

aerodynamic shell means for enclosing said support frame and said electronic control means, said aerodynamic shell includes an upper fixed half-shell and a lower removable half-shell enclosing said support frame and at least a major portion of missile launch tubes mounted in said clamp means.

4,429,612

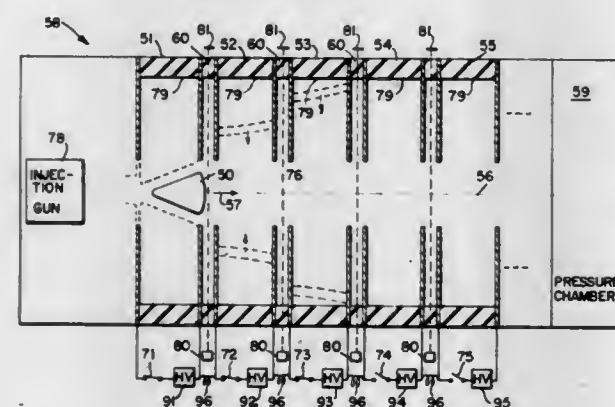
METHOD AND APPARATUS FOR ACCELERATING A SOLID MASS

Derek A. Tidman, Silver Spring, and Yeshayahu A. Goldstein, Potomac, both of Md., assignors to GT - Devices, Alexandria, Va.

Filed Jun. 18, 1979, Ser. No. 49,557
Int. Cl.³ F41F 1/00, 1/02; G21B 1/00

U.S. Cl. 89—8

84 Claims



1. A method of accelerating a solid mass along a predetermined path, said mass having an axis initially positioned at a point on the path and a peripheral cross sectional surface region surrounding, but not intersecting the axis, the axis moving along the path during acceleration, comprising the steps of imploding a plasma discharge toward the path in response to current flowing in the plasma, the plasma arriving on the region of the surface to impart force components to the mass along and normal to the path and accelerate the mass along the path, and synchronizing the imploding of the plasma with the acceleration of the mass along the path so the arrival of the plasma on the region is matched with movement of the projectile along the path.

4,429,613

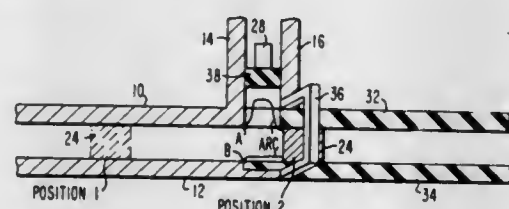
ELECTROMAGNETIC PROJECTILE LAUNCHER WITH AN AUTOMATIC PLASMA FORMATION DEVICE

Daniel W. Deis, Churchill Borough; Ian R. McNab, Murrysville Boro, both of Pa., and Joseph L. Smith, Jr., Concord, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 15, 1981, Ser. No. 283,582
Int. Cl.³ F41F 1/00

U.S. Cl. 89—8

14 Claims



1. An electromagnetic projectile launching system comprising:

- a first pair of conducting rails;
- a conductive armature slidably disposed between said first pair of rails;
- a source of current;
- means for connecting said current to said first pair of rails, thereby propelling said armature along said first pair of

rails and striking an arc when said armature breaks contact with said first pair of rails;

a second pair of conducting rails located adjacent said first pair of rails at the point where said arc is formed, and electrically connected to said first pair of rails; and

means for transferring, without extinguishing, said arc into a gap between said second pair of conductors, where said arc acts as a plasma armature for propelling a projectile.

4,429,614

SLIP ON COMPENSATOR FOR REVOLVERS

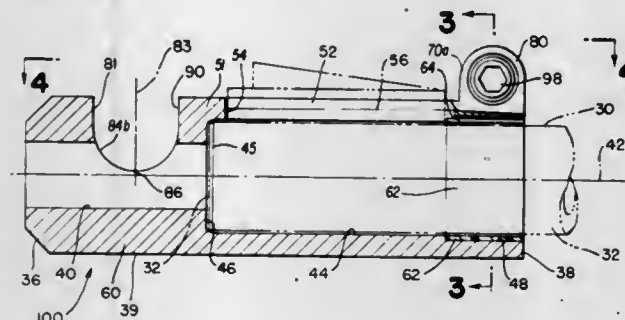
Charles T. Tocco, 436 N. Mercy Springs Rd., #127, Los Banos, Calif. 93635

Filed Feb. 13, 1981, Ser. No. 234,272

Int. Cl.³ F41C 21/18

U.S. Cl. 89—14 C

9 Claims



1. A compensator device for controlling the recoil of an associated gun having a gun body means and a gun barrel, said gun barrel having an outer diameter, a gun sight on said outer diameter adjacent the one end and a bore formed therein, said compensator device comprising:

- a cylindrical body member having one end and an opposite end, said cylindrical body member further having an outer diameter, a first internal passage extending from said one end towards said opposite end, a second internal passage larger than said first internal passage extending from said opposite end toward said one end, a counter-bore adjacent said opposite end, said counter-bore being larger than said second internal passage and further being centrally located therewith and a radial shoulder portion interposed said one end and said opposite end and formed between said first and second internal passages, said first internal passage having an internal diameter of substantially constant diametral dimension and being greater than the said bore formed in the gun barrel, said second internal passage having an internal bore of substantially constant diametral dimension and being greater than the outer diameter of said gun barrel, said second internal passage further being concentric with said first internal passage;

an annular resilient insert member mounted on said outer diameter of said gun barrel and in said counter-bore of said cylindrical body member;

securing means, mounted adjacent to said opposite end of said cylindrical body member, for detachably securing said cylindrical body member to said gun barrel so as to place said internal diameter of said first internal passage of said cylindrical body member in substantial axial alignment with said bore of said gun barrel, said securing means further comprising clamping means, formed in said opposite end of said cylindrical body member, for clamping said cylindrical body member to said gun barrel such that said second internal passage of said cylindrical body member is in frictional engagement with outer diameter of gun barrel, said clamping means further comprising:

- a. a pair of bosses extending from said outer diameter of said cylindrical body member adjacent to said opposite end, said pair of bosses further being substantially parallel and spaced apart from each other, one of said bosses having a portion defining a first aperture, said first aperture having an axis which is substantially perpendicular to the longitudinal axis of said second internal

passage, the other of said bosses having a portion defining a second aperture centrally aligned with respect to said first aperture, said second aperture having screw thread means formed therein; and

b. a screw thread fastener member inserted through said first aperture and threadably engaging said screw thread means in said second aperture, said screw thread fastener member having a head larger than said first aperture, said head abutting against the one of said bosses so that when said screw thread fastener member is rotated to further engage said screw thread means in said second aperture, said screw thread fastener member draws the one of said bosses towards the other of said bosses to compress said annular resilient insert member and clamp said outer diameter of said gun barrel; and

venting aperture means formed through the wall of said cylindrical body member interposed said one end and radial shoulder portion, said venting aperture means including a portion generally contained within a vertical plane passing through the axis of said bore of said gun barrel when said gun is held in a generally horizontal firing position, such that when said gun is fired, the gases generated during the ignition of a related bullet assembly freely escape said one end of said gun barrel, unrestricted by said structural relationship established between the gun barrel and said one end of said cylindrical body member toward said venting aperture means and pass there-through, thereby creating reaction forces assisting in maintaining the fired gun stable.

4,429,615

ARTICULATED FEEDER

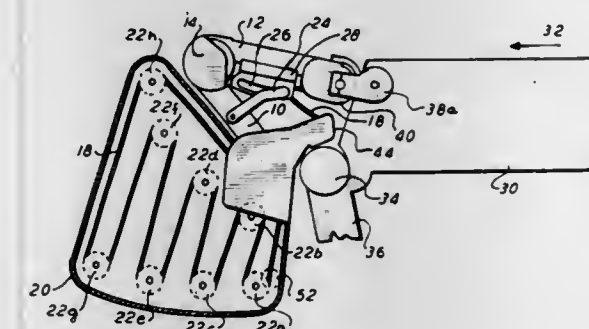
Philip E. Morris, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1982, Ser. No. 369,313

Int. Cl.³ F41D 10/14

U.S. Cl. 89—33 BB

14 Claims



1. A feeder for transferring ammunition from a magazine to a loading assembly of an elevationally rotatable gun, comprising:

- a first chute pivotally mounted about said magazine;
- a second chute articulated between said first chute and said loading assembly, said chutes being sized to provide an internal passage for said ammunition;
- endless transfer means for circulating along an interior path from said magazine through said chutes to drive said ammunition therethrough, said endless means returning from said interior path to said magazine along a return path; and
- linkage means coupled to said endless means along its return path for drawing it inwardly as said chutes unfold.

4,429,616

APPARATUS FOR TRANSPORTING AMMUNITION TO A TOP-MOUNTED GUN

Heinrich Grosser, Vellmar, Fed. Rep. of Germany, assignor to Thyssen Industrie AG Henschel, Kassel, Fed. Rep. of Germany

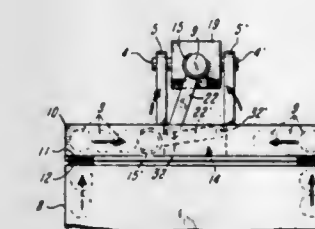
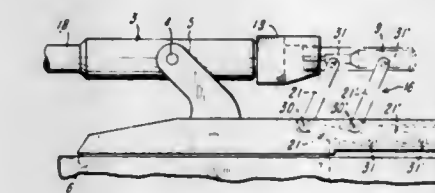
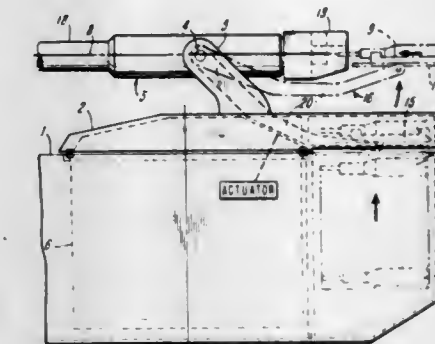
Continuation of Ser. No. 68,868, Aug. 22, 1979, abandoned. This application Jan. 19, 1982, Ser. No. 340,713

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837303

Int. Cl.³ F41H 7/06

U.S. Cl. 89—36 K

11 Claims



1. Apparatus for storing rounds of ammunition and loading the rounds in a gun having a breech and a barrel wherein the gun is mounted on and above an armored turret for rotation about a horizontal axis with respect thereto to elevate the barrel and wherein the turret is mounted on an armored enclosure for rotation about a vertical axis with respect thereto to swivel the barrel with respect to the armored enclosure, the apparatus comprising:

- a main magazine located within the armored enclosure for storing the rounds of ammunition in parallel vertical columns within the armored enclosure;
- a standby magazine positioned in the turret behind and beneath the breech of the gun, the standby magazine being operatively independent of the elevation of the gun and being rotatable in and out of alignment with the main magazine; the standby magazine having first and second sections extending parallel to said horizontal axis, the first and second sections being covered with armor and being separated by a space aligned with a gap in the armor plate through which gap the rounds are delivered to the breech of the gun, and means included in the first and second sections for moving the rounds horizontally to the space so that the rounds may be lifted through the gap in the armor plate to the breech of the gun;

lifting means mounted on said turret and movable operatively independent of the elevation of said gun, means for moving the lifting means vertically between a first position within the space for receiving rounds from the standby magazine and a second position behind the breech of the gun for charging the gun with the round, and means for transferring rounds from the main magazine to the standby magazine when the turret is rotated to position the standby magazine in alignment with the main magazine.

4,429,617

RECIPROCATING SLIDE DAMPENING MECHANISM FOR FIREARMS

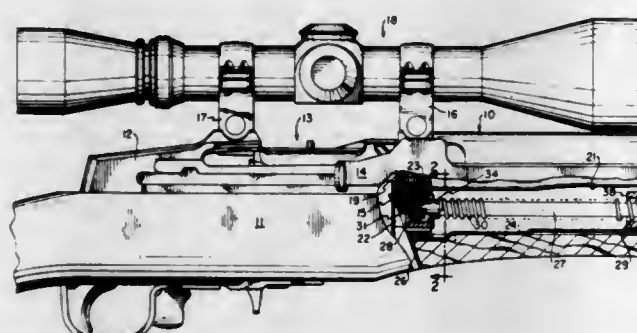
William B. Ruger, Southport, Conn., assignor to Sturm, Ruger & Company, Inc., Southport, Conn.

Filed Oct. 23, 1981, Ser. No. 314,458

Int. Cl.³ F41C 27/00

U.S. Cl. 89—198

4 Claims



1. In a firearm having a reciprocating slide positioned forward of the receiver in a slide channel and associated with a rod the improvement comprising

- (a) the rod having a dampening head attached to its rearward end;
- (b) a recessed floating block means positioned in the slide channel forward of the receiver for receiving the rod dampening head;
- (c) floating block mounting means for mounting the floating block to permit limited movement of the floating block in the slide chamber;
- (d) spring means on the rod urging the rod rearwardly;
- (e) cam means on the rod dampening head to engage the mounting means through the urging of the spring means to position the block in a forward position;
- (f) face means on the block for engagement with the slide as it moves rearwardly to move the block to a rearward position on its mounting means causing the rod dampening head and attached rod to be moved forwardly to compress the spring means

whereby block movement rearwardly, dampening head rod movement forwardly and spring means compression absorb energy from the rearwardly moving slide.

4,429,618

HYDRAULIC ROLL-ADJUSTMENT APPARATUS

Friedrich Klute, Kreuztal, and Robert Fender, Essen, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,441

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019947

Int. Cl.³ F01B 25/26, 7/20

U.S. Cl. 91—1

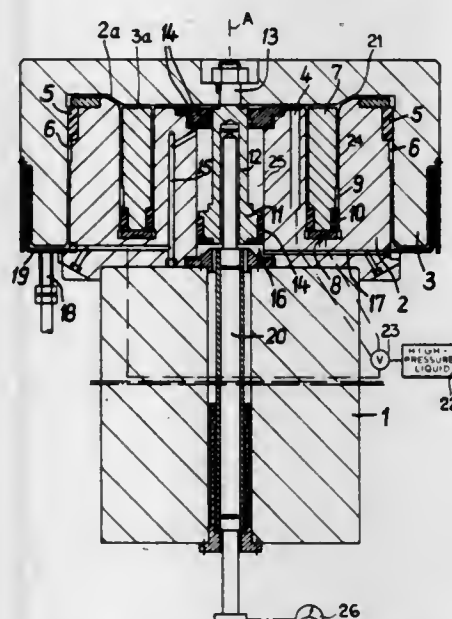
5 Claims

1. A hydraulic adjustment apparatus for use in a roll stand, the apparatus comprising:
a cylinder forming a first cylinder chamber and having a first cylinder surface directed backward in a predetermined direction in said first chamber;

having in said chamber a forwardly directed first piston face of a predetermined first piston area, said first piston being formed with at least one second chamber open forward in said direction at said first face;

a second piston displaceable forward and backward in said direction in said second chamber and having a forwardly directed end engageable with said first cylinder surface and a second piston face of a predetermined second piston area substantially smaller than said first piston area and directed backward in said second chamber;

means for alternately pressurizing said chambers at the respective piston faces in any relative axial position of said



pistons and cylinder with liquid under substantially the same high pressure, whereby when said second chamber is thus pressurized said first piston and cylinder will be urged apart with substantially less force than when said first chamber is thus pressurized, said first piston being formed with a third chamber extending in said direction; and

a third piston fixed to said cylinder and engaged in said third chamber, said third piston having a forwardly directed third piston face in said third chamber, said means being connected to said third chamber to pressurize same with said fluid at said high pressure.

4,429,619

CONTROL SYSTEM FOR A HYDRAULIC LOAD

Volkmar Leutner, Birkbuschstr. 11, 7251 Friolzheim, and Berthold Pfuhl, Graf-Hartmann-Str. 65, 7145 Markgröningen, both of Fed. Rep. of Germany

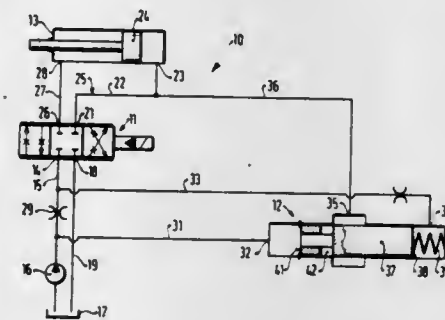
Filed Apr. 4, 1980, Ser. No. 137,987

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919206

U.S. Cl. 91—29

Int. Cl.³ F15B 13/042

12 Claims



1. A control system for a hydraulic load, including a source of pressure fluid, at least one intake port to the load, at least one pressure conduit for connecting the source to the intake port

and an electrohydraulically operated main control valve arranged in said pressure conduit to direct the pressure fluid to said hydraulic load, said system comprising a measuring throttle connected in said pressure conduit; an auxiliary circuit including an auxiliary control valve having a slider; two end spaces cooperating respectively with the ends of said slider and an intermediate control space connected to said intake port in parallel with said measuring throttle and said main control valve in said pressure conduit; a biasing spring within one of said two end spaces for unilaterally adjusting the slider into a flow blocking rest position; a first branch conduit connected between the inlet of said measuring throttle and one space of said auxiliary valve; a second branch conduit connected between the outlet of said measuring throttle and the other end space of said auxiliary valve and when pressure differences across said measuring throttle is low, some of the pressure fluid is directed through the first branch to maintain the slider in the flow blocking rest position and when pressure differences across said measuring throttle is high, some of the pressure fluid is directed through the second branch to move the slider from the flow blocking rest position to an open position to allow some of the pressure fluid through the slider to the hydraulic load which controls said slider in proportion to pressure differences across said measuring throttle to maintain the hydraulic load in a fixed position.

4,429,620

HYDRAULICALLY OPERATED ACTUATOR

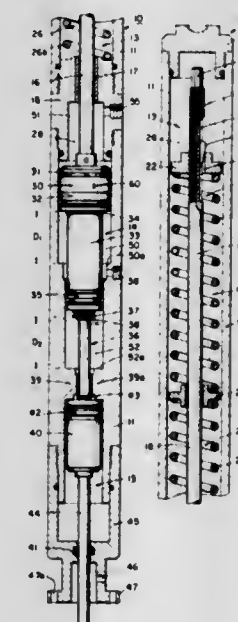
Joseph A. Burkhardt; Thomas W. Childers, both of New Orleans, La.; Harry R. Hanson, Houston, Tex., and Bobby M. Harkrider, Gretna, La., assignors to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 13,941, Feb. 22, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,004

Int. Cl.³ F15B 13/042

U.S. Cl. 91—395

37 Claims



1. Apparatus comprising:

- a housing having an inner wall and containing at least two linearly spaced-apart chambers;
- a piston arranged for reciprocation in one of said chambers in a power stroke and in a return stroke;
- reciprocative means connected to said piston for movement therewith and extending from said one chamber into said other chamber;
- an annular space formed between said reciprocative means and the inner wall of said housing; and
- metal seal ring means operable to seal upon compression sealing off fluid communication between said chambers only at the completion of the power stroke and at the completion of the return stroke of said piston, said metal seal ring means comprising two metal seal ring units, one of said seal ring units being resiliently compressed to close

off said annular space and seal off fluid communication between said chambers at the completion of the power stroke of said piston and the other of said metal seal ring units being resiliently compressed to close off said annular space and seal off fluid communication between said chambers at the completion of the return stroke of said piston.

4,429,621

HYDRAULIC SYSTEMS

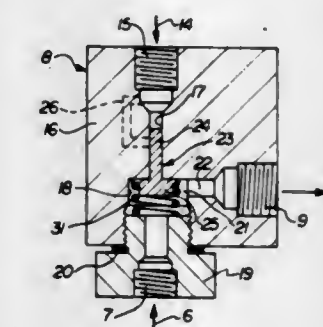
Frederick J. Adams, Avon, England, assignor to Cam Gears Limited, Hertfordshire, England

Continuation-in-part of Ser. No. 962,677, Nov. 21, 1978, abandoned. This application Apr. 20, 1981, Ser. No. 255,557
Claims priority, application United Kingdom, Nov. 24, 1977, 48959/77

Int. Cl.³ F15B 11/08, 13/04; F16K 31/12

U.S. Cl. 91—420

2 Claims



1. An apparatus for use in a power steering system having a pump to supply fluid under pressure to actuate a motor which turns a steerable vehicle wheel, said apparatus comprising a steering control valve having means for receiving fluid under pressure from the pump and means for transmitting a return fluid flow which is conducted from a power steering motor to a reservoir during turning movement of the steerable wheel, restrictor means for throttling the return fluid flow from the steering control valve as a function of the output pressure from the pump, said restrictor means having an inlet port for receiving the return fluid flow from said steering control valve, an outlet port through which the return fluid flow is discharged from said restrictor means, a throttle chamber connected in fluid communication with said inlet and outlet ports, a movable throttle member, said throttle member having a head portion and a stem portion, said head portion of said throttle member being disposed in said chamber and being movable from a first position toward one of said ports to restrict the flow of fluid from said inlet port to said outlet port, an annular stop surface disposed in said chamber opposite from said one of said ports, said head portion of said throttle member having an annular rim with a first side surface which is disposed in engagement with said stop surface when said throttle member is in the first position, a coil spring disposed in said chamber and urging said throttle member toward the first position, said coil spring engaging a second side surface of said annular rim on said head portion of said throttle member and circumscribing said one of said ports so that the return fluid flow enters said chamber through said inlet port and passes between turns of said coil spring before flowing from said chamber through said outlet port, means for exposing an end surface on said stem portion of said throttle member to fluid pressure conducted from the output of the pump to urge said head portion of said throttle member toward said one of said ports against the influence of said coil spring with a force which varies as a function of variations in the fluid pressure conducted from the pump to effect movement of said throttle member toward said one of said ports when a pressure differential between the stem and head portions of said throttle member exceeds a predetermined amount, and surface means defining a passage in which said

stem portion of said throttle member is disposed, said passage having a length which is greater than the length of said stem portion, said stop surface being disposed adjacent to one end of said passage, the end surface on said stem portion being disposed in said passage between said one end of said passage and the opposite end of said passage, said opposite end of said passage being connected in communication with the outlet fluid pressure from said pump.

4,429,622

PRESSURE RESPONSIVE ACTUATOR FOR USE WITH AN AUTOMATIC DUMP VALVE

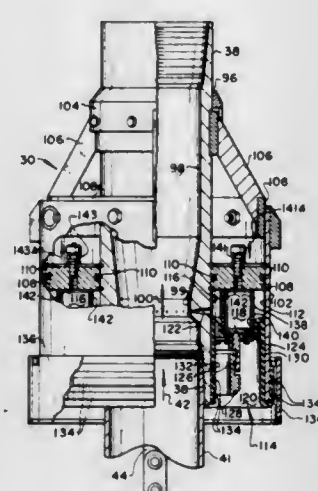
Donald F. Taylor, Dallas, Tex., assignor to Sedco, Inc., Dallas, Tex.

Division of Ser. No. 58,927, Jul. 19, 1979, Pat. No. 4,300,585. This application Sep. 15, 1980, Ser. No. 187,425

Int. Cl.³ F01B 19/00

U.S. Cl. 92-93

3 Claims



1. A pressure responsive actuator comprising, in combination:

a first elongated tubular housing defining a longitudinally extending flow passage and having a sidewall portion constricting the flow passage thereby defining a venturi flow region;

a second elongated tubular housing mounted in spaced relation around the first elongated tubular housing and sealed at one end thereof defining an annular cavity;

a piston assembly disposed for movement through said annular cavity, said piston assembly including an annular piston member slidable with respect to an outer wall of said first tubular housing and an inner bore wall of said second tubular housing, said piston assembly including seal means interposed between said piston member and said outer and inner walls, respectively, thereby dividing the annular cavity into first and second pressure chambers; and said sidewall portion of the first elongated tubular housing having an opening connecting the first pressure chamber in fluid communication with the venturi flow region, and the second pressure chamber being adapted for connection to an external fluid pressure source.

4,429,623

COFFEE-MAKING MACHINE

Ernesto Illy, 8, via Locchi, I - Trieste, Italy

Filed Apr. 19, 1982, Ser. No. 369,516

Claims priority, application Italy, Jul. 16, 1981, 22376/81[U] Int. Cl.³ A47J 31/24

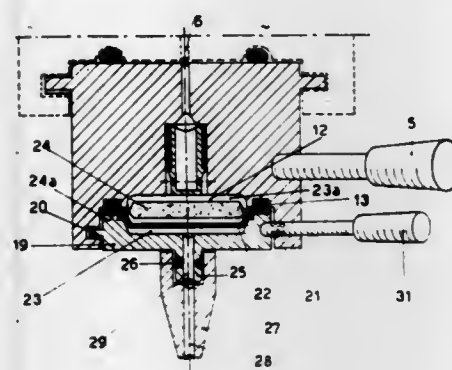
U.S. Cl. 99-295

9 Claims

1. In a coffee machine heretofore adapted to brew coffee by passing hot water from a distributor through a quantity of ground coffee loosely placed in a filter inside a receptacle, a combination comprising:

a removable adapter adapted to replace said receptacle and

permit said coffee machine to brew coffee using a pre-packaged, water-permeable coffee pod; connecting means for connecting the adapter to the distributor of the machine; and



a removable box adapted to be connected to the adapter and define therewith an extraction chamber into which said coffee pod may be inserted prior to connection of said box to said adapter.

4,429,624

STIRRING ARRANGEMENT

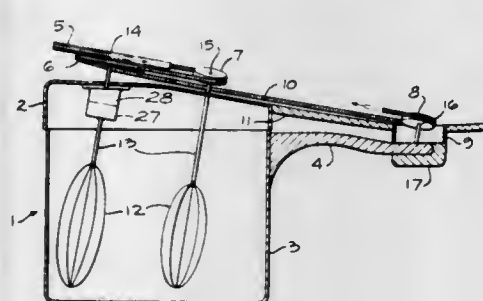
Maynard W. Linn, 6336 N. Bergeron, Fresno, Calif. 93704

Filed Mar. 25, 1982, Ser. No. 362,022

Int. Cl.³ A47J 27/00

U.S. Cl. 99-348

15 Claims



1. In an improved stirring arrangement, the improvement comprising, in combination:

a container for containing materials to be stirred, a handle for said container, a lid for said container, a handle for said lid, a pair of grooved pulleys mounted on the lid for rotational movement, a first of said pair of grooved pulleys having a first diameter, the second of said pair of grooved pulleys having a second diameter smaller than the first diameter, and said pair of grooved pulleys mounted on a common axle, a belt means engaging the grooves of the pair of pulleys to impart rotary motion thereto comprised of an alloy of nickel and titanium, said belt having a predetermined configuration, a take-up idler pulley mounted on the lid for rotational movement spaced apart from said pair of grooved pulleys to direct said belt from said first grooved pulley to said second grooved pulley, said take-up idler pulley mounted on a first shaft, said take-up idler pulley increasing in temperature above a predetermined first temperature whereby said take-up idler pulley transfers thermal energy to said belt to increase the temperature of said belt above the crystalline phase change temperature of said alloy comprising said belt for the condition of the container subjected to heat input, a return idler pulley mounted on said handle for rotational movement to direct said belt from said second grooved pulley to said first grooved pulley, said return idler pulley mounted on a second shaft, means to decrease the temperature of said return idler pulley below the predetermined second temperature whereby said return idler pulley absorbs thermal energy from said belt whereby said belt is reduced in temperature below the crystalline phase change temperature

of said alloy comprising said belt, stirring means extending into the container for stirring the contents of said container, and coupling means for coupling said stirring means to said first shaft.

4,429,625

COOKING SHEET AND LIFTER FOR POULTRY, MEAT AND THE LIKE

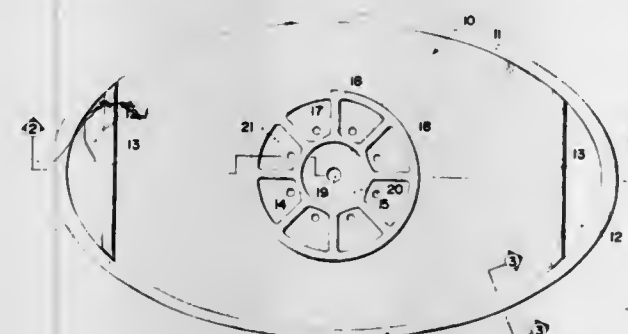
Robert H. Nelson, Calgary, Canada, assignor to R. H. Nelson Holdings Ltd., Calgary, Canada

Filed Jan. 18, 1982, Ser. No. 340,511

Int. Cl.³ A47J 37/06

U.S. Cl. 99-425

8 Claims



1. A combination cooking sheet and lifter for meat, poultry and the like comprising a substantially flat sheet of relatively heavy duty aluminum foil which includes ends, lifting handle portions formed at each end thereof, drainage apertures through said sheet substantially centrally thereof and liquid collecting and guiding areas formed around said drainage apertures, said sheet being flexible thereby cradling the meat or poultry when lifting same from the cooking medium said lifting handle portions including a removed portion of the foil sheet adjacent each said end and inboard of the outer periphery of said sheet thereby defining hand engaging apertures.

4,429,626

JUICE EXTRACTOR DEVICE

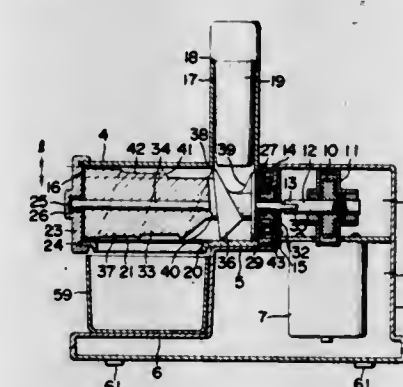
Kelsuke Ihara, Kasukabe; Kazuo Toda, Tokyo, and Shoji Hoshino, Sagami, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 258,900

Int. Cl.³ A23N 1/02

U.S. Cl. 99-510

1 Claim



1. A juice extractor device comprising a juice extractor body which has a base end, an outer end, an upper side, a lower side, and a bore therewithin extending between said ends and having a horizontal axis, said body having an inlet port near said base end and on said upper side, a juice discharge port in said lower side below said axis and extending from near said outer end to near said base end, a residuum discharge port in said upper side above said axis and near said outer end, said bore having a substantially conical inner surface which is disposed concentrically with respect to said axis and increasing in diam-

eter from said base end to said outer end of said body, a filter provided in said juice discharge port and having an inner surface the curvature of which is substantially the same as that of said inner surface of said bore, and a rotary body which is rotatably disposed in and extends along substantially the entire length of said bore of said juice extractor body in such a manner that said rotary body is opposed to all of said ports, said rotary body having its axis coincident with said horizontal axis of said bore and having an outer circumferential surface which has a spiral compressing portion and a spiral blade positioned adjacent said inlet port, said spiral blade having a valley formed therealong which increases sharply in diameter in the direction toward said outer end of said body, said compressing portion comprising a spiral wing continuing from said spiral blade, said spiral wing having a valley formed therealong which increases gradually in diameter in the direction toward said outer end of said body, a gap between said valley of said wing of said spiral compressing portion and the inner surfaces of said bore of said juice extractor body and said filter being established at not more than 6 mm along a major portion of its length and a gap between said spiral wing and said inner surfaces being established at not more than 2 mm, said gaps decreasing gradually in the direction toward said outer end of said juice extractor body.

4,429,627

METHOD AND APPARATUS FOR MONITORING A PRESS

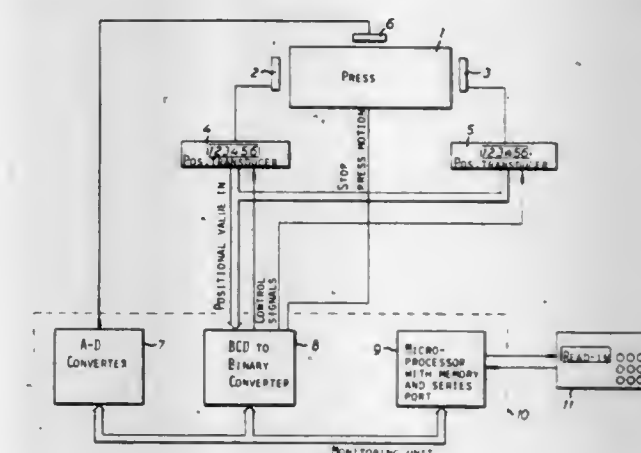
Lennart Edsö, Remmaregränd 3, S-222 51 Lund, Sweden
PCT No. PCT/SE82/00175, § 371 Date Jan. 12, 1983, § 102(e)
Date Jan. 12, 1983, PCT Pub. No. WO82/04010, PCT Pub. Date Nov. 25, 1982

PCT Filed May 17, 1982, Ser. No. 459,571

Claims priority, application Sweden, May 19, 1981, 8103121 Int. Cl.³ B30B 15/28

U.S. Cl. 100-35

5 Claims



1. A method for safe-guarding a press by monitoring the press motion, wherein the press force exerted by the press is continuously sensed during each pressure stroke; wherein reference force values are produced by registration during a first pressure stroke or calculation as an average for several pressure strokes of the instantaneous values of the sensed press force at each one of mutually subsequent positions of the one press platen of the press in relation to its other press platen; wherein the instantaneous values of the force, for pressure strokes executed after the reference force values have been produced, are compared with the produced reference force values at each one of the mutually subsequent positions of the one press platen in relation to the other press platen during the entire pressure stroke; and wherein the press motion is directly discontinued if, on comparison, the sensed force value in any position deviates from the reference force value of that position by more than a predetermined amount.

4,429,628

EXTRACTION DEVICE

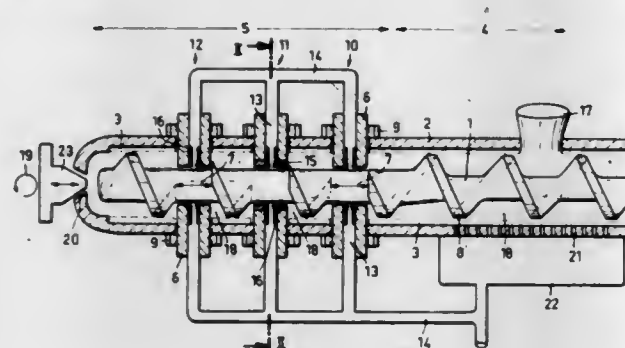
Klaus Koch, Laatzen, and Gerhard Syrbius, Grossburgwedel, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany
Filed Dec. 2, 1981, Ser. No. 326,477

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046384

Int. Cl.³ B30B 9/14

U.S. Cl. 100—117

10 Claims



1. Apparatus for separating liquid components from solid components of a liquid-solid mixture, comprising

- (a) a hollow press barrel defining a relatively low pressure feed region and a relatively higher pressure pin-barrel region,
- (b) a drivable screw rotatable in said barrel, said screw having a longitudinal axis, a base, and a screw flight helically disposed thereon, said screw flight being formed with axially spaced gaps extending radially entirely around the screw base in the areas of said gaps,
- (c) a plurality of radially inwardly directed pins passing into said pin-barrel region of said press barrel, the radially inner ends of said pins extending substantially to said base of said screw thread in the regions of said axial gaps and forming narrow radial gaps with said screw base, the presence of said pins in said pin-barrel region effecting a substantial buildup of pressure in such region thereby resulting in the release of liquid from said mixture, the diameter of each said pin being less than the length of the adjacent axial gap so as to permit rotation of said screw, each said pin having an axially extending throughbore including a first, open end adjacent the base of said screw and a second end remote from said screw base, said throughbores being at substantially atmospheric pressure, the radial dimension of said radial gaps being such that the liquid can be extracted and discharged through said throughbores without any substantial drop in pressure in said pin-barrel region and without clogging of said throughbores, and
- (d) discharge network means, also at substantially atmospheric pressure, in fluid flow communication with said second end of each said bore.

4,429,629

PRESS CONSTRUCTION

Frank W. Leonard, P.O. Box 5634, Boise, Id. 83705

Filed Oct. 13, 1981, Ser. No. 310,617

Int. Cl.³ B30B 7/00

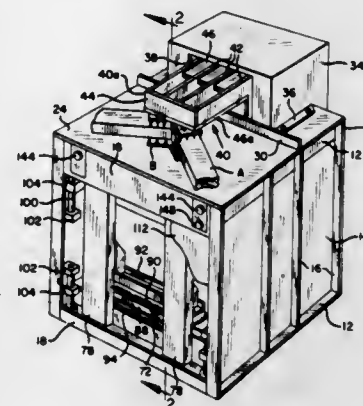
U.S. Cl. 100—226

21 Claims

- 1. A press construction comprising
 - (a) a vertical support frame having top, bottom, front, rear and side portions,
 - (b) a top reinforced surface on said frame forming a first platen surface,
 - (c) a second platen assembly movable vertically in said support frame,
 - (d) a carriage supported on said second platen assembly having a surface forming a second platen surface arranged

to cooperate with the first platen surface for pressing articles,

- (e) said carriage having movement on said second platen assembly between a pressing position over said first platen surface and a retracted position,



- (f) and drive means disposed between said frame and said second platen assembly arranged to lift said second platen assembly to open said press and to pull said second platen assembly down to close said press.

4,429,630

PRINTING MACHINE MILLING ROLLER DRIVE SYSTEM

Josef Hajek, Friedberg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

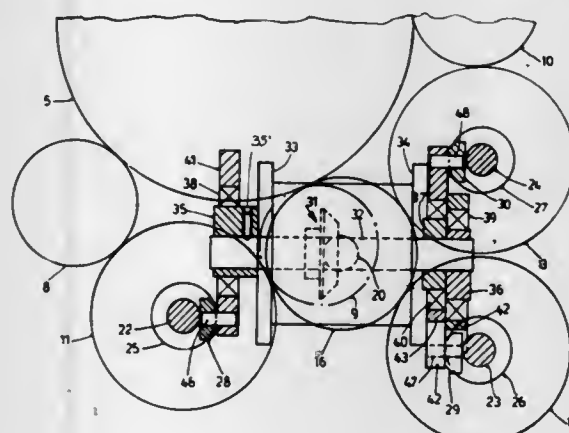
Filed Jan. 24, 1983, Ser. No. 460,309

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203803

Int. Cl.³ B41F 13/12, 7/26

U.S. Cl. 101—216

5 Claims



- 1. In a rotary printing machine having
 - a frame (21);
 - a plate cylinder (5, 6, 7) and gear means (18) rotating therewith,
 - a drive system for a plurality of axially oscillating milling rollers (11, 12, 13) comprising, in accordance with the invention, means (22, 23, 24) for rotatably journaling the milling rollers while permitting axial excursion;
 - a central gear (16) driven to rotate with the plate cylinder gear means (18);
 - a central drive shaft (20) driven by the central gear;
 - a plurality of drive gears (11', 12', 13') meshing with said central gear and providing rotation for respectively associated milling rollers (11, 12, 13);
 - a right-angle drive (31) coupled to rotate with the shaft (20) of the central gear (16) and having an output shaft (32);
 - a plurality of circumferentially adjustable rotatable eccentrics (35, 36, 37),

- one for each milling cylinder, secured to the output shaft (32);
- connecting rod means (41, 42, 43) journalled on the eccentric at one end thereof and converting rotary movement of the eccentric into linear movement;
- and engagement coupling means (46, 47, 48; 28, 29, 30; 25, 26, 27) coupling the other end of the respective connecting rods to the respective milling rollers for longitudinal oscillatory movement thereof in the rhythm of rotation of the plate cylinder.

4,429,631

AUXILIARY INKING ROLLER KIT FOR DUPLICATING PRESS

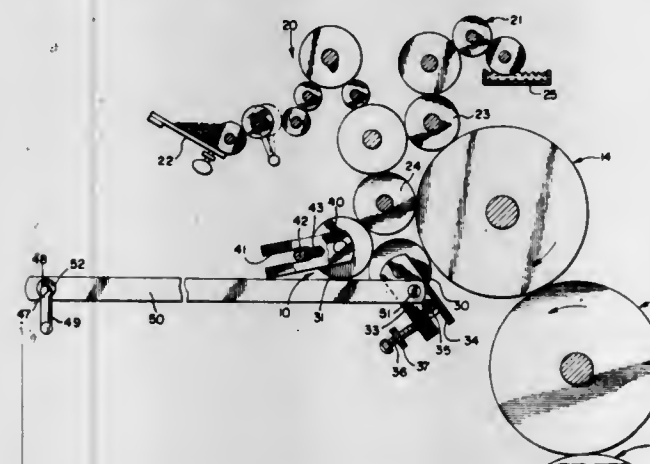
Louis P. Commers, Melrose Park, Ill., assignor to Suburban Duplicator Repair, Inc., Franklin Park, Ill.

Filed Sep. 13, 1982, Ser. No. 417,144

Int. Cl.³ B41F 31/00

U.S. Cl. 101—349

3 Claims



- 1. An auxiliary inking roller kit for mounting on a duplicating press having a master cylinder rotatably mounted between opposed side plates and an ink system for applying ink to the master cylinder, said ink system including upper and lower form rollers engaging said master cylinder, an ink fountain, and a series of ink transfer rollers between said ink fountain and said form rollers, said ink roller kit comprising a pair of opposed mounting plates mountable on said side plates in fixed relation thereto, a pair of rollers, means rotatably mounting said rollers on and between said mounting plates and for movement of the axes of said pair of rollers relative to the axis of the master cylinder, one of said rollers being an auxiliary form roller for engagement with said master cylinder below said lower form roller, the other of said rollers being in engagement with said auxiliary form roller and said lower form roller to transfer ink from said lower form roller to said auxiliary form roller, and means for selectively moving the auxiliary form roller into and out of engagement with said master cylinder independently of the lower form roller so that said auxiliary form roller can be removed from contact with said master cylinder while said lower form roller remains in contact with said master cylinder.

4,429,632

DELAY DETONATOR

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 27, 1981, Ser. No. 257,974

Int. Cl.³ C06C 7/00; F42C 19/10, 19/12

U.S. Cl. 102—202.13

18 Claims

- 1. A delay detonator comprising a tubular metal detonator shell integrally closed at one end and closed at the other end by an ignition assembly for igniting a train of charges therein, and containing, in sequence from its integrally closed end,
 - (a) base charge of a detonating explosive composition;
 - (b) a priming charge of a heat-sensitive detonating explosive composition;

- (c) a pressed delay charge of an exothermic-burning composition; and
- (d) a loose pulverulent, flame-sensitive ignition charge separating said delay charge from said ignition assembly, said



- loose ignition charge (1) having a free surface adapting it to be unrestrained in the direction of said ignition assembly and (2) being adapted to be ignited in response to direct contact with flame emitted from the ignition of a charge in said ignition assembly.

4,429,633

IMPACT IGNITER

Sören Edelson, and Bo Peterson, both of Lindesberg, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

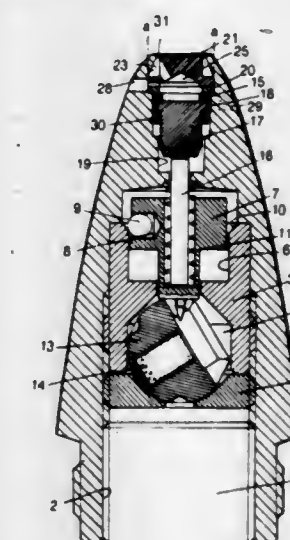
Filed Jun. 9, 1981, Ser. No. 271,763

Claims priority, application Sweden, Jun. 25, 1980, 8004682

Int. Cl.³ F42C 15/36

U.S. Cl. 102—222

16 Claims



- 1. An improved igniter for attachment to the forward end of a projectile, comprising:
 - a housing member adapted to be positioned at the forward end of a projectile, said housing member having a longitudinal axis, a forward end and a side wall;
 - a chamber within said housing member;
 - a fuse located in said chamber, said fuse comprising a material which will melt when air streams against it following firing of a projectile;
 - an arming mechanism located in said housing member and operatively associated with said fuse, said arming mechanism contacting said fuse and being held in an unarmed configuration by said fuse while said fuse remains intact;
 - at least one first channel means leading from the exterior of said igniter inward to said chamber, said channel means being angled rearwardly from said forward end of said

housing member toward said longitudinal axis, for leading a portion of the air streaming past the exterior of said igniter after firing of an associated projectile into said chamber and into contact with said fuse to cause said fuse to melt and to permit said arming mechanism to assume its armed configuration; and

at least one second channel means leading from said chamber outward to the exterior of said igniter, for leading said portion of air back to the exterior of said igniter.

4,429,634

ADHESIVE LINER FOR CASE BONDED SOLID PROPELLANT

James D. Byrd, and James O. Hightower, both of Huntsville, Ala., assignors to Thiokol Corporation, Chicago, Ill.

Continuation of Ser. No. 888,053, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 757,260, Jan. 6, 1977, abandoned. This application Mar. 12, 1980, Ser. No. 129,542

Int. Cl.³ F42B 1/00

U.S. Cl. 102—290

4 Claims

4. A case bonded solid propellant rocket motor wherein said motor contains a bonded casing liner consisting essentially of hydroxy terminated polybutadiene and from about 1% to 10% of aziridine.

4,429,635

MINE, ESPECIALLY ANTITANK MINE

Wolfgang Dorn, Niederkassel-Lulsdorf; Fritz Elsner, Troisdorf-Sieglar; Klaus Fischer, Troisdorf, and Heinz Kroschel, Troisdorf-Sieglar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

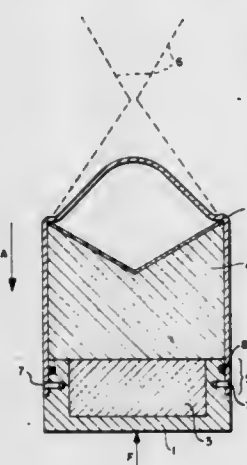
Filed Oct. 2, 1981, Ser. No. 308,121

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037607

Int. Cl.³ F42B 23/04

U.S. Cl. 102—401

3 Claims



1. A mine, especially an antitank mine, which can be laid on the ground surface by being dropped from the air and which impinges on the ground in a preferred impact direction, said mine comprising a detonator and an explosive charge located in a housing, said housing being subdivided into an operational part containing the detonator and into an active part containing the explosive, both the active and operational parts being coupled together by a shape-mating connection, and said shape-mating connection being severed when a predetermined impact load on said mine has been exceeded and thereupon the active part is separated from the operational part by the impact shock.

4,429,636

VEHICLE TURNTABLE

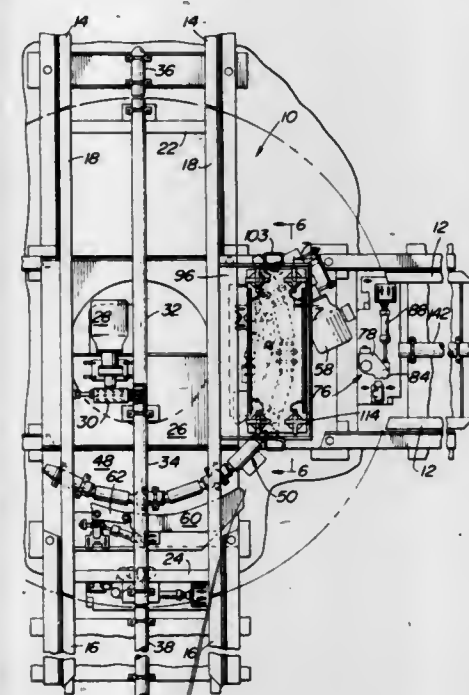
Barry L. Ziegenfuss, Saylorsburg, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 14, 1981, Ser. No. 330,351

Int. Cl.³ B61J 1/02; B61B 13/12

U.S. Cl. 104—36

15 Claims



1. A turntable comprising a support, a table pivotably mounted on the support for movement about a vertical axis, said table having tracks for supporting a vehicle, said table having drive wheels depending therefrom, an arcuate drive tube assembly, said drive wheels being arcuately arranged about said axis for driving frictional contact with said assembly for causing said table to pivot about said axis, a drive motor coupled to aid drive tube assembly for rotating said drive tube assembly about its longitudinal axis, and latch means for latching said table in a position at the ends of its movement.

4,429,637

RAILWAY VEHICLE TRUCK

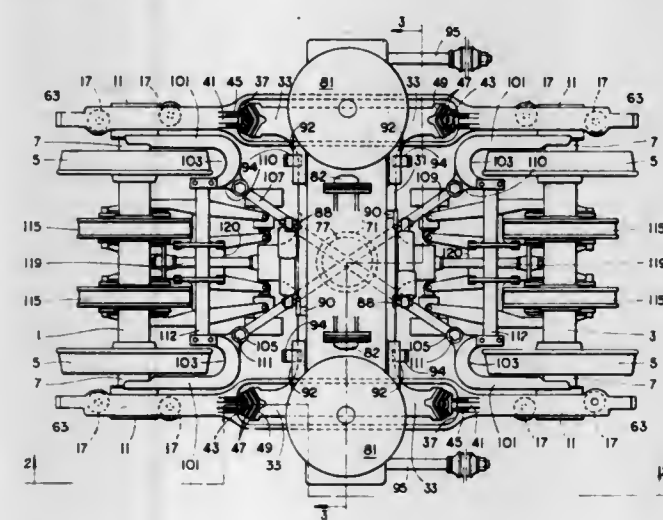
Keith L. Jackson, Granite City; Dallas L. Schmitt, Fairview Heights, and John L. Schauster, Highland, all of Ill., assignors to Lukens General Industries, Inc., Coatesville, Pa.

Filed Oct. 19, 1981, Ser. No. 312,994

Int. Cl.³ B61F 5/38, 5/30, 3/08

U.S. Cl. 105—168

17 Claims



1. A radial axle railway vehicle truck comprising a pair of longitudinally spaced wheel and axle assemblies, each having an axle and a pair of railway flanged wheels fixedly mounted on its end portion, bearing assemblies each including a bearing

rotatably receiving an end of each of said axles outboard of said wheels and having upwardly facing horizontal surfaces fore and aft of the respective bearings, the surfaces nearest the ends of the truck being at a higher level than the axle centers and the surfaces remote from the ends of the truck being at a level lower than the respective axle centers, said upper surfaces being positioned at least in part transversely inboard of the bearing center and the lower surfaces being positioned at least in part transversely outboard of the bearing center, elastomeric pad devices seated on said bearing assembly surfaces and being correspondingly positioned inboard and outboard respectively with respect to said bearing center, longitudinally extending side frames at the respective sides of said truck having downwardly facing horizontal surfaces vertically aligned with said bearing assembly surfaces and seated on said pad devices, said pad devices being yieldable in shear to accommodate yawing movements of the respective axles relative to said side frames, said side frames each having a depressed central portion, end portions overlying the respective bearing assemblies and intermediate sloping portions connecting said overlying end portions and said depressed central portion, and a main frame resiliently supported on both said side frames by vertically yieldable resilient means and held thereby against substantial longitudinal and lateral movements with respect to said side frames.

4,429,638

UTILITY SHELF

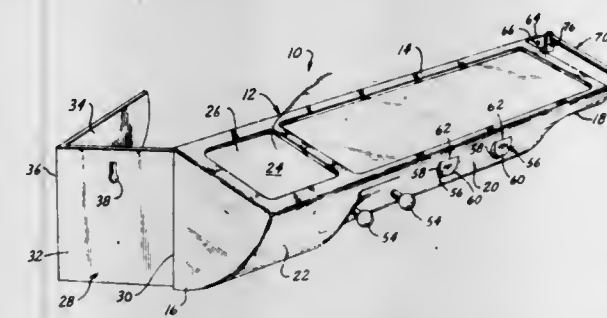
Yaffa Licari, Elberon, N.J., assignor to Basic Line, Inc., Cliffwood Beach, N.J.

Filed Jan. 15, 1982, Ser. No. 339,428

Int. Cl.³ A47B 85/00, 3/00, 67/02; A47F 5/08

U.S. Cl. 108—25

10 Claims



1. A plastic utility shelf, comprising a body, having a substantially flat top wall, a curved front wall, a pair of converging and diverging sidewalls, a storage well positioned in said body below an opening provided in said top wall, and a panel hingedly connected to said body such that said panel is pivotable between a closed position in which said panel extends into said body to form a rear wall and an inner sidewall of said storage well and an open position in which said panel is positioned outside said body to provide substantially complete access to said body from behind, whereby said shelf may be nested in another similar shelf when said panel is in its open position.

4,429,639

MONEY-DISPENSING DEVICE FROM A SAFE'S SPACE

Joachim Burchart, Schlagen, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,230

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037839

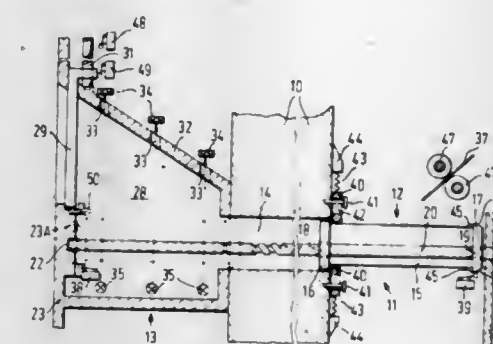
Int. Cl.³ E06B 7/32

U.S. Cl. 109—19

13 Claims

1. A device for conveying objects such as bank notes and coins from a security area to a dispensing point through a safe wall comprising: drawer means reciprocally movable from the security area to the dispensing point; motor-powered drive means for moving the drawer upon

enablement thereof between the security area and the dispensing point; normally closed access means associated with the drawer means in the dispensing point and operable between closed and opened conditions;



first control means for automatically enabling the access means only when the drawer means substantially fully reaches the dispensing point; and second control means for automatically preventing the enabling of said motor powered drive means to return the drawer means to the security area until the drawer means is empty.

4,429,640

SUBMERGED SCRAPER CONVEYOR FURNACE TRANSITION PIECE

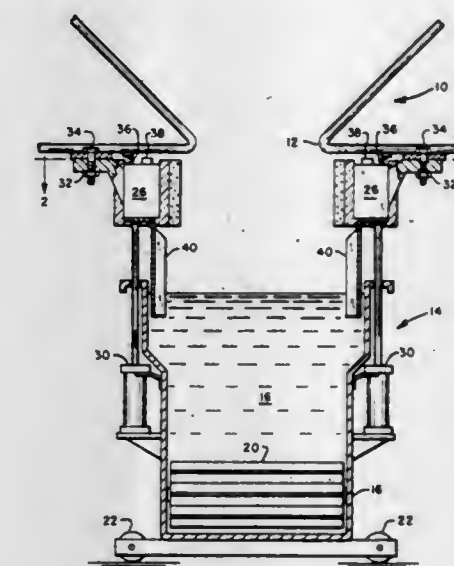
Robert P. Sullivan, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 25, 1982, Ser. No. 392,411

Int. Cl.³ F23J 1/00

U.S. Cl. 110—165 R

3 Claims



1. In combination, a top-supported furnace in which an ash-bearing fuel is burned, opening means in the furnace bottom, a bottom supported tank open at its upper end and containing water positioned beneath the furnace opening means, into which the ash from the furnace falls, means for removing the ash from the tank, an intermediate transition piece, drive means carried by the tank for moving the transition piece between a first position spaced from the furnace bottom, and a second position in engagement with the furnace bottom, means for removably securing the transition piece to the furnace bottom, flexible seal means which completely surround the furnace bottom for sealing the space between the transition piece and the furnace bottom when the transition piece is in its second position, stop means for limiting the movement of the transition piece towards the furnace bottom to prevent the seal means from becoming crushed, and plate means carried by the transition piece which completely surround the furnace bot-

tom which coacts with a body of water carried by the tank for forming a water seal between the furnace bottom and the tank.

4,429,641

CERAMIC FURNACE DOOR AND FRAME

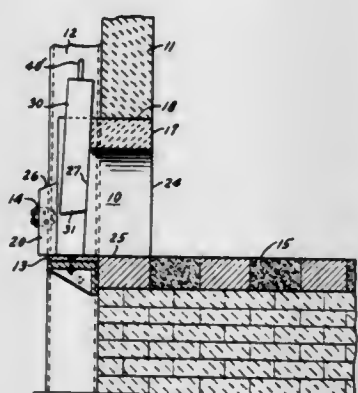
John D. Early, Hamburg, N.Y., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 30, 1981, Ser. No. 335,964

Int. Cl.³ F23M 5/00

U.S. Cl. 110—181

2 Claims



1. In a furnace having a hearth door and frame, the improvement comprising a one-piece cast ceramic door frame, said door frame including:

- (a) two sides, each of said sides having:
 - (i) a front portion supported on a sill plate and a rear portion supported on a furnace sidewall;
 - (ii) a front wall extending upwardly from said sill plate;
 - (iii) a tapered back wall; and
 - (iv) a recessed portion between said front wall and said back wall for slidably receiving a furnace door;
- (b) a hearth extending between said two sides; and
- (c) a door opening formed by said two sides and said hearth, said door opening flaring inwardly to widen on said furnace side.

4,429,642

THERMAL RECLAIMER APPARATUS FOR A THERMAL SAND RECLAMATION SYSTEM

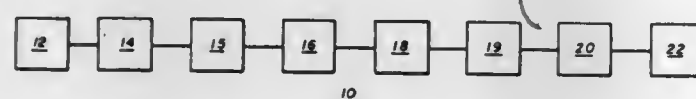
Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 16, 1982, Ser. No. 369,334

Int. Cl.³ B09B 3/00

U.S. Cl. 110—236

9 Claims



1. A thermal reclaimer apparatus for effecting the removal of organic matter from used foundry sand, which contains organic matter, metal of either a ferrous or nonferrous nature, dust and fines, comprising:

- a. means including a plurality of surfaces defining a chamber having a first opening formed in one of said plurality of surfaces and a second opening formed in another one of said plurality of surfaces, said chamber being operative to retain the used foundry sand therein while the used foundry sand is being heated to a predetermined temperature for a preestablished period of time in order to accomplish the burning away of organic matter contained in the used foundry sand;
- b. feed means cooperatively associated with said chamber, said feed means including a member supported for movement within said first opening of said chamber, said member embodying a cross-sectional area substantially equivalent to the cross-sectional area of said first opening such

that said member essentially seals off said first opening when said member is positioned therewithin, said feed means being operative as a consequence of the movement of said member in said first opening to effect the injection into said chamber through said first opening of used foundry sand containing organic matter;

- c. burner means cooperatively associated with said chamber, said burner means including a burner pipe supported so as to project through said second opening a predetermined distance into said chamber, said burner pipe having a cross-sectional area less than the cross-sectional area of said second opening so as to provide an annular space surrounding said burner pipe through which the discharge of the used foundry sand from said chamber is effected, said burner means being operative to provide a hot gas flow into said chamber sufficient to selectively heat the used foundry sand to a first temperature when the used foundry sand contains metal of a ferrous nature and to a second temperature when the used foundry sand contains metal of a nonferrous nature for purposes of accomplishing the burning away of organic matter contained in the used foundry sand; and
- d. rotating means cooperatively associated with said chamber, said rotating means being operative to effect the rotation of said chamber as the used foundry sand in said chamber is being heated by the hot gas flow from said burner means.

4,429,643

APPARATUS AND METHOD FOR TREATING SEWAGE SLUDGE

John H. Mulholland, Bramalea, Canada, assignor to 456577 Ontario Limited, Toronto, Canada

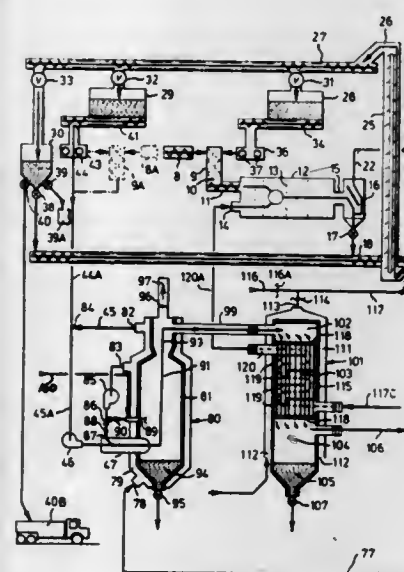
Filed Jun. 12, 1981, Ser. No. 272,998

Claims priority, application Canada, Jun. 30, 1980, 355114

Int. Cl.³ F23G 7/04

U.S. Cl. 110—238

10 Claims



1. A sewage sludge treatment system comprising

- (a) means for dewatering the sludge;
- (b) a rotary dryer for exposing dewatered sludge to hot gas;
- (c) a furnace for burning sludge from the dryer;
- (d) means for mixing part of the sludge from the dryer with dewatered sludge supplied to the dryer;
- (e) a first cyclone for separating solids from dryer discharge gas;
- (f) means for heating and circulating part of the dryer discharge gas back to the dryer, including a heat exchanger having a passage for furnace discharge gas and a separate passage for the circulating dryer discharge gas whereby the latter is heated by the furnace discharge gas without exposure to contaminants thereon;
- (g) means for delivering the remainder of the dryer discharge gas into the furnace for combustion therein

whereby no dryer discharge gas is discharged directly to the atmosphere;

- (h) a first water scrubber for said remainder of dryer discharge gas delivered into the furnace, to reduce the moisture content of said remainder of dryer discharge gas by cooling;
- (i) a second cyclone for separating solids from the furnace discharge gas emanating from the heat exchanger;
- (j) a second water scrubber for further cleaning of the furnace discharge gas emanating from the second cyclone;
- (k) an anaerobic sludge digester heated by water from the scrubbers, and said digester producing a gaseous fuel for use in the furnace;
- (l) means for introducing fresh air into the circulating dryer discharge gas, including means for heating the fresh air in the heat exchanger without contact with furnace discharge gas;
- (m) means for introducing combustion air into the furnace.

4,429,644

FLUIDIZED BED FIRING SYSTEM

Lothar Thomas, Krefeld, Fed. Rep. of Germany, assignor to Deutsche Babcock Anlagen Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

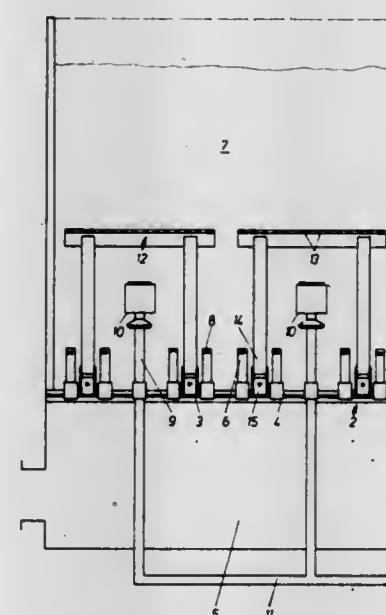
Filed Jan. 22, 1982, Ser. No. 341,603

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1981, 3115843

Int. Cl.³ F23G 5/00

U.S. Cl. 110—245

11 Claims



1. Fluidized bed firing system comprising: a combustion chamber having a bottom; coal nozzles penetrating said bottom for introducing a coal/air mixture; air nozzles penetrating said bottom for injecting combustion air into the fluidized bed; a plate having openings and arranged within the fluidized bed in spaced relationship above each coal nozzle, said plates deflecting gas flow for destroying bubbles forming in the bottom of said fluidized bed and continuously enlarging after rising, so that fine particles are prevented from leaving the fluidized bed with the bubbles in unburnt condition and are held substantially long in said fluidized bed, said plate covering only a respective coal nozzle and air nozzle located in close adjacent vicinity, said plates being spaced from each other, the number of plates corresponding to the number of coal nozzles.

4,429,645

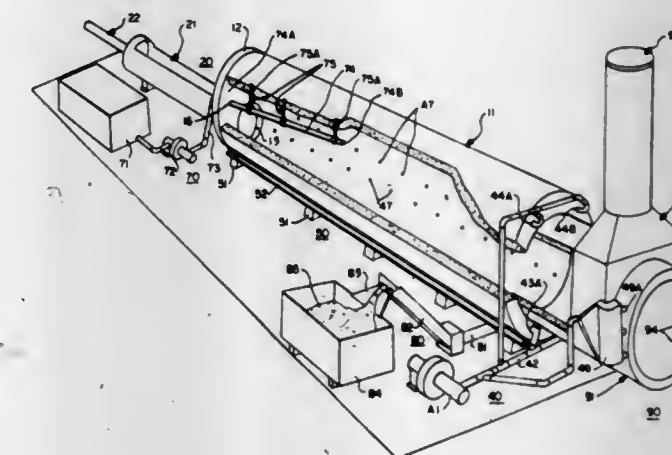
BURNING SYSTEM AND METHOD

R. Edward Burton, 23881 Sherwood Rd., Willits, Calif. 95490
Continuation-in-part of Ser. No. 121,536, Feb. 14, 1980, Pat. No. 4,329,931. This application May 10, 1982, Ser. No. 376,763

Int. Cl.³ F23G 5/12

U.S. Cl. 110—346

9 Claims



1. A substantially smokeless burning system comprising: an elongated burning chamber having a front, fuel entry end with a fuel entry port located substantially at a lower floor region of said chamber and a rear, combustion gas exit end;

gate means mounted adjacent said fuel entry port and having a closed position blocking said fuel entry port and an open position for admitting fuel through said fuel entry port; support means for supporting said burning chamber in a generally horizontal orientation;

feeding means for pushing an elongated volume of new fuel into said fuel entry port, thereby pushing already burning fuel generally toward rear end of said burning chamber to establish a fuel drying zone extending across a lower front portion of said chamber, a volatile burning zone adjacent to and at least partially overlying said fuel drying zone in a generally lower central portion of said chamber, and a charcoal burning zone in a generally lower rear portion of said chamber adjacent to and at least partially overlying said volatile burning zone; and

air delivery means for supplying air to the interior of said chamber at a plurality of locations across at least substantially the total length of said chamber; whereby incomplete combustion products from said volatile burning zone pass through and across said charcoal burning zone and are substantially completely burned in said charcoal burning zone before exiting at said rear end of said burning chamber;

said burning chamber comprising a generally hollow body molded from a refractory material; said feeding means comprising an elongated fuel accumulation chamber communicating with said fuel entry ports and adapted to receive fuel to be burned, a feeding ram carried in said fuel accumulation chamber and adapted to push material therein into said burning chamber, and driving means for driving said feeding ram; and said air delivery means comprising at least one duct integrally formed in an upper wall portion of said hollow body and extending across at least substantially the total length of said body, and a plurality of air delivery ports located at intervals along substantially the total length of said channel to connect said passageway with the interior of said hollow body, said duct being adapted to be connected to an air supply means for delivering air to the interior of said hollow body through said channel and said air delivery ports.

4,429,646

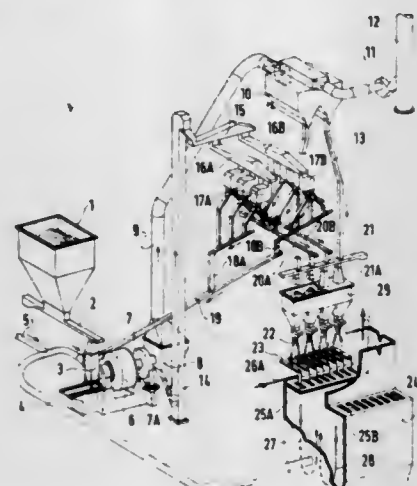
METHOD AND APPARATUS FOR BURNING DAMP OIL-SHALES OF LOW HEATING POWER

Guy Quesnel, Gif sur Yvette, France, assignor to Societe anonyme dite: Stein Industrie, Velizy-Villacoublay, France
Filed Jun. 17, 1982, Ser. No. 389,350

Claims priority, application France, Dec. 11, 1981, 81 23182
Int. Cl.³ F23D 1/00

U.S. Cl. 110-347

11 Claims



1. A method of burning damp oil-shale of low heating power in a combustion chamber having a chimney, the method comprising:

- providing a drying gas by mixing hot gas taken from the combustion chamber with relatively cool gas taken from the chimney, in proportions correlated to the quantity of water in said damp shale;
- crushing lumps of said shale in a crusher and in the presence of said drying gas;
- injecting the resulting grains of crushed shale together with the hot gas into an expansion chamber in which the major portion of the grains falls out from the drying gas, while the lightest portion of grains is entrained by the gas;
- passing the drying gas together with said lightest portion of grains entrained thereby through filter means to separate said lightest portion of grains from the drying gas;
- riddling said major portion of the grains to provide a larger grain fraction and a smaller grain fraction;
- recycling said larger grain fraction through said crusher;
- combining said smaller grain fraction with said lightest portion of grains separated by said filter means; and
- injecting the combined grains into said combustion chamber in a suspension in primary air.

4,429,647

METHOD OF AND DEVICE FOR LOOSENING AGRICULTURALLY USED SOIL

Eugen Zinck, Hüffelsheimerstrasse 2, 6550 Bad Kreuznach, Fed. Rep. of Germany

Continuation of Ser. No. 179,164, Aug. 18, 1980, abandoned, which is a continuation of Ser. No. 944,370, Sep. 28, 1978, abandoned. This application Nov. 30, 1982, Ser. No. 445,661

This application Nov. 30, 1982, Ser. No. 445,661

Int. Cl.³ A01C 23/02

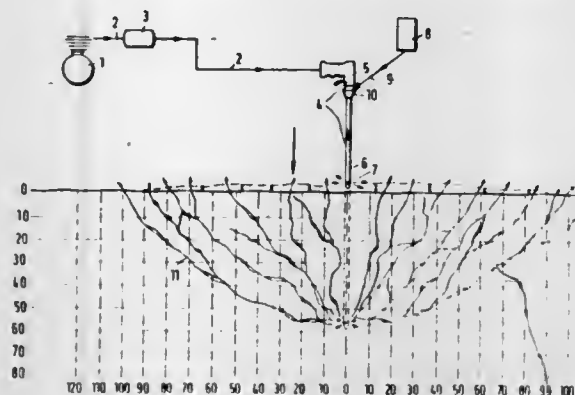
U.S. Cl. 111-6

5 Claims

1. A method of pneumatically loosening and breaking open agriculturally used soil from the surface down to a predetermined depth by means of compressed air introduced into the soil, the method comprising the steps of:

- (a) storing compressed air under high pressure in a storage container;
- (b) injecting said compressed air into the soil at said predetermined depth below the surface of the soil;
- (c) controlling said injecting step so that compressed air is released in at least one sudden burst and with sufficient pressure at said predetermined depth to pneumatically lift and erupt the soil, including the said surface, and form air

guiding passages extending laterally and upwardly from the injection point to the surface of the soil, with the air escaping at the soil surface through such passages, and



(d) introducing filling materials into said passages immediately following said injecting step to prevent collapsing and closing of said passages.

4,429,648

STAGGERED NEEDLE BAR FOR TUFTING MACHINES

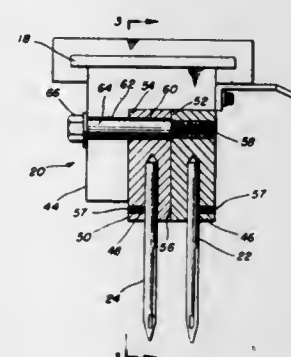
Ian Slattery, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jun. 27, 1983, Ser. No. 508,137

Int. Cl.³ D05C 15/12

U.S. Cl. 112-79 R

14 Claims



1. In a tufting machine, needle mounting apparatus for supporting a plurality of needles in two longitudinal rows extending transversely across the machine, the needles in one row being offset longitudinally relative to the needles in the other row to provide a stagger, the amount of offset being adjustable, said apparatus comprising a needle bar housing having a substantially planar reference surface reciprocally carried in said machine, a first elongated needle holding block corresponding to said one row and a second elongated needle holding block corresponding to said other row, said first block having a pair of spaced longitudinally extending substantially planar reference surfaces, said second block having a pair of spaced longitudinally extending surfaces, at least one of said surfaces of said second block being a substantially planar reference surface, means for securing a first plurality of needles intermediate the surfaces of said first block and a second plurality of needles intermediate the surfaces of said second block, fastening means for clamping said blocks to said needle bar housing with the reference surfaces of said first block abutting the respective reference surfaces of said needle bar housing and of said second block and with said first needles offset substantially intermediate said second needles, said fastening means including means for permitting said first block to be positioned relative to said second block and to said needle bar housing for adjusting the stagger of said first needles relative to said second needles so that the first block may be adjusted finely and secured to said needle bar housing and to said second block.

8. A needle bar for supporting a plurality of needles in two longitudinal rows extending transversely across a tufting ma-

4,429,650

EXTRUDED SEWING MACHINE FRAME

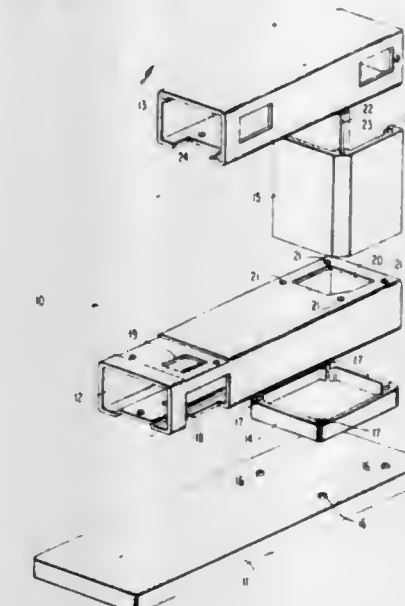
Hitoshi Ishikawa, Nishio; Kimihiko Yamamoto, Nagoya, and Yasuro Sugiura, Takahama, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Dec. 30, 1981, Ser. No. 335,494

Claims priority, application Japan, Jan. 14, 1981, 56-003667
Int. Cl.³ D05B 73/00

U.S. Cl. 112-258

4 Claims



1. A sewing machine frame composed of a plurality of hollow extruded components comprising a vertical support member comprised of hollow extrusion means, a horizontal cantilevered bed comprised of hollow extrusion means connected to said support member, a horizontally disposed arm comprised of hollow extrusion means connected to said support member in spaced parallel relation to said bed and a base member connected to said support member.

4,429,649

ASSEMBLY FOR LOWER THREAD TENSION ADJUSTMENT OF SEWING MACHINE

Yasukata Eguchi, Kunitachi, and Eiichi Shomura, Hachioji, both of Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

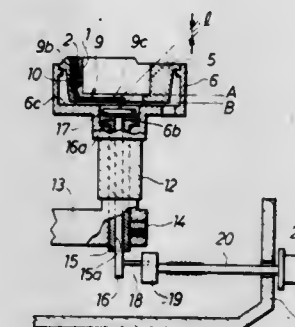
Filed Sep. 25, 1981, Ser. No. 305,802

Claims priority, application Japan, Sep. 26, 1980, 55-136050[U]

Int. Cl.³ D05B 63/00

U.S. Cl. 112-229

5 Claims



1. An assembly for adjusting a lower thread tension for use in combination with a sewing machine having a loop taker and a bobbin carrier which is held by the loop taker and carries therein a bobbin loaded with a lower thread, said assembly comprising

- (a) a base plate attached to an inner wall of the bobbin carrier and provided with a slit through which the lower thread passes;
- (b) a substantially L-shaped presser element having a vertical portion and a horizontal portion, the vertical portion being adapted to be normally pressed against the base plate so as to give a tension to the lower thread passing through the slit;
- (c) means for turnably supporting the L-shaped presser element with respect to the base plate;
- (d) magnetic means acting on the horizontal portion of the L-shaped presser element without contact thereto for turning the L-shaped presser element; and
- (e) means for manually operating the magnetic means to vary a magnetic force of the magnetic means with respect to the horizontal portion of the L-shaped presser element.

4,429,651

DEVICE FOR DETECTING ABSENCE OF A THREAD IN A SEWING MACHINE

Ikuro Tajima, Nagoya, Japan, assignor to Tokai Kogyo Mishin Kabushiki Kaisha, Kasugai, Japan

Filed Jul. 29, 1980, Ser. No. 173,425

Claims priority, application Japan, Aug. 6, 1979, 54-100578; Aug. 6, 1979, 54-100579; Jun. 27, 1980, 55-88443

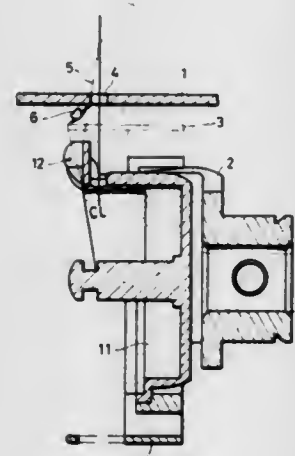
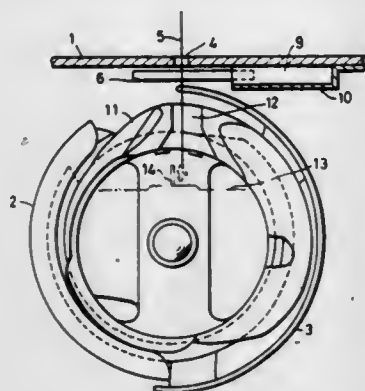
Int. Cl.³ D05B 69/36

U.S. Cl. 112-273

7 Claims

1. A device for detecting absence of a needle thread or a bobbin thread in a sewing machine having a throat plate including a needle hole provided therein, a rotary hook and a rotary hook fin fitted on said rotary hook, said device comprising at least one piezoelectric element provided between said throat plate and said rotary hook and adapted for intermittent

contact with one of said threads when said thread shifts from the center of said needle hole by engaging with said rotary



hook fin, said thread passing vertically through said center of said needle hole.

4,429,652

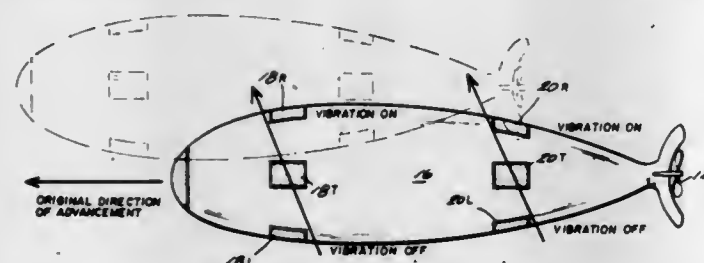
ULTRASONIC EXCITATION OF UNDERWATER TORPEDOES FOR ENHANCING MANEUVERABILITY, SPEED AND TARGETING ACCURACY

Israel Stoi, Monroeville, Pa., assignor to Invocas, Inc., Columbus, Ohio

Filed Nov. 23, 1981, Ser. No. 324,010
Int. Cl.³ F42B 19/01

U.S. Cl. 114—20 R

13 Claims



13. A method for steering an underwater hull such as that of a torpedo having an external wall defining a longitudinally forward-presented nose portion and a laterally-presented portion, where the external wall has an external surface which is subject to skin friction drag due to the generation and existence on and adjacent to said external surface of a boundary layer of fluid as the hull is advanced through the water, said hull including a propulsion device for advancing the hull through the water at such a speed that a substantial-portion of such energy as is expended in operating said propulsion device would need to be expended for overcoming said skin friction drag, and for permitting the hull to be advanced through the water by said propulsion device at a substantially reduced expenditure of propulsive energy, due to ultrasonically-induced high-energy

continuing fragmentation of the fluid boundary layer adjoining said external surface of said external wall of said hull, said method comprising:

- providing said external wall at at least three respective sites thereof with respective ultrasonically-vibratable plates each having an external face which is generally flush with said external surface of said external wall of said hull, at least one of these plates being directed substantially axially forwardly from said nose portion and at least two others of these plates being directed laterally outwards from said laterally-presented portion, said sites of these two plates being angularly spaced part-way around said hull from one another; and
- controllingly supplying ultrasonic vibrational power to each of said plates from within said hull for at least some-time vibrating ones of the respective plates sufficiently to produce ultrasonically-induced fragmentation of said fluid boundary layer adjoining said external surface of said external wall of said hull in the vicinity of the respective said plates, whereby said hull may be more easily advanced through the water in a direction toward where said fluid boundary layer is being fragmented, including
- while propelling said hull through the water along a path of movement underwater using said propulsion device, altering said path of movement, midcourse, by at least temporarily providing less power to at least one of said laterally outwardly directed plates than to at least another of said laterally outwardly directed plates.

4,429,653

MEANS EMPLOYING HYDRO-JETS FOR FACILITATING THE CLEARING OF DISAGGREGATED ICE CHUNKS FROM THE CUTTING REGION

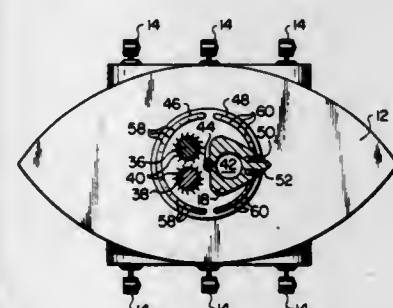
George W. Morgan, San Jose, Calif., and Vernon F. Wetzel, Calgary, Canada, assignors to Suncor, Inc., Toronto, Canada
Continuation of Ser. No. 140,041, Apr. 14, 1980, abandoned.

This application Feb. 1, 1982, Ser. No. 344,447

Int. Cl.³ B63B 35/12

U.S. Cl. 114—42

3 Claims



1. A semi-submersible operations vessel adapted for use in ice covered waters, said vessel including a subsurface flotation hull, an above-water deck structure, and an intermediate hull up-standing between said flotation hull and said deck structure, said intermediate hull including cooperating ice engaging, disaggregation, and clearing means comprising:

- a counter-rotating pair of vertically oriented, ice disaggregating drums;
- a nautical wedge portion having a roughly triangular cross-section with a first side thereof being disposed proximate peripheries of said drums;
- pressurized hydro-jet means adapted to deflect disaggregated ice chunks, which ice chunks tend to follow natural flow paths proximate said drum peripheries, from said natural flow paths into preferred discharge paths, said pressurized hydrojet means comprising first and second vertical arrays of nozzles generally centrally disposed on said first wedge side and further disposed generally equidistant from the axes of said drum pair, said first and second nozzle arrays being directed, respectively, outwardly between said first wedge side and the periphery of a first drum of said drum pair and outwardly between said

first wedge side and the periphery of a second drum of said drum pair, such that disaggregated ice tends to follow discharge paths proximate second and third sides of said nautical wedge, thereby preventing horizontal pickup of disaggregated ice chunks in the region of said drums; and (D) air release means disposed proximate the lower end of said intermediate hull for controllably mixing air with seawater to provide a support fluid, for ice chunks disaggregated by said drum pair, which has a lower density than seawater alone, thereby controllably slowing the ascent rate of such ice chunks to inhibit vertical pickup thereof.

4,429,654

HELICAL SEAM STRUCTURAL VESSEL, METHOD AND APPARATUS OF FORMING SAME

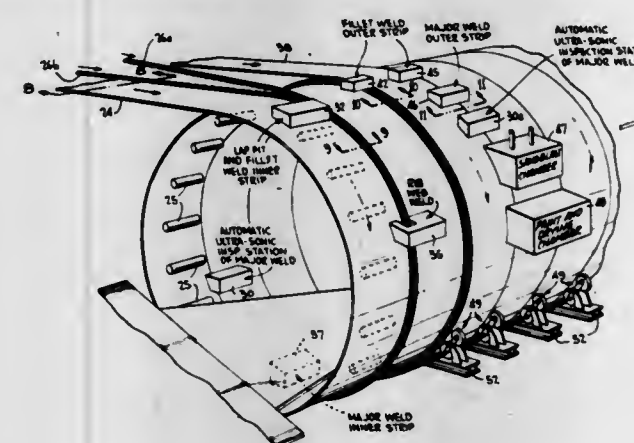
Richard H. Smith, Sr., 2926 Sing Sing Rd., R.D. #1, Elmira, N.Y. 14903

Filed Jul. 10, 1981, Ser. No. 282,082

Int. Cl.³ B63B 9/06, 3/00; F16L 9/16, 9/18

U.S. Cl. 114—65 R

12 Claims



1. A structural vessel, comprising an inner tubular liner and an outer tubular shell surrounding said liner in spaced relation, said liner and said shell comprising helically curved strips of material, continuous and helically curved spacer means between said liner and said shell, said spacer means spanning contiguous edges at successive turns of said liner and spanning contiguous edges at successive turns of said shell, and means seaming together said liner edges and seaming together said shell edges, said spacer means being secured to said strips via said seaming means.

4,429,655

SINGLE LEG TERMINAL

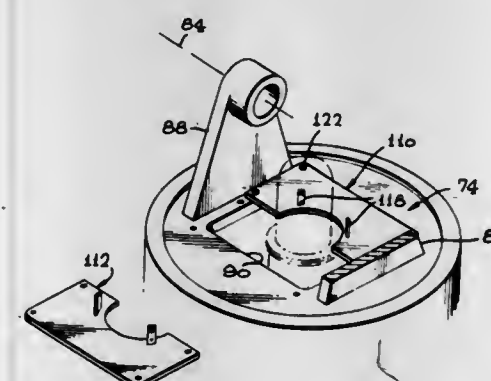
Phillip H. Tang, Rosemead, Calif., assignor to Amtel, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 34,555, Apr. 30, 1979, Pat. No. 4,326,312. This application Jan. 21, 1982, Ser. No. 341,312

Int. Cl.³ B63B 21/52

U.S. Cl. 114—230

8 Claims



1. In a single leg mooring installation which includes a riser assembly extending up from the sea floor to near the sea sur-

face to moor to a vessel, and a fluid conduit which can extend upwardly from the sea floor and sidewardly from an underwater location to the vessel to transfer a fluid cargo between a pipe near the sea floor and the vessel, and wherein the upper portion of the riser assembly must be tiltable and the upper portions of both the riser assembly and fluid conduit must be capable of rotating without limit about a substantially vertical axis to follow a drifting vessel, the improvement wherein:

said riser assembly includes a nonrotatable base lying at the sea floor, a turntable rotatably mounted on the base to rotate about a vertical axis thereon and having a hole at said axis, and a yoke-like member having a pair of upstanding leg portions with lower ends mounted on radially outer portions of said turntable to leave the middle of the turntable free of obstruction, said yoke-like member having an upper portion pivotally connected to the lower portion of said riser assembly; said fluid conduit includes a fluid swivel lying under said turntable and having a rotatable portion rotatable about said vertical axis, and also includes a pipe transition element extending through said hole in said turntable and having a lower end coupled to said rotatable portion of said fluid swivel and an upper end lying above said turntable and extending at an angle to said vertical axis; and means for sealing said pipe element to said turntable to resist the entry of silt into the area under said turntable occupied by said fluid swivel, said means including at least one member having a radially outer portion directly mounted on an area of said turntable that surrounds said hole and an inner portion sealed to said pipe.

4,429,656

TOROIDAL SHAPED CLOSED CHAMBER WHISTLE

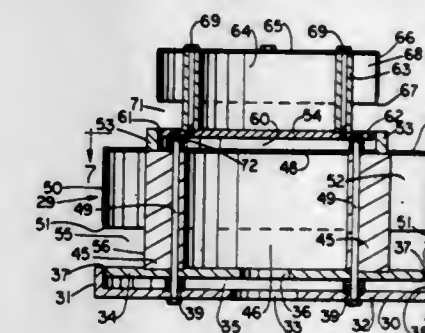
Richard J. Weisenberger, 8 Kentoo Dr., Erlanger, Ky. 41018

Filed Feb. 1, 1982, Ser. No. 344,364

Int. Cl.³ B06B 1/18

U.S. Cl. 116—137 R

27 Claims



1. A single-tone toroidal whistle for producing a directional output comprising:

- a hollow cylinder having a closed continuous bottom end and having an open top end;
- the bottom end of said cylinder having a central aperture for the passage of air under pressure into the hollow portion of said hollow cylinder;
- a circular plate positioned within said hollow cylinder parallel to the bottom end of said hollow cylinder to form an air passage between said circular plate and the bottom end of said hollow cylinder, said circular plate positioned within said hollow cylinder to form an annular air slit between said circular plate and the inner wall of said hollow cylinder;
- a torus positioned on top of said circular plate, said torus having an interior cavity;
- a circular cover affixed to the top of said torus;
- a lip descending perpendicularly from said circular cover, said lip being tapered to form a point on said lip above said inner wall of said hollow cylinder;
- said torus, said lip, and said circular cover together forming between them a chamber, air under pressure from

said annular air slit being adapted to pass to form a sound wave within said chamber, said chamber having a width in a 1 to 3 ratio to the length of said chamber, the outer diameter of said chamber being about 0.625 times the fundamental wavelength of said sound wave.

4,429,657

METHOD, MATERIALS AND APPARATUS FOR MANUFACTURING PRINTED CIRCUITS

Raymond C. DesMarais, Jr., North Chelmsford, Mass., assignor to Additive Technology Corporation, North Chelmsford, Mass.

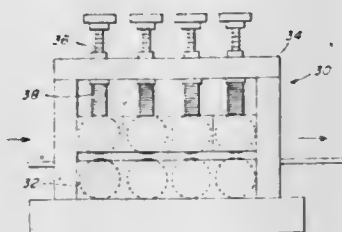
Division of Ser. No. 103,157, Dec. 13, 1979, Pat. No. 4,327,124.

This application Apr. 26, 1982, Ser. No. 372,095

Int. Cl.³ B05C 11/02

U.S. Cl. 118—114

1 Claim



1. Apparatus for use in making printed circuit boards having at least a stratum of conductive ink and a stratum of conductive particles thereon comprising:

- a frame;
- a plurality of pairs of rollers mounted to said frame; and
- means for driving a least one of each pair of rollers;
- said rollers mounted to define a linear path between each pair for a board fed therethrough;
- said rollers defining progressively increasing durometer hardness along said linearpath.

4,429,658

SEALANT APPLICATOR FOR RIVETS

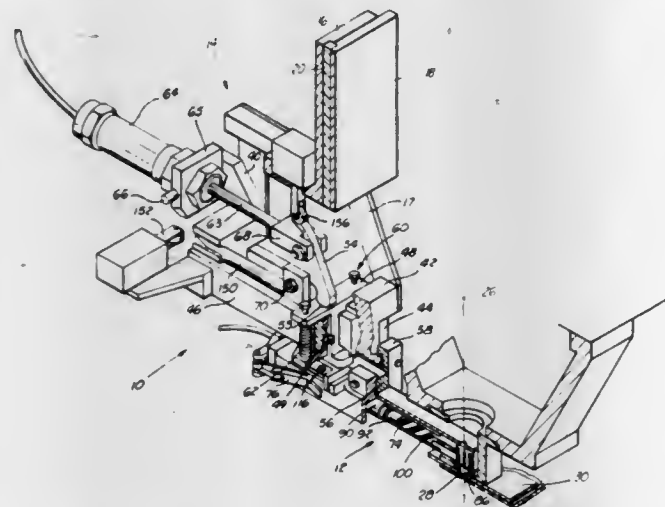
Everett E. Jones, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 10, 1981, Ser. No. 291,400

Int. Cl.³ B05C 7/00

U.S. Cl. 118—711

8 Claims



1. A sealant applicator for rivets, the applicator used for applying a sealant to a rivet hole immediately after a rivet hole is drilled in a work piece and prior to installing the rivet, the applicator comprising:

- an air operated probe assembly having a probe mounted therein for moving adjacent to the circumference of the top of the rivet hole of the work piece and leaving a thin film of sealant thereon and between the probe and the

circumference when the assembly engages the top of the work piece; and

means for moving the probe assembly for a retracted position with the center line of the probe displaced from the center line of the rivet hole to a position where the center line of the probe is indexed with the center line of the rivet hole, lowering the assembly to engage the top of the work piece and returning the assembly to the retracted position when the sealant has been dispensed by the probe.

4,429,659

APPARATUS AND METHOD OF CONFINING FISH

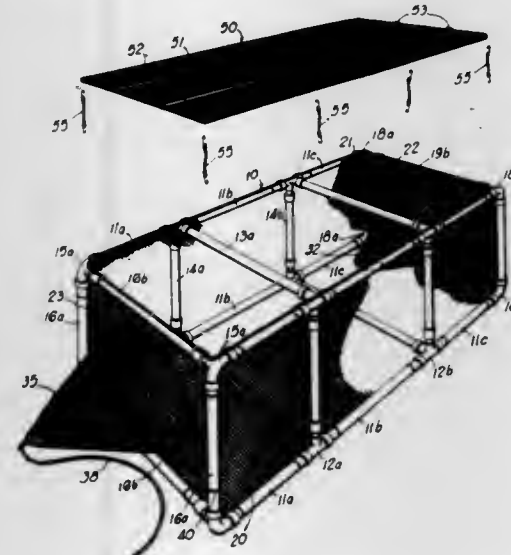
Hugh K. Holyoak, Rte. 1, Alapaha, Ga.

Filed Apr. 10, 1981, Ser. No. 252,934

Int. Cl.³ A01K 63/00

U.S. Cl. 119—3

24 Claims



1. Apparatus for confining fish comprising:

- a bouyant rigid frame defining an essentially open interior, said frame being formed of struts and means joining the ends of such struts, said means and said struts providing a perimeter defining an upper opening;
- a net assembly having flexible side walls and a flexible bottom joining the lower ends of said side walls, the upper edge portions of said side walls extending over and being secured to said frame for defining within said upper opening, an upwardly opening access opening;
- top means forming a removeable top extending over said access opening, said top means being supported by said frame for temporarily closing of said access opening; and
- detent means removeably for securing said top in its position extending over said access opening.

4,429,660

WATER POWERED FISH FEEDER

Edward F. Olson, 1961 Merritt, Turlock, Calif. 95380, and Robert F. Olson, P.O. Box 847, Summer Lake, Oreg. 97640

Filed Aug. 25, 1982, Ser. No. 411,862

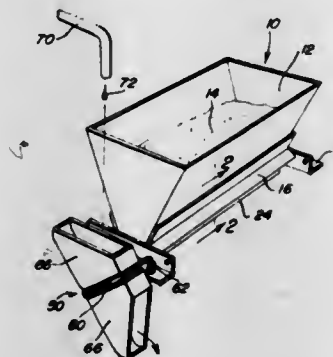
Int. Cl.³ A01K 5/00

U.S. Cl. 119—51 R

10 Claims

1. A water powered fish feeder assembly comprising a frame having a longitudinal opening extending along an interior portion of the frame and having at ends thereof a supporting base, a feed bin having a passageway communicating with the longitudinal opening, the feed bin adapted for containing and storing granular-type fish feed, a shaft mounted for rotation supported by bushings on the supporting base and the shaft extending beyond at least one end thereof, a metering rotor fixedly secured to the shaft and having its diametrical dimension essentially filling a transverse sectional area of the passageway whereby rotation of the shaft in one direction is effective to cause the rotor to dispense a predetermined amount of feed from the feed bin, means mounting at least one

container fixedly and eccentrically on the shaft for water collection in the container until a water level is reached whereupon exceeding the water level, the container is tipped about the shaft axis for emptying the container while rotating the shaft and rotor in said one direction through a predetermined



rotational increment to dispense said amount of feed, and means to thereafter return the container to its original position accompanied by rotation of the shaft and rotor in the opposite direction, whereupon water is again collected in said at least one water container for repeating the dispensing of said amount of fish feed from the assembly.

4,429,661

HEAT RECOVERY APPARATUS AND METHOD

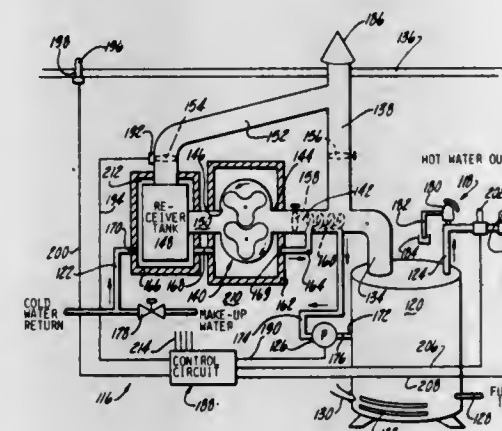
Michael C. McClure, 2808-17 Mile Rd., Sterling Heights, Mich. 48078

Filed Nov. 27, 1981, Ser. No. 325,532

Int. Cl.³ F22B 33/00

U.S. Cl. 122—20 B

25 Claims



1. A flue gas heat recovery apparatus for use within a heating plant including an exhaust flue and a cold fluid return duct, said apparatus comprising:

- compressor means operative to draw relatively low temperature exhaust gases within said flue at a relatively low inlet pressure and to discharge said gases at an elevated outlet pressure;
- a heat exchanger disposed within said return duct and operative to receive said discharged gases to effect a transfer of thermal energy from said gases to fluid flowing within said return duct;
- means operative to selectively vary operation of said compressor as a function of predetermined operating parameters; and
- means operative to effect exhaust of gases existing said heat exchanger to a low pressure sink.

4,429,662

METHOD AND APPARATUS FOR GENERATING VAPOR

Kenichi Hashizume, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 159,491, Jun. 16, 1980, abandoned.

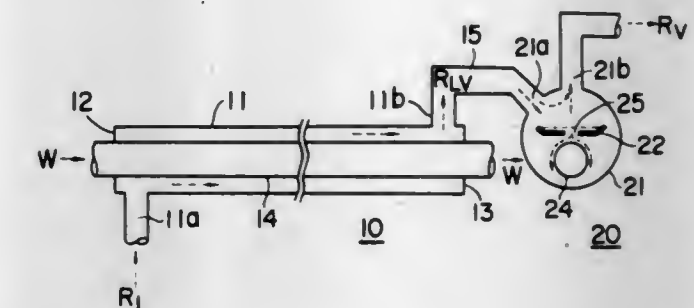
This application Jul. 13, 1982, Ser. No. 397,790

Claims priority, application Japan, Jun. 21, 1979, 54-77503; Jul. 24, 1979, 54-93303

Int. Cl.³ F22B 1/02

U.S. Cl. 122—32

10 Claims



1. A method of generating vapor comprising the steps of: preparing a first evaporator in which a liquid is evaporated by a heating fluid having a higher temperature than an evaporating temperature of said liquid to form a mixture of said liquid and vapor thereof and a second evaporator including a heat transfer tube for evaporating said liquid of said mixture; simultaneously passing said liquid and said heating fluid through said first evaporator in a heat transfer relationship thus forming said mixture of said liquid and vapor thereof, said mixture having a vapor-water ratio of from 0.6 to 0.8;

admitting said mixture into said second evaporator to separate said vapor from said liquid; passing said separated liquid about said heat transfer tube to substantially completely evaporate said separated liquid; and supplying the vapor in said second evaporator to vapor utilization apparatus.

5. Apparatus for generating vapor from a liquid comprising: a first heat exchanger having at least one first heat transfer tube and a first heat transfer jacket, said first heat transfer tube passing through said first heat transfer jacket, whereby a fluid passing through said first heat transfer tube can transfer its heat to a liquid passing through said first heat transfer jacket, said liquid being at a lower temperature than said fluid, to at least partially evaporate said liquid;

means for supplying a heated fluid to said first heat transfer tube; means for supplying a liquid to said first heat transfer jacket; a second heat exchanger having at least one second heat transfer tube and a second heat transfer jacket, said second heat transfer tube passing through said second heat transfer jacket;

means for supplying a heated fluid to said second heat transfer tube; means connecting said first heat transfer jacket to said second heat transfer jacket, whereby the vapor and liquid portions of said partially evaporated liquid of said first heat transfer jacket flows into said second heat transfer jacket;

said second heat exchanger further comprising a vapor exit vent on said second transfer jacket, the vapor portion of said partially evaporated liquid from said first heat exchanger jacket flowing into said second heat exchanger jacket immediately passing out from said second heat exchanger jacket through said vent; and a distributor plate disposed over said second heat transfer tube, said plate being adapted to receive the liquid portion

of said partially evaporated liquid from said first heat exchanger jacket flowing into said second heat exchanger jacket, said plate having openings so formed so as to permit said liquid portion to be distributed over said second heat transfer tube in a thin film, whereby said liquid portion is evaporated, the vapor from said evaporated liquid portion passing out from said second heat exchanger jacket through said vent.

4,429,663

REACTOR PRESSURE VESSEL FOR A BOILING-WATER REACTOR

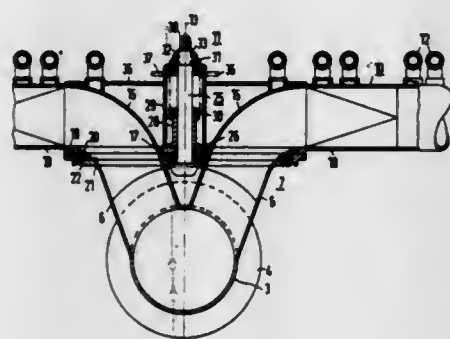
Heinrich Dorner, and Günter Rabe, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany
Continuation of Ser. No. 52,629, Jun. 27, 1979, abandoned. This application May 15, 1981, Ser. No. 264,139

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829590

Int. Cl.³ F22B 37/22

U.S. Cl. 122—365

8 Claims



1. In a reactor pressure vessel for a boiling-water reactor having a feedwater inlet nozzle, the combination comprising a heat protective pipe received in the nozzle and having an extension projecting therefrom, a feedwater sparger ring disposed in a given plane inside the vessel and having additional nozzles disposed thereon for distributing feedwater inside the vessel, and means for connecting said feedwater sparger ring to said heat protective pipe, said connecting means comprising an elbow extending angularly downward from said given plane and connecting said feedwater sparger ring to said extension of said heat protective pipe, another extension projecting from said heat protective pipe, and said connecting means also comprising another elbow extending angularly from said given plane and extending said feedwater sparger ring to said other extension of said heat protective pipe defining two portions of said sparger ring being disposed between said connections, said portions both being open between said connections, said extensions and said elbows being, respectively, disposed symmetrically to one another with respect to a common plane of symmetry being perpendicular to the axis of said heat protective pipe and including a locking device disposed in said plane of symmetry and locking said extensions and said elbows together.

4,429,664

COOLED SHAKING GRATE HAVING NO GRATE BAR

Karl Feldhoff, Marienheide, and Paul Peters, Gummersbach, both of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany
Filed Dec. 3, 1982, Ser. No. 446,710

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148446

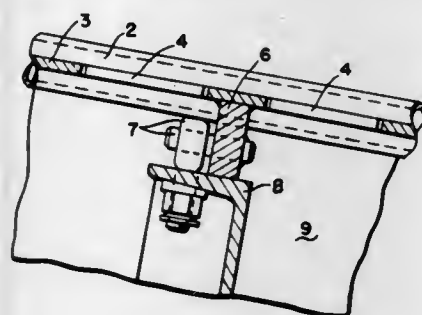
Int. Cl.³ F22B 31/00; F23K 3/08

U.S. Cl. 122—376

1 Claim

1. A shaking grate for a fuel bed, said shaking grate having an inlet with a charging region for said fuel bed and including: a vibrating grate carriage which is provided with crossbars; a planar grate sheet comprising alternatingly, inclined and

interconnected tubes and crosspieces; said tubes being continuous and being disposed parallel to the direction of incline; said crosspieces having slot-shaped openings which taper conically in the direction of said fuel bed, said crosspieces being free of said openings in the region of said inlet for said fuel bed and up to the beginning of the first combustion zone of said fuel bed;



ridge plates and heat-compensating glide elements for connecting said grate sheet to said crossbars of said grate carriage;
a coolant circuit with which said tubes communicate; and
a riser for coolant, said riser being situated in said charging region of said inlet for said fuel bed.

4,429,665

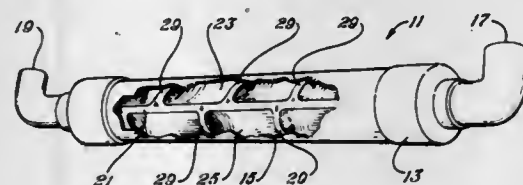
FUEL TREATING DEVICE AND METHOD

Bill H. Brown, 3933 Boise Ct., Irving, Tex. 75062
Filed Aug. 17, 1982, Ser. No. 408,756

Int. Cl.³ F02M 27/00

U.S. Cl. 123—3

8 Claims



1. A fuel treating device for improving the combustion characteristics of liquid fuels comprising:

a casing through which liquid fuel is adapted to flow;
an elongated metal bar located inside said casing for contacting said fuel flow;
said metal bar comprising an alloy of nickel, zinc, copper, tin, and silver.

7. In a combustion process wherein liquid fuel and an oxygen-containing gas are first mixed and then ignited, a method of treating the fuel prior to mixing it with the gas, comprising the steps of:

flowing said fuel through a casing having a hollow interior in which is housed an elongated metal bar, said bar having exterior surfaces in contact with said fuel flow;
wherein said metal bar is an alloy of nickel, zinc, copper, tin, and silver.

4,429,666

MOTOR VEHICLE HAVING AN INTERNAL-COMBUSTION ENGINE FITTED WITH MEANS FOR CONTROLLING THE AIR STREAM FLOWING THROUGH THE ENGINE COMPARTMENT

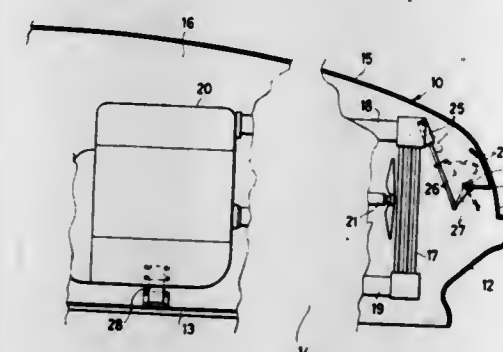
Filippo Surace, and Giampaolo Garcea, both of Milan, Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy
Filed Apr. 1, 1982, Ser. No. 364,314

U.S. Cl. 123—41.05

1 Claim

1. A motor vehicle front body portion defining an engine

compartment, said engine compartment including a front portion and a rear portion, an engine mounted in said rear portion and an air cooled radiator for said engine mounted in said front portion, said front body portion being in the form of a shell and having a rounded front part extending above and below said radiator, said front body portion being open at the bottom thereof between said radiator and said grill for the discharge of air, and said rounded body front part having air flow means for the flow of cooling air through said rounded body front part to and through said radiator, said air flow means including constantly open air ports for directing normally required cooling air to said radiator, and an additional air port formed in said



rounded body front part above said normally open air ports and in horizontal alignment with said radiator, said additional air port generally lying in a primarily vertical plane, a closure slat normally aligned with said additional air port and generally forming a part of the contour of said rounded body front part, mounting means pivotally mounting said closure slat for pivoting from its body contour forming position closing said additional air port to a generally horizontal out of the way position, and a thermostatically activated device carried by said radiator and coupled to said mounting means to selectively position said closure slat in accordance with the temperature of engine coolant.

4,429,667

FUEL SUPPLY FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Yoshihisa Kawamura, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Division of Ser. No. 89,266, Oct. 29, 1979, Pat. No. 4,378,761.

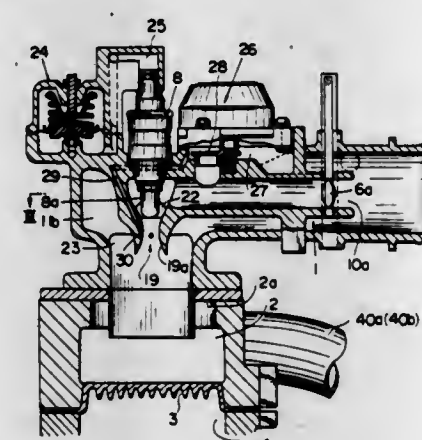
This application Oct. 26, 1981, Ser. No. 315,146

Claims priority, application Japan, Nov. 1, 1978, 53-135031

Int. Cl.³ F02M 61/14

U.S. Cl. 123—52 M

5 Claims



1. A method for supplying a fuel to a single point fuel-injected internal combustion engine comprising:
producing a primary air flow in an air intake manifold;
injecting fuel directly into the primary air flow in a direction substantially parallel to said primary air flow at the point of injection for atomization therein;
producing an auxiliary air flow substantially parallel to said

primary air flow around said primary air flow in the vicinity where the fuel injection is effected;
guiding said primary air flow and injected fuel by said auxiliary air flow towards a riser portion of said air intake manifold for evaporating the injected fuel and for creating a uniform air/fuel mixture, said riser portion having a floor surface in contact with an exhaust passage; and
adjusting the auxiliary air flow corresponding to the load condition on the engine for increasing said auxiliary air flow under substantially high load condition.

4,429,668

INTERNAL COMBUSTION ENGINE FOR PORTABLE MACHINE

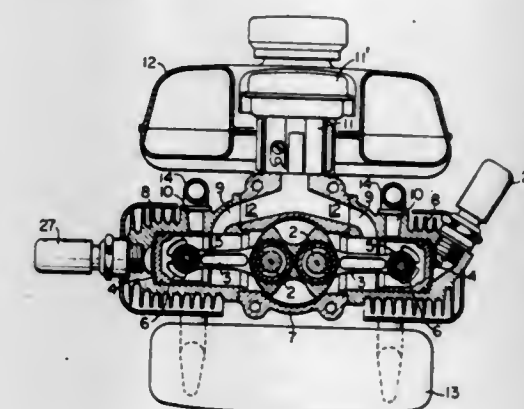
Kumalchi Nakagawa, Kokubunji, and Hisashi Inaga, Tokyo, both of Japan, assignors to Kloritz Corporation, Tokyo, Japan
Filed Sep. 15, 1982, Ser. No. 418,155

Claims priority, application Japan, Oct. 20, 1981, 56-156204[U]

Int. Cl.³ F02B 75/24

U.S. Cl. 123—56 B

1 Claim



1. A 2-cycle opposed cylinder simultaneous ignition type internal combustion engine comprising: a crank case 7; an intake system provided at the upper side of said crank case 7 and including a carburetor 11, air cleaner 11' and so forth; a fuel tank 12 arranged around said intake system; a manifold type exhaust muffler 13 provided at the lower side of said crank case 7; a starter 18 provided on one end of said crank case 7 in the axial direction of a crank shaft 1 of the engine; a transmission shaft 22 for working machine detachably connected to the output side of said crank shaft 1; and internally cooled type pistons 4,4 received by two cylinders 8,8 acting as piston valves; each of said cylinders 8,8 having an intake port 9 and an exhaust port 10 which are arranged on the same side of said cylinder 8 in a side-by-side relation in the direction of axis of said cylinder 8.

4,429,669

VALVED PRECHAMBER DIESEL ENGINE AND METHOD OF OPERATING

Harvey A. Burley, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,868

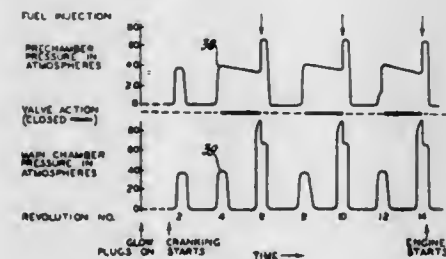
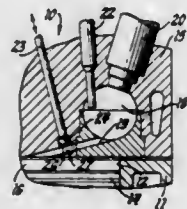
Int. Cl.³ F02B 19/02, 75/02

U.S. Cl. 123—179 H

3 Claims

1. The method of operating for starting and warming up a low compression indirect injection compression ignition internal combustion engine having a variable volume main combustion chamber connected by a throat to a prechamber into which fuel is injected for burning to develop power and having a valve operative to close or open the throat to permit or prevent communication between the prechamber and the main combustion chamber, wherein said chambers each form at least one quarter of the total cylinder clearance volume, said method comprising the steps of

admitting a charge of air to the main combustion chamber and subsequently contracting the main combustion chamber to compress the fresh charge into the clearance volume comprising the main combustion chamber and the prechamber, closing the valve to retain in the prechamber the portion of the charge compressed therein, maintaining the valve closed while expanding and discharging the remaining charge portion in the main combustion chamber, admitting a second fresh charge and at least beginning its compression in the main combustion chamber,



fully compressing the second fresh charge and opening the valve to combine the compressed second fresh charge in the main combustion chamber with the retained compressed charge in the prechamber to provide an increased pressure in the prechamber sufficient for compression ignition, injecting a charge of fuel into the prechamber for ignition and burning, expanding the main combustion chamber to develop power, exhausting the burned gases, and repeating the foregoing steps for a sufficient number of cycles to allow normal running of the engine with compression ignition in the prechamber at the established low engine compression ratio.

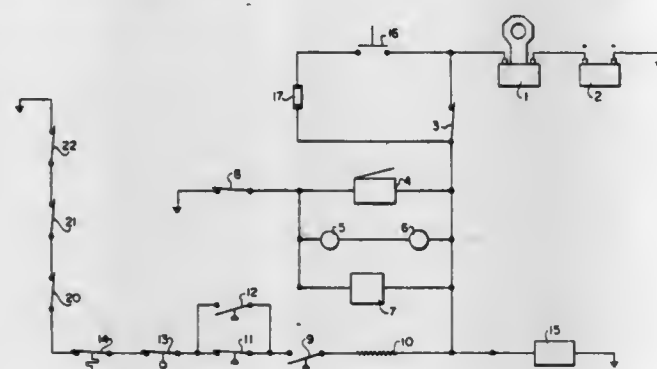
4,429,670

ENGINE PROTECTION SYSTEMS

George D. Ulanet, 89 Claremont Ave., Maplewood, N.J. 07040
Filed Feb. 3, 1978, Ser. No. 875,100
Int. Cl.³ F02B 77/08

U.S. Cl. 123—198 D

15 Claims



1. An internal combustion engine protection system having monitoring means for monitoring one or more operating parameters of the engine, alarm means and disabling means cou-

pled to said monitoring means for indicating when at least one operative condition does not fall within predetermined safe parameters and for disabling the engine if the condition endures for a predetermined period of time, and override means for overriding said disabling means and re-enabling operation of the engine, the improvement comprising, comprehensive circuitry for said monitoring, alarm and disabling means, said circuitry comprising:

- a normally open low RPM oil pressure sensor switch (9) that is adapted to close at a predetermined low oil pressure build up;
- a normally open high RPM oil pressure sensor switch (12) that is adapted to close at a predetermined high oil pressure build up;
- a relay coil (10) operatively associated with said switches and with a normally closed relay switch (8) in the portion of said circuitry including said disabling means;
- said disabling means comprising a shut-down circuit breaker means (7) and a normally closed shut-down circuit breaker switch (3);
- said circuit breaker means (7) being activated by current flow therethrough under engine operating conditions and being adapted, when subjected to said current flow for a predetermined period of time, to effect opening of said circuit breaker switch (3) to thereby disable engine operation;
- each of said pressure sensor switches (9, 12) when closed completing an electric circuit to thereby energize the relay coil (10);
- whereby the energized relay coil (10) effects opening of said relay switch (8) to thereby interrupt said current flow to the shut-down circuit breaker means (7) to forestall said engine disablement due to opening of the shut-down circuit breaker switch 3; and
- said pressure sensor switches (9, 12) being each adapted to open, when the associated oil pressure does not fall within the safe operating parameter, to thereby effect deenergizing of the relay coil (10) with the consequent closing of the relay switch (8) to thereby initiate reactivation of the shut-down circuit breaker means (7) by current flow therethrough.

4,429,671

DEVICE FOR AUTOMATICALLY ADJUSTING THE ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE WHEN OPERATING UNDER IDLING CONDITIONS

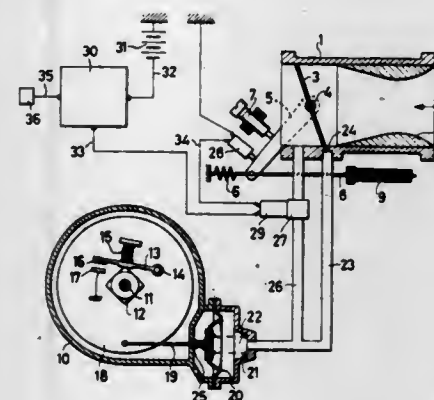
Filippo Surace, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Dec. 31, 1981, Ser. No. 336,273

Claims priority, application Italy, Jan. 9, 1981, 19068 A/81
Int. Cl.³ F02P 5/04

U.S. Cl. 123—339

4 Claims



1. A device for automatically adjusting a spark advance of an ignition system for controlling the idling r.p.m. of an internal combustion engine, said device being of a type controlled by a first sensor means of a pneumatic kind comprising a sealed

cavity, a membrane in said cavity, and elastic means acting on said membrane, switch means adapted to control said ignition system, said membrane being operatively connected to said switch means, said cavity being connected by a first conduit to an intake manifold for air aspirated by the engine upstream of a throttle valve positioned in said intake manifold and being connected by a second conduit to the said intake manifold downstream of said throttle valve, said second conduit being controlled by an electrically operated valve controlled by second sensor means which senses engine speed and by third sensor means which senses the position of said throttle valve.

4,429,672

DEVICE FOR CONTROLLING THE RATE OF DELIVERY OF A FUEL-INJECTION FOR AN INTERNAL-COMBUSTION ENGINE

Manuel Roca-Nierga, Barcelona, Spain, assignor to Spica S.p.A., Leghorn, Italy

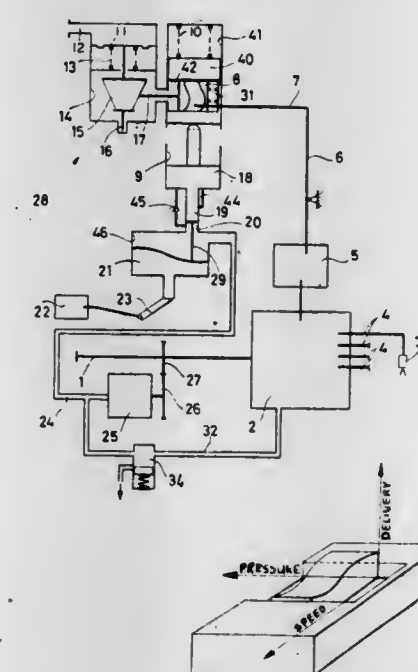
Filed Apr. 14, 1982, Ser. No. 368,118

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115720

Int. Cl.³ F02D 1/06

U.S. Cl. 123—369

18 Claims



1. A controlled device for an internal combustion engine comprising pump means for generating fuel pressure which is proportional to the rpm's of an internal combustion engine, means for delivering fuel to injectors of an internal combustion chamber, means for developing supercharging pressure for an internal combustion engine, means for controlling said fuel delivering means in response to fuel pressure and supercharging pressure, said controlling means including a tridimensional planar cam, means for mounting said cam for sliding movement in two directions perpendicular to each other in a common plane, means for moving said cam in a first of said two directions in response to the generated fuel pressure, first means for biasing said cam in a direction opposite to said first direction against the force of the generated fuel pressure, means for moving said cam in a second of said two directions in response to the supercharging pressure, second means for biasing said cam in a direction opposite to said second direction, and means for responding to cam movement in both of said two directions for operating said fuel delivering means.

4,429,673

PROGRAMMED COLD START ENRICHMENT CIRCUIT FOR A FUEL INJECTED INTERNAL COMBUSTION ENGINE

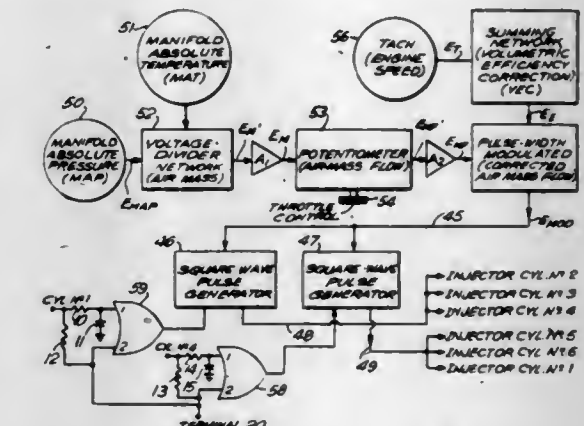
Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 11, 1981, Ser. No. 329,990

Int. Cl.³ F02B 3/00

U.S. Cl. 123—491

11 Claims



1. Electronic pulse generating means for timing the solenoid-excitation of a fuel-injection solenoid valve in a throttle controlled internal combustion engine, comprising, means responsive to incoming trigger signals generated by engine cylinder firing for normally enabling said pulse generating means at a first predetermined frequency of pulse generation, means responsive to a continuously evaluated plurality of electrically sensed parameters for varying the pulse width generated by said pulse generating means under conditions of normal engine operation, means responsive to engine starting under cold operating conditions for enabling said varying means to increase said pulse width and means responsive to engine starting and engine throttle position for enabling said pulse generating means at a second predetermined frequency of pulse generation.

4,429,674

MULTICYLINDER INTERNAL COMBUSTION ENGINE

Bernd-Eric Lübbing, Winterbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

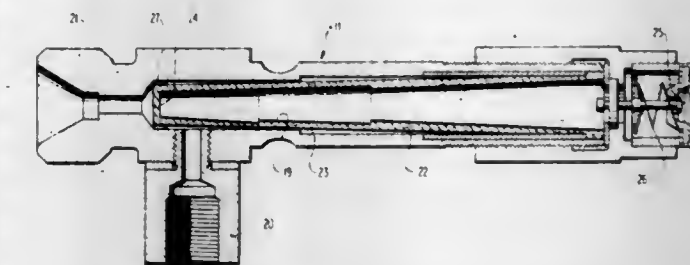
Continuation of Ser. No. 46,493, Jun. 7, 1979, abandoned. This application Nov. 20, 1981, Ser. No. 323,483

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826025

Int. Cl.³ F02B 3/00

U.S. Cl. 123—531

1 Claim



1. A fuel supply arrangement for an internal combustion engine, the fuel supply arrangement including an injection means for supplying a premixed fuel-gas mixture so that the fuel is in the form of a mist with droplets of a substantially identical droplet size each having a diameter at which a flow characteristic is obtained which is the same as a flow characteristic of the gas of the fuel-gas mixture, the injection means includes a discharge orifice, and is con-

structed so that the fuel-gas mixture is discharged from the discharge orifice substantially at the speed of sound, and in that

the injection means includes an injection nozzle, a fuel-gas mixing chamber means comprising a longitudinal bore hole in the injection nozzle,

a valve means for selectively opening and closing the discharge orifice in dependence upon a pressure in the mixing chamber means,

an approximately cylindrically shaped insert means, of porous material and having a hollow interior, is arranged in the mixing chamber means for filtering all of the air reaching the nozzle and all of the fuel, and disposed with a hollow space between its outer circumference and the wall of the longitudinal bore hole, and comprising closure means at one cylindrical end of the insert means,

means contiguous to the closure means to seal the insert means radially with respect to said longitudinal bore hole for isolating said hollow space from the closure means, means for introducing fuel to said injection means toward an exterior of said closure means of said insert means, means for introducing compressed air to the hollow space, and

the hollow interior of said insert means being developed conically to present an enlarged aperture to said valve means.

4,429,675

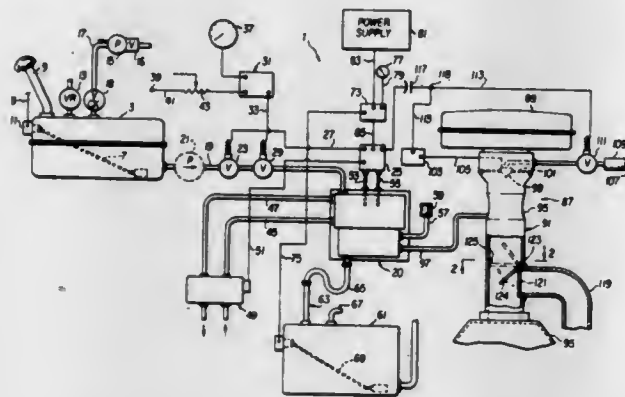
FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINES

William L. Talbert, York, Pa., assignor to Onics, Inc., York, Pa. Continuation of Ser. No. 943,660, Sep. 18, 1978, abandoned. This application Jan. 21, 1981, Ser. No. 226,618

Int. Cl.³ F02M 31/00

U.S. Cl. 123—558

34 Claims



1. A method of utilizing a liquid hydrocarbon fuel such as gasoline or the like for efficiently operating an internal combustion engine and reducing the formation of polluting products of combustion, which method comprises the steps of:

(a) providing a source of liquid hydrocarbon fuel which is capable of being combusted by an internal combustion engine and comprised of approximately two-thirds light fuel fraction and one-third heavy fuel fraction by volume; (b) separating the hydrocarbon fuel by vaporizing the light fuel fraction into a light vapor fraction substantially in the absence of air to prevent liquid phase oxidation of the hydrocarbon fuel and maintaining the light fuel fraction in vapor form;

(c) carbureting substantially only the light vapor fraction into the internal combustion engine for operating same at a higher than stoichiometric air-to-fuel ratio that varies in response to engine speed and operator demand under all operating conditions; and

(d) isolating substantially only the heavy fuel fraction from the source of hydrocarbon fuel.

4,429,676 EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR VEHICLE ENGINES

Osamu Gotoh, Tokyo; Yutaka Otobe, Saitama; Michio Kawamoto, Tokyo, and Akira Fujimura, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

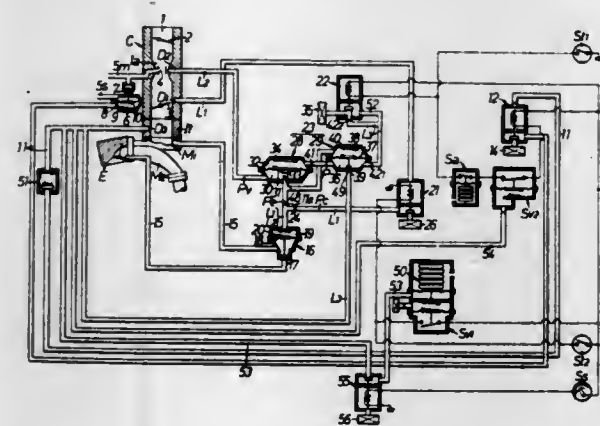
Continuation of Ser. No. 228,218, Jan. 26, 1981, abandoned. This application Jul. 8, 1982, Ser. No. 396,276

Claims priority, application Japan, Feb. 2, 1980, 55-11763

Int. Cl.³ F02M 25/06

U.S. Cl. 123—571

12 Claims



1. In an exhaust recirculation control system for an internal combustion engine for a vehicle, the engine having an intake passage with a pressure responsive auxiliary fuel supply device, and having an exhaust gas recirculation passage, the improvement comprising, in combination: a flow regulating valve in the exhaust gas recirculation passage, said flow regulating valve being actuated by suction pressure in the engine intake passage, a regulating valve means responsive to intake passage suction pressure for controlling actuating suction pressure to said flow regulating valve, a control suction air line communicating with the intake passage and said regulating valve means, means for changing the flow resistance through the control suction air line, said means being responsive to a predetermined control factor relating to an operating condition of the engine or the vehicle, whereby said flow regulating valve and said auxiliary fuel supply device are controlled in a manner such that the flow rate of exhaust gas being recirculated and the flow rate of fuel being supplied to the engine are varied in response to said predetermined control factor.

4,429,677

DISK LAUNCHING SYSTEM FOR GAMES

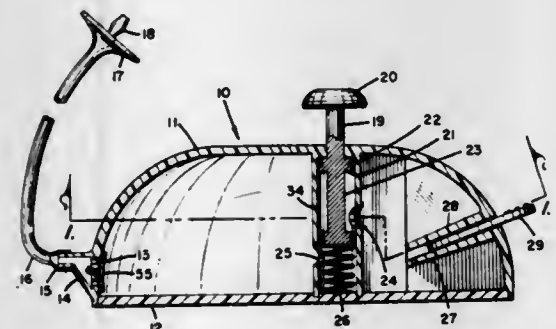
Ernest C. Moore, P.O. Box 24, Allano, Calif. 93544

Filed Nov. 2, 1981, Ser. No. 317,155

Int. Cl.³ F41B 1/00

U.S. Cl. 124—62

7 Claims



1. A mouth-blown pneumatic system for launching disks used to play games, and the like, comprising:

(a) a hollow housing, said housing having an opening for the delivery of air thereinto, and an elongated slot therein for the passage of a disk therethrough; (b) a baffle and housing support means immediately disposed

within said housing dividing said housing into first and second air reservoirs and providing structural support for said housing;

(c) an air valve for controlling the flow of air between said first and second reservoirs being actuatable from outside of said housing, said air valve being disposed within said baffle and housing support means and formed as a part of said baffle and housing support means;

(d) a pair of lips disposed in spaced-apart relationship to permit the insertion of a disk therebetween, said lips disposed in intimate abutting relationship to the inside housing surface about said slot, said lips being disposed at an upwardly directed launching angle with respect to the slot;

(e) a air hose, one end of which is coupled to said opening in said housing for the delivery of air thereto and the other end used for receiving air thereinto, so that when air is blown into said other end of said air hose, air is delivered into the first reservoir and when said air valve is actuated, compressed air is delivered from said first air reservoir to said second air reservoir and into engagement with a portion of the rim of the disk disposed within said pair of lips serving as a disk launching ramp so that when said compressed air is so engaged with said disk, the disk is launched upwardly and through the slot in said housing into the air towards its intended target.

4,429,678

CUTTING STYLUS FOR MECHANICALLY CUTTING MASTERS FOR KEEL-LAPPING

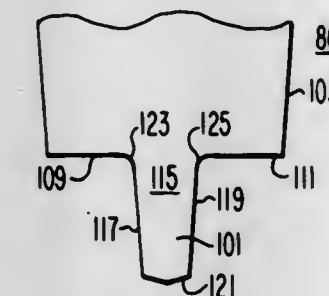
Gunter John, Indianapolis; James H. Rainey, Danville, both of Ind., and Pierre V. Valembois, Cranbury, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,810

Int. Cl.³ B28D 5/04

U.S. Cl. 125—39

3 Claims



1. A cutting stylus for cutting a fully shaped groove in a metal substrate as a step in a process for lapping a keel on a playback stylus, said playback stylus being suitable for playing back prerecorded signals from a disc record groove of a given width, said keel being defined by a constricted terminal region on the tip of said playback stylus, said constricted terminal region being narrower than said given groove width, said cutting stylus comprising:

a support body; a protrusion defined by a constricted terminal region; and shoulders joining said protrusion to said support body; said protrusion including: a flat cutting face having a shoulder end and a distal end; a pair of side surfaces extending from side cutting edges of said flat cutting face, said side cutting edges being tapered to form said protrusion such that said cutting face has a beveled contour having a first thickness proximate to said shoulder end and a second thickness which is less than said first thickness proximate said distal end; and a bottom surface extending from a bottom cutting edge of said flat cutting face; wherein said side surfaces taper at an angle of 1 to 3 degrees such that clearance is provided to said side cutting edges during the cutting operation and said bottom surface is formed such that a clearance angle of 5 to 10 degrees is

provided to said bottom cutting edge during the cutting operation; wherein said flat cutting face of said protrusion has dimensions of approximately 4 μm deep by 2 μm wide; whereby said groove in said metal master is cut, in a single pass across a surface of said metal master, having a contour that is the same as the contour of said cutting face.

4,429,679

MODULAIR AIR HEATER

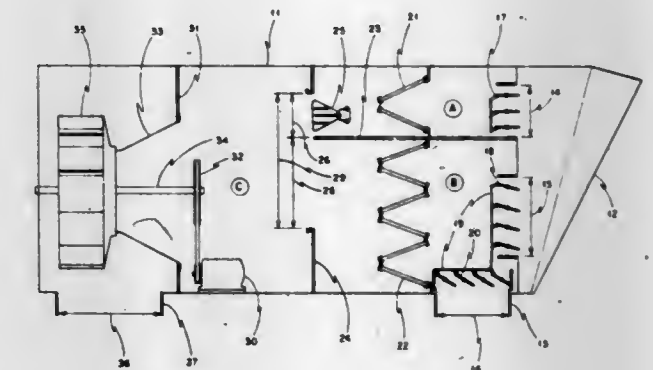
James V. Dirkes, Grand Rapids, Mich., assignor to Rapid Engineering, Inc., Grand Rapids, Mich.

Filed Sep. 30, 1981, Ser. No. 306,941

Int. Cl.³ F24H 3/02

U.S. Cl. 126—110 A

11 Claims



1. A space heating apparatus comprising a housing, a partition structure dividing the said housing into plurality of chambers, a first chamber provided with: a first profile opening of given dimensions, a first outdoor air admitting means located upstream of the said first profile means and a burner means suspended within the said first profile opening, a second chamber in juxtaposition with respect to said first chamber provided with: a second profile opening of given dimensions adjacent to and in straight line abutment but not in communication with the said first profile opening, a second outdoor air admitting means and an indoor air admitting means located upstream of the said second profile opening, a third chamber in communication with each of the said first and said second chamber by means of said first and said second profile opening means respectively and provided with: a blower means downstream of said first and said second profile openings and an air discharge means located downstream of the said blower means, the said indoor air admitting means and said air discharge means in communication with the space to be heated, wherein the said first profile opening is in a one-to-four area airflow relationship with respect to the said second profile opening with the combined area airflow of both profile openings taken in combination with the capacity of the said blower means generating a given profile velocity over the said burner means suspended in said first profile opening; the indoor air and outdoor air mixture moved at the said profile velocity through the said second profile opening in variable complementary volume relationship as demanded by the need for pressurized make up air to sustain a given threshold static pressure in the space to be heated.

4,429,680

OPEN FIRE CONVECTOR

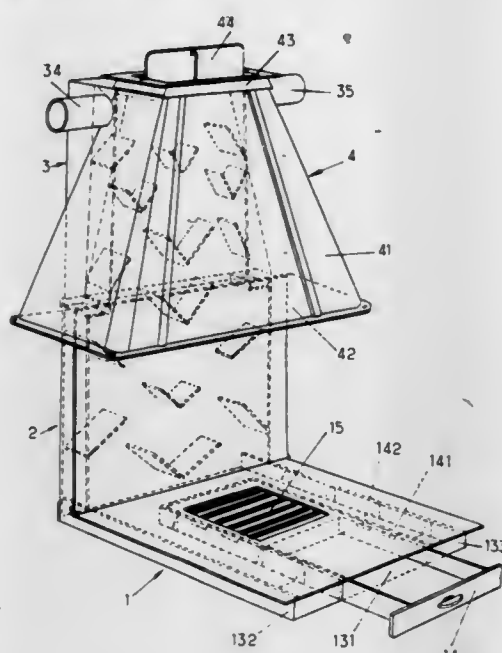
Michel Boldron, 136, avenue du Medoc, Le Vigean, 33320 Eyssines, France

Continuation of Ser. No. 40,383, May 18, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,458

Claims priority, application France, May 18, 1978, 78 14701 Int. Cl.³ F24B 7/00

U.S. Cl. 126—121

2 Claims



1. A hot air generator comprising a conduit, said conduit being characterized by a horizontal section thereof mounted on the base of the fireplace, a first vertical section detachably connected at one end to one end of the horizontal section and a second vertical section detachably connected to the other end of the first vertical section, said vertical sections extending along the back wall of the fireplace, said sections providing a continuous passageway through said conduit, the second vertical section being closed at its extreme upper end but provided with outlet openings at its sides, said horizontal section being provided internally thereof with an upstanding continuous guiding and channeling strip shaped to provide a pair of spaced parallel central legs and a pair of legs respectively spaced outwardly of the central legs, each of said central legs being provided with openings aligned with those in the other central leg of the pair, an opening in the upper wall of the horizontal section provided with a grille, a drawer slidably mounted within the horizontal section between the pair of central legs and beneath the grille, said drawer having at least two pairs of opposed openings in the sides thereof in such a manner as to be placed opposite a selected portion of the area of the openings of the said two central legs.

4,429,681

FIREPLACE GRATE ADAPTER

Samuel D. Love, 13510 Old Indian Head Rd., Brandywine, Md. 20613

Filed Jun. 16, 1981, Ser. No. 274,269

Int. Cl.³ F23H 13/00

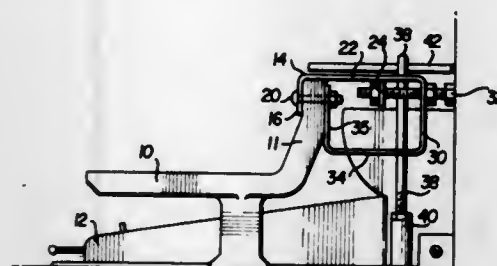
U.S. Cl. 126—152 B

14 Claims

1. A fireplace grate adapter for use in a fireplace, comprising:

- a body portion, comprising:
 - a substantially horizontal member,
 - a substantially vertical member connected with said substantially horizontal member, and
 - an aperture means in one of said substantially horizontal and vertical members;
- attachment means for attaching said body portion to a fireplace grate; and
- adjustable spacing means attached to said body portion and

extending through said aperture means, said adjustable spacing means contacting the back wall of a fireplace thus



allowing the grate to be held at an adjustable distance from the back wall of the fireplace.

4,429,682

AUTOMATIC SAFETY GAS HEATING DEVICE

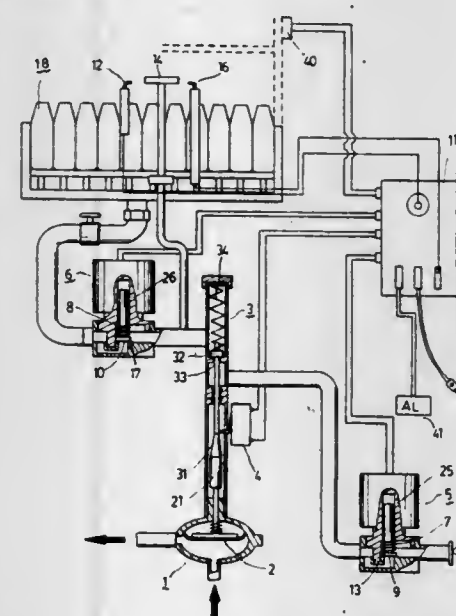
Ming F. Huang, No. 112, Ming-Te Rd., Pei-Tou District, Taipei, Taiwan

Continuation-in-part of Ser. No. 267,349, May 26, 1981. This application Feb. 26, 1982, Ser. No. 352,892

Claims priority, application Taiwan, Oct. 9, 1981, 6824923 Int. Cl.³ F24H 1/00

U.S. Cl. 126—351

4 Claims



1. An automatic safety gas heating device for water heating comprising: a valve rod externally connected to a diaphragm valve which is exerted upon by the pressure of the water; a microswitch for an electric control board, actuated by the movement of the valve rod; a first and a second solenoid operated valves connected in series and which are separately provided in a first gas conduit communicating with nozzles of a pilot burner and a second gas conduit communicating with nozzles of a main burner, the first and second solenoid operated valves separately actuated by the electric control board; a third valve provided in the first gas conduit and located between the first valve and being upstream of the nozzle of the pilot burner and the second valve, actuated by the movement of the valve rod; an igniter provided near the nozzle of the pilot burner, and actuated by the electric control board; and a first sensor provided in the vicinity of the nozzle of the pilot burner for detecting the presence of a pilot flame and inducing the electric control board to send signals, whereby as the valve rod actuating the microswitch on and the third valve to open, the pilot flame will start to be produced while the first valve is actuated to open, immediately after the pilot flame is produced, the sensor will

induce the electric control board to send a first electric signal to discontinue the sparking of the igniter, and to open the second solenoid operated valve and supply the gas to the main burner and ignited thereat; in the absence of the pilot flame, the sensor will induce the electric control board to send a second electric signal to continue the sparking of the igniter, and to deactuate the second solenoid operated valve and stop the gas supply to the main burner.

4,429,683

GRADIENT ZONE BOUNDARY CONTROL IN SALT GRADIENT SOLAR PONDS

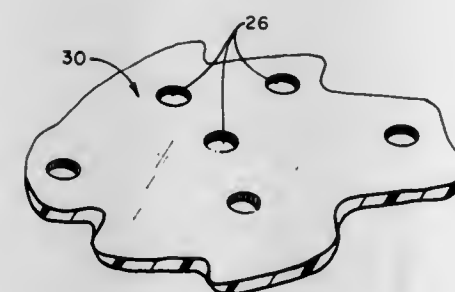
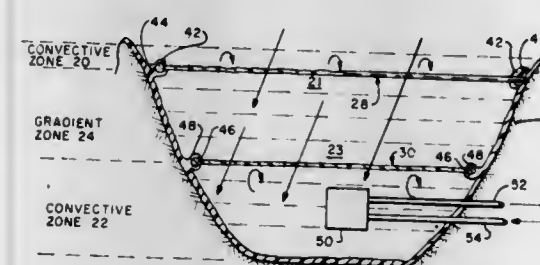
John R. Hull, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,362

Int. Cl.³ F24J 3/02

U.S. Cl. 126—415

9 Claims



1. In a salt gradient solar pond having at least one convective layer and a non-convective salt gradient layer overlying said convective layer, the transition region between said non-convective gradient layer and said convective layer defining a zone boundary, said convective layer having a generally uniform salt concentration and temperature profile, heat derived from solar radiant energy being collected and stored in said convective layer, and said gradient layer having a salt concentration and temperature profile which increases from the upper portion of said gradient layer towards said zone boundary to enhance storage of heat in said convective layer, apparatus for suppressing migration of said zone boundary comprising:

- a membrane extending horizontally across the pond at a depth corresponding to the depth of said zone boundary to inhibit the passage of turbulence from said convective layer into said gradient layer,
- said membrane being of a material which is permeable to solar radiant energy and being perforated to permit vertical molecular diffusion of salt across the membrane thereby preventing the formation of a convective zone in the gradient layer in the proximity of said zone boundary, and
- support means for securing the edges of said membrane at the sides of said pond.

9. In a salt gradient solar pond having a plurality of vertically oriented layers of salt water solution including upper and lower convective layers and a gradient layer disposed between said upper and lower convective layers, the transition region between said upper convective layer and said gradient layer defining an upper zone boundary and the transition region between said gradient layer and said lower convective layer

defining a lower zone boundary, said upper and lower convective layers each having a generally uniform salt concentration and temperature profile, and said gradient layer having a salt concentration and temperature profile which increases from said upper zone boundary to said lower zone boundary, a method for suppressing migration of said upper and lower zone boundaries comprising:

- extending a first perforated membrane horizontally across the pond at a depth corresponding to the depth of said upper zone boundary to inhibit the passage of turbulence from said upper convective layer into said gradient layer while permitting vertical molecular diffusion of salt across the membrane,
- extending a second perforated membrane horizontally across the pond at a depth corresponding to the depth of the lower zone boundary to inhibit the passage of turbulence from said lower convective layer into said gradient layer while permitting vertical molecular diffusion of salt across the membrane; and,
- adjustably supporting the edges of said first and second membranes at the sides of said pond.

4,429,684

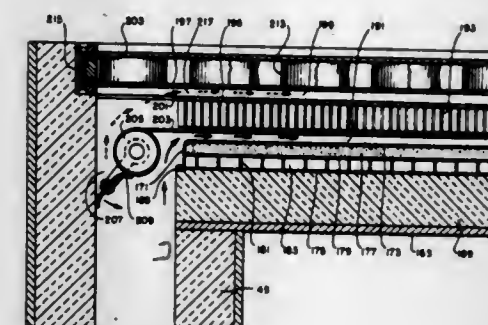
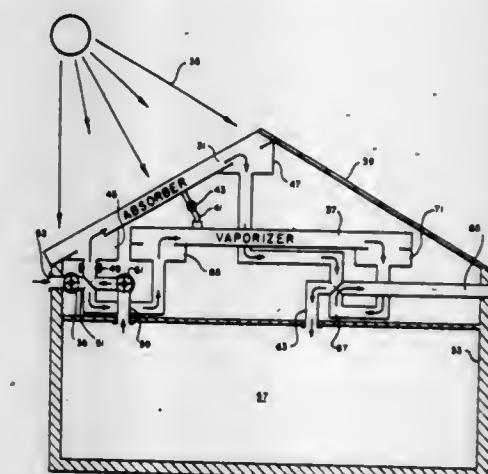
CHEMICAL HEAT PUMP

Leonard Greiner, 2853-A Hickory Pl., Costa Mesa, Calif. 92626 Division of Ser. No. 135,726, Mar. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 842,702, Oct. 17, 1977, abandoned. This application Nov. 12, 1981, Ser. No. 320,666

Int. Cl.³ F24J 3/02

U.S. Cl. 126—429

1 Claim



1. A solar energy chemical heat pump absorber panel comprising:
 - vapor absorbing chemical disposed in a bed portion of a transparent sealed container, said container at least partially evacuated for the transfer of water vapor in the remaining vapor transfer portion of said container;
 - a vapor permeable screen disposed within said sealed container between said vapor absorbing chemical and the source of sunlight, said screen coated with a substance having high infrared absorptivity and low infrared emissivity;

a first air passage for the flow of air transferring heat to and from said absorbing chemical, said air passage disposed between said source of sunlight and said transparent sealed container;

a second air passage disposed adjacent the shaded side of said transparent sealed container;

a removable shade for minimizing radiative heat loss from said absorbing chemical disposed between said absorbing chemical container and the outside environment;

a valve for selecting between heat transfer air flow through said first air passage and said second air passage; and

means disposed within said vapor transfer portion of said transparent sealed container for providing substantially uniform distribution of water vapor over said bed portion containing said absorbing chemical.

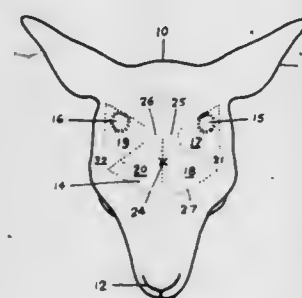
4,429,685

SURGICAL PROCEDURE

Timothy G. Zell, Box 982, Ukiah, Calif. 95482
Continuation of Ser. No. 175,029, Aug. 4, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,208
Int. Cl.³ A61K 31/505

U.S. Cl. 128—1 R

5 Claims



1. The method of forming a one-horned animal from an animal normally having a horn bud growing from a normal position on each side of the head, comprising the steps of:

pedicling a first flap of skin on each side of the head with each flap including the adjacent horn bud at a time prior to attachment of the bud to the skull;

pedicling a second skin flap on each side of the front of the head in alignment with the general area of the pineal gland;

lifting the first flaps of skin away from the skull about the attached end;

moving the second flaps of skin into the position vacated by the adjacent first flaps of skin; and

moving the first flaps of skin into the position vacated by the second flaps with the horn buds being at a transposed position adjacent one another over the pineal gland.

4,429,686

ENDOSCOPE LIGHT SUPPLY DEVICE

Selichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 214,096, Dec. 8, 1980, abandoned. This application Sep. 7, 1982, Ser. No. 415,459
Claims priority, application Japan, Dec. 20, 1979, 54-166195
Int. Cl.³ A61B 1/06

U.S. Cl. 128—6

2 Claims

1. In an endoscope system including an endoscope light supply device to which is connected a connector of an endoscope, the endoscope including a light guide having an optical axis and an eyepiece section on which is mounted a photographing device having a releasable shutter, the light supply device comprising:

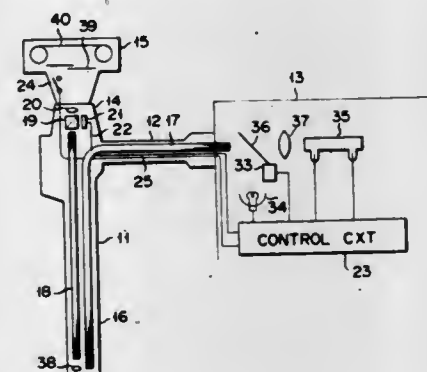
a signal source coupled to said photographing device for supplying a synchronizing signal in response to a shutter release operation of the photographing device during a photographing operation;

an electronic flash tube disposed on said optical axis of said

light guide of said endoscope and selectively energizable during a photographing operation for irradiating a photographing light;

an incandescent lamp disposed on a light path substantially perpendicular to said optical axis of said light guide and emitting an observation light along said light path during an observation operation, said light path of said incandescent lamp crossing said optical axis of said light guide substantially perpendicularly at a crossing position;

a movable mirror arranged at said crossing position of said optical axis of said light guide and said light path of said incandescent lamp during an observation operation for reflecting said observation light from said incandescent lamp to said light guide along said optical axis of said light



guide, said electronic flash tube being extinguished during said observation operation;

mirror driving means coupled to said signal source and to said movable mirror for moving said movable mirror away from said crossing position in response to said synchronizing signal during a photographing operation, thereby no longer reflecting observation light to said light guide and permitting only said photographing light from said electronic flash tube to be received at the light guide during a photographing operation; and

means coupled to said signal source and to said incandescent lamp for extinguishing said incandescent lamp in response to said synchronizing signal during a photographing operation.

4,429,687

APPARATUS FOR TREATING THE FEET

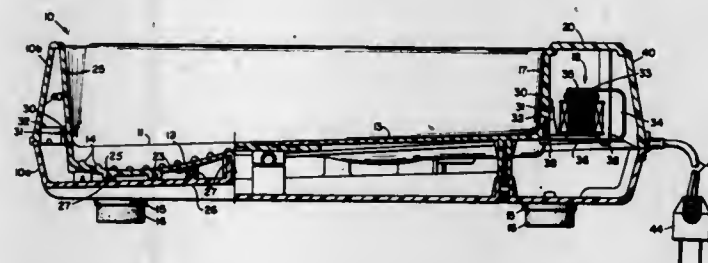
Belvin F. Friedson, Miami; Arnold Thaler, Plantation, and Ivan Saud, Miami, all of Fla., assignors to Save-Way Industries, Inc., Hialeah, Fla.

Filed Dec. 29, 1981, Ser. No. 335,360

Int. Cl.³ A61H 21/00

U.S. Cl. 128—24.2

13 Claims



1. Apparatus for treating the feet comprising: a casing having exterior walls, inwardly spaced interior side walls and an open top which define a tub for receiving and containing liquid, such liquid being exposed to ambient air under all conditions of operation, said tub having an unobstructed interior space defined by a floor and said interior side walls extending upwardly around the periphery thereof; a pair of foot receiving stations located in the floor; lower heating means including a rope heating element mounted in a channel located in the

lower surface of the floor beneath the foot receiving station, said rope heating element extending the length and width of said foot receiving station in a series of U-shaped or serpentine curves, said channel serving to distribute the heat provided by said first heating means; upper heating means including a rope heating element mounted in brackets extending at intervals between the exterior walls and the side walls, said brackets serving to distribute the heat provided by said second heating means, said upper heating means extending around the periphery of said interior side walls and being concentrated at a location spaced at a distance above the floor corresponding to the approximate upper level to which liquid is received in said tub for providing a concentrated quantity of heat to the upper surface of liquid within said tub.

4,429,688

MEDICAL APPLIANCE FOR PERCUSSIVE RESPIRATORY THERAPY

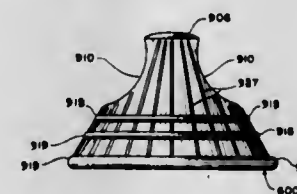
Peter B. Duffy, 4639-1/2 Tujunga, North Hollywood, Calif. 91602

Filed Dec. 8, 1980, Ser. No. 213,818

Int. Cl.³ A61H 31/00

U.S. Cl. 128—28

2 Claims



1. A medical appliance for use in percussive respiratory therapy, said apparatus comprising:

an open ended cup-like enclosure means in the shape of a truncated cone for substantially sealing pneumatically with the body surface of a person by resiliently conforming to the body contour upon impact;

a portion of said cone being adapted to provide gripping means for the user, said gripping means including:

two opposing concave regions on opposite sides of the cone for holding it between two fingers; and

surface irregularities on the substantially planar exterior surface below the concave regions for enhancing the grippability of the appliance with the other fingers of the user;

said open end of the cone defining an inward curling semi-circular lip; and

a resiliently deformable annular ring defining a groove therein to communicate with the interior and exterior portions of said curling semi-circular lip, said annular ring also defining a cavity filled with compressible gaseous vapor in the portion of the ring in communication with the exterior portion of the curling semi-circular lip, for cushioning the impact of said appliance upon the body of a patient.

4,429,689

SEX AID DEVICE FOR MALES

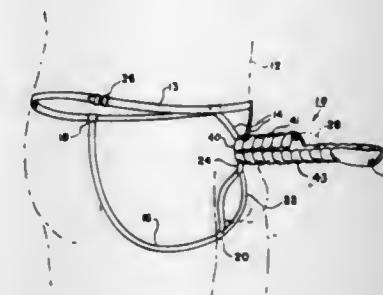
Procopio U. Yanong, 1900 Half Day Rd., Bannockburn, Ill. 60015

Filed May 26, 1982, Ser. No. 382,253

Int. Cl.³ A61F 5/42

U.S. Cl. 128—79

9 Claims



1. A sex aid device for use with a penis, comprising a generally tubular member adapted to receive a penis, said tubular member being adapted to extend from the base of and terminate dorsally just behind the glans penis of an unerect penis,

and which tubular member includes at least one relatively inelastic but flexible longitudinally extending support member which extends from the base to the tip of the penis ventrally to receive the ventral portion of the glans penis while allowing the dorsal portion thereof to be free to receive tactile stimulation; said support member having a spoonlike forward extension member and having a forward-projecting tip of soft compressible elastic material affixed to said extension member and shaped to form an artificial glans penis.

4,429,690

PLATE FOR BROKEN BONE FIXATION

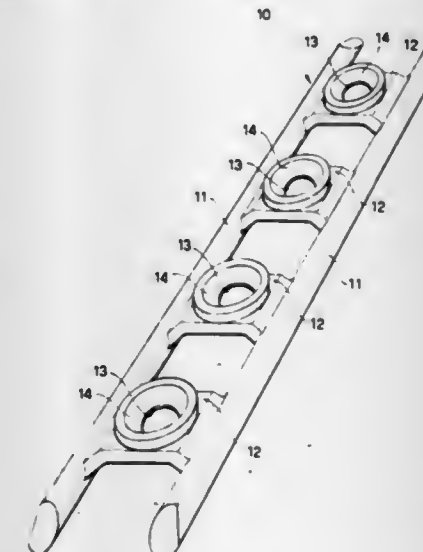
Giancarlo Angelino-Pievani, Pioltello, Italy, assignor to Cise Centro Informazioni Studi Esperienze SpA, Italy

Filed Aug. 24, 1981, Ser. No. 295,469

Claims priority, application Italy, Sep. 15, 1980, 24658 A/80
Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 D

4 Claims



1. A plate for treatment of bone fractures by joining parts of a broken bone across the fracture line by screw attachment to the parts to be joined comprising

a framework plate including

a pair of longitudinal bars having convex undersurfaces supporting said framework plate while lying in a longitudinal direction along the broken bone with each of

said bars supported on opposite sides of the fracture in said broken bone,
a plurality of cross-bracket bridging members with each of said members integrally connected to each of said longitudinal bars and extending therebetween, said cross-bracket bridging members spaced along said longitudinal bars and from each other with open spaces therebetween,
each of said bridging members having a hole therethrough for holding a screw for attachment to a bone part.

4,429,691

METHOD FOR FILLING IN DEFECTS OR HOLLOW PORTIONS OF BONES

Shigeo Niwa, Aichi; Kazuhiko Sawai; Shinobu Takahashi, both of Nagoya; Hideo Tagai, Tokyo; Mikiya Ono, Saitama; Yoshiaki Fukuda, Saitama, and Hiroyasu Takeuchi, Saitama, all of Japan, assignors to Mitsubishi Mining and Cement Company, Ltd., Tokyo, Japan

Division of Ser. No. 191,894, Sep. 29, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,259

Claims priority, application Japan, Oct. 8, 1979, 54-128821 Int. Cl.³ A61F 1/00; C01B 25/32

U.S. Cl. 128—92 C

16 Claims



1. A method of treating bones with a filler, wherein defects or hollow portions of bones are filled with fluidized or plasticized powders of a calcium phosphate compound having the apatite crystalline structure of each crystal grain size of from 50 Å to 10 microns and represented by the general formula of $\text{Ca}_m(\text{PO}_4)_n\text{OH}$ ($1.33 \leq m/n \leq 1.95$), and wherein at least a portion of said filler is filled in to reach the bone-marrow cavities of said bones.

4,429,692

TRACTION FORCE ADJUSTMENT APPARATUS

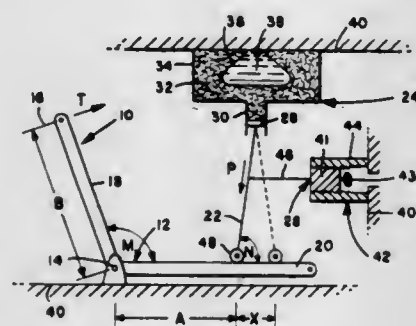
George A. Carruthers, Forge Bridge Cottage, Caton, Lancaster, England (LA 2 9NB)

Filed May 29, 1981, Ser. No. 268,129

Int. Cl.³ A61H 1/02

U.S. Cl. 128—75

18 Claims



1. Apparatus for application of traction force to patient, comprising:
a. cord means for applying a constant traction force to the patient;

b. a lever rotatable about a pivot and capable of being connected to said cord means remote said pivot;
c. a member journaled against said lever and movable therealong;
d. means for biasing said member against said lever with a force independent of displacement of said member along said lever in a direction generally transverse to the portion of said lever against which said member is journaled to maintain a predetermined traction force substantially constant; and
e. adjustable means for displacing said member along said lever as force is applied by said biasing means thereby changing distance between said pivot and where said member is journaled against said lever thereby changing force applied to said cord means to set said predetermined traction force.

4,429,693

SURGICAL FLUID EVACUATOR

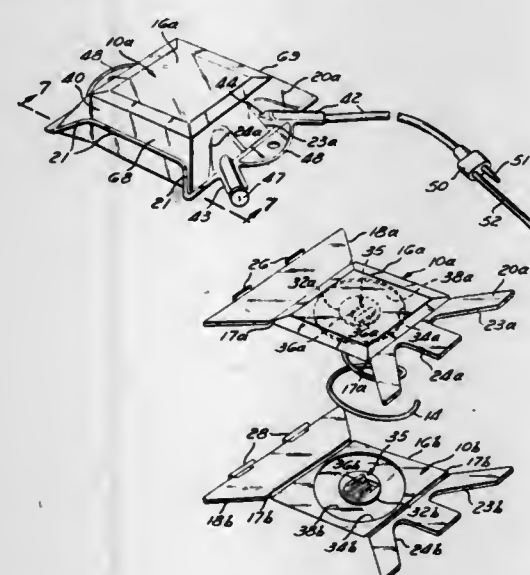
Larry W. Blake, 2885 Regis La., Costa Mesa, Calif. 92626; Ervin R. Harvel, 23991 Lindley, Mission Viejo, Calif. 92675; Duane R. Mason, 31 Farragut, Irvine, Calif. 92664, and George M. Wright, 24145 Puerta Deluz, Mission Viejo, Calif. 92675

Filed Sep. 16, 1980, Ser. No. 187,711

Int. Cl.³ A61M 1/00

U.S. Cl. 604—73

28 Claims



1. A surgical evacuation device for drawing fluid from a wound, comprising:
a compressible reservoir, having a pair of structural walls, and a flexible wall member, extending from said structural walls, to seal said reservoir from the atmosphere, the geometrical configuration of said reservoir controlled by said structural walls, as said reservoir expands;
a fluid collection tube connected to said reservoir for draining fluid from said wound to said reservoir; and
spring means for providing a biasing force in the direction of expansion of said reservoir, said force biasing said structural walls apart to expand said reservoir and create a vacuum therein, said force decreasing as said reservoir expands, said geometrical configuration producing a wall area projected in the direction of said biasing force, and acted upon by said biasing force, which area decreases as said reservoir expands to at least partially offset the decreasing biasing force provided by said spring to reduce changes in reservoir vacuum and maintain vacuum level.

4,429,694

ELECTROSURGICAL GENERATOR

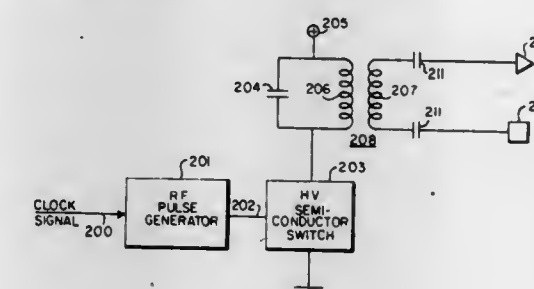
Francis T. McGreevy, Aurora, Colo., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 6, 1981, Ser. No. 281,005

Int. Cl.³ A61B 17/39

U.S. Cl. 128—303.14

26 Claims



1. An electrosurgical generator for performing surgical operations on a tissue mass comprising:
an active electrode,
a return electrode,
means for generating a damped oscillatory open circuit output voltage waveform across said electrodes, said waveform being substantially of the form $e^{-\zeta\omega_n t} \sin(\omega_n \sqrt{1-\zeta^2} t + \phi)$, where e is the base of the natural logarithm, ω_n is the undamped, natural frequency, ζ is the damping factor and is equal to or less than 0.038, but greater than 0 and ϕ is a phase angle, said generating means generating a loaded output voltage waveform across said electrodes after an electrical arc forms between said tissue mass and said active electrode, said loaded waveform being substantially of the form $e^{-\zeta\omega_n t} \sin(\omega_n \sqrt{1-\zeta^2} t + \phi)$, where e is the base of the natural logarithm, ω_n is the undamped, natural frequency, ζ is the damping factor and is substantially greater than 0.038.

4,429,695

SURGICAL INSTRUMENTS

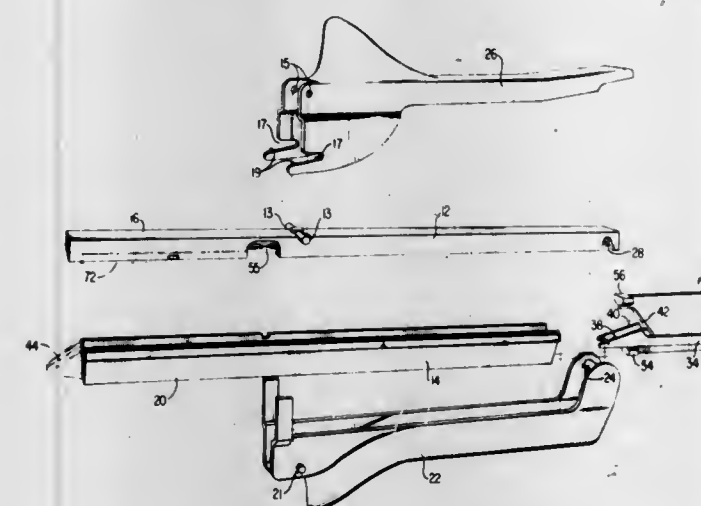
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 118,664, Feb. 5, 1980, abandoned. This application Jul. 1, 1982, Ser. No. 394,132

Int. Cl.³ A61B 17/04, 17/11

U.S. Cl. 128—305

19 Claims



16. A surgical instrument for use in fastening living tissue comprising upper and lower cooperating elongated jaws movable between open and closed positions, whereby tissue to be fastened may be gripped between said jaws when said jaws are in the closed position, means associated with one of said jaws for mounting a tissue fastening means, a pusher means movable longitudinally relative to said jaws when said jaws are in said closed position for forcibly expelling said fastening means from said one jaw and causing said fastening means to penetrate

tissue gripped between said jaws, and jaw support means carried by said pusher means, said jaw support means cooperating with said jaws during movement of said pusher means along said jaws for resisting forces tending to separate said jaws during expulsion of said fastening means.

4,429,696

SURGICAL APPARATUS FOR PRECISELY CUTTING OUT THE CORNEA

Khalil Hanna, Paris, France, assignor to Sevifra S.A., Paris, France

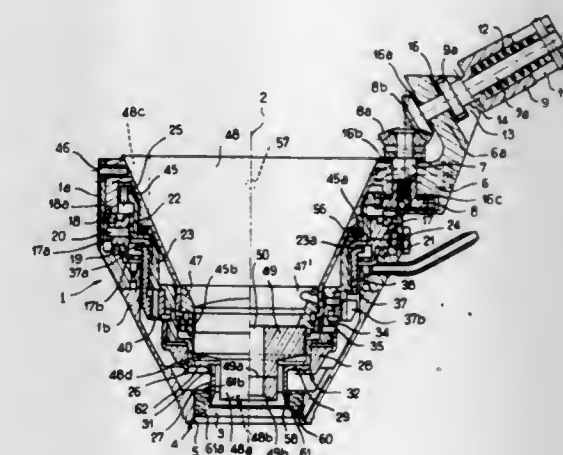
Filed Jul. 21, 1981, Ser. No. 285,684

Claims priority, application European Pat. Off., May 11, 1981, 81400745.6; France, Sep. 3, 1980, 80 19014

Int. Cl.³ A61B 17/32

U.S. Cl. 128—310

34 Claims



1. A trephine for making a circular incision in the cornea of an eye, said trephine comprising:
(a) a tubular support having an axis and being provided with a base portion having a front surface for application to the eye,
(b) a blade carrier coaxial with, and movable within, said support, said blade carrier having a front portion,
(c) a cylindrical blade coaxial with said support mounted on the front portion of said blade carrier, said blade having a circular cutting edge,
(d) drive means for simultaneously rotating and axially translating said blade carrier with respect to said support, the translatory movement serving to project the blade cutting edge from and retract it into the base portion of said support, and
(e) means for preventing the translatory movement but permitting the rotary movement of said blade carrier, upon operation of said drive means, after the cutting edge of said blade reaches a predetermined location of projection from the base portion of said support, whereby the cutting edge of the blade can be rotated within an incision without being retracted from the incision or moving forward to deepen the incision.

4,429,697

DUAL CHAMBER HEART PACER WITH IMPROVED VENTRICULAR RATE CONTROL

Tibor A. Nappholz, Drummoyne; Ronald C. Bradbury, Marsfield, and Bruce R. Satchwell, Pymble, all of Australia, assignors to Teletronics Pty. Ltd., Lane Cove, Australia

Filed Apr. 12, 1982, Ser. No. 367,427

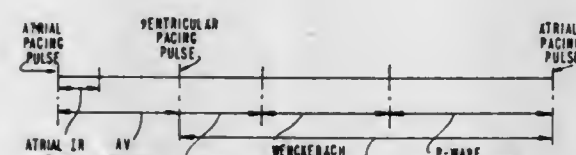
Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PG

119 Claims

1. A heart pacer comprising means for sensing atrial beats; means for generating ventricular pacing pulses; means responsive to said atrial beat sensing means for determining the atrial rate as a function of the number of atrial beats which occur during a measurement interval which is sufficiently long to

allow an average value to be determined; and means for controlling said ventricular pulse generating means to operate in synchronism with said atrial beat sensing means when said atrial rate is below a predetermined atrial upper rate, for controlling said ventricular pulse generating means to operate at a



constant rate independent of said atrial beat sensing means when said atrial rate is above said predetermined atrial upper rate, and for controlling the operating rate of said ventricular pulse generating means to decrease gradually toward said constant rate following said atrial rate first rising above said predetermined atrial upper rate.

4,429,698

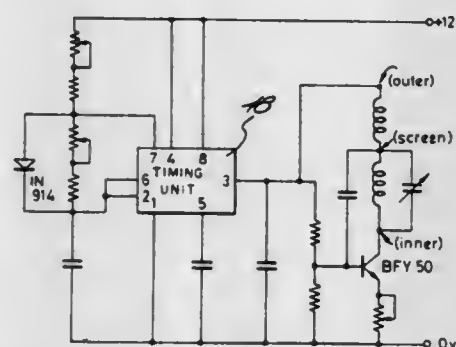
HIGH FREQUENCY ELECTROMAGNETIC THERAPY APPARATUS

Richard H. C. Bentall, P.O. Box 47, London, W11, England
Continuation of Ser. No. 74,926, Sep. 13, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,749

Int. Cl.³ A61N 1/40

U.S. Cl. 128-422

5 Claims



1. A high frequency electromagnetic therapy apparatus, comprising:

- a power supply;
- a flexible inductor of generally circular configuration forming an antenna which is positionable on an area of a body to be treated; and,
- a high-frequency, low-energy signal oscillating circuit for generating a high-frequency, low-energy electromagnetic field radiated from the inductor-antenna, at a power level in the milliwatt range, into the area of the body to be treated at an adsorbed power level in the same power range, which promotes healing of body tissue, but which is too small to significantly heat the body tissue, the fre-

quency of said radiated field being controlled by an inductive-capacitive tuned circuit, said inductor-antenna forming all of the inductive portion of the tuned circuit, the power level of the adsorbed field being independent of differences in capacitive coupling between the inductor-antenna and different parts of the body to be treated, the differences in coupling resulting in negligible power loss of the adsorbed field relative to the radiated field and inconsequential frequency shift, whereby an impedance matching circuit for the antenna is unnecessary.

4,429,699

BLOOD PRESSURE MEASURING EQUIPMENT

Rudolf A. Hatschek, Fribourg, Switzerland, assignor to Asulab AG, Biel, Switzerland

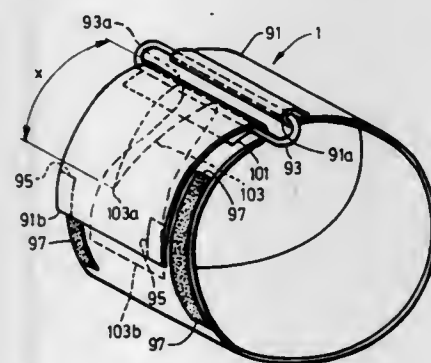
Filed Feb. 12, 1981, Ser. No. 235,561

Claims priority, application Switzerland, Feb. 18, 1980, 1299/80

Int. Cl.³ A61F 00/00

U.S. Cl. 128-681

9 Claims



1. Blood pressure measuring equipment comprising a sleeve attachable to a limb of a person, said sleeve defining a chamber inflatable by fluid and being provided with a measurement transducer for measuring the circumference or diameter of a limb to which said sleeve is attached, said transducer comprising two electrodes so arranged on said sleeve as to provide, when said sleeve is attached to a limb, a capacitor having a capacitance dependent on the circumference of the limb,

a pressure sensor for detecting fluid pressure in said chamber, and pressure value determining means electrically connected to said sensor to determine values of detected pressure levels in said chamber, said pressure value determining means comprising pressure value correcting means connected to said transducer and adapted to correct at least some of said determined pressure values in dependence on the limb circumference or diameter measurement determined by said transducer.

4,429,700

BLOOD PRESSURE MEASURING DEVICE

Richard Thees, Aachen, and Rolf Wilden, Roetgen, both of Fed. Rep. of Germany, assignors to Honeywell B.V., Amsterdam, Netherlands

Filed Feb. 2, 1981, Ser. No. 230,829

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1980, 3004011

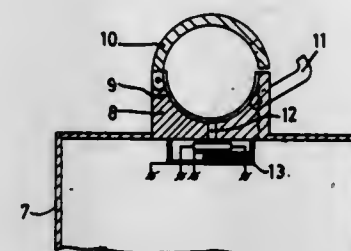
Int. Cl.³ A61B 5/02

U.S. Cl. 128-681

8 Claims

1. A blood pressure measuring device comprising: cuff means which function to apply pressure to a body part; fluid reservoir means which communicate with the interior of the cuff;

a liquid having a boiling point between 290° K. and 340° K. disposed in the reservoir means; means for measuring pressure in the cuff;



electric heating means disposed in the liquid which function to heat the liquid above its boiling point to increase vapor pressure in the cuff.

4,429,701

METHOD AND APPARATUS FOR MEASURING THE SYSTEMIC VASCULAR RESISTANCE OF A CARDIOVASCULAR SYSTEM

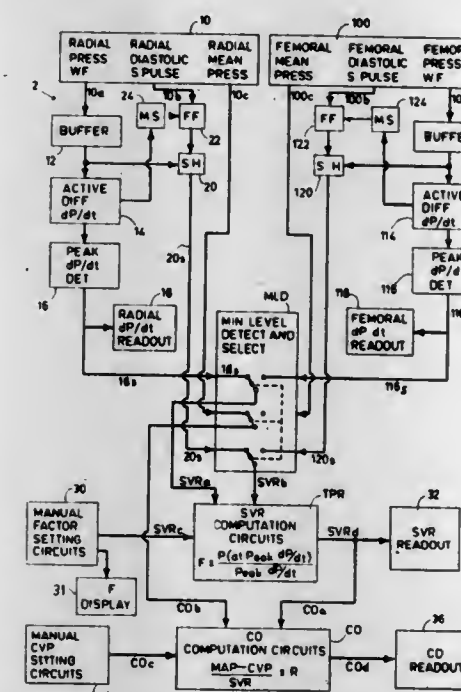
Daniel Goor, 4 Uri St., Tel Aviv, and Raphael Mohr, Shikun Rofim 19/6, Tel Hashomer, both of Israel

Filed Sep. 22, 1981, Ser. No. 304,596

Int. Cl.³ A61B 5/02

U.S. Cl. 128-713

19 Claims



1. A method of examining and indicating the status of the cardiovascular system of a subject, comprising the steps:

- A. detecting the arterial pressure of the subject and generating in response thereto a blood-pressure signal having a waveform in accordance with the detected arterial pressure;
- B. differentiating said blood-pressure signal to produce a dP/dt signal having a waveform varying in accordance with the rate at which the blood-pressure signal varies;
- C. detecting the peak of said dP/dt signal to determine the peak dP/dt ;
- D. determining a value which is substantially equal to the arterial pressure at the time of said peak dP/dt ;
- E. dividing said latter value by said peak dP/dt signal, thereby producing a measurement corresponding to the systemic vascular resistance of said cardiovascular system.

4,429,702 APPARATUS FOR MEASUREMENT OF ACOUSTIC VOLUME

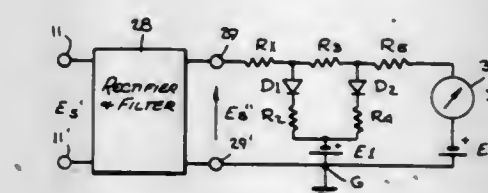
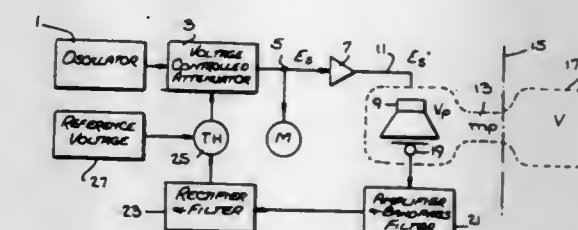
Daniel R. von Recklinghausen, Arlington, Mass., assignor to Electro Audio Dynamics, Inc., Great Neck, N.Y.

Filed Jun. 22, 1981, Ser. No. 275,866

Int. Cl.³ G01N 29/00

U.S. Cl. 128-746

7 Claims



1. In an apparatus for measuring acoustic volumes in human ears utilizing a hollow ear probe housing a sound transducer in combination with a microphone for transmitting into and receiving sound signals from said acoustic volume and an electrical circuit for feeding a signal to said transducer and generating an output from said microphone proportional to said volumes the improvement comprising a compensating nonlinear network incorporated in said electrical circuit and including elements for offsetting the nonlinearities in the combination of said probe and said transducer and said microphone for producing linear measurements of volume with improved accuracy, said probe having a wide-mouthed coupling with the measured ear canal with the resonance volume of the said acoustic volume and the probe volume being above that of the frequency of the signal being applied to the sound transducer.

4,429,703

CIGARETTE SUBSTITUTE

William Haber, 5812 Donna Ave., Tarzana, Calif. 91356

Filed Feb. 22, 1982, Ser. No. 350,721

Int. Cl.³ A24F 47/00

U.S. Cl. 131-273

7 Claims



3. A cigarette substitute assembly comprising: a hollow elongated cylindrical tube, said tube being a smooth plain hollow tube with inner and outer continuous cylindrical surfaces from end to end; a mouthpiece making a tight fit into one end of said tube to form one end member of said assembly; a second end member of said assembly, resembling the ashes of a cigarette making a tight fit into the other end of said tube, said second end member being hollow and having at least one opening at the outer end thereof; aromatic cartridge means for producing a pleasing taste and smell when air is drawn over it, mounted within said assembly; both of said end members including individual spaced finger means extending longitudinally away from the end mem-

bers and into said tube to firmly engage said tube and to secure said end members to said tube; and means for engaging and holding said aromatic cartridge means within said tube and spaced from the side walls thereof, and with the ends of said cartridge open and spaced from said fingers; whereby the user may taste and smell the harmless aromatic flavor from the cartridge while holding the cigarette substitute in the mouth and drawing air through the assembly thus aiding the user in stopping smoking.

4,429,704

SHOCK RESPONSIVE ROTARY ACTUATOR

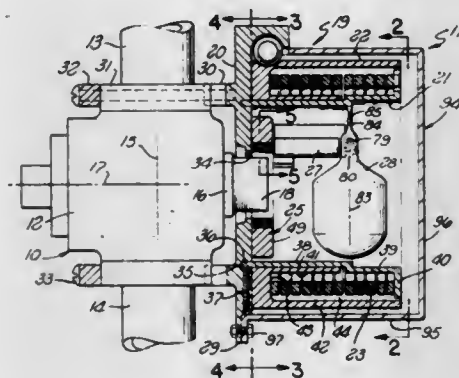
Mitchel R. Jones, 1214 Pontenova, Hacienda Heights, Calif. 91745

Filed Nov. 23, 1981, Ser. No. 323,755

Int. Cl.³ F16K 17/36

U.S. Cl. 137—45

16 Claims



1. A shock responsive actuator for turning a stem of a valve or the like about an axis between first and second positions comprising:

- a body structure;
- a member mounted for rotary movement in opposite directions about said axis relative to said body structure and through a range of pivotal movement greater than that of said stem between said first and second positions thereof;
- spring means yieldingly urging said member in a first of said rotary directions relative to said body structure and resisting movement of said member in the opposite rotary direction;

means forming a lost motion connection between said member and said stem for transmitting rotary movement about said axis from said member to said stem and enabling limited rotary movement of said member relative to said stem;

latch means for releasably retaining said member against rotary movement in said first direction relative to said body structure and from a predetermined cocked position in which said stem is in said first position thereof; and inertia actuated weight means responsive to earthquake forces or other shock forces to release said latch means and permit spring induced rotary movement of said member in said first direction in a relation first turning said member through an angle relative to said stem and then turning said stem with said member from said first position to said second position of the stem.

4,429,705

MANUALLY ACTUATED FUEL VALVE CONTROL

Stuart T. Ritchart, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 5, 1982, Ser. No. 346,334

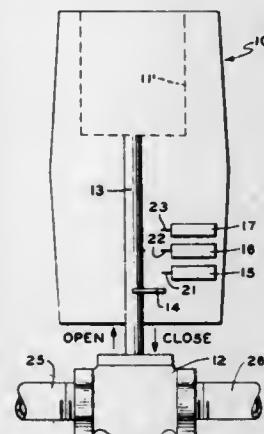
Int. Cl.³ F23D 5/16

U.S. Cl. 137—65

9 Claims

1. A manually initiated, hydraulically operated fuel valve, including: hydraulic actuator means including an electrically operated pump to provide a hydraulic actuating force to move an actuator member against a load, and an electrically operated

dump valve to bypass said hydraulic actuator means to allow said load to return said actuator member to a starting position upon said dump valve being deenergized; said load including bias means and a fuel valve; electric source means for energizing said actuator means; a first electric circuit connected to said electric source and said actuator means with said first electric circuit including a momentary manual start switch, and manual reset switch means connected in series to provide an initial energizing circuit for said actuator means; said reset switch means requiring manual reset after operation; second electric circuit means including a normally open control switch means which when closed short circuits said manual



start switch and said manual reset switch means; third electric circuit means connecting said dump valve and said pump motor in parallel circuit with said third electric circuit means including normally closed limit switch means which is open circuited when said actuator member moves said valve to an open position; and said actuator member including operator means to sequentially operate said control switch means, said manual reset switch means, and said limit switch means to provide a manual start sequence for said actuator means, but wherein said manual reset switch means ensures that said manual start switch cannot be blocked into a start position to control said actuator means.

4,429,706

SAFETY DEVICE FOR GAS-FIRED HEATING**APPARATUS**

Bernard Weichlein, Besancon; Jean-Claude Chatelain, and Denis Gaihier, both of Beure, all of France, assignors to Madec Mater, Servance, France

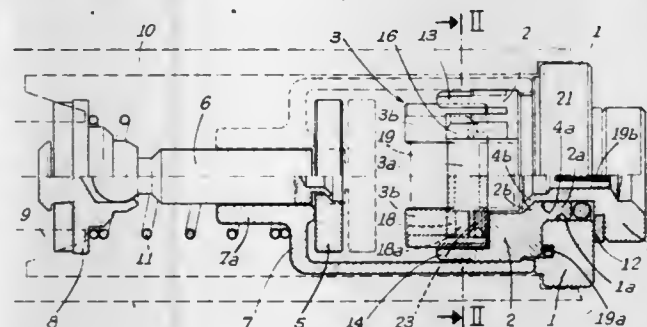
Filed Aug. 20, 1981, Ser. No. 294,433

Claims priority, application France, Sep. 17, 1980, 80 20032

Int. Cl.³ F23D 5/16

U.S. Cl. 137—66

4 Claims



1. In a safety device for gas-fired heating apparatus, constituted by an assembly mounted in a gas supply pipe and comprising an electromagnetically controlled valve of which the mobile obturator element cooperates hermetically with a seat made in said supply pipe, and mobile element being connected to a push rod, a spring urging said mobile element in the sense of closure of the valve, a metal plate, means coupling said mobile element to said metal plate, an electromagnet, said

metal plate and electromagnet being constructed and arranged so that said metal plate may be drawn by the core of said electromagnet excited by a detector for detecting normal functioning of the gas-fired apparatus, an electrically insulating intermediate element mounting said core on a metal support in the form of a circular ring, said ring being electrically connected to one of the ends of the excitation winding of the electromagnet and receiving a protecting casing which constitutes a longitudinal guide for the pushrod, and also a metal connector element electrically insulated from the support and ensuring the electrical connection of the other end of the excitation winding, and the intermediate element presents at least one substantially cylindrical portion extending between the opposite cylindrical zones of the support end of the connecting element, wherein said intermediate element is made of electrically insulating material, is elastically deformable and presents a plurality of arms extending longitudinally to form a housing for the core, at least certain of said arms being provided with hooking members or the like, whilst the connector element is fixed on said intermediate element by crimping of one of its ends.

4,429,707

HYDRAULIC POWER TRANSFER UNIT

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

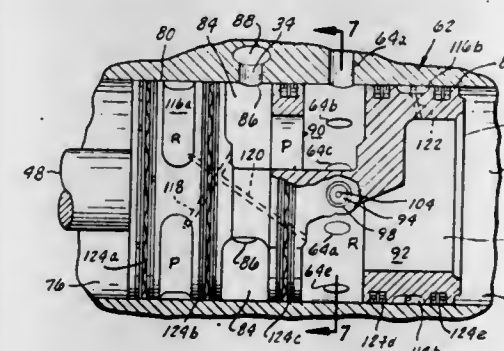
Division of Ser. No. 933,558, Aug. 14, 1978, Pat. No. 4,286,927.

This application May 26, 1981, Ser. No. 266,961

Int. Cl.³ F17D 3/00

U.S. Cl. 137—625.21

10 Claims



1. Vane means for use in switching hydraulic ports formed in a cylindrical surface, said vane means including:

- a main body portion having a top, bottom, sides, and a vane passageway formed therethrough from top to bottom for communicating any hydraulic pressure in the port being switched from said top to said bottom;
- a wiper portion connected to said main body portion at the top thereof;
- a ring-shaped surface formed on said wiper portion, said ring-shaped surface having a surface contour which is a portion of a cylinder so that it can mate for sliding contact with the cylindrical surface; and
- a ring-shaped undersurface adapted to have hydraulic pressure applied thereto discontinuous from said bottom, whereby the force by which said ring-shaped surface held against the cylindrical surface is dependent upon the area of said ring-shaped undersurface and the hydraulic pressure applied thereto, said main body portion isolating the hydraulic pressure applied to said ring-shaped undersurface by hydraulic pressure in the port being switched.

4,429,708

FLUID FLOW CONTROL

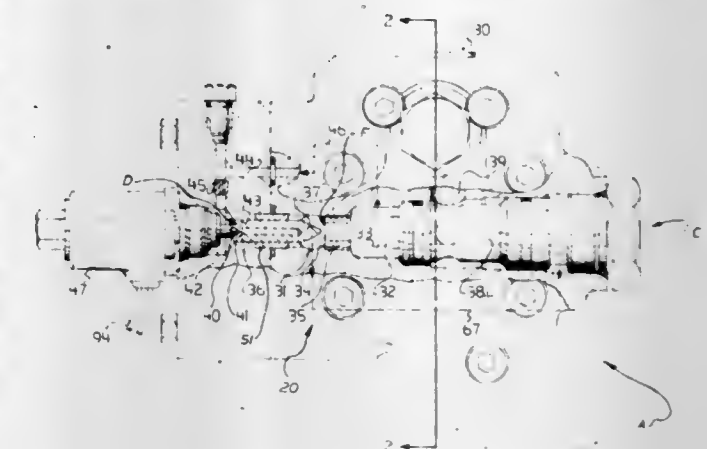
Timothy C. Strueh, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 23,024, Mar. 22, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,183

Int. Cl.³ F16K 31/02

U.S. Cl. 137—117

13 Claims



1. Apparatus comprising a pump for pumping fluid from an inlet to an outlet, means defining a variable orifice in said outlet for regulating fluid flow through said outlet, a fluid bypass valve adjacent to said variable orifice being directly responsive to the pressure drop across said orifice for bypassing selected amounts of fluid from a point upstream of said variable orifice to said inlet so as to cause the pressure drop across said orifice to remain substantially constant as the size of said orifice is varied and if the pressure upstream of the orifice varies, said means defining said variable orifice including a valve seat and a pintle member movable relative to said valve seat between different positions in which said pintle member is spaced from said valve seat to thereby control the size of the orifice, said pintle member having first and second ends, said first end of said pintle member being located proximate said valve seat and being effective to restrict fluid flow through said valve seat to an extent which is dependent upon the position of said pintle member, said pintle member being positioned by the application of a pressure differential acting on said first and second ends thereof, means defining a pressure chamber adjacent to and in fluid communication with said second end of said pintle member, means defining a passage for supplying said chamber with fluid, means defining a fluid discharge passage for directing fluid from said chamber to said first end of said pintle member, a pilot member movable relative to said fluid discharge passage for controllably restricting the rate at which fluid flows from said chamber and thereby controlling the pressure differential across said pintle member and thus the position of said pintle member, and an electrical solenoid operable to position said pilot member in response to an electrical signal applied thereto, whereby variation of the amplitude of said electrical signal results in a corresponding variation in the fluid flow through said outlet.

4,429,709

CASCADE-BASED METHOD AND DEVICE FOR FLUID HANDLING AND MEASUREMENT

Erkki J. Niskanen, Länsituulentie 8A16, 02100 Espoo 10, Finland

Filed Oct. 30, 1981, Ser. No. 316,819

Int. Cl.³ F16K 24/00

U.S. Cl. 137—220

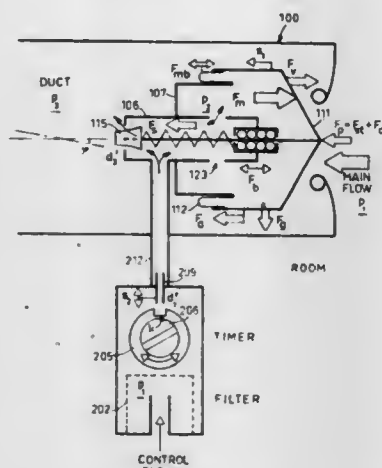
12 Claims

1. A device for maintaining constant rates of air flow in an air conditioning system, comprising:

- a valve housing, sealably disposed within the inlet end of an exhaust duct for the air flow and fitted with a combined main valve seat and cover;

a cylinder enclosure, fixably mounted and supported within said housing in a space of lower pressure, said enclosure fitted with an inlet opening for control air, connected to a space of higher pressure upstream in the air flow, and an outlet opening connected to the space of lower pressure downstream in the air flow;

a combined piston and main valve disc, capable of axial displacement in alignment with the axis of said enclosure and joined to it flexibly and hermetically;



a shaft, capable of axial displacement and disposed in a linear bearing for purposes of supporting and aligning the movement of said combined piston and main valve disk; and means for control of the area of said outlet opening and for changing a resultant of forces opposing the force of said combined piston and main valve disk, said means including a fixably mounted control valve seat, a control valve cone, mounted on said shaft and having a predetermined geometrical form to comply with predetermined displacement/pressure difference ratio, and spring means for changing said resultant of said opposing forces.

4,429,710

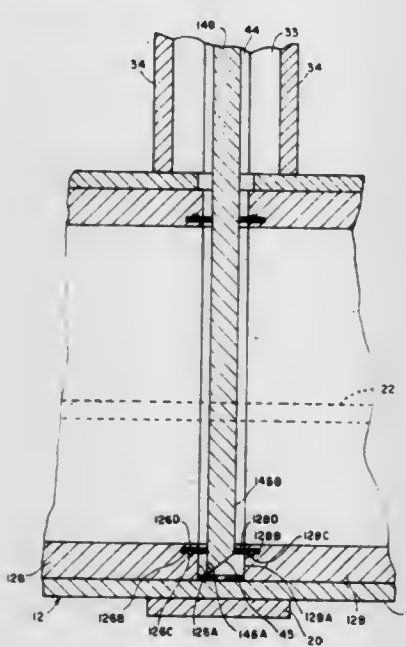
SLURRY GATE VALVE

Robert G. Grieves, Tampa, and Roscoe Richter, Lakeland, both of Fla., assignors to GIW Southern Valve, Inc., Grovetown, Ga.

Continuation-in-part of Ser. No. 235,420, Feb. 17, 1981, abandoned. This application Oct. 6, 1982, Ser. No. 433,035 Int. Cl.³ F16K 37/00, 3/00

U.S. Cl. 137—375

7 Claims



1. A slurry gate valve comprising in combination: a cylindrical conduit portion;

a second end of said conduit portion, said first and said second ends being in opposed relationship to each other; a first annular bolt flange disposed adjacent said first end of said conduit portion; a second annular bolt flange disposed adjacent said second end of said conduit portion; a first face of said first bolt flange; a first face of said second bolt flange; a plurality of bolt holes defined by said first faces of said first and said second bolt flanges; a first sleeve liner extending from said first face of said first bolt flange inwardly relative to said conduit portion; a second sleeve liner extending from said first face of said second bolt flange inwardly relative to said conduit portion; a first inward face of said first sleeve liner; a first inward face of said second sleeve liner; an annular slot defined by said first inward faces of said first and said second sleeve liners; an annular channel defined by said first inward face of said first sleeve liner; an annular channel defined by said first inward face of said second sleeve liner; an annular wiping seal disposed within each of said annular channels; a gate housing portion secured adjacent said conduit portion; a gate slidably disposed within said gate housing, said gate including a first and a second surface, said annular wiping seal of said first sleeve liner cooperating with said first surface of said gate, said annular wiping seal of said second sleeve liner cooperating with said second surface of said gate in wiping relationship thereto; a circular slot defined by said conduit portion, said circular slot being enclosed by said gate housing and in planar alignment with said gate and said annular slot; and an undercut key portion disposed adjacent each of said annular channels.

4,429,711

MULTIVALVE MANIFOLD INTERLOCK AND CONTROL SYSTEM

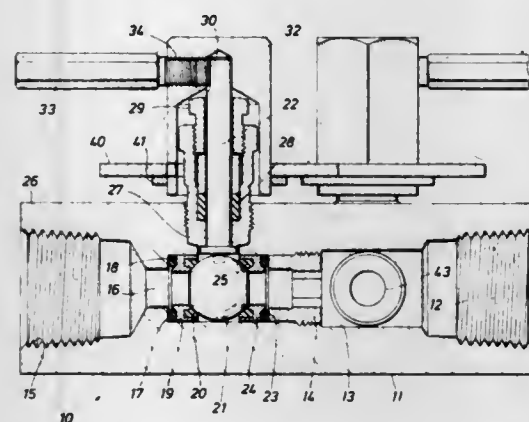
Marion L. Schomer, Houston, Tex., assignor to Anderson Greenwood & Co., Bellaire, Tex.

Filed Mar. 8, 1982, Ser. No. 355,476

Int. Cl.³ F16K 35/14

U.S. Cl. 137—385

16 Claims



1. A multivalve manifold for interconnecting a pair of fluid signals to a sensor comprising:

- a solid, rectangular valve body means having
 - a pair of adjacent inlet ports on one said of said body means;
 - a pair of adjacent outlet ports on an opposing side of said body means; and
 - a pair of interconnecting passages in said body means extending between said inlet and outlet ports;
- first and second valves in said body means opening and closing fluid flow through said passages;
- third valve in said body means opening and closing a pas-

sage between said interconnected passages downstream from said first and second valves;

(d) first, second and third valve stems connected to said first, second and third valves, respectively, and extending from said body means parallel to the other of said valve stems, each of said valve stem being enclosed by a valve stem cover dependent on rotation of said valve stems to a specified angular position;

(e) interlock means connected to said valve stems cooperatively

(1) preventing two of said valve stems from rotating while permitting one of the three valve stems to rotate;

(2) permitting only one of said two valve stems to rotate after said one of said valve stems has rotated;

(3) permitting the last of said valve stems to rotate after rotation of two of said valve stems;

(4) wherein rotation is between full open and closed valve positions; and

(f) lock bar means being mounted about said valve stem covers for securing at least two of said valve stems against operation, said lock bar means being selectively removeable to enable operation of said valve stems.

4,429,712
FAUCET

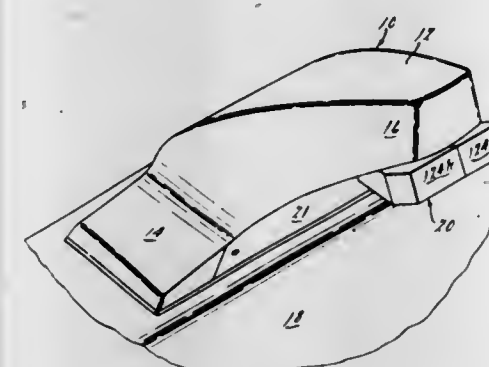
Robert D. MacDonald, Mesa, Ariz., assignor to Masco Corporation, Taylor, Mich.

Filed Mar. 12, 1981, Ser. No. 243,090

Int. Cl.³ F16K 19/00

U.S. Cl. 137—606

4 Claims



1. A faucet comprising a housing, a passageway passing through said housing and having an inlet and an outlet, a seat formed intermediate said inlet and said outlet, a slideway cavity in said housing adjacent said seat, a flat cantilever spring secured at one of its ends to said housing and disposed at the other of its ends in said slideway cavity, a first surface of a portion of said spring overlying said seat, a flexible valve member secured in said housing between said portion of said spring and said seat, a movable element disposed in said slideway cavity and engaging a second surface of said portion of said spring remote from said valve member, and selectively operable control means fastened to said element and selectively operable to move said element within said slideway cavity along said second surface of said spring; whereby movement of said movable element along said spring urges said other end of said spring against said valve member and towards said seat to thereby regulate the rate of discharge of fluid from said inlet to said outlet by varying the amount of deflection of said spring and the distance between said valve member and said seat.

4,429,713

SNAP CLOSURE COUPLING FOR FLOWING-MEDIA DUCTS

Friedrich C. Walter, Karlsruhe, Fed. Rep. of Germany, assignor to Argus Verwaltungsgesellschaft mbH, Ettlingen, Fed. Rep. of Germany

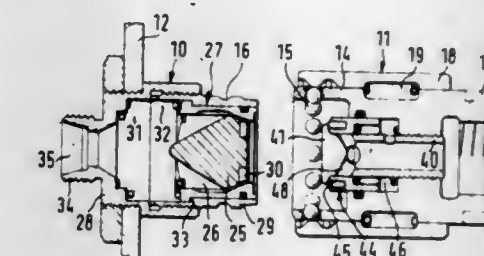
Filed Jun. 19, 1981, Ser. No. 275,350

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041909

Int. Cl.³ F16L 37/28

U.S. Cl. 137—614.03

4 Claims



1. Snap closure coupling for flowing medium ducts with closure pieces arranged to be movable axially in two coupling halves (10, 11) which are in the form of a plug valve and a sleeve valve and are pluggable into each other and are lockable in the coupling position, said closure pieces being loaded in the closing direction by closing springs (31, 46) and, when the coupling halves are separated, being held in closing position with a respectively associated seating surface of the respective coupling half, one of the closure pieces (25, 44) being constructed as a valve cone (25) received within a sleeve (44) having a valve seating surface and the other as valve seat (42) enclosing a spigot-like (40) valve seat firmly arranged in the associated coupling half, and constantly loaded by flow medium pressure on the side remote from the valve seat (42), said valve sleeve (44) on the coupling of both the coupling halves meets by an end face onto a contact surface of the sleeve of the other coupling half receiving the valve cone, the spigot-like valve seat placing itself by its end face onto the valve cone and displaces said valve cone in direction of its opening setting, the improvement comprising: the sleeve (29) of the one coupling half (10) receiving the valve cone (25) being an annular piston (27) guided to be axially movable in the sleeve-like housing (28, 29) of the one coupling half and the side of which remote from the valve seat surface (30) bears against a prestressed compression spring (32) and has a surface which is loadable by flow medium pressure and which is greater than the surface of the valve sleeve (44) loadable by flow medium pressure in the other coupling half, the rearward loading surfaces and spring supports of the valve sleeve (44) on the one hand and of the annular piston (27) with the valve cone (25) on the other hand being so matched to each other that, when the coupling half (11) with the valve sleeve (44) stands under pressure and the other coupling half (10) is free of pressure, the valve sleeve (44) and the valve cone (25) remain in closing position, but said valve cone being displaced axially together with the annular piston (27) receiving it, said annular piston however returning into its original position on a rearward flow medium pressure loading of the valve cone and of the annular piston to be axially movable, while its seat surfaces (30) lifts off from the valve cone (25) and the valve sleeve (44) in the other coupling half (11) is simultaneously displaced into its opening setting while freeing a throughflow path, whereby the coupling half is free of pressure when the other coupling half is under high pressure, after coupling the two halves the closure pieces of both halves remaining in closed position through the coupling for as long as flow medium pressure acts on said one coupling half resulting in release of axial displacement of said annular piston while said valve cone is stationary and the flow passages of both coupling halves become simultaneously opened.

4,429,714

CONTROL VALVE

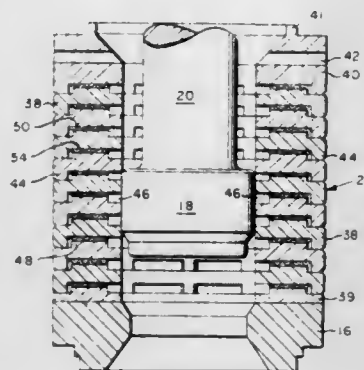
Allan B. Hughes, Wilmington, Del., and Terrence A. Dear, Elkton, Md., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Aug. 3, 1981, Ser. No. 290,081

Int. Cl.³ F16K 47/14, 47/02

U.S. Cl. 137—625.3

4 Claims



1. In a valve including a body with a passage therethrough, a seat in the passage and a plug movable toward and away from the seat, a cage surrounding the plug, said cage comprising: a stack of annular plates and an annular wire screen between each pair of adjacent plates, the plates having spaced legs projecting from one side adjacent the inner and outer edges thereof, each screen also being located between the inner and outer legs of one plate.

4,429,715

FLUID FLOW CONTROL VALVE

Derek J. Goldsmith, Sevenoaks, England, assignor to Goldsmith Patent Holdings (Sevenoaks) Limited, Westerham, England

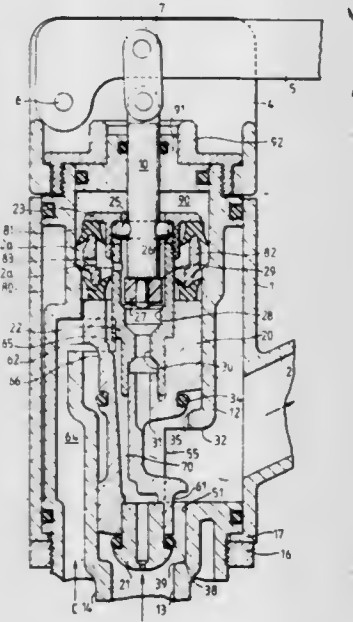
Filed Apr. 5, 1982, Ser. No. 365,590

Claims priority, application European Pat. Off., Apr. 10, 1981, 81301592.2

Int. Cl.³ F16K 11/02

U.S. Cl. 137—625.17

21 Claims



13. A fluid flow control valve comprising a body defining a chamber therein and having two inlet ports and at least one outlet port communicating with said chamber therein; a control member axially movable within the chamber to open and close communication from the inlet ports to outlet and rotatable to control the relative rate of flow through the individual inlet ports; and fluid pressure responsive means operable by supply fluid pressure from at least one of the inlet ports for providing a servo action to assist axial movement of the control member from a position in which both inlet ports are in

open communication with outlet to a position in which there is no communication from either inlet port to outlet, said fluid pressure responsive means defining a pressure chamber the fluid pressure in which is operable to urge the control member towards a fluid flow closing position and comprising one way valving means which provides for fluid communication from each of the inlets to said pressure chamber, said one way valving means comprising an annular cup seal permitting fluid flow therepast in one direction only.

4,429,716

CONTROL VALVE

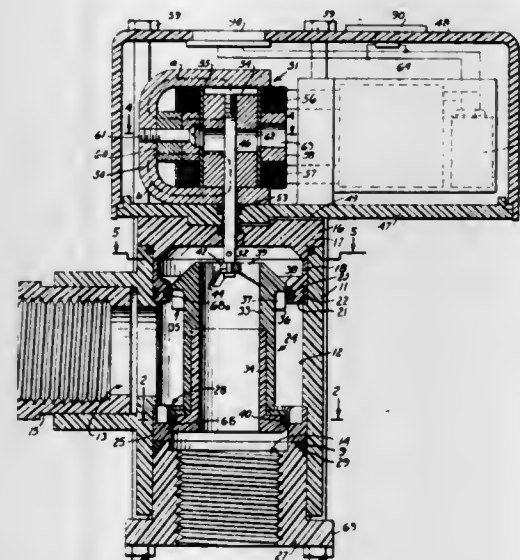
Richard A. Conrad, 1422 Phillips St., Vista, Calif. 92083

Filed Feb. 1, 1982, Ser. No. 344,610

Int. Cl.³ F17D 1/00

U.S. Cl. 137—625.35

6 Claims



1. A valve comprising:
a valve body having a bore,
a fluid outlet passage opening into said bore adjacent one end of said bore,
a fluid inlet passage opening into said bore intermediate the ends of said bore,
a cylindrical valve element in said bore,
means forming a first annular valve seat in said bore and intermediate said inlet and said outlet passages,
said bore having a longitudinally grooved section adjacent said seat,
a first annular elastomeric seal carried by said valve element and slideable along said grooved section,
means on said valve element forming a second annular valve seat at the opposite end of said bore,
said valve element having a second longitudinally grooved section adjacent said second seat,
a second annular elastomeric seal carried by said valve body, said second seal being slideable along said second grooved section,
said grooved sections and said seals forming the sole sliding support for said valve element, and
means for selectively moving said valve element in one direction to engage said seals with respective ones of said seats whereby to close said valve and moveable in the opposite direction to remove said seals from engagement with said respective seats whereby to open said valve.

4,429,717

VALVE FOR CONTROLLING THE FLOW OF SEMI-LIQUID COMPOSITIONS

Robert N. Montgomery, 3728 University Ave., Laurel, Miss.

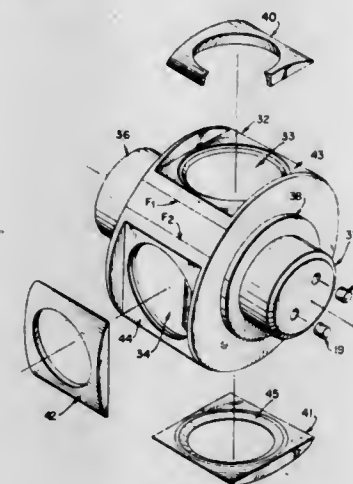
39440

Filed Sep. 4, 1981, Ser. No. 299,539

Int. Cl.³ F16K 11/085, 5/08

U.S. Cl. 137—625.47

7 Claims



1. A valve for controlling the flow of a liquid stream containing solid materials, comprising a valve housing having at least two housing ports for fluid communication with said liquid stream, a cylindrical valve core journaled for rotation within said housing to provide fluid communication between said housing ports and having fluid passages formed therein, at least one of said fluid passages having cutting plate means disposed at the opening of said fluid passage for cutting solid materials during activation of the valve, and means for rotating said valve core to provide fluid communication between said housing ports and said fluid passages, said cutting plate means comprising a circular knife edge disposed along the outside edge of at least one of said fluid passages.

4,429,718

PRESSURE RESISTANT ACCUMULATOR DEVICE

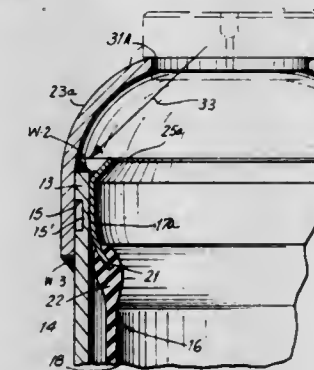
Jacques H. Mercier, New York, N.Y., assignor to The Normand Trust, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,863

Int. Cl.³ F16L 55/04

U.S. Cl. 138—30

4 Claims



1. An accumulator device comprising a pressure vessel including a closed end having an oil port and an open end, said open end terminating in an upwardly directed edge portion, a bladder subassembly mounted in said open end, said sub-assembly including an axially elongated metallic mounting skirt having a bladder fixedly secured to one end thereof, said mounting skirt being disposed within said vessel with said one end nearest said closed end of said vessel, at least a portion of the outer wall portion of said skirt intimately engaging the inner wall portion of said vessel adjacent said open end, said skirt including an upper end portion extending above said open end of said vessel, a cap member having an opening for the

reception of a gas charging valve, said cap member being positioned in closing relation of said open end, said cap member including a depending skirt outwardly lapping said open end, said cap member including a downwardly directed edge portion, said upper end portion of said skirt, edge portion of said vessel, and inner wall portion of said cap member together defining an annular trough, a first continuous annular weld connection formed between said mounting skirt and said vessel at engaging portions thereof, a second continuous annular weld connection received within said annular trough and connecting said edge portion and the inner wall portion of said cap member and a third continuous annular weld connection formed between said edge portion of said cap member and outer wall portion of said vessel.

4,429,719

PIPE THREAD PROTECTOR

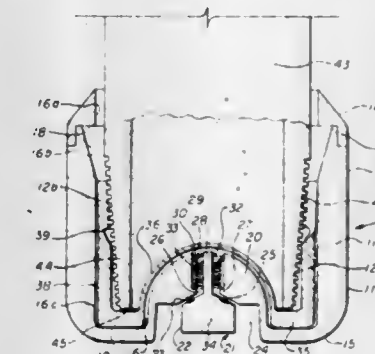
Donald E. Mosing, P.O. Box 53909, Lafayette, La. 70505

Filed Aug. 5, 1982, Ser. No. 405,595

Int. Cl.³ B65D 59/06; F16L 21/02

U.S. Cl. 138—96 T

4 Claims



1. A pipe thread protector for protecting the threads of a pipe section, comprising:

- a first member having a first cavity;
- a second member slidably constrained within the first cavity between first and second positions, said second member including sealing means for providing sealing contact with said first cavity, said second member having a second cavity for reception of the pipe section there-within when in said first position, said second member being shifted to said second position when the pipe section is fully inserted within the second cavity;
- gripping means formed on said second cavity for engaging the pipe threads when said second member is in said second position, said gripping means releasing said pipe threads when in said first position;
- locking means for maintaining said second member in said second position whereby said gripping means are retained in engagement with the pipe threads, said locking means being externally releasable for removing the pipe thread protector from the pipe section;
- said locking means comprises vacuum means for evacuation of air between said first and second members when said second member is shifted to said second position, whereby said second member is maintained in said second position, said vacuum means further enabling the readmission of air between said first and second members so as to enable said first member to shift to said first position for releasing said pipe thread protector from the pipe section.

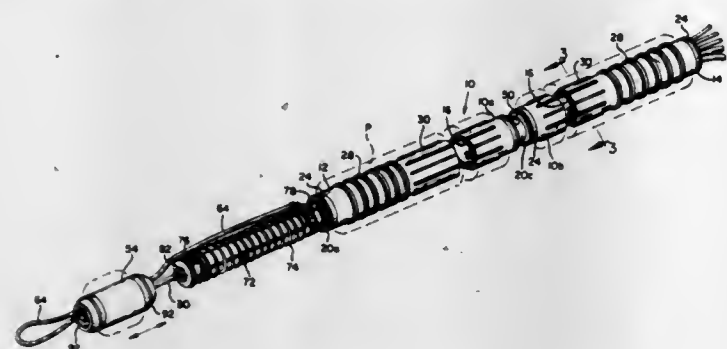
4,429,720

**APPARATUS FOR SEEKING OUT AND REPAIRING
LEAKS IN PIPES**

Richard D. Beck, P.O. Box 7247, and Campbell H. Steketee, Jr.,
3421 25th St., S.E., both of Salem, Oreg. 97303
Filed Sep. 23, 1982, Ser. No. 421,904
Int. Cl.³ F16L 55/18

U.S. Cl. 138—97

10 Claims



1. Apparatus for repairing leaks in a pipe comprising
 - (a) an elongated flexible body member arranged to be inserted in a pipe,
 - (b) said body member having leading and trailing end portions,
 - (c) said leading and trailing end portions being expandable,
 - (d) an expandable intermediate portion on said body member of a length to span a leak in a pipe,
 - (e) inflating means in said body member arranged to expand said leading and trailing end portions for sealing said ends against the interior surface of a pipe,
 - (f) said intermediate portion also being expandable by said inflating means,
 - (g) and grout carrying means in said body member for discharging grout along said intermediate portion and into a leak in a pipe,
 - (h) the exterior surface of said expandable intermediate portion having longitudinal passageways for the flow of the grout in the expanded condition of said intermediate portion.
8. Apparatus for repairing leaks in a pipe comprising
 - (a) an elongated flexible body member arranged to be inserted in a pipe,
 - (b) means in said body portion for supplying grout into a pipe for repairing a leak in the pipe,
 - (c) an expandable head adjacent the leading end of said body member,
 - (d) means flexibly connecting said head to said body member,
 - (e) inflating means in said head arranged to expand it against the interior surface of a pipe to obtain a grip on the pipe,
 - (f) and double acting fluid operated cylinder means connected between said body member and said head whereby upon selected inflation and deflation of said head and operation of said fluid operated cylinder means said body member is arranged to be pulled along a pipe.

4,429,721

INTERLOCKING REFRACTORY SEGMENTS

Raymond W. Davis, Burlington, Canada, assignor to Plibrico
(Canada) Limited, Burlington, Canada

Filed Nov. 15, 1982, Ser. No. 441,561

Claims priority, application Canada, Nov. 10, 1982, 415368

Int. Cl.³ F16L 9/22; F27D 3/02

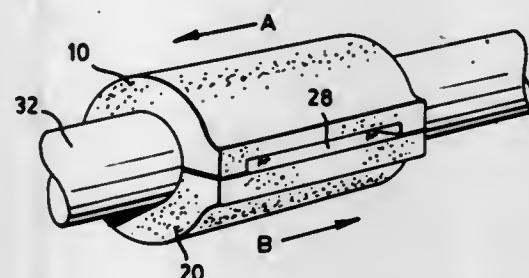
U.S. Cl. 138—149

1 Claim

1. A refractory segment comprising:
 - (a) a body of refractory material having an inner face formed to provide a pipe receiving channel, an outer face spaced outwardly from said inner face, a pair of longitudinal side faces extending laterally, one on either side of said channel and an end face at each end of said body,
 - (b) a setback formed in at least one of said side faces, said

setback being in the form of a recess which has an inner face spaced inwardly from its associated side face and each end face of the body to form an abutment between said inner face and each end face, each recess opening laterally outwardly through said outer face whereby the interior of each recess is visible from the exterior of the body,

- (c) at least two anchor members embedded in said body, each anchor member having exposed end faces projecting one from each longitudinal side face of said body, said anchor members being arranged such that the exposed



- ends thereof project from each end face in which a setback is formed and are arranged to be disposed within the setback so as to be visible from the exterior of the body,
- (d) the exposed ends of said anchor means being adapted to interlock with the exposed ends of the anchor means of another segment,
- (e) said setback being proportioned to permit and said exposed ends being arranged to permit longitudinal relative movement between a pair of oppositely disposed segments to effect interlocking of the exposed ends when the segments are positioned about a pipe in use.

4,429,722

**METHOD AND APPARATUS FOR WEAVING FABRICS
OF NOVEL CONSTRUCTION**

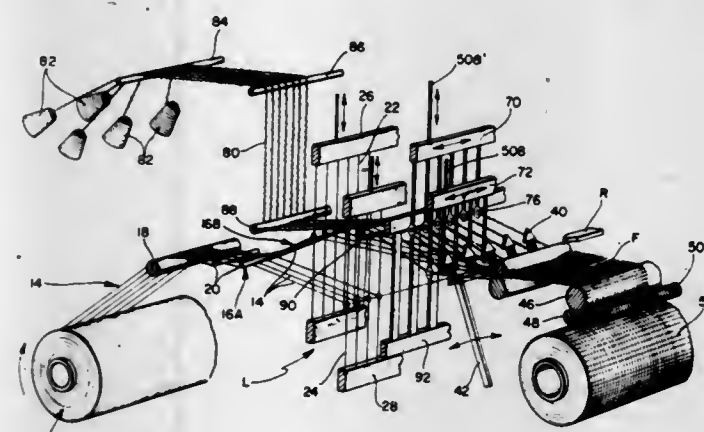
Earl E. Herzog, Greenville, R.I., assignor to Quaker Fabric
Corp., Fall River, Mass.

Filed May 18, 1981, Ser. No. 264,534

Int. Cl.³ D03C 7/06

U.S. Cl. 139—48

30 Claims



1. In a loom means for advancing a plurality of warp yarns in generally parallel paths through said loom for weaving into fabric, and means for deflecting said warp yarns in diverging planes during their advance to form a shedding zone through which filling yarn is projected for interweaving with said warp yarns during subsequent beat up by a reed to the fell of the fabric being woven on the loom, the improvement comprising: a plurality of decorating yarns advancing through the loom to the fabric in paths at least a portion of which are generally parallel to said warp yarns, harness means for engaging said

decorating yarns, and means for operating said harness means in a predetermined sequence to shift said decorating yarns controlled thereby from a first position residing generally parallel with said warp yarns to a second position where said decorating yarns are displaced laterally from said warp yarns, said operating means thereafter shifting said harness means in a direction to dispose said decorating yarns in a third position overlaying a preselected number of said warp yarns and thereafter projecting said decorating yarns to a fourth position within said shedding zone for binding into said fabric during beat up of said filling yarn, said harness means including at least first and second harnesses, each said harness being adapted to engage a predetermined group of said plurality of decorating yarns.

4,429,723

**YARN BRAKING MEANS FOR YARN FEEDING
DEVICES**

Adriano Marolino, Gaglianico, Italy, assignor to Roj Electrotex
S.p.A., Biella, Italy

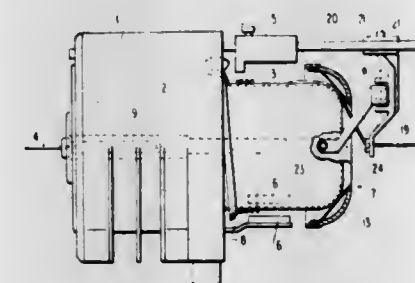
Filed Oct. 15, 1981, Ser. No. 311,752

Claims priority, application Italy, Oct. 15, 1980, 25350 A/80

Int. Cl.³ D03D 47/36

U.S. Cl. 139—452

2 Claims



1. Means for braking the yarn coming out of devices feeding said yarn to weaving machines with a constant adjustable tension, of the type acting on an end cap of a stationary winding drum of a said device, comprising a plurality of elastically yielding metal elements, positioned radially in a support that envelops said cap and is self-centering in respect of said cap, said elements engaging the outcoming yarn about a circumferential area of the cap having a slightly smaller diameter than that of the winding drum of the feeding device, said metal elements being substantially radial sheet-metal blades, arranged to form a frustoconical surface and mutually connected along the major circumference of said surface, said blades being mounted in an open cup-shaped support of plastic material, the peripheral connection area of said blades being anchored by means of an elastic deformable ring in an inner seat on the rim of wider diameter of said cup-shaped support, the free ends of said blades bearing on the rim of smaller diameter of the same cup-shaped support.

4,429,724

**PRESSURE GENERATOR FOR INTRAVASCULAR
DILATOR**

Gerald Dorros, and Donald A. Spring, both of Milwaukee, Wis.,
assignors to Cardiovascular Diagnostic Services, Inc., Milwaukee, Wis.

Filed Oct. 20, 1980, Ser. No. 199,099

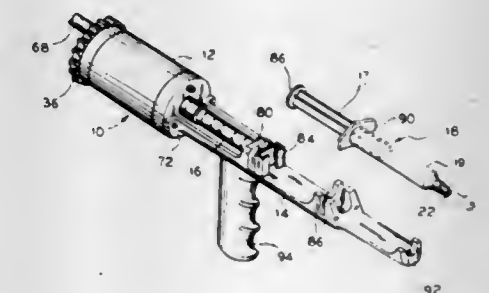
Int. Cl.³ A61M 29/02

U.S. Cl. 141—27

3 Claims

1. Pressure generating means for pressurizing a liquid to be delivered at a controlled pressure to a catheter from a container of said liquid, said container including plunger means for expelling and recovering liquid relative to said container, said pressure generator including:
 - first means adapted to be coupled to said plunger,

second means constructed and arranged to be advanced and withdrawn at a controlled rate relative to said first means, said second means including operating means and a first threaded member coupled to said first means and a second threaded member coupled to said operating means, said first means comprising a third member slidably engageable with said first threaded member and being coupled to said plunger means, elongate spring means disposed between said first threaded member and third member for resiliently advancing or retracting said third member relative to said plunger when said first member is rotated, whereby when one of said threaded members is rotated by said operating means in a first direction, said first member and said third member advance toward said container to pressurize the liquid



therein, whereby liquid is discharged at a controlled rate from said container to said catheter, and when the one of said threaded members is rotated by said operating means in an opposite direction, said first and third members are displaced away from said container to retract said plunger and withdraw liquid from said catheter and return the same to said container, said first and third members each include hollow tubular portions in telescoping engagement, said spring means being disposed within said tubular portions, and retainer means coupled to said first and third members for preventing the separation thereof, said retainer means including elongate means extending axially through said tubular portions and being engageable at its opposite ends with said first and second members.

4,429,725

**DISPENSING NOZZLE FOR VACUUM ASSIST VAPOR
RECOVERY SYSTEM**

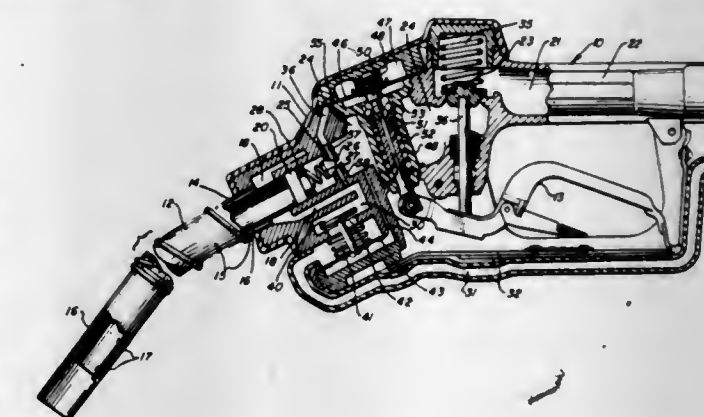
Donald C. Walker, Munster, Ind., and Theodore O. Wagner, St.
Charles, Ill., assignors to Standard Oil Company (Indiana),
Chicago, Ill.

Filed Dec. 30, 1981, Ser. No. 335,637

Int. Cl.³ B65B 3/18

U.S. Cl. 141—59

4 Claims



1. A dispensing nozzle for use in a vacuum assist vapor recovery system, said nozzle comprising:

- (a) a nozzle body having an inlet and an outlet for liquid to be dispensed;
- (b) a filling spout attached to said nozzle body, said spout being adapted for loose fitting reception in a vehicle tank fill pipe and having an internal conduit for liquid connecting to said nozzle body outlet and an external conduit for vapor return surrounding the liquid conduit, said two conduits defining a passage for conducting vapor from the vehicle tank to a vapor return conduit means in said nozzle body;
- (c) a control valve in said nozzle body for controlling the flow of liquid through said body from said inlet to said outlet;
- (d) manually operated means for controlling the operation of said control valve and vacuum responsive release means to effect closing of said valve and stoppage of liquid flow when a predetermined partial vacuum is induced within said nozzle body;
- (e) venturi means responsive to liquid flow, through said nozzle body for inducing a partial vacuum and an interconnecting passage between said vapor return conduit means to the venturi means, said passage normally allowing the flow of vapor from said vapor return conduit means to said venturi means to limit the partial vacuum induced thereby and said interconnecting passage being located at a point in the vapor return conduit which becomes full of liquid at such times when liquid begins to be aspirated from the vehicle tank through the vapor return conduit; and
- (f) a check valve within the nozzle body for closing said vapor return conduit which valve is actuated to an open position by liquid pressure within the nozzles body when said control valve in the nozzle body is open.

4,429,726

MACHINE FOR CARRYING OUT MILLING, PLANING, AND SIMILAR OPERATIONS

Otto Betzler, Taubersbischofsheim, Fed. Rep. of Germany, assignor to Michael Weinig GmbH & Co. KG, Taubersbischofsheim, Fed. Rep. of Germany

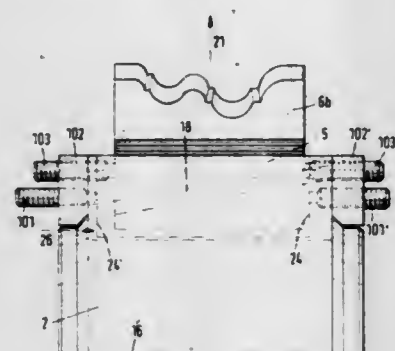
Filed Aug. 6, 1981, Ser. No. 290,492

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030206

Int. Cl.³ B27C 5/00

U.S. Cl. 144—134 R

6 Claims



1. In a machine for carrying out milling, planing, and similar operations of workpieces composed of wood, plastic and similar synthetic materials, said machine including at least two drive spindles, each of which carries a circular cutter head (2) rotatable about a carrier axis (16) and having radially spaced groove-shaped receptacles (3) on the peripheral surface for supporting cutter blades (6) therein, the combination therewith of means for adjustably supporting said cutter blades (6) in each of said groove-shaped receptacles with their outer cutting surfaces accurately positioned along a cutting circle diameter (11), said adjustable blade supporting means comprising an adjusting plate (5) supported along one wall (9) of said groove-shaped receptacle (3), said adjusting plate (5) including a key-type guide (17) extending at an inclined angle and outwardly from a front side (13) of said adjusting plate (5) adjacent said

wall (9) of said groove-shaped receptacle (3), an inclined groove (18) extending along said wall (9) and slidably receiving said key-type guide (17) therein, said inclined key-type guide (17) and said inclined groove (18) providing minor inward and outward radially directed adjustment of said adjusting plate with transverse movement of said adjusting plate (5) from side to side of said groove-shaped receptacle (3), a cutter blade (6) supported against a rear side (12) of said adjusting plate (5) and including sawtoothlike grooves (15) on one side, sawtoothlike grooves (14) on said rear side (12) of said adjusting plate (15) and mating with said sawtoothlike grooves (15) on said cutter blade (6), said sawtoothlike grooves (14, 15) extending parallel to said carrier axis (16) and permitting major inward and outward adjustments of said cutter blade (6) relative to said adjustable plate (5), said inclined angle of said key-type guide (17) defining an acute angle relative to said sawtoothlike grooves (14, 15), first setting means (101, 101') supported on opposite end portions of said cutter head carrier (2) and being engageable with opposite end portions of said adjusting plate (5) for imparting side to side movement to said adjusting plate (5) and to thereby provide minor inward and outward adjustments of said adjusting plate (5) and said cutter blade (6) relative to said cutting circle diameter (11), second setting means (103, 103') supported on opposite end portions of said cutter head carrier (2) and being engageable with opposite end portions of said cutter blade (6) for permitting side to side adjustment of the cutter blade (6), whereby when said second setting means (103, 103') axially fixes said cutter blade (6), adjustment of said adjusting plate (5) relative to the cutter blade (6) restricts movement of the cutter blade (6) to the radial direction only and locking means (7) carried by said groove-shaped receptacle (3) for maintaining said adjusting plate (5) and said cutter blade (6) in adjusted position in said groove-shaped receptacle (3).

4,429,727

LOG SPLITTER

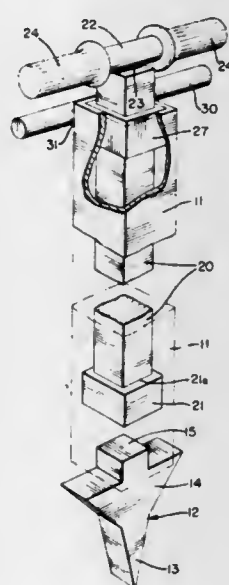
Robert C. Wilson, 1105 N. Stephenson Hwy., Apt. 74, Royal Oak, Mich. 48067

Filed Apr. 21, 1982, Ser. No. 370,365

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 C

1 Claim



1. A log splitter comprising:

a vertically arranged, elongated, generally square cross-section tube and a similarly cross-sectional shaped rod fitted within and telescopically slidably arranged within the tube and extending out of the upper end of the tube; first handle means formed on the upper end of the rod for manually supporting and handling the log splitter including an elongated rod-like member secured at its center to

the upper end of the rod with hand grips formed on opposite sides of the rod axis;

an enlarged hammer block portion formed upon the lower end portion of the rod;

a pointed wedge tip member secured upon the lower end of the tube and having an anvil block portion arranged within the lower end of the tube and extending a short distance upwardly within the tube for receiving axially downwardly directed impacts from said hammer block portion;

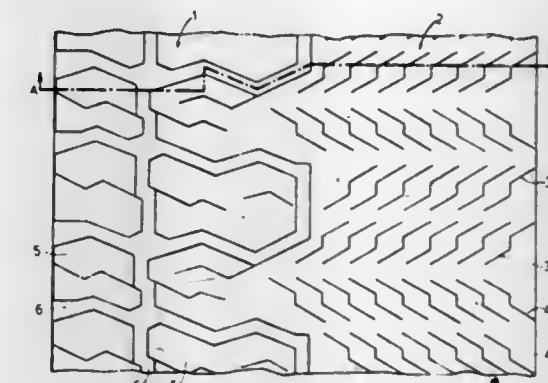
said rod slidably extending through a guide and stop bushing secured within the upper end of the tube, with the bushing being coaxially arranged relative to the axes of the tube and rod and having a cross-sectionally shaped opening corresponding to the cross-sectional shape of the rod, and with said bushing preventing rotation of the rod within the tube and forming a stop for limiting the upward movement of the rod when the bushing is contacted by the hammer block portion;

secondary handle means secured upon the upper end of the tube closely adjacent to said elongated member of said first handle means when the rod is maximally retracted within the tube for permitting simultaneous manual gripping of the hand grips and secondary handle means for temporarily securing the rod and tube together against relative telescopic movement, and said secondary handle means comprising an elongated shaft arranged below and parallel to said hand grips so that the shaft and adjacent hand grips may be manually grasped together for manually locking the rod relative to the tube; and

said wedge tip member being formed in two integral sections, namely, a lower, narrow, elongated, sharp pointed section and an upper, wide, roughly V-shaped section whose edges diverge at a relatively wide angle as compared with the divergence of the edges of the lower section with which the upper section is integral, for first penetrating into a log and then widening the split formed in the log;

whereby the tip member on the lower end of the tube pierces and splits a log section when the tip is rested upon the log section and the rod is manually raised and then rapidly lowered so that the hammer block portion impacts the anvil block portion.

is suitable for snow and ice and of which the lamellae are arranged at an angle of 15° to 45° to the running direction and



gauged in such a way that from 50 to 100 lamellae have contact with the ground.

4,429,729

WINDOW SHADE CLUTCH ASSEMBLY

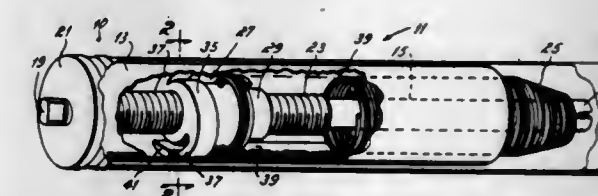
Randy Winslow, Ripley, Tenn., assignor to Clopay Corporation, Cincinnati, Ohio

Filed Jul. 9, 1982, Ser. No. 396,649

Int. Cl.³ E06B 9/20

U.S. Cl. 160—315

26 Claims



1. An assembly for preventing over tensioning of a spring motor means in a window shade comprising:

stationary means connected to said spring motor means;

rotation means rotatable in a first and second direction relative to said stationary means, said rotation means being connected to said spring motor means, said spring motor means being tensioned with the rotation of said rotation means in said first direction; and

means for preventing further tensioning of said spring motor means at a selected tension thereof while permitting said rotation means to continue to rotate in said first direction.

4,429,728

TIRE HAVING AN ASYMMETRICAL TREAD PROFILE

Jakob Ippen, Leverkusen, and Friedel Stüttgen, Pulheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,570

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130574

Int. Cl.³ B60C 11/00, 11/04, 11/12

U.S. Cl. 152—209 A

4 Claims

1. A tire having an asymmetrical tread profile, characterised in that, looking in the running direction, the treads of both halves of the tire have different profiles and consist of different rubbers specifically adapted to the particular tread profile, one half of the tire having a mixed profile suitable for wet or dry summer and winter conditions and consisting of interlocked profile blocks separated by grooves extending in and transversely of the running direction and the other half of the tire having a continuous profile interrupted only by lamellae which

4,429,730

CARGO CONTAINER COVER

Ronald W. Elston, Burnham, England, assignor to Transequip Limited, Feltham, England

Filed Jan. 22, 1982, Ser. No. 341,763

Claims priority, application United Kingdom, Jan. 28, 1981, 8102618

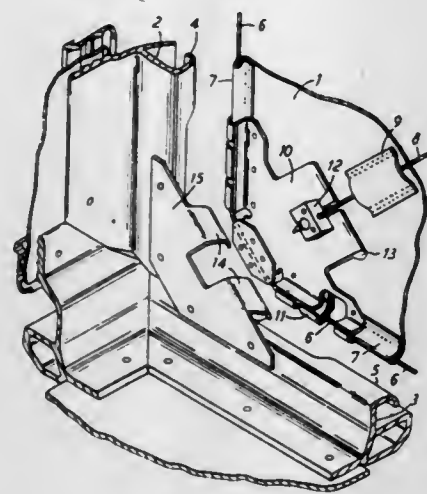
Int. Cl.³ A47H 3/00

U.S. Cl. 160—368 R

4 Claims

1. A cover for an opening in a cargo container, the cover comprising a flexible curtain secured at the top of the opening to the container, wherein the curtain has at its sides and lower portion peripheral tunnels accommodating at least one periph-

eral strand, and at its back inclined tunnels accommodating at least two bracing strands, the curtain including at its lower portion spaced apart fittings including each guiding and attachment means for the strands, over-centre clip means for simultaneously pulling taut said one peripheral strand and said at least two bracing strands during relative pivoting movement of first and second parts of said over-centre clip means, said over-centre



tre clip means being an over-centre clip having first and second parts, said second part being attached to the container adjacent the opening, and said first part being connected to said one peripheral strand and said at least two bracing strands whereby upon movement of said first part from a nonover-centre position relative to said second part to an over-centre position of said first part relative to said second part, said peripheral and bracing strands are drawn taut.

4,429,731

TRANSLATING FIELD INDUCTOR FOR PRODUCING A DIRECTIONALLY ORIENTED FLUX WITHIN THE STIRRING ROLLER OF A CONTINUOUS CASTER FOR SLABS

Jean Delassus, Montmorency, France, assignor to CEM Compagnie Electro-Mecanique, Paris, France

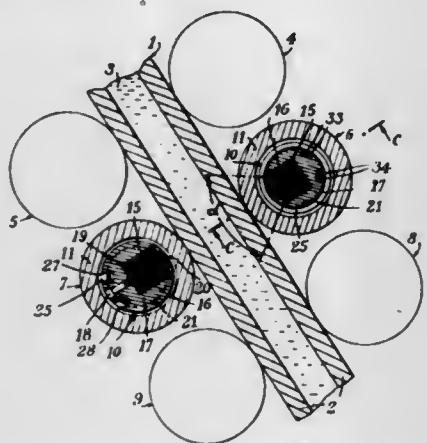
Filed Nov. 23, 1981, Ser. No. 324,099

Claims priority, application France, Nov. 25, 1980, 80 24960

Int. Cl.³ B22D 27/02

U.S. Cl. 164—504

3 Claims



1. An inductor for generating a linearly translating magnetic field from within a stirring roller of a continuous slab casting apparatus, comprising:

a stationary arbor disposed within the stirring roller, said arbor being made of a nonmagnetic metal having good electrical conductivity, and including a single longitudinal groove having a wide transverse cross-section relative to the diameter of said arbor;

a magnetic core comprising a plurality of flat magnetic sheets disposed parallel to the axis of said arbor within said

wide groove such that the arbor effectively forms a screen surrounding three sides of said core; a series of circumferential grooves forming notches in said arbor and said core and being spaced over the length of said arbor; and a plurality of circular induction coils respectively housed in said circumferential grooves.

4,429,732

REGENERATOR STRUCTURE FOR STIRLING-CYCLE, RECIPROCATING THERMAL MACHINES

William M. Moscrip, Rte. 2, Box 474, Fredericksburg, Va. 22405

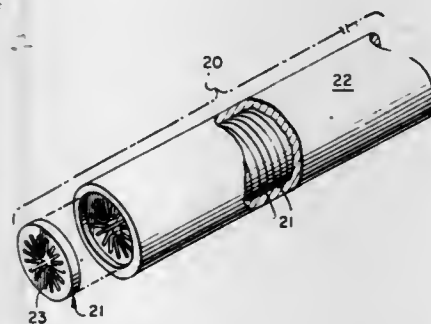
PCT No. PCT/US82/00650, § 371 Date Jul. 28, 1982, § 102(e) Date Jul. 28, 1982, PCT Pub. No. WO82/04100, PCT Pub. Date Nov. 25, 1982

PCT Filed May 14, 1982, Ser. No. 403,772

Int. Cl.³ F28D 17/00

U.S. Cl. 165—10

4 Claims



1. A regenerator structure for use in a Stirling-cycle, reciprocating, thermal machine comprising a gas-tight shell providing a conduit for machine working fluid, a thermal mass packing said shell comprised of wafers of solid material with tops and bottoms lying in parallel planes, stacked and perforated and having an outer periphery shaped to conform to the transverse sectional configuration of the interior of said shell, the perforations through said wafers being arranged to provide one or more passages through said packing, each having a high ratio of exposed surface area to cross-sectional flow area and said wafers being composed of material having anisotropic properties disposed to provide a high ratio of the thermal conductivity normal to the direction of the flow through said passage to the thermal conductivity in the direction of that flow.

4,429,733

APPARATUS FOR CONTROLLING BLOWING MODE OF A CAR AIR-CONDITIONER

Toshizo Hara, Kawashima; Shinji Sutoh, Annaka, and Toshio Kojima, Kounan, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

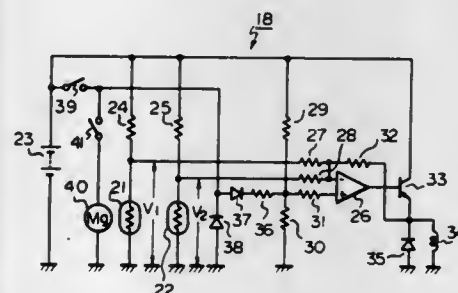
Filed Mar. 30, 1981, Ser. No. 248,834

Claims priority, application Japan, Mar. 31, 1980, 55-40231

Int. Cl.³ B60H 1/00; F24F 7/00

U.S. Cl. 165—16

9 Claims



1. An apparatus for controlling the blowing mode of air from

a car air-conditioner for vehicles, said air-conditioner having a duct in which a blower, an evaporator and a heater core are mounted, comprising:

means for changing the blowing mode of the air from the air-conditioner, said changing means having an upper vent and a lower vent which are formed at the outlet portion of said duct and a shutter for changing the ratio of the quantity of air issuing from said upper vent to the quantity of air issuing from said lower vent;

means for generating a control signal depending upon at least the temperature of the air outside of the vehicle, said generating means including a sensor for producing an output signal indicative of the temperature of the air outside of the vehicle, and a circuit for shifting the level of the output signal in response to the operating mode of the air-conditioner; and

means responsive to the control signal for driving said shutter so as to be positioned at any desired position in a continuous positional manner while avoiding discrete steps in the change of position.

4,429,734

HEAT EXCHANGER COIL

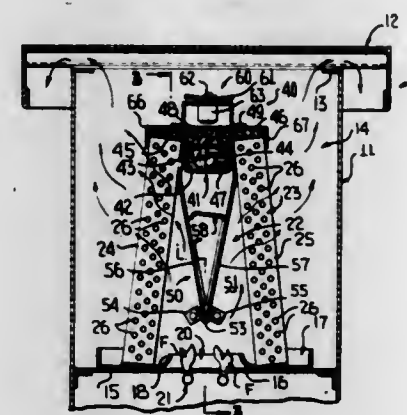
Gerry Vandervart, Niagara Falls, Canada, assignor to Kool-Fire Limited, Niagara Falls, Canada

Filed May 4, 1981, Ser. No. 259,946

Int. Cl.³ F28F 29/00

U.S. Cl. 165—29

17 Claims



1. In a heat pump, an outdoor heat exchanger, said outdoor heat exchanger comprising coil means for conducting therethrough a heat exchange medium, said coil means defining a substantially enclosed interior chamber into and upwardly through which air is adapted to flow, said coil means including relatively spaced coil portions between which air passes from said interior chamber to the exterior thereof, said coil means having a generally open lower end portion in fluid communication with said interior chamber, heat-generating means disposed generally contiguous and below said coil means for introducing a flame substantially entirely into said interior chamber through said open lower end portion whereby the heat of the flame is absorbed by the heat exchange medium during the passage of the heat into the interior chamber and through the spaced coil portions, means for closing an upper end portion of said interior chamber to prevent heat from flowing therethrough whereby essentially all of the heat introduced into the interior chamber is absorbed during its passage therethrough and to the exterior of said coil means through said spaced coil portions, and fan means for drawing a limited amount of air from the exterior of said coil means to withdraw air from said interior chamber thereby creating a negative pressure within said interior chamber for assuring air flow from said interior chamber to the exterior thereof through said spaced coil portions.

4,429,735

SIMPLIFIED AIR CONDITIONER

Tamotsu Nomaguchi; Masahiro Tano, both of Amagasaki; Mitsuo Fukuda, and Tatsuo Saitou, both of Nakatsugawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

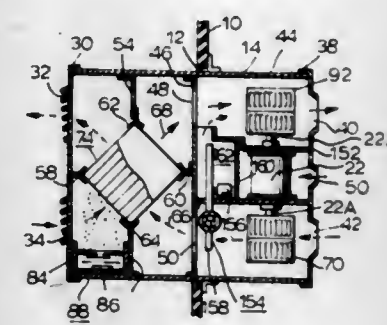
Continuation of Ser. No. 90,309, Nov. 1, 1979, abandoned. This application Sep. 15, 1981, Ser. No. 302,359

Claims priority, application Japan, Nov. 7, 1978, 53-137093; Mar. 13, 1979, 54-29161

Int. Cl.³ F23L 15/02; F24F 3/14

U.S. Cl. 165—60

1 Claim



1. A simplified air condition, comprising: a box member including at least one suction portion on each of the indoor and outdoor sides thereof, and at least one exhaust port disposed on each of the indoor and outdoor sides thereof, a suction passageway and an exhaust passageway extending through said box member between the respective suction and exhaust ports, said passageways crossing each other between said suction and said exhaust ports; a suction air blower disposed in said suction passageway to draw the outdoor air through said suction passageway; an exhaust air blower disposed in said exhaust passageway to exhaust the indoor air through said exhaust passageway; a heat exchanger disposed in said passageways at the crossing of said suction and exhaust passageways to effect heat exchange between the outdoor air and the indoor air; a humidifier disposed in said exhaust passageway and between said suction port on the indoor side and said heat exchanger to humidify and cool the exhausted indoor air; and a dehumidifier device disposed in said suction passageway between said suction blower and said heat exchanger to dehumidify the outdoor air, said dehumidifying device having a rotary dehumidification disc and driving means for rotating said rotary dehumidification disc, substantially half of said dehumidification disc extending transversely of said suction passageway to dehumidify the outdoor air, a reclaiming air passageway extending into said box member from the outdoor side of said box member to said exhaust passageway upstream of said exhaust air blower, the other half of said rotary dehumidification disc outside of said suction passageway extending transversely into said reclaiming air passageway; and a heater means disposed in said reclaiming air passageway upstream of said other half of the rotary dehumidification disc for heating outdoor air sucked through said reclaiming air passageway.

4,429,736

CONCENTRATION IN TIME OF A GAS COMPONENT ENTRAINED IN A CARRIER GAS

Andrew J. Turner, Great Missenden, England, assignor to Perkin-Elmer Limited, Buckinghamshire, England

Filed Sep. 24, 1981, Ser. No. 305,297

Claims priority, application United Kingdom, Oct. 10, 1980, 8032745

Int. Cl.³ F28B 21/00

U.S. Cl. 165—61

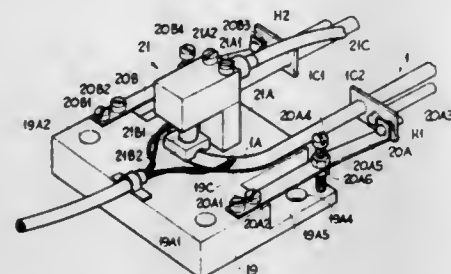
29 Claims

1. A method of increasing the concentration in time of a gas component entrained in a carrier gas with which it forms a mixture, comprising the steps of:

(a) interposing between a solid phase temperature depressing means and an electrically conductive hollow body of low thermal capacity a thermal coupling means comprising a

material having a thermal conductivity much lower than that of the hollow body and prearranging the thermal resistance actually offered by the material to hold the hollow body at a given depressed temperature while the mixture is streamed through the hollow body;

(b) maintaining the stream for a predetermined condensation time to condense the gas component within the hollow body;



(c) raising the hollow body to an elevated temperature by applying ohmic heating thereto through a step-down transformer operating at a frequency of at least one kilohertz; and

(d) maintaining the elevated temperature for a predetermined thermal desorption time that is short compared with said condensation time to desorb the condensed gas component.

4,429,737

WRAPPED FIN HEAT EXCHANGER

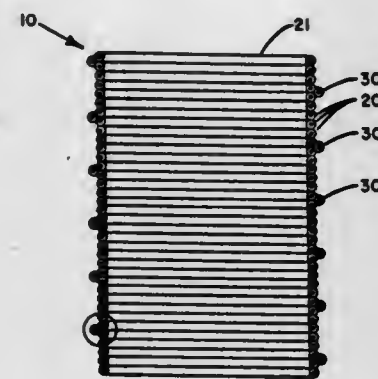
John R. McManus, Marcellus, and Dale Jackson, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,380

Int. Cl.³ F24B 1/06

U.S. Cl. 165—125

7 Claims



1. A wrapped fin heat exchanger made from a single length of wrapped fin tubing including a tubular fluid conducting portion and fin material wrapped about the tubular portion to promote heat transfer to a gas flowing thereover which comprises:

a core portion of tubing formed in a generally cylindrical configuration having a plurality of helical loops of wrapped fin tubing, each loop being located a predetermined distance from the adjacent loop; and

a locking portion of tubing formed in a generally cylindrical configuration having a diameter different from the diameter of the core portion and having at least one helical band extending between opposite ends of the heat exchanger to secure the loops of the core portion in the cylindrical configuration as formed.

4,429,738

HEAT EXCHANGER CONSTRUCTION

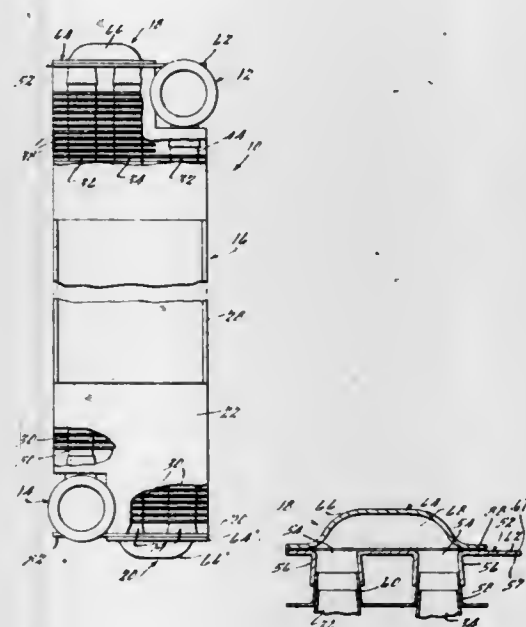
Ivan D. Woodhull, Jr., Flat Rock, Mich., assignor to Karmazin Products Corporation, Wyandotte, Mich.

Continuation of Ser. No. 6,678, Jan. 26, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,470

Int. Cl.³ F28D 1/04

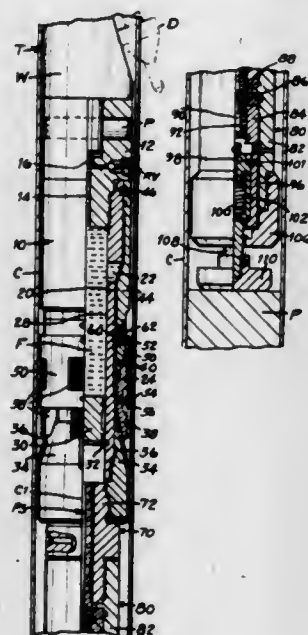
U.S. Cl. 165—151

6 Claims



thereof applied toward a bottom of or plug in the well bore for attachment to a sidewall in the well bore comprising:

- an inner mandrel having
 - a closed end portion with coupling means thereon connected to the downhole tool;
 - a sidewall extending around an internal chamber closed off by the closed end portion and extending axially to an opposite open end of the inner mandrel;
 - at least one fluid passage in the sidewall of the inner mandrel;
 - ratchet teeth on an intermediate external side portion of the sidewall of the inner mandrel, and a lower expander cone tapering outwardly and downwardly from and extending around a lower end portion of the inner mandrel;
- an outer mandrel and piston extending around and adapted for sliding sealing engagement with an external surface of the inner mandrel and initially connected by shearable means to the inner mandrel and including
 - an internal piston surface area extending around the inner mandrel adjacent the fluid passage, and an upper cone situated adjacent a lower end portion of the outer mandrel and tapering inwardly toward and extending around the sidewall of the inner mandrel;
- a plurality of gripping slips including upper and lower internal surfaces angularly spaced around the cones and fixed



against rotation relative to at least one of the cones and adapted for engagement and radial displacement by the cones into gripping engagement with the sidewall in the well bore; releasable slip housing means extending around and attached by shearable means to the upper cone portion of the outer mandrel and piston for displacing and maintaining the slips angularly spaced about for contact with the upper and lower cones;

ratchet means including ratchet teeth adapted for locking engagement in one direction with external teeth of the inner mandrel and displaceable in one axial direction by movement of the outer mandrel and piston relative to the inner mandrel for preventing opposite reverse movement and disengagement of the cones from the slips and slips from the sidewall;

power supply means supported adjacent the lower open end of the inner mandrel including combustible material adapted to be ignited by a primer igniter and supply a sufficient source of fluid pressure in the internal chamber for releasing and displacing the outer mandrel and piston, upper cone and slips relative to the inner mandrel and lower cone and force the gripping slips radially outwardly into gripping engagement with the sidewall in the well bore comprising

a power supply housing attached to the lower cone por-

tion of the inner mandrel adjacent the open end including

- an internal cartridge chamber extending between opposite ends of the housing,
- a cartridge of ignitable combustible propellant material situated in the internal cartridge chamber with one end adjacent the open end of the inner mandrel including a head at an opposite end of the cartridge, and
- a central primer igniter capsule inserted into a central bore in the head for impactation and ignition by and upon release of preloaded firing means;

preloaded mechanical firing means supported adjacent to the power supply means for striking the primer igniter and igniting the combustible material including

- an outer firing means housing attached to one end portion of the power supply housing,
- firing pin means including a movable firing pin situated within the firing means housing and adjacent the head for striking the primer igniter capsule, and
- releasable preloaded hammer means situated within the firing means housing and adjacent the firing pin means for impacting and propelling the firing pin into the primer igniter capsule; and

mechanical trigger means adjacent to the firing means and adapted for engaging a bottom or plug in the bore hole and to release the preloaded firing means when a sufficient predetermined amount of weight of the anchor device and support means is released and applied to the trigger means supported by the bottom or plug.

4,429,742

TUBULAR ALIGNMENT ASSEMBLY

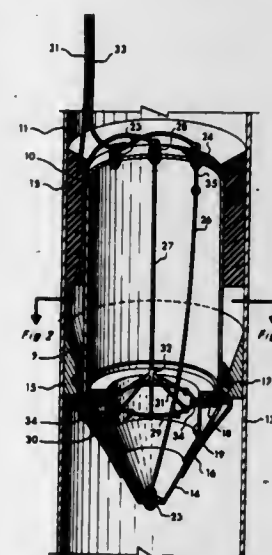
Ronald E. Antes, Rickmansworth, England, assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 64,144, Aug. 6, 1979. This application Jun. 4, 1981, Ser. No. 270,683

Int. Cl.³ E21B 19/16

U.S. Cl. 166-127

3 Claims



1. A tubular alignment assembly comprising an elongated stabbing means adapted to assist alignment of first and second hollow tubular members being positioned end to end, said tubular alignment assembly shaped to conform to the interior of the tubular members to be aligned and having a base portion flexibly attached to the end portion of the first tubular member and having a stabbing tip protruding beyond the end portion and shaped to engage and align said first tubular member with the second tubular member when the ends of the first and second tubular members are positioned end to end, wherein the tubular alignment assembly has a latching means in the stabbing tip adapted to lock the first tubular member into the second tubular member when said members are positioned end to end.

4,429,743

WELL SERVICING SYSTEM EMPLOYING SONIC ENERGY TRANSMITTED DOWN THE PIPE STRING

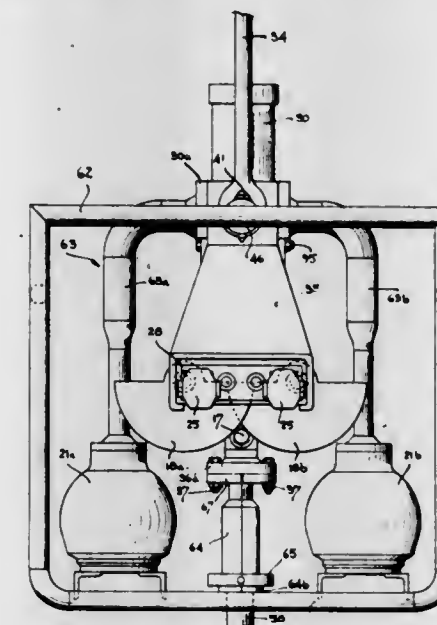
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Feb. 1, 1982, Ser. No. 344,626

Int. Cl.³ E21B 37/08, 41/00

U.S. Cl. 166-177

8 Claims



1. A well servicing system for generating and feeding sonic energy down a pipe string suspended in a bore hole to a down hole work area comprising:

- orbiting mass oscillator means for generating sonic energy, means for supporting said pipe string from a position above said bore hole,
- cylinder-piston assembly means for resiliently connecting the supporting means to the top end of the pipe string, means for providing pressurized fluid in said cylinder-piston assembly such that the fluid provides compliant loading for said piston, and
- means for coupling said oscillator to said pipe string at a point therealong proximate to and below said cylinder-piston assembly means to transmit said sonic energy from said oscillator to said pipe string such that a low acoustical impedance is presented to said energy transmission.

4,429,744

OIL RECOVERY METHOD

Evin L. Cook, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 261,824, May 8, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,128

Int. Cl.³ E21B 43/24

U.S. Cl. 166-263

5 Claims

1. In a method for recovering viscous oil from an oil-bearing subterranean reservoir penetrated by an injection well and a production well, the method comprising

- (a) injecting a thermal recovery fluid comprising a mixture of steam and a hydrocarbon having from 3 to 8 carbon atoms in the molecule and mixtures thereof via said injection well into the reservoir to reduce the viscosity of the oil in the reservoir and to displace the oil toward said production well;
- (b) recovering oil from said production well;
- (c) throttling said production well and continuing injection of said mixture of steam and hydrocarbon without interrupting the injection rate until the bottom-hole pressure of said production well has increased to a desired pressure level; and
- (d) opening said production well and continuing injection of said mixture of steam and hydrocarbon without interrupting the injection rate and recovering oil therefrom as the bottom-hole pressure of said well declines.

4,429,745

OIL RECOVERY METHOD

Evin L. Cook, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 261,824, May 8, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,130

Int. Cl.³ E21B 43/24

U.S. Cl. 166-263

5 Claims

1. In a method for recovering viscous oil from an oil-bearing subterranean reservoir penetrated by an injection well and a production well, the method comprising:

- (a) injecting a thermal recovery fluid comprising a mixture of steam and carbon dioxide via said injection well into said reservoir to reduce the viscosity of the oil in the reservoir and to displace the oil toward said production well;
- (b) recovering oil from said production well;
- (c) throttling said production well and continuing injection of said mixture of steam and carbon dioxide without interrupting the injection rate until the bottom-hole pressure of said production well has increased to a desired pressure level; and
- (d) opening said production well and recovering oil therefrom as the bottom-hole pressure of said well declines without interrupting the injection rate of the thermal recovery fluid.

4,429,746

METHOD AND APPARATUS FOR DISPOSING OF DRILLING MUDS AND WASTES GENERATED DURING WELL DRILLING OPERATIONS AND FOR PLUGGING AND ABANDONING THE WELL

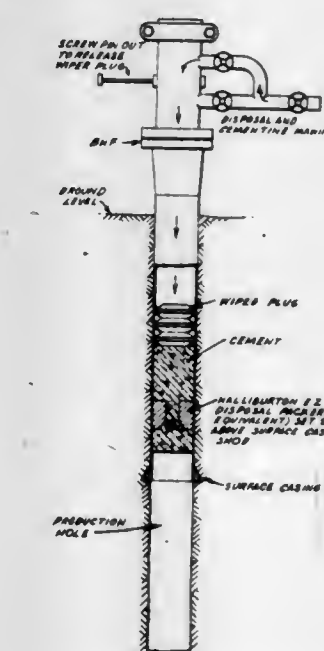
Gerald D. Allard, 1904 Harbour Dr., Seabrook, Tex. 77586

Filed Jul. 29, 1981, Ser. No. 288,214

Int. Cl.³ E21B 23/00, 33/05, 33/13

U.S. Cl. 166-291

6 Claims



1. A method for restoring the location of a drilling well operation by directing muds and waste fluids generated during the drilling operation and temporarily stored on the drill site, whereby the muds and waste fluids are pumped into the surface casing of the well after the drilling rig has been released from the well, the method comprising

- coupling the surface casing at about ground level with a rubber wiper plug container which has the same or approximately the same inside diameter as the inside diameter of the surface casing prior to or after releasing said drilling rig;
- wherein said rubber wiper plug container contains at least one rubber wiper plug and means to temporarily secure said rubber wiper plug inside the container

wherein said rubber wiper plug is sized to conform to the inside of the surface casing;
 wherein said rubber wiper plug container is provided with at least one inlet,
 wherein said inlet is in communication with the inside of said rubber wiper plug container at a position below the position of said rubber wiper plug;
 injecting into said inlet at a position below said wiper plug, said muds and waste fluids and then injecting a slurry of cement through said inlet in an amount sufficient to plug said well; then releasing the rubber wiper plug and inserting fluid over the wiper plug into the surface casing to push the slurry of cement down through the inside of said casing; and removing said rubber wiper plug container from the surface casing.

5. A system for disposing of muds and fluids, generated during well drilling operation, comprising:

- a surface casing of said well;
- a means for allowing fluids to be pumped through it and for preventing fluids from coming up the well, said means disposed down said surface casing and secured in position; an apparatus coupled to the surface casing at about ground level, said apparatus comprising:
- a first means for holding a rubber wiper plug, the inside of said first means being cylindrical and having approximately the same diameter as the cylinder defined by the inside walls of said surface casing;
- a rubber wiper plug sized to conform to the inside of said surface casing;
- means for temporarily securing the rubber wiper plug in said first means;
- at least two inlets communicating with the inside of said first means, one of said two inlets communicating with the inside of said first means below the position of the rubber wiper plug secured in said first means; and
- coupling means including a flange for coupling said first means to the surface casing thereby allowing for release of the drilling rig from the well during the disposal.

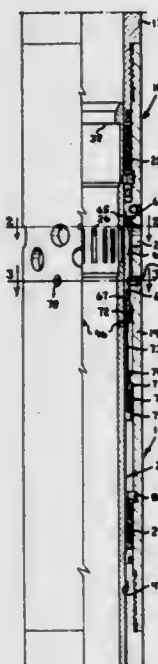
4,429,747 WELL TOOL

Jimmie R. Williamson, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 1, 1981, Ser. No. 298,482

Int. Cl.³ E21B 34/08

U.S. Cl. 166—321



1. A well tool, comprising:

- a. an elongate tubular body having means on its opposite ends for attachment to a well flow conductor and having

lateral port means intermediate its ends fluidly communicating its interior with the exterior thereof;

- b. first sleeve valve means in said tubular body slidable between positions opening and closing said lateral port means;
- c. second sleeve valve means in said tubular body surrounding said first sleeve means and initially closing said lateral port means, said second sleeve valve means being movable to a position opening said lateral port means in response to a predetermined high pressure from exterior of said tubular body; and
- d. seal means initially sealingly engaged between said tubular body and said second sleeve valve means to prevent leakage of fluids between the interior and exterior of said body through said lateral port means.

4,429,748

LOW PRESSURE RESPONSIVE APR TESTER VALVE

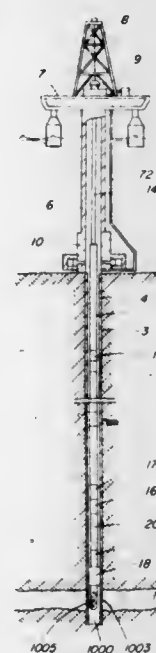
Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 204,100, Nov. 5, 1980. This application Mar. 24, 1982, Ser. No. 361,303

Int. Cl.³ E21B 43/00

U.S. Cl. 166—324

11 Claims



1. A valve for use in a well testing string located in a wellbore and having a packer arranged for selectively sealing the wellbore isolating that portion of the wellbore above the packer from that portion of the wellbore below the packer to allow the production of fluids from that portion of the wellbore below the packer through said valve in the testing string as well as the introduction of fluids into that portion of the wellbore below the packer through said valve in the testing string, said valve being responsive to changes in the pressure of the fluid in the annulus between the wellbore and the well testing string in that portion of the wellbore above the packer when the packer sealingly engages the wellbore, said valve comprising:

- valve section means having a valve means therein in a closed position to prevent the flow of fluid through the well testing string, the valve means being responsive to changes in the pressure of the fluid in the annulus to open the valve means to allow the flow of fluid through the well testing string;
- power section means responsive to changes in the pressure of the fluid in the annulus, the power section means having first means therein adapted to move the valve means of the valve section means to the open position and having resilient means therein adapted to return the valve means of the valve section means to the closed position from the open position in response to a change in the pressure of the

fluid in the annulus, wherein the power section means comprises:

- power case means releasably secured to the valve section means and the isolation valve means;
- power mandrel means slidably disposed within the power case means adapted to engage a portion of the valve section means to close the valve means therein;
- fluid mandrel means secured within the power case means;
- gas-fluid balancing seal means slidably disposed on the fluid mandrel means within the power case means; and
- resilient ring assembly means retained within the power case means releasably securing the power mandrel means in either a first closed position or second open position within the power case means; and
- isolation valve means for being continuously responsive substantially without interruption during such time as said valve is located in said wellbore to changes in the pressure of the fluid in the annulus adapted to maintain the resilient means of the power section means at a level of force sufficient to close the valve means of the valve section means regardless of the hydrostatic pressure and temperature of the fluid in the annulus and the pressure and temperature of the fluid in said valve in the testing string.

4,429,749

FARRIER'S EQUINE HOOF-SIZER

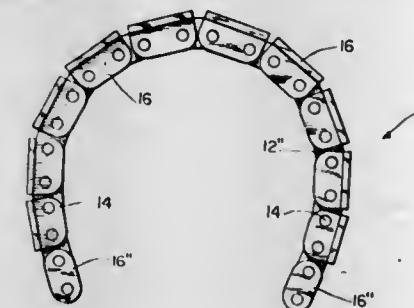
Robert L. Nelms, Sparks, Nev., assignor to Allfarr Enterprises, Inc., Dallas, Tex.

Filed Jul. 30, 1982, Ser. No. 403,490

Int. Cl.³ A01L 7/00, 11/00

U.S. Cl. 168—45

3 Claims



1. An equine hoof-sizer useful in farriery, comprising:
 - (A) plural overlapping links joined end-to-end to form three layers of links and thereby an articulable base;
 - (B) clips moveably overlying the base formed by the layers of links, said clips each having an upright hoof wall engaging clamp;
 - (C) fasteners joining the links and clips in a friction-fit, whereby upon conforming the hoof sizer clips to an equine hoof, the shape thereof may be retained until completion of a given equine shoeing.

4,429,750

RIDGE LEVELER

Jerry O. Pope, Rte. 1, Box 37, Loyal, Okla. 73756

Filed Jun. 1, 1981, Ser. No. 269,369

Int. Cl.³ A01B 25/00, 35/18

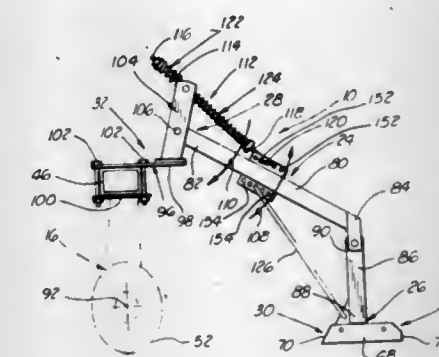
U.S. Cl. 172—253

12 Claims

1. A ridge leveler system comprising:
 - a plow comprising:
 - a first forward row of discs mounted on the plow; and
 - a first rearward row of discs mounted on the plow and spaced a distance from the first forward row of discs, the first rearward row of discs being positioned to plow substantially the same earth as plowed by the first forward row of discs when the plow is pulled in the forward direction;
 - a ridge leveler, comprising:
 - a bar assembly having a first end and a second end;
 - a ridge blade assembly connected to the first end portion

of the bar assembly having a substantially flat ground engaging surface and a face having a sufficient area to engage the earth and to substantially level the engaged earth as the plow is being pulled in the forward direction; and

means for connecting the second end portion of the bar assembly to the first forward row of discs to support the ridge blade assembly in a plowing position wherein the ridge blade assembly engages a portion of the earth as



the plow is being pulled in the forward direction, the bar assembly and the ridge blade assembly connected thereto being positioned near the outermost discs of the first forward row of discs to engage and substantially level the outermost ridge of earth resulting from the outermost discs of the first forward row of discs plowingly engaging the earth as the plow is being pulled in the forward direction to reduce the volume of earth to be plowingly engaged by the outermost discs on the first rearward row of discs.

4,429,751

CONTROL SYSTEM FOR PILE HAMMERS

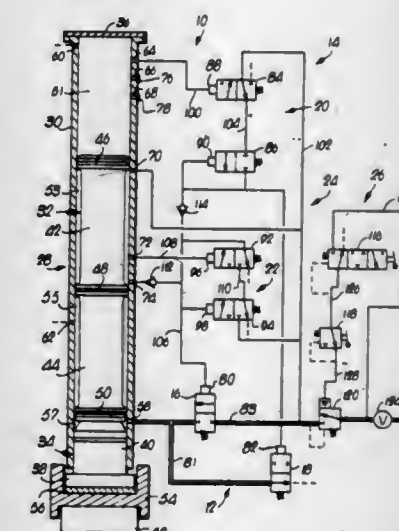
E. Don Jackson, Kansas City, Mo., and Ralph E. Myers, Kansas City, Kans., assignors to Conmaco, Inc., Kansas City, Kans.

Filed Oct. 26, 1981, Ser. No. 314,584

Int. Cl.³ B23Q 5/00; E21C 5/00

U.S. Cl. 173—13

3 Claims



1. A pressurized fluid control system for a pile hammer, said hammer including an elongated, tubular housing, said housing including structure defining a supply/exhaust port, first and second control air vents, a control air supply port, a plurality of hammer fully raised sensing orifices, a hammer partially raised sensing orifice and a hammer fully down sensing orifice, an axially shiftable piston disposed within said housing, means including a motive fluid conduit and a pressurized fluid source operatively connected to said housing for shifting said piston within said housing, said control system comprising:
 - a motive fluid valve assembly, said assembly including:
 - a supply valve operatively coupled to said motive fluid

conduit for controlling flow of motive fluid into said housing; and
 an exhaust valve operatively coupled to said housing for controlling discharge of fluid from the housing; and
 a control assembly for controlling the opening and closing of said supply and exhaust valves in response to the position of said piston within said housing, including control valve means and a plurality of control fluid conduits operatively coupling said control valve means, housing, and motive fluid valve assembly.

said control valve means comprising first, second, third and fourth control valves, each of said control valves including a pressure sensitive pilot;
 said supply valve and said exhaust valve including a pressure sensitive pilot; and
 said control fluid conduits including:

- a first conduit selectively connecting one of said hammer fully raised sensing orifices and said pilot of said first control valve;
- a second conduit connecting said pressurized fluid source and said first control valve, said control air supply port and said fourth control valve;
- a third conduit connecting said first control valve and said control valve;
- a fourth conduit connecting said hammer fully down sensing orifice and said pilot of said second control valve, said second control valve, said third control valve, said pilot of said fourth control valve, said pilot of said supply valve and said pilot of said exhaust valve;
- a fifth conduit connecting said hammer partially raised sensing orifice and said pilot of said third control valve;
- a sixth conduit connecting said third control and fourth control valves.

4,429,752

PNEUMATIC MOTOR FOR ROCK DRILLS AND THE LIKE

Edward A. Bailey, Newport, and Louis H. LeBlanc, Jr., Claremont, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

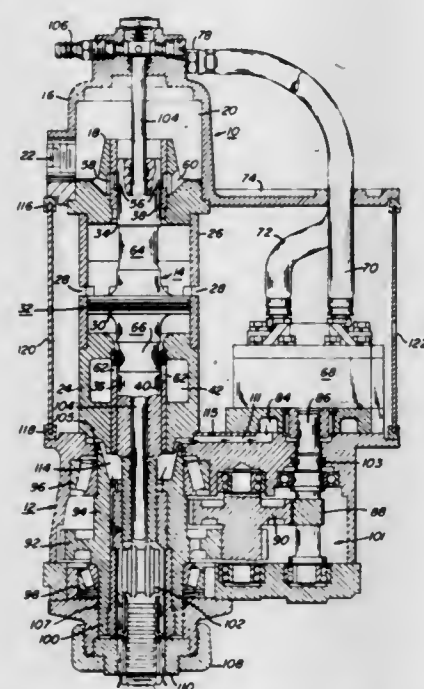
Division of Ser. No. 110,857, Jan. 9, 1980, Pat. No. 4,340,121.

This application Dec. 7, 1981, Ser. No. 328,055

Int. Cl.³ B25D 9/00

U.S. Cl. 173—59

3 Claims



1. A lubrication system for the striking bar of a pneumatic rock drill assembly of the type having a non-coaxial drill rotation motor and of the type in which a drill rod is carried by said striking bar which is repeatedly struck by a reciprocating piston and wherein said striking bar is carried for reciprocation by a rotatable bushing connected through a gear train enclosed within a oil flooded gearbox to a pneumatic motor, said gear-

box sealed to prevent loss of said oil, said system comprising: a passageway means in said rock drill assembly for directing exhaust air and oil from the pneumatic motor to the outer circumferential periphery of said striking bar to lubricate the lower end thereof.

4,429,753

ROTARY PULL DOWN PULL UP DRIVE FOR DRILL PIPES

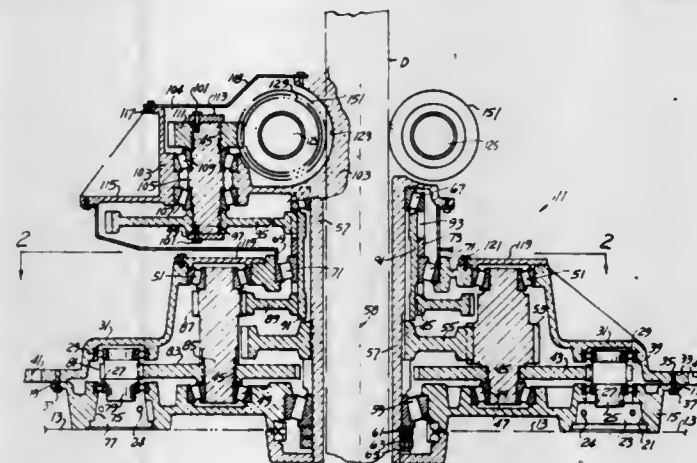
Richard Cushman, Westland, Mich., assignor to Noster Industries, Inc., Garden City, Mich.

Filed Jun. 21, 1982, Ser. No. 390,272

Int. Cl.³ E21C 1/10

U.S. Cl. 173—149

1 Claim



1. A rotary pull down, pull up drive for a drill pipe comprising a centrally apertured housing mountable upon a platform and having a central vertical axis;

first and second reversible hydraulic motors spaced from said axis secured within said housing;
 first and second upright motor drive shafts journaled within said housing;

an upright tubular output shaft projected through said housing and supportably journaled thereon upon said axis, and adapted to axially receive a drill pipe projected there-through;

a first gear train within said housing interconnecting said first drive shaft and output shaft;

a centrally apertured superstructure housing spaced from and overlying said housing receiving said drill pipe mounted on and secured to said output shaft for rotation therewith;

a plurality of angularly related drill pipe feed rollers rotatably mounted and journaled upon said superstructure housing upon horizontal axes in operative driving engagement with said drill pipe for rotating and longitudinally feeding said drill pipe along said axis;

a spindle mounted around said output shaft rotatively journaled and supported upon said housing;

a second gear train within said housing interconnecting said second drive shaft and said spindle for rotating said spindle upon said axis relative to said output shaft;

and a plurality of third gear trains supported and journaled within and upon said superstructure housing respectively interconnecting said spindle and each of said drill pipe feed rollers;

rotation of said feed rollers upon horizontal axes in one direction feeding said drill pipe downwardly and in the opposite direction feeding said drill pipe upwardly, rotation of said feed rollers in a horizontal plane simultaneously rotating said drill pipe upon said vertical axis; the mounting of each drill pipe feed roller including a horizontal top shaft mounted and journaled upon said superstructure housing;

a spherical bearing on and intermediate the ends of said top shaft;

said feed roller having a corresponding internal spherical

recess receiving said spherical bearing, whereby said feed roller on rotation in a horizontal plane relative to and against said feed pipe is adapted to rotate in a vertical plane relative to its supporting top shaft to frictionally dig into and operatively engage said feed pipe;
 a side thrust pin slidably mounted upon said superstructure housing on an axis parallel to said top shaft;
 a roller mounted upon said pin in operative engagement with a peripheral side portion of said feed roller;
 and a spring means on said superstructure housing yieldably engaging and biasing said pin against said feed roller.

4,429,754

METHOD AND APPARATUS FOR CLEARING EARTH DRILL CUTTINGS FROM AROUND DRILL HOLES

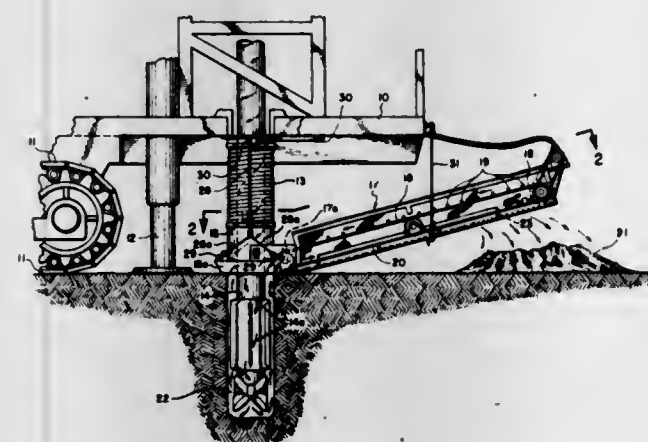
Leo P. Cormier, P.O. Box 217, Hanna, Wyo. 82327

Filed Jul. 15, 1981, Ser. No. 283,433

Int. Cl.³ E21B 12/06

U.S. Cl. 175—88

3 Claims



1. Apparatus for clearing a drill hole opening of cutting deposited about the margin of the opening by the drill during an earth drilling operation, comprising, in combination with a drilling rig having a deck through which the drill stem extends during the drilling operation and a skirt attached to the underside of said deck and adapted to surround the drill stem in spaced relationship therewith during a drilling operation, a hopper positioned below the skirt and having the lower end of the skirt attached thereto; and an elongate endless conveyor having one end positioned within said hopper and the length thereof extending exteriorly of the hopper to a dump site remote from the drill hole opening, whereby drill cuttings which tend to be deposited within the hopper about the drill stem are removed by the conveyor, said conveyor being of scraper type having an endless chain equipped with scraper blades and operating in a trough so that the scraper blades scrap drill cuttings along the bottom of the trough, the bottom of the trough having an elongate discharge opening extending therein and along the length thereof adjacent to the other end of the conveyor.

4,429,755

DRILL WITH POLYCRYSTALLINE DIAMOND DRILL BLANKS FOR SOFT, MEDIUM-HARD AND HARD FORMATIONS

Kirk E. Williamson, P.O. Box 8156, Corpus Christi, Tex. 78412

Filed Feb. 25, 1981, Ser. No. 237,971

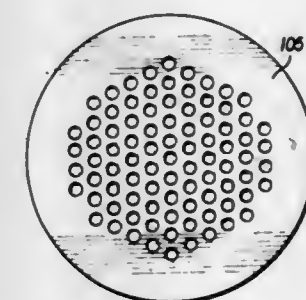
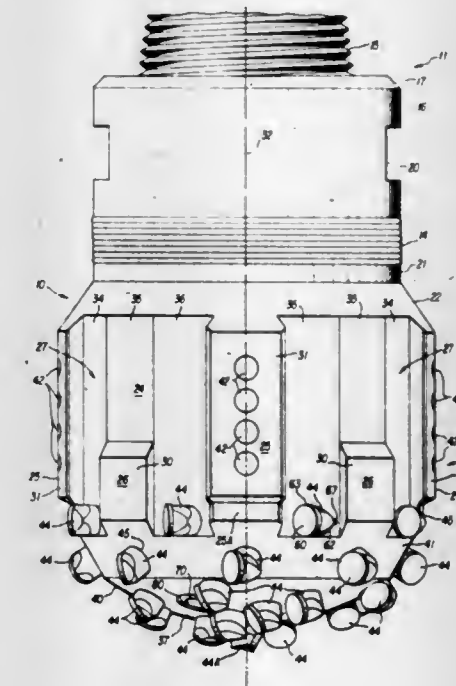
Int. Cl.³ E21B 10/46, 10/60

U.S. Cl. 175—329

31 Claims

1. A drill bit for oil or gas wells which comprises a shaft, a cylindrical bit body affixed to said shaft, said bit body having a convex end surface and a side surface, said side surface including a plurality of alternating raised portions and fluid channels defined between said raised portions, a plurality of cutters rigidly mounted on said end surface, one said cutter disposed to rotate closely proximate the bit's axis of rotation, a first set of cutters each disposed at a first equal radius from said axis and every cutter in said first set displaced from its adjacent

cutter or cutters in said first set through equal arcs around said axis, and further successive sets of cutters, the cutters in each said set being disposed further radii equal in each said set and all cutters in each respective set being displaced from its adjacent cutter or cutters in its said set by substantially equal arcs



in each said set around said axis and having flat cutting faces which are slanted to the rear relative to their direction of rotation and otherwise generally face in said direction, said cutters tracing circular cutting paths around said axis which overlap and substantially cover the entire area of said end surface.

4,429,756

WEIGHING SCALE

Walter E. Jacobson, Meriden, and Douglas Bliss, Wallingford, both of Conn., assignors to Revere Corporation of America, Wallingford, Conn.

Filed Nov. 17, 1981, Ser. No. 322,197

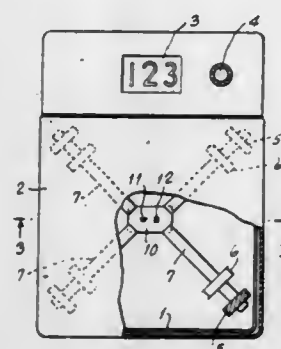
Int. Cl.³ G01G 3/14

U.S. Cl. 177—211

4 Claims

1. A weighing scale, comprising:
 a. a rectangular platform for receiving a load to be weighted;
 b. a rectangular base including four fulcrum means adjacent the corners of the base;
 c. lever means including four deflectable arms extending diagonally inward from the corners of the base, said arms being supported by said fulcrum means, said lever means having recesses adjacent the inner ends of said arms;
 d. four means on the platform abutting the four levers at points spaced from the four fulcrum means, for transferring the load from the platform to the lever means;
 e. a bendable rectangular plate member having end portions tightly received in the recesses of the lever means;
 f. strain gage means on said bendable plate member for

converting the strains developed therein into an electrical signal; and



g. weight indicating means responsive to the electrical signal.

4,429,757

WEIGHING APPARATUS INCLUDING A SECTIONAL YOKE MEMBER

Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

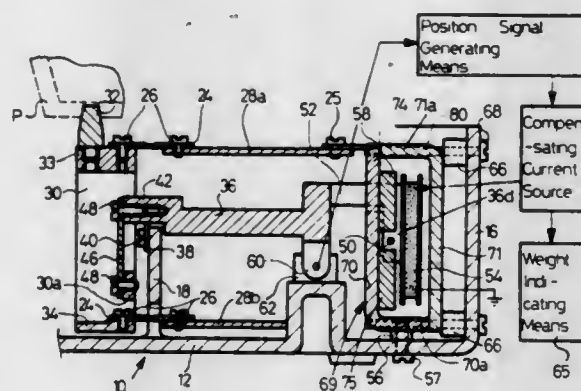
Filed Mar. 23, 1982, Ser. No. 361,360

Claims priority, application Switzerland, Jun. 2, 1981, 3739/81

Int. Cl.³ G01G 7/00, 23/48

U.S. Cl. 177—212

6 Claims



1. Weighing apparatus of the electromagnetic load compensation type, including a housing (10), a load receiving member (30) connected for vertical movement relative to said housing, means connected with the housing for establishing a stationary permanent magnetic field, and compensation circuit means including a coil (54) connected with said load receiving member for movement in said magnetic field; the improvement wherein said field establishing means comprises

- (a) a hollow sectional open-ended soft iron yoke member (69) having in transverse cross-section a generally rectangular cross-sectional configuration, said yoke member comprising an assembly of a pair of generally identical L-shaped sections (70, 71) that extend longitudinally the length of said yoke member; and
- (b) at least one flat permanent magnetic member (74) connected with said yoke member for establishing a flow of magnetic flux therein.

4,429,758

MOTORIZED CART

Eli Meshulam, 1108 E. Pico Blvd., Los Angeles, Calif. 90021

Filed Oct. 15, 1981, Ser. No. 296,317

Int. Cl.³ B62D 51/04

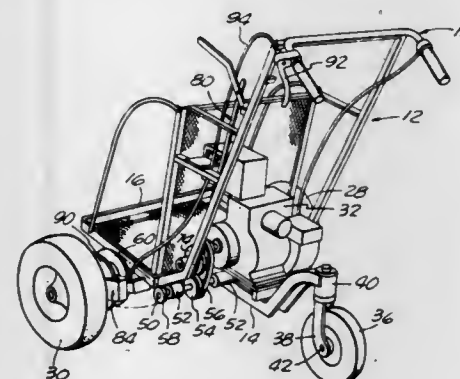
U.S. Cl. 180—19 R

1. A motorized cart comprising:

- (a) a base frame;

- (b) a load carrying platform mounted on said base frame;
- (c) roller means carried by said base frame for rollably supporting said base frame and said load carrying platform while the cart and its load is being moved from place to place, said roller means comprising:

- (1) a transversely extending axle carried by said base frame, said axle having a transversely extending first axis;
- (2) a pair of transversely spaced apart first and second wheels rotatable about said first axis;
- (3) at least one third wheel rollably carried by said base frame rearwardly of said first and second wheels, said



third wheel being rotatable about a second axis longitudinally rearwardly spaced apart from said first axis; and

- (4) a differential means drivably interconnected with said first and second wheels and adapted to permit said first and second wheels to rotate at different speeds;
- (d) driving means for driving said pair of transversely spaced apart wheels, said driving means comprising:
 - (1) a motor carried by said base frame;
 - (2) connecting means for interconnecting said motor and said differential means to drive said first and second wheels; and (e) upstanding handle means for guiding the path of travel of the cart.

4,429,759

LATCH MECHANISM

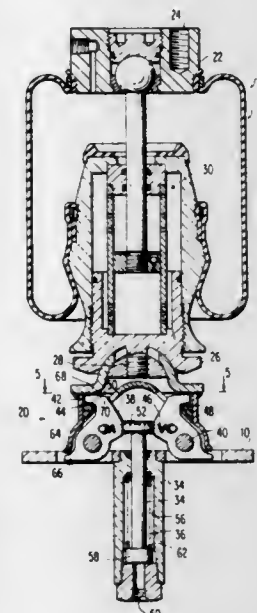
Ray Clark, Pewaukee, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Feb. 11, 1982, Ser. No. 348,141

Int. Cl.³ B62D 27/06

U.S. Cl. 180—89.14

8 Claims



9 Claims

1. A mechanism for latching a first body to a second body, said mechanism comprising:

- (a) a plunger operable to be mounted on the first body;

- (b) first means for moving said plunger back and forth between a first position and a second position including, hydraulic means for forcing said plunger from its first position to its second position;
- (c) a pair of opposing latch hooks operable to be pivotally mounted on the first body symmetrically about said plunger for pivotal movement between a first, locking position in which said latch hooks are in contact with said plunger when said plunger is in its first position and a second retracted position;
- (d) catch means operable to be mounted on the second body in position for engagement by said latch hooks when said latch hooks are in a first, locking position;
- (e) said plunger having an enlarged head which is in contact with said latch hooks when said plunger is in its first position;
- (f) second means for biasing said latch hooks toward a second, unlocked position and withdrawing said latch hooks from contact with said catch means when said plunger is in its second position;
- (g) extension means formed on the opposite sides of the pivots of each of said latch hooks such that mechanical contact of said extension means will serve to pivot said latch hooks; and
- (h) mechanical actuating means connected to said catch means for mechanically engaging said extension means as said first and second bodies come into engagement and for pivoting said pair of opposing latch hooks into locking engagement with said catch means.

4,429,760

REAR-WHEEL SUSPENSION DEVICE FOR A TRICYCLE VEHICLE

Shinichi Koizumi, Tokyo; Takeshi Kawaguchi, Saitama, and Katsuyoshi Kawasaki, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

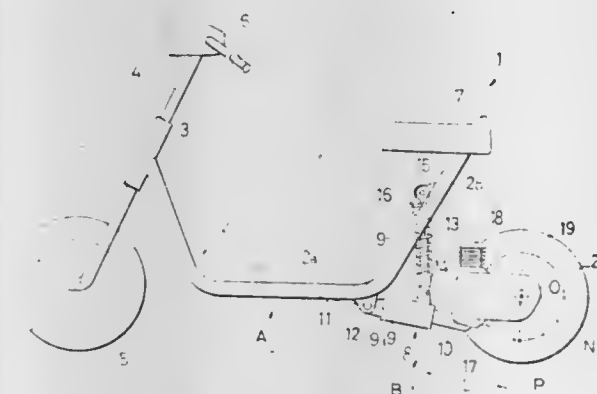
Filed Oct. 2, 1981, Ser. No. 307,866

Claims priority, application Japan, Oct. 3, 1980, 55-138384; Dec. 19, 1980, 55-180168

Int. Cl.³ B62D 61/08; B62K 5/06

U.S. Cl. 180—215

7 Claims



1. A rear-wheel suspension device on a tricycle vehicle, comprising:
 - front and rear vehicle portions, said front vehicle portion having a frame;
 - a pair of rear wheels mounted on said rear vehicle portion by said axles;
 - a rolling joint interconnecting said front and rear vehicle portions, said rolling joint including a casing having a sleeve bearing therein and pivotally mounted on said frame for substantially up and down angular movement with respect to said front vehicle portion of said tricycle vehicle, said rolling joint further including a spindle rotatably mounted in said casing, said axles having a fixed positional relationship with a longitudinal axis of said rolling joint; and
 - a shock absorber interposed between said frame and said casing.
2. A rear-wheel suspension device according to claim 1,

including a power unit supporting said rear wheels for driving said rear wheels through said axles, said spindle being rigidly connected to said power unit.

4,429,761

SEAT AND CONTROL LEVER INTERLOCK

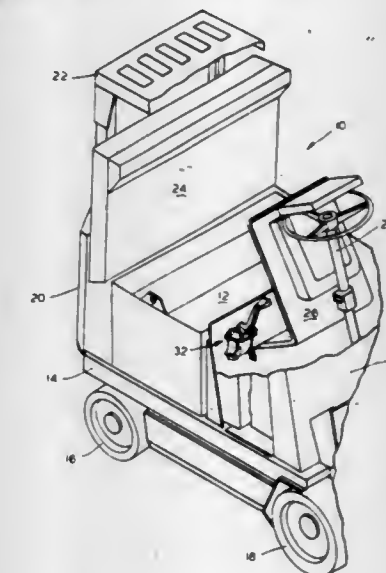
Louis A. Haddock, Jr., and Ronald L. Jones, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 17, 1981, Ser. No. 293,055

Int. Cl.³ B60K 28/00

U.S. Cl. 180—271

8 Claims



1. In a lift truck having a power source compartment, an operator seat mounted forwardly of the compartment for forward pivotal movement from a normal position in which the seat extends over a portion of the compartment and operator control lever means adjacent the seat mounted for forward pivotal movement from a normal position in which the control lever means extends over a portion of the compartment, interlocking linkage means operatively connected between the seat and control lever means responsive to forward pivotal movement of said seat for maintaining said control lever means in a forwardly pivoted inoperative position following movement of the control lever means to said forwardly pivoted position, said seat being mounted pivotally from a transverse pivot shaft and said linkage means being operatively connected between said shaft and said control lever means, whereby forward pivotal movement of said seat rotates said shaft to cause actuation of said linkage means.

4,429,762

HORN LOUSPEAKERS OF THE SECTORIAL DIFFUSION TYPE, AND METHOD FOR MAKING SAID LOUSPEAKERS

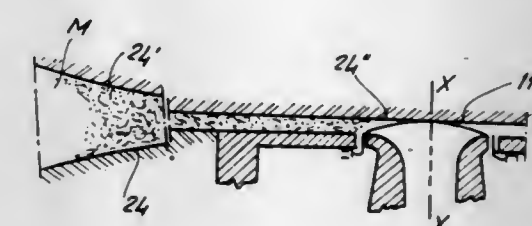
Mario Cesati, Via de Vitalis, 16, Brescia, Italy

Filed May 1, 1981, Ser. No. 259,559

Int. Cl.³ G10K 11/10

U.S. Cl. 181—159

4 Claims



1. A loudspeaker of the sectorial diffusion type, which comprises two first opposite walls forming a horn, an electroacoustic transducer provided with a curved diaphragm tangentially contacting a third wall, said diaphragm and said third wall

forming a structure, said two first walls being arranged in a direction essentially perpendicular to the vertical axis of said structure, and converging towards said structure, said diaphragm, said third wall and said horn forming a compression chamber, a mass of fibrous material in a sector of said compression chamber in an amount sufficient to absorb the acoustic power irradiated from the compression chamber in a predetermined direction in which diffusion or sound has to be deadened.

4,429,763

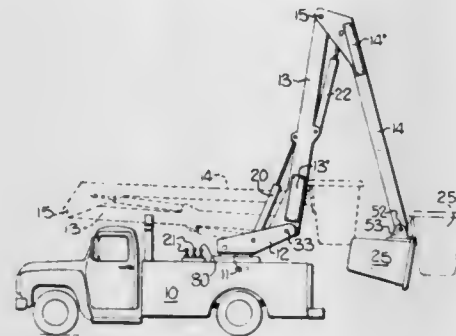
BUCKET ROTATION SYSTEM FOR AERIAL TOWER

Timothy B. Houck, Raleigh, N.C., assignor to Technical and Safety Consultants, Inc., Raleigh, N.C.

Filed Mar. 4, 1982, Ser. No. 354,657
Int. Cl.³ B66F 11/04

U.S. Cl. 182—2

4 Claims



1. In a truck supported aerial tower including a first boom section supported at one end for pivotal and rotational movement on said truck, a second boom section pivotally supported at one end to the other end of said first boom section, motive means for imparting selected movement to said first boom section relative to said truck and to said second boom section relative to said first boom section, a workman support bucket supported for pivotal movement on the other end of said second boom section, and a mechanical leveling system extending from said truck to said workman support bucket and including at least one closed loop of flexible elongate material extending along said first and second boom sections, said closed loop including adjacent runs movable in opposite directions upon movement of said boom sections to normally maintain said workman support bucket in a vertical position throughout the range of movement of said first and second boom sections, adjustment means in said closed loop for making minor adjustments of said workman support bucket relative to the vertical position, the combination therewith of a bucket rotation system including operator means interposed in said closed loop, said operator means being movable between active and inactive positions and independently of said minor adjustment means, said operator means normally being maintained in said inactive position to maintain said workman support bucket in the vertical position, and control means operatively connected to said operator means, said control means being operable to immediately move said operator means from said normal inactive position to said active position and to thereby impact sufficient movement in opposite directions to said adjacent runs independently of movement of said boom sections to immediately move said workman support bucket from the normal vertical position to a horizontal position to facilitate removal of an injured workman from said support bucket.

4,429,764

SCAFFOLD SYSTEM FOR USE IN SANDBLASTING

John W. Park, 1820 Sweetwood Dr., Colma, Calif. 94015

Filed Feb. 22, 1983, Ser. No. 468,370
Int. Cl.³ E04G 3/10

U.S. Cl. 182—129

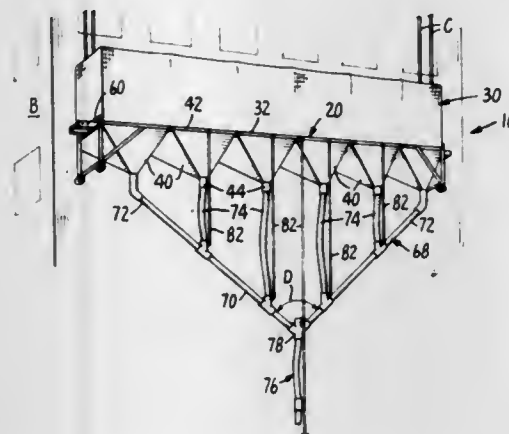
10 Claims

1. A scaffold system adapted to be raised adjacent the side of

a building, said system for use in a sandblasting operation, said system comprising:

an elongated planar platform;

a plurality of inverted pyramidal troughs connected to the bottom surface of said platform, each trough having an open upper end and an outlet means formed in the lower apex portion thereof, said troughs being mounted along the length of said platform in abutting, side-by-side relationship, with said troughs projecting outwardly beyond the elongated side edges of said platform;



conduit means connected to the outlet means of each said trough for channeling sand accumulated therein, downwardly;

enclosure means extending upwardly from the upper surface of said platform, said enclosure means surrounding both ends of said platform and the side edge thereof which is spaced away from the building, whereby when a sandblasting operation is carried out on said platform, sand particles and any material removed from the side of the building will be contained by said enclosure and directed into said troughs to be channeled by said conduit means directly to the ground.

4,429,765

COLLAPSIBLE SAWHORSE

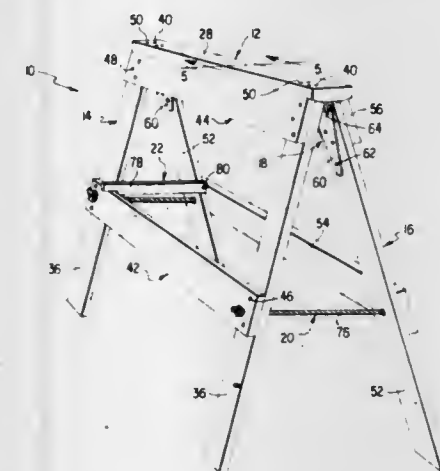
Gilbert C. Garcia, Corpus Christi, Tex., assignor to Homer Ramos, Corpus Christi, Tex., a part interest

Continuation-in-part of Ser. No. 216,019, Dec. 12, 1980. This application Apr. 27, 1982, Ser. No. 372,153

Int. Cl.³ B27B 21/00; F16M 11/00; A47B 37/00

U.S. Cl. 182—153

9 Claims



1. A collapsible sawhorse moving between storage and load supporting positions, comprising

an elongate beam of generally pentagonal cross-section having a length dimension, a width dimension and a thickness dimension, the beam having a planar upper surface corresponding to the base of the pentagon, a pair of gener-

ally parallel sides intersecting the upper surface and corresponding to the sides of the pentagon and first and second downwardly extending converging bottom faces intersecting the parallel sides;

a first pair of generally straight parallel spaced legs having a long dimension and an end generally perpendicular to the long dimension, the end abutting the first bottom face of the base;

means rigidly connecting the end and the first bottom face; a second pair of generally straight parallel spaced legs having a long dimension and an end generally perpendicular to the long dimension, the second legs being of generally the same size as the first legs;

a pair of hinges connecting the first and second legs including a first arm connected to the first leg, a second arm connected to the second leg and a pivot connection located adjacent the convergence of the base bottom faces; the arrangement between the hinges and the second legs being such as to abut the ends of the second legs against the second bottom face in load supporting position of the sawhorse;

means for limiting pivotal movement of the second legs relative to the first legs in a spreading direction; and

means for selectively preventing pivotal movement of the legs toward each other.

4,429,766

LADDER CONSISTING OF SLIDING SECTIONS

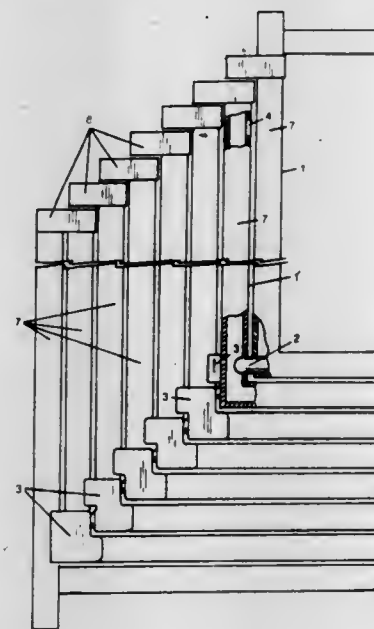
D. Salvador Alimbau Marques, Barcelona, Spain, assignor to Andral Corporation, Williamsville, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,382

Int. Cl.³ E06C 1/12

U.S. Cl. 182—195

14 Claims



1. A new sliding section ladder, comprising sections of varying widths made up of u-shaped modules, comprising a base and upright sections, each module being smaller in width than the one immediately before it, the outer sides of the smaller module backing into the inside of the immediately larger module, whereby the base and upright sections of the u-configuration of the smaller module are adjacent to the u-shaped base and upright sections of the larger module when said ladder is in a closed position and wherein said base sections decrease in width as they approach the top of said ladder when said ladder is in an open position.

4,429,767

PELLETIZED BRAKE LINING DISC BRAKE

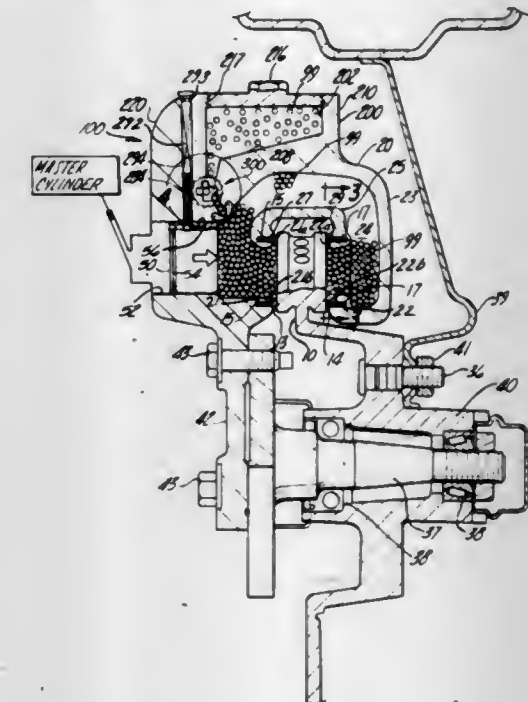
Robert L. Jenkins, 545 Yarbboro, Bloomfield Hills, Mich. 48013

Filed Aug. 25, 1980, Ser. No. 181,147

Int. Cl.³ F16D 65/52

U.S. Cl. 188—71.8

3 Claims



1. A brake device having a rotatable disc, said device comprising:

a stationary support; a nonrotating housing mounted to said support and spaced away from and extending across the periphery of said rotatable disc;

a chamber in said housing extending radially inwardly on opposite sides of said rotatable disc, said chamber having portions defining a cavity and a guide bore extending from said cavity and oriented perpendicular to the face of said rotatable disc;

a sleeve fitted into said guide bore; a plurality of brake lining pellets stored in said cavity and in said sleeve;

moving means, mounted in said chamber, for moving said brake lining pellets against said rotatable disc so that the relative motion between said disc and said nonrotating housing is retarded when said moving means is engaged, said moving means further comprising a piston mounted within said guide bore, and actuating means, mounted in said chamber, for actuating said piston against said brake lining pellets; and

replenishing means, mounted in said chamber, for replenishing said brake lining pellets in said cavity when at least one of said brake lining pellets is expended, said replenishing means further comprising a pellet storage reservoir mounted on said chamber, and feeding means, disposed in said chamber, for feeding at least one of said brake lining pellets from said pellet storage reservoir into said cavity when at least one of said brake lining pellets is expended; wherein said chamber further has portions defining a first passage extending perpendicularly to the axis of said guide bore, a second passage extending from the bottom of said pellet storage reservoir toward said cavity, said second passage communicating with said pellet storage reservoir to pass at least one of said brake lining pellets from said pellet storage reservoir into said second passage, an opening having its axis disposed perpendicular to and communicating with said first passage, said opening further communicating with said second passage and a third passage connecting said opening to said cavity for flow communication therebetween so as to pass at least one of said brake lining pellets therethrough;

and further wherein said feeding means comprises: a feeder member rotatably mounted in said opening, said

feeder member having a first disc and a second disc mounted to the face of said first disc, said first disc having a plurality of cavities formed in the periphery of said first disc for holding at least one brake lining pellet therein, said first disc further connecting said second passage with said third passage; and

rotating means, mounted in said first passage and coupled to said second disc, for rotating said feeder member in one direction of rotation in response to the movement of said piston in said guide bore to advance at least one of said brake lining pellets from said second passage into said opening, into said third passage and into said cavity such that when said piston moves in one direction in said guide bore to squeeze said brake lining pellets in said cavity against said rotatable disc and when at least one of said brake lining pellets is expended, said rotating means rotates said feeder member when said piston moves in the opposite direction so that at least one of said brake lining pellets in said second passage is advanced into one of said cavities in said first disc and said brake lining pellet is rotated by said feeder member into said third passage and into said cavity so as to replenish said cavity with at least one of said brake lining pellets when said rotating means is engaged.

4,429,768
BRAKES

Hugh G. Margetts, Leamington Spa, and Charles H. Pace, Solihull, both of England, assignors to Lucas Industries Limited, Birmingham, England

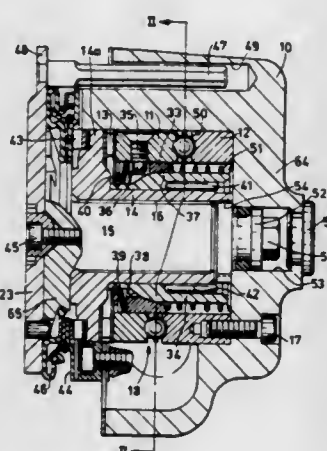
Filed Apr. 21, 1978, Ser. No. 898,865

Claims priority, application United Kingdom, Apr. 22, 1977, 16763/77

Int. Cl.³ F16D 55/08

U.S. Cl. 188—71.9

15 Claims



1. A mechanical brake actuator for a vehicle brake comprising a housing having an axis, a non-rotatable cam component fixed in or integral with said housing, a rotatable cam component in said housing and rotatable about said axis, said rotatable cam component being radially spaced from said housing throughout its circumference to define an annular clearance, said cam components each having a respective helical cam groove therein, said cam grooves being complementary to one another and axially confronting one another, a plurality of balls between said two axially confronting helical cam grooves to form a helical thrust bearing, and an elongate member extending generally tangentially and engaging said rotatable cam component at a point spaced from said axis for rotating the rotatable cam component in a direction to effect axial displacement of that component relative to said housing, said helical cam grooves having sufficient depths that the lateral reaction arising from the application of a lateral force to the rotatable cam component by said elongate member is transmitted to said non-rotatable cam component and thereby to said housing by

the action of the balls of said helical thrust bearing on the walls of said helical grooves.

4,429,769

FLOATING CALIPER TYPE DISC BRAKE

Harumi Oshima, and Tukasa Uno, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

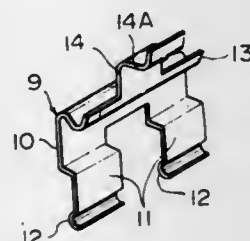
Filed Mar. 31, 1982, Ser. No. 363,780

Claims priority, application Japan, Mar. 31, 1981, 56-45936

Int. Cl.³ F16D 65/09, 65/20

U.S. Cl. 188—73.31

2 Claims



1. A floating caliper type disc brake comprising a pair of friction pads, a caliper adapted to be mounted on a stationary member to slide thereon in the direction of the axis of a rotatable disc, each of said friction pads having on opposite ends in the direction of the circumference of the disc projections for mounting slidably the friction pads on said stationary member, and a guide plate adapted to be interposed between the stationary member and each of projections of friction pads in mounting the friction pads on the stationary member, said guide plate having a generally channel shaped retaining portion for engaging slidably with the projection of the friction pad, an upwardly extending hook portion extending from the upper end of the retaining portion and along the side surface of the caliper, and a hook provided on the upper end of the hook portion and adapted to engage with a circumferentially projecting lug provided on the side surface of the caliper, thereby suspending the friction pads on the caliper when the caliper and the friction pads are disassembled from the stationary member.

4,429,770

FRICTION LINING CARRIER MEMBER HAVING REPLACEABLE FRICTION LININGS

Helmut Weisbrod, Bad Nauheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 205,132, Nov. 10, 1980, abandoned.

This application Nov. 15, 1982, Ser. No. 441,460

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947606

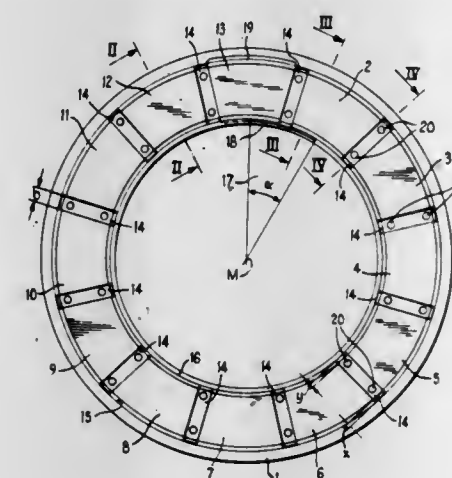
Int. Cl.³ F16D 51/00, 69/04

U.S. Cl. 188—73.32

9 Claims

1. A circular friction lining carrier member having a plurality of replaceable friction linings comprising: said carrier member having a first groove, disposed at an outer portion thereof and a second groove disposed at the inner portion thereof, said plurality of linings being guided in and held captive in said first and second grooves; and a supporting element for transmitting circumferential forces acting on said plurality of linings during operation to said carrier member disposed between each adjacent ones of said plurality of linings, each of said supporting elements being a solid rectangular member of square cross section immovably fastened to said carrier member by at least one fastening element extending through said rectangular member into said carrier member with each end of each of said rectangular members being radially spaced from an associated one of said first and second grooves, each of said rectangular members being in a non-overlapping, circumferential force transmitting relationship with a

length of adjacent edges of said adjacent ones of said plurality of linings coextensive with the length of an associated one of said rectangular members to receive said circumferential force.



4,429,771

MECHANICAL AIR FAILURE BRAKE

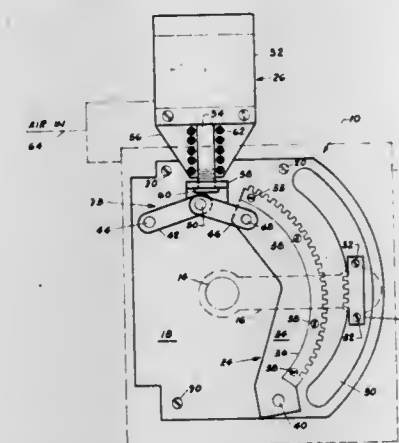
Thomas E. Martin, Chesterland, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 26, 1981, Ser. No. 296,395

Int. Cl.³ F16D 65/24

U.S. Cl. 188—170

8 Claims



1. In a control drive mechanism comprising a control shaft movable through a predetermined angle of rotation, and a lever attached to and rotatable with said shaft, a brake mechanism comprising a first rack section mounted on said lever, a second rack section mounted for rotation on a fixed pivot and movable between a first position out of engagement with said first rack section and a second position engaged with said first rack section, means biasing said second rack section into said second position, and air motor means connected to said second rack section and operable to move said second rack section to said first position against said biasing means.

4,429,772

DRUM BRAKE ANCHOR ASSEMBLY

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 14, 1981, Ser. No. 301,626

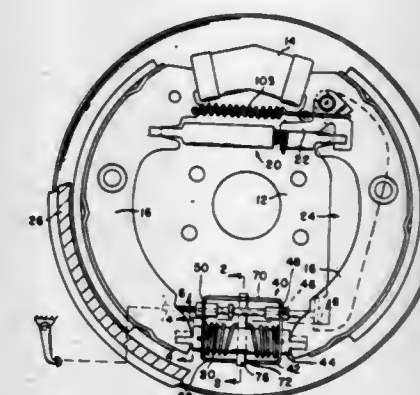
Int. Cl.³ F16D 51/24, 51/52

U.S. Cl. 188—328

6 Claims

1. A drum brake assembly with an anchor assembly defining a duo mode of operation, a pair of brake shoes movable by a hydraulic actuator during a service brake operation to a braking position, a parking lever assembly cooperating with the pair of brake shoes to move the latter to the braking position during a parking brake operation, a backing plate supporting the hydraulic actuator, the anchor assembly and the pair of

brake shoes, the anchor assembly defining a first mode of operation during the service brake operation to transfer torque developed during braking to the backing plate via the anchor assembly, the anchor assembly defining a second mode of operation during the parking brake operation to substantially prevent the transfer of torque developed during braking to the anchor assembly, and the anchor assembly including a connecting member extending between the pair of brake shoes, the connecting member being fixed laterally relative to the backing plate during the first mode of operation, characterized by



said anchor assembly further including a bracket supporting the connecting member, said bracket also supporting a portion of the parking lever assembly, and the connecting member being rotatable from its position in the first mode of operation in response to movement of said portion in order to reach a position permitting movement in the second mode of operation, the connecting member including a transversely extending pin and said bracket defines at least one slot for receiving said pin in the first mode of operation, whereby the pin is fixed laterally within the one slot in the first mode.

4,429,773

ELECTROMAGNETIC CLUTCH AND BRAKE

Takashi Dohi; Nozomu Shinozaki, both of Hirakata, and Shigeo Neki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

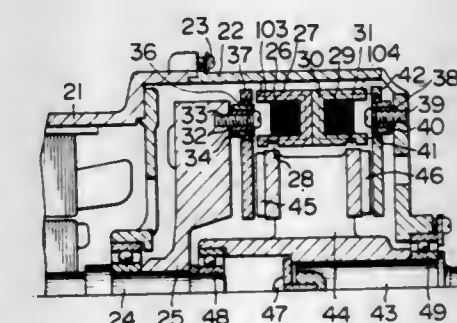
Filed Jul. 21, 1981, Ser. No. 287,074

Claims priority, application Japan, Jul. 31, 1980, 55-106125; Nov. 17, 1980, 55-162424; Nov. 17, 1980, 55-162425; Nov. 17, 1980, 55-162426; Jan. 30, 1981, 56-13438

Int. Cl.³ B60K 41/24

U.S. Cl. 192—18 B

8 Claims



1. An electromagnetic clutch for use with a motor having a fixed bracket and a rotatable motor shaft, comprising a flywheel attached to said motor shaft for rotation therewith; an output shaft rotatably supported by said bracket, the axis of rotation of said output shaft being substantially coaxial with the axis of rotation of said motor shaft; a clutch rotor attached to said output shaft, said clutch rotor being located between said flywheel and a radial portion of said bracket; a clutch section including

- a plurality of clutch pins attached to a face of said flywheel opposing said clutch rotor;
- a plurality of clutch sliding members, each of said clutch sliding members surrounding one of said plurality of clutch pins and being axially displaceable with respect thereto;
- a clutch ring having a plurality of apertures therein, each of said apertures surrounding one of said plurality of clutch sliding members;
- a plurality of clutch buffer members interposed between each of said plurality of clutch sliding members and said clutch ring, said clutch ring being prevented from rotating relative to said flywheel but being displaceable in the axial direction with respect thereto, said buffer members permitting radial expansion of said clutch ring with respect to said flywheel; and
- a clutch solenoid secured to said bracket adjacent said clutch ring, energization of said clutch solenoid bringing said clutch ring into contact with said clutch rotor, whereby said output shaft is rotated as a unit with said motor shaft; and
- a brake section including
 - a plurality of brake pins attached to a face of said bracket opposing said clutch rotor;
 - a plurality of brake sliding members, each of said brake sliding members surrounding one of said plurality of brake pins and being axially displaceable with respect thereto;
 - a brake ring having a plurality of apertures therein, each of said apertures surrounding one of said plurality of brake sliding members;
 - a plurality of brake buffer members interposed between each of said plurality of brake sliding members and said brake ring, said brake ring being prevented from rotating relative to said bracket but being displaceable in the axial direction with respect thereto, said buffer means permitting radial expansion of said brake ring with respect to said bracket; and
 - a brake solenoid secured to said bracket adjacent said brake ring, energization of said brake solenoid bringing said brake ring into contact with said clutch rotor, whereby the rotation of said output shaft is stopped.

4,429,774

PAWL AND RATCHET MECHANISM

Herbert A. Clements, Woking, and Robert H. Heybourne, Thames Ditton, both of England, assignors to S. S. Patents Limited, Middlesex, England

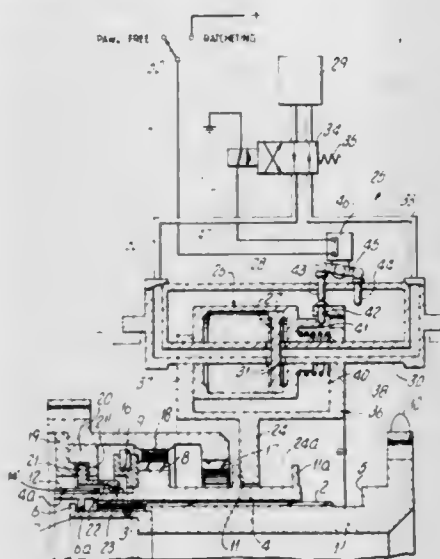
Filed Oct. 19, 1981, Ser. No. 312,701

Claims priority, application United Kingdom, Oct. 27, 1980, 8034573

Int. Cl.³ F16D 23/08, 23/10

U.S. Cl. 192—53 H

12 Claims



1. In a pawl and ratchet mechanism having a movable baulking member which may be set in both a ratcheting and a pawl free condition in which the pawl and ratchet components of the mechanism are respectively in and out of engagement with each other, the baulking member also being settable in a baulking condition which prevents relative movement of the said components into the ratcheting condition, the baulking member being maintained in the baulking condition when the relative rotation of the said components is inappropriate to permit the mechanism to be operated in the ratcheting condition, and a thrust member which is engageable with the baulking member or with means connected thereto and which is movable in first and second directions in which the baulking member is respectively moved towards and away from the ratcheting condition the improvement which comprises thrust switching means settable in first and second conditions in which, in operation, thrust is imparted to the thrust member to cause the latter to move respectively in the said first and second directions and detector means which detects when the baulking member has moved into the baulking condition and when the baulking member has moved out of the baulking condition and into the pawl free condition, the detector means controlling the setting of the thrust switching means so that, in operation, when the baulking member is in the baulking condition, the thrust switching means is so set that the thrust moves the baulking member towards the pawl free condition, and when the baulking member has moved into the pawl free condition, the thrust switching means is so set that the thrust moves the baulking member towards the ratcheting condition.

4,429,775 CLUTCH TYPE TORQUE CONTROL DEVICE FOR AIR DRIVER

Hirokazu Teramoto, Nara, Japan, assignor to Uryu Seisaku, Ltd., Osaka, Japan

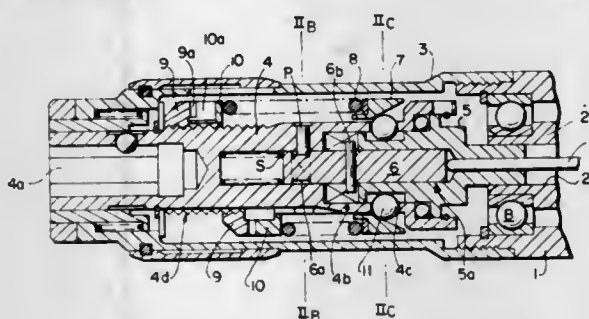
Filed Mar. 5, 1981, Ser. No. 240,615

Claims priority, application Japan, Mar. 5, 1980, 55-28264

Int. Cl.³ B60K 41/02; F16D 7/02

U.S. Cl. 192—0.096

6 Claims



1. A clutch type torque control device, comprising:
 - a longitudinally extending housing having a front end and a rear end, having a central, longitudinally extending, first cavity open at said front and rear ends, and having a central longitudinally extending axis along said first cavity;
 - a main shaft having a work end at said front end and extending in said first cavity toward said rear end, said main shaft being rotatable about said central axis and having a longitudinally extending second cavity opening at its rearmost end and a radially extending passage opening into said second cavity, said main shaft having a rear portion having a plurality of ball receiving holes circumferentially spaced about said central axis rearward of said passage;
 - a drive shaft rotatable about said central axis extending longitudinally rearward of said main shaft;
 - a plurality of balls movably fitted in said plurality of ball receiving holes;
 - a cam located between said main shaft and said drive shaft, rotatable with said drive shaft about said central axis, having cam surfaces including substantially flat cam surfaces for engaging said plurality of balls so as to rotate said plurality of balls and said main shaft therewith about said

- central axis, and having intermediate cam surfaces between said substantially flat cam surfaces closer to said plurality holes than said substantially flat cam surfaces;
- means, including a first spring, for pushing said plurality of balls through said plurality of ball receiving holes against said cam surfaces, whereby a predetermined torque on said cam through said drive shaft pushes said plurality of balls against the force of said first spring from said flat cam surfaces onto said intermediate cam surfaces releasing the torque from said main shaft, whereby said cam rotates independently of said main shaft;
- a pilot pin mounted to said cam for rotation about said central axis therewith and for movement with respect thereto in opposite first and second longitudinal directions extending into said second cavity and having an outer planed-off surface longitudinally forward of said cam;
- a stop pin slidably mounted in said passage having a first end abutting said pilot pin and a second end, said first end being fittable onto said planed-off surface;
- a second spring engaging said stop pin at said second end and said pilot pin, for pressing said stop pin radially inward into abutting contact with said pilot pin, said stop pin engaging said planed-off surface during rotation of main shaft with said cam so as to block movement of said pilot pin in said second direction, rotation of said pilot pin with said cam relative to said main shaft pushing said stop pin radially outward and off said planed-off surface;
- an air driven motor in said housing engaging said drive shaft for rotating said drive shaft about said central axis;
- means, responsive to longitudinal movement of said pilot pin in said opposite first and second longitudinal directions, for respectively providing and closing off access of pressurized air through said first cavity to said motor for driving said motor; and
- means for urging said pilot pin in said second directions so as to push said pilot pin in said second direction when said stop pin is off said planed-off surface.

4,429,776

FRICTION CLUTCH

Paul Maucher, Sasbach, and Patrick Weydmann, Buhlertal, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

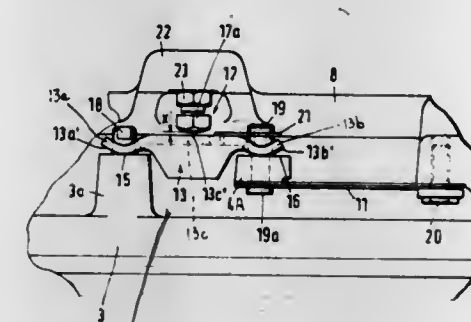
Filed Feb. 6, 1981, Ser. No. 232,246

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004277

Int. Cl.³ F16D 13/50, 13/56

U.S. Cl. 192—99 A

48 Claims



1. A friction clutch for use in automotive vehicles or other machines of the type having a rotary driving element, comprising a housing secured to said element; first and second pressure plates disposed between said housing and said element and arranged to normally rotate with said element; first and second friction discs respectively interposed between said element and said housing on the one hand and said first and second plate on the other hand; means for biasing said plates into engagement with the respective discs; and disengaging means including at least one release member mounted on said housing and movable from a first to a second position to thereby move one of said plates away from the respective disc, and at least one changeover lever interposed between said housing on the one hand and said plates on the other hand and movable from a first

to a second position to thereby move the other of said plates away from the respective disc in response to movement of said release member to said second position, said lever having first and second arms respectively contacting said first and second plates and a median portion between said arms, said housing having a portion defining a fulcrum for said median portion of said lever during movement of said lever to said second position, said arms having first surfaces and said pressure plates having second surfaces which abut against and along which the respective first surfaces roll during movement of said lever relative to said fulcrum, said median portion of said lever being free to perform a pivotal as well as at least one additional movement with reference to said fulcrum.

4,429,777

AUTOMATIC LOCKING AND ADJUSTMENT ASSEMBLY

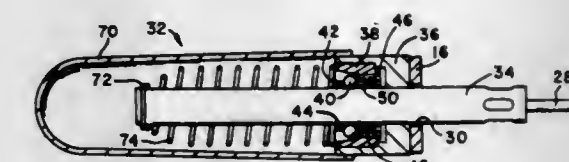
Alistair G. Taig, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1981, Ser. No. 291,646

Int. Cl.³ F16D 13/75

U.S. Cl. 192—111 A

7 Claims



1. An automatic locking and adjustment assembly for fixing a cable to a housing which includes a variable setting relative to the cable, the housing including a cam, gripping means engageable with the cam and the cable to fix the latter to the housing, a cage carrying the gripping means relative to the housing and the cable a first resilient member biasing the housing to an initial setting relative to the cable and a second resilient member biasing the gripping means to a first position relative to the cage, the cable being movable slightly relative to the housing away from a rest position setting to fixedly engage the gripping means with the cam and the cable, characterized by said cage frictionally engaging said cable to carry said gripping means in spaced relation to said cam when said cable is in its rest position and said cage defining a lost motion connection for carrying said gripping means, said lost motion connection providing for said cage to move relative to said cable when said cable is moved relative to said housing and said lost motion connection also providing for said cage to move with said cable at a different rate of travel than said gripping means when said cable is returned to its rest position.

4,429,778

CONDITIONING TIME CONTROL FOR VENDING BY SELECTION

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, St. Louis, Mo.

Filed Jul. 15, 1981, Ser. No. 283,656

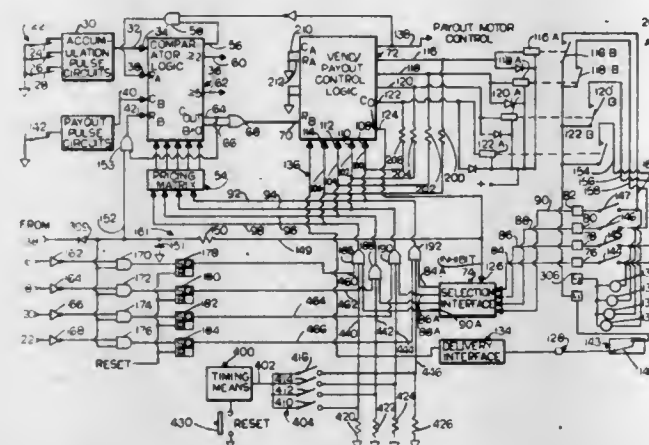
Int. Cl.³ G07F 5/16

U.S. Cl. 194—10

30 Claims

1. A conditioning time control for controlling the pre-vend time conditioning of products in a multi-selection vendor having credit entry means, vend selection means actuatable to select a vend selection, each vend selection having a pre-established vend price associated therewith, and vend producing means for effecting delivery to a customer of a product associated with the selected vend selection when the credit entered is at least equal to the vend price for the selected vend selection, said conditioning time control including means to inhibit vending of the products associated with a particular vend selection for a period of time in order to permit pre-vend time conditioning of such products, conditioning selection means

actuatable by authorized personnel for individually establishing particular vend selections to be inhibited, and reset means operable by authorized personnel, said inhibiting means being responsive to actuations of said conditioning selection means and to operation of said reset means to effect pre-vend time



conditioning of the products associated with the vend selections established by actuation of the conditioning selection means, said inhibiting means effecting pre-vend time conditioning by inhibiting vending of such products for a period of time subsequent to operation of the reset means while permitting vending of products associated with other vend selections.

4,429,779

RESERVOIR FOR ROD-LIKE ARTICLES

Dennis Hinchcliffe, London, England, assignor to Molins Limited, London, England

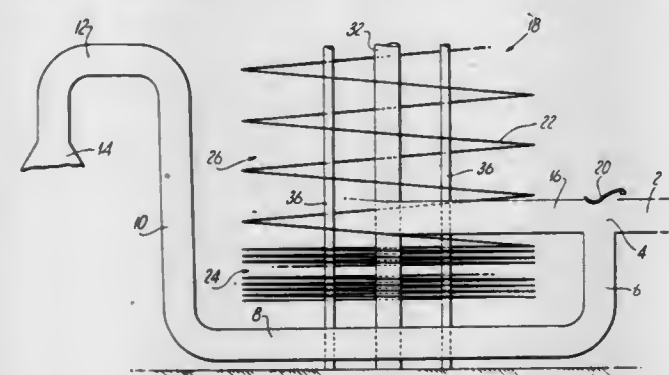
Filed Jul. 8, 1981, Ser. No. 281,330

Claims priority, application United Kingdom, Jul. 17, 1980, 8023317

Int. Cl.³ B65G 1/00

U.S. Cl. 198—347

11 Claims



1. A reservoir for rod-like articles, comprising longitudinally-rigid support means having a helically-extending support surface including a leading end for supporting a continuous stack of rod-like articles; and means for progressively and reversibly driving said support surface along a path from a storage position, in which it is compactly stored with adjacent turns closely spaced, to an operative position, in which adjacent helical turns are spaced apart to allow a stack of rod-like articles to be conveyed thereon, including a plurality of longitudinally-spaced drive means arranged along said path and engaging said support surface for feeding said support surface along said path and guide means extending between said drive means and defining said path therebetween along which said support surface is fed by said drive means, whereby said leading end and successive increments of said support surface may be reversibly engaged by and conveyed between successive drive means as said support surface is fed along said path, and so that progressively more drive means are engaged with said support surface as said surface is advanced along said path further into said operative position.

4,429,780
DEVICE FOR DEPOSITING GOODS ONTO CONVEYOR BELTS OR THE LIKE

Jim Innes, Kitchener, Canada, assignor to Santrade Ltd., Lucerne, Switzerland

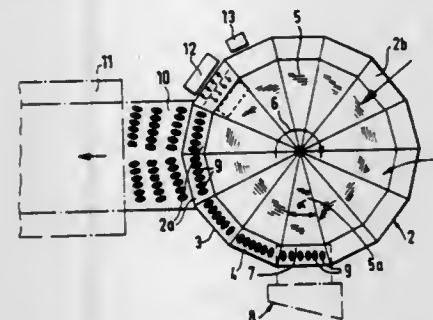
Filed Jul. 27, 1981, Ser. No. 287,062

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029159; Dec. 3, 1980, 3045616

Int. Cl.³ B65G 47/26

U.S. Cl. 198—424

16 Claims



1. A device for transfer of piece goods onto conveyor belts or the like, particularly for pieces susceptible to deformation, made from dough-like material, wherein the premolded individual pieces are delivered to a conveyor belt and are transferred onto same by a transfer device, characterized in that the transfer device comprises a rotatable transfer table which is provided in the region of its periphery with swingably mounted transfer plates for the individual pieces, at least a part of the region of the transfer table is disposed above the conveyor belt, the transfer plates are downwardly swingable by a control device within the said region of the table, the swing axes of the transfer plates extend tangentially to the path of motion of the transfer table, and said oppositely swingable transfer plates are so arranged with respect to each other that they abut against each other with their freely swingable edges.

4,429,781

METHOD AND APPARATUS FOR SUPPLYING INDIVIDUAL ITEMS TO A CONVEYOR

Dieter Holzhäuser, Darmstadt, Fed. Rep. of Germany, assignor to Kosan Crisplant A/S, Aarhus N, Denmark

PCT No. PCT/DK80/00015, § 371 Date Nov. 10, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01903, PCT Pub. Date Sep. 18, 1980

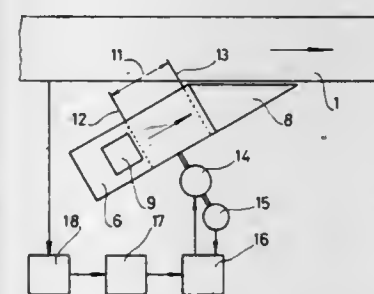
PCT Filed Mar. 7, 1980, Ser. No. 212,709

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909292

Int. Cl.³ B65G 47/68

U.S. Cl. 198—448

8 Claims



1. A method of operating an apparatus for supplying individual items to a conveyor moving at an operating velocity, said apparatus having a loading device and a drive for varying the conveying speed of the loading device, comprising the steps of: (A) delivering an item onto a conveying surface of the loading device; and (B) accelerating said item from an initial velocity on said loading device, that has a speed component in a direction of conveyance of the conveyor which is substantially different from said operating velocity of the conveyor, to

substantially the same speed component in the direction of conveyance of the conveyor as the conveyor by a controlled adjustment of the conveying speed of the loading device in a manner in which the acceleration of the item on the conveyor does not produce overturning thereof and does not overcome the static friction between the item on the conveying surface of the loading device and said conveying surface, whereby sliding of the item is avoided.

4,429,782

SCREW CONVEYER WITH REMOVABLE FLIGHTING

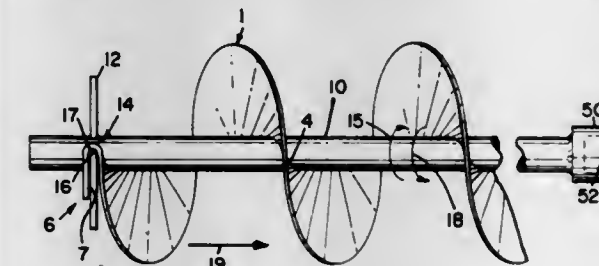
Gerald R. Pierson, Bloomington, Minn., assignor to McQuay-Perfex Inc., Minneapolis, Minn.

Filed Oct. 16, 1981, Ser. No. 312,274

Int. Cl.³ B65G 33/26

U.S. Cl. 198—677

8 Claims



1. A screw conveyor comprising: a rigid helicoidal member having a coaxial cylinder passageway; a shaft sized to fit in said passageway; complementary coupling means operatively associated with said helicoidal member and said shaft respectively and including a reverse bend on one end of said helicoidal member, said coupling means for engaging said shaft member and said member upon inserting said shaft in said member and rotating said shaft in one direction, and for disengaging and permitting extraction of said shaft from said member upon rotating said shaft in the other direction.

4,429,783

SCRAPER BLADE ASSEMBLY FOR CENTRAL CHAIN SCRAPER CONVEYORS

Anton Clement, Iserlohn-Letmathe, Fed. Rep. of Germany, assignor to August Thiele, Iserlohn-Kalthof, Fed. Rep. of Germany

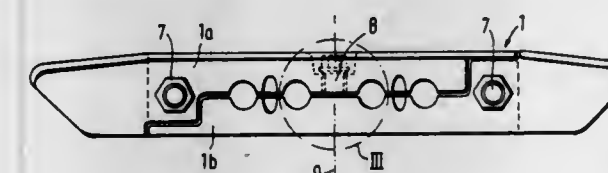
Filed Aug. 25, 1981, Ser. No. 296,184

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3038799

Int. Cl.³ B65G 19/24

U.S. Cl. 198—731

17 Claims



1. A scraper blade assembly for use in a scraper chain conveyor including at least one centrally disposed chain consisting of a plurality of consecutive links, especially in a double central chain conveyor, comprising two discrete elongated scraper blade parts each substantially disposed at one side of a parting plane, said blade parts having at least two sets of mutually overlapping portions, said sets being spaced from one another longitudinally of said blade parts and at least one of said overlapping portions of each of said sets extending across said parting plane; means for bounding on each of said blade parts at least one pair of channels situated between said sets and

opening onto said parting plane, the associated channels on said two blade parts complementing each other into confining openings for portions of a respective central chain link extending along said parting plane at a spacing longitudinally of said blade parts; and means for connecting said blade parts to one another, including aligned through holes in each of said sets, extending along said parting plane and transversely to the blade parts elongations, connecting bolts extending through said holes, at least one additional hole in one of said blade parts situated between said sets and extending substantially normal to said parting plane, at least one additional bolt connected to the other of said blade parts and extending across said parting plane into said additional hole, said bounding means including at least one lining on each of said blade parts, said lining being exchangeably connected with the remainder of the respective blade part, and at least one nut threaded onto said additional bolt and engaging said one blade part at said additional hole, at least one of said aligned holes in each of said sets being constituted by a slot which is elongated in the direction normal to said parting plane.

4,429,784

INFEED ASSEMBLY FOR RANDOM LENGTH END SHAPING MACHINE

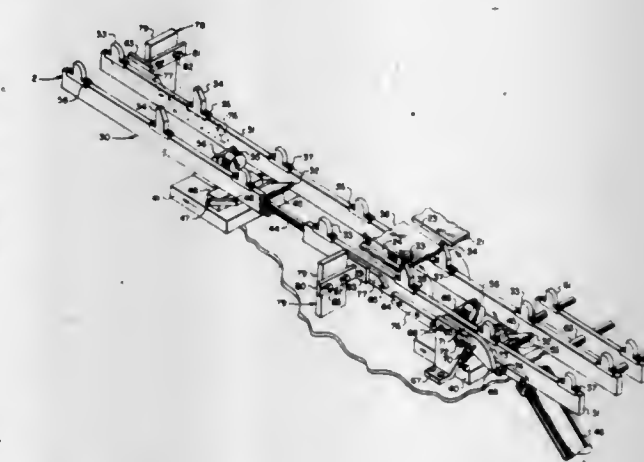
Jeff Y. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine, Garland, Tex.

Filed Nov. 3, 1980, Ser. No. 203,235

Int. Cl.³ B65G 25/02

U.S. Cl. 198—744

24 Claims



24. In a woodworking apparatus that has at least one end shaper, table means for supporting sticks of random length during their travel through the apparatus and an infeed assembly for advancing said sticks through said apparatus; holddown means overlying and coacting with the table means for preventing displacement of the sticks during the shaping of their ends comprising a pressure head assembly for holding discrete sticks of random thickness, width and length against displacement while permitting travel of said sticks therebeneath. the pressure head assembly having a housing elongated longitudinally of the direction of travel of said sticks, an elongate wear strip of suitable flexible material slidably mounted in the underside of the housing and depending therefrom for upright movement relative thereto, the wear strip being articulated at spaced intervals and having upwardly opening recesses intersecting its articulations and terminating above the lower surface thereof so as to have upwardly facing bottoms, and means confined within each recess and bearing against its bottom for resiliently urging the underlying portion of said wear strip into engagement with said sticks, the articulations of said wear strip being formed by upwardly opening slots extending transversely entirely through said strip so as to intersect the recesses, the lower portions of the upwardly facing slots being enlarged so as to provide the desired flexibility of said wear strip.

4,429,785

CURVE-NEGOTIATING PLATE CONVEYOR
 Manfred Dango, Harkortstrasse 15, 5900 Siegen 1, Fed. Rep. of Germany

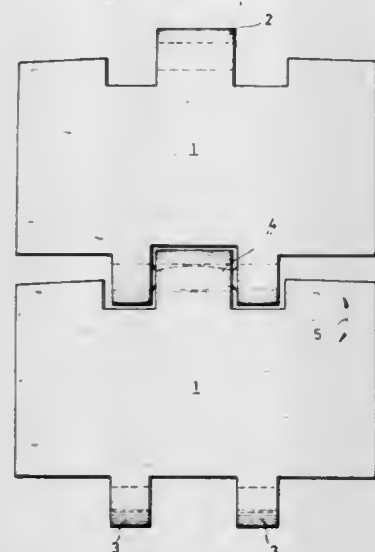
Filed Feb. 23, 1982, Ser. No. 351,732

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107127

Int. Cl.³ B65G 17/26

U.S. Cl. 198—852

6 Claims



1. A plate chain conveyor assembly comprising:
 - a plurality of plate members each having first and second opposite ends, said first end being provided with a single hinge eye and said second end being provided with two spaced hinge eyes, said plate members being disposed adjacent one another such that the single hinge eye of each said plate member interengages with the two spaced hinge eyes of an adjacent plate member to form a common passage;
 - a plurality of hinge bolts each having cylindrical ends and an approximately barrel shaped center section, said center section changing in shape from a substantially circularly shaped center portion to a substantially lens-shaped cross section towards each of said cylindrical ends, one of said hinge bolts being disposed in each said passage with the lens-shaped cross section having its larger cross sectional dimension oriented perpendicularly to the plane of the plate member having the two spaced hinge eyes through which said bolt passes.

4,429,786

INTEGRATED CONTACT LENS-MAINTENANCE KIT CARRYING APPARATUS

Stephen J. Hucal, 535 N. Michigan Ave., Chicago, Ill. 60611
 Filed Sep. 30, 1982, Ser. No. 429,325

Int. Cl.³ B65D 21/02, 85/62; A45C 11/04

U.S. Cl. 206—5.1

18 Claims

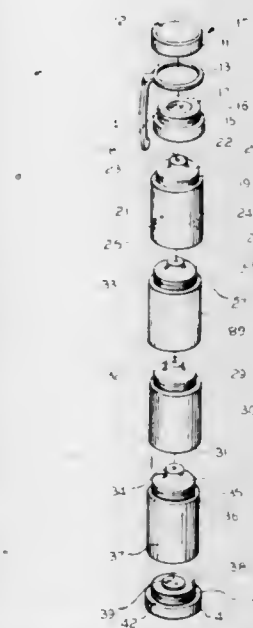
1. An integrated contact lens and maintenance kit carrying apparatus for the portable facilitated storage of a user's contact lenses as well as a plurality of fluids for the maintenance of said contact lenses, said apparatus comprising:

- two lens storage means for the receipt and storage of each one of a pair of contact lenses;
- each of said lens storage means capable of removably receiving one each of said pair of contact lenses as well as maintaining each of said lenses in a liquid-tight storage fluid environment;
- a first of said two lens storage means being operably positioned over the second of said lens storage means so as to be substantially concentrically positioned thereabove along the longitudinal axis of said apparatus;
- a plurality of fluid container means operably and removably maintained along said longitudinal axis of said apparatus

and operably attached to one or more of said lens storage means by container attachment means;

each of said fluid container means being juxtaposed in position to one or more successive ones of said fluid container means and removably containing fluids utilized for said user's wearing and maintenance of said contact lenses;

each of said fluid container means and said lens storage means being integrated into a substantially elongated thin cylindrical configuration to facilitate the portable carrying of same in a user's pocket and purse;



- each of said fluid container means having a peripheral portion thereabout forming a substantial peripheral portion of said thin cylindrical configuration;
- each of said fluid container means possessing alternative fluid release and containment means associated therewith; and
- each of said fluid container means and lens storage means further having indicia means associated therewith to facilitate the identification of said fluids and lenses respectively contained thereby.

4,429,787

COIN CARD AND INTEGRAL INFORMATION CHART THEREFOR

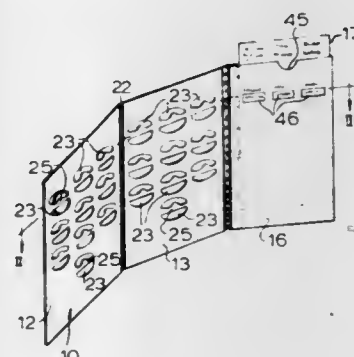
H. Clifton Morse, 345 Fullerton Pkwy., Chicago, Ill. 60614

Filed Sep. 3, 1982, Ser. No. 414,827

Int. Cl.³ A45C 11/28

U.S. Cl. 206—83

9 Claims



1. An article retaining card and cooperating slide chart formed from a single piece of relatively stiff flat cardboard cut to have parallel end edges, one generally continuous side edge and an opposite interrupted side edge including two side by side disconnected article retaining cards having article carrying slots therein and foldable over said piece of cardboard to define two connected article retaining cards of substantially the same area, an accordion fold line extending along said piece of cardboard defining the backs of said article retaining cards,

said piece of cardboard also including a slide card formed integrally therewith and removable therefrom, and a double-accordion type fold line defining an expandable hinge extending along said single piece of cardboard at the margin of the innermost of said article retaining cards, the balance of said strip of cardboard beyond said article retaining cards comprising two aligned generally rectangular pieces of cardboard of substantially equal size and a hinge line intermediate the ends of said pieces of cardboard accommodating said pieces of cardboard to be folded over each other, an outer end of said two aligned pieces of cardboard including an adhesive spacer flap foldable over said end, an adhesive strip extending along one side of said flap, another adhesive strip extending along one of said pieces adjacent said expandable hinge for adhesively securing said spacer flap to said piece of cardboard to space said pieces apart to form a slide for said slide card, said slide card having indicia thereon pertinent to the articles insertible in said slots, and the outer face of said slide having windows therein enabling the viewing of said indicia on said slide card upon movement of said slide card along said slide.

4,429,788

CONTAINER FOR OIL CAN SPOUT

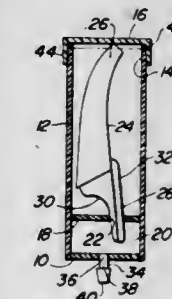
Dennis J. Harris, 717 W. 53rd St., Davenport, Iowa 52806

Filed Jan. 11, 1983, Ser. No. 457,297

Int. Cl.³ B65D 85/00; F16C 3/14; F16M 33/00; B65B 3/04

U.S. Cl. 206—349

7 Claims



1. For use with an oil can spout of the type having a lower can-piercing end and an upper pouring end; a multi-part container having upper and lower parts which when assembled includes a bottom, top and upright walls extending between and joined to the top and bottom, at least said bottom part being cup-like and the top providing an upper, removable closure for said bottom, said assembled parts being of such height and cross-sectional dimensions as to receive and enclose the spout lower end down and with its upper end adjacent the top of the container, spout support means rigid with the container and spaced above the bottom to provide an oil reservoir, said support means being formed to receive the lower end of the spout and oil drain means in communication with the oil reservoir and having an outlet end exteriorly of the container and removable closure means for the outlet end of the drain means.

4,429,789

SURGICAL SPONGE COUNTER

P. Brooks Puckett, Jr., Mequon, Wis., assignor to Meridian Industries, Inc., Milwaukee, Wis.

Filed Nov. 22, 1982, Ser. No. 443,167

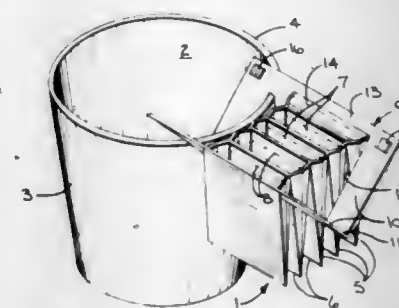
Int. Cl.³ A61B 19/00; B65D 5/44, 27/08; A61F 13/00

U.S. Cl. 206—370

10 Claims

1. A surgical sponge counter for attachment to a kick bucket or the like during an operation, comprising:
 - (a) a plurality of closely adjacent interconnected transparent expandable bags forming a group of bags,
 - (b) said bags having closed bottom edges and having top mouths adapted to be openable upon expansion of said bags for receiving the sponges,
 - (c) means for supporting said bags in generally vertical hanging position,

- (d) means securing at least some of said bags to said bag supporting means,



- (e) and means on said bag supporting means for attaching the latter to a kick bucket.

4,429,790

LATCH AND HANDLE ASSEMBLY FOR MAGNETIC RECORDING DISC CARTRIDGE

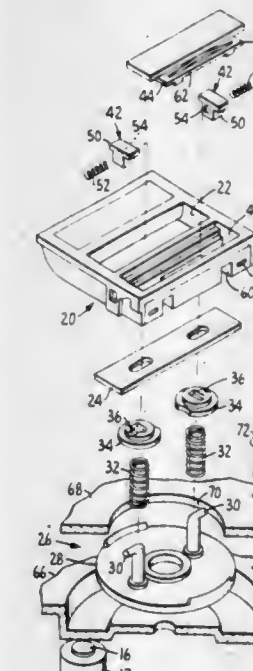
Dean L. Christensen, Costa Mesa, and Frank S. Ebey, Lake-wood, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 13, 1981, Ser. No. 282,521

Int. Cl.³ G11B 23/02; A45C 13/26

U.S. Cl. 206—444

6 Claims



1. In a magnetic recording cartridge having a recording disc contained within a first housing, with a second separably-mating housing whereby separation of said second housing is effected by lifting said recording disc axially away from engagement with a portion of said second housing which extends transversely of the disc axis;

- an improved latch-handle assembly combined therewith, this assembly comprising:
 - lift means comprising a pair of L-shaped posts and a lift plate; and
 - grip means adapted to move about a pivot axis, said movement being between a first position substantially parallel to said disc and a second position relatively normal to the first position, being substantially perpendicular to the plane of said disc and generally parallel to said disc axis; this grip means including a cavity with a pair of slots adapted to receive said lift means, a pair of spring bias means and an urging means, the urging means being adapted to move from a first position to a second position, whereby in said first position the spring bias means is held in "disengaged" condition and whereby in said second position it facilitates release of said spring bias means to be spring-urged into "engaged" condition whereat to capture said lift means; said pair of spring bias means being thus adapted to be

spring-urged from said "disengaged" to said "engaged" condition and so adapted to so capture said lift means; and said spring bias means being located at opposite means of said cavity and each of said bias means comprises a slide member having a hole at one end thereof and a spring at an end opposite said one end; said hole adapted to receive said L-shaped post, said spring is urged against the end of said cavity; and

wherein, in said first position, said grip means is adapted to receive said lift means through said slots;

said urging means being adapted to so urge said spring bias means to said "engaged" condition, and in a direction substantially perpendicular to said pivot axis, as well as being adapted to retain said spring bias means in said cavity.

4,429,791

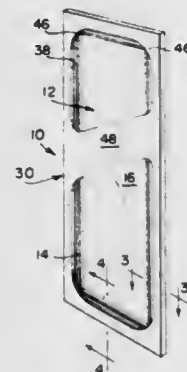
MIRROR PACKAGE AND METHOD OF FORMING
Anthony D. Ruppel; Monte Williams, and Larry Willis, all of Vincennes, Ind., assignors to Hamilton Glass Products Incorporated, Vincennes, Ind.

Filed Jun. 1, 1982, Ser. No. 383,590

Int. Cl.³ B65D 5/02, 25/00

U.S. Cl. 206—454

11 Claims



1. A method of producing a package for a mirror having opposite edges and opposite ends comprising the steps of forming a flat sheet having an opening in the center and four inwardly-directed flaps, as well as four outwardly-directed flaps which ultimately define supports for opposite edges and opposite ends of said mirror, double folding said outwardly-directed flaps on opposite ends to produce at least one double ply in contiguous engagement with said sheet, folding said inwardly-directed flaps on opposite ends in overlapping relation with the double plies on opposite ends to produce rigid supports for opposite ends of said mirror.

4,429,792

MEDICATION-DISPENSING CARD

Jacob M. Machbitz, Tiburon, Calif., assignor to Medication Services, Inc., San Rafael, Calif.

Continuation-in-part of Ser. No. 301,086, Sep. 11, 1981, abandoned. This application Sep. 16, 1981, Ser. No. 302,888

Int. Cl.³ B65D 83/04, 85/56

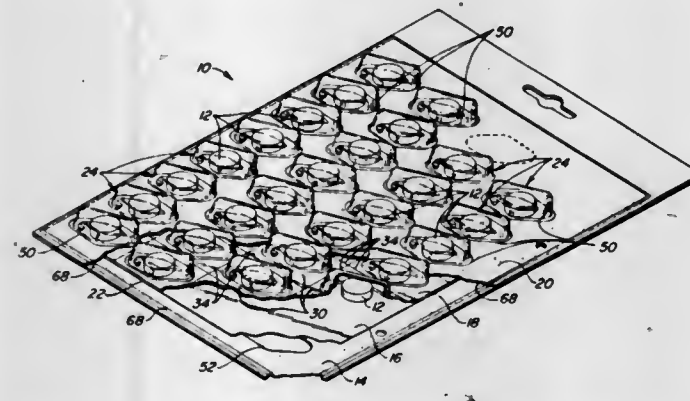
U.S. Cl. 206—531

17 Claims

1. A medication-dispensing card comprising an inner pack for storing single doses of medication prior to use and an outer cover for nonpermanently encasing the inner pack, wherein:

- (a) the inner pack comprises:
- a blister sheet having a plurality of pockets formed therein;
 - single doses of medication retained within at least some of the said pockets;
 - a lidding sheet laminated to one side of said blister sheet so that the pockets are sealed to protect the medication; and
 - means for separating one or more pockets from the remainder of the inner pack in a predetermined grid pattern so that unused doses can be recovered and recycled; and

- (b) the outer cover comprises:
- a front panel lying adjacent the blister sheet and having a plurality of apertures which receive the pockets there-through; and
 - a back panel having substantially the same peripheral dimension as the front panel, said back panel lying



adjacent the lidding sheet and having a plurality of apertures arranged in a pattern corresponding to that of the pockets in the blister sheet, said front and back panels being free from means for detaching individual pockets and being characterized by a boss formed along the inner surface of at least one of the panels and disposed near the edge thereof, said front and back panels being attached solely by means of said boss.

4,429,793

DIABETIC TRAVELING CASE

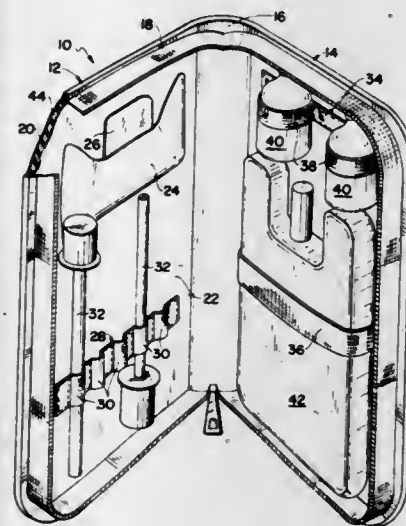
Emil G. Ehmann, Kenilworth, N.J., assignor to Ehmann Corporation, Kenilworth, N.J.

Filed May 13, 1982, Ser. No. 377,850

Int. Cl.³ A45C 11/20; B65D 69/00; F25D 3/08

U.S. Cl. 206—570

4 Claims



1. A pocket-sized diabetic traveling case, comprising a first cover, having an inner surface, an outer surface and a layer of expanded cellular polystyrene sandwiched between said inner and outer surfaces of said first cover; a second cover, having an inner surface, an outer surface and a layer of expanded cellular polystyrene sandwiched between said inner and outer surfaces of said second cover so as to thermally insulate said second cover; connecting means for pivotally connecting said first and second covers to each other such that said first and second covers are pivotal relative to each other between a closed position in which said first and second covers are arranged parallel to each other with said inner surfaces thereof in face-to-face relationship and an open position in which said first and second covers are pivoted away from each other; first attaching means

releaseably attaching at least two insulin containers to said inner surface of said first cover, said first attaching means including an elastic strap having a plurality of loops formed therein, each loop being sized and shaped so as to releaseably receive one of said insulin containers; second attaching means releaseably attaching a substantially flat container of freezing material to said inner surface of said first cover such that said container of freezing material is in close proximity to said insulin containers, whereby said insulin containers are refrigerated by said container of freezing material when said first and second covers are in at least said closed position; first holding means for releaseably holding a plurality of syringes, said first holding means including an elastic strap attached to said inner surface of said second cover and having a plurality of loops formed therein, each loop being sized and shaped so as to releaseably receive one of said syringes; second holding means for releaseably holding miscellaneous items, such as alcohol swabs, said second holding means including a pouch attached to said inner surface of said second cover; and a zipper attached to said first and second covers so as to releaseably maintain said first and second covers in said closed position.

4,429,794

UNITIZED PACKAGING ARRANGEMENT

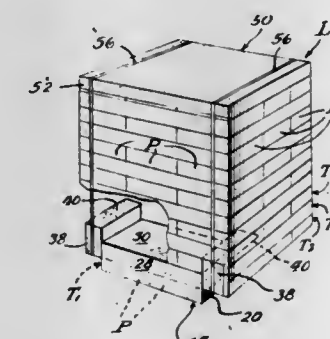
Jay D. Steger, 1413 Bayside La., Wheeling, Ill. 60090; Thomas G. Neitzke, 210 E. Evergreen, Mt. Prospect, Ill. 60056, and Stephen J. Gagnon, 4128 B. Cove La., Glenview, Ill. 60025

Filed May 3, 1982, Ser. No. 374,104

Int. Cl.³ B65D 19/04, 19/20

U.S. Cl. 206—597

19 Claims



1. An arrangement adapted for unitizing a shipping load which is adapted for transport upon vehicle-mounted lift tines, the load comprising multiple tiers of packages in a layered array wherein the second tier includes portions overhanging laterally opposite sides of the first tier, the arrangement comprising:

- a unitary support member adapted to fit beneath and support said load,
- said support member including a first support portion adapted to fit beneath said first tier of packages, and a pair of second support portions respectively connected to laterally opposite edges of said first support portion by a pair of connector portions, said second support portions being adapted to respectively fit beneath said overhanging portions of said second tier and be engaged by said lift tines during transport of said load, and

said support member further including a pair of first end flap portions respectively connected to longitudinally opposite edges of said first support portion and each adapted to overlap longitudinally opposite sides of said first tier, and first and second pairs of second end flap portions, the second end flap portions of each of said first and second pairs being respectively connected to longitudinally opposite edges of a respective one of said second support portions, each of said second end flap portions being adapted to overlap a respective one of the outwardly facing sides of said overhanging portions of said second tier of packages to protect said overhanging portions of said second tier.

4,429,795

BOOK REJECT MECHANISM

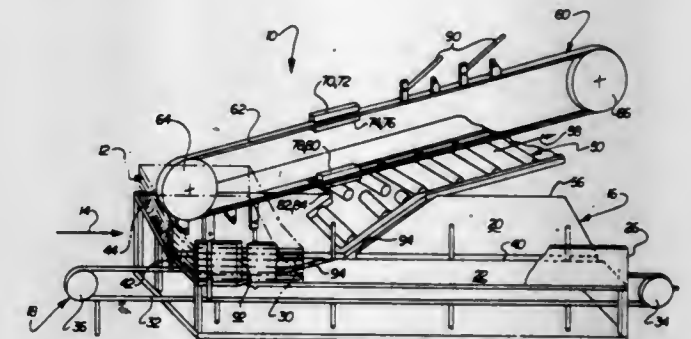
Richard B. Hawkes, Peru, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Oct. 28, 1981, Ser. No. 315,711

Int. Cl.³ B07C 9/00; B65G 37/00, 47/46

U.S. Cl. 209—651

10 Claims



1. Apparatus for handling assemblages of sheet-like items comprising a raceway for receiving and supporting assemblages, a raceway conveyor having spaced raceway pins thereon projecting through said raceway for engaging trailing surfaces of assemblages positioned thereon and for pushing the assemblages along the raceway, powered conveyor means for receiving and moving assemblages thereon away from said raceway, said powered conveyor means extending at an angle to the direction of movement of said raceway conveyor, a divert conveyor for moving defective assemblages off said raceway and onto said powered conveyor means, said divert conveyor including a plurality of divert pins, means supporting said divert pins for movement between a retracted position and an extended position in which said divert pins project into the path of movement of said assemblages on said raceway, means for moving at least one of said divert pins to its extended position so that said one divert pin is adapted to engage a side of a defective assemblage, said divert conveyor extending generally parallel to said powered conveyor means, said divert pins moving in a path that intersects the path of movement of said raceway pins, and said one divert pin cooperating with a respective raceway pin to push the defective assemblage from said raceway onto said powered conveyor means.

4,429,796

INTERCONNECTED ONE-PIECE DESK UNIT

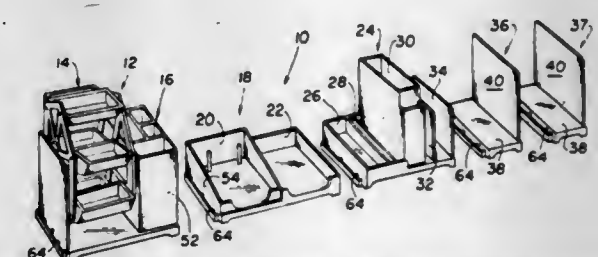
Howard Sussman, c/o F. F. Adams Inc., 700 NW. 8th Ave., Fort Lauderdale, Fla. 33311

Filed Jan. 28, 1980, Ser. No. 116,092

Int. Cl.³ A47F 5/00

U.S. Cl. 211—11

4 Claims



1. An improved desk top article of manufacture formed of a cooperating arrangement of plural holders for sundry items interconnected into a one-piece unit for use on a desk surface, each said holder comprising a base having two vertically oriented opposite sides, a compartment-forming wall supported by opposite end connections to extend lengthwise of and in a clearance position from one said opposite side so as to cooperate therewith in bounding a vertically oriented holder-connecting compartment, and said other opposite side being defined by a depending wall having notches formed therein at locations selected to align with said opposite end connections.

of said compartment-forming wall, adjacent holders having operative positions in side-by-side relation with said depending wall of one said holder projected through said compartment of an other said holder until establishing contact with said desk surface such that each said holder is supported on said desk surface with said opposite sides in contact therewith and in interconnected relation with each other, each said depending wall being sufficiently sized so as to be adapted to pivot into contact with a cooperating said compartment-forming wall incident to the lifting of said holders, whereby a grouping of at least three said interconnected holders are adapted when lifted under slight pressure applied inwardly at opposite ends to retain their interconnected relation due to said established contact between said depending and compartment-forming walls and wherein said lifted holders thereby contribute to facilitated cleaning of said desk surface beneath said holders.

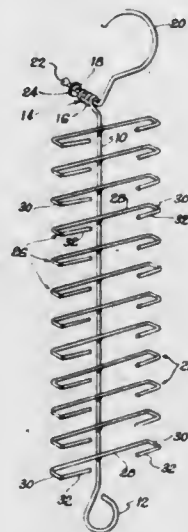
4,429,797 TIE CADDY

Wesley A. Collins, 18417 S. Van Ness Ave., Torrance, Calif. 90504

Filed Mar. 24, 1982, Ser. No. 361,292
Int. Cl.³ A47F 5/08

U.S. Cl. 211—119

5 Claims



1. A tie-rack which comprises:

- a vertical spine;
- a plurality of vertically spaced lateral arm pairs extending from said spine in opposite directions from one another;
- means at one end of said spine for suspending same from a fixed support, said means comprising a hook for engaging a closet clothes bar;
- means for pivotally connecting said spine to said hook;
- said means for connecting comprising:
- said spine having a pivotal neck at said end, and said hook having a stem swivelling into said neck about an axis defining an oblique angle with said spine.

4,429,798

PROTECTED GLASS JAR WITH CLOSURE

Allan A. Borows, 1889 Palmer Ave., Larchmont, N.Y. 10538

Filed Jun. 11, 1982, Ser. No. 387,406
Int. Cl.³ B65D 8/06, 23/00

U.S. Cl. 215—12 R

7 Claims

1. A double-walled container for cosmetic and like substances, comprising in combination:

- (a) a jar part constituted of substantially non-compressible material, having an annular side wall and a transverse bottom wall joined thereto;
- (b) said jar part having an annular top sealing rim portion and shoulder means on the outer annular side surface of said rim portion;
- (c) an outer jacket for and assembled to said jar part, constituted of yieldable material, said jacket having an annular

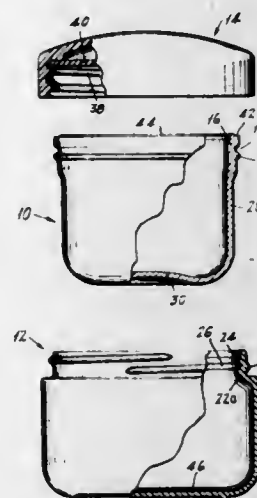
side wall and a transverse bottom wall joined to said side wall,

(d) said jacket having a top rim portion on said side wall, and having shoulder means on its inner side surface engageable and cooperable with the said shoulder means of the jar part,

(e) said top rim portion of the jacket being fully exposed upwardly of the jacket and being uncovered when the jar part and jacket are assembled to each other, and said top rim portion of the jacket having sloped fastening means on its outer annular side surface for engagement by a closure cap,

(f) a turnable closure cap having a sealing liner,

(g) said sealing liner engaging the said annular top sealing



rim portion of the jar part to seal closed the contents of the latter, and

(h) said closure cap having sloped fastening means on its inner side surface, cooperable with the said sloped fastening means of said jacket to pull the closure cap closed when it is turned, and cooperable by a camming action with the sloped fastening means of said jacket to exert radially-inward pressures on the top rim portion of the latter, thereby to securely lock the rim portions of the non-compressible jar part and the yieldable jacket to each other in response to tightening of the closure cap by virtue of interaction of the said fastening means with each other in yielding and non-yielding relation respectively, whereby separation of the jacket from the jar part is minimized when the closure cap is closed.

4,429,799

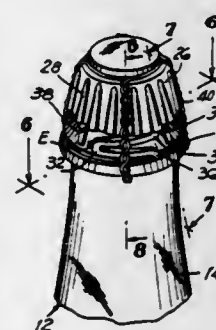
BOTTLE WITH A ONE-PIECE CORKING MEANS

Efim Zaltsman, Brooklyn, N.Y., assignor to Monarch Wine Co., Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 223,894, Jan. 9, 1981, abandoned. This application Jun. 3, 1982, Ser. No. 384,758
Int. Cl.³ B65D 1/02, 55/16

U.S. Cl. 215—31

25 Claims



25. A bottle for use with a tethered, headed cork having a flexible, elongated, folded tether connected adjacent one end to the head of the cork, said tether lying substantially within the confines of the periphery of the head of the cork, an elasto-

meric ring including means for connection to the tether adjacent its other end, said bottle adapted to contain pressurized, carbonated, water-based liquid contents, said bottle having a neck with a finish which includes a pair of annular flanges closely spaced together near the mouth of the bottle, the outer diameter of the flange closest to the mouth, being slightly larger than the inner diameter of the ring so that the ring can be pushed down over this flange expanding as it does so and constricting after it passes such flange and being able to be pushed manually over the next flange, the second flange having a diameter which is large enough to check downward movement of the ring, but small enough to permit the ring to be pushed manually over it.

4,429,800

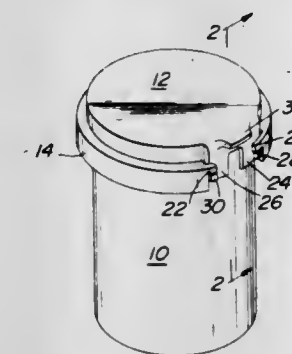
CHILD SAFE CONTAINER-CLOSURE UNIT

Donald J. Greenspan, 235 Pavilion Avenue, Riverside, N.J. 08075

Filed Jun. 1, 1982, Ser. No. 383,659
Int. Cl.³ B65D 55/02

U.S. Cl. 215—216

19 Claims



1. A child safe container-closure unit comprising a container for holding items, said container capable of being opened at least at one end thereof,
- a releasable cover for engagement with an opening at least at one end of said container, said cover having fastening means for attaching said cover to said container, said fastening means including releasable latch means comprised of at least two latches separated by a predetermined distance so that the latch means is releasable by an adult finger, but is reasonably inoperable by at least one child's size finger.

4,429,801

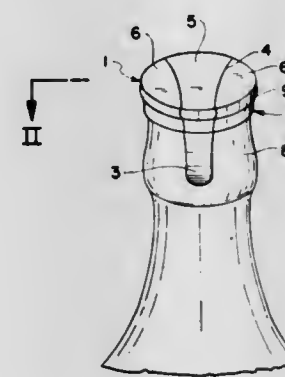
TEAR-OFF CAP FOR CLOSING BOTTLES

Luigi Taragna, Aprilia, Italy, assignor to American Flange & Manufacturing Co. Inc., Linden, N.J.

Filed Mar. 16, 1982, Ser. No. 358,538
Int. Cl.³ B65D 41/42

U.S. Cl. 215—254

4 Claims



1. A light metal tear-off cap for closing bottles comprising a circumferential flap and a flat disc-shaped part, a tear-off band crosses the disc-shaped part and circumferential flap and ex-

tends beyond the same in a pullout tongue, a disc-shaped gasket fastened only partially to the bottom surface of the metal disc-shaped part characterized in that said disc-shaped gasket is fastened to said metal disc-shaped part only in zones disposed laterally of and outside the tear-off band.

4,429,802

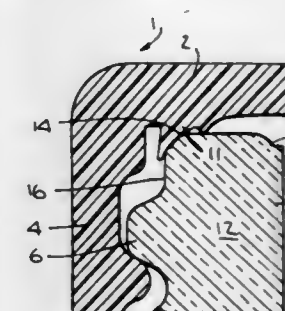
LINERLESS CLOSURE CAP

Walter J. Marks, Mississauga, Canada, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed May 28, 1982, Ser. No. 383,285
Int. Cl.³ B65D 41/04

U.S. Cl. 215—344

6 Claims



1. In a one-piece molded closure cap having a cover and a depending skirt with container engaging means on the skirt for engaging cap engaging means on the container rim finish below a closure engaging edge on the outside of the rim, the improvement comprising a circular sealing portion on the underside of the cap cover having a flared and concave curved inner sealing surface for sealing engagement with the container rim outer edge and having a shorter downwardly projecting sealing ring positioned intermediate the edges of said rim, said circular sealing portion comprising a downwardly projecting sealing ring having a generally triangular cross-section with the flared and curved surface being the hypotenuse of the triangle.

4,429,803

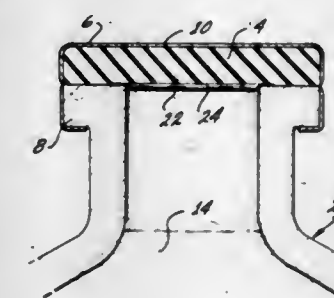
BROKEN SEAL DETECTOR

Ida M. Butterfield, Santa Maria, Calif., assignor to Butterfield Group, Santa Maria, Calif.

Filed Mar. 31, 1982, Ser. No. 363,925
Int. Cl.³ B65D 51/24

U.S. Cl. 215—366

2 Claims



1. An improvement for use in a container of the type having a mouth sealed by a closure that includes a rubber disc that in normal use is penetrated by a hypodermic needle to permit the fluid in the container to be withdrawn by aspiration, said improvement comprising:

- a blister-like sac spanning the entire mouth of the container and containing a colorant, so that when the blister-like sac is penetrated by a hypodermic needle, some of the colorant will be released into the fluid in the container imparting a color to the fluid to indicate that the container has been broken into.

4,429,804

RE-SEALER FOR TAB-RETAINING POP-TOP CANS

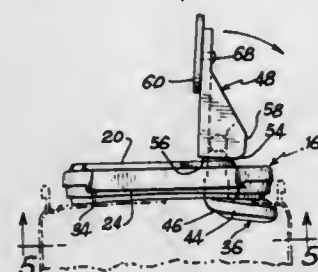
Gerald F. Pease, 10622 Prospect Ave., Santee, Calif. 92071

Filed Jun. 9, 1982, Ser. No. 386,545

Int. Cl.³ B65D 45/00

U.S. Cl. 220-247

3 Claims



1. A re-sealer for a beverage can of the type in which the opener tab remains with the can alongside the pouring hole in the lid after opening, said re-sealer comprising:

- (a) a cover body defining a continuous sealing lip dimensioned to encircle both said pouring hole and said tab;
- (b) said body defining a cavity to provide clearance for said tab;
- (c) a stem with a laterally extended foot at the bottom for extending into said hole and under a portion of said lid alongside said opening for a positive engagement thereof;
- (d) said stem being mounted eccentrically in said body adjacent one edge of said cavity and being rotatable about its axis to swing said foot into and out of general alignment with said hole for removal and insertion of said foot through said hole, and for rotating said foot sideways to clamp under said lid; and
- (e) an actuator lever operatively connected to the upper end of said stem to selectively draw said foot up against said lid, or down free thereof.

4,429,805

CONTAINER CONSTRUCTION

Ilija Letica, Oxford, Mich., assignor to Letica Corporation, Rochester, Mich.

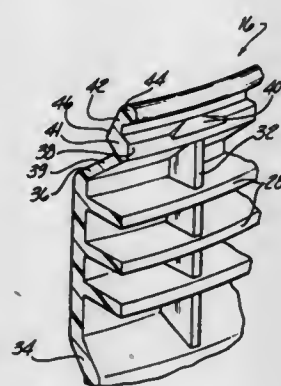
Continuation-in-part of Ser. No. 235,245, Feb. 17, 1981, Pat. No. 4,349,119, which is a continuation-in-part of Ser. No. 169,330, Jul. 16, 1980, Pat. No. 4,293,080. This application

May 10, 1982, Ser. No. 376,312

Int. Cl.³ B65D 41/16, 41/18

U.S. Cl. 220-306

8 Claims



1. A plastic container, comprising:

- a base;
- a generally cylindrical sidewall extending upwardly from said base and defining an open top of said container opposite of said base,
- said sidewall including a section therein radially inset from said sidewall and adjacent said open top; and
- means within said inset section for stiffening said inset section in a direction essentially parallel to the longitudinal axis of said container.

4,429,806

ROTATING DRUM DISPENSING MACHINE

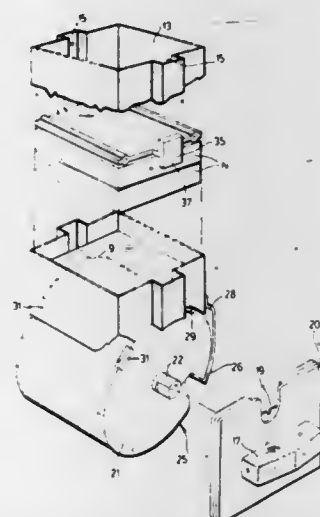
Joseph W. Schwarzli, Stouffville, Canada, assignor to Twin-Cee Limited, Georgetown, Canada

Filed Sep. 1, 1981, Ser. No. 298,478

Int. Cl.³ B65H 7/18

U.S. Cl. 221-20

2 Claims



1. A coin operated dispensing device comprising a rotatable operating member provided with a coin insert for receiving a coin to release said operating member, said coin insert being moveable to and away from a coin loading position with rotation of said operating member, a rotatable drum adapted for rotation with said operating member to dispense articles to a dispensing opening in said device, a chute for loading the articles in said device and for feeding the articles to said rotatable drum which is located between said dispensing opening the said chute for blocking said chute against pilfering through said dispensing opening in all positions of rotation of said drum, said chute extending generally vertically in said dispensing device and including a locking member adapted to slide downwardly in said chute as the articles are fed therefrom, said chute being provided with two outer channel regions, one to either side of said chute, said locking member being provided with a pair of lugs adapted to slide downwardly in said channel regions and said drum being provided with a pair of slots for engaging said pair of lugs such that said locking member moves to a locking position for locking both said drum and said operating member against rotation when said chute has been emptied and said coin insert being held away from said coin loading position to prevent insertion of coins in said dispensing device when said chute is empty.

4,429,807

ADJUSTABLE DISPENSING MECHANISM FOR VENDING MACHINE

John A. Enders, Simsbury, Conn., assignor to Choice-Vend Industries, Inc., Windsor Locks, Conn.

Filed Aug. 4, 1981, Ser. No. 290,090

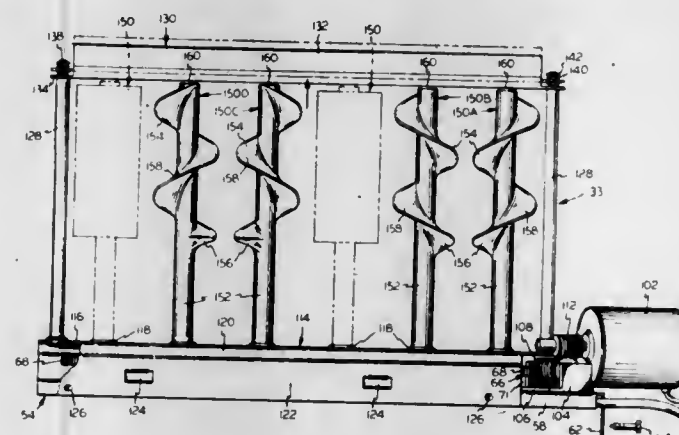
Int. Cl.³ G07F 11/36

U.S. Cl. 221-75

11 Claims

1. A mechanism for dispensing generally cylindrical articles from a plurality of stacks contained in a vending machine, comprising: support means, including a base; a plurality of gear members mounted in meshing engagement with one another on said base for simultaneous rotation about parallel, generally rectilinearly aligned axes; a plurality of helical carriers vertically mounted on said support means and adapted to support the articles generally horizontally within their convolutions, each of said carriers being aligned on the axis of rotation of one of said gear members and having an upper helix portion and a lower helix portion, said upper helix portion being adapted to receive the articles and said lower helix portion being adapted to permit the release thereof at at least one rotational position of said carrier; means for affixing said carriers to said gear

members for conjoint, coaxial rotation, said means selectively disengageably affixing at least one of said carriers to an associated one of said gear members in any of a plurality of angularly displaced relative positions; a motor operatively connected to drive said gear members; and a vend limit switch operatively connected to at least one of said gear members to cause deenergization of said motor, depending upon the position thereof, each time that the lower helix portion of any of said carriers is in one of the article-release rotational positions thereof, said one gear member having a cam member disengageably mounted thereon with cam elements extending radially outwardly from the axis thereof for operating said limit switch, said cam member being divided at a plane perpendicular to the axis thereof into first and second portions, the num-



ber of cam elements presented by said first portion being different from that presented by said second portion, so that the position of mounting upon said one gear member may be reversed to change the number of cam elements effectively presented to said switch, depending upon the mode of operation, whereby the articles, withdrawn from the stacks and progressively lowered within the convolutions of said carriers during rotation thereof, can be discharged in a predetermined sequence depending upon the relationship between said lower helix portions of said carriers, and whereby the timing of discharge can be altered by changing the relative angular position of affixation of said one carrier to said one gear member, and by appropriate mounting of said cam member on said one gear member.

4,429,808

DUAL DRIVE ROTARY FEEDER

Myron L. Doty, Greenwood, Ind., assignor to Moorfeed Corporation, Indianapolis, Ind.

Filed Dec. 17, 1981, Ser. No. 331,624

Int. Cl.³ B65H 3/42

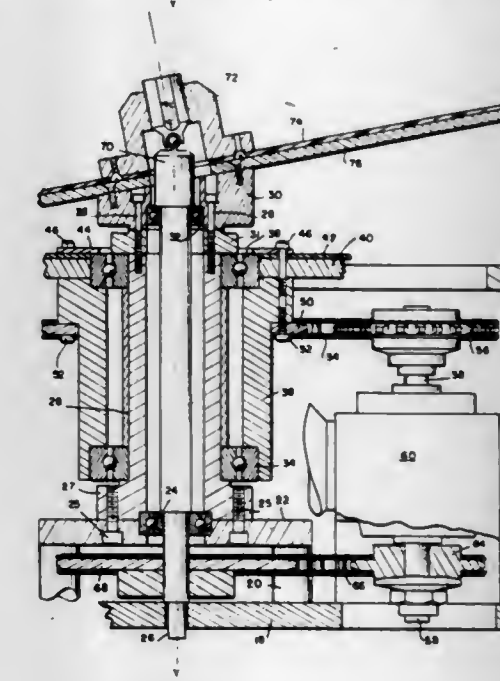
U.S. Cl. 221-167

8 Claims

1. An apparatus for feeding articles in serial order comprising:

- a base,
- a substantially horizontal, annular surface rotatably movable with respect to the base about an axis perpendicular to the base,
- a cylindrical wall subtending from the inner periphery of the annular surface and rotatably movable therewith,
- an inclined support surface fixed stationary relative to the base, the point of intersection of the support surface with the axis being positioned substantially midway between the plane of the annular surface and the lowest extent of the cylindrical wall, and
- a disc mounted for rotational movement on the support surface substantially concentric with the axis, the periph-

ery of the disc being immediately adjacent to the cylindrical wall, the disc being inclined by the support surface



such that the uppermost portion of the periphery of the disc is immediately adjacent the annular surface.

4,429,809

DEVICE FOR THE METERED RELEASE OF AN ACTIVE INGREDIENT

Jacques Bousgarbies, Poitiers, France, assignor to Airwick Industries, Inc., Carlstadt, N.J.

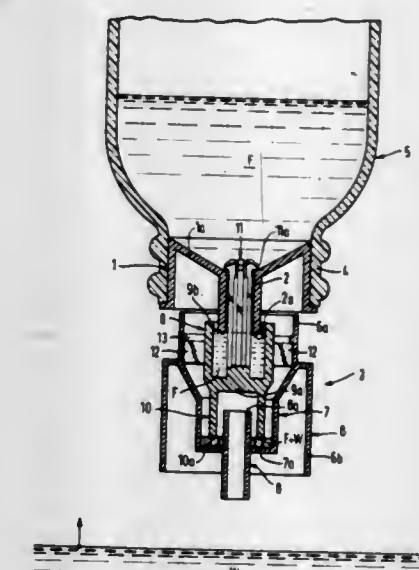
Filed Apr. 13, 1981, Ser. No. 253,972

Claims priority, application Switzerland, Apr. 25, 1980, 3208/80

Int. Cl.³ E03D 9/02

U.S. Cl. 222-67

17 Claims



1. A device for the metered release of a liquid active ingredient from a stock container into a surrounding liquid, the level of which rises and falls from time to time, having a level-controlled metering unit (2, 9, 3) with a movable float (3) guided thereon, said unit communicating with the interior (5) of the container and releasing a defined quantity of active ingredient when said float (3) is raised, and further comprising a release control unit (7, 8, 10) having a movable collecting chamber (7, 6a) positioned to collect said defined quantity of released active ingredient and an overflow syphon positioned in said chamber for transferring said defined quantity of active ingredient into the surrounding liquid.

4,429,810

PLASTIC POUCH, AND STORING AND DISPENSING METHOD USING SAME

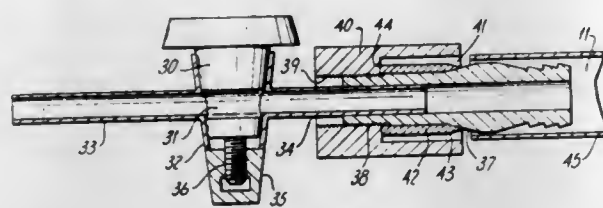
Gerald Hampel, Lugano-Paradiso, Switzerland, and Giorgio Mugnai, Rho, Italy, assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 229,437, Jan. 28, 1981, abandoned. This application Aug. 23, 1982, Ser. No. 410,213

Claims priority, application Italy, Feb. 7, 1980, 19772 A/80 Int. Cl.³ B65D 1/32

U.S. Cl. 222—107

1 Claim



1. A valve and pouch combination wherein said valve is adapted to cooperate with and dispense liquid from said pouch, comprising:

- (a) a hermetically sealed pouch of flexible, thermoplastic material having first and second closed ends and a main container portion comprising:
 - (i) a first thermal seal which is adjacent to and substantially parallel to said first end;
 - (ii) a pair of parallel partial seal lines sealing the second end of said pouch;
 - (iii) a passage defining seal line joining the ends of said pair of parallel partial seal lines said passage communicating with said main container portion;
 - (iv) a liquid in said main container portion of the pouch; and,
 - (v) said passageway being adapted to receive a biconical mounting portion of a dispensing valve when liquid is being dispensed from the pouch; and,
- (b) valve means adapted to co-operate with said pouch and allow discharge of liquid from said pouch comprising:
 - (i) a valve-portion insertable into said passageway to be held there solely by adhesion to the pouch material bounding said passageway;
 - (ii) said portion of said valve which is insertable in said passageway being biconical; and,
 - (iii) said valve including inner and outer spaced cylindrical surfaces defining therebetween an annular gap to receive the pouch material bounding said passageway and further including outwardly spreadable clamping means for diminishing the radial extent of said annular gap to clamp said valve to the pouch material bounding the passageway.

4,429,811

LIQUID STORAGE CONTAINER ASSEMBLY AND DECANter

Delbert C. Bakeman, 15520 Hamner Dr., Los Angeles, Calif. 90077

Filed Jan. 7, 1982, Ser. No. 337,565

Int. Cl.³ B05B 11/02

U.S. Cl. 222—159

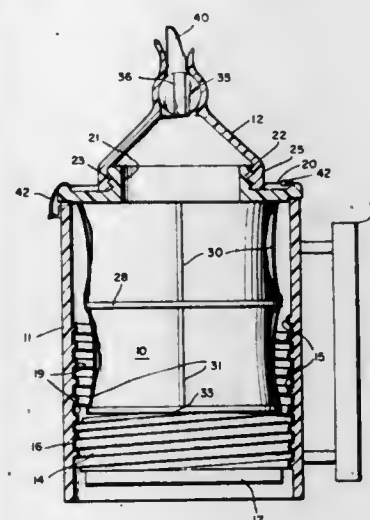
4 Claims

1. A liquid storage container assembly and decanter comprising:

- (a) a collapsible container of generally cylindrical form and consisting of a flexible and stain-resistant material for holding a liquid;
- (b) a cylindrical outer casing for enclosing said container, said casing having an internal screw thread and having an internal coating of high reflectivity and low emissivity thermal properties;
- (c) a piston having an outer screw thread meshing with said internal screw thread, whereby said coating and the air space between said container, casing, and piston tend to maintain the temperature of a liquid in said container, said

piston having a handle for rotating it to compress or release said container, thereby to substantially exclude air from said container;

- (d) a transparent pouring neck having means for removably attaching it to said container;
- (e) a valve disposed in said pouring neck for opening and closing the space within said container;



4,429,812

SOAP DISPENSING SYSTEM

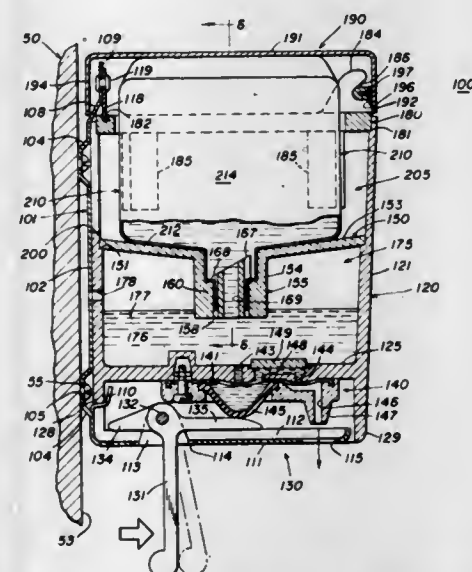
Robert L. Steiner, and Randel P. Smith, both of Chicago, Ill., assignors to Steiner Corporation, Salt Lake City, Utah

Filed Apr. 16, 1981, Ser. No. 254,940

Int. Cl.³ B67D 5/06

U.S. Cl. 222—181

26 Claims



- 1. A system for dispensing liquid soap comprising a closed wall structure defining a container, partition means separating said container into a lower liquid soap reservoir and an upper refill compartment, dispensing means carried by said container for dispensing liquid soap from said reservoir, a refill aperture in said partition means providing communication between said reservoir and said refill compartment, a refill cartridge containing liquid soap and having an outlet and being imperforate except at the outlet thereof, and slot and key mechanism carried by said refill cartridge and said container for maintaining said cartridge in a predetermined refill configuration and in communication with said refill aperture, a drain slot in said upper refill compartment to cause bulk liquid soap poured

thereinto to flow therefrom, and a drain opening in said lower liquid soap reservoir vertically spaced above the cartridge outlet when said cartridge is in the refill configuration thereof, said refill cartridge being removably enclosed within said refill compartment in a refill configuration with said outlet disposed for cooperation with said refill aperture to permit flow of liquid soap from said refill cartridge to said reservoir thereby to refill said reservoir.

4,429,813

MECHANICAL DEVICE TO TRANSFER LIQUIDS FROM CONTAINERS

Elias M. De Freitas, Porto Alegre, Brazil, assignor to Termolar S/A, Porto Alegre, Brazil

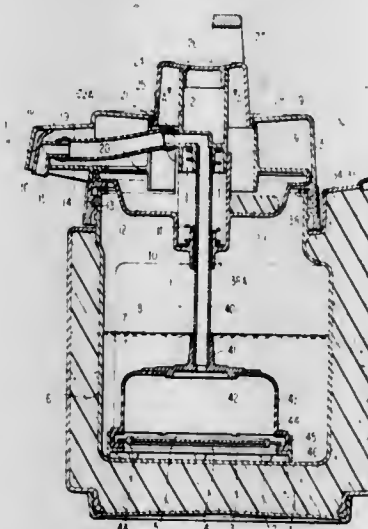
Filed Jan. 15, 1982, Ser. No. 339,547

Claims priority, application Brazil, Jan. 23, 1981, 8100430

Int. Cl.³ B67D 5/42, 5/50

U.S. Cl. 222—207

15 Claims



- 1. A mechanical device to transfer liquids from containers which, when fitted into a container, does not require its inclination, and does not depend on its air tightness and volume, comprising a pump including a flexible bell shaped member (43), with an upper orifice, and a widened ring-like area in its lower extremity, forming a housing (45) where a rigid veined disc is located forming a disc-valve (4), said housing being provided, in its upper internal edge, with small prominences (44) and the lower edge, which limits the opening of the mouth of the bell shaped member, and ends in a small inner vertical projection forming a continuous rim (46); a liquids transference pipe (40) connected to the upper orifice of the bell shaped member, and when a vertical manual compression effort is made, the bell shaped member is deformed, compressing the liquid inside it, thereby pressing the disc-valve (4) against the continuous rim (46) of the housing (45), thereby sealing of the mouth of the bell shaped member and forcing the liquid to flow out through the transference pipe (40); and the prominences (44) of the housing limit the upward movement of the disc-valve, leaving an empty space for the inflow of the liquid in the bell shaped member (43) when it returns to its original shape.

4,429,814

AEROSOL CONTAINER FOR DISPENSING THERMOSETTING POLYURETHANE FOAM

Frank Scotti, 450 Indian Rd., Wayne, N.J. 07470, and Edward H. Page, 1021 Hillcrest Rd., Ridgewood, N.J. 07450

Filed Jun. 25, 1982, Ser. No. 392,178

Int. Cl.³ B65D 83/14

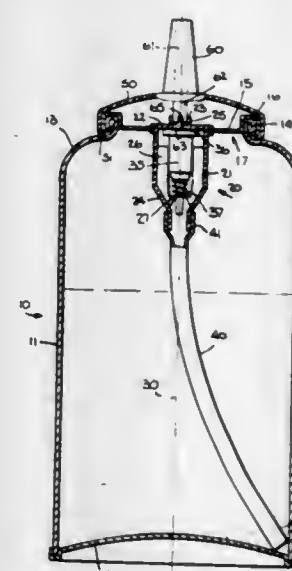
U.S. Cl. 222—402.13

14 Claims

- 1. In an aerosol container having an open top end, a closed bottom end and a cap member closing said top end, the improvement of an assembly for dispensing thermosetting resins comprising:

an upstanding valve shell mounted on and penetrating said

- cap member said valve shell having a top wall provided with an aperture and a lower end having an opening;
- a spring biased fluid impervious valve plunger member disposed in said valve shell substantially coaxially aligned with said aperture and normally biased upwardly in sealing engagement with said top wall for preventing fluid flow through said aperture;
- a cover member fabricated from flexible resilient material detachably mounted to said top end of said container;
- a dispensing member mounted on and penetrating said cover member including a downwardly depending first conduit member substantially coaxially aligned with said aperture wherein said first conduit member normally terminates above said valve shell top wall;
- a second conduit member depending from said valve shell lower end and terminating near said bottom end of said container for providing a fluid passage from said bottom end, through said opening and into said valve shell;



- wherein providing a downward force on said resilient cover member causes said first conduit member to penetrate said aperture and engage and urge downward said valve plunger member and releasing said downward force results in said resilient cover member urging said first conduit member upward to said normal position wherein said first conduit member terminates above said valve shell top wall permitting said spring biased valve plunger member to return to said normally biased sealing engagement with said valve shell top wall;
- wherein said dispensing member including said first conduit member, said valve shell, said second conduit member, and said valve plunger member are fabricated from a plastic material having a moisture content of less than about 0.6 percent based on the weight of said plastic at 100% humidity at 25° C. at standard atmosphere pressure; and
- wherein said container has disposed therein a thermosetting resin and a propellant.

4,429,815

ROTATING DISPENSER CAP

Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022

Filed Nov. 12, 1981, Ser. No. 320,735

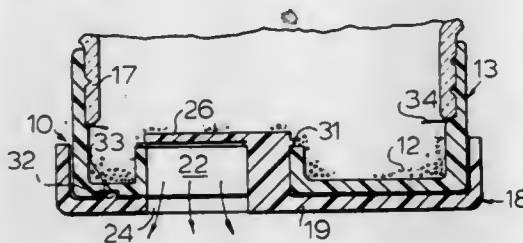
Int. Cl.³ B67D 3/00

U.S. Cl. 222—452

21 Claims

- 1. A dispenser for granular solids material comprising:
 - a container having an orifice defined by an externally threaded neck portion,
 - a cap body having a cap surface disposed across said orifice and an internally threaded peripheral wall threadably engaged with said neck portion,
 - a peripheral wall formed on said cap surface defining a keyhole opening having an open upper end facing exterior

of said cap surface and an open lower end exposed in and facing in direct communication with the interior of said container,
 a generally solid metering disk overlying said cap surface and having a shaft member supported in a semi-circular segment of said keyhole opening for rotation of said disk relative to said cap body.
 a collection chamber defined by the remainder of said keyhole opening,



a discharge opening in said disk disposed to overlie said collection chamber upon selective rotation of said disk, and
 a valve means connected for rotation with said shaft member directly underlying said discharge opening, and disposed spaced beneath the lower end of said collection chamber so as not to be in contiguous relation therewith, for blocking flow communication between the interior of said container and the lower end of said collection chamber when said discharge opening overlies said collection chamber upper end.

4,429,816

UNION FOR PROVIDING INERT GAS BETWEEN TEEMING NOZZLE AND POURING TUBE

Anthony Thrower, Dronfield, England, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

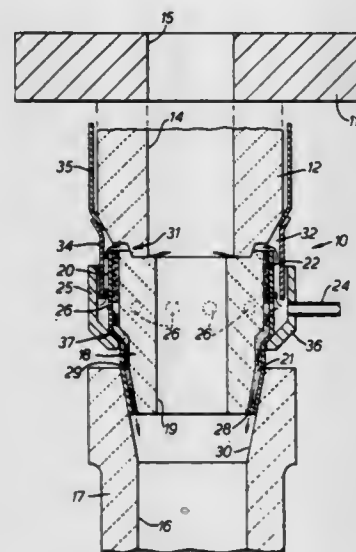
Filed Feb. 24, 1982, Ser. No. 351,822

Claims priority, application United Kingdom, Mar. 3, 1981, 8106587

Int. Cl.³ B22D 41/08

U.S. Cl. 222—603

10 Claims



9. Apparatus for use in submerged pouring of molten metals, comprising a nozzle leading downstream to an elongated submerged pouring tube, the nozzle having, at least at its downstream end, a metal jacket spaced therefrom to define an annular manifold space, a gas supply pipe communicating with said manifold space, and gas discharge orifice means at the said end of the nozzle, the nozzle and its metal jacket forming a gas-tight joint with the upstream end of the pouring tube, and said orifice means being arranged to eject gas fed into the manifold

space in a direction substantially along the inner wall of the pouring tube.

4,429,817

TREATING AGENT SHOOTING APPARATUS OF LAUNDRY MACHINE

Yoshio Ikeda, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

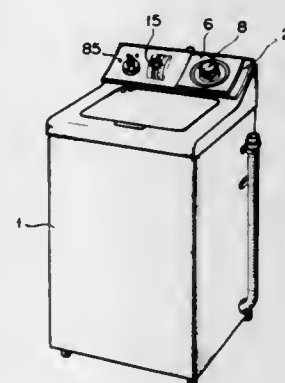
Filed Apr. 2, 1981, Ser. No. 250,144

Claims priority, application Japan, Apr. 3, 1980, 55-44817; Apr. 30, 1980, 55-57194

Int. Cl.³ D06F 39/02

U.S. Cl. 222—652

14 Claims



1. A treating agent dispensing apparatus of a laundry machine having a tank comprising:
 storage means for storing an amount of a treating agent;
 a treating agent dispensing vessel rockable between a dispensing stand-by position wherein a treating agent is reservably received and a dispensing position wherein the reserved treating agent is discharged into the tank;
 driving means for rocking said treating agent dispensing vessel from said dispensing stand-by position to said dispensing position;
 a control member movable between an original position, a treating agent feed position, and a dispensing vessel return position intermediate said original and said feed positions, said control member including a control lever rockable around a horizontal axis, said control lever rocking to engage said treating agent dispensing vessel as said control member is moved to said treating agent feed position, thereby responsively rocking said dispensing vessel to said dispensing stand-by position;
 interlocking means operatively connected with said control member to be moved thereby when said control member is moved from said original position to said return position for rocking said treating agent dispensing vessel and returning said dispensing vessel from said dispensing position to said dispensing stand-by position; and
 treating agent feeding means operatively connected with said control member to be moved thereby when said control member is moved from said vessel return position to said treating agent feed position for feeding a predetermined amount of treating agent from said treating agent storage means into said treating agent dispensing vessel while said dispensing vessel is in said dispensing stand-by position.

4,429,818

CARRIER RACKS FOR BICYCLES

Thomas C. Patterson, Westport, and David L. Campbell, Norwalk, both of Conn., assignors to Cannondale Corporation, Georgetown, Conn.

Filed Oct. 2, 1981, Ser. No. 307,804

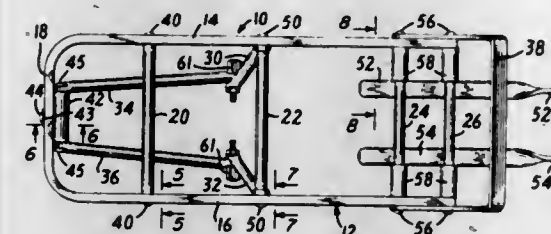
Int. Cl.³ B62J 7/04

U.S. Cl. 224—39

10 Claims

1. A rear carrier rack for bicycles comprising a platform defined by a peripheral frame having at least two laterally

spaced-apart side portions and a rear portion, a main strut extending generally downwardly from each side portion of the frame and adapted to be attached to a bicycle at an attachment location in the area of the rear axle to support the platform over the rear wheel, a pair of rear struts connected to the rear portion of the frame at locations substantial distances inwardly from the side portions and extending downwardly, forwardly and outwardly for attachment to the frame at said attachment locations, a pair of laterally spaced-apart seat stay connecting



bars adjustably attached to the frame for adjustment longitudinally of the frame, each connecting bar being a band of metal having a rear portion oriented with its major surfaces flatwise to the platform, said rear portion extending substantially the entire distance from the platform to a distal front end portion for maximum lateral rigidity, said distal front end portion being twisted about 90° generally about the longitudinal axis of the band providing an orientation of said distal front end portion that is generally flatwise to the seat stays for connection to a seat stay.

4,429,819

APPARATUS FOR LEADING THE TAIL OF WEB OF PAPER

Jaakko Palovaara, Muurame, Finland, assignor to Valmet Oy, Finland

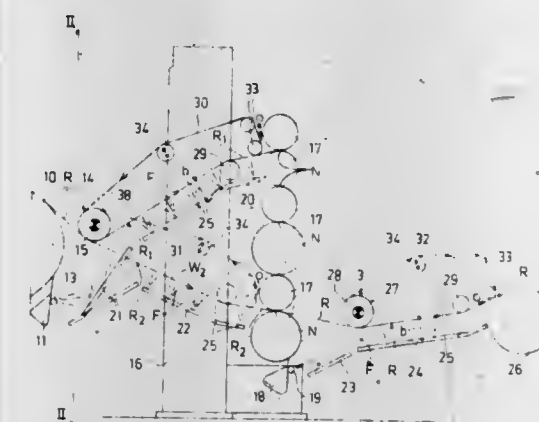
Filed Aug. 28, 1981, Ser. No. 297,350

Claims priority, application Finland, Sep. 3, 1980, 802772

Int. Cl.³ B65H 17/28

U.S. Cl. 226—95

1 Claim



1. Apparatus for leading the tail of a web of paper forward, before widening of said web, to cooperate with different parts of a paper machine, said paper machine including an axle and a reversing roller mounted on said axle and having a predetermined diameter, said apparatus comprising
 a fabric loop driven by said reversing roller, said fabric loop having a specific running section;
 an air blower positioned at a distance from said fabric loop adjacent said specific running section thereof, said air blower having jet means for directing a plurality of air jets toward said tail of said web whereby said tail is supported by said fabric loop and transferred forward thereby;
 an additional roller mounted on said axle and having a diameter equal to that of said reversing roller, said additional roller guiding said fabric loop; and
 a clutch in operative engagement between said reversing roller and said additional roller for driving said additional

roller and said fabric loop at the operating speed of said paper machine when said clutch is closed, and for permitting said additional roller and said fabric loop to remain idle when said clutch is open.

4,429,820

APPARATUS FOR FEEDING WIRE OVER LARGE DISTANCES

Angel S. Angelov, and Dimitar A. Ivanov, both of Sofia, Bulgaria, assignors to Institute Po Technicheska Kibernetika, Sofia, Bulgaria

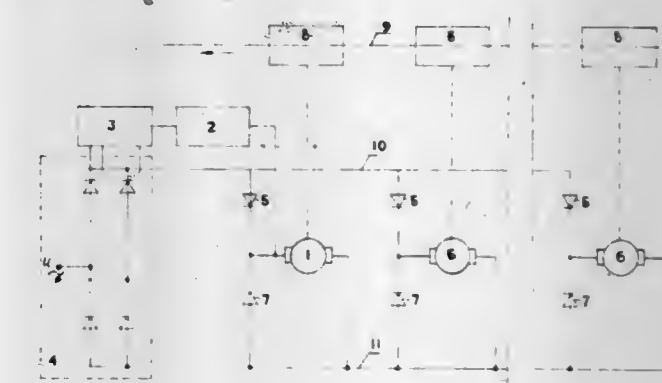
Filed Apr. 30, 1982, Ser. No. 373,536

Claims priority, application Bulgaria, Apr. 30, 1981, 51904

Int. Cl.³ B65H 51/02

U.S. Cl. 226—108

3 Claims



1. Apparatus for feeding wire over large distances from a source of wire supply to a work station, comprising first and second tandemly arranged wire-feeding mechanisms, the first wire-feeding mechanism being disposed adjacent the work station and the second wire-feeding mechanism being disposed nearer the source of wire supply than the first wire-feeding mechanism, a first D.C. motor drivingly connected to the first wire-feeding mechanism, said first motor having two terminals, a second D.C. motor drivingly connected to the second wire-feeding mechanism, said second motor having two terminals, a source of alternating current connected to a pulse governed thyristor rectifier having a first output terminal connected to a first output conductor and a second output terminal connected to a second output conductor, the first terminal of each of said first and second motors being connected in parallel to the first output conductor through a respective separating diode and to the second output conductor through a back-polarizing diode, the second terminal of each of said first and second motors being directly connected in parallel to the second output conductor, the first terminal of the first motor being connected through a speed stabilizer to a pulse generator connected to the thyristor rectifier so as to transmit ignition pulses thereto.

4,429,821

WIRE FEEDING MECHANISM

Jivko Y. Jelezov, and Todor D. Bogdanov, both of Sofia, Bulgaria, assignors to DSO "IZOT", Sofia, Bulgaria

Filed Apr. 30, 1982, Ser. No. 373,540

Claims priority, application Bulgaria, Apr. 30, 1981, 51 910

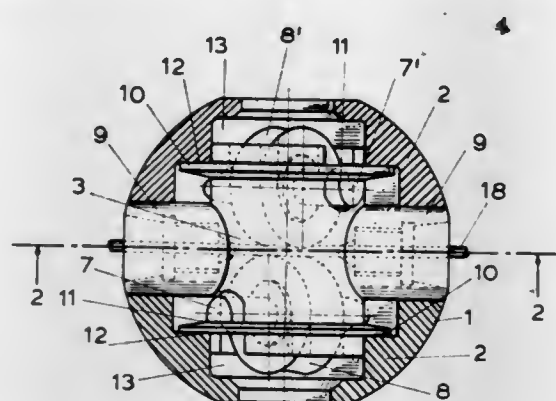
Int. Cl.³ B65H 51/04, 51/32

U.S. Cl. 226—181

4 Claims

1. In wire-feeding mechanism including a housing containing rollers freely running around axles disposed at an angle with respect to each other and crossing the wire being fed by the mechanism, the housing and the rollers rotating about the wire and the rollers traveling in helical directions about the wire, the axles being mounted in a support and guiding unit, and thrust transmitting units mounted upon the housing for thrusting the rollers in the support and guiding unit toward each other and into forcible engagement with the wire, the improvement wherein the housing is spherical and presents the

cavity therewithin in which the support and guiding unit is disposed, and the support and guiding unit for the rollers is shaped as one body having oppositely directed cylindrical end portions projecting from a central hub, and seats provided in



the central hub for the axes of the rollers, each thrust transmitting unit for thrusting the rollers together including at least one disc spring disposed between flat portions provided at each end of each axle and a respective flat supporting seat on the housing.

4,429,822

CLUTCH AND MULTIPLE SPEED CAPSTAN TAPE DRIVE MECHANISM AND TAPE POSITION INDICATOR FOR TAPE TRANSPORT

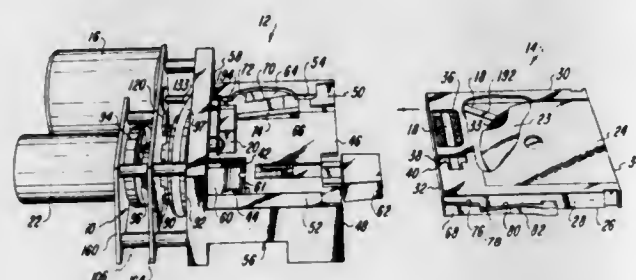
Arthur Dyck, Abbotsford, Canada, assignor to Gunstream Industries, Inc., Denver, Colo.

Filed Jul. 13, 1981, Ser. No. 282,811

Int. Cl.³ B65H 17/22, 17/00

U.S. Cl. 226—188

14 Claims



1. In a transport apparatus for recording tape having a driven rotationally mounted tape drive capstan for advancing the tape and a pinch roller for firmly engaging the tape between the tape drive capstan and the pinch roller and motor means for rotating the tape drive capstan, an improvement comprising, in combination:

- rotor means operatively connected to rotate with said tape drive capstan and to rotate said tape drive capstan;
- flywheel means rotationally positioned coaxially with said rotor means and operatively connected with said motor means to be rotated at a first predetermined rotational rate;
- at least one detent cam operatively pivotably connected to said flywheel means and operative from centrifugal force at the first predetermined rotational rate of said flywheel means to engage said rotor means and rotate said rotor means in conjunction with said flywheel means upon the rotational axis of the tape drive capstan being no greater than the first predetermined rotational rate;
- a drive element operatively connected to rotate said tape drive capstan;
- a high speed driver element rotationally positioned on said transport apparatus and operatively connected with said motor means to be rotated at a second predetermined rotational rate, the second predetermined rotational rate

being substantially greater than the first predetermined rotational rate; and

at least one cam element pivotably connected to the high speed driver element and operative from centrifugal force at rotational rates of the high speed driver element greater than the first predetermined rotational rate and at least equal to the second predetermined rotational rate to engage said drive element and rotate said drive element in conjunction with said high speed driver element.

4,429,823

TAPE GUIDE MEANS FOR RECORDING AND/OR REPRODUCING APPARATUS AND METHOD OF MANUFACTURING THE SAME

Yozaburo Umehara, 2-8-6, Shakujiimachi, Nerima-ku, Tokyo, Japan

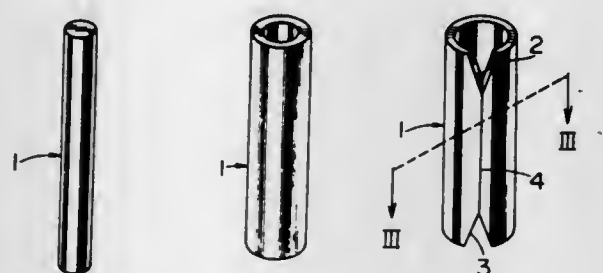
Continuation of Ser. No. 76,827, Sep. 19, 1979, abandoned, which is a division of Ser. No. 940,198, Sep. 7, 1978, Pat. No. 4,228,940. This application Dec. 28, 1981, Ser. No. 334,472

Claims priority, application Japan, Sep. 14, 1977, 52-124344; Mar. 3, 1978, 53-24344

Int. Cl.³ B65H 23/04; G03B 1/48

U.S. Cl. 226—196

2 Claims



1. A tape cassette comprising a cassette case, a reel disposed therein, a tape fed from said reel and a cylindrical tape guide for guiding said tape; said cylindrical tape guide being provided with a surface layer formed by a hard chromium plating and comprising (a) a non-magnetic austenitic stainless steel upon which said hard chromium surface layer is formed, (b) a post extending from said cassette case, and (c) a projection extending from said post wherein said cylindrical tape guide includes a groove in at least one end thereof which is fitted to said projection.

4,429,824

DELTA-ALPHA BOND/SUPERPLASTIC FORMING METHOD OF FABRICATING TITANIUM STRUCTURES AND THE STRUCTURES RESULTING THEREFROM

James R. Woodward, La Jolla, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 17, 1981, Ser. No. 303,054

Int. Cl.³ B23K 31/02

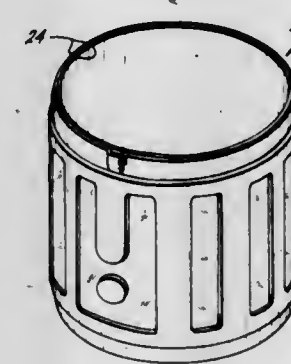
U.S. Cl. 228—157

15 Claims

1. Method of manufacturing structures from sheets of material with superplasticity characteristics comprising the steps of: placing at least two overlapping sheets of said material between an inner and outer mandrel tool, said inner mandrel tool having a greater coefficient of thermal expansion than said outer mandrel tool; placing forming shims between one of said mandrel tools and the adjacent sheet at locations where said sheets of material are overlapping and to be joined by diffusion bonding; sealing the sheets of material from the atmosphere; applying inert gas under pressure between said sheets when the sealing of the sheets of material from the atmosphere is complete to provide separation of sheets at regions not sandwiched by said shims, and elevating said temperature sufficiently to render said sheets of material to a state of superplasticity to cause said inner

mandrel tool to expand toward said outer mandrel tool compressing said sheet material therebetween and causing the contacting surface of said sheets of material to bond together by diffusion means, said gas pressure being sufficient to cause said sheet material to form into the voids between said tooling shims and said mandrel tools.

8. A system in which flat mandrels sandwich at least two overlapping superplastic material sheets with intervening forming shims placed in locations of overlap to be diffusion bonded together, the mandrels and assemblage being secured



4,429,826

SLIP CASE FOR FILING BOX

David E. Shedd, Barrington, R.I., assignor to Taylor Box Co., Warren, R.I.

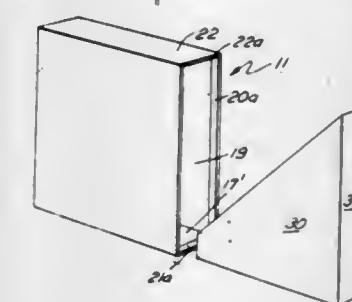
Filed Feb. 28, 1983, Ser. No. 470,005

Int. Cl.³ B65D 13/06, 5/38

U.S. Cl. 229—23 BT

2 Claims

together by low thermally expanding refractory metal bolts which upon heating clamp the assemblage with a pressure which causes diffusion bonding of the areas compressed by the shims and other areas being pressurized by an inert gas to cause superplastic forming of the metals into the cavity caused by the mandrels when the temperature of the assemblage is suitably elevated, said inert gas being admitted by a small tube placed between said material sheets at their outer edges and sealed thereto by the differential in thermal expansion between said bolts and said mandrel.



4,429,825

LEAK RESISTANT CLOSURE

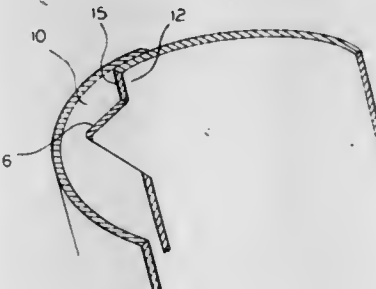
Michael A. Kipp, Phoenixville, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,184

Int. Cl.³ B65D 3/00

U.S. Cl. 229—1.5 B

1 Claim



1. A leak-resistant closure arrangement for a single lap container and lid, comprising:

- (a) a container body having a wall formed from a single ply of flexible sheet material, such as paperboard, which is formed into a tubular structure with outer and inner end portions secured to each other in overlapping relation;
- (b) said inner end portion having an extension with a recess at the upper corner thereof and presenting, adjacent said recess, an upwardly facing shoulder surface, said outer end portion overlapping said recess and said extension throughout its entire length;
- (c) a plug-type lid having a round center section and an integral, annular rim section including:
 - (i) a generally cylindrical inner flange extending upwardly from the outer periphery of said center section;

1. A slip case comprising an inner part and an outer part, the inner part having a bottom, front and side walls with a retainer lip joining the peripheries of the bottom and a portion of the side walls contiguous to the bottom wall opposite said front wall to define an opening, said lip having a height substantially less than the height of said front wall; the outer part comprising a rectangular form having back, two sides, top and bottom walls, the sides, top and bottom walls defining an open front to receive the inner part; a one-piece outer cover for the outer part of a dimension to totally overlie the back and said two side walls and having a pair of flaps extending from opposite sides of that portion of said outer cover which overlies one of said sides, said flaps having a width greater than the top and bottom wall width, said flaps folding over the top and bottom walls and partially down the other of said side walls, the cover over the other of said walls overlying the edges of the flaps.

4,429,827

DOCUMENT MAILER AND POSTAL SYSTEM

Myles N. Murray, 15 Skyline Dr., Chagrin Falls, Ohio

Filed Aug. 17, 1981, Ser. No. 293,296

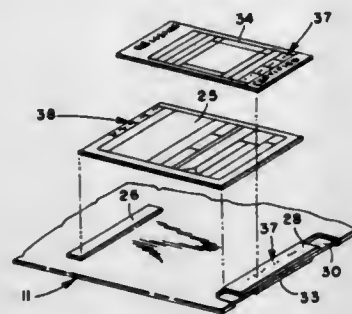
Int. Cl.³ B65D 27/00

U.S. Cl. 229—68 R

10 Claims

1. A mailer in combination with a document, comprising an enclosure in which the document is to be mailed, said enclosure having a window for exposing a part of the document contained in said enclosure, and return receipt means secured to said enclosure for permitting acknowledgement of receipt of the mailer and document by the recipient, said return receipt means including a first portion overlapping said window and affixed to the document at said window, and a second portion constituting a return receipt detachably secured to said first

portion and said enclosure whereby said return receipt can be endorsed by the recipient, detached and returned to the sender



as acknowledgement of receipt of the document as well as the mailer.

4,429,828

BEVERAGE PACKAGE

Jürgen Färber, Kaarst, Fed. Rep. of Germany, assignor to PLK Papier- und Kunststoff Werke Linnich GmbH, Dusseldorf, Fed. Rep. of Germany

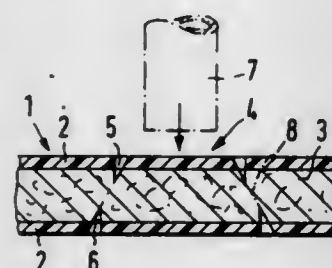
Filed Sep. 28, 1981, Ser. No. 306,107

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037657

Int. Cl.³ B65D 17/28, 17/42

U.S. Cl. 229—75

3 Claims



1. In a cardboard container plastic coated on at least one of its inside and outside and provided with a weakened area through which a straw is to be inserted, the improvement which comprises a pair of incisions penetrating deeper than half the thickness of the container and surrounding such area on the inside and outside of the container respectively, the area enclosed by the incision on the outside being smaller than the area enclosed by the incision on the inside.

4,429,829

INTERACTIVE DUAL PROBE TEMPERATURE CONTROL SYSTEM

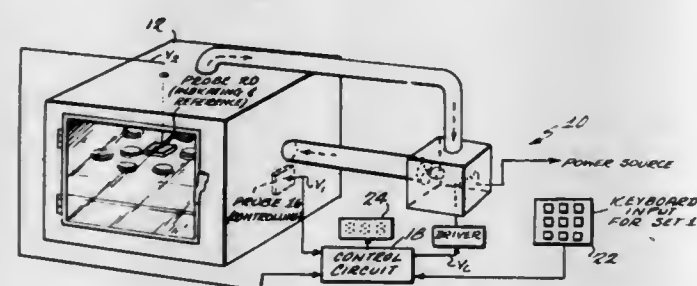
Edmund L. Dutton, Marietta, Ohio, assignor to Mallinckrodt, Incorporated, St. Louis, Mo.

Filed Nov. 20, 1981, Ser. No. 323,476

Int. Cl.³ G05D 15/00; A01G 23/10

U.S. Cl. 236—78 B

11 Claims



1. An interactive dual temperature sensing system for con-

trolling temperature within a defined space, said system comprising:

a controllable thermal source connected to provide thermal input to said defined space in at least one source location; a first temperature sensor positioned at a first location within said defined space relatively near said thermal input; a second temperature sensor positioned at a second location within said defined space relatively further from said thermal input than said first location; and an electronic control circuit connected to said source and to said first and second sensors including means for automatically controlling said source based on the temperature (TEMP1) sensed at said first location with respect to a controlling setpoint temperature (SET2) that is automatically adjusted to minimize the difference between the temperature (TEMP2) sensed at said second location and a particular desired temperature (SET1);

said first location being at a location for achieving rapidly responsive control of said source;

said second location being approximately at the optimum location for accurately indicating the true temperature of a desired portion of said defined space;

said electronic control circuit including

a digital data processor means programmed to store digital data representing the temperatures sensed by said first and second temperature sensors (TEMP1 and TEMP2 respectively), the temperature control set point (SET2) and the desired temperature (SET1);

said digital data processor means also being programmed to iteratively adjust said setpoint data value (SET2) by incrementing/decrementing then existing setpoint (SET2) with the calculated difference in value between said desired and actual sensed temperature at said second location (SET1 and TEMP2 respectively);

said digital data processor means being programmed to perform said incrementing/decrementing only after a predetermined elapsed time period greater than the thermal response time of the defined space.

4,429,830

SPACE AND UTILITY WATER HEATING SYSTEM

Siegfried Förster, Alsdorf, and Peter Quell, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

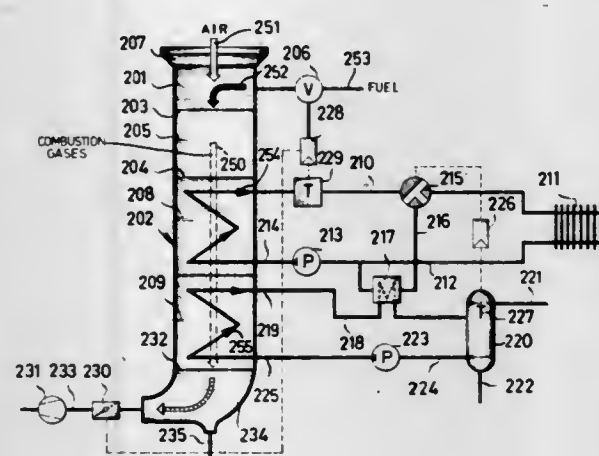
Filed Apr. 14, 1981, Ser. No. 254,092

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014180

Int. Cl.³ F24D 3/08

U.S. Cl. 237—19

7 Claims



1. A heating system comprising:

a heating unit including a fuel-fired burner, a combustion chamber in which a hot combustion gas is generated by said burner, and a recuperator through which said gas is passed in at least a first and a second zone in indirect heat

exchange with a recirculatable space heating fluid and hot utility water, respectively; means including a feedline connected to a high-temperature end of said first zone, at least one space heater connected to said feedline, at least one return line connected to said space heater, and a circulator forming a circulation path for said space-heating fluid through said first zone; means including a hot water storage tank and a pump for circulating hot water between said tank and said second zone for circulating hot water; a heat exchanger having two sections in heat exchanging relation with one another; means forming a bypass through one of said sections between said feedline and said return line, and at least one valve for controlling the flow through said bypass, said means for circulating hot water between said tank and said second zone including the other section of said heat exchanger; first control means responsive to the temperature of water in said tank for controlling said valve; and second control means responsive to the temperature in said feedline for controlling the rate of fuel flow to said burner and the rate of flow of said gas through said recuperator.

4,429,831

GROUND RELEASE IRRIGATION SYSTEM

Gerald H. Maddox, 5820 Sunrise Rd., Lincoln, Nebr. 68510

Continuation-in-part of Ser. No. 187,985, Sep. 17, 1980, abandoned. This application Mar. 27, 1981, Ser. No. 248,541

Int. Cl.³ B05B 3/00

U.S. Cl. 239—177

8 Claims



1. For use in combination with a pivot-type irrigation system wherein a water distribution pipe supplied from a central source is rotated through a path of travel to provide irrigation of the area covered thereby, a plurality of downwardly depending hose fittings disposed along the length of the pipe, a plurality of flexible hoses attached to respective ones of said plurality of hose fittings, said hoses extending from the main pipe to the ground so as to release water therefrom at the distal end thereof at ground level, and hose movement restraining means for preventing lateral movement of said hoses relative to said path of travel, said hose restraining means including mounting means provided on opposite sides of each said hose fitting above the associated hose and a plurality of downwardly depending restraining braces, each supported by a said mounting means so as to be swingable in the direction of the path of travel of the distribution pipe, for restraining lateral movement of said hoses.

4,429,832

PROJECTABLE LAWN SPRINKLER

Kerney T. Sheets, P.O. Box 771, Duplessis, La. 70728

Filed Oct. 16, 1981, Ser. No. 312,351

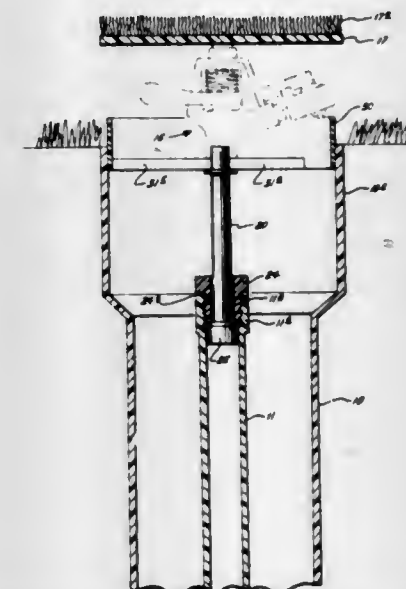
Int. Cl.³ B05B 15/10

U.S. Cl. 239—204

3 Claims

1. In a projectable lawn sprinkler having a housing, a stationary pipe located in the interior of said housing and connected

to the base of said housing, a projectable conduit slidably connected to the interior of said stationary pipe, and a means for spraying water connected to said projectable conduit means, the improvement comprising guard means connected to said projectable conduit and slidably received inside said hous-



ing for preventing foreign matter from entering the interior of said housing, the top of said guard means being projectable to a position above the top of said housing, said projectable guard means being a cylinder, the top of said cylinder extending above the top of said housing when said projectable conduit means is projected to its uppermost height.

4,429,833

PROCESS AND DEVICE FOR DELIVERING A LIQUID ONTO A ROTATING AND HOLLOW BODY

Roland Meisner, Schorndorf, and Hagen Buchholz, Münster, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

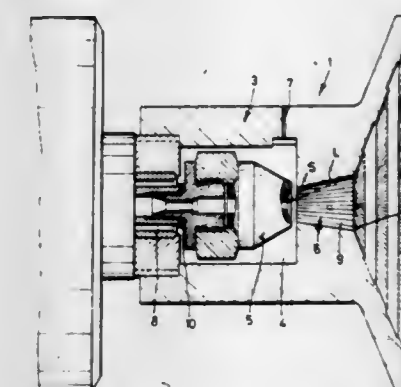
Filed Nov. 30, 1981, Ser. No. 326,037

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047670

Int. Cl.³ B05B 3/10

U.S. Cl. 239—224

5 Claims



1. An apparatus to feed from a fixed feed part a fluid, for instance a liquid coating means, in the form of a liquid sheet shaped in the manner of a surface of a cone to the inner contour of a rotatable spray bell (1) having a bell-shaped hollow body (2) symmetrical about the axis of rotation thereof and having a cylindrical end part (3) where the fluid is accelerated and guided to a rim of the spray bell (1),

a fixed hollow cone nozzle (5) at the feed end of the feed part to generate the liquid sheet in the form of a conical surface,

and a transfer surface (6) spaced opposite the mouth of the hollow cone nozzle (5), having the shape of a hollow

frustum-of-cone, and located in the rotatable spray bell (1),
said hollow frustum-of-cone transfer surface (6) tapering toward the hollow conical nozzle (5), said hollow conical nozzle (5) being mounted in the cylindrical end part (3), and said hollow frustum-of-cone transfer surface (6) being hollowed out between the bell-shaped hollow body (2) and the cylindrical end part (3).

4,429,834

MOUTH CLOSURE ASSEMBLY FOR MOUTH OF FOAM LIQUID DISPENSING CONTAINER

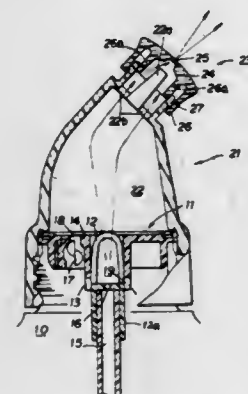
Kazuo Ito, Kamakura, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 348,146

Claims priority, application Japan, Apr. 13, 1981, 56-52884[U]

Int. Cl.³ B65D 1/32

U.S. Cl. 239—327



1. A mouth closure assembly for the mouth of a squeezable foam liquid dispensing container, comprising an inner foaming portion fitted in said mouth of the container and including foamable liquid and air mixing means, air guide means for guiding air into said mixing means, a mixing means holder and replacing air inflow control means; and a detachable outer foam liquid dispensing portion surrounding said container mouth and said inner foaming portion and including a cavity defined therein in communication with said mixing means and a closure cap for closing said cavity, said mixing means including a porous member defining a mixing chamber therein and supported by a holder fitted in said mouth of the container, said porous member having through holes, said air guide means including a pipe positioned immediately below and depending from said porous member and communicating with the interior of said container, a pipe holder interposed between said porous member and said pipe and formed with a through hole communicating between said mixing chamber and pipe, and said air inflow control means including an air vent hole formed in said porous member holder and a check valve disposed in said porous member holder for closing and uncovering said air vent hole.

4,429,835

SPRAY-DIFFUSER

Inge Brugger, Prinz Karl Str. 50a, D-8130 Starnberg, and Emeram Stell, Starnberg, both of Fed. Rep. of Germany, assignors to Inge Brugger, Starnberg, Fed. Rep. of Germany

Filed Nov. 13, 1981, Ser. No. 321,013

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043377

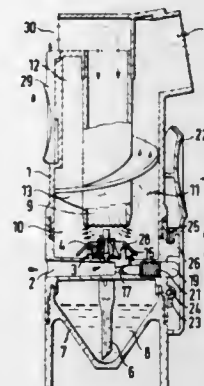
Int. Cl.³ B05B 7/00; A61M 11/02, 15/00

U.S. Cl. 239—338

15 Claims

1. A spray-diffuser for the atomisation of liquids or solid substances, such as medicaments, with the help of a flow of compressed air especially for inhalation purposes, having located in an atomisation chamber a spray-diffuser nozzle which is connected to a compressed air channel and having a suction arrangement for sucking up the medicament, whereby the

compressed air channel adjacent the nozzle has, for escape of the compressed air, a release opening which is settable to a non-operating position, characterized in that the release open-



4,429,836

APPARATUS FOR DISINTEGRATING AND MIXING FOODSTUFFS

Bengt Göransson, Östanberqsv.34, Örebro, Sweden

PCT No. PCT/SE80/00238, § 371 Date Jun. 4, 1981, § 102(e) Date Jun. 4, 1981, PCT Pub. No. WO81/00956, PCT Pub. Date Apr. 16, 1981

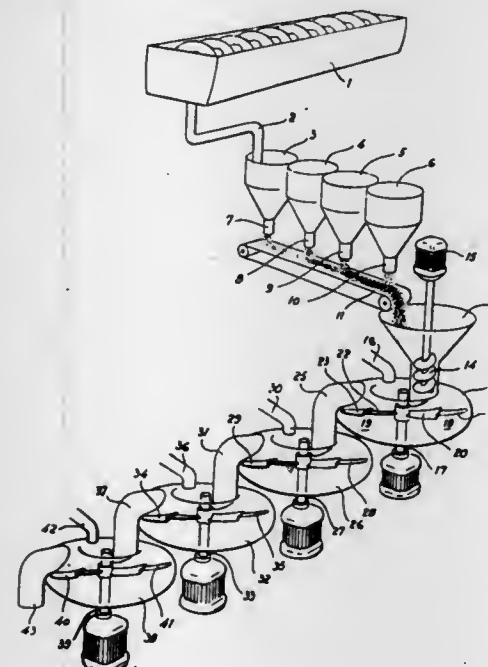
PCT Filed Oct. 2, 1980, Ser. No. 270,522

Claims priority, application Sweden, Oct. 4, 1979, 7908219

Int. Cl.³ A47J 43/07

U.S. Cl. 241—282.1

1 Claim



1. Apparatus for providing continuous cutting and mixing of foodstuff such as sausage, comprising:

- a generally cylindrical vessel having an axially disposed rotatable shaft and an annular processing space surrounding said shaft, said vessel having two annular halves rotatable with respect to each other about the axis of said shaft;
- a foodstuff inlet adjacent a radially inner part of said annular processing space and a foodstuff outlet adjacent a radially outer part of said annular processing space; and
- a pair of mixing and cutting blades extending in opposite directions radially out from said shaft for rotation therewith, each blade having a radially inner portion and a radially outer portion, the inner portion of each blade being pitched to urge the foodstuff in one axial direction while cutting it, the outer portion of each blade being

pitched to urge the foodstuff in the opposite axial direction.

4,429,837

BLADE ASSEMBLY FOR MEAT CHOPPER

Fritz Knecht, D-7981 Heissen-Vogt, Fed. Rep. of Germany

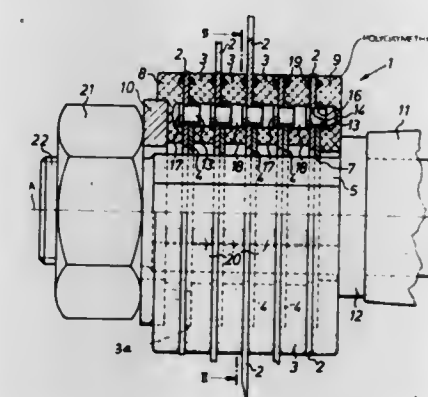
Filed Nov. 25, 1981, Ser. No. 324,977

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044632

Int. Cl.³ B02C 18/20

U.S. Cl. 241—292.1

10 Claims



1. A blade assembly for a meat cutter, said blade assembly comprising:

- a support shaft extending along an axis and having an end member and a noncircular-section portion extending axially from said end member;
- a plurality of like metallic support disks having respective central holes traversed by and complementary to said noncircular-section portion and respective outer peripheries;
- respective metallic blades bearing in surface contact axially on said support disks and each having a radially outwardly projecting cutting portion extending radially outward past the outer periphery of the respective support disk, said blades with the respective support disks being axially spaced along said noncircular-section portion;
- means including respective fasteners engaged axially through said support disks and the respective blades for securing each blade to the respective support disk for joint rotation therewith;
- a plurality of spacer rings of a rigid synthetic resin axially alternating with the blades and the respective disks, each of said rings engaging axially in one direction on one respective blade and the respective support disk and axially in the opposite direction on the adjacent blade and the respective support disk; and
- another end member screwed onto said support shaft and pressing said support disks, blades, and spacer rings axially together against the other end member.

4,429,838

CLAMPING CHUCK IN WINDING MACHINES

Erich Lenk, and Hansjochen Busch, both of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,749

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039064; Nov. 27, 1980, 3044707

Int. Cl.³ B65H 54/54

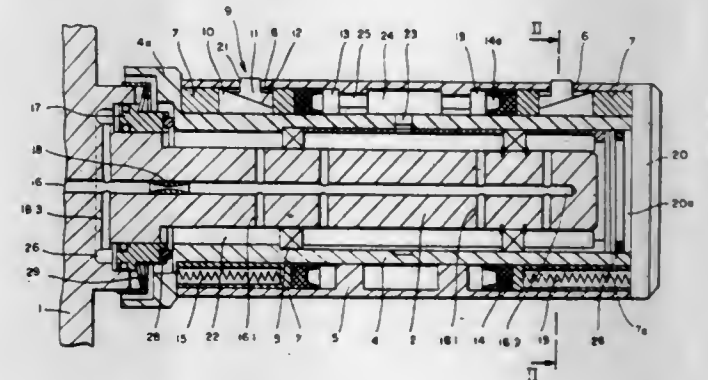
U.S. Cl. 242—46.4

8 Claims

1. In a clamping chuck on a thread-winding machine for the reception of a removable bobbin carrier wherein said chuck includes a chucking spindle turnably borne on and extending from the machine frame, a cylindrical mantle sleeve mounted concentrically about said spindle and having an inner diameter greater than an outer diameter of said spindle over a substantial portion of the total length of the chuck so as to define at least one annular cylindrical interspace between said sleeve and said

spindle at a selected axial position along the chuck, and clamping means situated within said interspace and being radially movable through openings in said mantle sleeve, the improvement which comprises:

- a plurality of clamping elements arranged in said interspace between said spindle and said mantle sleeve for free radial movement in an axial plane of the chuck, each clamping element having a radially outermost clamping end which is radially movable of its sleeve opening and guided by said opening between an extended position for gripping the bobbin carrier and a retracted position for releasing the bobbin carrier and having a radially innermost sliding end surface which is inclined with respect to the chuck axis;
- a plurality of wedge-shaped thrust members, each of said thrust members being paired with a clamping element and being defined by a radially outermost end surface inclined with respect to the chuck axis to provide a sliding support in contact with the correspondingly inclined inner end



surface of its paired clamping element, and each wedge-shaped thrust member being slidably carried on the spindle for movement back and forth in an axial direction as its supported clamping element is moved radially between said extended position and said retracted position;

spring and pneumatic actuated cage means having axially spaced and opposing annular end walls which act as pistons to exert opposite axial forces on each of said thrust members while the clamping element is guided in its sleeve opening in radial direction in order to cause a relative movement between each clamping element and the axially inclined surface of its paired wedge-shaped thrust member;

spring means to actuate said cage means while the chuck is in operation in order to maintain a radial gripping force exerted by said outermost clamping end of said clamping element on said bobbin carrier; and

pneumatic means cooperating with said cage means to exert a pneumatic force opposing said spring actuation of said cage means in order to release each clamping element.

4,429,839

WATER SKI TOW ROPE REEL APPARATUS

Donald W. Jessamine, 401 Aurora St., Phillipsburg, N.J. 08865

Filed Dec. 10, 1981, Ser. No. 329,233

Int. Cl.³ B65H 75/28, 75/40

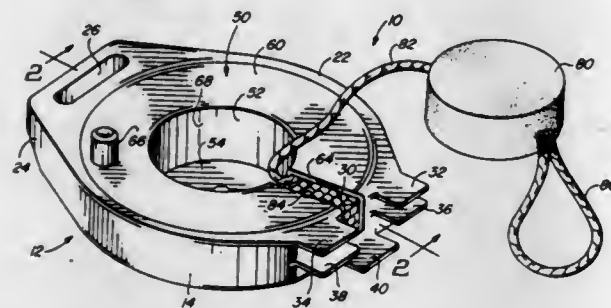
U.S. Cl. 246—96

5 Claims

1. Water ski tow rope reel apparatus comprising, in combination:

- housing means, including
- a floor,
- a wall secured to the floor and extending substantially perpendicular thereto,
- a handle for holding the housing, and
- a slot extending through the wall through which a tow rope passes;
- reel means secured to the housing means and rotatable relative thereto, including

a bottom wall disposed adjacent to the bottom of the housing means, cylindrical wall means extending substantially perpendicular to the bottom wall means and about which the tow rope is wound, an outwardly extending flange remote from the bottom wall and extending outwardly radially from the cylindrical wall, and a slot extending through the flange and the wall through which a portion of the tow rope is disposed;



handle means secured to the reel means for rotating the reel means relative to the housing means for winding the rope through the slot in the housing means and about the cylindrical wall of the reel means; and holding means integral with said housing and disposed adjacent to the slot for securing a handle of a water ski tow rope to the housing means, including a plurality of flat, opposed tabs spaced apart from each other and parallel to the floor of the housing and extending downwardly from the housing means.

4,429,840

WINDING SPRING ESPECIALLY FOR SEAT BELT RETRACTOR

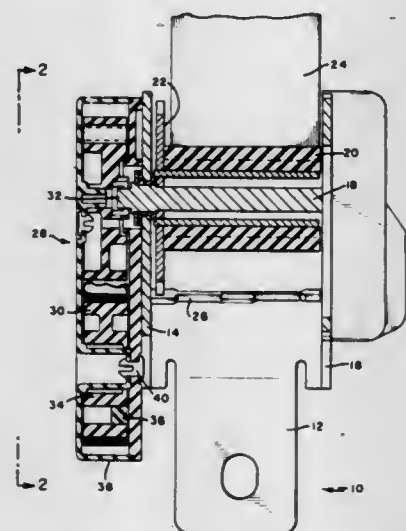
Jai H. Chawla, Knoxville, Tenn., and Arduino Colasanti, East Detroit, Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 26, 1982, Ser. No. 362,185

Int. Cl.³ B65H 75/48

U.S. Cl. 242—107

10 Claims



6. In a seat belt retractor comprising a frame, a main shaft rotatable in said frame, a spool mounted on said shaft for rotation therewith, seat belt webbing having one end attached to said spool and adapted to be wound thereon, and a rewind spring motor mounted on said frame for winding said webbing on said spool and permitting said webbing to be extracted from said spool, the improvement comprising: said rewind spring motor comprising: a drive spool rotatable with said main shaft; an idler spool mounted for rotation about a second shaft spaced from said main shaft; and a rewind spring having a stretched S-shape and disposed between said drive spool and said idler spool; said rewind

spring having a first end in communication with said drive spool; a second end in communication with said idler spool; a normal use region extending from said drive spool toward said idler spool and comprising a first portion in communication with said first end and having a first natural radius of curvature, and a second portion in communication with and extending from said first portion toward said idler spool, said second portion having a second natural radius of curvature, said second natural radius of curvature being larger than said first natural radius of curvature, the transition between said first and second portions being defined by an abrupt increase in the natural radius of curvature; and a surplus use region extending from said second portion to said second end of said spring.

4,429,841

EMERGENCY LOCKING DEVICE FOR SAFETY BELT RETRACTOR

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisa, Osaka, Japan

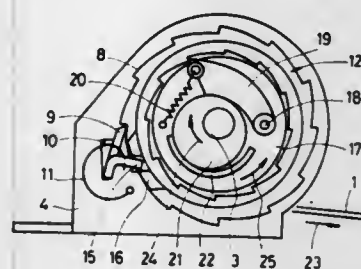
Filed Jul. 15, 1982, Ser. No. 398,668

Claims priority, application Japan, Aug. 4, 1981, 56-122694

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 B

5 Claims



1. An emergency locking device equipped with a safety belt retractor wherein a reel (2) for winding a safety belt (1) thereon is rotatably mounted on a fixed reel support (4) with a shaft (3) fixed to the reel (2) being journaled on the support (4), and the reel (2) is biased to rotate in a belt rewinding direction by a return spring (5), comprising:

- a ratchet wheel (8) fixed to the reel (2);
- a locking pawl (9) mounted on the reel support (4) so as to be movable between engaging and disengaging positions with respect to the ratchet wheel (8);
- a releasing spring (11) urging the locking pawl (9) toward a disengaging position from the ratchet wheel (8);
- a drum-shaped clutching wheel (12) rotatably mounted on the shaft (3), said clutching wheel (12) being provided with inner ratchet teeth (14) on its inner peripheral surface and engaging projections (16) on its outer peripheral surface, said engaging projections (16) being engaged with said locking pawl (9);
- a locking initiating inertia member (21) rotatably mounted on said shaft (3), said inertia member (21) having its outer peripheral surface radially offset from the central axis of the shaft (3);
- a mounting plate (17) fixedly positioned on said shaft (3);
- a locking transmission pawl (19) pivotally mounted about an axis (18) on said mounting plate (17), said locking transmission pawl (19) keeping in contact with the outer peripheral surface of said locking initiating inertia member (21) so as to be movable between engaging and disengaging positions with respect to one of said inner ratchet teeth according to the rotation of said locking initiating inertia member (21) with respect to said shaft (3);
- a biasing spring (20) urging said locking transmission pawl (19) to be disengaged from said inner ratchet teeth (14); and
- a control member (22) mounted on said mounting plate (17) to limit the rotation of said locking initiating inertia member (21) within a predetermined range.

4,429,842

CENTRAL CONNECTIBLE YARN BRAKE MECHANISM

Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

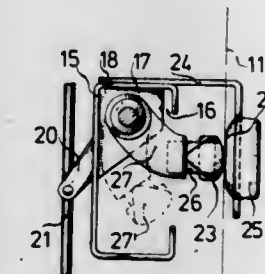
Filed Nov. 19, 1982, Ser. No. 442,900

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145990

Int. Cl.³ B65H 59/22

U.S. Cl. 242—149

1 Claim



1. Central connectible yarn brake mechanism for doffed threads from a creel, comprising a profiled metal bar having at least one groove formed therein, stationary first brake elements being mutually spaced apart along said metal bar outside said groove and each being associated with one of the threads, first means for individually connecting said first brake elements to said metal bar, movable second brake elements each being associated with one of the threads and being movable between a braking position in which said second brake elements are biased against a thread and against a respective one of said first brake elements and a detached position in which said second brake elements are lifted from a respective one of said first brake elements, bearings disposed on said metal bar in said groove, a central rotatable bar movable in said bearings in said groove, levers each being fastened to said rotatable bar, and second means for individually connecting each of said levers to a respective one of said second brake elements for holding said second brake elements and moving said second brake elements between said braking and detached positions, at least one of said connecting means being an elastically deformable connection element.

4,429,843

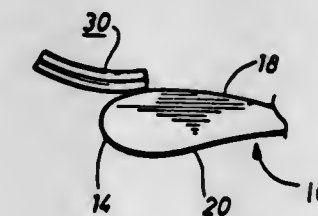
COUNTER-ROTATING VORTICES GENERATOR FOR AN AIRCRAFT WING

Roger A. Thompson, 7606 Joplin, Apt. 2, Houston, Tex. 77087
Continuation-in-part of Ser. No. 960,221, Nov. 13, 1978, Pat. No. 4,323,209. This application Mar. 24, 1982, Ser. No. 361,421
The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.

Int. Cl.³ B64C 23/06

U.S. Cl. 244—199

21 Claims



1. Apparatus for increasing the lift generated by a wing, having upper and lower surfaces, while propelled through a fluid medium comprising:

- a finger mounted adjacent to the leading edge of said wing and extending forwardly therefrom such that the finger is

essentially tangential to the upper surface of said wing, said finger having lateral edges thereon; said finger being mounted on the wing such that as the wing is propelled through the fluid medium, impingement of the fluid medium on said finger produces by flow around said lateral edges, a first and second vortex trailing rearwardly from said finger over the wing in the direction of fluid flow, each of said vortices being in contact with and counter-rotating with respect to the other; and said finger being sized such that each vortex produced thereby is of sufficient size and strength to modify the flow pattern above the boundary layer on the wing upper surface so as to effect an increase in the lift.

4,429,844

VARIABLE CAMBER AIRCRAFT WING TIP

Stephen T. Brown, Bellevue, and Frank D. Statkus, Woodinville, both of Wash., assignors to The Boeing Company, Seattle, Wash.

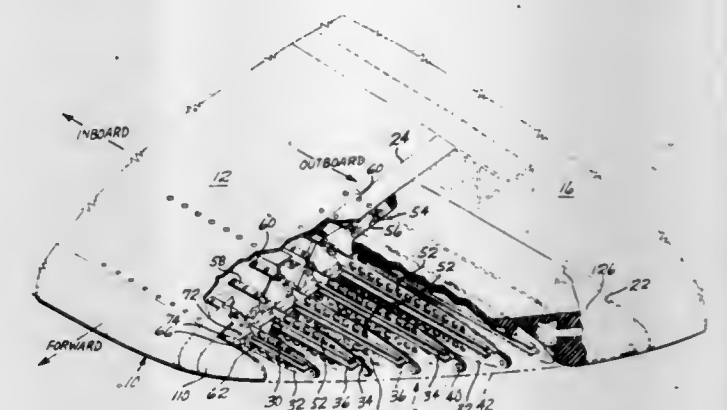
PCT No. PCT/US82/01354, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982

PCT Filed Sep. 29, 1982, Ser. No. 451,216

Int. Cl.³ B64C 3/48

U.S. Cl. 244—219

38 Claims



9. In an aircraft wing, a variable camber wing tip forming an outboard and forward portion of said wing, said wing tip comprising:

- an inboard generally fore and aft extending end of the wing tip being secured along a complementary outer end of a variable camber leading edge portion of the wing;
- a trailing edge of the wing tip extending along a fixed outboard forwardly facing edge of the wing;
- said wing tip having a normal camber on its upper surface in an upper position and being adapted to have an increased camber curvature in a deflected down position;
- said wing tip in the down position having a compound curvature between the upper cambered surface and its lower surface, the wing tip being curved downwardly forwardly and outboardly in the down position; and
- means within the wing tip adapted to be actuated to vary the camber from the upper portion to the down position and return.

4,429,845

RAIL TRACK HEATERS

John C. Stover, Verona, and Paul J. Borkoski, North Huntingdon, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 26, 1982, Ser. No. 371,669

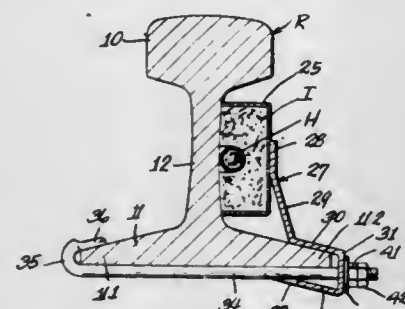
Int. Cl.³ E01B 7/24

U.S. Cl. 246—428

5 Claims

1. Heating means for a railway rail, said rail having a head, a base flange and a web integrally connecting said base flange and head, the improvement comprising: an elongated, tubular, metal-sheathed electric heating ele-

ment held in position parallel to said rail and against a side surface of said web and operable to heat the same, a channel-shaped, sheet metal cover transversely encompassing a length of said element, a bracket holding said channel-shaped cover in position, including an upper vertical portion in engagement with the outer surface of a side of said cover, said bracket having a U-shaped portion fitting around a transverse terminal portion of said base flange, the web of said U-shaped portion having a hole therethrough,



an elongated bolt underlying said base flange and having a threaded end extending through the hole in said U-shaped portion and having an opposite hook-shaped end adapted to hook around a transverse terminal portion of said base which is opposed to said first-named transverse portion, and a nut threaded on said bolt threaded end and operable to draw the hook-shaped bolt end and said bracket together to clamp said base flange therebetween and urge said upper vertical portion of said bracket and said channel-shaped cover against which it bears in a direction toward said web side.

4,429,846

ADJUSTABLE TREE STAND

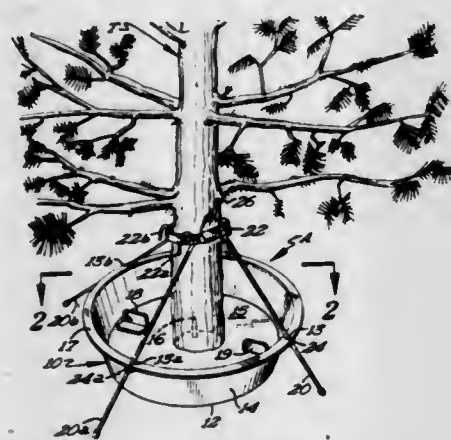
Harlan L. Halvorson, 701 - 6th St. SW., Wells, Minn. 56097

Filed Jun. 22, 1981, Ser. No. 275,900

Int. Cl.³ F16M 13/00

U.S. Cl. 248—524

8 Claims



1. An adjustable tree stand comprising:
 - (a) a circular support having a central, vertical axis,
 - (b) means for connecting a tree trunk to said support,
 - (c) a circular adjusting plate having a central axis substantially perpendicular to the plate,
 - (d) means mounting said circular plate on said support for rotation thereon with the axis of said circular support coinciding with the axis of said plate,
 - (e) means for mounting the lower end of a tree on the plate offset from the axis of the plate,
 - (f) means associated with said plate for rotating said plate on said support to cant a tree mounted thereon relative to the vertical axis of said support.

4,429,847

SPRING BYPASS ASSEMBLY

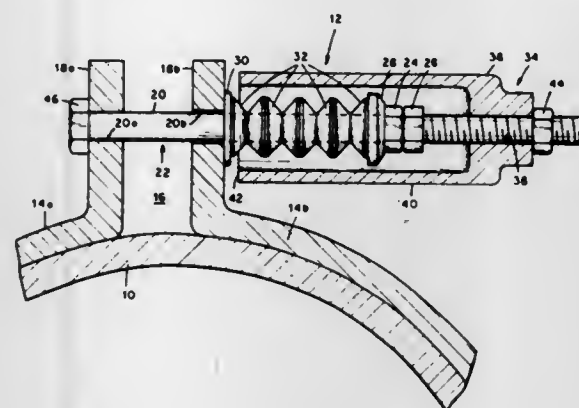
Henry Jablonski, San Jose, and Jeffrey D. Roughgarden, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 2, 1982, Ser. No. 384,306

Int. Cl.³ F16L 3/08

U.S. Cl. 248—74 R

4 Claims



1. A collar assembly for restraining an object, comprising:
 - a clamp rim conforming to the periphery of said object and extending substantially completely thereabout with at least one contraction and expansion gap interrupting its continuity about said object, ends of said rim at said gap being formed with flanges which project radially outward from said object in spaced but juxtaposed relation to each other, an aperture extending through each of said flanges in a circumferential direction relative to said object;
 - means for resiliently biasing said flanges toward each other, comprising (1) a shaft extending through the aperture in each of said flanges and projecting away from one flange on the side thereof remote from the other flange, (2) annular spring means extending around the projecting portion of said shaft, and (3) means mounted on the projecting portion of said shaft for holding said spring means against said one flange; and
 - means for limiting movement of said flanges away from each other, comprising (1) an elongate stop element having a first portion formed with an aperture through which said shaft extends and a second portion which projects from said first portion toward said one flange and is normally spaced therefrom to allow a predetermined expansion of said object and separation of said flanges before said one flange engages the second portion, and (2) means for adjustably holding said stop element at different locations along the length of said shaft.

4,429,848

SURGICAL HANGER

Chee C. Gunsolus, 3402 SE. Inlet Harbor Trail, Stuart, Fla. 33494

Filed Jan. 15, 1982, Ser. No. 339,371

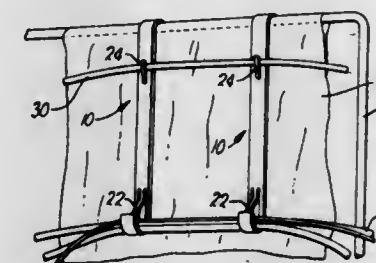
Int. Cl.³ A62C 23/04

U.S. Cl. 248—75

7 Claims

1. A hanger comprising:
 - an elongated strip of rigid material having an intermediate portion and terminal end portions bent out of the plane of said intermediate portion in the form of terminal hooks; and
 - a releasable latch cooperatively positioned adjacent at least one of said hooks for releasably securing a hose or the like within said one hook, said latch comprising an elongated

shiftable element normally in at least partial blocking relationship to the open end of said one hook, said element



being integral with said strip and projecting obliquely therefrom.

4,429,849

FRAME FOR SETTING UP THE LINES PREPARATORY TO ERECTION OF BUILDINGS OR THE LIKE

Josef Maier, Schwimmbadstr. 3, D-7611 Steinach, Fed. Rep. of Germany

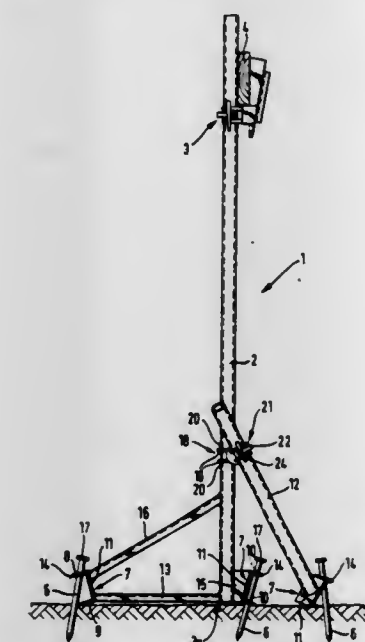
Filed Nov. 19, 1980, Ser. No. 208,408

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948230

Int. Cl.³ A45F 3/44

U.S. Cl. 248—156

31 Claims



1. A frame for setting up lines preparatory to excavation at building sites or the like comprising:
 - (a) a post;
 - (b) at least one leg adjacent to the ground for connecting said post to the same, said leg being substantially U-shaped and including a pair of overlapping substantially parallel flanges which are connected by a web and are disposed in respective planes, said flanges being substantially perpendicular to said web and each of said flanges being provided with an opening having an axis which is generally normal to the plane of the respective flange, said leg being arranged such that said flanges are parallel to or make an acute angle with the ground, said web being fixedly secured adjacent one end of said post and defining an acute angle with respect to the longitudinal axis of said post; and
 - (c) securing means for securing said leg to the ground, said securing means including at least one securing member extending with clearance through at least one of said openings and into the ground.

4,429,850

DISPLAY PANEL SHELF BRACKET

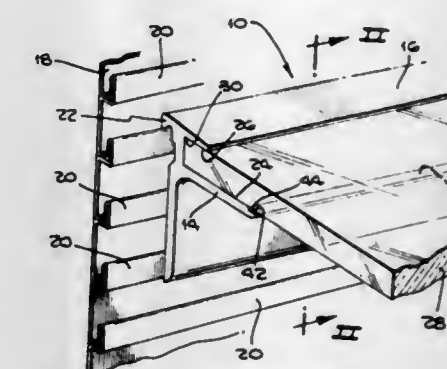
Karl Weber, Laguna; Michael Schlinger, Yorba Linda, and Richard Beedle, Costa Mesa, all of Calif., assignors to Uniweb, Inc., Anaheim, Calif.

Filed Mar. 25, 1982, Ser. No. 361,785

Int. Cl.³ A47G 29/02

U.S. Cl. 248—250

3 Claims



1. A unitary bracket for holding a shelf to a panel as its sole support, said bracket comprising:
 - (a) a back portion including means for holding said back portion horizontally disposed against the panel;
 - (b) a lower support portion extending horizontally outward from said back portion and having a top surface upon which the shelf can rest, said top surface having a front edge disposed equally distant from the panel when the bracket is attached to the panel;
 - (c) an upper support portion extending outward from said back portion above and parallel to said top surface of said lower portion and having a bearing bottom surface adjacent said back portion adapted to bear along the top inner edge of a shelf disposed in the bracket between said lower and upper support portions, said front edge being a distance away from said bearing surface short enough being that the weight of the shelf extending beyond said front edge will tend to rotate the shelf about said front edge and against said bearing surface to thereby cause a gripping action on the shelf while, at the same time, said distance is long enough that said lower support portion can support the shelf in a horizontal position; and
 - (d) wherein said back portion, lower support portion and upper support portion are formed integrally of each other and together form a longitudinally extending shelf edge receiving channel closely fitting and coextending with adjacent marginal areas of the edge of said shelf received therein;
 - (e) wherein said front edge of said top surface of said lower support portion is provided with a groove coextensive with the longitudinal extent of said front edge and; a strip of material having a high coefficient of friction coextensive with and fixedly disposed in said groove is provided whereby the retention of said shelf in said channel is facilitated.

4,429,851

MOBILE HOME STABILIZER

Thomas M. DeJager, 39369 Oak View Rd., Yucaipa, Calif. 92399

Filed Apr. 15, 1981, Ser. No. 254,473

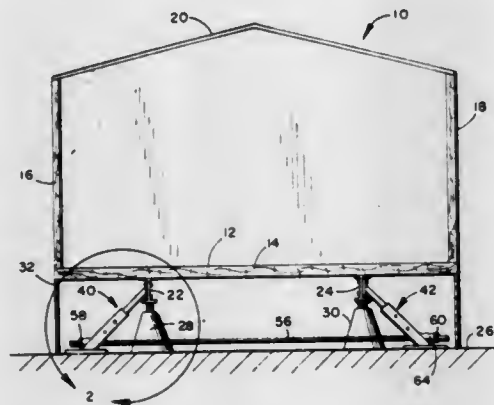
Int. Cl.³ B60S 9/02

U.S. Cl. 248—354 S

6 Claims

1. A mobile home stabilizer system for stabilizing against lateral earth movement comprising:
 - first and second stabilizer legs, each said stabilizer leg having an upper end and a lower end, each said stabilizer leg being formed of a tube and a rod with said rod telescopically mounted for sliding motion within said tube for the length adjustment of said stabilizer leg, and fixing means is

provided for fixing the length of said stabilizer leg at a predetermined length, a first pad on the upper end of said first stabilizer leg for rigid attachment to one of the longitudinal strength members of a mobile home, a second pad on the upper end of said second stabilizer leg for rigid attachment to another of the longitudinal strength members of the mobile home, a first substantially flat foot rigidly secured at the lower end of said first stabilizer leg for substantially non-penetrating engagement with the ground, a second substantially flat foot rigidly secured at the lower end of said second stabilizer leg for substantially non-penetrating engagement with the ground, said pad on each said stabilizer leg being positioned at substantially



right angles with respect to said foot on said same stabilizer leg, said stabilizer legs being oriented at an acute angle between said feet and said pads and at an acute angle with respect to the ground and being directed away from each other so that said first and second feet are farther apart from each other stabilizer legs being oriented so that said first and second pads and second first and second feet substantially lie in a plane which lies substantially at right angles to the longitudinal strength members; and connection means on said first and second stabilizer legs for attaching said first stabilizer leg to said second stabilizer leg so that upon lateral movement said stabilizer legs move with the mobile home.

4,429,852 ADAPTER

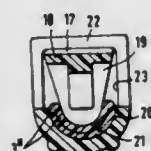
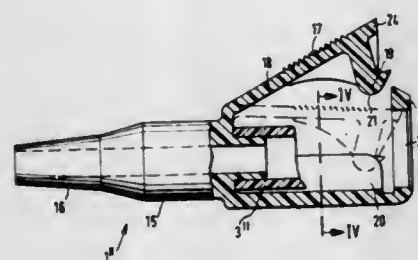
Bernd Tersteegen, and Gunter Van Endert, both of Karlstrasse 17-19, 4000 Dusseldorf, Fed. Rep. of Germany
Continuation of Ser. No. 313,157, Oct. 20, 1981. This application
Apr. 11, 1983, Ser. No. 482,017

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039591

Int. Cl.³ F16L 55/14; A61B 17/00

U.S. Cl. 251-9

2 Claims



1. An adapter for connecting first and second tubes comprising: an adapter body; first connecting means on said body for

attachment to said first tube; second attachment means on said body for attachment to said second tube; manually movable compression means formed integrally with said body comprising a clamping member movable with respect to said body and having an arcuately shaped tube engaging portion, said compression means being movable under manual pressure from an open position to a closed position wherein one of said tubes is at least partially constricted; said body including an integrally formed support having an arcuately shaped tube engaging surface, said support being positioned opposite of said clamping member with respect to said one tube for cooperation with said clamping member when said compression means is positioned in said closed position to compress said one tube between said clamping member and said support, said arcuately shaped tube engaging surface being generally defined by a radius greater than a further radius generally defining said arcuately shaped tube engaging portion; said adapter further including latching means formed integrally with said body and formed by a portion of a wall defined by an opening through which said one tube extends, said wall being integrally formed with said support; said latching means being adapted to engage and coact with catch means formed integrally with said compression means to releasably retain said compression means in said closed position.

4,429,853

DISCONNECTING VALVE ROCKER MECHANISM
Pierre Chaffiotte, Saint Cloud, and Christian Guicherd, Le Pecq, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

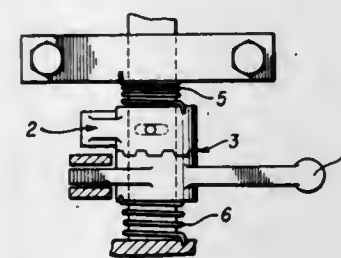
Filed Apr. 28, 1981, Ser. No. 258,315

Claims priority, application France, May 8, 1980, 80 10284; Oct. 17, 1980, 80 22235

Int. Cl.³ F02D 13/06

U.S. Cl. 123-198 F

11 Claims



1. A rocker mechanism for putting out of use at least one cylinder of an internal combustion engine, said mechanism comprising:

- a rocker shaft;
- at least one first rocker element pivotally mounted on said shaft, said first rocker element including a first meshing portion formed on a first axial face thereof and being adapted to control an inlet valve of a cylinder by the pivoting of said first rocker element on said shaft;
- at least one second rocker element pivotally mounted on said shaft, said second rocker element including a second meshing portion formed on a second axial face thereof facing said first axial face and being adapted to pivot in response to an engine cam shaft, wherein each said first rocker element is mounted on said shaft in an axially slidable manner, and wherein each said second rocker element is mounted on said shaft in an axially fixed manner and includes means for permitting relative angular movement between said shaft and each said second rocker element; and

control means mounted on a stationary portion of said engine for selectively axially moving said first rocker element such that said first and second meshing portions are meshing with one another, whereby said first and second rocker elements pivot as a single body.

4,429,854

DUAL SQUEEZE SEAL GLAND

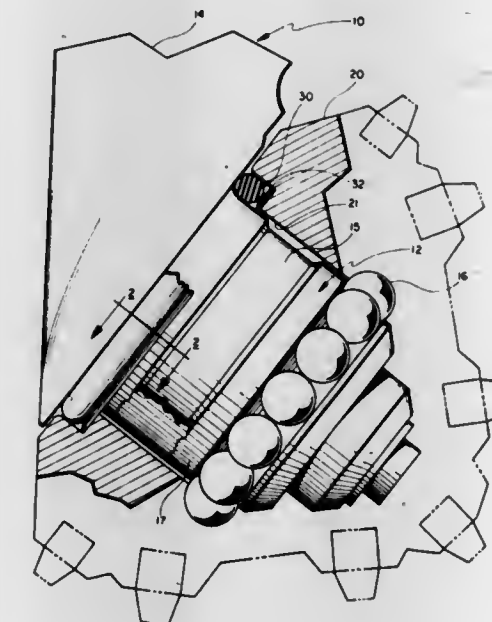
Nareshchandra J. Kar, Westminster, and Rao R. Nimmagadda, Fountain Valley, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 26, 1982, Ser. No. 444,549

Int. Cl.³ E21B 10/08

U.S. Cl. 384-94

4 Claims



4,429,855

HAND WHEEL FOR BOTTOM OPERATED TANK CAR VALVE

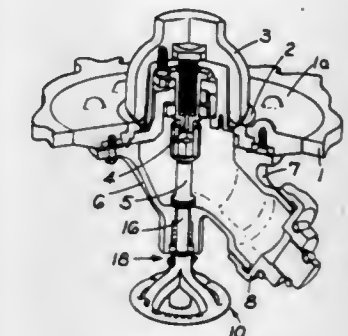
Angelo J. Buffone, Chesterfield, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,179

Int. Cl.³ F16K 51/00

U.S. Cl. 251-144

10 Claims



1. A connection arrangement for the lower portion of a tank bottom operating lading valve shaft wherein a tank lading valve is located within the tank and wherein the lading valve includes a downwardly extending operating shaft having a lower connection portion comprising: a hand wheel including an upper connection portion having a nonround slot to receive said operating shaft; hand wheel connecting means connecting the operating shaft to the hand wheel; said hand wheel including a body portion; said hand wheel body portion comprising a circumferential portion and a hub portion and wherein ribs extend between said circumferential portion and said hub portion; and wherein spaces are provided between said ribs; at least one nonround side opening extending through at least one of said ribs adapted to receive a generally horizontally extending operating tool; said hand wheel also including in its lower surface a bottom opening adapted to receive an operating tool whereby the attendant may utilize said ribs, said side opening and/or said bottom opening to rotate said hand wheel and said operating shaft to move said lading valve between open and closed positions.

4,429,856

INFLATION VALVE

Isaac S. Jackson, Greenwich, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,335

Int. Cl.³ F16L 37/28

U.S. Cl. 251-149.1

10 Claims



1. A two-piece valve comprising:
(a) a valve body having a longitudinal passage therethrough;
(b) said valve body being formed of a rigid material;
(c) said valve body including between the ends thereof an intermediate annular member extending inwardly from the wall of said passage and having a central opening therethrough;
(d) said annular member including a transverse wall at one

- side thereof and a valve seat at the other side thereof, and having a predetermined longitudinal distance between said transverse wall and said valve seat;
- (e) a valve element of flexible elastic material received within said longitudinal passage and movable therein;
- (f) said valve element including an enlarged portion at one end, a valve-seat-engaging portion having a diameter greater than that of said central opening at the other end, and an intermediate portion of a diameter less than the diameter of said central opening;
- (g) said valve element being compressible so that said valve-seat-engaging portion may be forced through said opening in said annular member and said enlarged portion may be compressed against said transverse wall; and
- (h) the longitudinal distance between said transverse wall and said valve seat of said annular member exceeding the longitudinal distance between said enlarged portion and said valve seat-engaging portion of said valve element, whereby the resilience of said compressed enlarged portion urges said valve-seat-engaging portion firmly against said valve seat in sealing engagement.

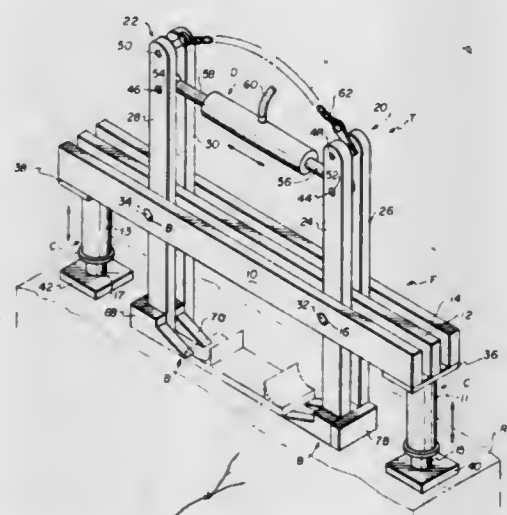
4,429,857

APPARATUS FOR INTEGRALLY REMOVING A TRACK PLATE AND SPIKES

W. Gardner Ferguson, 2518 Broad Ave., Altoona, Pa. 16601
Filed Jan. 26, 1983, Ser. No. 461,002
Int. Cl.³ B25C 11/00

U.S. Cl. 254—18

13 Claims



1. An apparatus for integrally removing a track plate and spikes secured to a tie, comprising:
- (a) three parallel spaced longitudinally extending frame members, each of said frame members having opposed ends;
- (b) bracket means secured to generally said frame members ends for fixedly aligning said frame members for defining a frame thereby;
- (c) cylinder and piston means secured to said bracket means extending transversely of said frame and including a tie contacting portion and being adapted for reciprocally displacing said frame;
- (d) each of said frame members having a pair of spaced apertures and each aperture of a frame member being aligned with an aperture of an adjacent frame member;
- (e) a pair of arms pivotally secured to said frame and each of said arms having upwardly and downwardly extending portions, each of said arms including a pair of arm members and having one of said frame members disposed between said arm members;
- (f) pin means pivotally securing said arms to said frame;
- (g) opposed piston cylinder and piston means pivotally secured to said upwardly extending portion of each of said arms for reciprocally pivoting said arms; and
- (h) opposed crowbar means secured to said downwardly extending portion of said arms each of said crowbar means

including a tie contacting portion and a track plate contacting portion whereby said track plate contacting portion adapted for being positioned between said track plate and said tie by pivoting of said arms for displacing said track plate and said spikes and whereby said cylinder and piston means upwardly displacing said frame for integrally removing said track plate and said spikes from said frame.

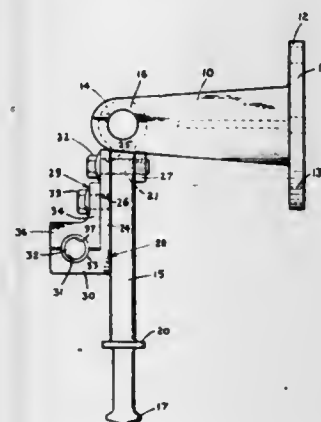
4,429,858

ELECTRICAL TRANSMISSION SYSTEM CONDUCTOR INSTALLATION TECHNIQUE

David R. Dunbar, Wilmington, N.C., assignor to Interpace Corporation, Whippany, N.J.
Division of Ser. No. 139,048, Apr. 10, 1980, Pat. No. 4,312,495.
This application Nov. 2, 1981, Ser. No. 316,794
Int. Cl.³ B65H 59/00

U.S. Cl. 254—134.3 PA

4 Claims



1. In a power transmission system comprising a pole for supporting a line conductor, a suspension insulator having a first end connected with the pole and a second end extending from said pole in a downward and outward direction, and a strut insulator extending from said pole to form a junction with the suspension insulator at the second end thereof, the improvement being a conductor erection system comprising:
- a bracket mounted to said junction of said insulators;
- a connector suspended from said bracket, said connector having an upper end and a lower end;
- a cable clamp detachably secured to said connector near said upper end thereof, said cable clamp having an aperture disposed with its axis parallel to the direction of said conductor and through which aperture a cable can be slid;
- a cable secured by said cable clamp, both ends of said cable being attached to the line conductor, said cable being slidably disposed within said cable clamp for raising said conductor;
- means for transferring load from the line conductor to said cable, said transferring means including a sheave assembly detachably securable to the lower end of said connector for temporary support of said conductor; and a conductor clamp securable to said line conductor for attachment of the line conductor to the lower end of said connector.

4,429,859

CONCENTRATED SOFTENING COMPOSITION FOR TEXTILE FIBERS

Jean-Pierre Steiner, Versailles; Christiane Melin, Courbevoie; Jean-Francois Platon, Courbevoie, and Nicole Peton, Ivry sur Seine, all of France, assignors to Lesieur-Cotelle & Associes, Boulogne Billancourt, France

Continuation of Ser. No. 262,269, May 11, 1981, abandoned.

This application Feb. 18, 1983, Ser. No. 467,863

Claims priority, application France, May 14, 1980, 8010905

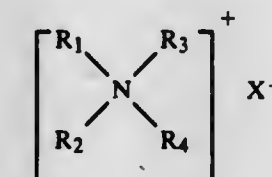
Int. Cl.³ D06M 13/20, 13/46

U.S. Cl. 252—8.8

11 Claims

1. A concentrated softening composition for textile fibers comprising:

12 to 30% by weight of the total weight of the composition as an active cationic softening agent at least one quaternary ammonium compounds having the general formula



wherein R₁ is a carboxy alkyl group having from 10 to 22 carbon atoms, R₂ is a carboxy alkyl group having from 10 to 22 carbon atoms, R₃ is an alkyl group having 1 to 3 carbon atoms, R₄ is an hydroxy alkyl group having 1 to 4 carbon atoms, and X is an anion selected from the group consisting of a halide, methylsulphate and ethylsulphate; at least one non-ionic emulsifying agent; one or more solvents selected from the group consisting of methanol, ethanol, isopropanol and glycol type solvents representing 5 to 12% of the total weight of the composition; said emulsifier and said solvent effective to give a viscosity below 400 mp/s to the mixed concentrate, a viscosity of 40–80 mp/s to the concentrate diluted by a 4:1 ratio, and improved stability to the softener composition.

4,429,860

RUNNER SYSTEM FOR TRANSFERRING MOLTEN METAL

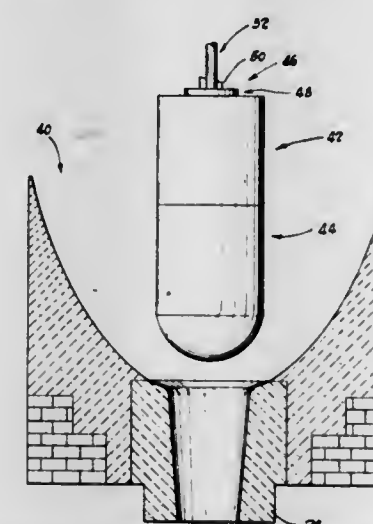
John Fischley, Chagrin Falls, Ohio, and Tom E. Anderson, Munster, Ind., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 24, 1982, Ser. No. 361,206

Int. Cl.³ C21B 7/14

U.S. Cl. 266—44

24 Claims



1. An apparatus for transferring molten metal during a smelting process from a blast furnace to bottle cars comprising:
- (a) a main runner extending from the furnace to a downstream end;
- (b) said main runner including a generally vertical opening

through which molten metal can flow through into a first bottle car station beneath the main runner; and

(c) a flow control means to block said opening so that when said opening is covered flowing molten metal will flow downstream past the opening and into another bottle car station near the downstream end of the main runner.

4,429,861

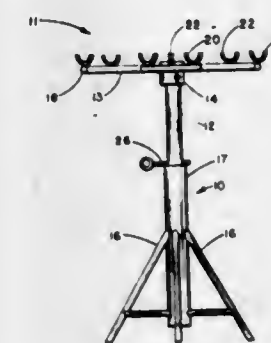
TOBACCO LEAF GRADING AND STRIPPING APPARATUS

Alfred P. Range, Rte. 14, Box 596, Johnson City, Tenn. 37601
Filed Nov. 19, 1980, Ser. No. 208,244

Int. Cl.³ B25B 1/20

U.S. Cl. 269—40

2 Claims



1. A tobacco leaf grading and stripping apparatus comprising base means, and tobacco stick hanger means rotatably mounted on said base means and comprising a plurality of individual arms extending outwardly from stanchion means in a spoke-like manner a distance close to or beyond the outer periphery of said base means, each of said arms being provided on its outer portions with support means, each said support means comprising a cross-member having cradle means thereon, the axes of adjacent cradle means of adjacent cross-members being in substantial alignment for jointly receiving and supporting both ends of a loaded tobacco stick in a generally horizontal posture.

4,429,862

APPARATUS FOR POSITIONING A WORKPIECE

Herbert Niedecker, Am Ellerhang 6, Königstein 2, Fed. Rep. of Germany 6240

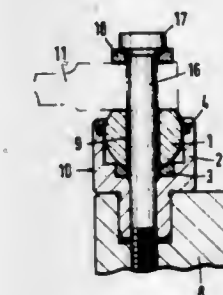
Continuation of Ser. No. 2,928, Jan. 12, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,882

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802791

Int. Cl.³ B23Q 1/00

U.S. Cl. 269—47

6 Claims



1. In a device for positioning and clamping workpieces in three dimensions, which are to be machined, comprising a carrier means carrying three positioning members and clamping means, the improvement wherein each of the positioning members comprises a spherical member having an upper flat plane surface for engaging a workpiece and a spherical seat for each spherical member, each spherical member being capable of limited rotational movement in its seat, at least one of the members being capable of limited rotational movement in its seat,

spherical members having an axial bore and a bolt with a threaded end, said bolt projecting through said axial bore centrally through said upper flat plane surface of said one spherical member, said bolt engaging with its threaded end said carrier means, said bolt forming said clamping means comprising a bolt head having a spherical lower surface facing down, and a washer having a lower flat surface and an aperture surrounded by an upper spherical surface facing up for cooperation with said spherical lower surface of said bolt head, said bolt also projecting through the aperture of said washer and sitting with its spherical lower surface on the upper spherical surface of said washer for clamping a workpiece directly between the upper flat plane surface of said one spherical member and said lower flat surface of said washer, said washer aperture and said axial bore both having a diameter larger than said bolt for a positional adjustment between said clamping means and a workpiece with a hole through which the bolt extends.

4,429,863

MANUAL/AUTOMATIC PAPER FEED MECHANISM IN A COPYING MACHINE

Fukusaburo Itoh; Kazushige Mizumoto, and Yoshikazu Nishikawa, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

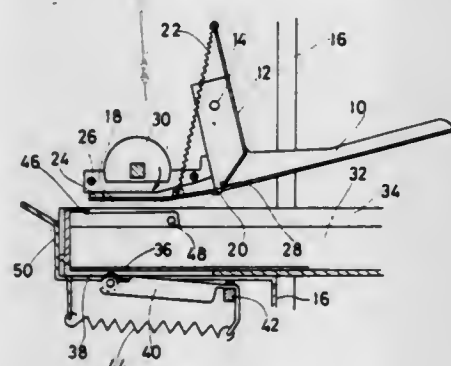
Filed Sep. 2, 1981, Ser. No. 298,540

Claims priority, application Japan, Sep. 10, 1980, 55-126251

Int. Cl.³ B65H 3/44, 1/12, 3/06

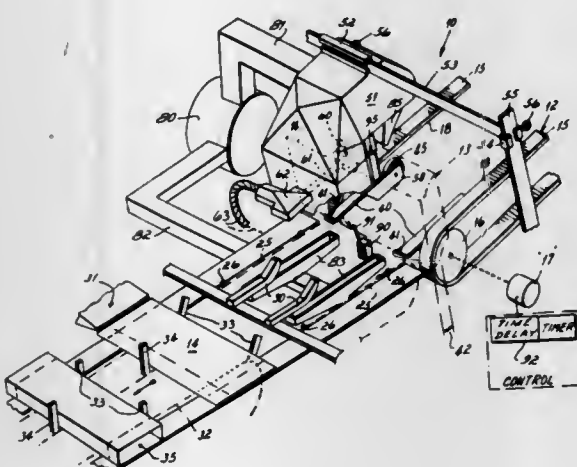
U.S. Cl. 271-9

4 Claims



1. A manual/automatic paper supply system for use in a copying machine comprising in combination:

- a paper feed system including a paper feed roller;
- a cassette holder for holding a copy paper cassette beneath said paper feed system;
- biasing means for directing copy paper contained in said copy paper cassette toward an operating region of said paper feed roller;
- a paper supply means for the manual feed of individual sheets of copy paper to said copying machine juxtapositioned to said paper feed system above said cassette holder said paper supply means comprising a manual paper supply guide plate and a paper feed guide plate, said paper supply means being capable of occupying a first position such that said paper feed guide plate is located beneath said paper feed roller for conducting the manual supply of copy paper to said copying machine upon selection of a manual paper feed mode, and a second position such that said paper feed guide plate is displaced from said operating region of said paper feed roller means upon selection of an automatic paper feed mode; said paper supply system being rotatably secured to said copying machine such that said paper feed guide plate will pivot from said first position to said second position and back to said first position, into and out of the operating region of said paper feed roller in response to the selection of said manual or automatic mode of operation; and
- a correlation means for disabling said biasing means when said paper supply means is located in said first position.



9. Apparatus for feeding flat folded cartons into a cartoner comprising,

- a generally horizontal conveyor for receiving a stack of cartons on their edges in a generally vertical orientation, a metering wheel at the downstream end of and above said conveyor,
- means for rotating said metering wheel from zero rpm to at least about 250 rpm,
- means for driving the conveyor to advance said cartons toward said metering wheel,
- a blade on the surface of said metering wheel said blade having a first section presenting a leading edge to slide between the upper edges of first and second leading cartons to thrust the edge of said carton forward from said stack to swing said cartons to a horizontal attitude,
- said blade having a second section spaced slightly downstream of said first section and presenting a surface to hold back the upstream cartons,
- said blade having a trailing edge spaced downstream from said leading edge for partially releasing said cartons,
- a horizontal feed chain forward of said conveyor and having spaced feed lugs for receiving cartons one at a time and advancing them into said cartoner,
- and a release plate downstream from said blade and formed as a part of a circle to capture cartons from said blade at low speeds and to release cartons in timed relation to said feed lugs on said chain.

12. Apparatus for feeding flat folded cartons into a cartoner comprising,

- a generally horizontal conveyor for receiving a stack of cartons on their edges in a generally vertical orientation, mechanical means for separating leading cartons from said stack, and
- a blower means for delivering separated cartons through approximately 90° to a generally horizontal attitude to a receiving conveyor associated with said cartoner,
- said mechanical means including a carton release member disposed adjacent said blower means for releasing cartons from said stack to be acted upon by said blower means

4,429,864

HIGH SPEED CARTON FEEDER

Eric W. Scarpa, Cincinnati, Ohio; Charles C. Hughes, Villa Hills, Ky., and Stanley F. Humbert, Cincinnati, Ohio, assignors to R. A. Jones & Co. Inc., Covington, Ky.

Filed Jun. 22, 1981, Ser. No. 276,081

Int. Cl.³ B65H 3/28, 5/22

U.S. Cl. 271-10

29 Claims

4,429,865

PAPER FEED DEVICE

Osamu Okada, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

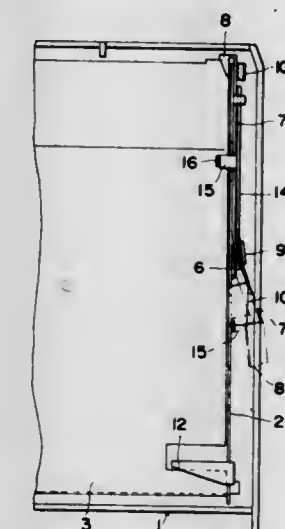
Filed Aug. 26, 1981, Ser. No. 296,356

Claims priority, application Japan, Sep. 11, 1980, 55-126792

Int. Cl.³ B65H 3/56

U.S. Cl. 271-170

7 Claims



1. A paper feed device comprising: a plate member for supporting a stack of sheets thereon; separating pawls turnably supported for movement toward and away from the top sheet of the stack and for lightly pressing on each of the forward end corners of the stack when moved toward the stack to the limit of turning movement; and means acting on the separating pawls as the pawls are turned away from the stack to a lifted position and displacing said separating pawls in a direction laterally away from the edge of the stack in response to the turning.

4,429,866

MOVING NIP CONSTANT VELOCITY DOCUMENT TRANSPORT

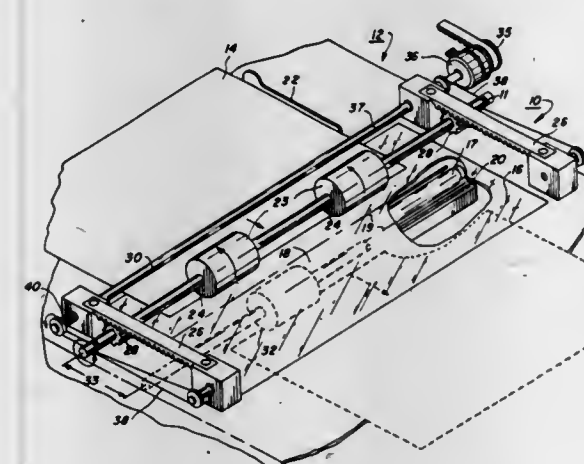
Victor Castro-Hahn, Fairfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1981, Ser. No. 315,791

Int. Cl.³ B65H 5/12

U.S. Cl. 271-266

8 Claims



1. In a document transport apparatus for transporting an original document sheet over the imaging station at a transparent platen of a copier, the improvement comprising: integrally movable roller unit means adapted to drivingly engage a document sheet on said platen from an initial position upstream of said imaging station, and driving means to both rotate and translate said roller unit means relative to said platen and in engagement with a document sheet and so as to translate said roller unit

means and a document sheet thereunder over and through said imaging station so that the roller unit means releases and ejects the document sheet trail edge downstream of said imaging station and after both said roller unit means and the document sheet have passed over and beyond said imaging station without imaging the roller unit or rubbing said transport platen with said roller unit in said imaging station and wherein said rotational movement of said roller unit means advances the lead edge of a document ahead of it before it enters the imaging station.

4,429,867

FLOTATION AMUSEMENT DEVICE

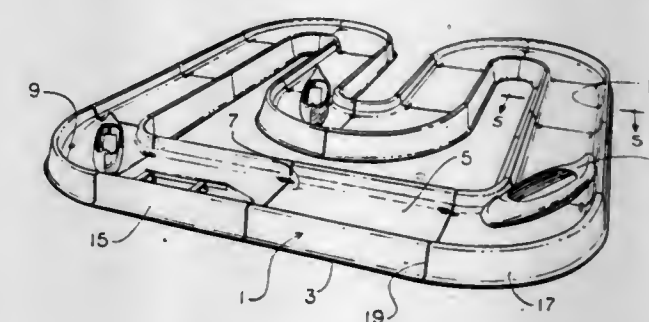
Jerry L. Barber, Greenville, S.C., assignor to Wayne P. Comstock, Greenville, S.C., a part interest

Filed Nov. 3, 1981, Ser. No. 317,769

Int. Cl.³ A63G 3/00

U.S. Cl. 272-32

8 Claims



1. A portable amusement device, comprising: a plurality of trough defining segments; each of said trough defining segments being formed with double side walls and end walls with said double side walls defining a hollow section to permit nesting of individual segments for shipment and storage; means for joining said segments to one another to form a continuous trough; pump means in at least one hollow section connected to said trough for moving an aqueous flotation medium through said continuous trough.

4,429,868

CALF STRETCHING DEVICE

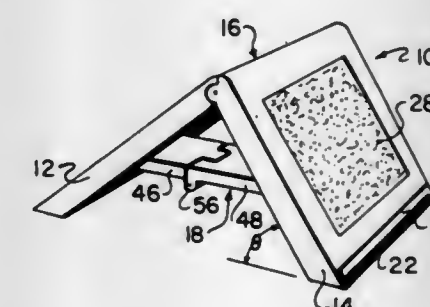
James S. LeBlanc, San Diego, and Alan K. Uke, Solana Beach, both of Calif., assignors to Paraflexor, San Diego, Calif.

Filed Sep. 3, 1981, Ser. No. 299,022

Int. Cl.³ A63B 23/04

U.S. Cl. 272-93

10 Claims



1. A device to aid a person using the device in stretching his or her calves, comprising: a pair of generally rectangular members each having an upper side, a lower side, a first longitudinal edge and a second longitudinal edge opposite the first longitudinal edge, at least one of the upper sides being dimensioned so that the distance between the first longitudinal edge and the second longitudinal edge is substantially equivalent to the length of the feet of the person using the device and so

that it has sufficient area to support both of the person's feet;
hinge means for connecting the members along their first edges and permitting relative swinging movement of the members; and
linkage means connected between the lower sides of the members for permitting the members to swing together and for limiting the amount that the members can swing apart so that when the second edges of the members rest on a floor, the one upper side will be inclined at a predetermined desired angle with respect to the floor;
whereby the person may stand on the one upper side with both of his or her feet upwardly inclined moving from heel to toe and his or her calves will be stretched.

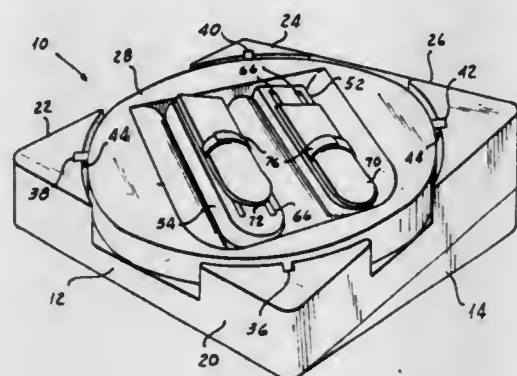
4,429,869

SKIER'S EXERCISE DEVICE

Arthur Eckstein, 47 Pinetree La., Roslyn Heights, N.Y. 11577
Filed Oct. 15, 1981, Ser. No. 311,775
Int. Cl.³ A63B 69/18

U.S. Cl. 272-97

5 Claims



1. Skier's exercise apparatus including in combination a turntable formed with a pair of generally parallel spaced elongated troughs, means mounting said turntable for rotary movement around a pivot axis located between said troughs, a pair of intermediate supports, means mounting said supports in said troughs for rotary movement around axes extending generally longitudinally of said troughs, a pair of foot-receiving plates, and means mounting said plates respectively on said supports for fore-and-aft sliding movement in the direction of said support axes.

4,429,870

PHYSICAL EXERCISING APPARATUS

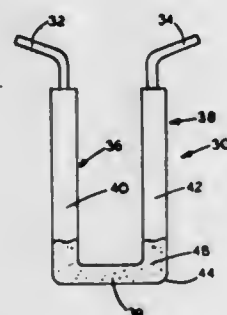
Thomas T. Gibbs, 1539 Edgeware Rd., Victoria, British Columbia, Canada V8T 2J6

Filed Jan. 27, 1981, Ser. No. 228,763

Int. Cl.³ A63B 21/06

U.S. Cl. 272-117

6 Claims



1. An exerciser comprising:
(a) a pair of elongate, parallel members having adjacent first ends and adjacent second ends opposite the first ends,
(b) a pair of handle members near the first ends of the parallel members, the handle members being elongate and extending outwardly from the parallel members and away from each other, a weight member, each of said handle

members comprising tubes with equal outside cross-sectional extents, the exerciser further comprising a cylindrical bearing surface on each said parallel member between the handle members and the weight member, the bearing surfaces having outside cross-sectional extents substantially greater than the outside cross-sectional extents of the handle member; said exerciser being gripped and moved doing various exercises, said bearing surface engaging the shoulders of a user; and
(c) said weight member interconnecting the parallel members near the second ends thereof and said weight member being substantially heavier than the parallel members.

4,429,871

HYDRAULIC EXERCISER

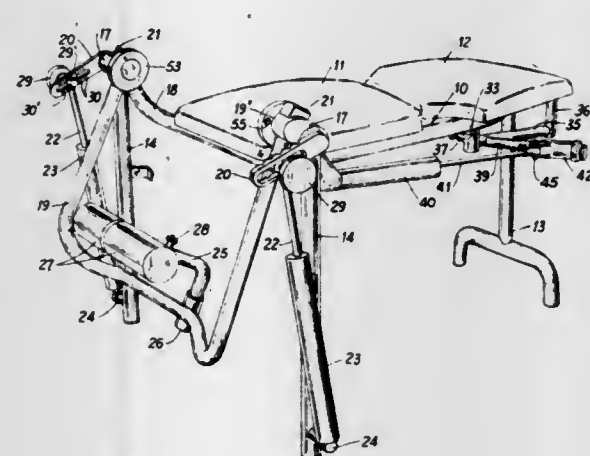
Paul F. Flechner, Costa Mesa, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,365

Int. Cl.³ A63B 21/10

U.S. Cl. 272-130

25 Claims



1. An exercise device, comprising a table, an exercise station at opposite ends of said table, said table being adapted to have a user of said exercise device seated at either end thereof or prone thereon in either lengthwise direction of said table, input exercise arms having hydraulic cylinder means for exerting a resistance to only one direction of motion connected to each input arm for resisting the motion of that arm in one direction at each of said stations, and said arms and cylinders being adapted at one of said stations for knee extension, leg curl, chest pull-over and chest press exercises, and at the other station for leg scissor, hip extension, shoulder raise and back pull-down exercises.

4,429,872

FOUL OR BASE LINES FOR ATHLETIC ACTIVITIES
Nickolas E. Capachi, 2459 Moorbrook Way, Sacramento, Calif. 95826

Filed Aug. 5, 1981, Ser. No. 290,111

Int. Cl.³ A63B 71/02

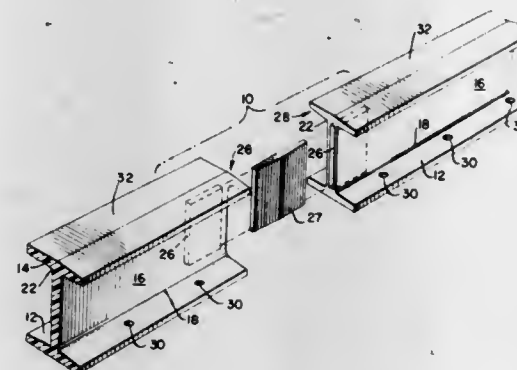
U.S. Cl. 273-25

6 Claims

1. A foul or base line segment of plastic or rubberized material suitable for installation in various fields of athletic activities comprising:

- a generally horizontally extending lower flange for installation in a field beneath ground or playing level;
- a generally horizontally extending upper flange which upon installation will be clearly visible at ground or playing level to demarcate fair and foul zones or areas, for example;
- an intermediate web extending generally vertically between said lower and said upper flanges and having a lower edge integral with said lower flange at about the transverse midsection of said lower flange, an upper edge integral with said upper flange at about the transverse

midsection of said upper flange, and retaining means formed in at least one end of said web; and
d. coupling means enclosed within and cooperating with said retaining means to couple said one end of said web to



4,429,874

GAME RACQUET FRAME

Robert E. Rodgers, Jr., Houston, Tex., assignor to Leach Industries, Inc., San Diego, Calif.

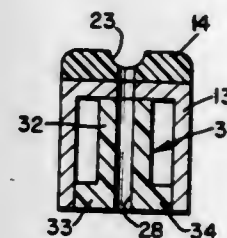
Division of Ser. No. 77,274, Sep. 20, 1979, Pat. No. 4,331,331.

This application Aug. 31, 1981, Ser. No. 298,261

Int. Cl.³ A63B 49/10, 49/12

U.S. Cl. 273-73 C

1 Claim



an end of a like foul or base line segment placed end-to-end with said foul or base line segment to extend it and to ensure installation at substantially the same level or height.

1. A game racquet comprising a preformed unitary synthetic plastic frame member having integral defined head and throat portions and a solid integral handle end portion, said head including a yoke extending adjacent the throat to complete a closed perimeter for the stringing area, a metal channel member having, in cross-section, a generally U-shaped configuration defined by a planar bottom wall and a pair of planar side walls, said bottom wall having a flat inner surface extending across the entire width thereof and said side walls having flat inner surfaces extending the entire length thereof, said metal channel member snugly extending over the outer periphery and opposite sides of said plastic frame member, said plastic frame member being in the form of an inverted T with the stem of the T abutting the flat inner surface of the bottom wall of said channel member, and with the lateral flanges of the T extending into abutment with and adhesively secured to said side walls of said channel member, and a bumper strip adhesively bonded upon and along the outer periphery of said channel member at least at said head portion.

4,429,873

TENNIS RACKET

Joris Van Raemdonck, Bazel, Belgium, assignor to Snauwaert En Depla N.V., Roeselare, Belgium

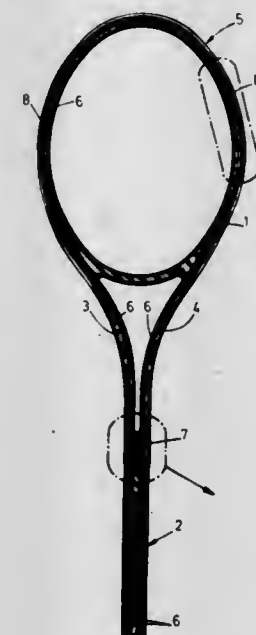
Filed Aug. 12, 1981, Ser. No. 292,246

Claims priority, application Belgium, Aug. 13, 1980, 201742

Int. Cl.³ A63B 49/10, 49/12

U.S. Cl. 273-73 F

11 Claims



1. Tennis racket comprising:

a frame;

a shaft;

said frame and said shaft being formed by synthetic fibres or synthetic resin-impregnated fibres;

an inner core, made of synthetic foam, encompassed by said fibres and at least one wooden layer reinforcing said synthetic foam;

a one portion of side of said at least one wooden layer in contact with said fibres; and

a portion of the other side of said at least one wooden layer in contact with said foam core.

4,429,875

GOLF CLUB

Robert Stanton, Rte. 44, Millbrook, N.Y. 12545

Filed Sep. 30, 1982, Ser. No. 429,065

Int. Cl.³ A63B 53/12

U.S. Cl. 273-81.2

4 Claims



1. A golf club comprising:

upper and lower tubular sections wherein said upper tubular section has a grip at one end and said lower tubular section has a head at one end requiring a predetermined alignment with said grip;

a coupler including upper and lower parts, said lower part being inserted in said lower tubular section at the end opposite said head and said upper part being insertable in

the lower end of said upper tubular section opposite said grip;
 a shaft inserted in said upper tubular section including exterior threading at its lower end and a shoulder at its upper end;
 said upper part of said coupler including interior threading cooperating with said exterior threading of the lower end of said shaft whereby coupling can be made by inserting said upper part of said coupler into the lower end of said upper tubular section and screwing said shaft into said coupler until said shoulder of said shaft is tight against said grip at the upper end of said upper tubular section; and
 aligning means including means integrally associated with said upper part of said coupler, and cooperating means associated with the lower end of said upper tubular section.

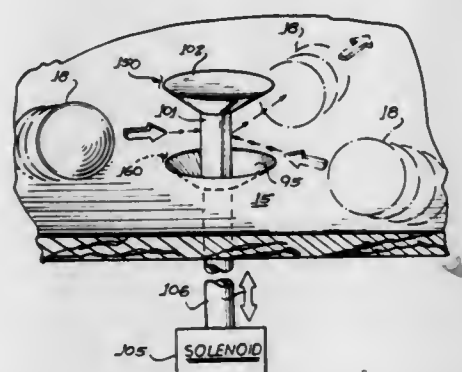
4,429,876

PINBALL MACHINE AND PLAY FEATURE THEREOF
 Ronald D. Halliburton, Delray Beach; James H. Pearson, Oakland Park, and Robert J. Sava, Miramar, all of Fla., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Dec. 24, 1981, Ser. No. 334,316
 Int. Cl.³ A63F 7/02, 7/30

U.S. Cl. 273-121 A

10 Claims



1. A drop target for use in conjunction with a playfield and a ball, comprising: a target member having a post and a flange atop the post, first means for positioning the flange and a portion of the post above the playfield so as to position the target in an up position responsive to a control stimulus and second means for positioning the target beneath and flush with the playfield so as to allow the ball to pass thereover unobstructed responsive to the collision of the ball from any direction with the target when the target is in the up position.

4,429,877

GAME OF CHANCE TO BE PLAYED IN CONJUNCTION WITH A BASEBALL GAME

C. Wallace Coppock, 920 Ely Blvd., South, Petaluma, Calif. 94952

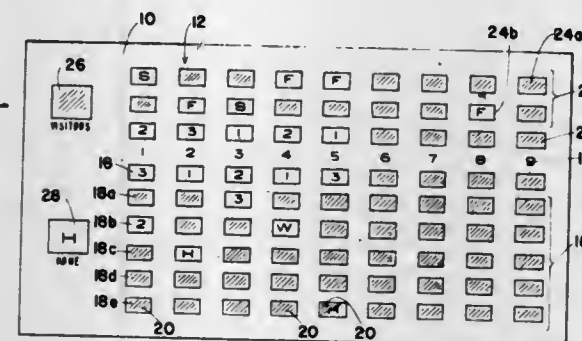
Filed Jun. 1, 1982, Ser. No. 383,739
 Int. Cl.³ A63F 9/00

U.S. Cl. 273-139

9 Claims

1. A game of chance to be played in conjunction with a baseball game comprising:
 a game card having a row of spaces delineated thereon to represent possible activities in an inning of a baseball game in play;
 one of three first marks in a first one of said spaces;
 said one first mark representing one of the three players of one team certain to bat in a given inning;
 at least one second space;
 a second mark in each second space;

each of said second marks indicating one of several accomplishments of a baseball player during a turn at bat; and



a removable mask covering each space in said row thereof to render a mark therein invisible.

4,429,878

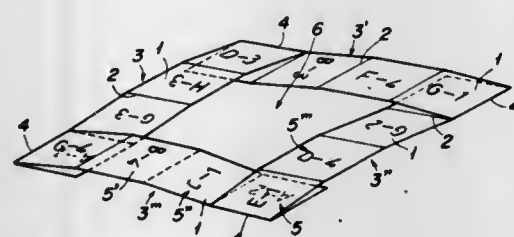
FOLDABLE PUZZLE CARDS

Noriji Asao, 607, Fuchu-cho, Fuchu-shi, Hiroshima-ken, Japan

Filed Oct. 15, 1981, Ser. No. 311,616
 Int. Cl.³ A63F 9/08

U.S. Cl. 273-155

5 Claims



1. A foldable puzzle card comprising four elongated rectangular strips, each including four equal card boards which are foldably connected with each other, said four strips being disposed to form a rectangular frame, and means for foldably interconnecting end card boards on both sides of one strip with end card boards on both sides of the other two strips extending perpendicularly to said one strip so as to cause interconnected end card boards of said one strip and of the other strips to overlap each other, front and rear surfaces of each card board being provided with predetermined patterns whereby by suitably folding said strips a desired pattern can be formed with patterns formed on said card boards.

4,429,879

SOLE PLATE INTERNAL SUSPENSION IN METAL SHELLS TO FORM METAL WOODS

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208

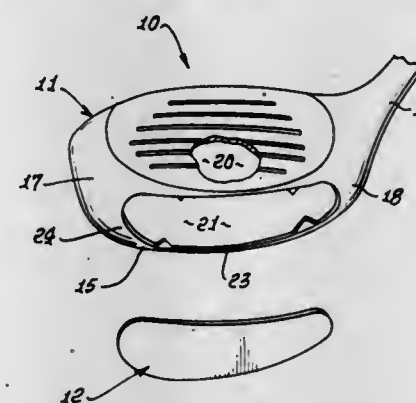
Filed Apr. 5, 1982, Ser. No. 365,148
 Int. Cl.³ A63B 53/04

U.S. Cl. 273-167 H

4 Claims

1. A golf club head having a hollow metal shell defining a front wall, a bottom wall, and top and back sides, said bottom wall having an opening therein, a metallic sole plate attached to said bottom wall thereby closing said opening and forming a hollow golf club head, the combination comprising:
 (a) ledge structure integral with the shell and adjacent a rim formed by said opening so that the ledge structure is in the shell hollow, in offset relation to the rim, said ledge structure defined by multiple ledges spaced about said opening and spaced apart from one another, and projecting toward the central region of said opening, said ledges spaced apart in pairs at opposite sides of an upright plane bisecting the head in a front to rear direction,
 (b) the sole plate located in said opening and supported solely

by portions of said ledges spaced from said rim to have close peripheral spacing from the rim,
 (c) the sole plate being peripherally connected to the shell rim by weld material which fills the spaces between the sole plate and the rim and engages said ledges,



(d) upright ribs integrally formed with said front wall, at least a first two of said ledges defined by the lower terminals of said ribs, and
 (e) said ledges spaced from the outer surface of said bottom wall and toward the hollow interior of the shell so that the sole plate outer surface is flush with said bottom wall outer surface.

4,429,880

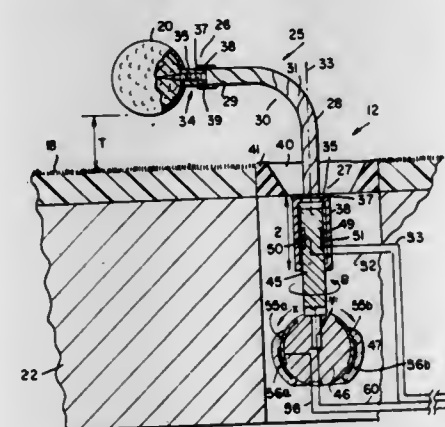
GOLF GAME SIMULATOR DEVICE

Richard M. Chen, 51-25 Goldsmith St., Elmhurst, N.Y. 11373, and Marvin Feldman, 788 Columbus Ave., New York, N.Y. 10025

Filed Jul. 31, 1981, Ser. No. 289,051
 Int. Cl.³ A63B 69/36

U.S. Cl. 273-176 FA

18 Claims



17. A golf simulator comprising:
 means to mount a golf ball so that the ball can be struck by a golf club in putting, chipping, or driving; said mounting means comprising means to permit movement of said mounting means in response to the impact of the club on said ball; means operably interconnected to said golf ball mounting means to actuate a first electrical signal responsive to the movement of the mounting means upon impact of the ball and a second electrical signal at a finite time after said impact; computer means to compute the difference in said signals so as to provide data for said ball as if the ball were in respective putting, chipping, or driving movement, said data including golf ball loft data from said signals from said movement; means to input golf course data comprising fairway and green images to said computer so that said computer computes said golf course data and said golf ball putting, chipping or driving movement data; and visual display means to visually display the fairway and green images and the golf ball data being disposed on the fairway or green image.

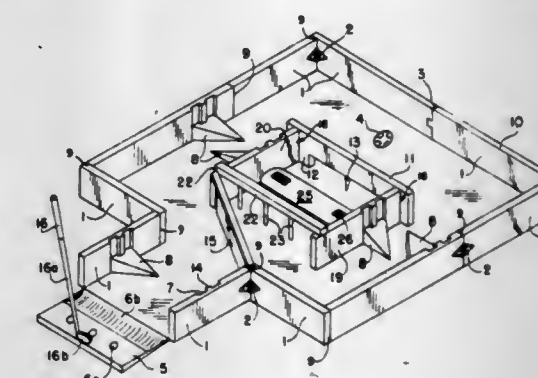
4,429,881
PORTABLE GOLF GAME

Kenneth A. Barrett, 110 Pine St., Florence, Northampton, Mass. 01060

Filed Sep. 2, 1981, Ser. No. 298,782
 Int. Cl.³ A63B 69/36

U.S. Cl. 273-176 F

15 Claims



1. A portable golf game comprising of an outer perimeter fence formed in the shape of a rectangle, consisting of modular rectangular blocks hinged together by strap means on each side thereof and of a height to contain a conventional golf ball, a starting area having a rectangular block fence on each side connected to the perimeter fence, an opening in said perimeter fence whereby a golf ball may enter within the perimeter of said fence from the said starting area, a tongue and groove means for interconnecting the perimeter fence to the rear of the rectangular block of the starting area, a middle section located within the center area of the inside of said perimeter fence, said middle section having a first tunnel board parallel to the rear fence, a left leg parallel to the left outside fence, a right leg parallel to the right outside fence, said right leg and said left leg connected to said tunnel board, and of the same height as said outside fence, means for rigidly securing said legs to said tunnel board, whereby three fairways are formed, and a circular plate of the size of a golf ball simulating a hole whereby the ball may be contained therewithin, said perimeter fence being in five hinged connected segments on each side thereof whereby said sections may be folded up and stored in a small area adapting same to being easily assembled, disassembled and carried out to different locations.

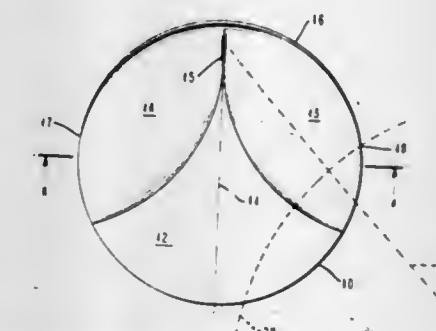
4,429,882

GOLF PUTTING TARGET

Robert Stanton, Rte. 44, Millbrook, N.Y. 12545
 Filed Sep. 30, 1982, Ser. No. 429,066
 Int. Cl.³ A63B 69/36

U.S. Cl. 273-177 R

2 Claims



1. A golf putting target comprising:
 a solid circular base;
 a vertical back wall integral with said base and extending around a portion of the circumference of said base;
 said base having increasing thickness from the front thereof to the back along a center line corresponding with the path of

a properly putted golf ball and forming an upward slanting flat ramp, said ramp decreasing in width from the front of said base to the back; and
 a downward sloping ramp on both sides of said center line from the top of said upward slanting ramp on said base to the side of said base, whereby the intersection of said upward slanting flat ramp and said downward sloping ramps form a ridge along said center line.

4,429,883

LABYRINTH SEAL CONSTRUCTION

Keiichi Nakanishi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 141,971, Apr. 21, 1980, abandoned.

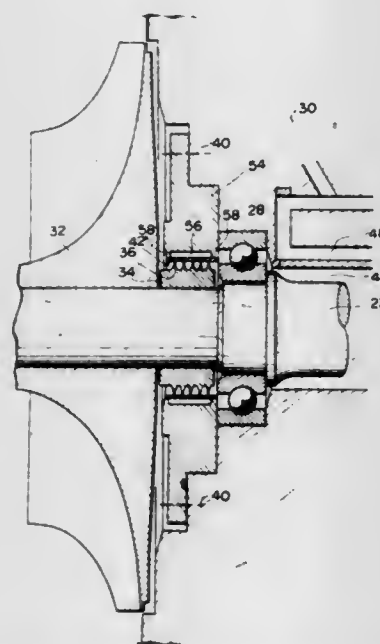
This application Aug. 19, 1981, Ser. No. 294,386

Claims priority, application Japan, May 8, 1979, 54-60125[U]

Int. Cl.³ F01D 11/08

U.S. Cl. 277-53

3 Claims



1. A labyrinth seal construction arranged in a device having a housing and a rotatable shaft which is rotatable about its axis relative to said housing, said labyrinth seal construction comprising:

a first annular metal member spacedly and coaxially disposed about said rotatable shaft and secured to said housing;
 a second annular metal member coaxially and securely disposed on said rotatable shaft to define an annular gap between the inner cylindrical surface of said first annular metal member and the outer cylindrical surface of said second annular metal member, one of said first and second annular metal members being formed at the cylindrical surface facing toward the annular gap with an annular groove leaving two spaced annular side banks by which said annular groove is defined, said annular groove being coaxial with the rotatable shaft;

a resilient metal sleeve consisting of a single plate having a width sufficient to span said spaced side banks of the grooved metal member and being coaxially and securely disposed on the tops of said side banks so as to enclose said annular groove; and

a plurality of annular projections formed on the cylindrical surface of the other one of said first and second annular metal members to project toward the cylindrical surface of said resilient metal sleeve so that upon rotation of said rotatable shaft, relative rotation between said annular projections and said resilient metal sleeve occurs with tops of said annular projections directed toward the cylindrical surface of said resilient metal sleeve to provide a labyrinth seal effect therebetween.

4,429,884 STERN TUBE FACE SEAL WITH FUNNEL-SHAPED PACKING

Sotosuke Matsumoto, Kawagoe, Japan, assignor to Eagle Industry Co., Ltd., Tokyo, Japan

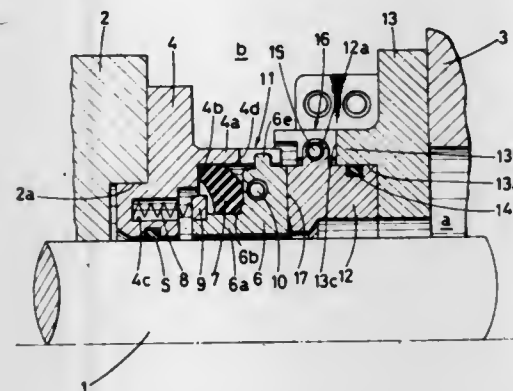
Filed Mar. 9, 1983, Ser. No. 473,487

Claims priority, application Japan, Mar. 17, 1982, 57-40728

Int. Cl.³ F16J 15/38

U.S. Cl. 277-93 SD

1 Claim



1. A stern tube seal characterized in that an annular housing fitted in a rotating shaft is integrally formed with an axially and rearwardly extending flange, a rotatable and slidable ring having a section of approximately L-shape and a small diameter portion at a front end thereof is arranged at an inner peripheral position of said flange, said rotatable and slidable ring and said flange of said housing having engaging means to prevent relative movement in a rotating direction, said rotatable and slidable ring is biased by means of coiled springs axially and frontwardly, and a packing having a shape of approximately funnel formed of an elastic material such as rubber is interposed between a shoulder portion in the outer periphery of said rotatable and slidable ring and a shoulder portion in the inner periphery of the flange of said housing.

4,429,885

SPACER AND EXPANDER MEMBER FOR HOLDING AND BIASING PISTON RING RAILS

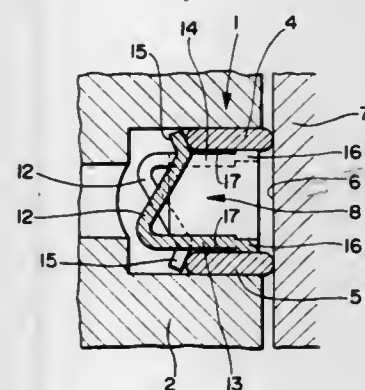
Ko Chiba; Hajime Yamauchi; Yoneo Kawauchi, and Yukio Ikeda, all of Kashiwazaki, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,177

Int. Cl.³ F16J 9/06, 9/20

U.S. Cl. 277-140

3 Claims



1. A piston ring assembly comprising a pair of rails having cylinder-engaging rounded faces and a spacer and expander member for holding said rails in axially spaced relation and for expanding said rails radially outwardly, said spacer and expander member being constructed of corrugated sheet metal having upper and lower crowns and connecting portions continuously connecting said crowns, each said upper crown being provided at its inner portion with an arm extending downwardly to engage the inner periphery of said rail supported on

said lower crown, each said lower crown being provided at its inner portion with an arm extending upwardly to engage the inner periphery of said rail supported on said upper crown, each said arm being tapered in width and provided at its tip with an enlarged rail receiving portion, said arms extending alternately upwardly and downwardly from said lower and upper crowns and being inclined radially outwardly to provide a resilient spring-like action, the rail receiving portions of said arms being inclined radially inwardly.

4,429,886

FLEXIBLE PIPE GASKET

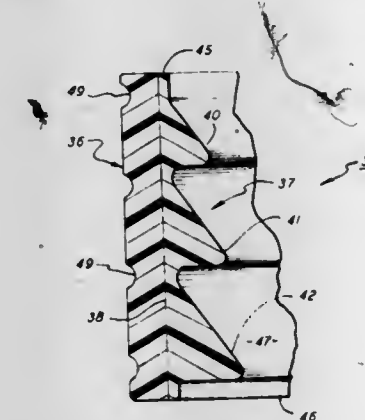
Robert C. Buttner, Syracuse, N.Y., assignor to Concrete Pipe & Products Corp., East Syracuse, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,928

Int. Cl.³ F16S 15/32

U.S. Cl. 277-207 A

8 Claims



1. A resilient gasket for providing a fluid tight seal between a concrete pipe and the wall of a circular receiving hole formed in a second concrete member, said gasket including an outer ring having a smooth outside diameter that is at least as large as the diameter of the receiving opening and an inside diameter that is greater than the pipe diameter, said ring being formed of a resilient material having a mass that is sufficient to support the ring in a circular condition within the hole and apply a deforming pressure to compress the ring against the wall of the hole about the entire periphery thereof, the resiliency of said ring being such as to permit the ring to be collapsed inwardly upon itself so that it may be inserted and removed from the hole, and an inner finned section axially aligned within the ring having a plurality of axially spaced circular fins disposed inwardly into a central opening, each fin having an inside diameter that is less than said outside diameter of the pipe, said fins also being formed of a resilient material so that added sealing pressure is applied to the ring when the pipe is passed into the opening.

4,429,887

4-JAW WORK HOLDING LATHE CHUCK

Bernard Smith, 33 Bagshawe Avenue, Chapel-en-le-Frith, Stockport, Cheshire SK12 6SE, England

Filed Nov. 3, 1981, Ser. No. 317,860

Claims priority, application United Kingdom, Nov. 29, 1980, 8038413; Apr. 8, 1981, 8111074

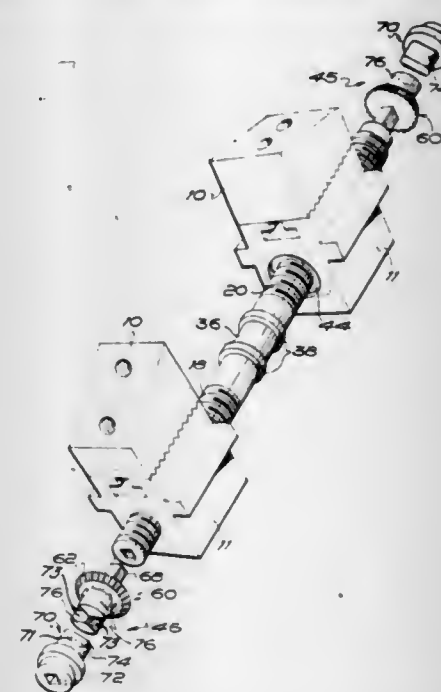
Int. Cl.³ B23B 31/16

U.S. Cl. 279-112

8 Claims

1. A 4-jaw work holding rotary chuck comprising a body part with oppositely disposed radiating guides; respective jaws slidably adjustable along said guides; a pair of adjusting screws extending diametrically across the body part and each extending through a pair of opposed jaws, each adjusting screw having a right-hand thread at one end and a left-hand thread at the other end for adjusting the respective pair of jaws with equal and opposite movement, the adjusting screws being disposed in mutually offset planes and crossing each other at the axis of the chuck so that each adjusting screw can be operated independently of the other for adjusting the associ-

ated pair of jaws relative to the other pair; means for effecting a relative adjustment of one of each pair of jaws relative to the other jaw of such pair, said means being operable independently of said adjusting screws and comprising a pair of sleeves associated with respective ones of the adjusting screws, each sleeve being mounted on one end of its associated adjusting screw and being internally screwthreaded for engaging the screwthread at that end of the screw and externally screwthreaded, with a screwthread of opposite hand, for engaging the jaw which is mounted on that end of the screw; a pair of lockable driving means for rotatably driving respective ones of said sleeves, each driving means comprising a rotary driving member arranged for non-rotatably engaging said body part of



the chuck and being movable relative to its associated sleeve out of non-rotary engagement with said body part; spring means for yieldably urging said driving member into non-rotary engagement with said body part; and a pair of rotatable torque applying means being provided for rotating said driving members, each torque applying means comprising a driving surface arranged in lost motion rotary driving connection with a driven surface of the associated spring loaded driving member, and cam means on said associated torque applying means for engaging and displacing said driving member along the axis of the associated sleeve and out of non-rotary engagement with said body part during lost motion rotation of said driving surface relative to said driven surface so that said driving member becomes rotatable by said driving surface.

4,429,888

TOY DUMP TRUCK

Shane-Mau Wu, 107 Shin An Rd., Shihlin, Taipei, Taiwan

Filed Dec. 22, 1981, Ser. No. 333,436

Int. Cl.³ B62K 9/00

U.S. Cl. 280-1.11 R

8 Claims

8. A rideable toy dump truck comprising:
 a frame;
 plural wheels journaled to said frame for supporting said dump truck for rolling movement across a surface;
 a dump bed, pivotably mounted on said frame, for moving between a raised position and a lowered position;
 drive train means, manually operable by a rider, for providing a driving force to predetermined one of said wheels to move said dump truck across said surface and to move said dump bed between said raised and lowered positions, said drivetrain means including:
 a rotatable drive shaft;
 input means, journaled to said drive shaft, for allowing said rider to induce said drive shaft to rotate, said input

means comprising pedal means, journaled to said frame, for accepting force manually applied by the feet of said rider;

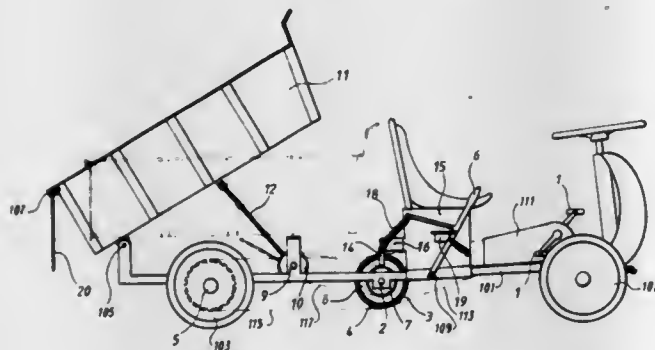
propulsion means, journaled to said drive shaft, for transmitting driving force to said predetermined ones of said wheels; and

dumping means, journaled to said drive shaft, for transmitting force to move said dump bed between said raised and lowered positions;

clutch means, operably associated with said drive train means and manually operable by said rider, rotatable with said drive shaft and reciprocally movable to a go position or to a dump position, for engaging said propulsion means while in said go position to effect operative union between said propulsion means and said drive shaft, and for engaging said dump means while in said dump position to effect operative union between said dump means and said drive shaft, said clutch means including

a propulsion sprocket, journaled to said drive shaft, capable of rotational movement independent of said drive shaft but incapable of substantial rectilinear movement along said drive shaft, for transmitting rotational force to said propulsion means;

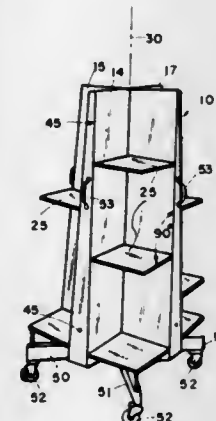
a dump sprocket, journaled to said drive shaft, capable of rotational movement independent of said drive shaft but



4,429,889
STACKING CART
Dan P. Westra, Grand Haven, Mich., assignor to The Challenge Machinery Company, Grand Haven, Mich.
Filed Feb. 8, 1982, Ser. No. 346,758
Int. Cl.³ B62B 3/10

U.S. Cl. 280—79.1 A

21 Claims



1. A stacking cart for sheet material comprising:
 - a generally horizontally extending movable stand having a centrally located vertical axis;
 - a plurality of vertically oriented, substantially identical, troughs having first and second sides defining a generally V-shaped cross section, said V-shaped trough being disposed on said stand, said V-shaped troughs being provided with top ends and lower ends;
 - a plurality of generally horizontally extending shelves disposed in said V-shaped troughs;
 - means for mounting said shelves to extend in a direction generally orthogonal to said first and second sidewalls of said V-shaped troughs;
 - means for securing said V-shaped troughs in a back-to-back relationship, each of said V-shaped troughs being disposed in an inclined relationship with respect to said centrally located vertical axis, said top ends of said V-shaped troughs being inwardly disposed relative to said lower ends of said troughs, whereby paper products disposed on said shelves are gravity biased inwardly toward said centrally located axis; and
 - said means for securing said v-shaped troughs in back-to-back relationship comprising at least one vertically oriented flange disposed on one of said first and second sides of said V-shaped troughs.

4,429,890
FOLDABLE AND PORTABLE VEHICLE
David T. Hon, Los Angeles, Calif., assignor to Hon Corporation, Los Angeles, Calif.
Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,433
Int. Cl.³ B62M 1/02; B62K 15/00

U.S. Cl. 280—259

15 Claims

incapable of substantial rectilinear movement along said drive shaft, for transmitting rotational force to said dumping means;

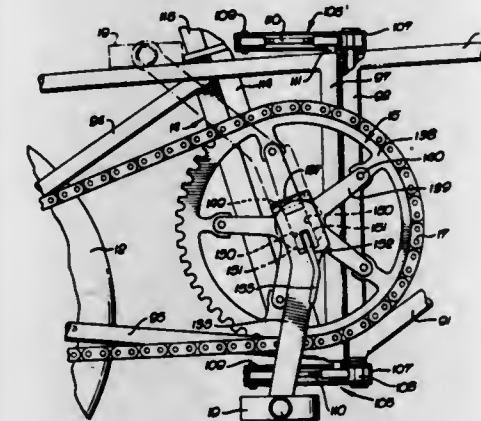
a sleeve, journaled to said drive shaft, located between said propulsion sprocket and said dump sprocket, for moving in a reciprocal rectilinear motion along said drive shaft to contact said propulsion sprocket or said dump sprocket;

first mating means for selectively coupling said sleeve with said propulsion sprocket including a first plurality of protrusions extending from a surface of said propulsion sprocket, and a second plurality of protrusions extending from a surface of said sleeve, said second plurality of protrusions being disposed on said sleeve surface to engage said first plurality of protrusions when said sleeve is brought in contact with said propulsion sprocket; and

1. In a foldable and portable bicycle, a pedal/sprocket assembly comprising:
 - a crankshaft rotatably mounted on the bicycle to rotate about a sprocket axis and having opposite ends disposed along opposite sides thereof, and a sprocket mounted on said crankshaft on one side of the bicycle;
 - two cranks having inner end portions overlying the opposite ends of said crankshaft and having outer end portions extending generally radially outwardly from the crankshaft along said opposite sides in normal operating positions, each of said cranks having a pedal on its radially outer end projecting laterally outwardly therefrom;
 - means drivingly connecting each of said cranks to said crankshaft to turn the latter and said sprocket, and also for folding from said normal operating positions generally reversely

across the crankshaft to folded positions in which said pedals project laterally inwardly;

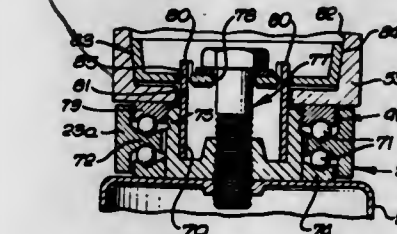
each of said cranks having a bend between the inner and outer ends portions thereof offsetting the outer end portion rearwardly from a true radial position whereby the crank folds



into a folded position that is other than directly opposite the normal operating position, for location of the inwardly projecting pedal on the bicycle;

and means for latching each pedal releasably in the normal operating position.

4,429,891
FOLDABLE AND PORTABLE VEHICLE
David T. Hon, Los Angeles, Calif., assignor to Hon Corporation, Los Angeles, Calif.
Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,556
Int. Cl.³ B62K 15/00, 21/06
U.S. Cl. 280—278

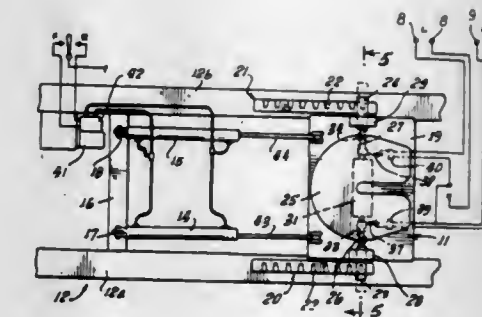
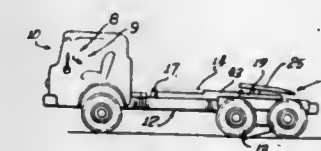


1. A foldable and portable bicycle comprising:
 - a foldable frame having a front end;
 - a handlebar assembly normally extending upwardly from said front end and supported for folding into a lowered position below said front end;
 - a front wheel support extending downwardly from said front end to support a front wheel of the bicycle;
 - connecting means joining said handlebar assembly to said front wheel support;
 - a steering bearing rotatably supporting said handlebar assembly and said front wheel support on said frame, said bearing comprising a narrow arcuate housing secured to said front end and forming a front wheel support and bearing housing; and
 - bearing elements in said housing between the latter and said connecting means, said bearing having relatively short axial length and a diameter substantially greater than said axial length whereby the bearing reduces the folded height of the frame while remaining effective to sustain the loads encountered in use.

4,429,892
SLIDING FIFTH WHEEL
William H. Frampton, 17119 Clarkdale, Artesia, Calif. 90701, and Alfred M. Bos, 10123 Palm St., Bellflower, Calif. 90706
Filed Jun. 25, 1981, Ser. No. 277,247
Int. Cl.³ B62D 53/08

U.S. Cl. 280—407

6 Claims



1. A device for attachment to a tractor for selectively moving the fifth wheel assembly with respect to the drive wheel of the tractor, said tractor having a frame including a cross member, two side rails, each side rail having a guide member which holds one side of a fifth wheel platform in a manner which allows longitudinal movement of the platform, the guide members also having locking means, said device comprising:
 - a first drive member affixed at one end to said cross member held by the two side rails and at the other end to the fifth wheel platform;
 - a second drive member affixed at one end to a cross member held by the two side rails and at the other end to the fifth wheel platform;
 - means for selectively extending or contracting the first and second drive members, said means for extending or contracting having activating means located in the cab of the tractor rig; and
 - locking means affixed to said fifth wheel platform and to the side rails of the tractor comprising a first row of lock notches affixed to one of the side rails of the tractor frame and a second row of lock notches affixed to the other of the two side rails of the tractor frame and a pair lock lug means affixed to lock bars which lock lug means are moveable between a first position in which each lock lug is held by at least one of the lock notches in each of the rows and a second position where the lock lugs are disengaged from any of the lock notches in both rows; and
 - indicator means located in the cab of the tractor to indicate when said locking means of the fifth wheel assembly are in a locked or unlocked configuration, whereby the operator may unlock the fifth wheel assembly, activate the first and second drive members to cause the drive members to extend or contract and cause the platform to slide with respect to the drive wheel and lock the fifth wheel assembly without leaving the cab of the tractor and without locking the wheels of the trailer.

8 Claims

4,429,893

BOAT TRAILER

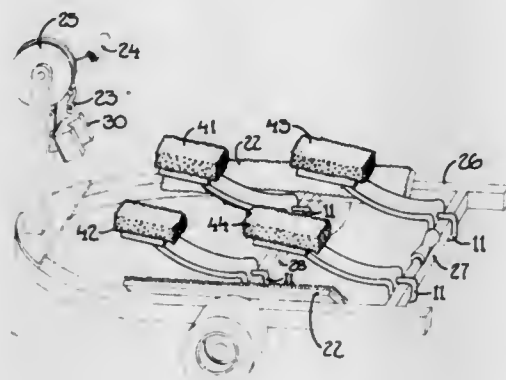
Anthony Palamara, 7559 Calle Granada, Anaheim, Calif. 92807

Filed Apr. 5, 1982, Ser. No. 365,503

Int. Cl.³ B60P 1/46

U.S. Cl. 280—414.1

4 Claims



1. A boat trailer with cross member means, padded means located on both sides parallel to the sides of the trailer and five inches above the wheels to permit said cross member means to contain the boat hull in a final resting position, four automotive leaf springs 40 inches long, one end bent at a 90 degree angle and fastened with attachment means to the outside one-third of the cross members of the trailer, the unattached end tilted inward and attached to padded block means which interact with the boat hull urging it inward toward the center during launching and recovery, and winch means to haul the boat into final position on the trailer.

4,429,894

FASTENING DEVICE FOR A TRAILER AND TRAILER COMPRISING SUCH A DEVICE

Alain Feuvray, 21 rue de Lattre de Tassigny, 71100 Chalon sur Saone, France

PCT No. PCT/FR80/00001, § 371 Date Aug. 28, 1980, § 102(e)

Date Aug. 28, 1980, PCT Pub. No. WO80/01372, PCT Pub. Date Jul. 10, 1980

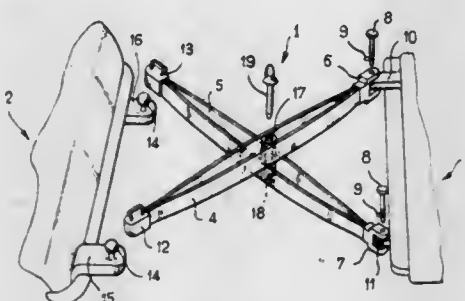
PCT Filed Jan. 2, 1980, Ser. No. 214,052

Claims priority, application France, Jan. 3, 1979, 79 00077; Jan. 2, 1980, 80 00001

Int. Cl.³ B60D 1/14

U.S. Cl. 280—458

2 Claims



1. A trailer having wheels and a coupling device comprising two crossed arms each including a first end articulated to the trailer and a second end adapted to be hooked to a towing vehicle, an orifice formed in each of said arms at the point where the arms cross when the towing vehicle and the trailer are aligned, a bolt removably engaged in these two orifices coaxially aligned to lock the crossed arms together in a symmetrical position with respect to the longitudinal middle plane of the trailer, pivots fixed to the trailer, the wheels of the trailer being rotatably mounted on said pivots about axes disposed rearwardly of the axes of the pivots so that the wheels of the trailer are oriented around said pivots to follow the path of the front wheels of the towing vehicle.

4,429,895

ADJUSTABLE TRAILER HITCH ASSEMBLY

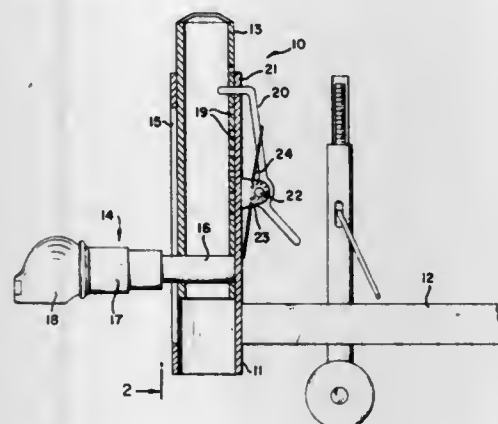
Ronald W. Hunter, 7280 Nevada La., Colorado Springs, Colo. 80908

Filed Oct. 19, 1981, Ser. No. 312,861

Int. Cl.³ B60D 1/06

U.S. Cl. 280—490 R

1 Claim



1. An adjustable trailer hitch assembly, comprising, in combination, a cross-sectionally square sleeve secured fixedly in vertical position on a forward end of a trailer tongue, a correspondingly cross-sectional square tubing adjustably slidable vertically in said sleeve, said tubing carrying a forwardly extending ball hitch arm, for attachment to a towing vehicle, said arm extending through a vertical slot of said sleeve, and means for elevating said ball hitch arm in height for selectively tilting or leveling a towed trailer, said means comprising a coarse adjustment and a fine adjustment, said coarse adjustment comprising a latch bolt supported on said sleeve engaging a selected one of a vertical row of holes on said tubing, and said fine adjustment comprising a threaded opening through a bottom plate affixed to a lower end of said tubing, and an upwardly extending screw for adjustable engagement in said threaded opening, said screw being secured to said ball hitch arm, and being longer than a distance between an upper edge of said sleeve and an upper edge of said slot, so that said engagement is accomplished when said square tubing is slid upwardly outside said sleeve for rotation relative to said screw.

4,429,896

STEP-IN SKI BINDING

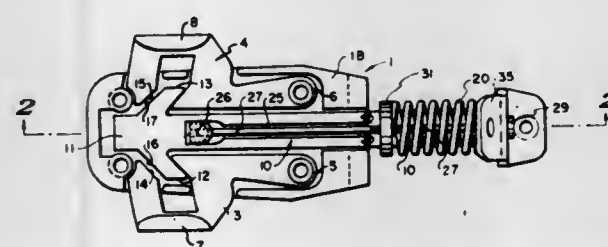
Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation of Ser. No. 1,688, Jan. 8, 1981, abandoned. This application Sep. 1, 1981, Ser. No. 298,392

Int. Cl.³ A63C 9/10

U.S. Cl. 280—624

32 Claims



1. In a step-in binding with a movable clamping member having an open position for disengaging a ski boot and a ski and a closed position for engaging a ski boot and a ski, an improvement comprising: a step-in member; means mounting the step-in member for movement from a clamp-opened position to a clamp-closed position and from the clamp-closed position to a clamping force applied position, said step-in member functioning to be moved into the clamp-closed position

and then the clamping force applied position as the ski boot progressively displaces the step-in member; a connecting member; means coupling said step-in member and said connecting member; a spring member; means coupling said spring member and said connecting member; and means coupling said spring member and said movable clamping member for closing said movable clamping member and thereafter causing said spring member to apply a clamping force to said movable clamping member as said step-in member is moved by said ski boot from said clamp-opened position through said clamp-closed position to said clamping force applied position, there being no substantial clamping force applied by the spring member to said clamping member when said step-in member is in said clamp-open position.

26. In a step-in binding with a movable clamping member having an open position for disengaging a ski boot and a ski and a closed position for engaging a ski boot and a ski, an improvement comprising: a step-in member; a connecting member; means coupling said step-in member and said connecting member; a spring member; means coupling said spring member and said connecting member; and means coupling said spring member and said movable clamping member for closing said movable clamping member and thereafter applying a clamping force to said movable clamping member as said step-in member is moved from a clamp-opened position through a clamp-closed position to a clamping force applied position, said means coupling said spring member and said clamping member comprising a movable linkage assembly movable between a clamp-opened position and a clamp-closed position for moving said movable clamping member to its clamp-closed position and thereafter applying said clamping force thereto as said movable linkage assembly is moved to its clamp-closed position, said means for coupling said connecting member to said step-in member and said spring member comprising means for moving said linkage assembly from its clamp-opened position to its clamp-closed position as said step-in member is moved from its clamp-opened position to its clamp-closed position.

4,429,897

VARIABLE TERRAIN DOLLY

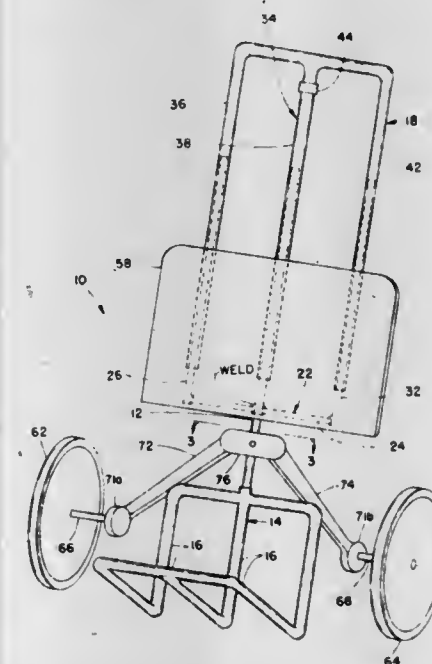
Donald M. Friedman, 8 Glenwood Dr., Hauppauge, N.Y. 11788, and Fred M. Monner, 21 Pimlico Dr., Commack, N.Y. 11725

Filed Feb. 5, 1982, Ser. No. 346,016

Int. Cl.³ B62B 1/12

U.S. Cl. 280—646

5 Claims



1. A load carrying utility cart adapted for multi-terrain usage

and for travel over a sandy or rocky surface, in particular, comprising:

- a chassis comprising an elongated, tubular member with load supporting means mounted on the lower end thereof directed frontwardly and a frame of extensible tubular members mounted in a flat array on said chassis for permitting an extension of the upper end thereof, said frame forming a back for said chassis to aid in the support of said load;
- foldable shelf means mounted on said chassis adjacent the lower end of said frame, said shelf means directed frontwardly when unfolded and cooperating with said frame for support of said load;
- pivot means located on said chassis for supporting a pair of wheels about which said chassis can be pivoted for permitting movement of said cart, said pivot means being located on said chassis at a point between said load supporting means and said shelf means, thereby permitting the balanced distribution of load about said pivot means;
- said pivot means having arms extending rearwardly of said chassis from said pivot point, said arms being in a common plane which is at an angle with said chassis of no more than 45 degrees from the lower end of said chassis, and each of said arms directed sidewardly from said pivot means;
- said wheels having a diameter which is in excess of one-half the distance between the lower end of said cart and the location of said pivot means, said wheels being supported at the free ends of said arms; and
- handle means pivoted on one of said extensible frame adjacent the upper end of said chassis rotatable between a position folded in against said chassis and a position extending the height of said chassis for use in pulling said cart when in use, and including means to lock said handle means in any selected position.

4,429,898

SUSPENSION ASSEMBLY FOR SEISMIC EXPLORATION VEHICLE

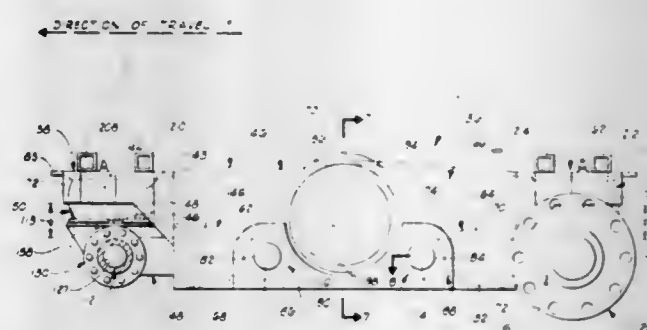
John W. Bedenbender, Plano, Tex.; Marvin C. Cook, and Otis A. Johnston, both of Ponca City, Okla., assignors to Mertz, Inc., Ponca City, Okla.

Filed Mar. 10, 1981, Ser. No. 242,358

Int. Cl.³ B60G 11/28

U.S. Cl. 280—678

16 Claims



1. In a tracked vehicle having a substantially rigid main frame supported and moved by track assemblies disposed along opposing sides of the frame, each of the track assemblies including an endless track, at least one drive sprocket and a plurality of bogies disposed on the inside perimeter of the track to maintain the track in proper alignment and to support the vehicle, the improvement being a suspension assembly for connecting the bogies to the frame which comprises:

- a walking beam having a forward end portion, a medial portion, and a rearward end portion, the medial portion of the walking beam pivotally connected to one side of the frame in a substantially parallel, spatial relationship with the side of the frame such that the walking beam is provided with a pivotation axis about a transverse axis of the main frame;

a forward bogie arm having one end and a distal end, said one end pivotally connected to the walking beam such that the forward bogie arm has a pivotation axis substantially parallel to the pivotation axis of the walking beam, said distal end having a bogie rotatably mounted thereon; a first biasing means disposed between said distal end of the forward bogie arm and the walking beam for biasing the bogie thereon in a downwardly direction; a rearward bogie arm having one end and a distal end, said one end pivotally connected to the walking beam such that the rearward bogie arm has a pivotation axis substantially parallel to the pivotation axis of the walking beam, said distal end having a bogie rotatably mounted thereon; and a second biasing means disposed between said distal end of the rearward bogie arm and the walking beam for biasing the bogie thereon in a downwardly direction; wherein each of the forward and rearward bogie arms comprises:

- a first tubular member having a cylindrical shaped bore extending therethrough, the first tubular member forming said one end of each of the forward and rearward bogie arms; and
- a second tubular member having a cylindrical shaped bore extending therethrough, the second tubular member forming the distal end of each of the forward and rearward bogie arms.

4,429,899

HOLLOW STABILIZER FOR VEHICLE

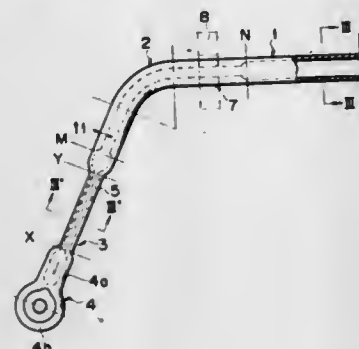
Akira Ohno; Toshiaki Sato, and Kanji Inoue, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan Continuation of Ser. No. 183,386, Sep. 2, 1980, abandoned. This application Nov. 22, 1982, Ser. No. 443,453

Claims priority, application Japan, Sep. 7, 1979, 54-123805

Int. Cl.³ B60G 19/00

U.S. Cl. 280—689

1 Claim



1. A hollow stabilizer for a vehicle made from a single hollow pipe, said single hollow pipe comprising:

- a hollow torsion section (1) coupled to the vehicle, said torsion section having a substantially circular cross-section;

hollow curved sections (2) integrally extending from the opposite ends of said hollow torsion section (1);

arm sections (3) integrally formed with, and extending from said curved sections (2) respectively, said arm sections (3) each having a cross-section substantially in the form of the letter I and which extends in a plane of action of the bending load applied to each said arm section; and

coupling sections (4) integrally formed with, and extending from, said respective arm sections (3), said coupling sections each having a substantially circular cross sectional portion (4a) connected to the end of the respective arm section (3) and a substantially flat shaped portion (4b) extending from said substantially circular coupling section portion (4a) and adapted to be coupled to a wheel suspension, each substantially flat shaped portion (4b) of said coupling sections extending in a plane substantially per-

pendicular to the plane of said I-shaped cross sectional portion of said arm section (3).

4,429,900

AUTOMOTIVE SUSPENSION SYSTEM FOR MAINTAINING THE REAR WHEELS SUBSTANTIALLY PARALLEL TO ONE ANOTHER THROUGHOUT USE

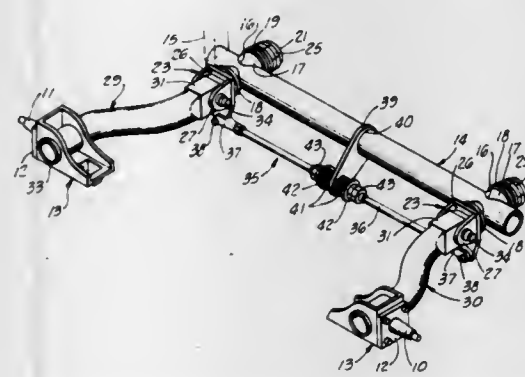
Joseph S. Feher, 900 N. Hammond St., #115, Los Angeles, Calif. 90069

Filed Nov. 6, 1980, Ser. No. 204,541

Int. Cl.³ B60G 3/14, 19/02

U.S. Cl. 280—689

7 Claims



1. A rear wheel suspension system for an automotive vehicle, comprising:

- first and second trailing arm means each having one end affixed to a rear wheel axle;

first and second clevis means movably connected with the respective other ends of the trailing arms enabling movement of the trailing arms thereabout in a substantially vertical plane;

first and second cylindrical members affixed respectively to the first and second clevis means;

an elongated beam having a pair of transverse openings therein spaced from each other along the beam, said openings rotatably receiving the respective cylindrical members therein;

a control link having its ends pivotally interconnected with the clevis means for transmitting rotation of one clevis means and associated cylindrical member to the other clevis means and associated cylindrical member; and spring means carried by the control link for resiliently resisting movement thereof.

4,429,901

POSTING BOARD

Howard K. Clery, Jr., Brynmawr, and Scott R. Penniman, Lansdale, both of Pa., assignors to Rep Industries Inc., Lansdale, Pa.

Filed Jul. 6, 1981, Ser. No. 280,727

Int. Cl.³ B41L 3/00

U.S. Cl. 282—29 B

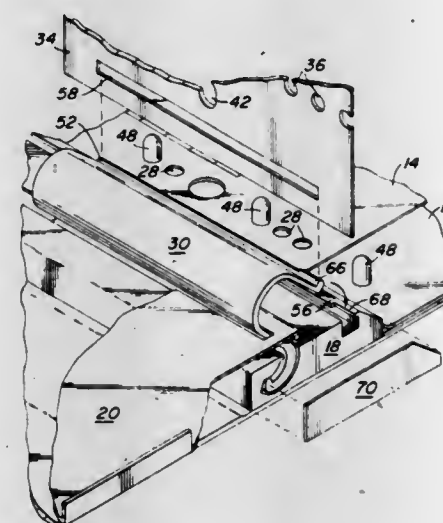
6 Claims

1. A check posting board having a writing surface provided with a column of regularly spaced aligning posts by which checks may be aligned over a business form with duplicating material therebetween by placing discrete holes in the checks and business form over selected ones of the posts, including:

- (a) an elongated rail member adjacent to an edge of the writing surface, the longitudinal axis of said rail member being parallel to the column of posts;
- (b) two spaced parallel slots in an upper surface of the rail member extending substantially the length of the rail member; and
- (c) a carriage for retaining checks by stub ends thereof in a manner in which a check may be aligned over the business form by placing selected ones of the holes in the check stub over selective ones of the posts, wherein the check carriage is an inverted U-shaped member and has a flange disposed in sliding engagement in each of said slots.

whereby the carriage may be slid along the rail members and said flanges extend outwardly from the edges of the

pipes to at least the latch contacting position solely under the influence of gravity.



carriage, with the checks being retained by the inverted U-shaped member passing through a slot provided in the stub end of each check.

4,429,902

REMOTELY RELEASABLE CONNECTOR

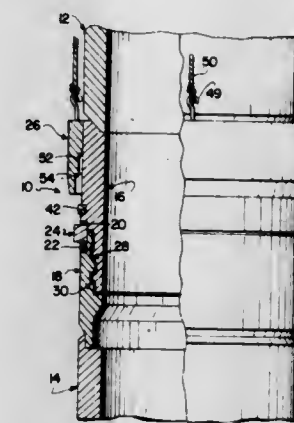
William S. Cowan, West University Place, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Sep. 18, 1980, Ser. No. 188,584

Int. Cl.³ F16L 37/08

U.S. Cl. 285—3

30 Claims



1. A remotely releasable connector for first and second pipes, the combination comprising:

- first and second sets of engageable threads coupled to the first and second pipes;

a first recess in the exterior of the first pipe;

a second recess in the exterior of the second pipe, said recesses being substantially aligned when the pipes are threadedly engaged;

a latch;

means for supporting said latch in a locking position so that a first part is located in said first recess, and a second part is located in said second recess, thereby preventing disengagement of the pair of pipes; and

release ring means, supported around the exterior of said pipes, for moving said latch out of the locking position by contacting said latch upon movement of said release ring means longitudinally of said pipes, the smallest interior diameter of said ring means that contacts said latch being slightly larger than the largest exterior diameter of at least one of said pipes adjacent said latch,

said ring means being freely slidable along at least one of the

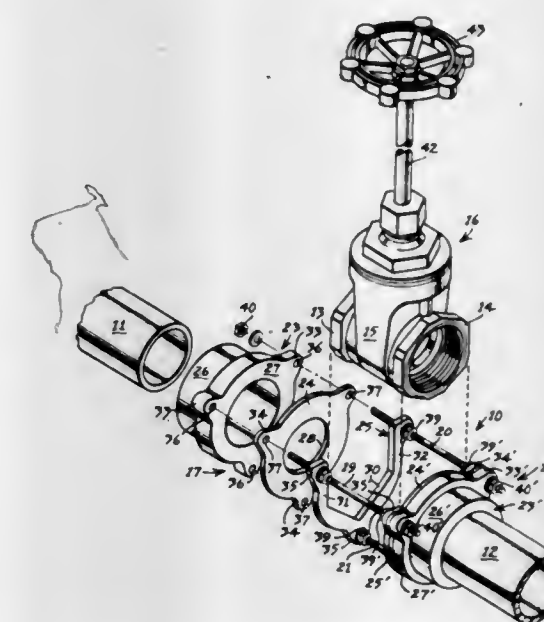
PIPE COUPLING DEVICE FOR RECEIVING REMOVABLY INSERTABLE VALVE

Marvin E. Baker, 815 Ewing Ave., Nashville, Tenn. 37203
Filed Jul. 29, 1981, Ser. No. 287,764

Int. Cl.³ F16L 35/00

U.S. Cl. 285—24

5 Claims



1. A coupling device for connecting a coupling element having opposite end portions with aligned end openings, between opposed ends of coaxially spaced first and second pipe sections, comprising:

- (a) a first end flange member connectable to a first pipe section having a longitudinal axis, said first end flange member having a central opening therethrough coaxial with the first pipe section,

- (b) a first annular gasket having an outer surface adapted to fit flush in sealing engagement against said first end flange member, and an inner surface, and having a central opening therethrough coaxial with the central opening of said first end flange member,
- (c) a first guide member adapted to fit against said inner surface of said first annular gasket, said first guide member being generally U-shaped having a transversely extending bottom ledge and a pair of upright arms projecting upward from said bottom ledge and transversely spaced apart for receiving an end portion of a coupling element so that the corresponding end opening of the coupling element is coaxial with the central opening of said first end flange member,
- (d) a second end flange member connectable to a second pipe section having a longitudinal axis, said second end flange member having a central opening therethrough coaxial with the second pipe section,
- (e) a second annular gasket having an outer surface adapted to fit flush in sealing engagement against said second end flange member, and an inner surface, and having a central opening therethrough coaxial with the central opening of said second end flange member,
- (f) a second guide member adapted to fit against said inner surface of said second annular gasket, said second guide member being generally U-shaped having a transversely extending bottom ledge and a pair of upright arms projecting upward from said bottom ledge and transversely spaced apart for receiving the other opposite end portion of a coupling element so that the corresponding end opening of the coupling element is coaxial with the central opening of said second end flange member,
- (g) a plurality of elongated tie rods,

- (h) means mounting said end flange members, said gaskets and said guide members on said tie rods for longitudinal axial movement, said end flange members being outermost and said guide members being innermost,
- (i) said end flange members, gaskets, and guide members being axially adjustable on said tie rods to receive the opposite end portions of the coupling element in the respective first and second guide members, seated upon the respective ledges, located between the opposed arms, and sealed between said gaskets in operative position, and
- (j) a pair of end securing elements on each end of each tie rod adjustably movable axially of said tie rods for urging said end flanges toward each other thereby compressing said gaskets into sealing engagement with said end flanges and the opposing ends of the coupling element and for locating said guide members in the desired position.

4,429,904

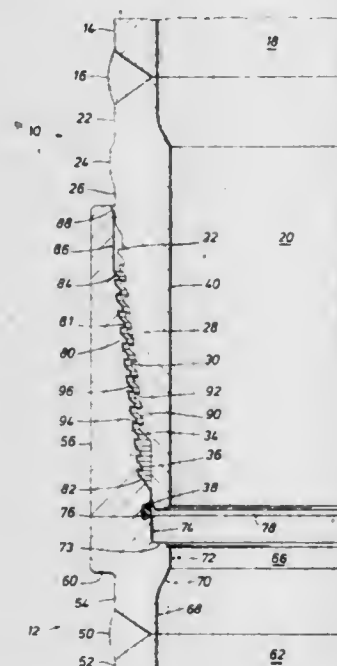
SELF-ALIGNING CONNECTOR

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 280,302, Jul. 6, 1981. This application Apr. 29, 1982, Ser. No. 373,114

Int. Cl.³ F16L 55/00, 25/00

U.S. Cl. 285—24



1. A connector assembly comprising:
 - a. a first connector member including a first guide section and a second guide section axially displaced from, and of generally lesser external lateral dimension than, said first guide section;
 - b. a second connector member for receiving said first connector member, including a first receptacle, for receiving said first guide section, and a second receptacle, for receiving said second guide section, axially displaced from and of generally lesser internal lateral dimension than said first receptacle;
 - c. tapered external thread means, as part of said first member, positioned generally axially between said first and second guide sections;
 - d. tapered internal thread means, as part of said second member, positioned generally axially between said first and second receptacles and generally complementary to said first thread means for threaded engagement therewith; and
 - e. wherein said first and second guide sections may be partially received by said first and second receptacles, respectively, to align said first and second members without threaded engagement between said first and second thread means.

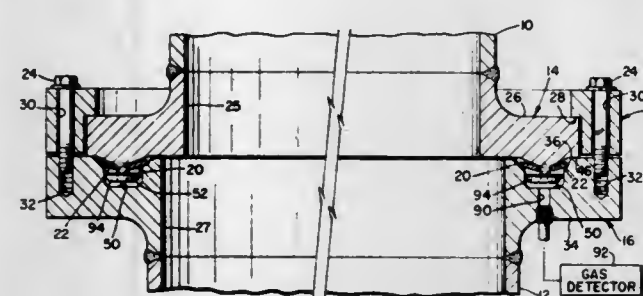
4,429,905
DUAL OPPOSED SEAL RING COUPLING
Gordon A. Valentine, Denver, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Dec. 29, 1981, Ser. No. 335,362

Int. Cl.³ F16L 35/00, 19/08, 23/00

U.S. Cl. 285—93

11 Claims



1. In a coupling assembly, first and second tubular fluid passage-defining structures, means for relatively drawing said structures axially together to assemble said structures in coupled relation to each other, said structures defining therebetween first and second cavities each extending circumferentially around the longitudinal axes of said structures, first and second seal rings each received in a separate one of said cavities and each being torsionally deflectable about its cross section to a condition in which it establishes a substantially fluid tight seal between said structures, and coacting means on said first and second structures for engaging said seal rings and torsionally deflecting said seal rings about their cross sections as said structures are drawn axially together, said seal rings engaging said coacting means at locations where they impose non-cumulative radially directed forces on said structures upon being torsionally deflected to their seal-establishing conditions.

4,429,906

FEMALE ELEMENT FOR QUICK-COUPLING CONNECTION FOR FLEXIBLE PIPES

Oliviano Spadotto, Pordenone; Gianfranco Roman, Pasiano, and Claudio Da Rold, Pordenone, all of Italy, assignors to Claber S.p.A., Fiume Veneto, Italy

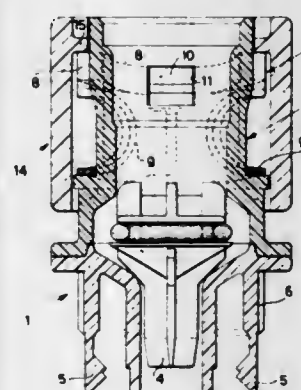
Filed Jul. 22, 1981, Ser. No. 285,324

Claims priority, application Italy, Jul. 31, 1980, 23847 A/80

Int. Cl.³ F16L 37/08

U.S. Cl. 285—315

2 Claims



1. A female coupling for a quick-coupling connection comprising: a stiff tubular body having a bore adapted to receive a male element having a recess thereon, said tubular body and having two windows therein at diametrically opposite locations; a retaining ring concentric with and surrounding said tubular body and means retaining said ring on said body, said ring being axially movable relative to said body; and, positioned in a space between said tubular body and said retaining ring, a single-piece connection element for selectively locking a male element in the bore of said tubular body and releasing

the male element from said bore, said connection element including first and second semi-circular connector portions each having two opposite ends each of which is adjacent an end of the other semi-circular portion, said semi-circular portions facing each other and together surrounding said tubular body so as to be coaxial with the axis of said tubular body, each connector portion including intermediate its ends at least one tooth which projects radially inward into a corresponding window in said tubular body for engagement with and disengagement from a recess in the male element of the connection, said connection element further including two resilient spring portions disposed axially adjacent said semi-circular connector portions for yieldably urging said teeth to protrude inside said tubular body, each said resilient spring portion being generally C-shaped and having opposite ends one of which is integral with one end of said first connector portion and the other of which is integral with the adjacent end of said second connector portion, each spring portion lying in a generally semi-circular plane so as to exhibit a convex surface and having an axis transverse to the axis of the two connector portions, said convex surfaces of the two spring portions facing toward each other, said tubular body having stop surfaces engaging said spring portions and limiting axial movement thereof and said retaining ring having surfaces engageable with said connector portions to press said connector portions toward said spring portions upon manual axial movement of said retaining ring whereby said teeth are moved radially outward against the bias of said spring portions.

4,429,907

PIPE COUPLER

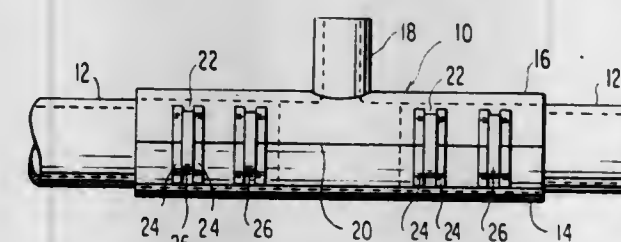
Fred A. Timmons, 418 Juniper Ave., Chico, Calif. 95926

Filed Aug. 10, 1982, Ser. No. 406,860

Int. Cl.³ F16L 17/04

U.S. Cl. 285—373

10 Claims



1. A pipe coupler for forming a water-tight seal on an existing pipe comprising:
 - (a) first and second elongated complementary members of generally semi-cylindrical cross-section, said members having abutting edges and being arranged to enclose a leak or joint in the existing pipe;
 - (b) said first and second members including a plurality of spaced lugs projecting from the walls of said members and extending transversely of said abutting edges, the space between each pair of said lugs on said first and second members being aligned and providing a recess having opposing faces and said recess extending across said abutting edges;
 - (c) reinforcing elements received in each of said recesses and extending across said abutting edges for reinforcing said coupler, each of said reinforcing elements having a constant thickness over its entire extent measured in the direction transverse to said faces and being approximately equal to the spacing between adjacent lugs and each of said reinforcing elements having tight engagement with the opposed faces of said spaced lugs; and
 - (d) means for holding said reinforcing elements in said recesses and for causing said abutting edges to adhere to each other.

4,429,908

LATCHING MECHANISM ON COKE OVEN DOORS
Friedrich Ernst, Dortmund, Fed. Rep. of Germany, assignor to C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,535

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 8031715[U]

Int. Cl.³ E05C 9/16; C10B 25/04

U.S. Cl. 292—35

7 Claims



1. A mechanism for latching to a coke-oven door frame a coke-oven door, said mechanism comprising: first and second latching beams mounted on said door for movement toward and away from said door, said latching beams being at different heights with respect to said door, hooks so mounted upon said door frame as to be in abutting relationship with outer ends of said first and second latching beams when said latching mechanism is in a closed position, means secured to said door for guiding each of said latching beams for movement in a plane perpendicular to that of said door, first and second toggle mechanisms operatively associated with, respectively, said first and second latching beams, each of said toggle mechanisms comprising a pivot and a pair of toggle arms having portions distal with respect to said pivot which are in operative association with said latching beams, a common biasing element, and actuating rods connecting said common biasing element and said pivots of said toggle mechanisms.

4,429,909

RESTRAINT ASSEMBLY FOR DOOR EXIT DEVICES

John L. Lindquist, 2109 Scarborough Dr., Lodi, Calif. 95240

Continuation-in-part of Ser. No. 329,729, Dec. 11, 1981,

abandoned. This application Jul. 6, 1982, Ser. No. 395,172

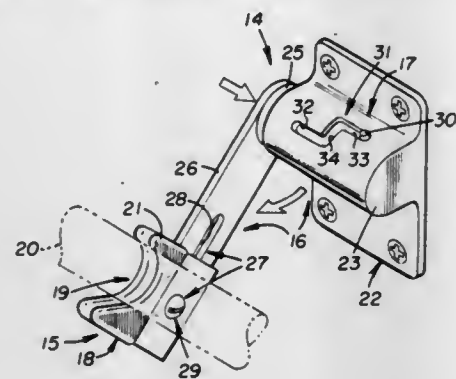
Int. Cl.³ E05C 15/02

U.S. Cl. 292—92

24 Claims

1. A restraint assembly for a door exit device having a pivotal panic bar depressable from a raised position to unlatch a door, said restraint assembly comprising:
 - a pivotal member movable between an engaged position beneath said panic bar to hold it in its raised position, and a disengaged position to permit pivotal depression of said panic bar,
 - mounting means for mounting said member on said door for pivotal movement between its engaged and disengaged positions, and
 - preload means for imposing a predetermined preload on said

member to hold it in its engaged position beneath said panic bar and to permit pivotal depression of said panic



bar and said member when a predetermined opening force is imposed on said panic bar.

4,429,910

WINDOW LOCK

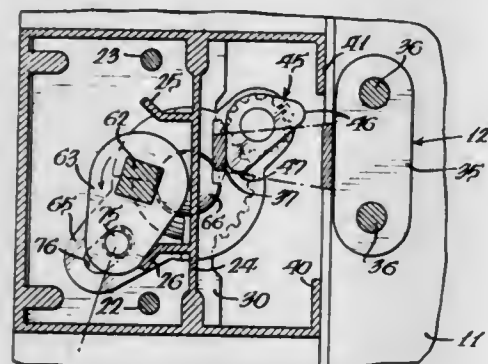
Donald L. Anderson, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Oct. 8, 1981, Ser. No. 309,562

Int. Cl.³ E05C 3/06

U.S. Cl. 292—199

7 Claims



3. A window lock comprising a keeper, a casing having an opening to receive the keeper and a rotatable handle for moving a cam within the casing into locked relation with the keeper, an actuator member mounted within the casing for pivotal movement about a pivot axis between two lock positions at opposite sides of a center position, said cam being mounted on said actuator member for rotation about a second axis at a distance from said pivot axis, means for causing rotation of the cam as the cam moves with the actuator member during pivoting of the actuator member, said cam having a generally triangular shape with a pair of locking sections with a pair of lock surfaces angularly diverging from each other and at generally equal angles to a line normal to the casing opening when the actuator member is in the center position, said locking sections being alternately operable one at each of said lock positions with the bodily movement of the cam moving one of the locking sections behind the keeper at the center position of the actuator member and continued movement of the actuator member causing the last-mentioned locking section to move in a direction to force the keeper into the casing as a combination of cam rotation and bodily movement, and connection means between said handle and the actuator member.

4,429,911

SECURITY DOOR BAR SYSTEM

William C. O'Neal, 4903 E. Crestwood, Little Rock, Ark. 72209, and James L. Grasby, 659 Cloverdale Rd., Jacksonville, Ark. 72076

Filed Mar. 1, 1982, Ser. No. 353,574

Int. Cl.³ E05C 19/18, 17/06

U.S. Cl. 292—259 R

1 Claim

1. A security bar system for preventing undesired forcible

opening of a hinge mounted door, the system adapted to be employed in conjunction with either left opening or right opening doors and comprising:

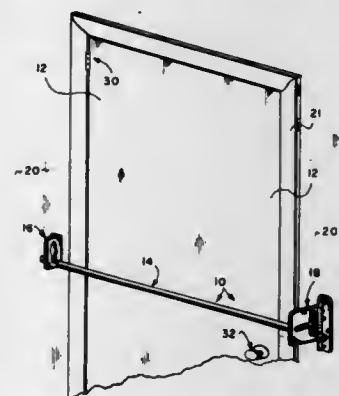
a first, rigid bracket adapted to be securely mounted adjacent the hinge side of said door; said first bracket provided with a central orifice and a generally vertically oriented slot symmetrical about said orifice;

a rigid displacement bracket adapted to be rigidly mounted adjacent the opposite side of said door, said displacement bracket comprising:

a generally planar mounting portion adapted to be rigidly secured to a wall adjacent said door; and,

a cooperating, generally planar offset rigid member hingeably coupled to said mounting portion, said cooperating portion provided with a generally T-shaped, symmetrical slot including a vertically oriented slot portion and a horizontally oriented slot portion perpendicularly bisecting and communicating with said vertically oriented slot portion;

an elongated, symmetrical, reversible, rigid, generally cylindrical bar adapted to extend between said first rigid bracket and said displacement bracket and to be removably coupled thereto whereby to secure said door, said bar terminating at each of its ends in integral, circular flange



members separated from the major length of said bar by reduced diameter segments of predetermined, equal length;

said first rigid bracket central orifice being of sufficient diameter to admit either of said bar flanges, and the major length of said first slot bracket being of a width substantially equal to the diameter of said bar reduced diameter segments to prevent axial displacement of a bar flange while permitting clearance of the door bar reduced diameter segment; and,

the intersection of said vertically oriented slot portion of said displacement bracket member with said horizontally oriented slot portion permitting axial admission of an opposite one of said bar end flanges, but the width of said horizontal and vertical slot portions being substantially equal to the diameter of said bar reduced diameter segments whereby to prevent axial withdrawal of said door bar flange while permitting clearance of a door bar reduced diameter segment, the generally horizontally oriented portion of said slot permitting limited opening of said door as a portion of a reduced diameter segment of said door bar may track therewithin during limited opening of said door.

4,429,912

FOLDABLE SECURITY BAR

Robert P. Smith, Jr., Irving, Tex., assignor to Michael Clate Woodlock, Ft. Worth, Tex.

Filed Jul. 6, 1981, Ser. No. 280,499

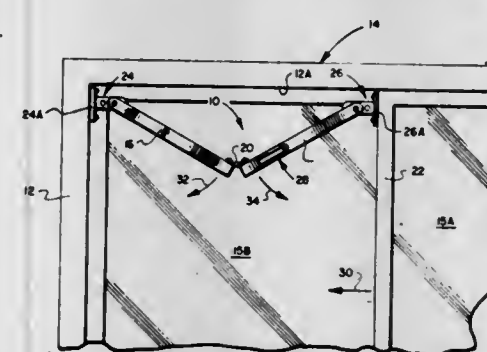
Int. Cl.³ E05C 17/12

U.S. Cl. 292—263

1 Claim

1. In a slidable panel assembly in which a panel is movable along parallel channel members between open and closed positions within a support frame and in which the movable panel can be removed from the assembly by transverse dis-

placement of the panel out of engagement with one channel member, the improvement comprising a foldable security bar assembly for securing the movable panel against said support frame, said foldable security bar assembly including first and second bars each having a tubular open end portion; a hinge pivotally connecting said first bar to said second bar whereby said first and second bars are rotatable about a common axis from a closed panel position, in which their tubular open end portions are in axial alignment, to an open panel position in which said bars extend transversely with respect to each other; a latch slidably received within the tubular open end portion of the first bar and movable from a released position in which said latch is fully retracted within the open end portion of said first bar thereby permitting unobstructed pivotal movement of said



first bar and said second bar relative to each other, and movable to a locked position in which opposite end portions of said latch extend within both tubular open end portions of said first and second bars when said tubular open end portions are in axial alignment, thereby preventing pivotal movement of said first bar and said second bar; and, bracket means pivotally coupled to said first and second bars and mounting said first and second bars to the movable panel and support frame, respectively, said bracket means including a mounting plate attached to said movable panel in a position closely adjacent said support frame but spaced from said frame allowing sliding movement of said panel along said channel members without interference, but engaging said support frame and thereby serving as a stop member in response to transverse displacement of the movable panel within said channel members.

4,429,913

SLEEVE TYPE DOOR SECURING DEVICE

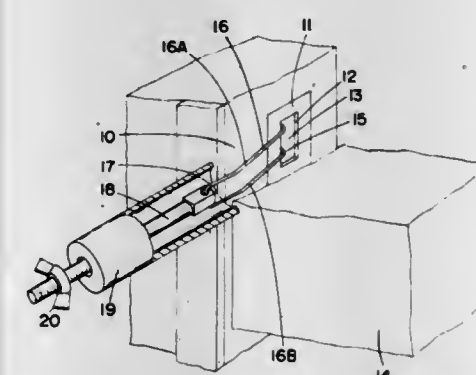
Henry A. Bey, Breckenridge, Minn., assignor to Lena Bey, Wahpeton, N. Dak.

Filed Feb. 17, 1981, Ser. No. 234,770

Int. Cl.³ E05C 19/18

U.S. Cl. 292—293

3 Claims



1. For use with a door which is hingedly mounted in an opening which has a door jamb, an opening in the door jamb for receiving a latch and a striker plate around the opening, there being a space between the side edge of the door and the door jamb even when the door is swung fully closed, a portable device for securing the door when closed comprising:

(a) a pair of tensilely strong parallel spaced-apart piano wire

members joined together at one end and having hooking means at the other end for engaging an inner edge of the opening in the striker plate on the door jamb said members extending partway from said other end along the door jamb in a direction which the door normally swings open and then partway angled inward to said one end, the wire members being thin enough to permit the door to close even when the hooking means is engaging the edge of the striker plate opening;

(b) an elongated threaded member pivotally attached at one end to the one end of said wire members whereby the threaded member can be swung away from the door opening to permit the door to be swung open or closed when the hooking means on the wire member is engaging the edge of the striker plate opening;

(c) a sleeve over said threaded member, the outer diameter of the sleeve being substantially larger than the space between the door and the door jamb when the door is closed and the axial opening in the sleeve being larger than the diameter of said threaded member to permit the sleeve to slide over the threaded member; and

(d) a wing nut threadably engaging the threaded member for moving the sleeve along said threaded member to securely hold the sleeve against the edge of the door and the door jamb when the door is closed.

4,429,914

SUPPORT SYSTEM FOR THE BODY OF A MOTOR VEHICLE, ESPECIALLY A PASSENGER CAR

Ulrich Bez, Gerlingen; Gerhard Schroder, Ditzingen, and Michael Rauser, Kornwestheim, all of Fed. Rep. of Germany, assignors to Dr. Ing.h.c.F. Porsche AG, Fed. Rep. of Germany

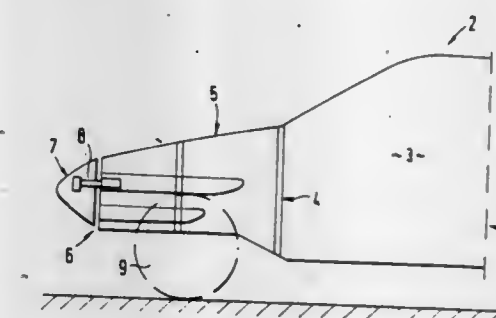
Filed Sep. 30, 1981, Ser. No. 307,317

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038920

Int. Cl.³ B62D 21/00

U.S. Cl. 296—188

16 Claims



1. A support structure constructed as at least part of a fender for the body of a motor vehicle and adapted to absorb forces by deformation, the support structure extending between one of the walls of a passenger compartment and one end part of the vehicle and providing for the connection of chassis elements, said support structure comprising support means including a forward section and a rear section interconnected intermediate said one wall of the passenger compartment and said one end part of the vehicle, said forward section and said rear section each including inner wall means and outer wall means cooperating to form at least one frame-like member and said at least part of a fender, said support means adapted for supporting said passenger compartment relative to said chassis elements, and for deforming to absorb the energy of forces greater than a predetermined amount, said forward section adapted to be less resistant to deformation than said rear section.

4,429,915

BICYCLE SEAT

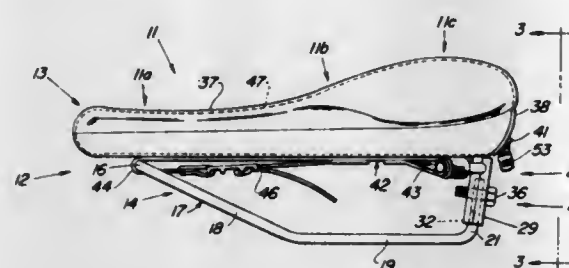
Calvin D. Flager, 23102 64th Ave. W., Mountlake Terrace, Wash. 98043

Filed Mar. 13, 1981, Ser. No. 243,314

Int. Cl.³ B62J 1/26

U.S. Cl. 297—199

10 Claims



1. A bicycle seat comprising: support means; seating means mounted on said support means and including pommel means, rear means for bearing weight, and intermediate means forming a slope and connecting said pommel means and said rear means; tube means of variable pressurization is disposed throughout said pommel means, rear means and intermediate means, and foam means is disposed in said rear means and extends into said intermediate means to form said slope, said tube means extending around said foam means, said tube and foam means being adjustable to provide support areas of contrasting hardness; and said rear means bearing weight of the rider transmitted through the rider's ischial tuberosities, said intermediate means bearing against the rider's pubic symphysis at said slope, said rear means and said intermediate means cooperating to urge proper low back curvature of the rider forward over said pommel means.

4,429,916

INFANT CAR SEAT

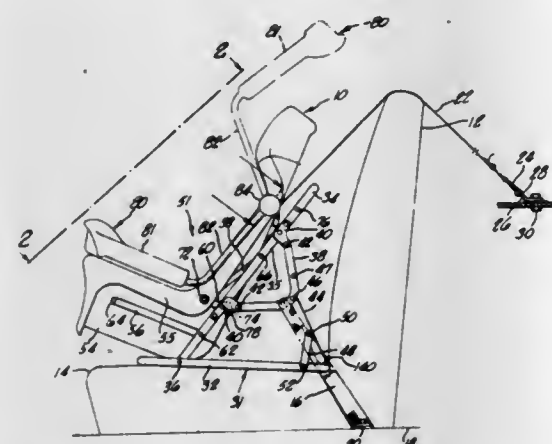
Richard E. Hyde, Palos Verdes; Gary L. Smith, Los Angeles; Lee T. Carmichael, Pasadena, and Albert E. Meader, Palos Verdes, all of Calif., assignors to California Strolee, Inc., Compton, Calif.

Filed Feb. 23, 1981, Ser. No. 237,491

Int. Cl.³ B60R 21/10

U.S. Cl. 297—250

14 Claims



1. An infant car seat for use in protecting and restraining a child, comprising in combination: a substantially rigid body member contoured to form head, back and seat portions; a support frame secured to said body member and adapted to rest said body member on an automobile seat; a means for securing said support frame to said automobile seat;

- an internal harness system attached to said body member and adapted to fit about a child;
a rotatable arm rest/shield secured to said body member;
a biasing means cooperatively connected to said body member and said arm rest/shield for biasing said arm rest/shield to a raised position;
a means cooperative with said internal harness system and said arm rest/shield for maintaining said biased arm rest/shield in a lowered position in front of said child.

4,429,917

CHAIR

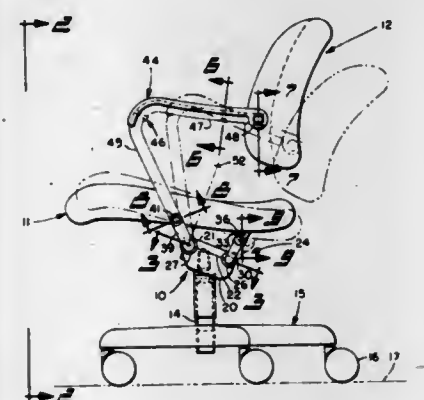
Niels Diffrient, Ridgefield, Conn., assignor to Hauserman Inc. Int. Furniture & Textile Division, Norwalk, Conn.

Filed Apr. 29, 1981, Ser. No. 258,760

Int. Cl.³ A47C 3/00

U.S. Cl. 297—300

16 Claims



1. A chair comprising a seat, a back, a four bar linkage, said linkage including a base, said seat forming a second link of said linkage, said linkage including a third link having one end portion pivotably connected with a rear portion of said base and an opposite end portion pivotably connected with a rear portion of said seat, a fourth link having a first end portion pivotably connected with a forward portion of said base and a second end portion pivotably connected with a forward portion of said seat, and means for mounting and fixing said back to said fourth link for pivoting movement together with said fourth link about said pivotable connection between said fourth link and said base.

4,429,918

OPERATORY STOOL

James D. Alsop, Jr., Bay Minette, Ala.; Kenneth L. Barrett, Des Moines, Iowa, and Arden F. Jenkins, Bay Minette, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

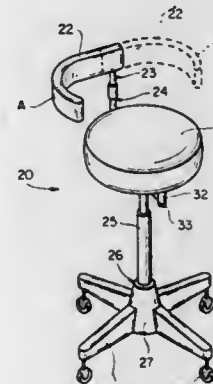
Continuation of Ser. No. 171,637, Jul. 24, 1980. This application

Nov. 12, 1982, Ser. No. 440,914

Int. Cl.³ A47C 1/00

U.S. Cl. 297—353

43 Claims



1. A stool comprising: a seat;

4,429,920

LOAD TRANSFER SYSTEM FOR SEAT MOUNTED RETRACTOR

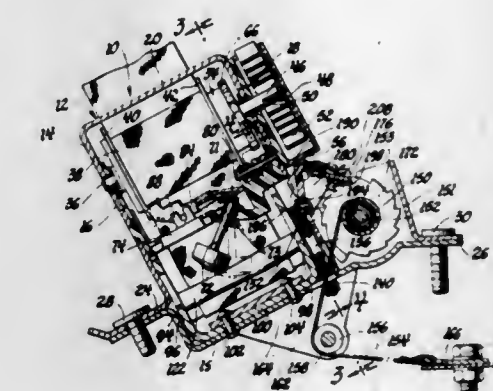
Joseph D. Kondziola, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1981, Ser. No. 299,407

Int. Cl.³ B60R 21/00

U.S. Cl. 297—478

3 Claims



- means depending from the seat from engaging a support surface;
an arcuate, body support arm positioned above the level of said seat for supporting a portion of the body of a user, said support arm having a concave surface;
support means supporting said body support arm above the level of said seat, and
connecting means for rotatably attaching said end of said support arm to a top end of said connecting means, said body support arm being reversibly rotatably secured about its point of attachment to said connecting means on either side thereof in a substantially horizontal position.

4,429,919

COMPOSITE INERTIA LATCH FOR VEHICLE SEAT BACK

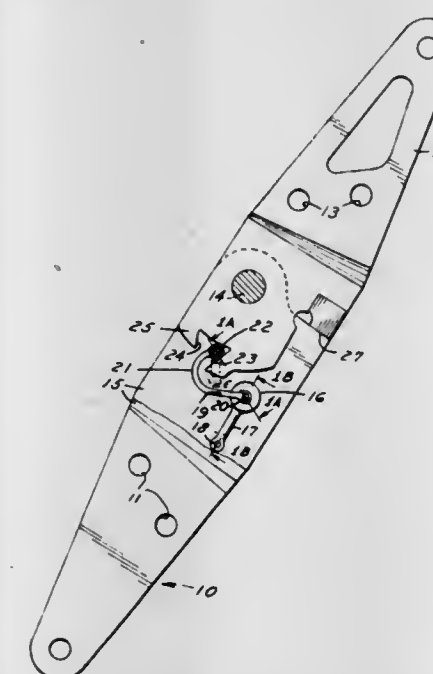
Bernd A. Kluebing, Radevormwald, Fed. Rep. of Germany, and Vikram Zaveri, Springfield, Mich., assignors to Keiper Recaro, Inc., Battle Creek, Mich.

Filed Mar. 9, 1981, Ser. No. 241,734

Int. Cl.³ B60N 1/02

U.S. Cl. 297—379

8 Claims



1. Gravity/inertia actuated latch for hinged vehicle seat back rest comprising pivotally connected hinge members mountable respectively on vehicle seat and back rest components, interengaging fixed and gravity/inertia actuated latch means mounted on said hinge members operative upon sudden vehicle deceleration to arrest back rest forward tilting, means responsive to operative back rest position to maintain said latch means oriented for interengagement, gravity/inertia actuated latch biasing means effective upon initial forward seat back tilting to release said latch means when said vehicle is stationary and to maintain said latch means in interengaging orientation upon initial forward seat back tilting under emergency vehicle deceleration conditions, and characterized by a composite latch construction including a gravity/inertia responsive mass element and separate latch engaging element, interconnecting means between said elements effective when the vehicle is stationary to move said latch engaging element of said latch means to a latch release position upon initial forward seat back tilting, and means responsive to vehicle deceleration for reducing the effective latch disengaging bias of said mass element and thereby also reduce the inertia value required to overcome said gravity bias and prevent latch disengagement under vehicle deceleration, said latch means including pivoted toggle linkage means connecting said latch engaging and mass elements adapted to neutralize said gravity unlatching bias in response to inertia imposed by vehicle deceleration.

1. A seat belt retractor for winding and unwinding an occupant restraint belt and adapted for mounting on a vehicle seat mounted on a vehicle body, said retractor comprising: a housing;
a belt reel rotatably mounted on the housing for restraint belt winding and unwinding rotation;
reel locking means for selectively locking the reel against restraint belt unwinding rotation so that a load is imposed on the restraint belt during restraint of an occupant;
belt clamping means movably mounted on the housing adjacent the exit of the restraint belt from the reel and being movable relative the housing and reel in response to imposition of occupant restraint load on the belt to clamp the restraint belt against extension from the retractor;
an anchor belt reel rotatably mounted on the housing for winding and unwinding an anchor belt having an end adapted for mounting on the vehicle body rearward of the seat;
a lock bar engageable with the anchor belt reel to lock the reel and thereby fix the length of the anchor belt to anchor the retractor housing and seat against forward movement by the occupant restraint load imposed on the restraint belt; and
means acting between the belt clamping means and the lock bar and adapted to engage the lock bar with the anchor belt reel upon restraint belt clamping movement of the restraint belt clamping means relative the housing and reel in response to imposition of occupant restraint load.

4,429,921

SLIDING BEARING AND SEAL

William E. Fritz, Naperville, and Thomas C. Soddy, Downers Grove, both of Ill., assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Division of Ser. No. 90,301, Nov. 1, 1979, Pat. No. 4,344,365.

This application Jan. 25, 1982, Ser. No. 342,596

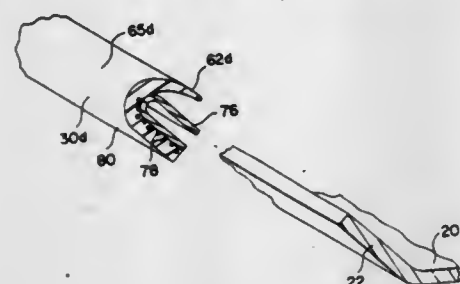
Int. Cl.³ B61D 7/22, 7/26; F16C 17/26

U.S. Cl. 308—3.5

4 Claims

1. An elongated low-friction body comprising an elongated channel defining steel strip having a metal matrix welded thereto, said matrix including a polymeric low-friction material molded thereto defining an elongated guide surface opposite said channel and an elongated load bearing surface between said channel and said guide surface, one side of said channel being defined by a flange extending along the length of said body with said molded polymeric material further defining an elongate integral tapered projecting sealing flap extending at least partly over said flange in outwardly-spaced relationship thereto along the length of said body.
2. An elongated body of low-friction polymeric material, a

substantially flat surface extending along the length of said body, a flange extending along the length of said body in spaced-apart relationship to said flat surface to define a mount-



ing channel therebetween, a plurality of studs extending outwardly from said flat surface toward said flange and being spaced-apart from one another along the length of said body, and means for attaching said studs to said flange.

4,429,922

ANTIFRICTION AXIAL GUIDE MEANS

Walter Pfluger, Solothurn, Switzerland, assignor to Agathon A.G. Maschinenfabrik, Solothurn, Switzerland

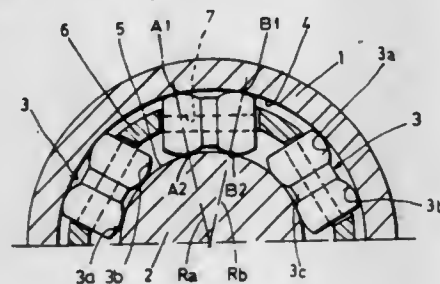
Filed Jul. 15, 1981, Ser. No. 283,647

Claims priority, application Switzerland, Jul. 17, 1980, 5492/80

Int. Cl.³ F16C 29/04

U.S. Cl. 308—6 R

1 Claim



1. An assembly adapted for relative linear movement comprising a guiding part and a guided part movable only linearly relative to one another, said guiding part having at least one first race disposed thereon and said guided part having at least one second race disposed thereon, a plurality of roller-shaped elements each defining an axis of roll in a plane perpendicular to the direction of relative linear movement between said guiding and guided parts, and disposed between said guiding and guided parts, each of said roller-shaped elements comprising two spaced, spherical-segment-shaped bearing surfaces of equal diameter with their centers spaced from one another along said axis of roll and rigidly connected to one another, said two bearing surfaces respectively contacting said first and said second races at substantially a single point each for ensuring substantially identical rolling conditions of both said bearing surfaces relative to both said first and second races as said guided and guiding parts move in a linear direction relative to one another.

4,429,923

BEARING SUPPORT STRUCTURE

Richard T. White, West Hartford, and Louis Kudlacik, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 8, 1981, Ser. No. 328,568

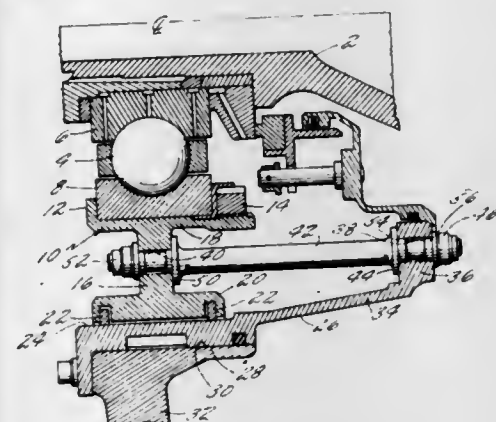
Int. Cl.³ F16C 27/00

U.S. Cl. 308—184 R

1 Claim

1. In a bearing support construction:
a fixed supporting structure;
a shaft positioned within said structure;
a bearing for the shaft having an outer race;

a supporting ring for said outer race;
an oil damping structure surrounding said ring and including an annular member having an inner cylindrical surface and having a mounting flange thereon;
said supporting ring having an outer cylindrical surface located adjacent to and spaced radially inward of said inner cylindrical surface to define therebetween an oil damping space;



said annular member having an inwardly extending flange at the end remote from the cylindrical surface;
a plurality of rods extending from said flange to said supporting ring and secured in both;
and the supporting ring being I-beam in shape with a disk portion to receive the rods and having integral cylindrical flanges one supporting the outer race and the other having the outer cylindrical surface for the oil damper.

4,429,924

PRESSURE-LUBRICATED AUTOMOTIVE-TYPE ALTERNATOR

Herbert Franz, Stuttgart, and Manfred Frister, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

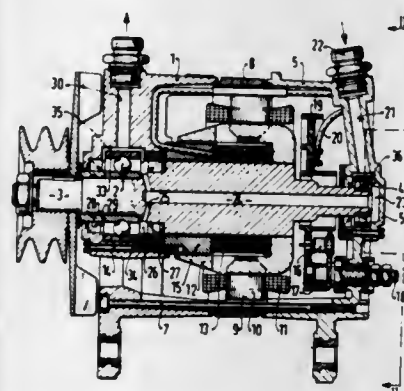
Filed Jul. 29, 1982, Ser. No. 403,099

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135901

Int. Cl.³ F01M 1/06

U.S. Cl. 308—187

8 Claims



1. Pressure-lubricated vehicular-type alternator comprising a stator;
a rotor;
a drive side bearing (2) and a rear side bearing (4);
a shaft rotatable in said bearings and supporting the rotor;
and a pressure lubricating circuit to lubricate said bearings, comprising
an oil pressure supply duct (21) and an oil removal duct (30);
a longitudinal bore (24) formed in the shaft (3);
at least one axially inclined radially extending communication bore (25) formed in the shaft adjacent said drive side bearing (2) and located to fling oil by centrifugal force out of said longitudinal bore, said shaft terminating in an

orifice directing said so-flung oil towards and across an end face of said drive side bearing;
means (23) for establishing fluid communication between the oil pressure supply and the longitudinal bore (24) in the shaft;
and means for removing oil from said drive side bearing and establishing oil communication between said drive side bearing and the oil removal duct (30).

4,429,925

BALL BEARING METHOD FOR ASSEMBLING THE BEARING AND AN APPARATUS FOR GRINDING THE BEARING

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenger Spicer, Poissy, France

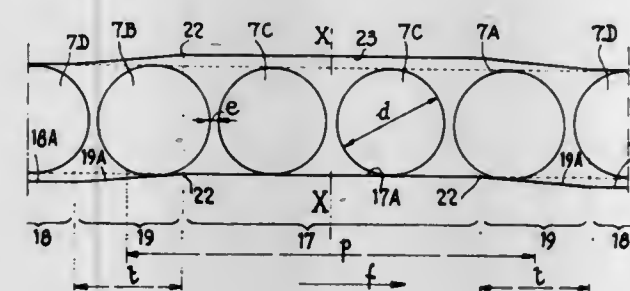
Filed Mar. 23, 1982, Ser. No. 361,068

Claims priority, application France, Mar. 25, 1981, 81 05976

Int. Cl.³ F16C 13/00, 33/58; B24B 1/00, 5/00

U.S. Cl. 308—189 R

13 Claims



1. In a ball bearing having an axis of rotation and comprising two bearing rings defining ball tracks, and a single row of balls interposed between the tracks, said tracks each having a cross-sectional concave, curvilinear contour which envelopes each ball sufficiently to ensure contact between the ball and the track in bearing operation, each track contour having a side portion on each side of the ball which is flatter than the curvature of the ball surface; the improvement wherein one of said rings is a fixed ring for subjection to a moment of given direction perpendicular to said axis of rotation, the track of the fixed ring being ground in such manner as to provide at least one unloaded region of the tracks on each side of a diameter perpendicular to said moment and, at each end of said diameter, a loaded ball region which creates, upon assembly of the bearing, a pre-stressing of the balls in said two loaded ball regions, which pre-stressing has an axial component in a direction opposed to the direction of said moment, said unloaded regions being interposed between two regions for respectively progressively loading and progressively unloading the balls, the fixed ring being adapted to receive a ball in one of said unloaded regions at least without a pre-stressing of the ball upon assembly of the bearing and in normal operation of the bearing.

12. An apparatus for grinding a ball bearing comprising two bearing rings defining ball tracks and a single row of balls interposed between the tracks and assembled with pre-stressing of the balls, wherein, in a localized sector of the periphery of the bearing comprising a completely unloaded ball region adjoining two regions for progressively loading and unloading the balls, the tracks of the bearing rings are ground in such manner as to be capable of receiving, in the completely unloaded region, a ball at least without a pre-stressing of the ball upon assembly of the bearing and in normal operation of the bearing, a fixed ring of said rings being provided for subjection to a moment of a given direction perpendicular to the axis of rotation of the bearing and said bearing comprising, in a free state of the bearing, at least one unloaded region on each side of a diameter perpendicular to said moment and, at each end of said diameter, a loaded region which creates, upon assembly of the bearing, a pre-stressing comprising an axial component in a direction opposed to the direction of said moment, said apparatus comprising a grinding wheel, a rotary spindle driven by a motor, a workpiece carrying rotary table perpendicular to the

axis of rotation of the spindle, elastically yieldable connecting means connecting the table to the spindle, means for biasing the table in a variable manner in the course of the rotation of the table, at least in a direction parallel to the axis of rotation of the table, and means for maintaining a rolling bearing ring coaxially with the table, the elastically yieldable connecting means being capable of rotating the ring about a fixed axis passing roughly through the centre of the rolling bearing ring under the effect of said biasing means.

4,429,926

THIN-WALLED BEARING BUSHINGS

MANUFACTURED BY A DEEP DRAWING PROCESS
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim; Heinrich Kunkel, Schweinfurt; Hermann Hetterich, Heidenfeld; Peter Horling, Mainberg, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

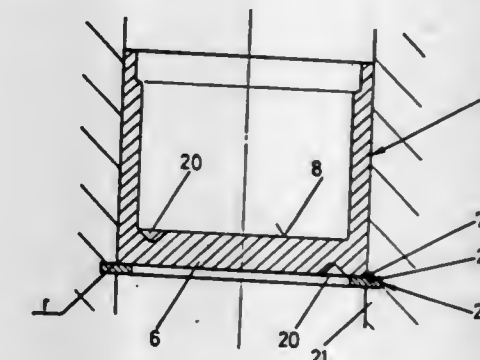
Filed Jul. 17, 1981, Ser. No. 284,190

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027262

Int. Cl.³ F16C 33/58, 33/64

U.S. Cl. 308—216

6 Claims



1. Thin-walled bearing bushing produced in a drawing process for the support of pins in universal joints comprising an elongated generally cylindrical sleeve section and a bottom section forming an end closure at one axial end of said sleeve section, the juncture of the peripheral surface of said sleeve section and the outer axial end face of said bottom section defining an outer rim having at least portions of a cross-sectional radius (r) smaller than the cross-sectional (R) at the juncture of the inner peripheral surfaces of the sleeve section and the inner axial end face of the bottom section and means defining at least a pair of separate grooves in the bottom section circumferentially spaced from one another and being disposed adjacent said peripheral rim.

4,429,927

CASING HAVING A MOUNTING PORTION AT ITS INNER WALL SURFACE FOR RECEIVING A BEARING MEMBER THEREIN

Akira Kawabata, 2-24-7 Shimizu, Suginami-ku, Tokyo, Japan, assignor to Akira Kawabata and Sunny Co., Ltd., both of Japan, a part interest

Filed Apr. 6, 1981, Ser. No. 251,453

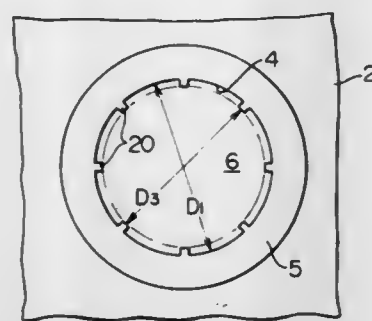
Int. Cl.³ F16C 35/06

U.S. Cl. 308—236

4 Claims

1. In a casing shaped from a light metal material by die-casting and having formed on its inner wall surface a mounting portion with a receiving end, a circular inner surface, and a bottom end, said mounting portion being adapted to receive a bearing member having a circular outer surface and serving to journal a shaft; the improvement comprising a plurality of supporting protrusions extending from the circular inner surface of the mounting portion into which the bearing member is to be press-fitted and spaced at predetermined intervals in the circumferential direction about the circular inner surface, the

circumferential width of each supporting protrusion increasing from the receiving end of the mounting portion to the bottom



end of the mounting portion, the supporting protrusions having projecting ends defining a circle of substantially uniform diameter.

4,429,928

CLOTHES DRYING STRUCTURE

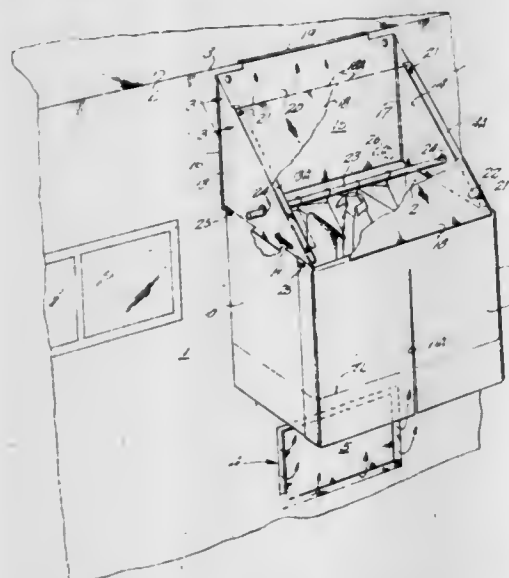
Ronald E. Sullivan, 9007 NE. 76th St., Vancouver, Wash. 98662

Filed Aug. 24, 1981, Ser. No. 295,737

Int. Cl.³ A47B 77/08; A01F 25/12

U.S. Cl. 312-31

7 Claims



1. A collapsible clothes drying structure for attachment to the exterior side of a mobile living unit having an exhaust vent in a wall of the unit, said structure comprising, an enclosure defining a clothes drying area, an enclosure support means for attachment to said living unit above the exhaust vent, said support means including a base for temporary rested abutment with the side of the mobile unit, side members, means movably mounting said side members on said base for collapsing movement of said side members about separate upright axes, a top wall in rested placement on said side members, and hanger means supported by said side members for supporting wearing apparel within the drying area of the enclosure.

4,429,929

PORTABLE TUBE HOLDER

J. Fred Stepp, 1888 Meadow La., Walnut Creek, Calif. 94595

Filed Aug. 3, 1981, Ser. No. 289,479

Int. Cl.³ B65D 5/35

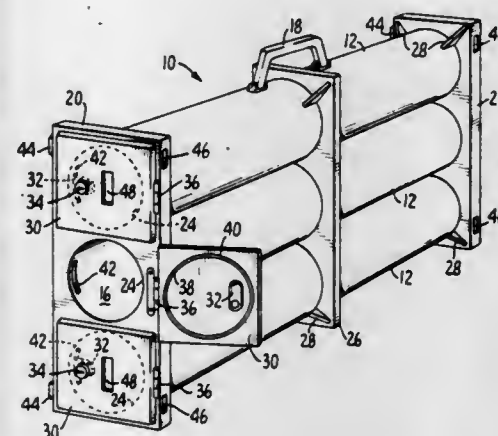
U.S. Cl. 312-107

5 Claims

1. A portable tube holder comprising at least two elongated tubes, each of said tubes having two open ends, a surrounding wall, and a hollow interior; a single front header permanently sealed to one end of each tube to fixedly hold said one end of each tube thereto in a spaced apart relationship, said front header being provided with a plurality of openings extending there-

through, said openings being equal in number to said tubes, and each of said openings being aligned with said hollow interior of one of said tubes to allow materials to be placed in and removed from said hollow interior of each tube;

a single, solid rear header permanently sealed to the other end of each tube to fixedly hold said other end of each tube thereto in a spaced apart relationship, and to form an end wall for each tube;



a carrying handle attached to one of said tubes to allow said portable holder to be lifted and transported; and a plurality of moveable doors removeably mounted on said front header, with each door being in aligned relationship with one of said openings, and locking securing means held in each of said doors and cooperating with said aligned tube whereby each of said doors may be selectively locked in position covering said aligned opening.

4,429,930

INTERLOCK FOR DRAWERS

Joseph L. D. C. Blouin, Levis, Canada, assignor to Nightingale

Saro Inc., Romuald, Canada

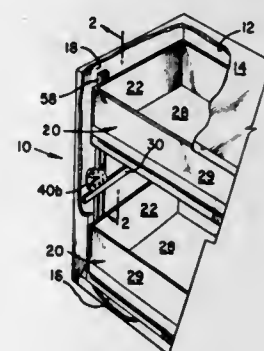
Filed Mar. 10, 1982, Ser. No. 356,808

Claims priority, application Canada, Dec. 24, 1981, 393236

Int. Cl.³ E05B 65/46; E05C 15/04

U.S. Cl. 312-216

7 Claims



1. A drawer interlock apparatus for a cabinet having multiple drawers comprising; a plurality of slide bars mounted within such cabinet and movable between locking and releasing positions; at least one drawer locking cam for each drawer, each such cam being pivotally mounted on a first pivot axis on a respective slide bar, and being movable between open and closed positions; a recess in such locking cam; drawer securing means on each said drawer interengageable with such recess in such cam, when in the closed position and being releasable from such recess in the open position to permit the drawer to be opened, and, linkage means connected to said cam at a second pivot axis spaced from said first pivot axis, and said linkage means connecting to the slide bar of the next adjacent cam of a

next adjacent drawer, such linkage means being responsive to opening movement of said first mentioned cam about said first pivot axis into its open position to move the slide bar to which such linkage is connected and thereby move the next adjacent cam to which such slide bar is connected and thereby prevent opening movement of the second mentioned cam.

4,429,931

CONTAINED FIRE HOSE

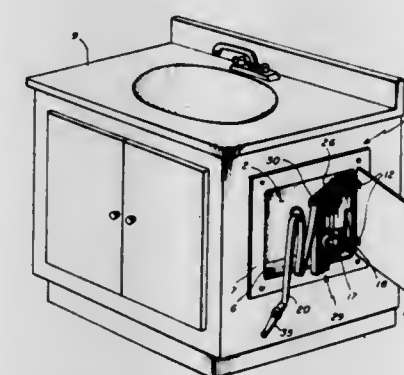
Robert Brooks, 2 Caldwell St., Weymouth, Mass. 02191

Filed Oct. 26, 1981, Ser. No. 314,700

Int. Cl.³ A47B 77/02

U.S. Cl. 312-228

3 Claims



1. A means for storing a fire hose in a bathroom comprising in combination a bathroom vanity having a means providing a water supply, a container shaped and mounted on the wall of said bathroom vanity;

an elongated hangar;

means for pivotally supporting said hangar for movement from a position within said container to a position in which one end of the hangar extends out of said container; a plurality of closed rings through which said hose extends with said hose folded in an accordion-like configuration and with said rings parallel to one another and engaging said hose at successive adjacent loops formed by said accordion-like folds;

said hangar extending through said successive rings supporting said hose whereby the hose may be pulled from the cabinet with successive segments of said hose defined by said rings being disengaged from said hangar as the rings are removed from said hangar and said means for providing a water supply including a pipe connected to one end of said hose and have a coupling for connecting to the water supply for said bathroom, a valve for controlling the flow of water through said pipe and means securing said pipe to said container.

4,429,932

DESK TOP ORGANIZER

V. Jack Brennan, P.O. Box 70639, Pasadena, Calif. 91107

Filed Jun. 17, 1982, Ser. No. 389,273

Int. Cl.³ A47B 43/02, 63/04

U.S. Cl. 312-259

5 Claims

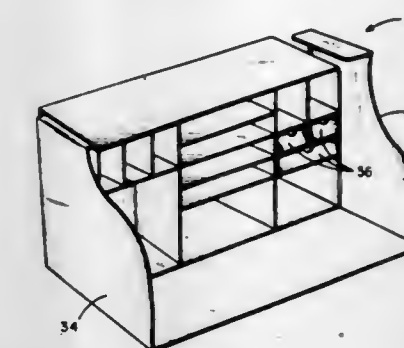
1. In a desk top organizing device placeable on a desk top, or the like comprising:

(a) a plurality of sub-assembled partitions, folded in halves along their center lines, respectively and mounted parallel, respectively perpendicularly to one another to form a plurality of double walled compartments;

(b) a tray, foldable for containment of and attachment around the sub-assembly of the partitions, providing bottom, side, top and back supportive surfaces therefor;

(c) an elongated wrap, having a rectangular center portion and two curved lateral portions, the width of which is greater than that of the supportive bottom and side surface

of the partition sub-assembly containing tray, around which it is wrapped for attachment thereto, so as to provide forwardly projecting winged sides for and an extension of the bottom supportive surface of the tray.



4,429,933

CLOSING MECHANISM FOR A CABINET COVER

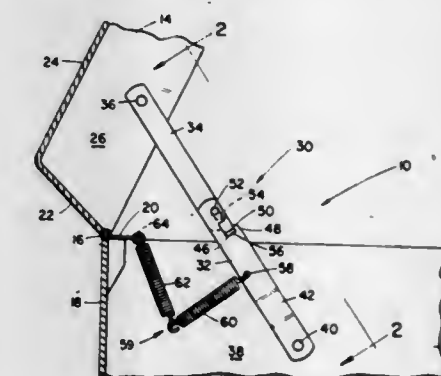
Eugene K. Sokolowski, 2415 N. Oak Park Ave., Chicago, Ill. 60635

Filed Jan. 9, 1981, Ser. No. 223,873

Int. Cl.³ B65D 43/24; E05C 17/32

U.S. Cl. 312-319

4 Claims



1. A closing mechanism (30) for a cabinet (10) having a base (12) and a cover (14) hinged to the base (12) wherein first and second elongated links (32, 34) are pivotally joined together at their first ends with a second end of the first link (32) being pivotally connected to the base (12) of the cabinet (10) and a second end of the second link (34) is connected to the cabinet cover (14) comprising:

an articulated biasing means (59) coupled to one of said links (32) and to said cabinet (10) and having a relaxed condition when the cover (14) is open and an active biasing condition as the cover (14) closes to urge the cover (14) to its open condition during closure, and said articulated biasing means (59) includes a first (60) and a second (62) elongated coil spring, a first end of said first coil spring (60) being pivotally connected to a first end of said second coil spring (62), a second end of said first coil spring (60) being connected to one of said first and second links (32) and a second end of said second coil spring (62) being connected to the base (12) of said cabinet (10), whereby said coil springs (60, 62) are relaxed and articulated at their common connection when said cover is open allowing said coil springs (60, 62) to move to a position which will not interfere with said cover (14) or said links (32, 34).

4,429,934

PANEL WIRING SYSTEM

Harold L. VandenHoek, Grand Rapids; Larry A. Speet, Holland, and Robert G. Mohr, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

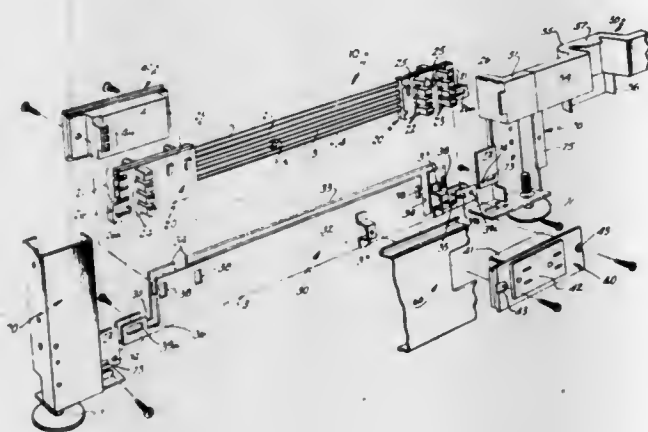
Continuation of Ser. No. 79,490, Sep. 27, 1979, Pat. No. 4,376,561, and a continuation-in-part of Ser. No. 909,975, May 26, 1978, Pat. No. 4,203,639. This application Feb. 22, 1982, Ser. No. 351,167

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.³ H01R 39/00

U.S. Cl. 339—22 R

27 Claims



1. In a panel system comprised of at least two free standing movable room divider panels having enclosed electrical wiring, the improvement comprising: each of said panels having first wiring means defining a first circuit extending generally from one end edge of said panel to the other; second wiring means defining a second circuit extending generally from one end edge of said panel to the other; at least one connector mounted in each of said panels, and including first, second and third sets of quick disconnect terminals; said first set of quick disconnect terminals having a configuration which is not that of a conventional plug receptacle, and being electrically connected with said first wiring means for connecting lighting to said first circuit; lighting means mounted on at least one of said panels and including a fourth set of quick disconnect terminals matingly joined to said first set of quick disconnect terminals, whereby current is delivered to said lighting means through said said first wiring means; said second set of quick disconnect terminals, having a configuration which is not that of a conventional plug receptacle, and being electrically connected with said second wiring means for connecting conventional plug receptacles to said second circuit; a conventional plug receptacle mounted on at least one of said panels, and having a fifth set of quick disconnect terminals matingly joined to said second set of quick disconnect terminals, whereby current is delivered to said conventional plug receptacle through said second wiring means; the configuration of said first set of quick disconnect terminals being different from the configuration of said second set of quick disconnect terminals, whereby said lighting means and said conventional plug receptacles cannot be inadvertently connected to a circuit not intended for them; said third set of quick disconnect terminals being electrically connected to both said first and second wiring means to facilitate electrical connection of both the first and second circuits in one panel to those in another panel; and panel power connector means joining said third set of quick disconnect terminals on the connector of one panel to the third set of quick disconnect terminals on the connector of the other panel.

4,429,935

MULTI-POSITION ELECTRICAL CONNECTOR

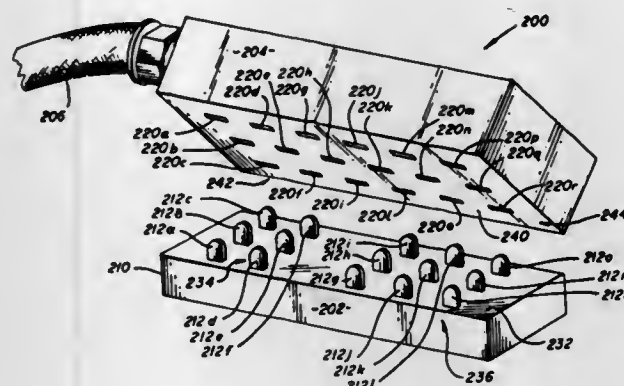
John D. Lamb, Lafayette, and Robert A. Chopko, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,446

Int. Cl.³ H01R 29/00

U.S. Cl. 339—32 M

6 Claims



1. An electrical connector for use with an electric device including first and second winding sections and a plurality of lead wires connected to the winding sections, the connector comprising:

a plug including
a base defining a longitudinal axis,
a first set of blades extending outward from the base,
first jumper means electrically connecting blades in the first set thereof,
a second set of blades extending outward from the base, and
second jumper means electrically connecting blades in the second set thereof; and
a socket defining
a first set of receptacles receiving the first set of blades, and
a second set of receptacles receiving the second set of blades;
the socket including
means for connecting a first subset of the first set of receptacles to a first voltage source,
means for connecting a second subset of the first set of receptacles to a second voltage source,
means electrically connecting the first set of receptacles to the second set of receptacles, and
means for connecting the second set of receptacles to the lead wires;
the plug and socket having first and second longitudinally spaced apart connected positions, wherein
in the first connected position, the first subset of the first set of receptacles coacts with the first jumper means and the means electrically connecting the first set of receptacles to the second set of receptacles to connect the first voltage source to the second set of receptacles and the second jumper means coact with a first combination of the second set of blades and second set of receptacles for connecting the winding sections in parallel, and
in the second connected position, the second subset of the first set of receptacles coacts with the first jumper means and the means electrically connecting the first set of receptacles to the second set of receptacles to connect the second voltage source to the second set of receptacles and the second jumper means coact with a second combination of the second set of blades and second set of receptacles for connecting the winding sections in series.

4,429,936

SPRING JAW FUSE CLIP AND INTEGRALLY RETAINED FUSE PULLER

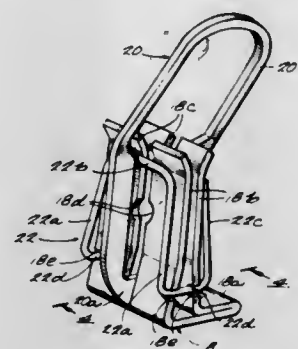
James J. Rusenko, Milwaukee, and Marian M. Rzepecki, Brown Deer, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 7, 1982, Ser. No. 366,437

Int. Cl.³ H01R 13/633

U.S. Cl. 339—45 R

12 Claims



1. A spring jaw fuse clip and a fuse puller integrally retained thereto comprising, in combination:

a base;
a pair of spaced legs extending upwardly from said base and having transversely aligned vertical slots open to the upper ends of the respective legs;
a backup spring engaging outer surfaces of said legs for biasing said legs inwardly, said spring having a portion spanning the respective slot in at least one leg;
an insulating loop comprising a planar U-shaped lower portion disposed in said slots transversely of said legs and an upper handle portion extending above the upper ends of said legs, the bight of said U-shaped lower portion extending across the space between said legs and being disposed in proximity to lower ends of said slots for positioning below a fuse blade inserted between said legs, said bight driving the fuse blade from engagement between said legs when said insulating loop is pulled upwardly, and said bight abutting said backup spring at said portion thereof spanning said respective slot to limit upward movement of said insulating loop.

4,429,937

CIRCUIT BOARD MODULE MOUNTING UNIT

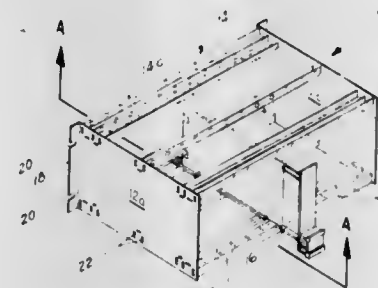
Edward F. Stockmaster, Mentor, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 22, 1981, Ser. No. 286,106

Int. Cl.³ H05K 7/14

U.S. Cl. 339—65

10 Claims



1. A module mounting unit for mounting a series of circuit board control modules comprising:

a pair of side plates;
a first bracket mounted between the lower front corners of said pair of side plates to have a series of apertures along the face of said bracket;
a second bracket mounted between the upper front corners of said pair of side plates;
a series of support brackets spacedly-mounted along the

lengths of said pair of side plates to separate said plates and having a series of circular and oval holes along the same face of the support bracket; and
a series of channel strips parallel-mounted across the circular and oval holes of said series of support brackets to form guideways for the circuit boards of said circuit board control modules.

4,429,938

LOCKING DEVICE FOR INTERFITTING MEMBERS

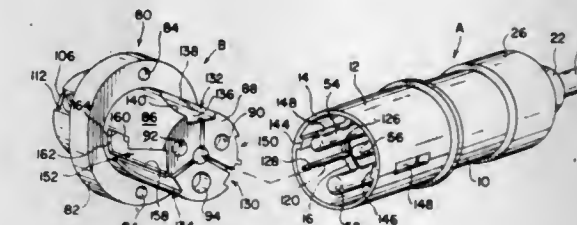
Joseph R. Flor, Livingston, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 6, 1982, Ser. No. 337,378

Int. Cl.³ H01R 13/625

U.S. Cl. 339—90 R

30 Claims



1. A device for automatically locking cooperative first and second members in an axially interconnected relationship, at least a generally cylindrical male portion of said first member from a first terminal end being axially receivable in a generally cylindrical female portion of said second member from a second terminal end, said device comprising:

one of said male and female portions including a plurality of spring members cooperable with a plurality of activating means on the other of said male and female portions, said spring members and said activating means being spaced apart circumferentially around the associated of said male and female portions, said spring members being placed in direct activating engagement with said activating means as said male portion is axially inserted into said female portion for causing said biasing means to be moved from a first normal position toward a second biasing position exerting a biasing force to urge relative rotation between said male and female portions; and, locking means cooperable between said male and female portions selectively movable from a first non-locking to a second locking condition, said locking means being automatically moved to said locking condition when a predetermined length of said male portion is received in said female portion and said male and female portions are relatively rotated under the influence of said biasing means.

4,429,939

ELECTRICAL CABLE ASSEMBLY

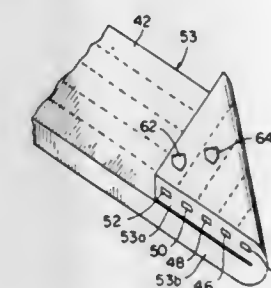
Raymond F. Piasecki, Leonardo, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 9, 1981, Ser. No. 300,466

Int. Cl.³ H01R 11/20

U.S. Cl. 339—97 C

24 Claims



1. An electrical cable assembly comprising an elongate flat cable having a plurality of electrical conductors and electrical

insulation about said conductors, first and second courses of said cable situated in mutually overlapping relation defining zones of interconnection registry for said conductors, and electrical connector means interconnecting together selected different ones of such conductors at said registry zones.

4,429,940

TAP CONNECTOR

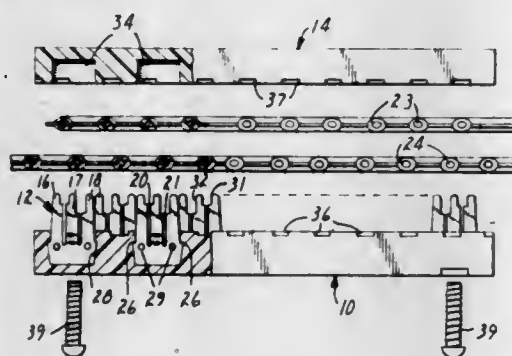
Lane A. Freshwater, Lino Lakes, and Eugene E. Moynagh, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 27, 1981, Ser. No. 325,348

Int. Cl.³ H01R 9/09

U.S. Cl. 339—99 R

11 Claims



1. A tap connector for tapping branch conductors to conductors of a bus cable, comprising:

an insulating base,

a plurality of tap contacts retained in said base, each said contact comprising a flat metal plate having three parallel, closely spaced legs extending from one edge, the two outer legs lying in a common plane and the center leg lying in a plane parallel to said common plane and offset therefrom by a distance at least equal to the thickness of said plate, the outer legs being spaced from the center leg to create two parallel sided conductor connecting slots of lesser width than the conductors to be connected for electrically connecting a branch conductor to a conductor of a bus cable, said contact legs being relieved at their free ends along their edges facing the conductor connecting slots to define wire retention areas of a width greater than the conductors to be connected to engage the insulation on the conductors and the inner edge of one outer leg and the adjacent edge of the center leg of each contact being relieved further along the conductor connecting slot a distance generally equal to the diameter of the insulated conductors to be connected, said contacts being positioned in said insulating base to connect a plurality of parallel, equally spaced conductors of a bus cable to a plurality of parallel equally spaced branch conductors at an angle to the conductors of the bus cable, and

an insulating cover having receptacles for the ends of said tap contacts to permit said cover to force the bus and branch conductors into said conductor connecting slots in said contacts when said cover is placed over said base and they are pressed together.

4,429,941

CABLE CLAMPING ARRANGEMENT FOR AN ELECTRICAL CONNECTOR

Norman Bottoms, Wilmslow, England, assignor to International Computers Limited, London, England

Filed Apr. 17, 1981, Ser. No. 255,098

Claims priority, application United Kingdom, May 6, 1980, 8015043; Aug. 12, 1980, 8026233

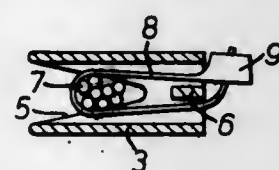
Int. Cl.³ H01R 13/58

U.S. Cl. 339—103 M

3 Claims

1. A cable clamping arrangement including: a structure of hollow cross-section having a pair of spaced apart opposite sides, each side having a first end and a second end opposite said first end; an acute angled V-shaped notch in each of the

opposite sides, the notches being aligned with one another and having their respective wider ends at the first end of each side; and means extending through the hollow structure in a direction away from the first ends for engaging the cable and urging



it into the notches so as to wedge it therein and thereby clamp it to the structure, the means including a flexible tie extending around the cable and a constriction in the interior of the hollow structure effective to secure the tie.

4,429,942

THREADED LAMP ADAPTER

George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 211,620, Dec. 1, 1980, Pat. No. 4,360,243. This application Sep. 20, 1982, Ser. No. 420,202

Int. Cl.³ H01R 13/02

U.S. Cl. 339—154 L

5 Claims



1. A connector for adapting a lamp to be threaded into a lighting fixture comprising:

a body adapted to receive first electrical conductor means connectable to an energizing terminal of said lamp, a sleeve having threads at least on its exterior surface for connection to a threaded light socket and rotatably mounted on said body, said body including retaining means for limiting axial movement between said body and said sleeve,

first resistance means on said body member, and second resistance means on said sleeve member, said first and second resistance means operating to increase the torque necessary to rotate said sleeve relative to said body when said sleeve is in a predetermined disposition relative to said body, said first and second resistance means comprising a projection and the other of said first and second resistance means has an opening adapted to receive said projection, and, said first resistance means being formed on said retaining means.

4,429,943

INSULATION BOX FOR WIRE HARNESS CONNECTOR DEVICE

Nori Inoue, Suzuka, Japan, assignor to Tokai Electric Wire Company Limited, Yokkaichi, Japan

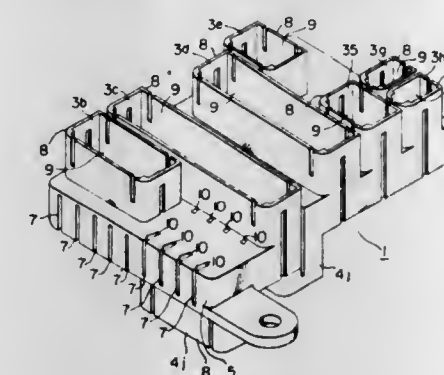
Filed Nov. 13, 1981, Ser. No. 321,228

Claims priority, application Japan, Nov. 14, 1980, 55-161266; Dec. 5, 1980, 55-175365[U]; Feb. 10, 1981, 56-17430[U]; Feb. 25, 1981, 56-25633[U]; Apr. 4, 1981, 56-48996[U]

Int. Cl.³ H01R 9/00

U.S. Cl. 339—198 R

7 Claims



1. An insulation box for connecting wire harnesses to a plurality of conductive strip members, comprising:

front and rear walls having a plurality of conductive strip insertion slots each communicating with one of a plurality of substantially parallel passages defined in said insulation box for holding the plurality of conductive strip members in a spaced, side-by-side, substantially parallel relationship;

a top wall connected to top ends of said front and rear walls and extending in a plane substantially parallel to the plane of said substantially parallel passages;

a bottom wall connected to bottom ends of said front and rear walls and extending in a plane substantially parallel to the plane of said substantially parallel passages;

at least one of said top and bottom walls having connector fitting openings formed therethrough for connecting the wire harnesses to said conductive strip members; and apertures formed in at least one of said top and bottom walls and communicating with said passages;

said connector fitting openings and said apertures being so arranged in relation to each other that the passages are opened to the exterior of the insulation box through at least one of said connector fitting openings and said apertures at any point along the length of said passages.

4,429,944

BATTERY POST CLAMP

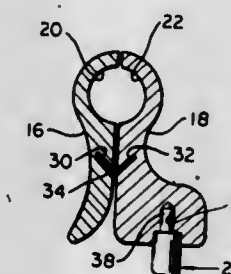
Joseph P. Bell, Rte. 1, Box 262D, Grayslake, Ill. 60030

Filed Aug. 6, 1981, Ser. No. 290,476

Int. Cl.³ H01R 11/11

U.S. Cl. 339—228

3 Claims



1. In a battery terminal clamp of the type in which a pair of conductive clamping members have cooperable recesses for engaging a battery terminal and the clamping members are pivoted at and biased towards a grouping relationship with

respect to a battery terminal by a spring and are maintained in alignment by an alignment member coupling both clamping members together, the improvement therein of maintaining the functions of the spring and alignment member while combining the same in a single element, comprising:

a V-shaped spring connecting both clamping members and providing a holding connection therebetween, while simultaneously providing the bias and the alignment of the clamping members, a slot in each of said clamping members, and said V-shaped spring including a pair of flat legs each press fit in a respective slot.

4,429,945

TERMINAL FOR BASELESS CARTRIDGE LAMP SOCKETS

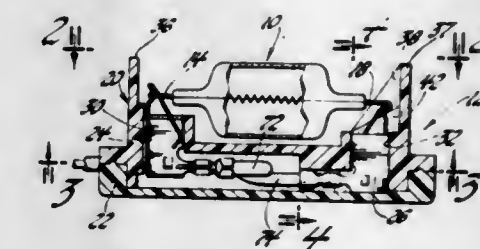
Charles R. Nestor, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 20, 1982, Ser. No. 341,117

Int. Cl.³ H01R 33/08, 33/12, 11/22

U.S. Cl. 339—252 R

3 Claims



1. A terminal for engaging and supporting a wire loop terminal or a wire hook terminal of a baseless cartridge lamp or the like, comprising:

a base having a spring tongue integrally attached to a forward edge of the base,

a side wall integrally attached to a side edge of the base, said side wall having a flange juxtaposed the spring tongue for limiting deflection of the spring tongue in one direction and a second flange spaced from the spring tongue in the opposite direction,

said spring tongue having a free end which extends beyond the side wall and flanges and which is bent to provide a hook for engaging and supporting either a wire loop terminal or a wire hook terminal,

a spring support which extends from the free end of the spring tongue and slideably engages the second flange to increase the spring forces when the spring tongue is deflected in the opposite direction, and and intumed foot at the end of the spring support which engages the spring tongue to limit the deflection of the spring tongue in said opposite direction.

4,429,946

METHOD AND SYSTEM FOR CONSTRUCTING A COMPOSITE HOLOGRAM

Kenneth A. Haines, Santa Clara, Calif., assignor to Eldetic Images, Inc., Santa Clara, Calif.

Division of Ser. No. 73,181, Sep. 7, 1979, Pat. No. 4,364,627.

This application Jul. 22, 1982, Ser. No. 400,614

Int. Cl.³ G03H 1/28, 1/30

U.S. Cl. 350—3.76

5 Claims

1. In the method of making a composite hologram of a large number of individual lenticular holograms, said holograms having narrow widths and a common height and joined together at their sides into a drum-like shape having a radius "R" and a center axis, wherein an apparent image of a three-dimensional object is reconstructed within said drum shape by illuminating the hologram from beneath by a white light source, said source having a maximum width "W" and positioned substantially on said center axis, the improvement wherein: the spac-

ing of the adjacent lenticular hologram elements is made to be substantially within a range of λR as an upper limit and $\lambda R/W$ as a lower limit, wherein " λ " is any wavelength of



visible light, thereby to minimize the effect and visibility of undesirable vertical liens that exist superimposed over the image.

4,429,947

REFLECTION MOUNT FOR TRANSMISSION HOLOGRAMS

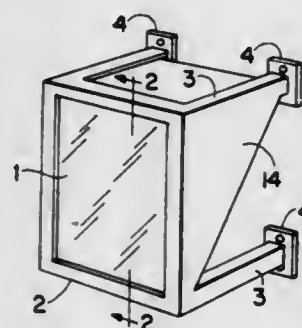
Stephen A. Benton, Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 13, 1981, Ser. No. 253,671

Int. Cl.³ G03H 1/22; G02B 27/2

U.S. Cl. 350—3.85

9 Claims



1. Apparatus for illuminating a transmission hologram for viewing by an observer facing the hologram on a first side thereof, comprising: means for mounting a transmission hologram in a plane generally normal to the intended line of sight of the observer; a source of light located on the same side of said mounting means as the intended location of the observer and directing light toward said mounting means along paths displaced from the paths of light from the general direction of the intended observer; reflecting means; means for mounting said reflecting means on a second side opposite the first side of the hologram in position to form a virtual image of said source on said second side of said hologram; light absorbing means; and, means for mounting said light absorbing means adjacent said reflecting means to absorb light coming from the general direction of the intended location of an observer and reflected by said reflecting means.

4,429,948

OPTICAL ALIGNMENT COMPENSATION

Richard L. Garwin, Scarsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1981, Ser. No. 263,648

Int. Cl.³ G02B 27/17

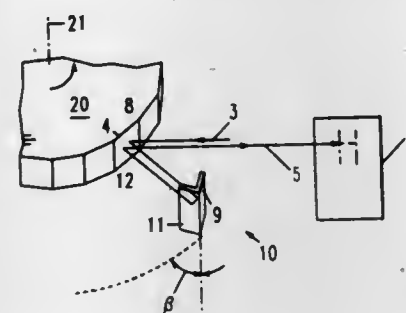
U.S. Cl. 350—6.8

5 Claims

1. In apparatus providing a raster scan of a surface by a beam of light, said raster scan being made up of a series of side to side movements of said light beam combined with incremental advancement of said surface in an orthogonal direction to said side to side movements and wherein the said side to side move-

ments of said light beam are produced by reflection in the path between the source of said light and said surface of said light beam along a light path direction on a moving reflecting member,

the improvement for selective control of the length of said side to side movements comprising at least one dihedral mirror assembly having reflecting surfaces that intersect in a line,



means positioning said assembly with said line perpendicular to the said light path direction of said moving reflecting member, and

means positioning one of said intersecting reflecting surfaces of said dihedral mirror at a side to side light beam movement length determining angle with respect to said moving reflecting member.

4,429,949

CONNECTOR FOR OPTICAL FIBERS WHEREIN INDIVIDUAL FIBER IS CENTERED BY A PLURALITY OF BALLS

Jacques Cartier, Fontenay-Sous-Bois, France, assignor to Radial, Rosny-Sous-Bois, France

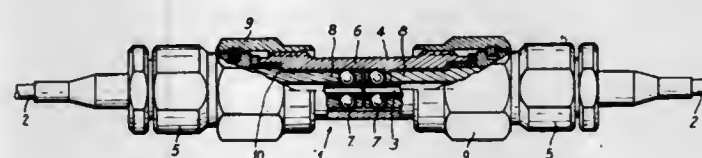
Filed Sep. 9, 1980, Ser. No. 185,876

Claims priority, application France, Sep. 18, 1979, 79 23200

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

8 Claims



1. A connector for optic fibers with an elastic sheath, comprising in combination, a rigid sleeve having an axis, a first optic fiber having an end within said sleeve, an elastic sheath on said fiber adjacent said end, means for radially centering said fiber relative to said sleeve and comprising, a set of balls between said sleeve and said elastic sheath, said balls each engaging the inside of said sleeve and the outside of said sheath and being disposed near the end of the fiber with their centers in a common plane perpendicular to the axis of said sleeve, said set of balls cooperating with the inside of said sleeve to define a space along the axis of the sleeve which is slightly less than the external diameter of said elastic sheath so that said first optic fiber is centered in said sleeve by means of radial compression of the elastic sheath by said balls, a second optic fiber having an end facing toward the end of the first optic fiber, and means for radially centering the end of the second optic fiber relative to the axis of said sleeve.

4,429,950

BICYCLE PEDAL REFLECTOR

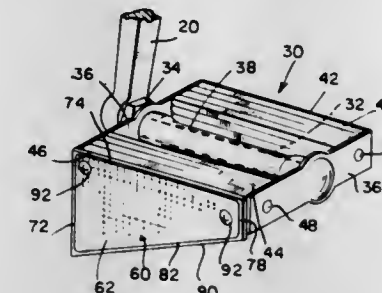
Helmut T. Zwahlen, 3 Canterbury Dr., Athens, Ohio 45701

Filed May 20, 1982, Ser. No. 380,417

Int. Cl.³ G02B 5/12; G05G 1/14

U.S. Cl. 350—99

18 Claims



1. A reflector for a pedal mounted to the crank of a bicycle, the pedal having front and rear facing pedal surfaces; the reflector comprising a reflectorized member having a reflective area greater than one of the front and rear facing pedal surfaces, and mounting means for mounting the reflectorized member on the one pedal surface, the reflectorized member including a proximal side adjacent to the crank when mounted on the one pedal surface and a bottom forming an acute angle with respect to the proximal side.

4,429,951

SPECTACLES FOR GIVING TWO-DIMENSIONAL TELEVISION OR MOTION PICTURES THREE-DIMENSIONAL APPEARANCE

Kichinosuke Hirano, 35-5 Kita-Karasuyama, 4-chome, Setagaya-ku, Tokyo, Japan

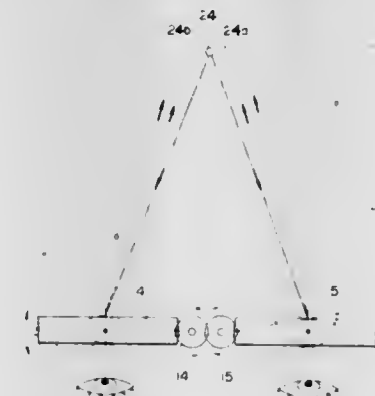
Filed Aug. 6, 1980, Ser. No. 175,858

Claims priority, application Japan, Dec. 5, 1979, 54-157877

Int. Cl.³ G02B 27/22; G02C 7/08

U.S. Cl. 350—144

6 Claims



1. Spectacles for giving a two-dimensional motion picture or television picture a three-dimensional appearance when worn in front of a wear's left and right eyes, said spectacles comprising a frame means for supporting a pair of lenses including a left lens and a right lens, means for shifting the image of the picture projected through the left lens to the right and the image of the picture projected through the right lens to the left, said image shifting means including a pair of refracting lenses including a left refracting lens and a right refracting lens, having respective first vertical axes located in the respective planes of said left and right refracting lenses, mounted on said frame means, for pivotal movement around said respective vertical axes and means, mounted to said frame means, for pivoting said pair of refracting lenses through equal angles around said respective vertical axes in opposite directions.

4,429,952

TRACKING REFLECTOR ASSEMBLY FOR A SKYLIGHT

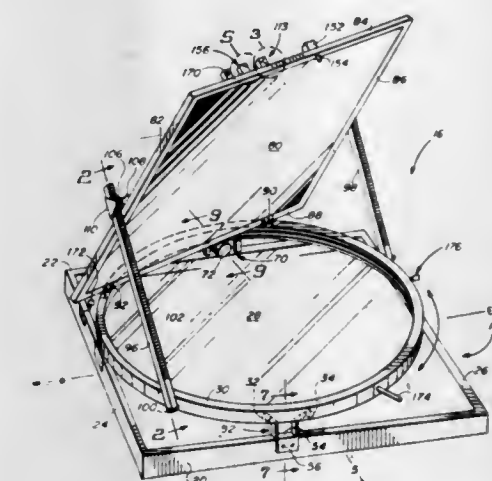
Richard L. Dominguez, 3835 W. Eva Ave., Phoenix, Ariz. 85021

Filed Dec. 28, 1981, Ser. No. 335,173

Int. Cl.³ G02B 17/00, 27/00

U.S. Cl. 350—258

20 Claims



1. A skylight reflector assembly for usage with a conventional skylight and adapted to track daily and seasonal movements of the sun, the skylight including a light transmissive panel having a center portion and supported within a frame, said skylight reflector assembly comprising in combination;

- a ring of a diameter commensurate with the width of the skylight frame;
- a plurality of rollers disposed above the skylight frame for rotatably supporting said ring above the light transmissive panel of the skylight, said plurality of rollers allowing said ring to rotate about an axis substantially perpendicular to the center portion of the light transmissive panel;
- said ring including a track for engaging said plurality of rollers to allow said ring to rotate relative to the skylight;
- a plurality of support brackets secured to the skylight frame for supporting said plurality of rollers, each of said support brackets having at least one of said rollers secured thereto;
- a reflector pivotally coupled to said ring for reflecting sunlight through the light transmissive panel of the skylight in addition to sunlight which strikes the light transmissive panel directly, said reflector being pivotally movable between a closed position overlying and shading the light transmissive panel of the skylight and an opened position allowing sunlight to pass through the light transmissive panel;
- vertical drive means coupled to said reflector for pivoting said reflector relative to said ring;
- horizontal drive means coupled to said ring for rotating said ring as well as said reflector pivotally coupled thereto; and
- control means responsive to the position of the sun for controlling said vertical drive means and said horizontal drive means to cause said reflector to track movements of the sun.

4,429,953

CURVED GLASS REFLECTOR AND METHOD OF MAKING SAME

Theodore F. Zehnpeffnig, Wayland, and William P. Reidy, Bedford, both of Mass., assignors to Visidyne, Inc., Burlington, Mass.

Filed Sep. 29, 1980, Ser. No. 191,508

Int. Cl.³ G02B 5/10

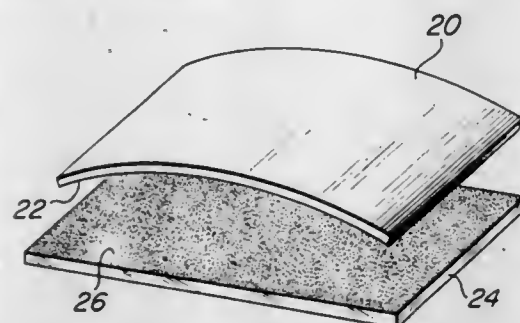
U.S. Cl. 350—293

6 Claims

1. A method of forming a curved, glass reflector having a curve depth d' comprising:

forming, in a metal leaf spring backing plate having a stiffness S_2 , a curved surface having a curve depth d ; bonding to said curved surface a flat glass plate having a stiffness S_1 ; and after bonding, permitting said bonded plates to adjust to an equilibrium curved formation in which the curve depth is d' where $d' = d/R$ and R is the ratio of $(S_1 + S_2)/S_2$.

2. A method of forming a curved, glass reflector having a curve depth d' comprising:



forming, in a glass backing plate having a stiffness S_2 , a curved surface having a curve depth d ; bonding to said curved surface a flat glass plate having a stiffness S_1 ; and after bonding, permitting said bonded plates to adjust to an equilibrium curved formation in which the curve depth is d' where $d' = d/R$ and R is the ratio of $(S_1 + S_2)/S_2$.

4,429,954

SPATIAL LIGHT MODULATOR AND PROCESS OF MODULATION

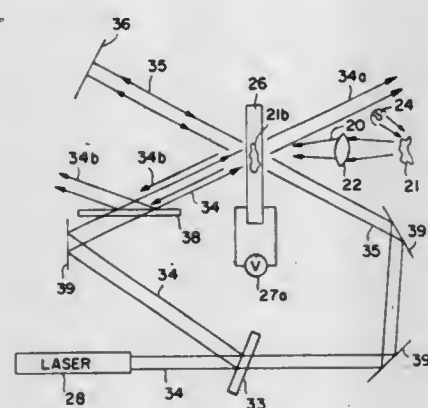
H. John Caulfield, Nagog Woods, Mass., and W. Thomas Cathey, Boulder, Colo., assignors to Aerodyne Research, Inc., Billerica, Mass.

Filed Nov. 5, 1980, Ser. No. 203,568

Int. Cl.³ G02F 1/29; G03H 1/22

U.S. Cl. 350—3.64

35 Claims



1. A method of spatial light modulation to impart information to a beam of coherent radiation from an input of non-coherent radiation, comprising imaging information-containing non-coherent radiation on a photosensitive crystal while applying an electric potential to said crystal to generate a pattern of electric charge within said crystal, and directing to said crystal at least one beam of coherent radiation, thus bringing about patternwise modification of refraction of said coherent beam.

4,429,955

PASSIVE ELECTRO-OPTICAL DISPLAY WITH SCREEN AND CONTROL ELECTRODES

Hubert Portmann, Rothenburg, Switzerland, assignor to Asulab S.A., Neuchatel, Switzerland

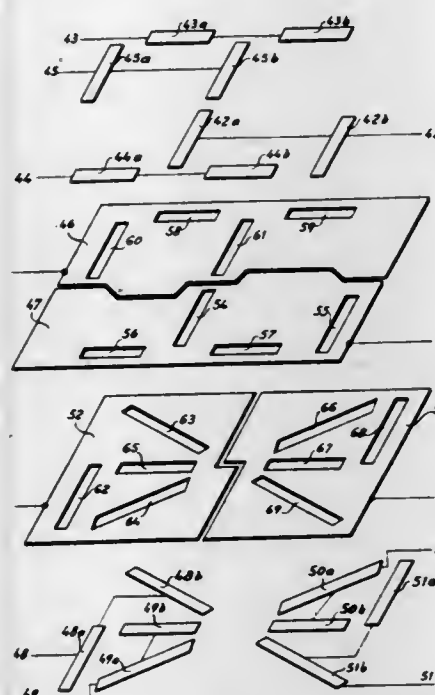
Filed Sep. 1, 1981, Ser. No. 298,495

Claims priority, application Switzerland, Sep. 15, 1980, 6897/80

Int. Cl.³ G02F 1/13

U.S. Cl. 350—332

3 Claims



1. A passive electro-optical display cell comprising: first and second spaced plates, at least one of which is transparent; a layer of a passive electro-optical material interposed between said first and second plates; control electrodes positioned on the inner face of each of said plates; and at least one screen electrode positioned between each of said control electrodes and said electro-optical material layer, each screen electrode being provided with openings facing a part of the surface of each control electrode associated therewith, said openings defining the shapes of segments to be displayed; at least the first plate carrying at least two screen electrodes, at least two openings of the screen electrode of the second plate being disposed facing a common control electrode, each of said at least two openings being disposed facing a different screen electrode of said first plate, the openings associated with any one of the control electrodes being all formed in the same screen electrode.

4,429,956

WET CORNEA TELESCOPE

M. Linton Herbert, 762 E. Michigan Ave., Orlando, Fla. 32806

Continuation of Ser. No. 113,498, Jan. 21, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,898

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

Int. Cl.³ G02B 3/12, 17/00, 21/04, 23/02

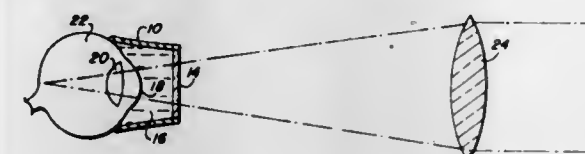
U.S. Cl. 350—410

40 Claims

1. A wet cornea telescope for permitting a viewer to see a magnified image of a remotely positioned object aligned with the optical axis of the telescope, comprising:

- a. a liquid-filled eyepiece coupled to the face of the viewer for forming an optically transparent, liquid-filled chamber, said eyepiece including
 - i. a flat, substantially non-magnifying, optically transparent window aligned with the optical axis of the telescope and spaced apart from the cornea of said eye;

- ii. a sidewall for maintaining said window spaced apart from said eye, said sidewall having a continuous front end surface for forming a leak-free seal between said eyepiece and said window and a continuous rear end surface for forming a leak-free seal between said eyepiece and the viewer's face; and



- b. means interposed in the optical path between the object and said eyepiece for converging light rays traveling from the object to the viewer's eye to thereby project a magnified image of the object on the viewer's retina.

4,429,957

PANORAMIC ZOOM LENS ASSEMBLY

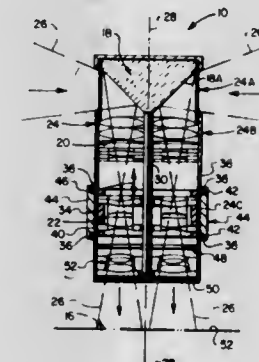
Don G. King, Lewisville, Tex., assignor to King-Bell Optics, Inc., Lewisville, Tex.

Filed Jul. 30, 1981, Ser. No. 288,656

Int. Cl.³ G02B 13/06, 15/14

U.S. Cl. 350—423

1 Claim



1. A zoom lens assembly for focusing the image of a panoramic view onto an image plane comprising, in combination: a cylindrical housing having a transparent sidewall zone and an opaque sidewall zone; a reflector mounted in said housing in optical communication with the transparent sidewall zone, said reflector having a symmetrical, reflective surface of revolution the axis of which is transverse to the image plane; a first annular lens mounted with said housing in a position surrounded by said opaque sidewall zone; a guide tube received within said housing and extending along the axis of said reflector through said first annular lens; a second annular lens received within said housing and movably mounted in concentric alignment with said first annular lens for reciprocal movement along said guide tube between the first annular lens and the image plane; and, carriage means received within said housing and mounted for movement along said guide tube, said second annular lens being mounted onto said carriage means.

4,429,958

RELATIVELY WIDE ANGLE TELEPHOTO TYPE LENS SYSTEM

Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Higashi, Japan

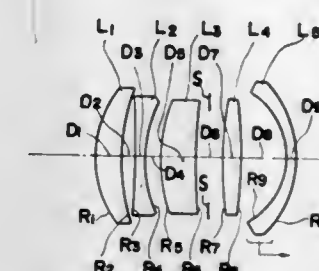
Filed Mar. 17, 1981, Ser. No. 244,341

Claims priority, application Japan, Mar. 24, 1980, 55-37775; Aug. 22, 1980, 55-116282

Int. Cl.³ G02B 9/60, 9/62, 15/14

U.S. Cl. 350—455

30 Claims



1. A telephoto type relatively wide angle lens system, with the object side principal point located outside the lens system, comprising, from the object to image side: a first positive lens component having a convex object side surface and a concave image side surface; a second negative lens component; a third positive lens component; an aperture stop; and a plurality of lens components at the image side of the aperture stop including a rearmost negative lens component having a concave object side surface and a convex image side surface, the rearmost negative lens component being shiftable along the optical axis for focusing.

4,429,959

SPECTACLE MOUNTED HINGED MONOCULAR OR BINOCULAR VISION AID

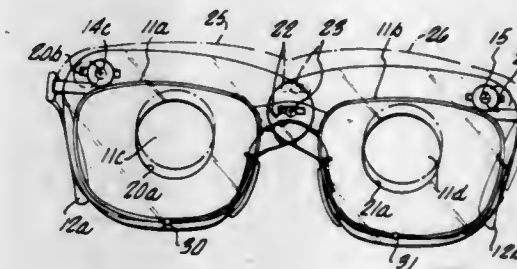
Samuel Walters, 3134 Dona Emilia Dr., Studio City, Calif. 91604

Filed Nov. 9, 1981, Ser. No. 319,271

Int. Cl.³ G02C 7/08, 1/00

U.S. Cl. 351—158

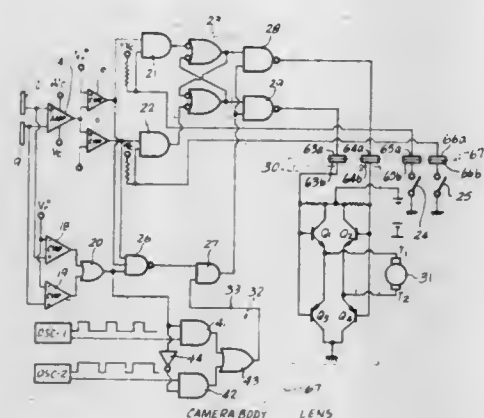
9 Claims



1. A visual aid device adapted to be hingeably attached to spectacle frames and for mounting one or more monoculars through which the eye or eyes of the wearer can view objects comprising first and second plates, said plates being generally in the shape of a conventional spectacle lens but including a lip on one side and wherein the lips of the plates can be overlapped to provide a central pivot point and hinge, and each of said plates having a first elongated hole at a side substantially opposite the lip of the respective plate, and the lips of each plate having a second elongated hole forming said pivot point, at least one of said plates having a substantially central aperture for receiving a monocular, and said first elongated holes being adapted to be secured to a hinge member attached to respective frame sections of spectacles and to allow, along with holes in the lips, pupil distance to be adjusted and set, and said second holes in

matic focussing type, capable of focussing objects, between a minimum and an infinite focussing distance comprising:

- a camera body;
- an interchangeable lens housing removably fitting in the camera body, said lens housing having a movable lens, a first switch for providing a signal associated with focussing an object at the infinite distance and a second switch for producing a signal associated with focussing an object at the minimum distance;
- a reversible focussing motor located in the lens housing and coupled to the lens for moving the lens for focussing objects lying between the minimum and infinite distance;
- electrical drive means located in the lens housing for driving the focussing motor responsive to two control signals indicating together the desired presence and direction of rotation of the focussing motor;



means in the camera body for generating two control signals indicating the presence and direction of rotation of the focussing motor;

first and second pairs of contacts, coupled between the lens housing and the camera body, for transmitting the respective two control signals from the camera body to the drive means in the lens housing; and

third and fourth pairs of contacts, coupled between the lens housing and the camera body, for transmitting the signals, produced by the first and second switches, respectively, from the lens housing to the generating means in the camera body, said pairs of contacts being oriented on the lens housing relative to each other for providing signal coupling between the lens housing and the camera body.

4,429,966

CAMERA WITH PHOTOELECTRIC FOCUS DETECTING DEVICE

Kazuya Hosoe, Kunitachi; Takao Kinoshita, Tokyo, and Masayoshi Yamamichi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,433

Claims priority, application Japan, Apr. 16, 1981, 56-57451; Apr. 17, 1981, 56-58174; Apr. 17, 1981, 56-58175; Apr. 17, 1981, 56-58176

Int. Cl.³ G03B 3/00, 7/099, 15/05, 17/20

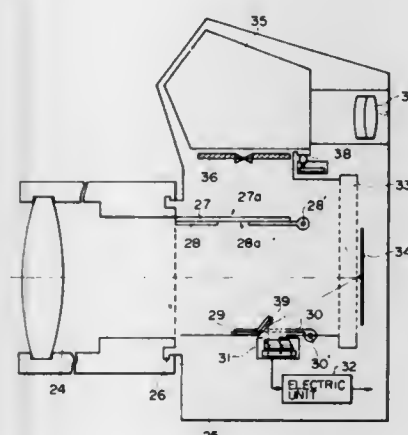
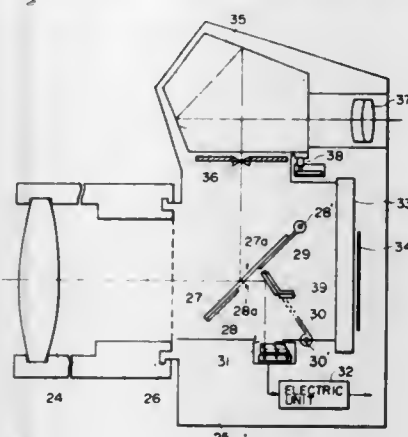
U.S. Cl. 354-406

26 Claims

1. A camera comprising:

- (A) a focus-adjustable objective lens;
- (B) means for exposing a photosensitive member to light from said objective lens;
- (C) a system for detecting the focusing state of said objective lens, said system including means for converting light into an electric signal;
- (D) optical means for directing the light reflected from said photosensitive member toward said converting means upon exposure of said photosensitive member to the light by said exposing means; and

(E) circuit means for producing an output associated with exposure of said photosensitive member in response to an



output of said converting means with respect to the light reflected from said photosensitive member.

4,429,967

DISTANCE MEASURING SYSTEM

Ryuji Tokuda; Masahiko Ogawa, both of Tokyo; Tokuchi Tsunekawa, Kanagawa, and Shuichi Tamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

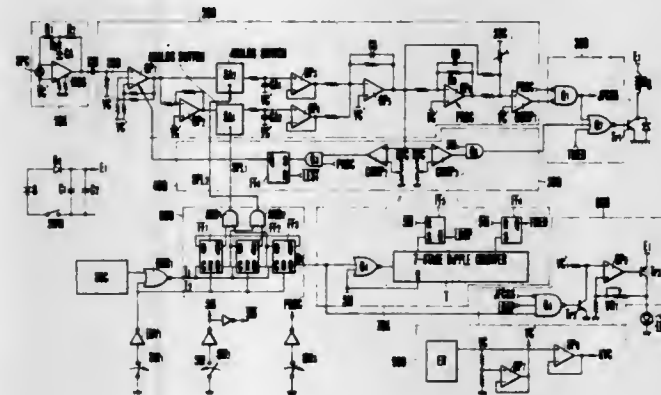
Continuation of Ser. No. 33,334, Apr. 25, 1979, abandoned. This application Jun. 23, 1982, Ser. No. 391,394

Claims priority, application Japan, Apr. 28, 1978, 53-51856

Int. Cl.³ G03B 3/00; G01C 3/10

U.S. Cl. 354-403

7 Claims



1. A distance measuring system comprising:

- (a) light sensitive means for converting light from an object whose distance is to be measured into an electrical signal;
- (b) amplifying means connected to the output of said light sensitive means for amplifying the electrical signal;
- (c) output means responsive to the amplified electrical signal and for producing an output signal corresponding to the distance to the object; and
- (d) gain control means connected to the amplifying means for

making the gain of said amplifying means high when the level of the electrical signal from said light sensitive means is lower than a predetermined level prior to the initiation of the operation of said output means;

said output means including means for inhibiting the output signal until the gain control means completes the gain control operation.

4,429,968

AUTOMATIC FOCUS CONTROL DEVICE

Hideo Taka, and Makoto Masunaga, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Japan

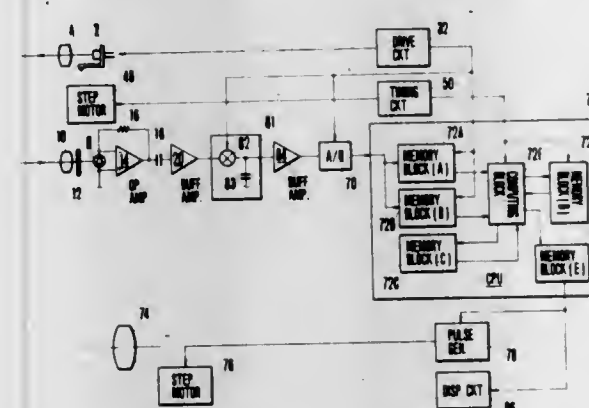
Filed Jul. 14, 1982, Ser. No. 398,183

Claims priority, application Japan, Jul. 22, 1981, 56-114852; Jul. 22, 1981, 56-114853

Int. Cl.³ G03B 3/10

U.S. Cl. 354-403

50 Claims



1. A device comprising:

- (A) means for projecting radiation toward an object;
- (B) means for sensing the radiation reflected by and coming from the object and for producing an electrical output indicative of the intensity of the received radiation;
- (C) means for effecting relative movement between the reflected radiation and said sensing means;
- (D) means for processing the electrical output of said sensing means to produce an output related to an object range; and
- (E) means arranged between said effecting means and said processing means for relating the output processing operation of the processing means to said relative movement between the radiation and said sensing means effected by the effecting means.

4,429,969

EXPOSURE CONTROL DEVICE OF CAMERA FOR FLASH EXPOSURE

Takashi Saegusa, Sagami, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,073

Claims priority, application Japan, Apr. 10, 1981, 56-53131; Apr. 10, 1981, 56-53132; Apr. 10, 1981, 56-53133

Int. Cl.³ G03B 7/081, 7/28, 15/05

U.S. Cl. 354-414

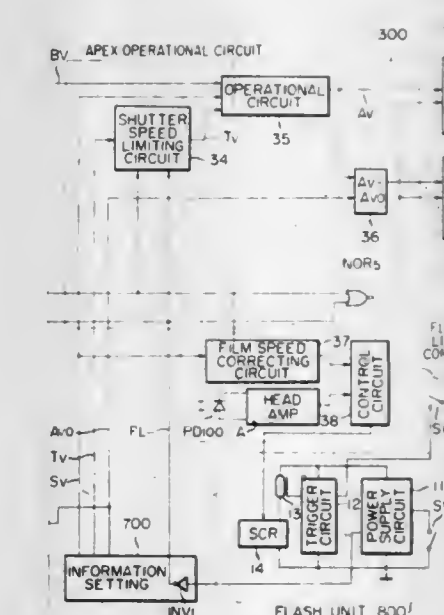
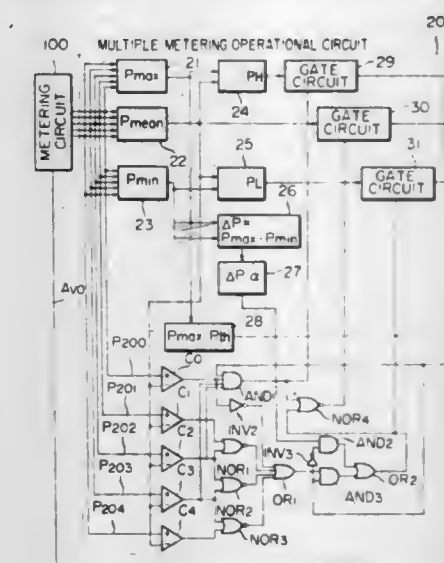
19 Claims

1. An exposure control device for photographing an object field to be illuminated by a flash unit, comprising:

- (a) means for measuring luminances in plural areas divided in said object field and generating electric output signals corresponding to the luminances in said areas;
- (b) first comparator means for extracting maximum and minimum output signals from said electric output signals, comparing the difference of said maximum and minimum output signals with a reference value and generating an output signal in case said difference is smaller than said reference signal;
- (c) means for releasing an output signal upon detection in advance that a flash is to be given by said flash unit at said photographing;

(d) second comparator means for comparing the luminance measured in said object field with a determined value and generating an output signal in case said luminance is substantially larger than said determined value;

(e) means for forming a light-metering output signal from said electric output signals, said means comprising means for producing a first light-metering output signal



upon the simultaneous reception of the output signals from said first comparator means and said flash detecting means for giving an appropriate exposure to the areas of relatively low luminances in said plural areas; and

(f) means for controlling the exposure in accordance with said first light-metering output signal in response to the output signal from said second comparator means.

4,429,970

ILLUMINATING LIGHT AMOUNT CONTROLLABLE RETINAL CAMERA

Hiroshi Fujiwara, Kawasaki, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,375

Claims priority, application Japan, Apr. 28, 1981, 56-65073

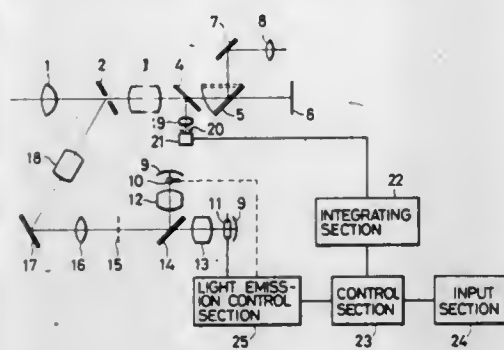
Int. Cl.³ A61B 3/14; G03B 7/16, 29/00

U.S. Cl. 354-413

5 Claims

1. A retinal camera comprising a light receiving element which can receive a part of the light from the retina and an illuminating light source which is arranged to illuminate said retina and can have the emitted light amount controlled on the

basis of the light amount detected by said light receiving element, the light measuring range of said retina being made at



least 2.5 times as large in the diameter as the nipple of the retina.

4,429,971

APPARATUS FOR TESTING AUTOMATIC ELECTRONIC FLASH

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Continuation of Ser. No. 235,702, Feb. 18, 1981, abandoned.

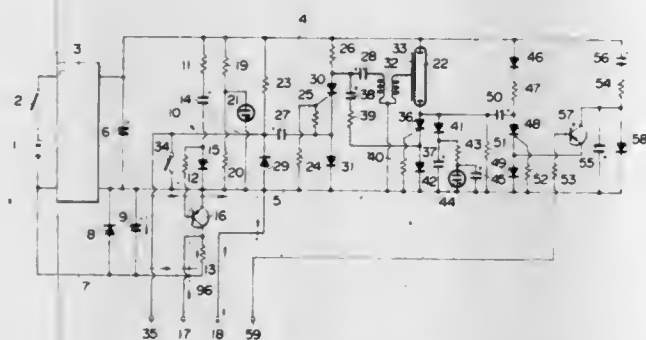
This application Jan. 3, 1983, Ser. No. 455,300

Claims priority, application Japan, Apr. 23, 1980, 55-54785

Int. Cl.³ G03B 15/05

U.S. Cl. 354-415

12 Claims



1. In a combination of a single lens reflex camera of the TTL direct photometry type and a TTL automatic electronic flash, in which the camera includes an exposure control circuit having a photometric element on which light passing through a taking lens and reflected from a shutter blind surface and a film surface impinges, and the electronic flash includes a flash discharge tube, the emission of light therefrom being interrupted in response to an illumination control signal which is produced by the exposure control circuit; an apparatus for testing the automatic electronic flash comprising:

a test switch in said electronic flash connected in parallel with a synchro contact switch contained within the camera for use during actual flash photography operations, said test switch for initiating the emission of flashlight upon being closed to test the emission of flashlight from the flash discharge tube without a shutter operation; said exposure control circuit including said photometric element for receiving light during testing of said electronic flash and during actual flash photography, said photometric element operating to receive said emitted flashlight when said test switch is closed; means for detecting the emission of flashlight from the flash discharge tube as it is activated in response to the closure of the test switch and for producing a light emission signal; means in said camera for receiving said light emission signal and applying same to said exposure control circuit; said exposure control circuit including a trigger switch and means for operating said trigger switch to activate said

exposure control circuit in response to receiving said light emission signal from said receiving means; and said activated exposure control circuit including means for providing an integrated voltage in accordance with the amount of light received by said photometric element during said test operation.

4,429,972

SINGLE LENS REFLEX CAMERA HAVING AN ELECTRO-MAGNETIC DEVICE

Masayoshi Yamamichi; Yukio Iura, both of Kanagawa; Hiroshi Aizawa, Tokyo; Tadashi Ito, Kanagawa; Tetsuya Taguchi, Kanagawa, and Tadanori Uchidoi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 973,890, Dec. 28, 1978, abandoned, which is a continuation of Ser. No. 678,207, Apr. 19, 1976,

abandoned, which is a continuation of Ser. No. 545,322, Jan. 29, 1975, abandoned. This application Feb. 4, 1981, Ser. No. 231,032

Claims priority, application Japan, Feb. 4, 1974, 49-14360; Jul. 27, 1974, 49-86370

Int. Cl.³ G03B 7/085, 7/26, 17/38, 19/12

U.S. Cl. 354-448

6 Claims



1. An electro-magnetic control system for a camera, comprising:

diaphragm control means;

mirror driving means;

driving power means for driving said diaphragm control means and said mirror driving means, the driving power means having a driving spring means to be charged for producing power for driving said control means and said mirror driving means;

initiation means arranged to hold said diaphragm control means and said mirror driving means in a charged state thereof and then to be movable for releasing said diaphragm control means and mirror driving means from the charged state to an actuating state;

electro-magnetic release means for operating said initiation means, said electro-magnetic release means being provided with an electro-magnet equipped with a permanent magnet, the magnetic flux of which causes said electro-magnet to attract an armature interlocked with said initiation means, said electro-magnetic release means being arranged such that, when the excitation coil thereof is energized, said magnetic flux of said permanent magnet is offset by a magnetic flux produced by the excitation coil to release said armature from the attraction by said electro-magnet, said armature having biasing means for applying a given force thereto sufficient to release said initiation means into an actuating state;

a power source;

current supplying means connected to said power source to supply an electric current to said excitation coil, said current supplying means having a capacitor which is charged with a current supplied from said power source and a resistor which restricts the capacitor charging current, said capacitor being provided with a discharge route to which said excitation coil is connected, said current supplying means being provided with electronic switch-

4,429,974

POWER SUPPLY DEVICE FOR CAMERA

Nobuyuki Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

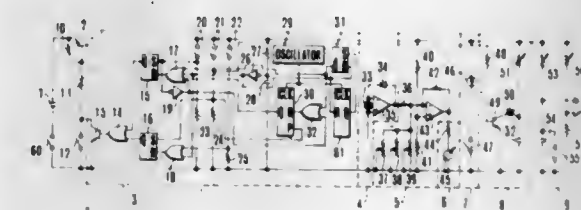
Filed Jun. 24, 1982, Ser. No. 391,718

Claims priority, application Japan, Jul. 7, 1981, 56-106406

Int. Cl.³ G03B 7/087, 17/38

U.S. Cl. 354-484

7 Claims



ing means for adding a driving pulse to the excitation coil from the capacitor;

current supply control means which controls the energization of said excitation coil effected by a discharging operation of said capacitor, said current supply control means being provided with control circuit means connected with said electronic switching means for turning on the latter during a predetermined period;

switch means having a first switch and a second switch, said second switch controlling the operation of said current supply control means, and being arranged to be turned on to actuate said current supply control means for energizing said excitation coil by allowing said capacitor to perform said discharging operation, said switch means having delay means for generating an operation signal to control the operation of said current supply control means a predetermined time after said switch means becomes on; and releasing operation means for turning on the first switch by a stroke and turning on the second switch by a second stroke.

4,429,973

COMPENSATION FOR DIAPHRAGM CONTROL FOR SLR CAMERA

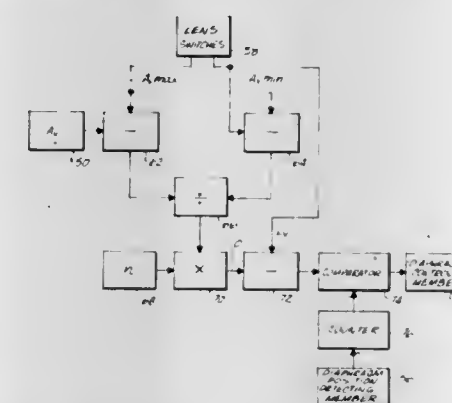
Masahiro Kawasaki, Tokyo; Fumio Urano, Omiya, and Yasumasa Tomori, Sakado, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 355,767

Int. Cl.³ G03B 7/095, 7/20

U.S. Cl. 354-455

6 Claims



1. A camera comprising:

a displaceable actuator;

a diaphragm adjustable between a maximum aperture value and a minimum aperture value responsive to displacement of the actuator;

means for generating a first signal representative of the displacement of the actuator;

means for generating a second signal representative of the desired aperture value of the diaphragm for correct exposure, the second signal equaling the desired aperture value minus the maximum aperture value;

means for generating a third signal representative of the difference between the minimum aperture value and the maximum aperture value;

means for displacing the actuator upon shutter release to adjust the diaphragm; and

means responsive to the first, second, and third signals for arresting the displacement of the actuator when the diaphragm is adjusted to the desired aperture value, the arresting means comprising means for dividing the second signal by the third signal to derive a fourth signal, means for comparing the fourth signal with the first signal, a diaphragm control magnet that arrests displacement of the actuator responsive to a binary signal of a given value, and means responsive to the comparing means for applying to the control magnet a binary signal of the given value when the fourth signal and the first signal assume a predetermined relationship.

4,429,975

CONTROL CIRCUIT FOR CAMERAS HAVING INTERNAL AND EXTERNAL POWER SUPPLIES

Kazuo Shiozawa, and Hideaki Sakai, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

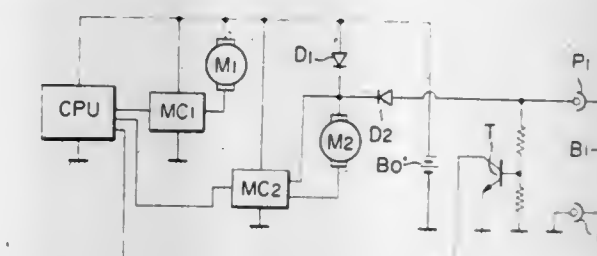
Filed May 19, 1982, Ser. No. 379,757

Claims priority, application Japan, May 28, 1981, 56-80056

Int. Cl.³ G03B 17/00; H02J 1/00

U.S. Cl. 354-202

3 Claims



1. In a camera of the type in which a plurality of operable elements are operated by a source of power contained therein, the improvement comprising means controlling certain of said elements for sequential operation when connected to said contained source of power, an external source of power, means connecting said external source of power to said operable elements and means responsive to implementation of said connecting means for controlling said certain elements for parallel operation.

4,429,976

EASY LOADING CAMERA

Jiro Sekine; Hiroshi Komatsuzaki; Hiroshi Hara, and Nobuyuki Kameyama, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

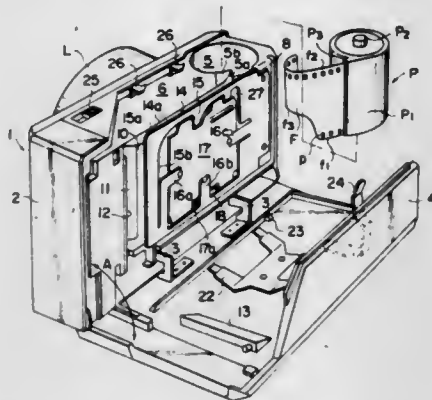
Filed Oct. 18, 1982, Ser. No. 434,931

Claims priority, application Japan, Oct. 20, 1981, 56-167561

Int. Cl.³ G03B 17/28

U.S. Cl. 354—203

3 Claims



1. A photographic camera comprising a film magazine receiving chamber formed in the camera body on one side of a film aperture and shaped to permit insertion of a film magazine having a film leader into the receiving chamber in one axial direction of the film magazine, and a film leader guiding means for guiding the film leader in between the film aperture and a pressure plate from one longitudinal edge thereof when the magazine is inserted into the chamber, characterized in that a first edge limiting member is provided in the camera body to abut against said one longitudinal edge of the film leader to limit its position in the transverse direction thereof, and a second edge limiting member is mounted on a back lid of the camera body so as to abut against the other longitudinal edge of the film leader to limit its position in the transverse direction thereof when the back lid is closed.

4,429,977

EASY LOADING CAMERA

Jiro Sekine; Hiroshi Komatsuzaki; Hiroshi Hara, and Nobuyuki Kameyama, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

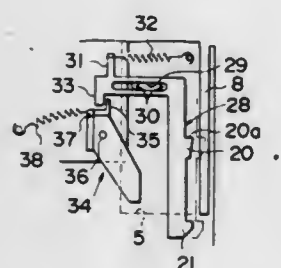
Filed Oct. 18, 1982, Ser. No. 434,932

Claims priority, application Japan, Oct. 20, 1981, 56-167560

Int. Cl.³ G03B 17/22, 17/28

U.S. Cl. 354—203

6 Claims



1. A photographic camera comprising a film magazine receiving chamber shaped to permit insertion of a film magazine having a film leader thereinto in one axial direction of the film magazine, and a film leader guiding means for guiding the film leader to extend in a proper direction when the magazine is inserted into the chamber characterized by having a tongue portion position limiting means for limiting the position of a narrow tongue portion formed in the leading end portion of the film, the tongue portion position limiting means comprising a tongue portion position limiting member which is movable between a retracted position in which it is retracted from the

feeding path of the film and an operative position in which it projects into the feeding path to limit the position of the narrow tongue portion, and a control means which permits the tongue portion position limiting member to move to the operative position only when a film magazine from which only the narrow tongue portion projects as the film leader is inserted into the film magazine receiving chamber, said tongue portion position limiting member being adapted to be moved to the retracted position when the back lid of the camera is closed.

4,429,978

ALBADA FINDER

Kazuo Ikari, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

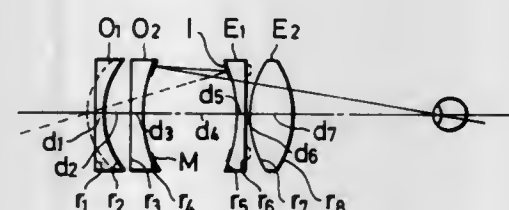
Filed Apr. 6, 1982, Ser. No. 366,088

Claims priority, application Japan, Apr. 9, 1981, 56-53602

Int. Cl.³ G03B 13/08

U.S. Cl. 354—224

25 Claims



1. An albedo finder comprising a first negative lens element, a second negative lens element having a part thereof any one of a reflecting surface and semi-transmission surface both used to form an image of a field mask, a third lens element and a positive eyepiece element, said first and second negative lens elements forming an objective, and said field mask being provided on the surface of said third lens element which is faced to any one of said second negative lens element and said positive eyepiece element, and satisfying the following conditions:

$$0.5 < |r_7/r_8| < 10$$

$$r_7 > 0$$

$$r_8 < 0$$

wherein the reference symbols r_7 and r_8 represent radii of curvature of the respective surfaces of the positive eyepiece element.

4,429,979

PHOTOGRAPHING DATA INDICATOR FOR A SINGLE LENS REFLEX CAMERA

Katumi Terada, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Feb. 5, 1982, Ser. No. 346,125

Claims priority, application Japan, Mar. 13, 1981, 56-36110[U]

Int. Cl.³ G03B 17/20

U.S. Cl. 354—289.1

8 Claims

1. Photographing data indicator for single lens reflex camera, comprising:

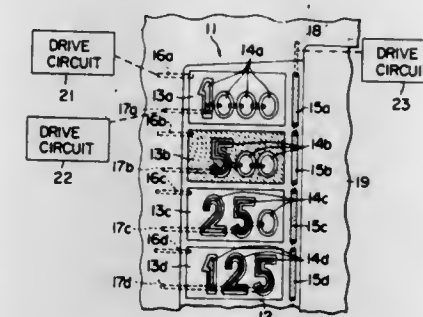
a first drive electrode having a through opening formed therein, the configuration of which represents photographing data;

a second drive electrode having a solid configuration which represents photographing data and which is disposed inside the through opening formed in the first drive electrode;

the first and second drive electrodes being disposed on a liquid crystal display panel which is in turn disposed within a viewfinder of a camera; and

a drive means for operating said data indicator in a first

mode wherein only said first drive electrode is visible, a second mode wherein only said second drive electrode is visible, and a third mode wherein both said first and sec-



ond drive electrodes, as well as the portion of said liquid crystal display panel adjacent said electrodes, are invisible whereby said data indicator is totally transparent when operated in said third mode.

4,429,980

MAGNETIC DRIVE MECHANISM FOR FILM DISC PROCESSOR

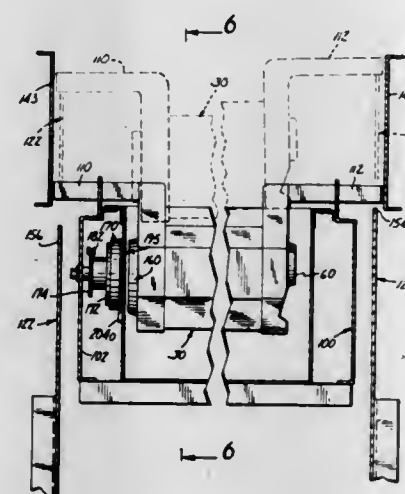
Clare K. Miller, Golden Valley, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Oct. 5, 1982, Ser. No. 432,817

Int. Cl.³ G03B 3/04, 3/08

U.S. Cl. 354—311

15 Claims



1. A processor for processing undeveloped photographic film discs, the processor comprising:

a rotatable spindle for carrying film discs;

a follower magnet connected to the spindle adjacent one end thereof;

conveyor means for conveying the spindle intermittently along a generally horizontal conveyor path to each of a plurality of stations so that the spindle has an axial direction which is generally horizontal and perpendicular to the conveyor path;

a drive magnet rotatably mounted adjacent selected stations in spaced axial alignment with the follower magnet when the spindle is positioned at one of the selected stations; and drive magnet rotation means for rotating the drive magnet to cause the follower magnet, spindle and film discs mounted thereon to be rotated due to magnetic coupling of the drive magnet and the follower magnet.

4,429,981

TANK APPARATUS WITH FLOATING AGITATOR FOR PROCESSING PHOTOGRAPHIC FILM

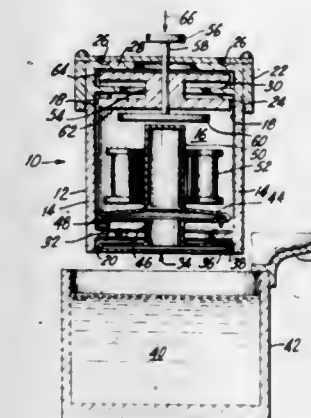
William J. Frazier, 4739 Lighthouse Rd., Orlando, Fla. 32808

Filed Sep. 28, 1982, Ser. No. 425,660

Int. Cl.³ G03B 3/04

U.S. Cl. 354—316

6 Claims



1. A tank apparatus for use in processing photographic material, such apparatus being adapted, during such processing, to be submerged by moving said apparatus in a vertical direction downwardly into one or more vessels containing a chemical solution used to process such film comprising, in combination,

(a) container means for housing the photographic material during such processing, said container means having at least one opening for receiving a chemical solution in the interior portion thereof to contact the photographic material housed therein, said opening being positioned at that portion of said container means which is first placed in a chemical solution held in a vessel;

(b) floating agitator means operatively positioned within said container means and effective to carry said photographic material during processing, said agitator means being positioned to reciprocally move between a first position and a second position within said container upon the application of a force said first position being located adjacent said opening in said container means and said second position being located vertically and linearly displaced from said first position;

(c) limiting means operatively connected to said container means and effective to limit the movement of said agitator means between said first and second positions, whereby the movement of said agitator means is substantially limited within a vertical plane essentially parallel to the direction followed when submerging said container means into a vessel;

(d) force activating means operatively connected to said agitator means and effective when actuated to move said agitator means between said first and second positions thereby moving said photographic material within said chemical solution contained within said container means and to said force activating means, thereby being freely floating within said container means when filled with a chemical solution, whereby said photographic material may be reciprocally moved by activation of said floating means or by vertical movement of said container means in said solution.

4,429,982

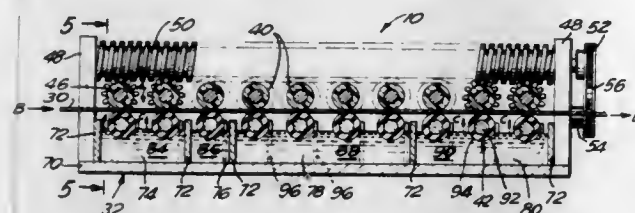
APPARATUS AND METHOD FOR PROCESSING STABILIZATION PHOTOGRAPHIC PAPER

Peter V. Martino, Rego Park, and Peter Meyers, New York, both of N.Y., assignors to Pluribus Products, Inc., Brooklyn, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,696
Int. Cl.³ G03D 5/06

U.S. Cl. 354—318

14 Claims



1. A stabilization processor for developing stabilization paper, and stabilization processor comprising:

- (a) a multi-bath assembly including a bottom surface, opposed parallel upstanding side walls and a plurality of upstanding dividers affixed perpendicular to said side walls and defining in turn, an activator bath for storing activator solution to activate developing agents in said stabilization paper for developing prints on said stabilization paper, a stop bath for storing a neutralizing solution for neutralizing said activator solution, a stabilizer bath for storing stabilizer solution to halt development of said stabilization paper, a rinse bath for storing a rinse solution, said rinse bath being disposed adjacent the stabilizer bath in said multi-bath assembly;

- (b) a plurality of parallel pairs of rollers, each said pair of rollers comprising a parallel arrangement of an upper roller and a lower roller, said pairs of rollers extending between and rotatably mounted on said multi-bath assembly side walls, said upper and lower rollers of said plurality of pairs of rollers defining respectively upper and lower planes disposed parallel to said bottom surface, at least one pair of rollers being disposed in each said activator, stop, stabilizer and rinse bath, said lower rollers further being disposed such that at least a portion of each said lower roller is immersed in said activator, neutralizer, stabilizer or rinse solutions when said solutions are placed in said multi-bath assembly, and wherein the lower roller in each said pair of rollers is suspended from the upper roller in said pair of rollers by end bands, said end bands defining biasing loops mounted over both said upper and lower rollers in each said pair of rollers, to bias said rollers in each pair together; and

- (c) a roller driving mechanism for causing rotation of at least one roller in each said pair of rollers.

4,429,983

DEVELOPING APPARATUS FOR EXPOSED PHOTORESIST COATED WAFERS

Charles A. Cortellino, Wappingers Falls; Joseph E. Levine, Poughkeepsie, and Henry C. Schick, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,157
Int. Cl.³ G03D 3/04, 3/06

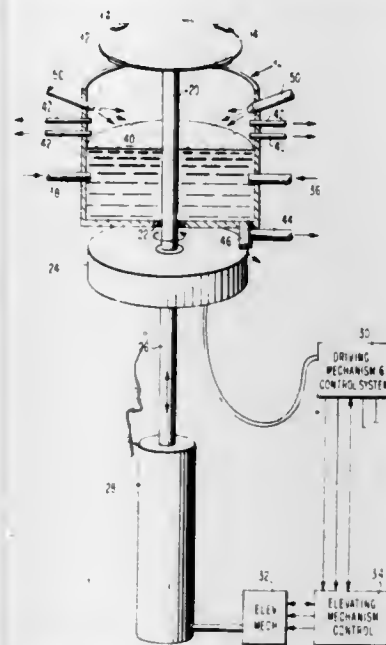
U.S. Cl. 354—320

10 Claims

1. Developing apparatus comprising:

- a tank having an opening at the top thereof and having a substantial fluid tight gland in the bottom thereof, an elongated shaft movably mounted in said gland for vertical and rotational movement therein, a driving mechanism coupled to said shaft for producing said rotational movement thereof,

- an elevating mechanism coupled to said shaft for producing said vertical movement thereof, a platform arranged on the upper end of said shaft, a control system coupled to said elevating mechanism for raising said platform to a rest position above said tank for



loading said platform, for lowering said platform into said tank to a given depth, for oscillating said platform between said given depth and a predetermined depth above said given depth, and for again raising said platform to said rest position for unloading said platform in readiness for subsequent reloading thereof.

4,429,984

COPYING MACHINE WITH TRACTION FEED

Akira Kiba, Toyokawa, and Kazuo Sugimoto, Moriyama, both of Japan, assignors to Minota Camera Kabushiki Kaisha, Osaka, Japan

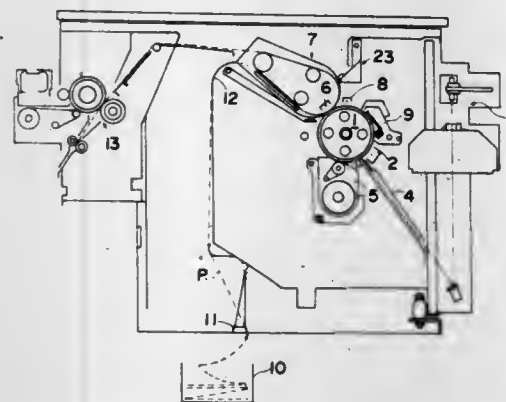
Filed Mar. 11, 1982, Ser. No. 357,315

Claims priority, application Japan, Mar. 18, 1981, 56-38833[U]

Int. Cl.³ G03G 15/14, 21/00

U.S. Cl. 355—3 SH

8 Claims



- 5. A copying machine comprising a photosensitive member on which a toner image is formed, a traction device for transporting a continuous sheet of paper having perforated edges from a storage means to a fixing station through an image transfer region between said traction device and said photosensitive member, said traction device having an endless belt with projections at the opposite edges thereof engageable with the perforations of the sheet, and a transfer member therein for transferring the toner image from the photosensitive member to the transporting sheet, said traction device being shiftably mounted for movement between an operative position close to the photosensitive member and an inoperative position spaced from the operative position; and a plate-like member posi-

4,429,986

CONTROL METHOD OF ELECTROPHOTOGRAPHIC COPYING MACHINE

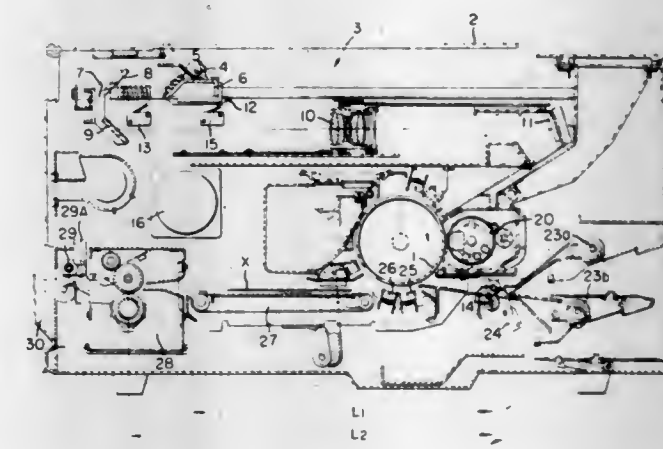
Shunichi Abe, and Mitsuo Akiyama, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,394

Claims priority, application Japan, Aug. 20, 1980, 55-113481
Int. Cl.³ G03G 15/28

U.S. Cl. 355—8

3 Claims



4,429,985

RECORDING SYSTEM PROVIDED WITH A DEVICE FOR CORRECTING DEVIATION OF RECORDING MEMBER IN ENDLESS BELT FORM

Takashi Yokota, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

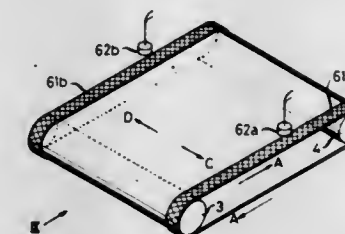
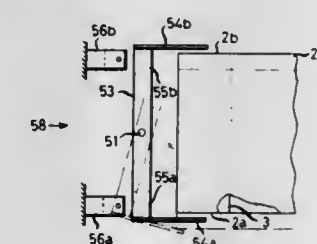
Filed Feb. 16, 1982, Ser. No. 349,301

Claims priority, application Japan, Feb. 20, 1981, 56-22909; Feb. 23, 1981, 56-25269; Feb. 23, 1981, 56-25721

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 BE

12 Claims



- 1. A recording system comprising a recording member in the form of an endless belt supported and driven for movement by a plurality of rollers for recording information on said recording member, comprising a device for correcting deviation of the endless belt recording member comprising:

deviation sensing means for sensing movement of said endless belt recording member in a direction at right angles to the direction of movement of the recording member and generating a signal; said deviation sensing means comprising at least one reflection type light sensor arranged in the vicinity of and juxtaposed against at least one side peripheral portion of said endless belt recording member, and a sensed pattern movable into a sensing zone of said reflection type light sensor when said recording member moves in a direction at right angles to the direction of its movement, said sensed pattern having a light reflection factor distinct from the light reflection factor of said recording member;

deviation correcting means for correcting the deviation of said recording member; and a control circuit receiving said signal generated by said deviation sensing means and actuating said deviation correcting means based on said signal.

- 1. In a method of electrophotographic copying utilizing a slit exposure optical system of the type equipped with a reciprocating primary movable carriage and a reciprocating secondary movable carriage having a speed of one half the primary movable carriage for scanning an original and directing the scanned image onto a photosensitive drum, means developing the image formed on said drum, and means moving a transfer medium from a position at one side of the drum, beneath said drum to transfer the image from the drum onto the transfer medium, and thence into a device where the transferred image is fixed upon the transfer medium, the improvement comprising prohibiting return movement of the reciprocating carriages from the time the leading edge of the transfer medium is at a position immediately in front of the fixing device, until it is fully discharged therefrom.

4,429,987

EARLY FUSER ROLL CLOSURE WITH REDUCED FORCE

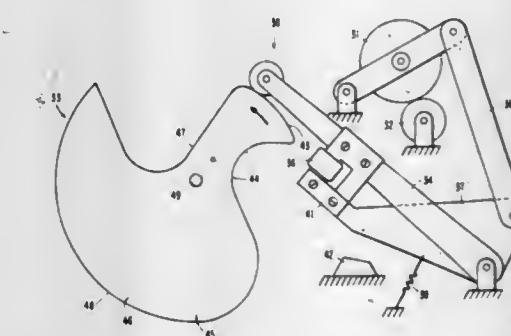
Jack P. Chang, and Marc L. Steinbrecher, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1982, Ser. No. 348,886

Int. Cl.³ G03G 15/20

U.S. Cl. 355—14 FU

20 Claims



- 1. A xerographic toner fixing apparatus comprising: substantially parallel first and second cylindrical fuser rollers; biasing means for maintaining the peripheral surfaces of said fuser rollers in an open position;

a rotatable cam with at least a first high dwell and a second high dwell;
a linkage mechanism coupling said cam to at least one of said fuser rollers; and
means for rotating said cam whereby the peripheral surfaces of said fuser rollers are shifted between open and closed positions in accordance with the contour of said cam and the closing force exerted between said fuser rollers during said first high dwell is less than the closing force exerted between said fuser rollers during said second high dwell.

4,429,988

PRINTED PAPER FEEDING DEVICE FOR PHOTOGRAPH PROCESSING APPARATUS

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Copal Company Limited, Tokyo, Japan

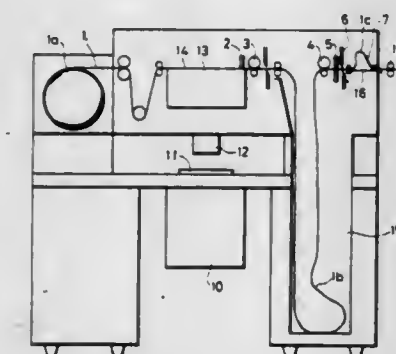
Filed Jan. 5, 1982, Ser. No. 337,245

Claims priority, application Japan, Jan. 9, 1981, 56-2451

Int. Cl.³ G03B 29/00

U.S. Cl. 355—28

4 Claims



1. A print paper feeding device for photograph processing apparatus comprising a cut marker which can make a cut mark between two adjacent picture frames of a tape-shaped print paper simultaneously with printing it, a first roller means which can intermittently feed said print paper by a length corresponding to one picture frame, a stocker which is set in the rear of said first feeding roller and can contain said print paper portion fed out of said first feeding roller means, a second feeding roller means which is arranged in the rear of said stocker and is to pull said print paper within said stocker out of said stocker, a cut mark sensor which is set in the rear of said second feeding roller means and can detect said cut mark and issue a signal to stop said second feeding roller means whenever a length portion corresponding to one picture frame of said print paper is fed, a cutter which is set in the rear of said cut mark sensor and can cut the print paper in the position of said cut mark, a third feeding roller means which is arranged in the rear of said cutter and is rotated at a velocity lower than of said second feeding roller means to form a loop of said print paper between it and said cutter, a loop sensor which is arranged between said cutter and third feeding roller means and can issue a signal to start said second feeding roller means when said loop becomes smaller than a predetermined size, and a controller which can receive signals from said cut mark sensor and loop sensor to control the respective operations of said cut marker, first feeding roller means, second feeding roller means and cutter; the size of said loop being maintained between a predetermined lower limit and an upper limit obtained by adding a length corresponding to one picture frame portion to said lower limit by said loop sensor; and said print paper being cut in the position of said cut mark by said cutter when the number of said cut marks of the print paper portion which has been fed into a processor by said third feeding roller means attains a predetermined value and said second feeding roller means is stopped.

4,429,989

APPARATUS FOR PRESSING ORIGINAL

Shigeru Yoshimura, Yokohama; Kiyomichi Ichikawa, Kawasaki, and Noriyoshi Ueda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

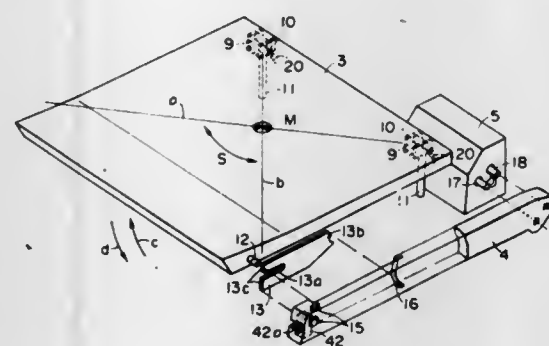
Continuation of Ser. No. 195,430, Oct. 9, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,885

Claims priority, application Japan, Oct. 13, 1979, 54-132078; Oct. 13, 1979, 54-132079; Oct. 13, 1979, 54-132080; Oct. 29, 1979, 54-150372

Int. Cl.³ G03B 27/62

U.S. Cl. 355—76

7 Claims



1. A device for automatically opening and closing an original pressing member for pressing an original against an original supporting surface, said device comprising:
an original pressing member having a rotating center freely slidably perpendicular of the original supporting surface about which center the pressing member is pivotable relative to the original supporting surface;
a rotatable driving shaft provided independently from said rotating center for automatically closing and opening said original pressure member;
a supporting arm engaging with said driving shaft for receiving the drive from said driving shaft so as to be rotated, said supporting arm being movably engaged with said original pressing member;
motor means; and
connecting means to transmit the driving force of said motor means to said rotatable driving shaft.

4,429,990

APPARATUS FOR CONTROLLING THE APPLICATION OF FUSER RELEASE MATERIAL IN ROLLER FUSERS

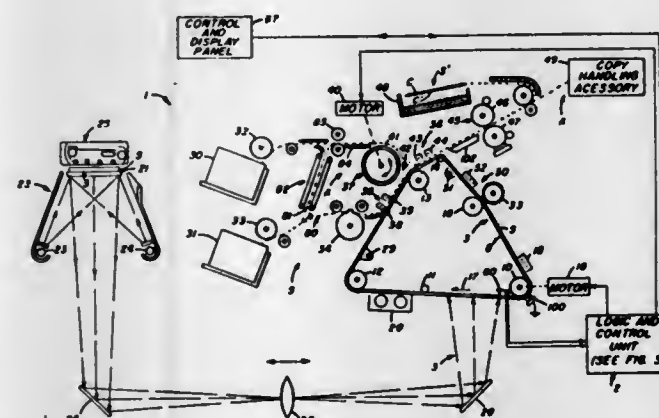
Ernest J. Tamary, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,436

Int. Cl.³ G03G 15/00

U.S. Cl. 355—14 FU

8 Claims



1. In reproduction apparatus including means for forming fixable images on one or both sides of a series of copy sheets constituting a copy run, first and second fuser rollers forming a nip through which said copy sheets are passed to fix the

images to the copy sheets, and actuable means for applying, when actuated, fuser release material to at least one of said rollers, the improvement comprising:

first means for detecting fixable images formed during a copy run of said reproduction apparatus;
second means for detecting copy sheets exiting from the nip of said fuser rollers; and
control means (1) for counting the number of fixable images detected by said first detecting means after the start of a copy run, (2) for counting the number of copy sheets detected by said second detecting means after the start of a copy run, and (3) for actuating said means for applying when said count of fixable images and said count of copy sheets have a preselected numerical relationship which provides an optimal application of release material per copy sheet and for deactuating said means for applying to discontinue the applying of fuser release material when said count of fixable images and said count of copy sheets do not have said preselected numerical relationship.

4,429,991

METHOD FOR DETECTING PHYSICAL ANOMALIES OF U.S. CURRENCY

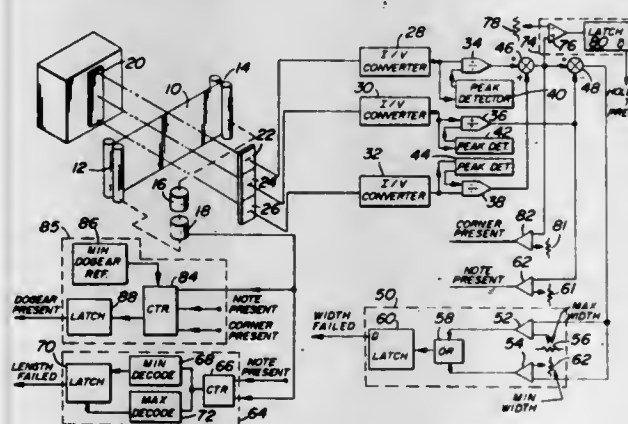
Charles J. Williams, Carmel, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 17, 1981, Ser. No. 293,067

Int. Cl.³ G01N 21/17; G01B 11/04

U.S. Cl. 356—73

5 Claims



1. A system for examining and detecting anomalies in bills comprising:
a source of light;
light detector means comprising at least first, second and third light detectors aligned to detect light from said source of light above, through and below said bill, respectively, and to generate electrical signals corresponding with the amount of light received from said source;
means for transporting one of said bills between said light source and said light detector means to control the amount of light reaching said detector;
first, second and third peak level detector circuits to respond to electrical signals from said first, second and third detectors to produce and maintain peak output signals representative of the peak output signal levels from said first, second and third detectors when no bill is present between said source of light and said detectors,
first, second and third divider circuits for receiving the electrical signals from said first, second and third detectors and the peak output signals from said first, second and third peak detector circuits to produce divided output signals therefrom,
an adder circuit for receiving the divided output signals from said first and third divider circuits to provide an added output signal representing the sum of the signals received from said first and third detectors,
a subtractor circuit for receiving the divided output signal from said second divider circuit and the added output signal from said adder circuit to produce a subtracted output signal representing the actual width of the bill.

4,429,992

METHOD AND DEVICE FOR TESTING OPTICAL IMAGING SYSTEMS

Gerd Häusler, Erlangen; Walter Järisch, Boeblingen, and Günter Makosch, Sindelfingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

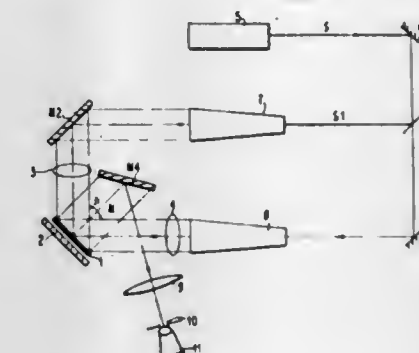
Filed May 22, 1981, Ser. No. 266,243

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020022

Int. Cl.³ G01M 11/00; G01B 9/02, 11/14; H01L 21/66

U.S. Cl. 356—124

18 Claims



1. A method for testing an optical imaging system where an original pattern is compared with a pattern copy made by the imaging system to be tested, including the steps of generating a first interferogram of said original pattern by two light beams symmetrically impinging and overlapping on said original pattern, making a pattern copy of said original pattern using said imaging system to be tested, generating a second interferogram of said pattern copy under conditions identical to those used to generate said first interferogram, and comparing said first and second interferogram to determine the relative deviations between said first and second interferograms said deviations being a measure of the quality of said optical imaging system.

4,429,993

METHOD AND APPARATUS FOR TESTING THE CORRESPONDENCE OF LINE OF SIGHT WITH TARGET LINE

Dieter Schick, Solms, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

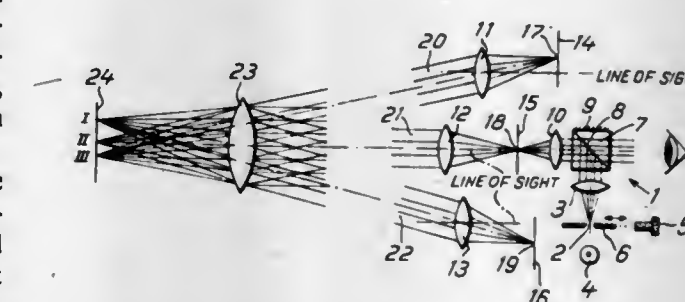
Filed Oct. 30, 1981, Ser. No. 316,953

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3044554

Int. Cl.³ G01B 11/26; G01C 1/00

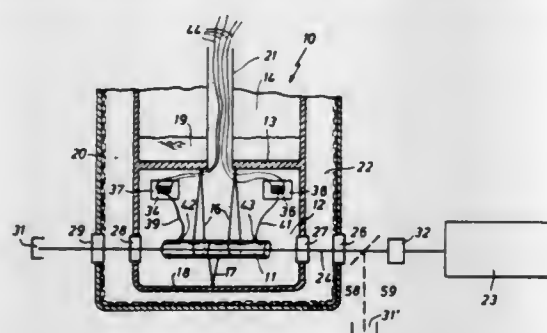
U.S. Cl. 356—152

15 Claims



1. An apparatus for testing the correspondence of at least one line of sight of an optical instrument with at least one target line of a weapon, comprising:
(a) an imaging system (23) said imaging system having a beam path and an image plane (24), a given area of said image plane defining a measuring field (25);

light used to irradiate the sample, characterized by the fact that a temperature sensor is provided to detect the sample tempera-



4,430,000

RADIATION MEASURING SYSTEM

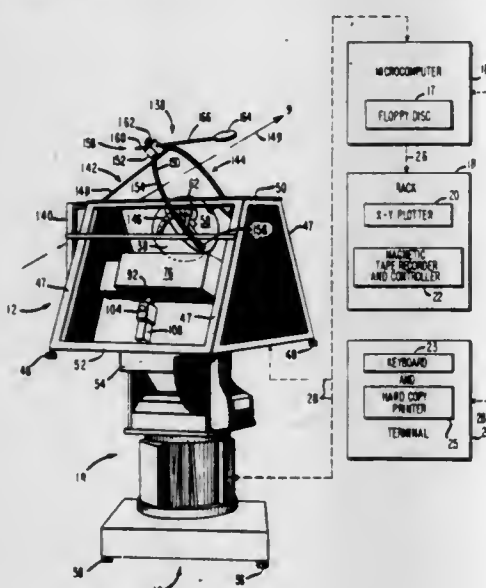
Herman G. Eldering, Chelmsford, and Arthur W. Kliman, Beverly, both of Mass., assignors to Baird Corporation, Bedford, Mass.

Filed Jan. 19, 1981, Ser. No. 226,070

Int. Cl.³ G01J 1/10; G01D 5/32

U.S. Cl. 356-236

10 Claims



1. A radiometer comprising:

- (a) an integrating sphere for admitting radiation;
- (b) means for intermittently interrupting the admission of radiation in said integrating sphere;
- (c) a source of reference illumination for calibrating said radiometer;
- (d) said source of reference illumination being a structured spectral source;
- (e) said structured spectral source being a continuous source with a structured spectral filter having strong absorption bands.

4,430,001

INJECTOR MIXER APPARATUS

George A. Schurr, Newark, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 106,402, Dec. 26, 1979,

abandoned. This application Sep. 28, 1981, Ser. No. 306,593

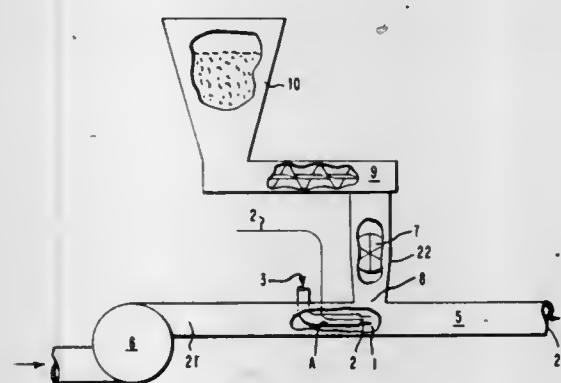
Int. Cl.³ B01F 5/04, 13/02

U.S. Cl. 366-107

4 Claims

1. An apparatus for uniformly mixing a relatively small amount of material with a relatively large amount of another material in particulate form comprising a conveyer-pipe treatment chamber with an entrance end, a feed opening and a discharge end, a nozzle for introducing a mixture of a high

pressure gas and the relatively small amount of material to be mixed having a discharge end housed within the conveyer-pipe treatment chamber and means for feeding the particulate material into said feed opening in the conveyer-pipe treatment chamber, said nozzle comprising an inner tube, from which the relatively small amount of material exits, concentrically arranged within an outer tube to form an annular opening between the outer tube and the inner tube from which the high pressure gas stream exits, said inner tube being shorter than the outer tube to permit the contents of the inner tube to be affected by the contents of the outer tube before reaching the discharge end of the nozzle, said feed opening located to per-



mit all the particulate material to enter above the nozzle discharge end, said nozzle discharge end located within the conveyer-pipe treatment chamber so that the longitudinal axis of the nozzle and the conveyer-pipe treatment chamber are parallel, said nozzle discharge end positioned in said conveyer-pipe treatment chamber so that the nozzle discharge end is beneath the feed opening to the conveyer-pipe treatment chamber and within a vertical projection of the feed opening so that at least some of the material in particulate form can freely fall by gravity across the discharge end of the nozzle, the conveyer-pipe treatment chamber having means to cause a flow of low pressure gas to enter and flow parallel to the flow of high pressure gas.

4,430,002

DOOR-OPERATING MECHANISM

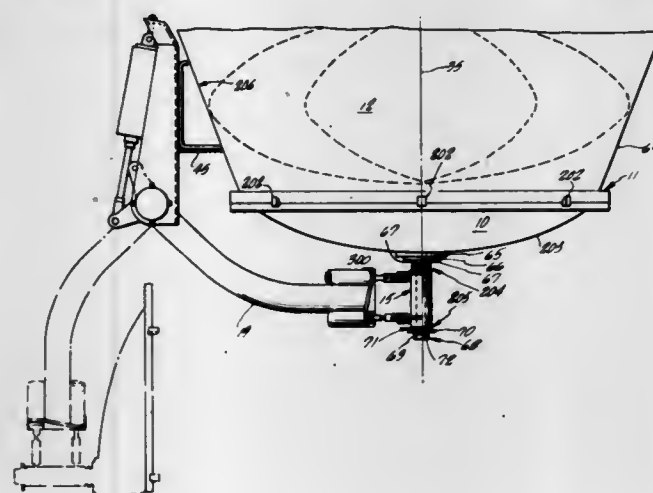
Anthony A. Dongelmans, Hacienda Heights, Calif., assignor to Challenge-Cook Brothers, Inc., City of Industry, Calif.

Filed Mar. 16, 1981, Ser. No. 243,694

Int. Cl.³ B01F 13/06

U.S. Cl. 366-139

47 Claims



1. A door-operating mechanism for a door to the mouth of a moveable container, the container being mounted for movement on foundation means and the mechanism being adapted for mounting on support means in adjacent relationship with the foundation means, and wherein the operating mechanism comprises anchoring means, moveable means extending from

the anchoring means, said moveable means being adapted for moving the door between a closed position with the mouth to the container and an opened position removed from the mouth, and clamp means between the door and the moveable means, the clamp means being adapted to release the moveable means from the door when the door is in the closed position with the mouth.

4,430,003

APPARATUS FOR SPRAYING LIQUIDS SUCH AS RESINS AND WAXES ON SURFACES OF PARTICLES

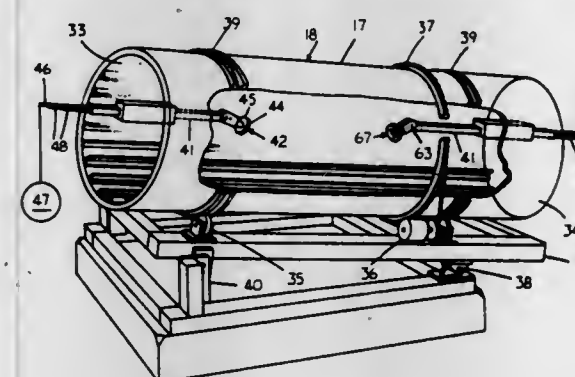
Norman W. Beattie, Surrey, and Donald W. Nyberg, North Vancouver, both of Canada, assignors to Hawker Siddeley Canada, Inc., Vancouver, Canada

Filed Nov. 18, 1980, Ser. No. 207,964

Int. Cl.³ B01F 9/06, 15/02

U.S. Cl. 366-173

35 Claims



12. A blender used to effectively apply finely dispersed liquid droplets of resins and/or waxes, through surfaces of particles, comprising:

- (a) a hollow drum rotatably supported on a frame for rotation about a downwardly inclined axis and having nonrotatable ends;
- (b) a variable speed drive assembly to rotate the hollow drum at selectable optimum speeds to produce along its upwardly moving inner wall a thin layer of particles which leave and fall from the inner wall a small distance before reaching the uppermost peripheral point of travel to produce a free falling cascade of particles which is sufficiently dense to form an impervious curtain spaced from the downwardly moving inner wall of the hollow drum;
- (c) a particle receiving assembly at the higher end of the rotatable drum;
- (d) a particle discharging assembly at the other end of the drum;
- (e) hollow nonrotatable cantilevered shafts positioned longitudinally within the hollow drum and extending from each end thereof;
- (f) spray disc sprayers rotatably mounted respectively on the ends of the cantilevered shafts inside the hollow drum;
- (g) power assemblies mounted respectively on the ends of the cantilevered shafts to rotate the respective spray disc sprayers to create spraying gravity forces of one thousand; and
- (h) a liquid supply assembly connected to the shaft for delivering liquid to the spray disc sprayers, while the particles are being delivered and removed from the hollow rotating drum.

4,430,004

MULTI-FACED CLOCK

Noel N. Nitschke, 81 Sherwill St., Feilding, New Zealand

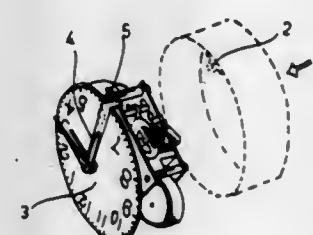
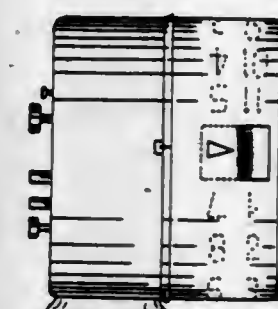
Filed Mar. 1, 1982, Ser. No. 353,190

Claims priority, application New Zealand, Mar. 12, 1981, 196485

Int. Cl.³ G04B 19/06

U.S. Cl. 368-235

4 Claims



1. A clock comprising a housing member, a clock face mounted within said housing, at least one rotatable shaft mounted within said housing and extending through the center of said clock face, an hour hand inserted on the end of said shaft extending through said face to be rotated by said shaft to sweep over said face, means to drive said shaft mounted within said housing, an extension on said hour hand, a cylindrical member rotatably mounted within said housing to rotate about its central axis coaxially with respect to said shaft, means to connect said cylindrical member to said extension so that said cylindrical member is rotated by said hour hand synchronously therewith, two axially spaced sets of time sequenced indicia on the outer peripheral surface of said cylindrical member, said sets being out of phase by 180° and inverted with respect to each other so that the same indicia can be read simultaneously on diametrically opposite sides of said cylindrical member, and means on said housing member adjacent said peripheral surface to indicate the same time on each one of said sets of time sequenced indicia on opposite sides of said housing member simultaneously and coinciding with the time indicated on said clock face.

4,430,005

SPEECH SYNTHESIZER TIMEPIECE WITH ALARM FUNCTION

Kosuke Nishimura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1981, Ser. No. 287,559

Claims priority, application Japan, Jul. 28, 1980, 55-197180[U]

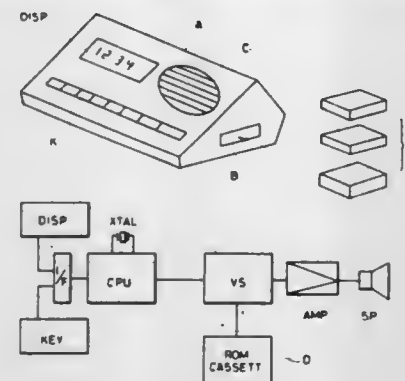
Int. Cl.³ G04B 19/30

U.S. Cl. 368-67

2 Claims

1. An alarm timepiece comprising: means for setting a plurality of alarm times; a removable and exchangeable read only memory device associated with said timepiece for storing data representing a plurality of messages; speech synthesizer means associated with said exchangeable

read only memory device for outputting verbal messages represented by said data at said alarm times; and



means for selecting which of said plurality of messages is outputted by said speech synthesizer means at each of said alarm times.

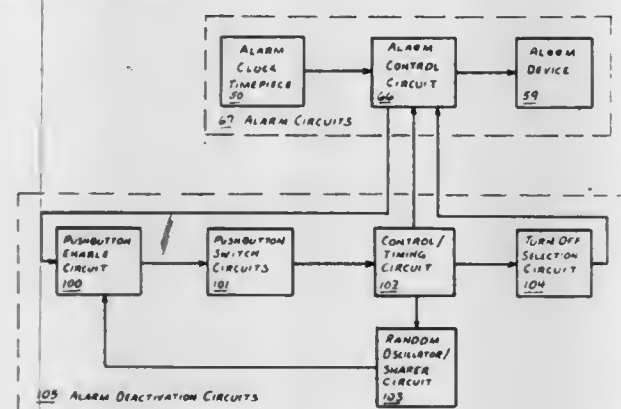
4,430,006 RANDOM MULTIPLE PUSH BUTTON CLOCK ALARM DEACTIVATION SYSTEM

Milton W. Jetter, 201 I St., SW., Apt. 838, Washington, D.C. 20024

Filed Sep. 9, 1982, Ser. No. 416,348
Int. Cl.³ G04B 23/02

U.S. Cl. 368-73

20 Claims



1. An alarm clock system comprising an alarm clock timepiece including alarm starting means for producing an electrical alarm signal, alarm means to generate an audible alarm responsive to said electrical alarm signal, alarm deactivation switch means comprising a plurality of switch circuits, each having a manually operated switch and an associated visual indicator, means to randomly enable a first switch circuit and simultaneously energize its visual indicator responsive to said alarm signal, means to sequentially randomly enable one or more of the other switch circuits and simultaneously energize their associated visual indicators responsive to successive operation of their manually operated switches as their associated visual indicators become energized, circuit means to disable said alarm means temporarily responsive to operation of the manually operated switch of the first switch circuit, and means to permanently disable the alarm means for the duration of said alarm signal responsive to sequential operation of a predetermined number of those manually operated switches whose associated visual indicators become sequentially energized.

4,430,007 METHOD OF REDUCING THE POWER CONSUMPTION OF THE STEPPING MOTOR OF AN ELECTRONIC TIMEPIECE AND AN ELECTRONIC TIMEPIECE EMPLOYING THE METHOD

Fridolin Wiget, Neuchatel, and Yves Guerin, Granges, both of Switzerland, assignors to ETA S.A. Fabriques d'Ebauches, Switzerland

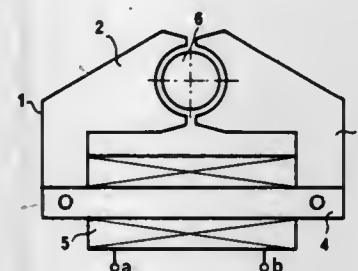
Filed Aug. 10, 1981, Ser. No. 291,391

Claims priority, application Switzerland, Aug. 25, 1980, 6381/80

Int. Cl.³ G04B 19/00; G04C 3/00

U.S. Cl. 368-157

13 Claims



1. A method for reducing the power consumption of the stepping motor of an electronic timepiece, by automatically establishing the width of voltage drive pulses supplied to the motor, in accordance with its load and its supply voltage, the motor comprising at least one actuating coil, a stator and a rotor which rotates through a given angle when a voltage drive pulse is applied to said actuating coil, comprising the steps of measuring, during each voltage drive pulse, the variation in the magnetic induction flux in the stator, and interrupting the voltage drive pulse when this variation in flux reaches a predetermined value.

5. An electronic timepiece comprising an oscillator for producing a standard frequency signal, a frequency divider circuit which is connected to the oscillator to produce a low-frequency time signal, a stepping motor, comprising at least one actuating coil, a stator and a rotor, a supply circuit for periodically producing and supplying voltage drive pulses to the actuating coil in response to the time signal, and monitoring means for controlling the supply circuit for automatically establishing the width of the drive pulses in accordance with the value of the load and the supply voltage of the motor, the monitoring means comprising a measuring device for measuring, in respect of each voltage drive pulse, the variation in the magnetic induction flux in the stator and producing a measuring signal representing the value of the variation in flux, and means responsive to the measuring signal to apply to the supply circuit, a signal for interrupting the voltage drive pulse to establish its width when the variation in flux reaches a predetermined value.

4,430,008 QUARTZ OSCILLATION-TYPE ELECTRONIC TIMEPIECE

Yasuhiko Nishikubo, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,033

Claims priority, application Japan, Jul. 28, 1980, 55-102467; Aug. 12, 1980, 55-110745

Int. Cl.³ G04C 3/00

U.S. Cl. 368-202

2 Claims

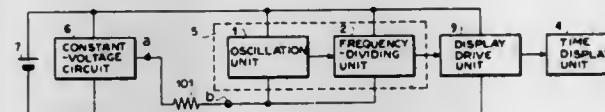
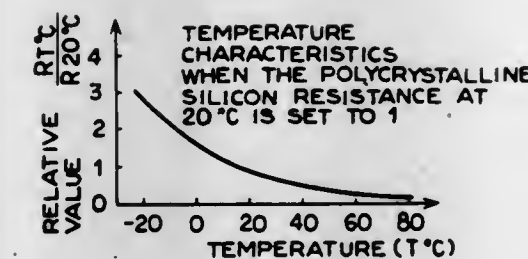
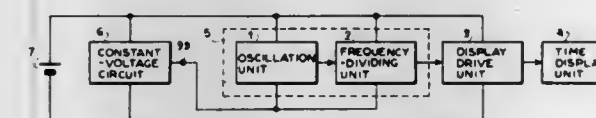
1. A quartz oscillation-type electronic timepiece comprising: (a) a time reference source consisting of a quartz oscillator or the like; (b) frequency-dividing means which receives time reference signals from said time reference source; (c) a display drive unit which receives time unit signals from said frequency-dividing means;

(d) a battery which supplies the energy to each of the above-mentioned portions; and

(e) a constant-voltage circuit which is connected between the terminals of said battery to make the voltage of said battery constant, and which consists of a current mirror-type reference voltage generator and a differential amplifier; wherein

(f) a current mirror type reference voltage generator is characterized in that it is composed of a pair of poles, a reference resistor is connected in series to an MOS transistor in the first pole, an output of the first pole becomes an input of the second pole, an output of the second pole is an input of the first pole and fed back with each other, plurality of MOS transistors are inserted between the MOS transistor connected to the output of the second pole and the drain of MOS transistor connected to the input of second pole, namely the reference voltage output terminal end, thereby the reference voltage higher than a voltage obtained before insertion of said MOS transistors as much as the sum of threshold voltages of said MOS transistors inserted can be generated;

(g) said reference resistor of said current mirror type reference voltage generating circuit is a polysilicon resistor having a negative temperature coefficient which can be



obtained by adding the process of implanting impurity ion in such a concentration sufficiently lower than that of source, drain diffusion to the standard silicon gate CMOS process and its resistance value is 1 M-ohms or more;

(h) said differential amplifier of a constant voltage circuit is characterized in that an output of second pole of the current mirror type reference voltage generator is provided as the gate input of the MOS transistor which operates as a constant voltage source thereof, a reference voltage output of the current type reference voltage generator becomes the first input of the differential amplifier, an output of differential amplifier is supplied to load electronic circuits through an inverter, a potential to be supplied to a load electronic circuit is fed back as the second input of the differential amplifier, and as a whole, an output of a constant voltage circuit is caused to have a low impedance and thereby the reference voltage is not changed by fluctuation of load electronic circuit;

(i) said time reference source through up to a time display device are made up of an integrated circuit consisting of complementary MOS transistors, and at least a portion of said integrated circuit is operated by a constant voltage produced by said constant-voltage circuit.

4,430,009 ARRANGEMENT FOR SECURING AND ELECTRICALLY CONTACTING A BATTERY IN A WATCH

Jacques Müller, Reconvilier, Switzerland, assignor to ETA S.A. Fabriques d'Ebauches, Switzerland

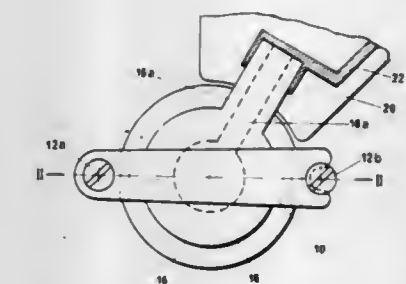
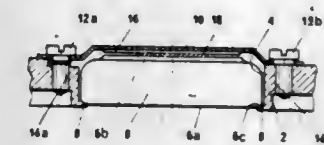
Filed Mar. 27, 1981, Ser. No. 248,253

Claims priority, application Switzerland, Mar. 31, 1980, 2534/80

Int. Cl.³ G04B 1/00

U.S. Cl. 368-203

7 Claims



1. An electronic watch comprising a plate; a printed circuit including an insulating substrate and at least one conductive track; and a fixing arrangement of a battery having first and second faces, comprising a clamp bar which is removably fixed at its two ends to a face of said plate and which passes over said first face of the battery, said second face of the battery resting on said plate; and electrical connecting means including a flexible insulating tongue having a first end fixed with respect to said insulating substrate and a second end which is disposed and maintained between said clamp bar and said first face of the battery and carrying a conducting layer which contacts a terminal in the said first battery face and is connected to a conductive track of the printed circuit, said flexible tongue being adapted to be bent for permitting easy removal of the battery.

4,430,010 THERMAL METHOD OF TESTING LIQUIDS FROM A NOZZLE

Christian Zrenner, Stuttgart, and Peter Kälberer, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,855

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045401

Int. Cl.³ B05C 21/00; G01N 25/18

U.S. Cl. 374-45

12 Claims



1. A method of testing a liquid flowing from a nozzle having a mouth, or the like, comprising the steps of providing a plurality of sensing elements having tips and

located so that the sensing elements with the tips are arranged at a distance from the mouth and at a circle in a ring-like element and transverse to a stream of liquid flow from the mouth and to be tested, said flow stream passing through the ring-like element without moistening said tips;

heating the tips of the sensing elements;
directing the stream of liquid to be tested on the ring-like element and near the heated tips of the sensing elements, so that when a malfunction occurs in the nozzle, said flow stream widens and the liquid cools the heated tips and thereby an electrical signal is produced; and
using the thus produced electrical signal for evaluating the liquid.

4,430,011

INTEGRAL BEARING SYSTEM

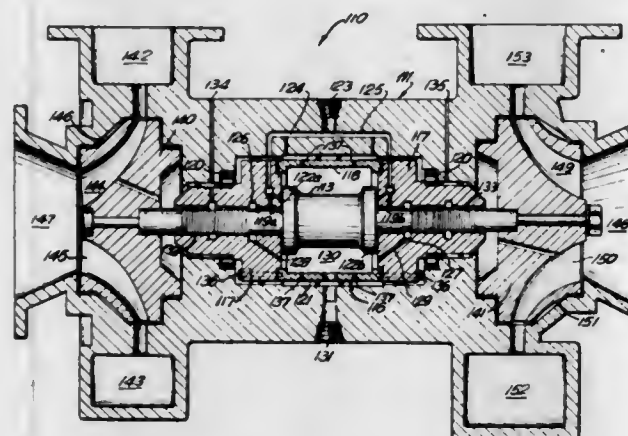
Leslie C. Kun, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 2, 1982, Ser. No. 403,932

Int. Cl.³ F16C 27/02

U.S. Cl. 384—99

9 Claims



1. A bearing system comprising:
 - (A) a stationary support housing having a longitudinal opening therethrough for positioning a rotatable shaft substantially aligned therein;
 - (B) an essentially non-rotatable bearing housing positioned between said shaft and said support housing comprising at least one pair of bearing means, each bearing means having a bearing surface for rotatably supporting said shaft, and a spacer portion between said pair of bearing means, said spacer portion not supporting said shaft;
 - (C) viscous damping means comprising a generally uniform annular space between said support housing and said bearing housing along at least a portion of their axial length, said axial length portion being greater than the axial length of said bearing surfaces, said annular space being filled with a viscous material through said axial length portion; and
 - (D) a plurality of spaced elastic supports in contact with said bearing housing and said support housing.

4,430,012

PAPER GUIDE FOR LINE PRINTER

Wayne J. Kooy, Galein; Horst M. Krenz, St. Joseph, and Lawrence C. Unger, Benton Harbor, all of Mich., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 251,413, Apr. 6, 1981. This application Mar. 3, 1983, Ser. No. 471,767

Int. Cl.³ B41J 11/30

U.S. Cl. 400—616.1

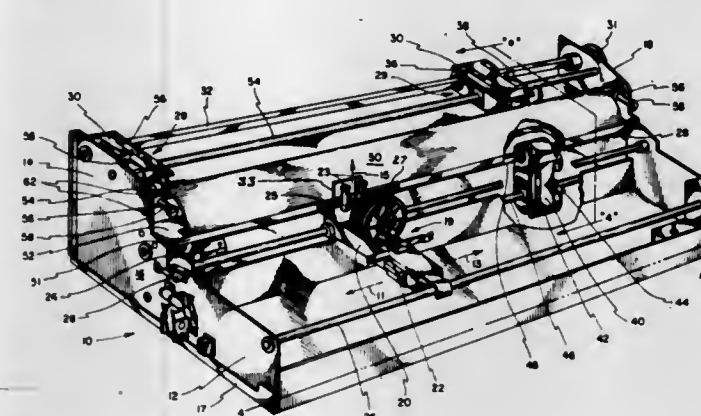
13 Claims

1. A paper feeding and guide apparatus for use in a bi-directional line printer having a frame including first and second structural support means, a plurality of cross-members coupled between said first and second structural support means including a platen and a print head having a printing surface facing

said platen and supported on a first cross-member and arranged to move in a path of travel along said first cross-member a permitted distance for printing on paper positioned between said platen and said print head and moving in a generally perpendicular direction to said print head direction of movement, said apparatus comprising:

first rotatable paper drive means located below said platen for providing paper in a generally upward direction between said platen and said print head;

second rotatable paper drive means for receiving said paper following the transport of said paper between said platen and said print head and for transporting said paper in a plane generally perpendicular to the direction of movement of the paper between said platen and said print head; and



adjustable curved guide means positioned beneath and in contact with said paper between said platen and said second rotatable paper drive means and having a first lower end portion fixedly mounted to said platen, a second upper end portion, and third and fourth lateral end portions positioned intermediate said first and second end portions, wherein said first and second end portions form opposite, facing edges of said guide means and wherein said second upper end portion is adjustably mounted for movement in a direction parallel to the paper path thereat to said first and second structural support means by means of which the curvature at each lateral end portion of said guide means may be independently adjusted in adjusting the paper path length between the respective ends of said first and second rotatable paper drive means for precisely positioning the paper relative to said print head.

4,430,013

DISPOSABLE SWAB ARTICLE

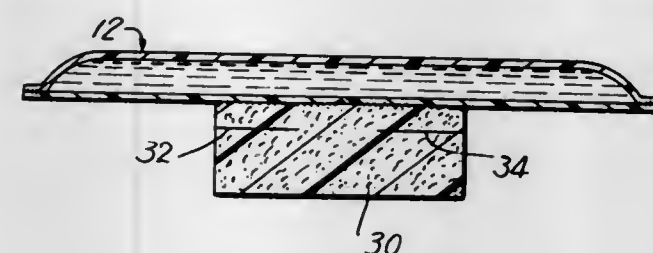
Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Continuation of Ser. No. 59,659, Jul. 23, 1979, abandoned. This application Nov. 19, 1981, Ser. No. 322,857

Int. Cl.³ A47L 13/17

U.S. Cl. 401—132

8 Claims



1. An applicator package having distal ends comprising a foam applicator pad and having a backing member adjacent thereto: said backing member being formed of a relatively rigid, flat and stiff plastic sheet material having a vapor and gas barrier coating and a laminated deformable plastic coated foil material having at least one reservoir containing a flowable product, such as a liquid being sealed to said flat and stiff sheet

material for containing the contents of said reservoir therebetween; said flat and stiff sheet material having a centrally disposed linear weakened portion in the surface of said flat and stiff sheet material and said weakened portion being transversely disposed of said flat and stiff sheet material with said foam applicator pad secured to the outer surface of said flat and stiff sheet material and centrally disposed over said weakened portion; said weakened portion rupturing upon forcing said distal ends of said applicator package towards each other and about said weakened portion, so as to compress the reservoir of said deformable plastic coated foil material by crushing opposite sides of said reservoir against each other such that substantially all of said flowable product in the reservoir can be controllably released into said applicator pad for wiping applications upon pressure completely deforming and collapsing said plastic coated foil material; and said foam applicator pad is a foam block having opposite slits partially through said foam block so that when said distal ends are squeezed together, the foam block assumes an inverted T-shape with a large wiping contact surface area.

4,430,014

BALL POINT PEN WRITING INSTRUMENT

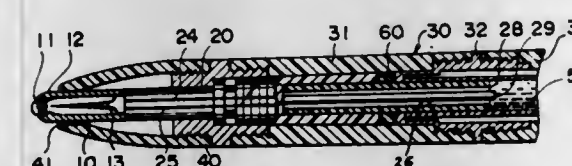
Kuo L. Tsai, Taipei, Taiwan, assignor to Cathay Pen Corporation, Taipei, Taiwan, a part interest

Filed Apr. 13, 1981, Ser. No. 253,877

Int. Cl.³ B43K 7/10

U.S. Cl. 401—216

8 Claims



1. A ball point pen writing instrument comprising a pen casing having a front end and a rear end, a central opening at the otherwise closed front end;
a pen-nib holding means fitted at the front end of said casing;
a ball point pen-nib using an ink solution and being nested in front of said holding means by a portion thereof;
an ink storage means positioned at the rear of said casing;
an ink guiding means connected between said pen nib and ink storage means to convey the ink from said ink storage means to the pen nib, said ink guiding means including a capillary member and an ink guiding core, said capillary member having a relatively larger diameter portion at the middle and a relatively smaller diameter portion at the front and at the rear, said relatively larger diameter portion of said capillary member being tightly and frictionally held within the inner surface of the front of said casing, and the rear of the relatively smaller diameter portion of said capillary member being further tightly mounted at the central opening of the closed front end of said casing, the remainder of said relatively smaller diameter portion extending through said central opening at the front end of said casing and projecting out of the same, and having at least one longitudinal capillary groove extending the entire length of the outer surface of said capillary member for transferring ink from said longitudinal capillary groove of said capillary member to said pen nib;
a sealing means overlapped onto the rear relatively smaller diameter portion of said capillary member;
a vent means provided between the inner wall of said pen-nib holding means and the outer surface of the front of said ball point pen-nib;
said ball point pen-nib comprising a pen point housing, a rolling ball held at the pointer end of said pen point housing and an ink-guiding core including a front end having a greatly reduced slim portion and a minor portion of the rear end mounted at the end of said pen nib so that a considerable space is formed between said ink-guiding

core and the inner wall of said pen point housing to store a sufficient amount of ink to effect a continuous capillary action for the writing point, the reduced slim point of said ink guiding core making no contact with said writing point;

said capillary member and said ink guiding core being mounted in face-to-face abutment, the abutting face of said capillary member being provided with at least one capillary groove which communicates with said longitudinal capillary groove which is surrounded and enclosed within the housing of said pen-nib holding means and makes no substantial contact with the inner surface of said pen-nib holding means.

4,430,015

FASTENING MEANS FOR MAKING INSERTS IN WIRE BOUND NOTEBOOKS AND THE LIKE

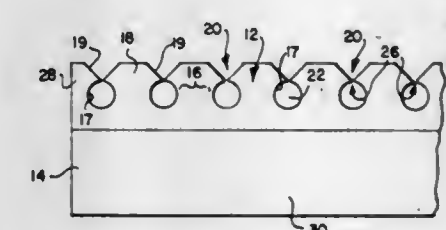
John J. Nerlinger, Dayton, Ohio, assignor to Mead Corporation, Dayton, Ohio

Filed Jun. 6, 1981, Ser. No. 271,336

Int. Cl.³ B42F 13/00

U.S. Cl. 402—79

6 Claims



1. A fastening means for attachment to a wire binder comprising a plurality of adjacently positioned tabs attached in a linear row to a base strip, each of said tabs being formed with the bulbous head portion and a post-like neck portion such that the head portions on two adjacent tabs form a V-shaped notch in the space between said tabs and the neck portions on two adjacent tabs form a generally circular aperture in the space between said tabs and an opening is formed between said notch and said aperture having a sufficient width such that said wire forming said binder passes from said notch into said aperture when one of said adjacent tabs is flexed out of a plane containing the other of said tabs and said wire is retained in said aperture when said tabs are not flexed.

4,430,016

BALL JOINT

Chikara Matsuoka; Kouzi Sawada, both of Toyota, and Takayoshi Sunayama, Hamamatsu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Ishikawa Tekko Kabushiki Kaisha, both of, Japan

Filed Jun. 3, 1981, Ser. No. 269,843

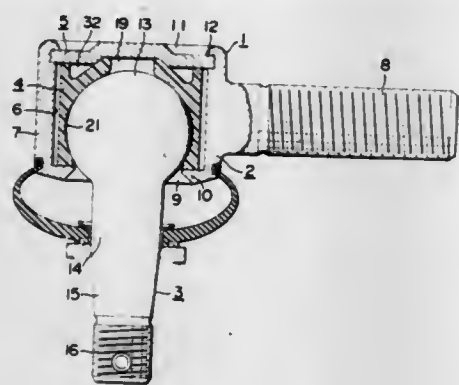
Claims priority, application Japan, Jul. 8, 1980, 55-95808[U] Int. Cl.³ B25G 3/00; F16D 1/00

U.S. Cl. 403—40

3 Claims

1. A ball joint (1) comprising:
a socket (2) having a cylindrical bore (6) having openings (9, 11) at opposite ends and an inwardly extending shoulder (10) at one opening (9) of said bore (6);
a ball stud (3) having a generally spherical head portion (13) disposed in said bore (6) and having a shaft (14) extending outwardly through said one opening (9);
an elastic bearing member (4) mounted in said bore (6) and comprising an annular hole having openings (19, 20) at opposite ends and defined by a generally spherical inner surface (17, 18) which slidably embraces said spherical head portion (13) of said ball stud (3) and cooperates therewith in an equatorial region (E) to define a lubricant receiving pocket (21);

one end of said bearing member (4) having a surface (22) engaging said shoulder (10) in said socket (2); the other end of said bearing member (4) having an annular recess (25) therein around the opening (19) of said annular hole, a radial face (31) around said recess (25), and an annular dome-shaped projecting portion (26) between said recess (25) and said opening (19); said bearing member (4) comprising a cylindrical outer peripheral surface (23) of substantially the same diameter as and engaged with the wall of said cylindrical bore (6), an elastically deformable tapered portion (24) of increasing diameter relative to said cylindrical surface (23) and engaged with the wall of said cylindrical bore (6) imparting preloading pressure to said bearing member in a radial



direction to thereby preload said spherical head portion, and a plurality of radially spaced apart axially extending grooves (28) between the ends of said bearing member (4) and extending radially inwardly partially into said bearing member from said outer peripheral surface (23) including tapered portion (24); and a rigid plug (5) rigidly connected to said socket (2) and engaged with said radial face (31) and with said annular dome-shaped portion (26) of said bearing member (4) to resiliently impart a predetermined amount of preloading pressure to said bearing member (4) in a vertical direction to thereby preload said spherical head portion (13) of said ball stud (3); said plug (5) cooperating with said annular recess (25) to define a space (32) serving as an air cushion.

4,430,017

MUSICAL INSTRUMENT SUPPORT

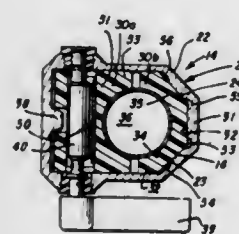
Kenneth G. Stefancich, Chicago, Ill., assignor to Mardan Corp., Elkhart, Ind.

Filed Apr. 29, 1982, Ser. No. 373,006

Int. Cl.³ F16B 7/14

U.S. Cl. 403—104

12 Claims



1. A clamp for coaxially securing a post to a tubular support, comprising:
 - a housing having a through opening and a camming portion adjacent said opening defined by a midportion and converging planar guide surfaces;

means for securing the housing to a tubular support with the through opening aligned with the axis of the support; resilient locking means in said opening having a blind recess in one end thereof and opening parallel to said housing through opening for receiving a camming means when the locking means is mounted in said opening, including a first U-shaped clamp member having a bight portion and spaced legs having end portions, a second U-shaped clamp member opposed to said first member and having a bight portion and spaced legs extending from adjacent said guide surfaces to adjacent said end portions of the first clamp member legs, the legs and bights of said first and second clamp portions cooperatively defining an included socket for receiving a post to be secured to the tubular support; said camming means being disposed within said first clamp member bight portion for urging said first clamp member against the post and the post against said second clamp member to urge the second clamp member against said midportion and compressively urge the legs thereof against the guide surfaces to cause the legs of said second clamp member to be guided thereby toward the legs of said first clamp member to securely grip the post in said socket; and means for manually operating the camming means for selectively securing and releasing the post.

4,430,018

END FITTING FOR OIL WELL SUCKER RODS

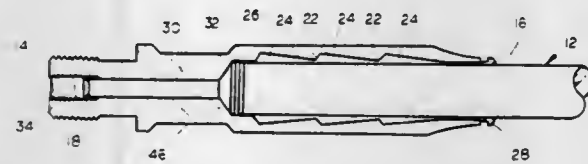
Carlin P. Fischer, Omaha, Nebr., assignor to Technicraft, Inc., Omaha, Nebr.

Filed Apr. 11, 1983, Ser. No. 483,832

Int. Cl.³ F16B 11/00

U.S. Cl. 403—268

5 Claims



1. A sucker rod for oil wells, comprising:
 - an end fitting having an externally threaded first end and an open rod receiving second end,
 - said end fitting having a chamber portion extending inwardly from said second end for receiving one end of a cylindrical rod,
 - said chamber portion being defined by a plurality of spaced-apart annular ridges defining frusto-conical shaped cavities therebetween,
 - said end fitting having a central bore formed therein extending inwardly from said first end to said chamber portion,
 - a fiberglass cylindrical rod having one end positioned in said chamber portion,
 - an adhesive means bonded to said one end of said rod and received by said cavities to maintain said rod in said chamber portion,
 - a valve in said end fitting comprising an elongated valve stem portion positioned in at least a portion of the length of said bore, and a valve head on one end of said stem portion which is positioned in the inner end of said chamber portion, said central bore having an internally threaded outer end portion,
 - a screw means threadably mounted in said internally threaded portion adapted to engage the other end of said valve stem portion to forceably move said valve away from said first end against the inner end of the cylindrical rod in said chamber portion.

4,430,019

CONNECTOR ASSEMBLY

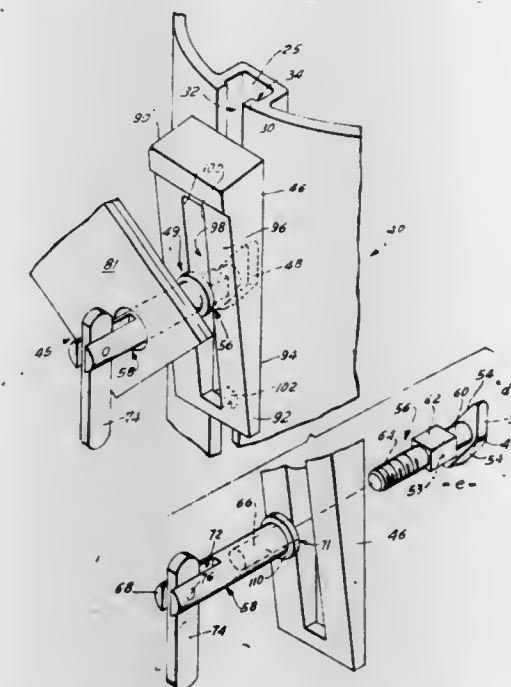
Michael S. D'Alessio, Flushing, N.Y., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Feb. 4, 1981, Ser. No. 231,493

Int. Cl.³ B25G 3/00; F16B 2/14, 21/80; F16G 11/00

U.S. Cl. 403—409

45 Claims



1. A connector assembly for use with a support element having an outwardly opening channel formed therein by a pair of spaced shoulders defining a slot, said assembly comprising a stud having a T-shaped head dimensioned to be received in said channel and a shank connected to said head to extend through said slot away from said head, said shank having a bearing surface thereon parallel to, spaced from and facing said head, and a tapered wedge having front and back surfaces and an aperture extending from said front surface to said back surface, the shank passing through said aperture so that the tapered wedge is slidably mounted on said shank between said head and said bearing surface for engaging said channel with its back surface and said bearing surface with its front surface to urge said head against an inner surface of the shoulders of the channel, thereby to firmly secure the stud to the support element, said shank having mounting means projecting from said bearing surface to be received in an apertured member for supporting the same.

4,430,020

DRIP IRRIGATION HOSE

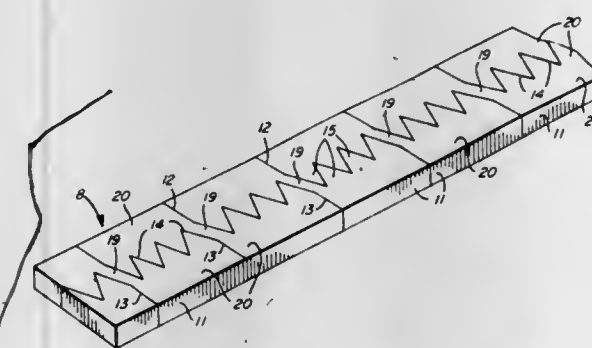
Jackie W. D. Robbins, Rte. 3, Box 329A, Ruston, La. 71270

Filed Sep. 29, 1982, Ser. No. 428,361

Int. Cl.³ E02B 13/00; B05B 1/20

U.S. Cl. 405—43

14 Claims



1. A drip irrigation hose comprising a primary conduit characterized by an elongated, resilient sheet having a first sheet edge, and a second sheet edge lapped over said first sheet edge;

an elongated, resilient plate extending between said first sheet edge and said second sheet edge of said resilient sheet and having a first plate edge in the interior of said conduit and a second plate edge outside said conduit; and at least one flow path in said plate, at least one inlet aperture in said first plate edge of said plate and communicating with said flow path, and at least one outlet aperture in said second plate edge and communicating with said flow path for discharging water from said primary conduit.

4,430,021

SECURE CHEMICAL WASTE LANDFILL

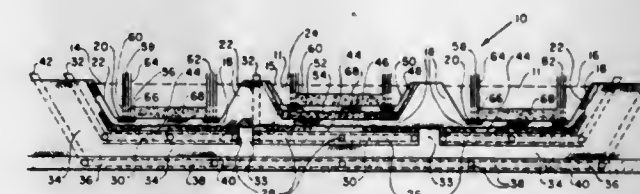
Louis E. Wagner, Eggertsville; Randolph W. Rakoczynski, Youngstown, both of N.Y., and Harold F. Flannery, Batavia, Ohio, assignors to Ecological Professional Industries, Inc., Cincinnati, Ohio

Filed Nov. 23, 1981, Ser. No. 324,067

Int. Cl.³ E02C 3/00

U.S. Cl. 405—129

11 Claims



1. A chemical waste landfill comprising:
 - (a) a plurality of compartments separated by and lined with a primary clay liner;
 - (b) a single integral synthetic water impervious liner beneath the primary clay lining of all of said compartments;
 - (c) a primary underdrain system for each of said compartments beneath said synthetic liner, each of said primary underdrain systems comprising a network of liquid permeable first pipes imbedded in a first liquid permeable aggregate and means for removing liquid which enters said first pipes, said primary underdrain systems being separated from each other by clay footings;
 - (d) a single integral secondary clay liner beneath the primary underdrain systems and footings of all of said compartments; and
 - (e) a secondary underdrain system beneath said secondary clay liner, said secondary underdrain system comprising a network of liquid permeable second pipes imbedded in a second liquid permeable aggregate; and means for removing liquid which enters said second pipes.

4,430,022

UNDERGROUND CABLE INSTALLING APPARATUS AND METHOD UTILIZING A MULTI-POSITIONABLE PLOW BLADE

Frank Kinnan, Camas Valley, Oreg., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 3, 1981, Ser. No. 269,955

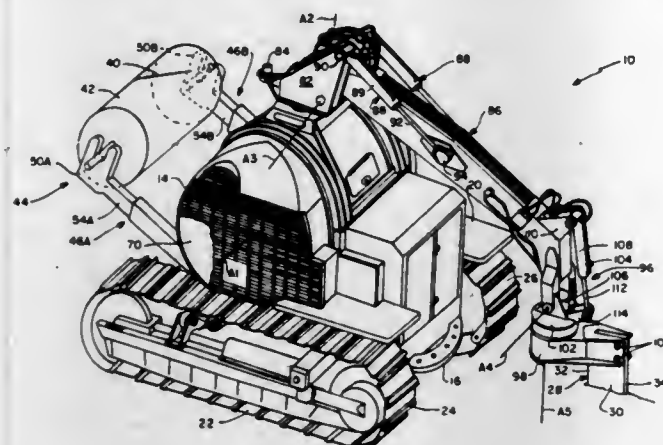
Int. Cl.³ E02F 5/10

U.S. Cl. 405—183

12 Claims

1. An apparatus for installing cable underground, comprising: a power driven land vehicle having a front end, a back end and opposite sides; an elongated cable laying plow blade; a plow blade support arrangement mounted on said land vehicle and supporting said blade for movement with said vehicle, said arrangement having means including a boom supporting said blade and said boom for movement relative to said vehicle between a first cable laying position so that the blade is disposed within the ground and an inoperative second position with the blade above the ground, at any desired point along a predetermined 360° path around said vehicle and around a vertical axis through said vehicle, without having to move said vehicle, said supporting means also including means connecting said blade to the front end of said boom for 360° rotational

movement about an axis parallel with said blade whereby said blade can be pushed in front of or pulled behind said vehicle or moved along either side of the latter at various laterally spaced points; means including a supply of cable supported on and



movable with said vehicle; and means for feeding said cable from its supply to an in-ground point on said blade when the latter is in its cable laying position and said vehicle is moving and from said in-ground point on said blade into the ground along the path taken by said blade.

4,430,023

ROPE GUIDING DEVICE

Donald A. Hayes; Lyle D. Finn, and Carl R. Brinkmann, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

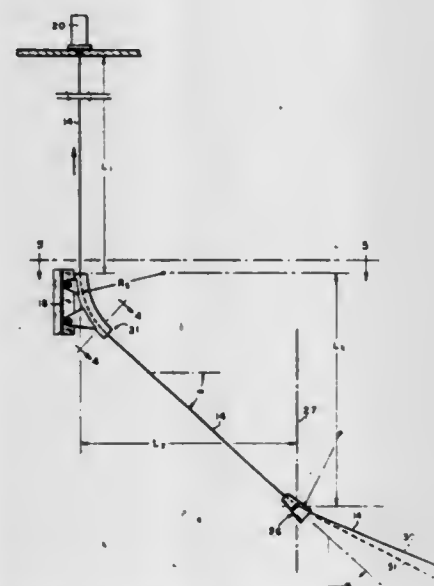
PCT No. PCT/US80/01069, § 371 Date Dec. 17, 1981, § 102(e) Date Dec. 17, 1981, PCT Pub. No. WO82/00675, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 21, 1980, Ser. No. 335,474

Int. Cl.³ E02D 21/00; B63B 21/24

U.S. Cl. 405—224

6 Claims



1. Rope guiding apparatus for use in anchoring an offshore structure in which a rope extends from said structure to an anchoring system on the ocean floor comprising:

- a rope guide member affixed to said structure and having inner and outer housings;
- the inner surface of said inner housing forming a three-sided pyramidal configuration, one of the corners of the pyramid forming a curved rope-contacting groove extending in a first plane, said groove and said rope having substantially the same circumferential radius;
- said inner housing being rotatable within said outer housing to rotate and change said first plane of said groove to a second plane of said groove to bend said rope from said first plane to said second plane to accommodate the posi-

tion of the anchor system relative to said platform, the second plane being the plane of the portion of said rope extending between said rope guide member and said anchor system.

4,430,024

HYDRAULICALLY OPERATED MANDRELS

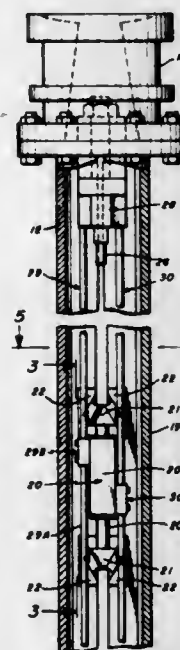
Charles L. Guild; Nicholas H. Werthessen, both of Barrington, and Carlton W. Aldrich, Jr., Cranston, all of R.I., assignors to American Pile Driving Corporation, East Providence, R.I.

Filed Aug. 5, 1981, Ser. No. 290,414

Int. Cl.³ E02D 11/00

U.S. Cl. 405—232

14 Claims



1. An expandable tubular mandrel for use in driving or withdrawing tubular piles, said mandrel including a pair of lengthwise sections, a head connected to and joining the upper ends of said sections, said sections below said head movable between retracted, pile-entering and expanded pile-gripping relationships, and hydraulically operated means to effect said relationships, said means including a series of piston-cylinder units spaced lengthwise of the mandrel and means incorporating said units therein with their axes extending lengthwise thereof in a manner such that expanding and contracting forces are applied to the sections when the units are operated to vary their overall lengths, to effect mandrel expansion when the overall length of at least one unit is changed in one direction and mandrel contraction when the overall length of at least one unit is changed in the opposite direction, means operable to deliver pressurized hydraulic fluid to and from said units to thus effect their operation, and said incorporating means includes connecting means for each unit, one for the cylinder and one for the piston rod thereof, one connecting means connected to at least one mandrel section and the other to both of said sections and operable to exert at least one of said forces thereon with the overall lengths of the units changed in one and the same direction.

4,430,025 OBLATE FRICITION ROCK STABILIZER AND INSTALLATION LUBRICATING CEMENT UTILIZED THEREWITH

Armand Clavatta, 703 Birch Hill Dr., Bridgewater, N.J. 08807
Division of Ser. No. 240,377, Mar. 4, 1981, Pat. No. 4,322,183, which is a continuation-in-part of Ser. No. 127,949, Mar. 7, 1980, Pat. No. 4,316,677.

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.³ E21D 21/00, 20/02

U.S. Cl. 405—261

1 Claim



1. A method of supporting a mine roof strata with an elongated shank structure which comprises the steps of drilling a vertical hole in the mine roof strata of a size to closely fit the exterior periphery of said shank structure at least at annularly spaced portions substantially throughout the vertical extent of the shank structure, applying a hardenable viscous material to the wall of the drilled hole and moving the shank upwardly into the hole while the material is viscous to thereby reduce by a lubricating action the frictional resistance occasioned by the close interengagement of the periphery of the shank structure with the wall of the hole during the upward movement of the shank structure into the hole, and hardening the viscous material after the shank structure has been moved upwardly fully into the hole to thereby increase by a cementing action the frictional gripping action of the exterior periphery of the shank structure with the mine strata.

4,430,026

ROOF SUPPORT SUITABLE FOR USE IN MINES

Nigel Hill, Pershore, and Dennis F. Rutherford, Cheltenham, both of England, assignors to Dowty Mining Equipment Limited, Great Britain

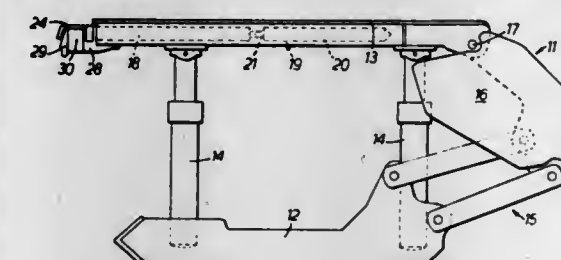
Filed Nov. 17, 1981, Ser. No. 322,283

Claims priority, application United Kingdom, Nov. 27, 1980, 8037974

Int. Cl.³ E21D 23/00

U.S. Cl. 405—291

6 Claims



1. A roof support, suitable for use in mines, comprising a main roof-engagable member, a roof-engagable pad which is mounted upon said main roof-engagable member for upward movement with respect thereto in order to exert a thrust on the mine roof, guide means extending downwardly from the underside of said pad, a linkage pivotally-connected between said pad and said main roof-engagable member, and actuator means, located by said guide means adjacent the underside of said pad, which actuator means has an output member pivotally-connected to said linkage whereby when said actuator means is operated said output member moves said linkage and

thereby said pad with respect to said main roof-engagable member to provide said upward movement, said actuator means itself being moved bodily by said linkage, with said pad, to be maintained so adjacent the underside of said pad, wherein said linkage includes a bell-crank member and a link member which are pivotally-connected together, said bell-crank member having rigidly interconnected first and second arms and said link member having a first end portion and a second end portion, the first arm of the bell-crank member being pivotally-connected to said pad and the second arm of the bell-crank member being pivotally-connected to said first end portion of said link member, while the second end portion of said link member is pivotally-connected to said main roof-engagable member.

4,430,027

METHOD OF FORMING A FOUNDATION WITH LIQUID TIGHT JOINTS

John Hughes, Arlington Heights, Ill., and Heinz Rasbach, Mainring, Fed. Rep. of Germany, assignors to American Colloid Company, Skokie, Ill.

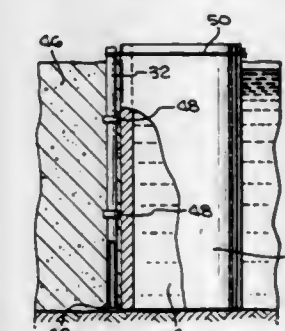
Division of Ser. No. 77,650, Sep. 12, 1979, Pat. No. 4,367,057.

This application Aug. 26, 1981, Ser. No. 296,431

Int. Cl.³ E02D 5/10

U.S. Cl. 405—303

6 Claims



1. In an isolation pipe adapted for vertical disposition between the side walls of a trench to form a removable bulkhead in a process of filling said trench with concrete or the like, the improvement for allowing easy removal of said isolation pipe while providing for an accurate and easily drilled positioning hole at the boundary of adjacent concrete sections, said improvement comprising:

a tubular drill guide member releasably attached to the outer surface of said isolation pipe with the longitudinal axes thereof being in parallel relationship, said member being of an easily drillable material, having a diameter generally smaller than that of said positioning hole and being releasably attached to said isolation pipe such that said member will automatically release from said isolation pipe and remain in said concrete where positioned when said isolation pipe is pulled from said trench after said concrete is poured and set.

4,430,028

FRONT-DISCHARGE NITRATE TRUCK

Richard M. Clayton, Highland, and Arthur J. Johnson, American Fork, both of Utah, assignors to Savage Rite-Way Corporation, Salt Lake City, Utah

Filed Jul. 13, 1981, Ser. No. 282,873

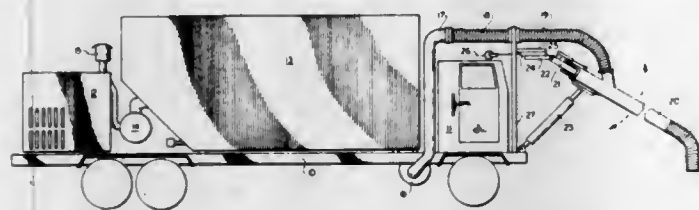
Int. Cl.³ B65G 53/40

U.S. Cl. 406—39

15 Claims

1. A front-discharge truck for transporting finely-divided, blowable materials comprising:
a truck frame supported by rear driving wheels and front steering wheels;
an elongated hopper having sloping sidewalls and a forward-located, discharge port supported by said truck frame;

conveying means located adjacent the bottom of said hopper to convey material in said hopper to said forward discharge port;
 an operator cab located proximate the forward wall of said hopper;
 a vane-type feeder located underneath and communicating with said hopper discharge port;
 an air blower having its discharge outlet connected by conduit means to the lower part of said vane feeder;
 an articulated boom having at least two segments, one of which is an anchor segment pivotally attached to a support frame above the cab area, said boom having drive



means to swing the boom in a horizontal arc of about 180° from a position about perpendicular to the right side of the truck to a position about perpendicular to the left side of the truck;
 boom elevation means to elevate and lower a forward section of the boom;
 air and material transport conduit communicating with the discharge outlet of said vane feeder and communicating with said boom to provide discharge of air and material proximate the free end of said boom;
 operator control means to control boom elevation, boom swing, conveying means, blower and vane feeder located within said operator cab.

4,430,029

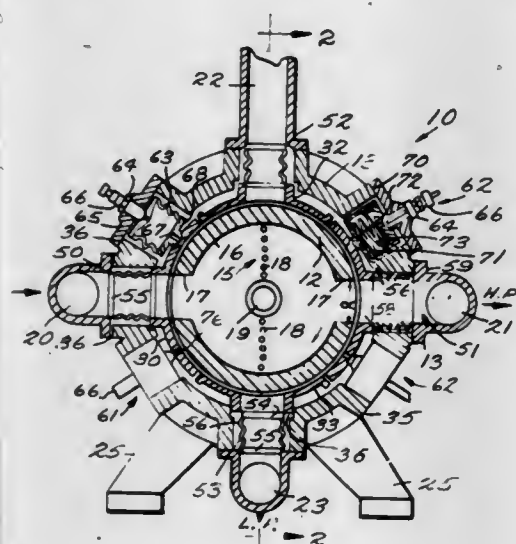
HIGH PRESSURE FEEDER DEFLECTION COMPENSATION

Ole J. Richter, Karlstad, Sweden, and Johan C. F. C. Richter, St. Jean Cap Ferrat, France, assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Nov. 21, 1980, Ser. No. 209,118
 Int. Cl.³ B65G 53/30, 53/46

U.S. Cl. 406—63

36 Claims



1. A high-pressure transfer device including: a pocketed rotor containing a plurality of diametrically through-going pockets, said rotor rotatable about an axis; a housing enclosing said rotor, said housing having an exterior periphery and four ports disposed around the exterior periphery thereof for registry with inlets to and outlets from said through-going pockets; means for mounting said rotor in said housing for rotation with respect to said ports about said given axis of rotation, and in a given direction; screen means for screening particulate mate-

rial above a predetermined size out of the liquid passing through at least one of said ports; and
 sealing means mounted to said housing and disposed between said rotor and said housing around the external periphery of said rotor and internal periphery of said housing for providing a biasing force and radially movable to provide minimized leakage of liquid between said rotor and housing while allowing relative rotational movement between said rotor and said housing.

4,430,030

OPERATING PROCESS FOR THE FORMATION OF A STEADY PARTICLE STREAM OF PARTICLES CONVEYED WITHIN A FLOW CONDUIT BY A FLOW MEDIUM AND ARRANGEMENT FOR EFFECTUATION OF THE PROCESS

Hans Langen, Jülich, and Helmut Ringel, Niederzier-Hambach, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Fed. Rep. of Germany

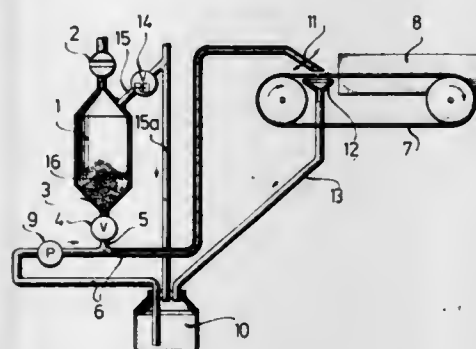
Filed Jul. 29, 1980, Ser. No. 173,332

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931244

Int. Cl.³ B65G 53/40

U.S. Cl. 406—146

3 Claims



1. In an operating process for the formation of a steady particle stream of particles which are conveyed within a flow conduit through the intermediary of a flow medium, said particles being introduced into said flow medium under the effect of gravity through an infed conduit discharging into said flow conduit; the improvement comprising: regulating a partial flow quantity of the flow medium introduceable into the infed conduit from a supply container by withdrawing said partial flow quantity from said infed conduit in a direction counter to the flow direction of the particles in a flow region devoid of particles for the setting of the particle stream to be introduced into said flow conduit; venting any gas bubbles formed in said flow medium upstream of said infed conduit to occlude the entry of gas bubbles into the infed conduit which would adversely affect the flow of the particles stream in the flow conduit; reconveying said partial flow into said supply container for said flow medium after separation of said particles, said partial flow being regulated in a return conduit leading to said container; and venting gas bubbles entrained in the flow medium through an upwardly open outlet in said return conduit.

4,430,031

CUTTING TOOL

Erik I. Hellström, Sandviken, Sweden, assignor to Santrade Ltd., Luzern, Switzerland

Filed Oct. 14, 1981, Ser. No. 311,264

Claims priority, application Sweden, Nov. 17, 1980, 8008038

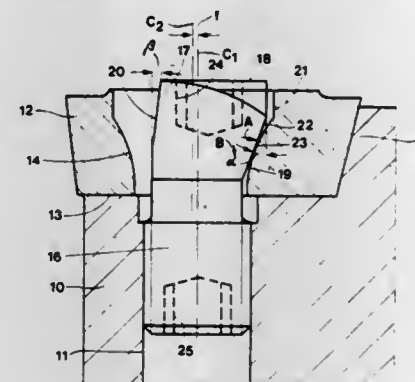
Int. Cl.³ B26D 7/26

U.S. Cl. 407—104

6 Claims

1. A cutting tool comprising:
 a cutting insert holder having an insert-receiving site which includes a base surface, a side support, and a threaded bore in said base surface,

a positive cutting insert seated within said insert-receiving site in contact with said base surface and side support, said insert having a hole therethrough which includes a first contact surface decreasing in cross-sectional area in a direction toward said base surface,
 a locking screw extending through the hole and threadedly mounted in said bore, said screw including a head disposed within said hole and including a second contact surface engaging said first contact surface and imposing a clamping force thereagainst to clamp said insert to said holder, said head being arranged eccentrically relative to



a longitudinal axis of said screw, the largest cross-section of said head being less than the smallest cross-section of said hole such that upon loosening of said screw by about one-half turn said insert is slidably removable over said head.

one of said first and second contact surfaces being of conical configuration, and the other being of convex configuration to produce point contact therebetween, said conical surface being oriented at an acute angle relative to said base surface so that said clamping force has directional components extending toward said base surface and said side support.

4,430,032

PEDESTAL CONTAINER LOCKING DEVICE

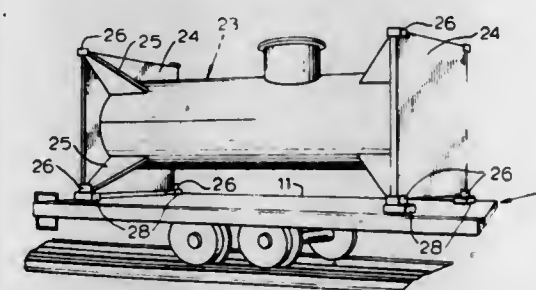
David P. Morgan, Hanover Park, Ill., assignor to Portec, Inc., Oak Brook, Ill.

Filed Sep. 22, 1981, Ser. No. 304,670

Int. Cl.³ B60P 1/64, 7/13; B61D 5/06

U.S. Cl. 410—68

7 Claims



1. A lading retaining means for a transporting vehicle having a flat deck in which the lading is in the form of a container having a corner fitting on at least four corners thereof and in the same horizontal plane, each fitting having a slot, receiving a latching lever for locking the container to the vehicle, a separate pedestal releasably supporting each corner of the container, and including a frame having a base, a platform spaced above said base, and end and sidewalls extending vertically of said platform and conforming to a corner fitting as the container is lowered onto said platform, one sidewall having a slot extending vertically therealong, parallel walls forming said slot, a latch lever extending along said slot between said parallel walls, a variable pivot for said latch lever, pivoting said latch lever between said parallel walls to move into said slot

and into latching engagement with an associated corner fitting, said latch lever having an inwardly extending upper end having an upwardly facing strike surface, and having a lower end portion extending a substantial distance beneath said platform, a compression spring engaging the lower end portion of said latch lever and biasing said latch lever to engage said strike surface with a corner fitting as a container is lowered onto said platform, said compression spring having a movable seat its adjacent lower end of said latch lever and having a saddle on its end opposite said seat and adjacent the lower end portion of said latch lever, a stationary seat for an outer end of said spring means, said saddle having bearing engagement with said lower end portion of said latch lever, said movable seat for said compression spring having a leg portion extending along said spring for a portion of length thereof and a lock bar engageable with said leg portion and reacting against said movable seat and an adjacent wall defining a slot, preventing compression of said spring and thereby securely locking said latch lever from moving to a release position.

5. A lading retaining means for retaining lading to a flat decked transporting vehicle in which the lading is in the form of a container having a corner fitting on each corner thereof, in the same plane and in which each fitting has a vertical latch receiving slot, a pedestal supporting each corner fitting of the container, each having a base engageable with the flat deck of a vehicle, two right-angled walls extending upwardly of said base and forming side and end walls for engagement with the corner of a container, and a platform disposed intermediate the ends of said walls, forming a support for the container, said sidewalls each having parallel spaced vertically extending walls intermediate the ends thereof forming a vertically extending slot, a latch lever extending along said slot, a pivot pin for said latch lever extending across and mounted on said sidewalls beneath said platform, said latch lever having an enlarged opening disposed beneath said platform and through which said pivot pin extends, to form a variable pivot for said latch lever, a second pin disposed beneath said pivot pin and forming a reaction member for said latch lever as the container is lowered onto said platform during a loading cycle, said latch lever having a lower end portion disposed beneath said last mentioned pivot pin, a compression spring seated in said pedestal adjacent an outer end thereof, a movable seat for the inner end of said spring having a leg portion extending along said spring from the seating portion of said spring on said movable seat, a saddle on the side of said movable seat opposite said leg portion and biased by said compression spring to form a biasing member engaging the lower end portion of said latch,

the improvement comprising locking means for said latch lever including an elongated lock bar movable to engage said leg portion and hold said seat from movement in a direction to effect compression of said spring, and release of the latch, an opening in one wall of said parallel walls forming said slot, adjacent said lock bar, to accommodate assembly of said lock bar to engage said leg portion when said lock bar is in a locked position, means selectively operable to pivotally move said lock bar to engage said movable seat and axially move said lock bar to fit into said opening when in a locked position, to retain said lock bar in a locked position and prevent pivotal movement thereof upon the exertion of pressure on said compression spring by said latch.

4,430,033

SHEET METAL INSERT FOR FOAM PLASTIC

Arthur J. McKewan, Rochester, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Apr. 22, 1981, Ser. No. 256,566

Int. Cl.³ F16B 13/06

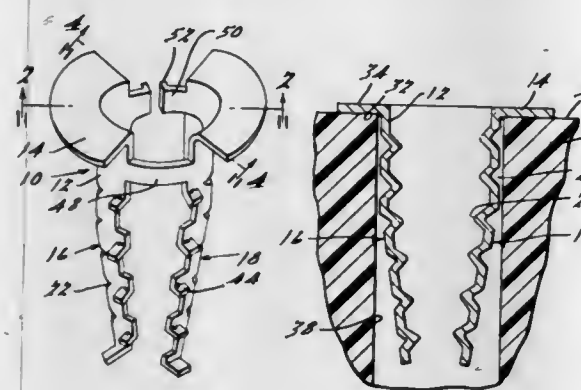
U.S. Cl. 411—61

1 Claim

1. A sheet metal insert for use in anchorage and fastening applications comprising:

a substantially cylindrical body portion with a collar at one end and two legs projecting downward from the other

end, said legs having inwardly projecting and substantially helically orientated ribs defining internal threads having imperforate leading and following flanks to correspond to and receive an externally threaded male fastening member, said legs including a plurality of formed teeth-like tangs disposed on either side of said legs to form an acute angle from the downward end of said legs, said tangs being formed progressively longer along said legs away from said collar, said legs being displaced sufficiently inwardly along the axis of said body to prevent



said tangs from interfering with installation of said insert in a preformed hole, said male fastening member being cooperable with said legs to force them laterally and embed said tangs into the wall of said preformed hole in which said insert may be located, said legs moving in an arc-like direction when forced outward by said male fastening member thereby pulling said sheet metal insert and thus said collar downward and firmly into abutting contact with the surface of a workpiece that contains said preformed hole.

4,430,034

STUD BOLT FOR METAL PANELS

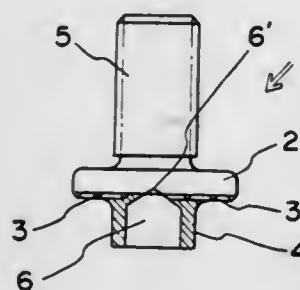
Tatsuhichi Fujikawa, Fukui, Japan, assignor to Fukui Byora Co., Fukui, Japan

Filed Jul. 7, 1981, Ser. No. 281,041

Int. Cl.³ B23P 11/00

U.S. Cl. 411-179

5 Claims



1. A stud bolt for a metal panel comprising:
 - a tubular shaped head portion having a first end face and a second end face and having a longitudinally extending hole open at said second end face;
 - a flat flange having a first surface fixed to said first end face of said head portion and a second surface opposite said first surface; and
 - a screw part extending longitudinally from said second surface of said flat flange;
- said head portion having an outer tubular surface and an inner tubular surface, said inner tubular surface defining the peripheral boundary of said hole, said head portion having a plurality of spaced peripherally longitudinally extending first grooves opening into said inner and outer tubular surfaces and said second end face.

4,430,035
FASTENER DRIVER HEAD AND TOOL AND COUPLING THEREBETWEEN

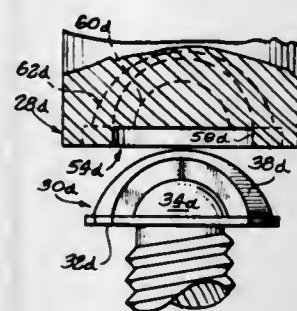
William G. Rodseth, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 30, 1981, Ser. No. 288,423

Int. Cl.³ F16B 23/00

U.S. Cl. 411-402

8 Claims



1. A driver head for a fastener comprising: a substantially disc-shaped base portion, a plurality of dome-shaped portions integrally formed with said base portion and concentrically located within one surface thereof and a plurality of ribs integrally formed with said base portion and alternating with said frustoconical portions and extending outwardly thereof, each of said ribs extending substantially from a diameter of said base to the outer periphery thereof in a substantially symmetrical configuration.

4,430,036

THREAD FORMING FASTENER

Eugene K. Chapman, South Dartmouth, Mass., assignor to Amca International Corporation, Hanover, N.H.

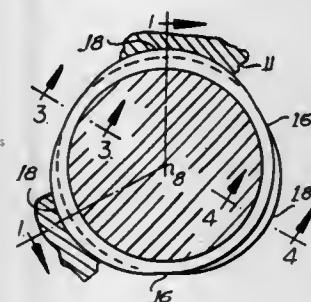
Division of Ser. No. 229,450, Jan. 29, 1981, Pat. No. 4,353,233.

This application Jun. 7, 1982, Ser. No. 385,703

Int. Cl.³ F16B 25/00

U.S. Cl. 411-416

7 Claims



1. A thread-forming fastener having a shank portion with a continuous helical roll-threaded formation of uniform pitch, the crest of said thread defining a helix including in a plurality of turns of the thread arcuate regions merging gradually with intermediate arcuate lobes, said lobes having radii of curvature that are less than the radii of curvature of the arcuate regions, said thread having a depth that is at a minimum circumferentially midway between said lobes, said thread having a depth that is at a maximum at said lobes, and a lobe in one turn of the thread being circumferentially offset from the nearest lobe in an adjacent turn and in which said offset is one-half the circumferential spacing of two adjacent lobes.

4,430,037
INDUSTRIAL ROBOT WITH SEVERAL AXES OF ROTATION

Luciano Bisiach, Strada San Vito Revigliasco 350, 10100 Turin, Italy

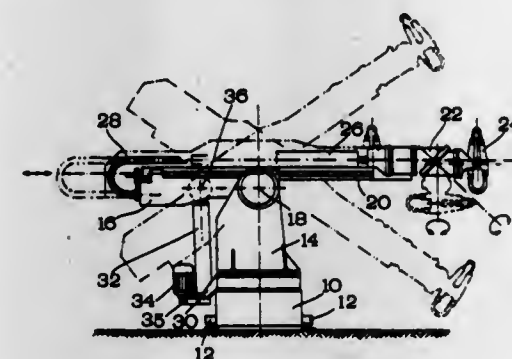
Filed Aug. 17, 1981, Ser. No. 293,141

Claims priority, application Italy, Apr. 23, 1981, 6755 A/81

Int. Cl.³ B25J 9/00

U.S. Cl. 414-4

1 Claim



1. An industrial robot having several axes of freedom of movement with an operating members supporting arm pivotally mounted at the top of a supporting column for angular medium position and characterized in that angular positioning of said supporting arm is controlled by an electromechanical actuator having one end pivotally connected to said supporting arm in a position spaced from said horizontal axis of angular movement and the other opposite end pivotally connected to said supporting column and comprising
 - a. a threaded shaft mounted at its two opposite ends in bearings connected to each other by rigid walls forming at least one linear guide member;
 - b. a lead nut meshing with said threaded shaft and provided with at least one projecting lug for slidably engaging said linear guide member; and
 - c. a tubular outer jacket secured to said projecting lug of said lead nut and being sealingly connected to one of said bearings of threaded shaft which is in the form of a piston and having a bottom provided with a gauged hole communicating with the atmosphere.

4,430,038

POWER DUMP WAGON

William Rempel, and Henry Rempel, both of Winnipeg, Canada, assignors to Greenbelt Farm Systems Inc., Winnipeg, Canada

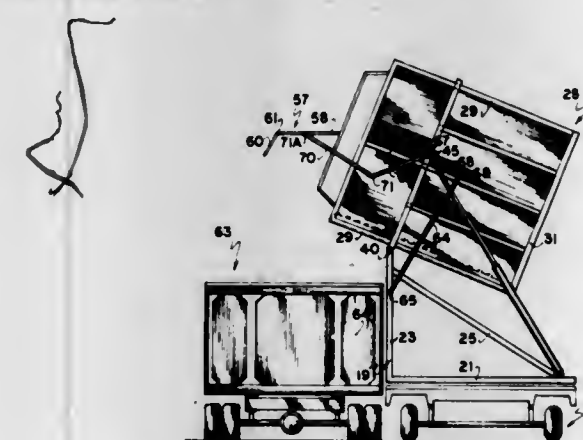
Filed Oct. 27, 1980, Ser. No. 201,172

Claims priority, application Canada, Nov. 1, 1979, 338944

Int. Cl.³ B60P 1/34

U.S. Cl. 414-346

13 Claims



1. A power dump wagon comprising in combination a supporting main frame, a dump wagon box mounted within said main frame, means for mounting said box by one side thereof within said main frame for tilting movement relative thereto, from a substantially vertical, normal position to an inclined unloading position and vice versa, an endless unloading conveyor

veyor operatively mounted upon said one side of said box and extending substantially the full length and breadth thereof, said unloading conveyor being substantially vertical when said box is in the said normal position, and including an outer run and an inner run spaced and parallel with said outer run and situated between said outer run and said one side, means to move said box from one position to the other and further means to operate said conveyor wherein said outer run moves upwardly from adjacent the lower end of said one side towards the upper end thereof.

4,430,039

FIBRE LOADING DEVICE FOR A BRUSH MANUFACTURING MACHINE

Leonel P. Boucherle, Roeselare, Belgium, assignor to Firma G.B. Boucherle, Izegem, Belgium

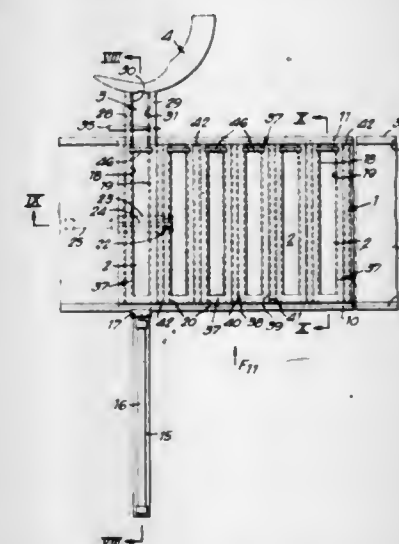
Filed Feb. 20, 1981, Ser. No. 236,613

Claims priority, application Belgium, Feb. 26, 1980, 58426

Int. Cl.³ B65G 1/06

U.S. Cl. 414-417

5 Claims



1. A fibre loading device for a brush manufacturing machine having a fibre magazine, which device comprises:
 - (a) a displaceable table for mounting adjacent a fibre magazine and including a vertical wall disposable adjacent the magazine;
 - (b) means for displacing the table;
 - (c) a displaceable fibre box carried by the table, which box includes a plurality of adjacent fibre chambers, each fibre chamber being defined by a bottom, an open end wall disposable adjacent the fibre magazine, two side walls, and an end wall having a first aperture therethrough;
 - (d) a plurality of fibre cartridges, each fibre cartridge being disposable in a corresponding fibre chamber, with each fibre cartridge having a U-shaped chamber defined by a bottom, a fixed end wall having a second aperture therethrough, a removable end wall for temporarily securing the fibres in the fibre cartridge, and two side walls, each side wall including an inner longitudinal groove;
 - (e) means for displacing the fibre box to successively align the fibre cartridges with the fibre magazine; and
 - (f) means for transferring fibres from each fibre cartridge into the fibre magazine when each fibre cartridge is aligned with the fibre magazine and after the removable end wall of the fibre cartridge has been removed, the transfer means being movable through the first and second apertures of each fibre box and its corresponding fibre cartridge and through the cartridge, with the transfer means being guided by the longitudinal grooves in the fibre cartridge.

4,430,040

COIL UPENDER

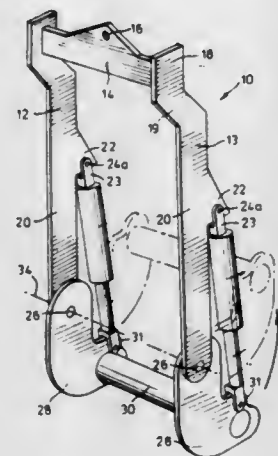
George G. Halmos, 81 Munro Blvd., Willowdale, Ontario, Canada M2P 1C5

Filed Dec. 14, 1981, Ser. No. 330,037

Int. Cl.³ B66C 1/54

U.S. Cl. 414—783

4 Claims



1. A coil upending and transporting apparatus comprising: a main frame having means for allowing the frame to be suspended from a suspension device, a sub-frame pivoted to said main frame at a horizontal axis located below said means, power means for positively pivoting the sub-frame with respect to the main frame about said axis, the sub-frame including:

- (a) support means for engagement under a coil whose axis is vertical,
- (b) an elongate holding mandrel disposed so as to be parallel with the axis of a coil at one end of which the support means is engaged, and
- (c) control means for moving said holding mandrel selectively (1) in the direction of its elongation, and (2) perpendicular to both its own elongation direction and the direction of said horizontal axis,

the horizontal axis at which the sub-frame is pivoted to the main frame being substantially aligned with the centre of gravity of the sub-frame when carrying a coil of average weight and size, thereby reducing the work required of the power means to positively pivot the sub-frame and coil about said horizontal axis.

4,430,041

CRANE AND MANIPULATOR INTEGRATION

Trevor Hemingway, Dronfield, and Anthony E. Middleton, Swinton, both of England, assignors to Davy-Loewy Limited, Sheffield, England

Continuation-in-part of Ser. No. 181,660, Aug. 26, 1980, abandoned, which is a continuation of Ser. No. 941,404, Sep. 11, 1978, abandoned. This application Oct. 13, 1981, Ser. No. 310,728

Claims priority, application United Kingdom, Sep. 15, 1977, 38614/77

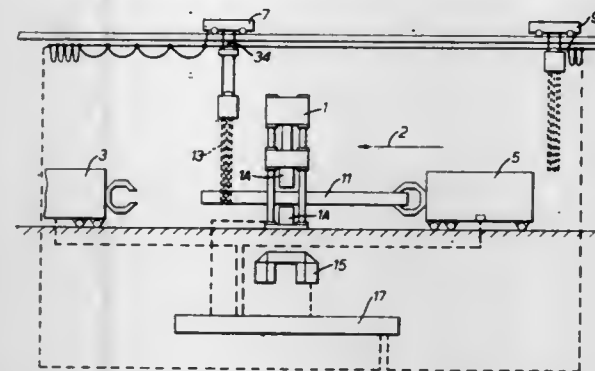
Int. Cl.³ B21J 13/10

U.S. Cl. 414—787

6 Claims

1. An installation, comprising: an overhead crane movable along a first path; electrical drive means for moving said crane along said first path; manually operable control means for producing an electrical control signal; control means for controlling said electrical drive means for said crane in response to said electrical control signal so as to bring about desired movement of said crane along said first path; a manipulator movable along a second path which is parallel

to and beneath said first path, and having a peel for supporting an elongate workpiece in a cantilever fashion; drive means for moving said manipulator along said second path; control means for controlling said drive means for said manipulator in response to said electrical control signal so



as to bring about desired movement of said manipulator along said second path; and means arranged for receiving said control signal and for applying said control signal to both of said control means for said crane and said manipulator whereby said drive means of said crane and said manipulator are controlled together.

4,430,042

VELOCITY PUMP REACTION TURBINE

Palmer A. House, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

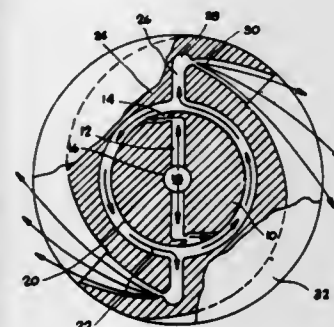
Division of Ser. No. 98,450, Nov. 29, 1979, Pat. No. 4,332,520.

This application Feb. 11, 1982, Ser. No. 347,821

Int. Cl.³ F01D 1/18

U.S. Cl. 415—1

10 Claims



1. A method for converting stored energy of a hot pressurized fluid into rotational mechanical work comprising: flowing the fluid outwardly through a plurality of first radial passageways in an inner assembly; discharging the fluid substantially tangentially through a liquid nozzle at the end of each first passageway into a surrounding annular channel; flowing the fluid outwardly through a plurality of second radial passageways in an outer rotor surrounding the channel; discharging the fluid substantially tangentially through a second nozzle at the end of each second passageway in the rotor to impart rotation on the outer rotor; the steps of flowing the fluid through the radial passageways of the inner assembly and discharging the fluid substantially tangentially into the annular channel being performed to cause the tangential velocity of the fluid to match the tangential velocity of the rotating outer rotor; and taking mechanical work from the rotating outer rotor.

4,430,043

VARIABLE STATOR VANE OPERATING MECHANISM FOR TURBOMACHINES

Ronald W. Knight, and Clive E. Olive, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

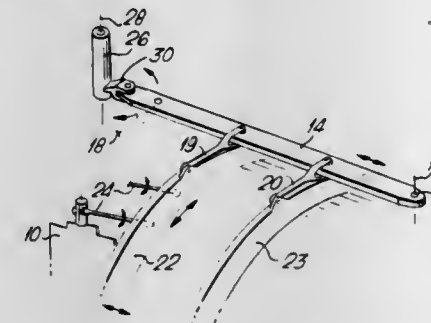
Filed Jun. 11, 1981, Ser. No. 272,550

Claims priority, application United Kingdom, Jun. 28, 1980, 8021304

Int. Cl.³ F01B 25/02

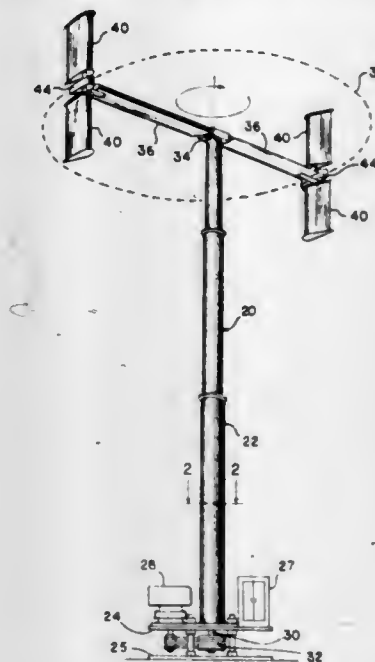
U.S. Cl. 415—159

5 Claims



1. A variable stator vane operating mechanism for a turbomachine comprising a beam, a pivot connection by means of which one end of the beam is connected to static structure of the machine, the machine having a longitudinal axis, said pivot connection enabling a pivoting movement of the beam about an axis substantially at right angles to the machine longitudinal axis, means allowing lengthwise movement of the beam, at least one unison ring supported both for rotation about and movement along the machine longitudinal axis, each unison ring being connected to the beam by a drag link which extends between the ring and the beam, a plurality of flexible first arms each of which is pivotally connected to a unison ring and to a vane to rotate the vane, and an actuating mechanism for moving the beam, said actuating mechanism comprising means for producing both said pivoting and lengthwise movements of the beam to rotate the unison rings, said actuating mechanism being so dimensioned and arranged that the longitudinal movement of the beam produced thereby is substantially matched to the movement of at least one unison ring along the machine longitudinal axis which is caused by pivoting of the associated first arms connected to the unison ring.

creased rotational velocity of said rotor, said control means prohibiting said pivotal movement of said blade



form at high rotational speeds of said turbine in a constant wind flow velocity.

4,430,045

HELICOPTER POWER TRAIN FOR DISTRIBUTING ROTOR BLADE FLAPPING DISPLACEMENTS THROUGH A PLURALITY OF DRIVE TRAIN COMPONENTS

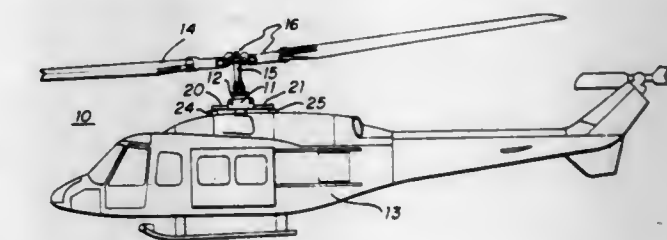
Wesley L. Cresap, Forth Worth, Tex., assignor to Bell Helicopter Textron, Inc., Forth Worth, Tex.

Continuation of Ser. No. 32,776, Apr. 24, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 279,705

Int. Cl.³ B64C 27/04

U.S. Cl. 416—138

5 Claims



1. A helicopter power train including a transmission for driving a multi-blade rotor for accommodating rotor tip-path plane flapping deflection comprising in combination:

- (a) a resilient mounting including a plurality of independently operating mounts with travel limits for coupling the transmission to the fuselage of the helicopter, said mounting to accommodate from about 15% to 35% of said deflection,
- (b) a flexible mast extending from said transmission to said rotor to accommodate from about 10% to 30% of said deflection,
- (c) a yoke secured to said mast for connecting said blades to said mast, said yoke having a thin flexure section immediately outboard of said mast to accommodate from about 40% to 60% of said deflection, and
- (d) each of said blades including means for providing beam bending to accommodate from 0% to about 10% of said deflection.

4,430,044

VERTICAL AXIS WIND TURBINE

L. Kenyon Liljegren, 1260 SE. Walnut #5, Tustin, Calif. 92680

Filed Nov. 23, 1981, Ser. No. 324,103

Int. Cl.³ F03D 7/06

U.S. Cl. 416—119

37 Claims

1. A wind turbine for obtaining power from a wind flow comprising: a support structure; a rotor; means for mounting said rotor for rotation on said support structure about an axis of rotation; at least one blade form pivotally mounted on said rotor a distance from said axis of rotation for limited pivotal movement relative to said rotor, said blade form pivotally moving relative to said rotor in response to the force of a wind current against its sides to generate a rotational force for self-starting of said turbine and operation at low rotational speeds; and means for controlling said pivotal movement of said blade form relative to said rotor, said means progressively biasing said blade form toward one selected orientation relative to said rotor and thereby progressively limiting said pivotal movement of said blade form in response to in-

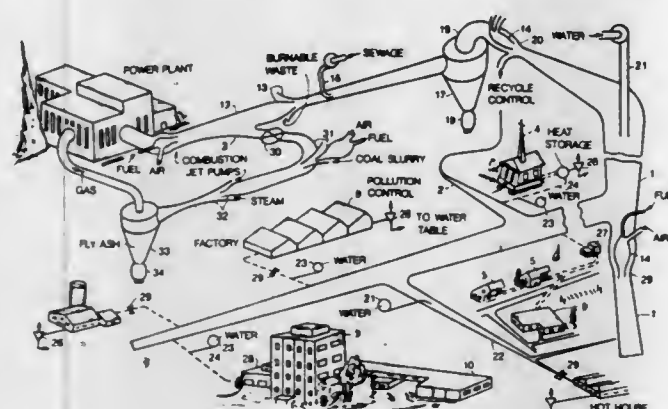
4,430,046

METHOD AND APPARATUS FOR TOTAL ENERGY SYSTEMS

Anthony J. Cirrito, Grafton, Mass., assignor to CTP Partners
Filed Jun. 18, 1980, Ser. No. 160,819
Int. Cl.³ F04F 5/00

U.S. Cl. 417—55

18 Claims



1. The method of generating a hot high pressure fluid stream comprising the steps of combustion of an oxygen bearing fluid and fuel, introducing a carbonaceous water bearing material into a pressure zone without substantial loss in pressure, transferring heat from said stream to react with and to evaporate the water from said material, separating the dried and unreacted parts of said material from said zone while continuing to substantially maintain said pressure in the remanent flow of product gas and water vapor, while continuing high static pressure in said flow after separating said parts for the optimal utilization of the heat content in said flow, and further whereby the delivery of product gas with minimal surplus steam is controlled by effecting, at the most, four independently varied steam sources including steam by direct heat transfer from at least two combustion reactions within the system, and further, whereby said combustion takes place in a confined space to deliver a transonic jet from a nozzle which emanates from said space into a mixing zone conforming to the low static pressure of said jet for receiving said material introduced at very low velocity in the range of 100 to 200 feet per second to interact violently with the combustion products in said jet.

4,430,047

PUMP ARRANGEMENT

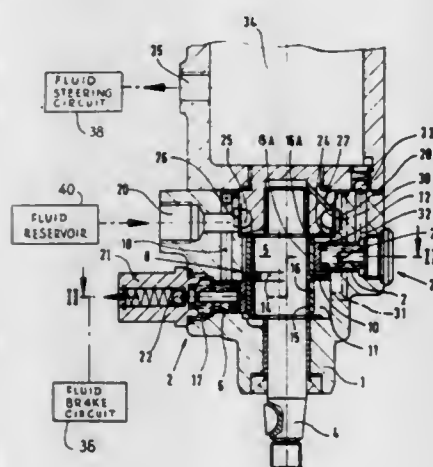
Rudolf Iig, Aalen, Fed. Rep. of Germany, assignor to Zahndradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 216,966
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951012

Int. Cl.³ F04B 23/04, 1/04

U.S. Cl. 417—273

9 Claims



1. In a multiple pump assembly for supplying fluid from a common fluid reservoir to a plurality of fluid circuits, said

pump assembly having a pump housing (1) and a drive shaft (4), the improvement residing in at least two radial piston pumps (2,3) having plungers (6,7) associated therewith, respectively, a common eccentric (5) mounted on the drive shaft having a common actuating surface in engagement with the plungers, said housing being formed with an eccentric chamber (8) enclosing the eccentric and a common suction port (20), and means mounted on the actuating surface of the common eccentric for dividing said eccentric chamber into separate compartments (11, 12) in fluid communication with said common suction port, said housing also being formed with annular channels (26/25, 26A/25A) through which fluid is conducted between the compartments and the common suction port.

4,430,048

DIAPHRAGM PUMP WITH A DIAPHRAGM CLAMPED IN PRESSURE-BALANCING ARRANGEMENT

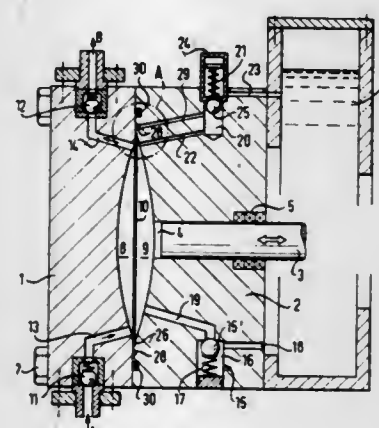
Horst Fritsch, Leonberg, Fed. Rep. of Germany, assignor to Lewa Herbert Ott GmbH & Co., Leonberg, Fed. Rep. of Germany

Filed Dec. 29, 1981, Ser. No. 335,410
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1980, 3049341

Int. Cl.³ F04B 43/06

U.S. Cl. 417—383

13 Claims



1. A diaphragm pump including at least one diaphragm separating a delivery chamber from a working chamber filled with a hydraulic medium, said diaphragm being firmly clamped between a cylinder body and a cylinder cover at a clamping surface formed by the peripheral edge portion of said diaphragm, and further including hydraulic diaphragm drive means in the form of a reciprocating displacement piston slidably disposed within said cylinder body between said working chamber and a hydraulic fluid reservoir, characterized in that a pressure balancing space is provided to be radially outside and to encircle said diaphragm clamping surface, said pressure balancing space communicating with said working chamber or with said hydraulic fluid reservoir through at least one communicating passage, and in that a separate annular seal member is disposed to be radially outside said pressure balancing space between said cylinder cover and said cylinder body to seal-off said pressure balancing space and said working chamber from the outside.

4,430,049

RIPPLE REGULATOR IN A LIQUID SUPPLY SYSTEM

Masahiko Alba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1982, Ser. No. 366,704
Claims priority, application Japan, Apr. 22, 1981, 56-61833

Int. Cl.³ F04B 11/00

U.S. Cl. 417—540

4 Claims

1. In a liquid supply system including a pump system for developing the liquid by means of a movement of a piston included therein, and a ripple regulating system for minimizing

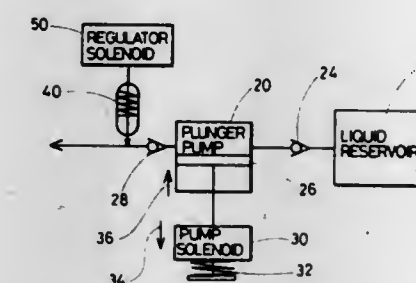
pressure ripples created by said pump system, said ripple regulating system comprising:

a ripple regulator including:

a pressure chamber;

inlet means for introducing the liquid developed from said pump system into said pressure chamber;

outlet means for developing the liquid from said pressure chamber; and



a resilient member secured to said pressure chamber so as to vary the volume of said pressure chamber; a solenoid mechanism connected to said resilient member for varying said volume of said pressure chamber; and drive control means for activating said solenoid mechanism in synchronization with the movement of said piston included in said pump system.

4,430,050

ROTARY, POSITIVE-DISPLACEMENT MACHINE

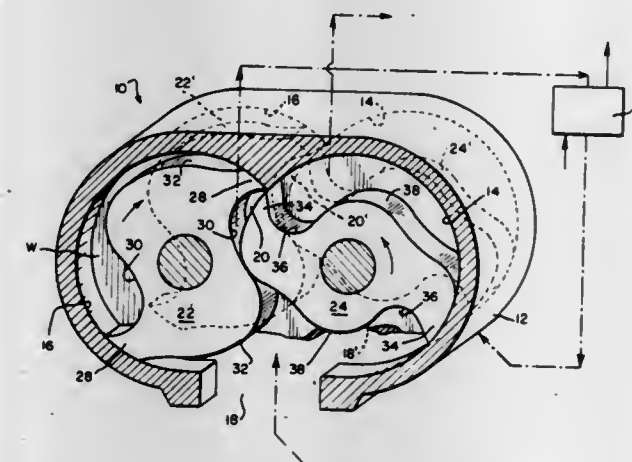
Theodore E. Blazewski, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 25, 1982, Ser. No. 342,122

Int. Cl.³ F01C 1/24; F04C 18/00

U.S. Cl. 418—191

28 Claims



1. A rotary, positive-displacement machine, with interengaging lobed-rotors having different-sized lobes, adapted to handle a fluid, comprising:

a housing;

said housing having a pair of parallel, cylindrical, intersecting bores, end walls for said bores, and first and second ports for the conduct therethrough of high-pressure and low-pressure fluid, respectively, wherein

said first port is formed in one of said end walls; first and second lobed-rotors rotatably mounted in said bores;

said first rotor has a hub which occludes said first port, and a groove which exposes said first port;

said hub has a radius of not more than ninety percent of the radius of the bore in which said first rotor is mounted;

said first rotor has a pair of grooves which, together, occupy less than one-half the circumference of said first rotor;

said first rotor has a pair of lobes which, together, occupy not more than approximately one-sixth the circumference of said first rotor;

said first rotor has a pair of lobes which, together, occupy not more than approximately one-sixth the circumference of said first rotor;

said first rotor has an axial center; each lobe of said pair thereof has, relative to a given rotary direction, an outermost leading tip and a first, intermediate reference point; each lobe further has a flank defined by convex and concave surfaces; said convex and concave surfaces describe first and second arcs, respectively; and said first arc is drawn from a second reference point which is traversed by a line extending between said axial center and said first reference point.

4,430,051

REACTION VESSEL

Baltzar C. von Platen, Ystad, Sweden, assignor to F. D. International, Ltd., London, England

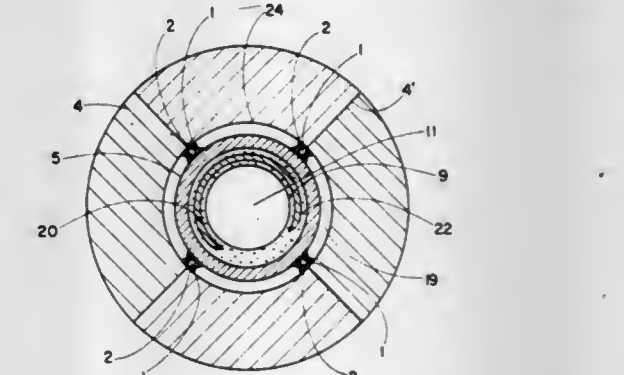
Filed Dec. 8, 1980, Ser. No. 213,897

Claims priority, application Sweden, Dec. 20, 1979, 7910512

Int. Cl.³ B01J 3/04, 3/06; C01B 31/06; B30B 15/34

U.S. Cl. 425—77

17 Claims



1. A reaction vessel for use in a high temperature, high pressure process for forming diamonds, diamond powder, boron nitride and similar substances, said reaction vessel including:

an inner hollow housing defining a reaction chamber therein;

an outer shell surrounding and supporting said inner housing to transfer pressure applied to the outer surface of said outer shell, to said inner housing and said reaction chamber, and

a fluid flow passageway provided between said inner housing and said outer shell through which flows a cooling fluid for receiving and transporting heat from the reaction chamber of the reaction vessel before said heat penetrates said outer shell.

4,430,052

BELLING MANDREL ASSEMBLY

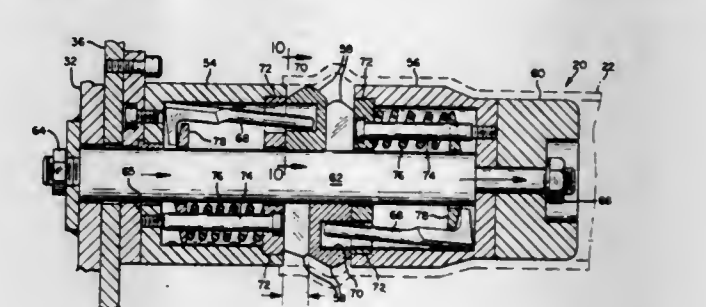
Robert P. Olsson, Renton, Wash., assignor to Western Plastics Corporation, Tacoma, Wash.

Filed Jul. 12, 1982, Ser. No. 397,533

Int. Cl.³ B29D 23/00

U.S. Cl. 425—392

15 Claims



1. A bellowing mandrel assembly for enlarging the end of a softened plastic pipe, comprising:

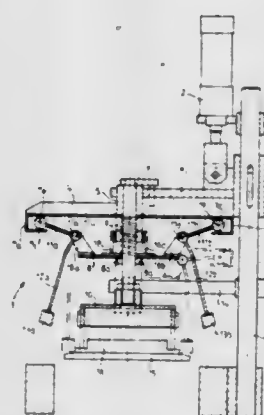
- (a) a frame,
- (b) mounted on the frame, socket molding means comprising:
 - (1) lip mold forming means
 - (2) base mold forming means engaged coaxially with the lip mold means
 - (3) seal pocket forming means interposed between the lip mold forming means and base mold forming means,
 - (4) shifting means engaging the seal pocket forming means for shifting it radially from retracted position to advanced position, and
 - (5) retracting means engaging the seal pocket forming means for moving it radially from advanced position to retracted position.

4,430,053

APPARATUS FOR SEALING TARTS OR PIES

Noël Launay, Beauvais, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Sep. 2, 1982, Ser. No. 414,486

Claims priority, application France, Sep. 8, 1981, 81 17012
Int. Cl.³ B29C 17/08; A21C 11/10
U.S. Cl. 425—510 5 Claims



1. An apparatus for sealing tarts or pies, particularly almond tarts, essentially characterised in that it comprises a plate intended to receive the product to be subjected to the confection process, a mould of suitable shape situated above said plate and fixed to a shaft capable of making an ascending-descending movement with a means for applying pressure to said product and

a means associated with said mould consisting of lateral arms supporting at their ends means for nipping and cutting into the periphery of the product to be obtained, said arms being activated in such a way that said nipping and cutting means are applied to said product when the mould is in its lower position.

4,430,054

OIL-WATER MIXING AND SUPPLYING SYSTEM

Mitsumasa Furuya, Tokyo, Japan, assignor to Nihon Eikan Shido Center Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,173

Claims priority, application Japan, Dec. 20, 1980, 55-180802
Int. Cl.³ F23J 7/00

U.S. Cl. 431—4

1 Claim

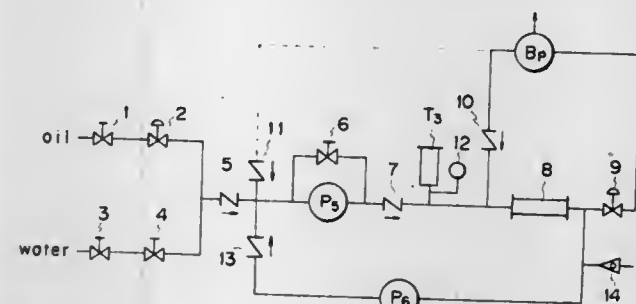
1. A system for supplying an oil-water mixture to a burner including apparatus for continuously emulsifying the mixture, comprising:

- (a) a first flow circuit operative when said burner is operative including
 - oil supply means,
 - water supply means,
 - first means for pumping oil and water from said respective supply means to said burner when said burner is operative, including flow-regulating means for limiting the flow of oil and water therethrough when said first pumping means is operative, and for providing a bypass

passage for said oil and water when said first pumping means is inoperative,

means, disposed upstream of said burner, for mixing said oil and said water prior to being delivered to said burner, said mixing means including stationary agitator elements, and

means for accumulating excessive increases in flow pressure and means for detecting said flow pressure increases, said detecting means being operatively coupled with said accumulating means and said first pumping means to define an auxiliary pumping means, whereby when said burner is operative, actuation of said detecting means causes inactivation of said first pumping means, and release of the excess pressure in said accumulating means into said first flow circuit, thereby maintaining the flow of said oil and water therethrough;



- (b) a second flow circuit operative when said burner is inoperative including
 - said mixing means, and
 - second means for pumping said oil and said water, said second pumping means being positioned downstream of said mixing means and providing continuous circulation of said mixed oil and water through said mixing means, thereby maintaining emulsification of said oil and said water while said burner is inoperative; and
- (c) means for switching from said first flow circuit to said second flow circuit, located in said first circuit, and including means for detecting increases in flow pressure in said first circuit and means for absorbing abnormal increases in pressure in said first circuit.

4,430,055

SEMI-CONTINUOUS VACUUM HEAT-TREATING FURNACE, AND ITS OPERATION PROCESS

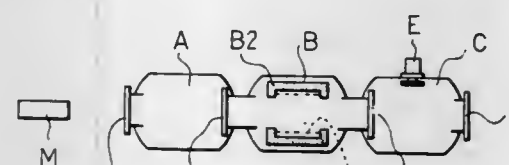
Michio Sugiyama, 7-21, Takamori-dai 3-chome, Kasugai-shi, Aichi-ken, Japan

Filed Feb. 17, 1982, Ser. No. 349,672

Claims priority, application Japan, Feb. 17, 1981, 56-21826
Int. Cl.³ C21D 1/74, 1/06; F27D 3/00; F27B 5/04

U.S. Cl. 432—11

3 Claims



1. A semi-continuous vacuum heat-treating furnace comprising:

- (a) a charging door and a carriage door installed respectively to charging and discharging ports at forward and rear sides of the furnace;
- (b) a vacuum heating chamber constituted at front portion of the furnace, said vacuum heating chamber having a heating element and a heat insulation material both are stable

- in chemical property and strength in vacuum condition and atmospheric pressure at high temperature;
- (c) a cooling chamber constituted at rear portion of the furnace; and
- (d) an intermediate vacuum door disposed within the furnace and for separating the vacuum heating chamber and the cooling chamber with each other.

4,430,056

PRESSURE ACTUATED SEAL FOR TRAVELLING GRATE

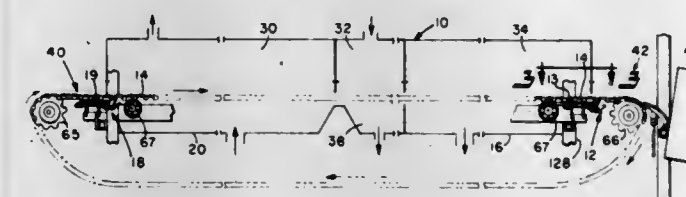
Virgil C. Rostvold, Nashwauk, Minn., assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Mar. 16, 1982, Ser. No. 358,643

Int. Cl.³ F27B 9/26; F27D 1/18; C21B 7/16

U.S. Cl. 432—137

26 Claims



1. A pressure actuated sealing system for a travelling grate having a plurality of pallets each with an irregular bottom surface including a generally horizontal lower surface and a downwardly extending seal plate engaging means at the leading edge thereof, said system including a windbox mounted below said travelling grate for creating a pressure differential across said travelling grate, a dead plate disposed below said travelling grate, said seal plate engaging means sliding on said dead plate as said grate travels, a horizontally elongated rigid seal plate, and means for pivotally mounting said seal plate for pivoting movement about an axis parallel to and below said dead plate thereby to follow the bottom contour of the pallets, said seal plate pivoting upon engagement by said seal plate engaging means and against a pressure differential created by said windbox from a first angular position in which an edge of said plate is proximate said horizontal lower surface of said pallet to a second angular position in which said edge of said seal plate is more distant from said lower surface of said grate, said seal plate returning to said first angular position after passage of said seal plate engaging means, thereby to follow the irregular bottom surface of said pallets.

4,430,057

CALCINER SCREW CONSTRUCTION

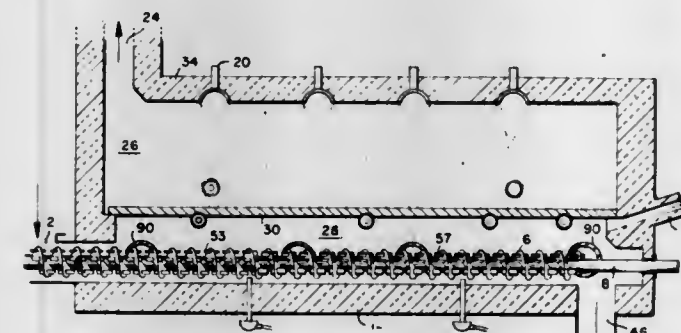
Donald P. Hoover, Lansdale; Michael A. Csapo, Wyncote, and Ernst A. Siemssen, Gwynedd, all of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Feb. 18, 1982, Ser. No. 349,846

Int. Cl.³ F27D 3/08; F26B 9/18, 11/12; B65G 33/06

U.S. Cl. 432—154

19 Claims



12. A calciner comprising

- (a) a heat source for heating a material,
- (b) a screw type conveyor arranged to convey said material while exposed to said heat source, said conveyor having at

least one pair of mated conveyor screws, each said conveyor screw comprising a shaft having screw flights attached thereto, the flight pitch of one screw in the pair being opposite from that of the other screw in the pair, the screws of each pair intermeshing with each other and rotating in opposite directions to advance material to and through said calciner,

(c) lifter means attached to said screws and rotating therewith for moving said material from beneath said shaft upward for contact with heat from said heat source, for mixing and cascading said material downward and for absorbing heat from said heat source and conducting said heat to said material,

wherein said lifter means comprise multiple substantially rigid members extending outwardly from said screw flight, extending in a direction substantially tangential to said conveyor screw shaft inner circumference, spaced from said conveyor screw shaft mounted on at least that portion of said screw flights where said material exits said calciner.

4,430,058

CERAMIC WORKPIECE HOLDER

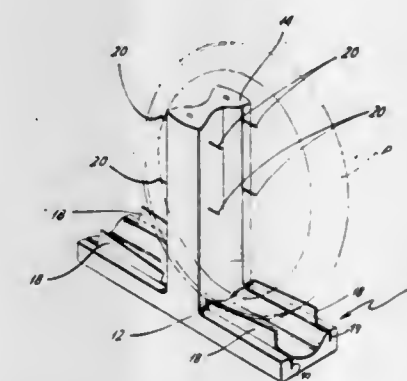
John J. Ryan, and Peter P. Laskey, both of 7809 Walker St., Philadelphia, Pa. 19136

Filed Apr. 12, 1982, Ser. No. 367,490

Int. Cl.³ F27B 5/00

U.S. Cl. 432—259

8 Claims



1. A ceramic workpiece holder comprising: an elongated base member; a support post upwardly standing from said base member and dividing said base member into separate support portions; a pair of elongate grooves extending along each said separate support portion; and a plurality of pairs of blades, each said pair in parallel spaced-apart relationship positioned in respective ones of said groove pairs.

4,430,059

INJECTION PRESS

Friedrich B. Bielefeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,032

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106379

Int. Cl.³ B29F 1/00

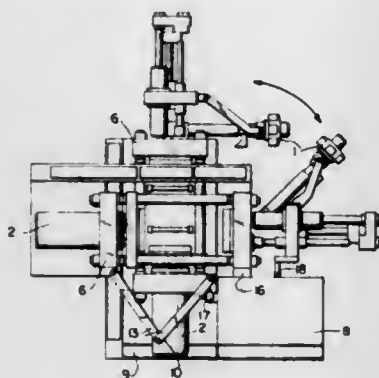
U.S. Cl. 425—190

8 Claims

1. An injection press for the processing of hot deformable substances, comprising:

- a machine base having a first vertical height and an upper support surface;
- a machine bed having a second vertical height lower than said first vertical height;
- a mold closure unit having a pivot point and containing a mold, said mold closure unit having one wall constructed to support said mold closure unit horizontally on said upper support surface;

a preplasticizing unit attached to said mold closure unit; a support bearing attached to said machine bed; a first bracket pivotally attached between said support bearing and said mold closure unit pivot point, said support bracket having a length permitting said mold closure unit to be moved between a first horizontal position on said upper support surface, wherein said pivot point is adjacent



said machine base, and a second horizontal position in said upper support surface while said bracket pivots between corresponding first and second positions; means for securing said bracket to said machine base when said mold closure unit is in said first position such that said mold closure unit may be pivoted to an upright position about said pivot point while being supported by said first bracket.

4,430,060

GAS LIGHTER

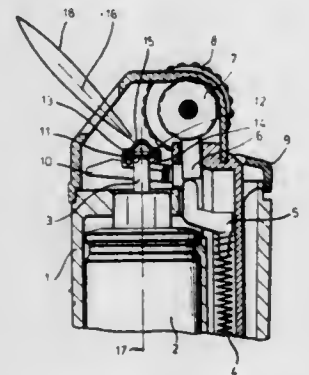
Alfred Racek, Seitenberggasse 54, 1160 Wien, Austria

Filed Jun. 2, 1981, Ser. No. 269,724

Int. Cl.³ F23Q 1/02

U.S. Cl. 431—276

2 Claims



1. A lighter comprising:
 - a housing having a flame opening;
 - a fuel supply tank in said housing for feeding fuel to a point at which a flame is formed in said opening, said tank having an axis and a nozzle means extending along said axis to said point, said opening being inclined to said axis;
 - a friction wheel mounted in said housing;
 - a first guide passage formed in said housing along a radius of said friction wheel and parallel to said axis but within an axial projection of the tank;
 - a flint in said guide passage and displaceable therein for the engagement of one end of said flint with the periphery of said wheel adjacent said point;
 - a second guide passage formed in said housing parallel to said first guide passage and said axis and offset outwardly from said first guide passage and extending alongside said tank;
 - a helical coil flint spring in said second guide passage; and
 - a displaceable offset generally Z-shaped pushrod between said flint and said spring, said pushrod having a first portion extending into said first guide passage and engaging the other end of said flint and a second portion extending

into said second guide passage and engaging said spring, said first and second portions being joined by a third portion lying substantially perpendicular to said first and second portions.

4,430,061

ORTHODONTIC BRACKET ASSEMBLY

David E. Webb, Jamul, and Lawrence F. Andrews, San Diego, both of Calif., assignors to Johnson and Johnson, New Brunswick, N.J.

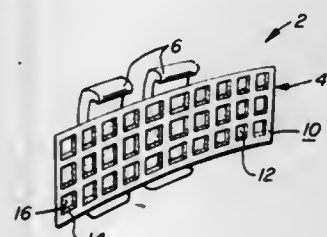
Continuation-in-part of Ser. No. 203,826, Nov. 3, 1980, Pat. No. 4,369,033. This application Sep. 21, 1982, Ser. No. 420,677

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ A61C 3/00

U.S. Cl. 433—9

6 Claims



1. An improved orthodontic bracket of the type including a pad having a surface adapted to be bonded to the exterior surface of a tooth, the pad having a tooth abutting surface with a plurality of cavities, said cavities defined by cavity walls, said bracket produced by a process comprising the following steps: casting said bracket as a unitary piece with the surface of said bracket having a cast irregular surface character, said casting step comprising the step of metal injection molding said bracket; providing an abrasive medium; and tumbling said cast bracket in the abrasive medium, the particles of the abrasive medium adapted so as not to smooth over the walls of said cavities but to smooth a substantial portion of the remainder of said tooth abutting surface and of said bracket surface.

4,430,062

DENTAL APPARATUS WITH A NUMBER OF DENTAL INSTRUMENTS CONNECTED TO A COMMON CONTROL CIRCUIT AND A COMMON OPERATOR UNIT

Frank Henrichsen, Dragor, Flemming Hansen, Ballerup, and Kim Sorensen, Lyngby, all of Denmark, assignors to A/S Flex Dental, Glostrup, Denmark

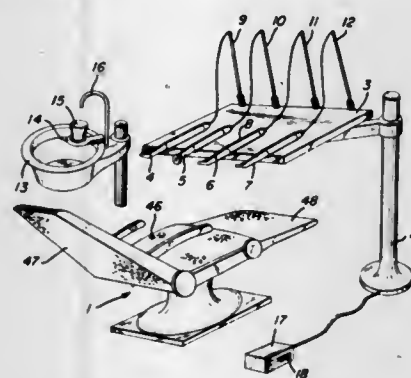
Filed Jun. 9, 1981, Ser. No. 272,061

Claims priority, application Denmark, Jun. 13, 1980, 2551/80

Int. Cl.³ A61C 1/02

U.S. Cl. 433—28

9 Claims



1. A dental apparatus comprising an instrument carrier with

a number of dental instruments arranged removably in individual positions in said carrier, instrument removal signal generators individually associated with each of said instrument positions, a control circuit common to said dental instruments, an instrument selector device incorporated in said control circuit and connected to said removal signal generators an instrument energizing and control device in said control circuit for energizing and controlling only one instrument at a time when selected by said selector device, an operator unit common to said instruments for controlling the energization and control of said selected instrument by said energizing and control device, said operator unit comprising a control member which is movable out of a home position to perform an instrument energizing movement, means in said control circuit for sensing said instrument energizing movement and actuating said energizing and control devices in response thereto, selectively actuatable function energizing devices for actuating auxiliary functions during a dental treatment, which are not related to the operation of the dental instruments; at least one such functioning energizing device being incorporated in said common control circuit, a mode switching device incorporated in said common control circuit and controlled by said instrument selector device for switching the dental apparatus between first and second modes of operation in response to at least one instrument being removed from its position or all instruments assuming their respective positions in said instrument carrier, respectively, first and second input control units incorporated in said common control circuit and being connected to said operator unit by said mode switching device in said first and second mode respectively, said first input control unit being connected with said instrument energizing and control device in said first mode and said second input control unit being connected with said at least one function energizing device for energizing the auxiliary function governed by said device in response to movement of the control member of said operator unit in said second mode of operation.

4,430,063

ELECTRICAL MACHINES CONSTRUCTIONAL SET

Erik Bach, Billund, and Jorgen P. J. Gronbjerg, Vestervig, both of Denmark, assignors to Interlego A.G., Baar, Switzerland

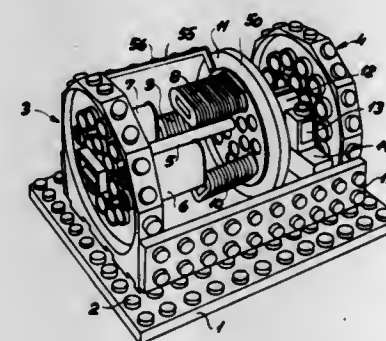
Filed Jun. 24, 1982, Ser. No. 391,518

Claims priority, application Denmark, Jun. 30, 1981, 2896/81

Int. Cl.³ G09B 23/18

U.S. Cl. 434—380

4 Claims



1. A building set for building a plurality of models of different types of electrical machines each comprising a rotor and a stator and having a plurality of magnetic elements mounted on the stator in a predetermined arrangement depending on the particular type of electrical machine to be constructed by the assembly of the components of the building set, said building set comprising a base plate provided with coupling means for detachably mounting a pair of stator elements thereon, said stator elements having bearing apertures for mounting a rotor shaft therebetween and a plurality of coupling means for detachably mounting a plurality of magnetic elements in a predetermined arrangement on the stator elements, said magnetic elements having complementary coupling means, said building set further comprising a substantially disc-shaped rotor element adapted to be mounted on the rotor shaft intermediate the

stator elements and said rotor element comprising a plurality of coupling means for detachably mounting a plurality of magnetic elements having complementary coupling means in selected positions depending on the arrangement of the magnetic elements mounted on the stator elements as determined by the type of machine to be built by the components of the building set wherein the coupling means of the rotor element is a plurality of coupling holes, and the coupling means of the magnetic elements is a pair of complementary coupling prongs.

4,430,064

SERIES DAMPER ROTARY AND FORCE VECTOR LAG CONTROL SYSTEM

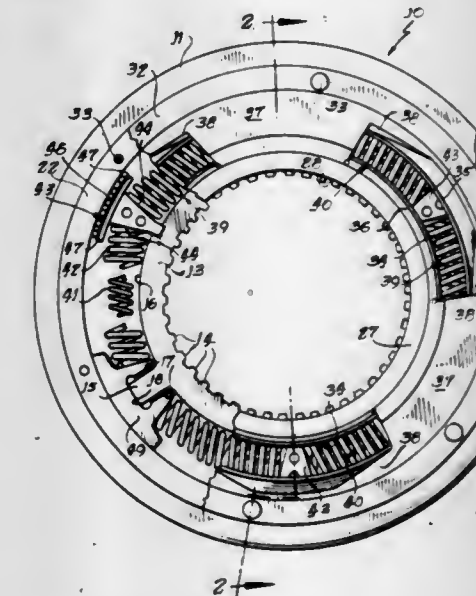
Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 18, 1981, Ser. No. 332,033

Int. Cl.³ F16D 3/14

U.S. Cl. 464—64

12 Claims



1. A vibration damper assembly to transmit torque between driving and driven members, comprising an input member operatively connected to torque input means, a hub member operatively connected to torque output means and having at least two circumferentially equally spaced radial fingers thereon, at least one spring separator located between adjacent hub fingers and floating independently of said hub member, compression spring sets interposed between said hub fingers and spring separators, and a pair of retainer plates substantially enclosing said hub member, spring separators and spring sets and operatively connected to said input member, said retainer plates having axially aligned elongated arcuate slots separated by inwardly offset drive straps and adapted to receive and retain said spring sets, the improvement comprising a friction lag plate-carried on and radially reciprocable to each hub finger, each lag plate having outwardly diverging edges terminating in an arcuate outer edge, said spring sets engaging the opposite diverging edges of each friction lag plate to provide a force vector acting to urge the lag plates radially outwardly to frictionally engage said retainer plates.

4,430,065

BARTLETT COUPLING

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton, Mass.

Filed Oct. 8, 1980, Ser. No. 195,240

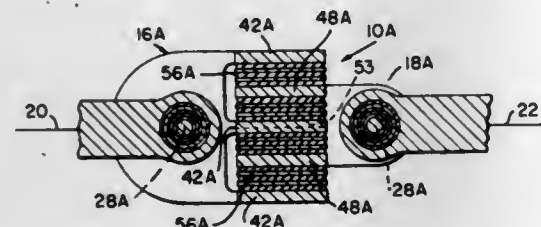
Int. Cl.³ F16D 3/52

U.S. Cl. 464—90

11 Claims

1. A flexible coupling of the type comprising:
 - a driving member rotatable about a first axis;
 - a driven member rotatable about a second axis;
 - a first intermediate member;
 - first coupling means for coupling said first intermediate

member to said driving member so that said first intermediate member is capable of pivoting with respect to said driving member about a third axis transverse to said first axis when torque is applied to said driving member; a second intermediate member; second coupling means for coupling said second intermediate member to said driven member so that said second intermediate member is capable of pivoting with respect to said driven member about a fourth axis transverse to said second axis when torque is applied to said driving member; third coupling means for coupling said first intermediate member to said second intermediate member so that said second intermediate member is capable of moving in shear with respect to, as well as rotating with, said first intermediate member when torque is applied to said driving member; wherein said first and second coupling means each com-



prises cylindrical laminated elastomeric bearing means and said third coupling means comprises substantially flat laminated elastomeric bearing means, each of said first and second cylindrical laminated elastomeric means and said flat laminated elastomeric bearing means comprising a plurality of alternating layers of resilient and nonextensible materials; and

wherein one of said intermediate members includes at least one pair of spaced apart plates having first and second parallel opposing flat bearing surfaces, the other of said intermediate members includes at least one plate having opposing sides for defining parallel third and fourth flat bearing surfaces, said one plate being disposed between said spaced apart plates so that said first flat bearing surface opposes said third flat bearing surface and said second flat bearing surface opposes said fourth flat bearing surface, and said flat laminated elastomeric bearing means are disposed between said first and third flat bearing surfaces and between said second and fourth flat bearing surfaces.

4,430,066

RESILIENTLY SUPPORTED CONNECTION UNIT FOR JOINING A TRANSMISSION SHAFT TO A TRANSMISSION COUPLING ELEMENT

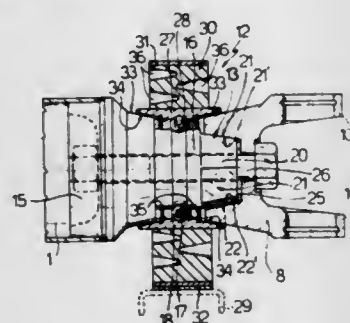
Mario Benassi, Turin, Italy, assignor to RIV-SKF Officine Di Villar Perosa S.p.A., Italy

Filed Jul. 24, 1981, Ser. No. 286,573

Int. Cl.³ F16C 27/06

U.S. Cl. 464-178

10 Claims



1. A connection unit for connecting one end of a shaft to a transmission coupling element and for resiliently supporting said end comprising a connection element arranged to connect said end of said shaft to said coupling element, said connection element having at least one axially extended portion with a

substantially pyramidal shape forming a plurality of flat lateral surfaces, each flat lateral surface portion of said substantially pyramidal portion defining a first active surface, wherein at least one of said coupling element and said end of said shaft include an end portion having a pyramidal shape forming a plurality of second active surfaces equal in number to and adapted to mate with said first active surfaces, said connection element being provided with at least one rolling track for a row of revolving bodies; a ring which is also provided with a rolling track; a row of revolving bodies being disposed between said connection element and said ring; a frame, and means for resiliently supporting said ring from said frame.

4,430,067

VARIABLE SPEED DRIVE WITH NO SLIPPAGE BETWEEN BELT AND SHEAVES

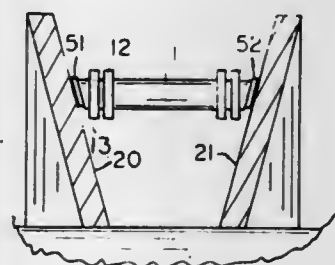
Ronald O. Whitaker, 4719 Squire Dr., Indianapolis, Ind. 46241

Filed Apr. 20, 1981, Ser. No. 234,968

Int. Cl.³ F16G 51/80, 51/16

U.S. Cl. 474-244

3 Claims



1. In a friction drive system utilizing a chain for transferring power from an input pair of conical sheaves to an output pair of conical sheaves and in which the chain carries a set of pins which wedge between the conical sheaves; a set of shoes, each of said shoes being appended to a respective end of a respective pin of said set of pins; each of said shoes being adapted for making contact with the conical surface of a respective sheave of said input pair of sheaves and each of said shoes being adapted for making contact with the conical surface of a respective sheave of said output pair of sheaves, each of said contacts being generally a line contact along a slant height of said respective sheave; appendage of each of said shoes to said respective pin being such that subsequent to the making of said line contact between said shoe and one of said respective sheaves, movement of said shoe relative to said pin in a linear direction parallel to said line contact is permitted, and movement of said shoe relative to said pin in a direction circumferential to said sheave is not permitted.

4,430,068

PROCESS FOR THE MANUFACTURE OF A PACKAGING CONTAINER AND ASSEMBLY ITEMS

Dieter vom Hofe, Cologne, and Klaus Meyer, Kaarst, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 326,169

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045710

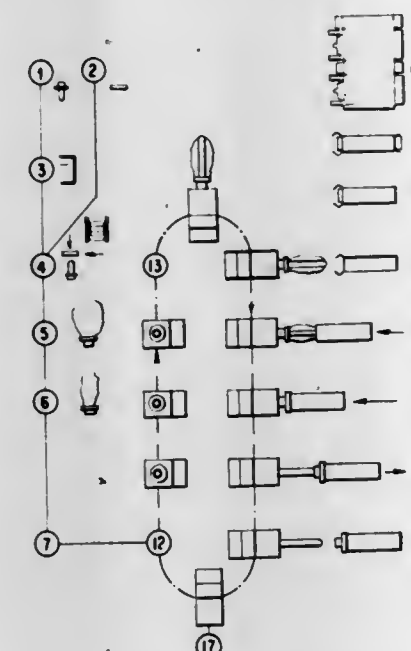
Int. Cl.³ B31B 7/00

U.S. Cl. 493-100

6 Claims

1. A process for the manufacture of a packaging container consisting of a mechanically stabilizing case of paper, cardboard, metal, plastic or a combination thereof and a sealing liner inserted therein in the form of a hollow, thin-walled plastic extension with a neck part integrally attached to said plastic extension and adapted to extend above said case, com-

prising the steps of inserting said plastic extension with a neck part integrally attached thereto into an adapter cover adapted to cover an opening in said stabilizing case and having first means to cooperate with means in said neck part to frictionally seal and to prevent movement in a circumferential direction around said neck part while forming a liquid tight seal, and second means adapted to fasten said adapter cover to said stabilizing case, assembling a precut blank into a case adapted



to enclose said plastic extension, said case having an opening therein and means to receive and permanently clasp said adapter cover second means, inserting said plastic extension with said adapter cover into said case whereby said means to receive and permanently clasp, receives and permanently clasps said second means, and obtaining an integral packaging container consisting of a stabilizing case with cover having a plastic extension therein with an integrally attached neck extending above the cover.

4,430,069

METHOD AND APPARATUS FOR SEALING AND CUTTING PLASTIC FILMS

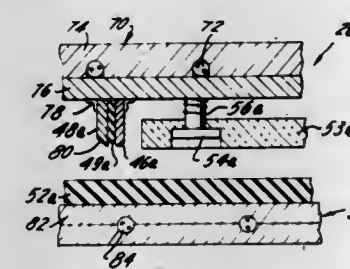
Richard S. Carlisle, Box 307, Rye, N.Y. 10580

Continuation-in-part of Ser. No. 941,721, Sep. 12, 1978, Pat. No. 4,256,024, Ser. No. 714,746, Aug. 16, 1976, Pat. No. 4,113,169, and Ser. No. 427,443, Dec. 21, 1973, Pat. No. 3,975,885, which is a continuation-in-part of Ser. No. 231,288, Mar. 2, 1972, Pat. No. 3,815,794. This application Mar. 16, 1981, Ser. No. 244,065

Int. Cl.³ B31B 1/64

U.S. Cl. 493-203

9 Claims



4. The method of making a seal between a pair of films and, concurrently, penetrating the films along the seal, including the steps of assembling a pair of films each having at least a layer of thermoplastic material facing the other film, supporting said films on a resilient counter, heating a severing blade to a temperature high enough to penetrate the films at least largely by fusion, retaining a body of resilient material of poor heat conductivity against a lateral surface of the severing blade, thereby to establish heat-transfer from the blade to said body of resilient material and producing a temperature gradi-

ent at the film-engaging surface of the body that decreases with distance from the blade, and pressing the blade against the films on the counter to cause the blade to penetrate the films and thereupon to cause the resilient body to bear against and seal the films together adjacent the outline penetrated by said blade while accommodating thickening of the seal being formed.

4,430,070

METHOD OF AND APPARATUS FOR UNINTERRUPTEDLY ASSEMBLING COMPONENTS FOR MAKING BAGS

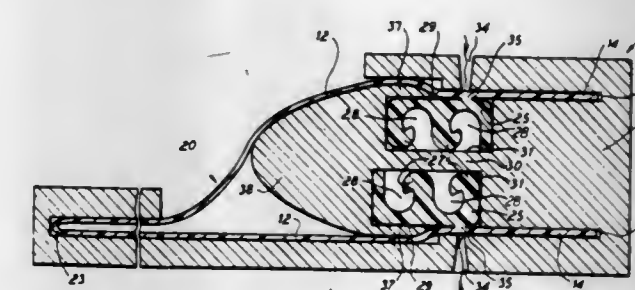
Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Aug. 11, 1981, Ser. No. 291,966

Int. Cl.³ B31B 1/64, 1/90

U.S. Cl. 493-215

18 Claims



1. A method of uninterruptedly assembling components for making bags having sheet material wall panels and an openable mouth defined by pull flanges adapted to be pulled apart for opening the bags

providing preformed wall panel sheet material having a pull flange area along an edge; providing a preformed extruded plastic flexible interlocking closure strip, having opposite faces one of which has profile means adapted for separable interlocking with complementary profile means on another closure strip and the other face providing a base surface of substantial width directly opposite said profile means; continuously longitudinally advancing both said sheet material and said fastener strip at the same speed and guiding said fastener strip to cause said base surface to engage in face-to-face relationship with the surface of said wall panel material along the inner side of the pull flange area and substantially spaced from said edge; and continuously securing a minor width longitudinally extending portion of said base surface adjacent to said pull flange area as a hinge attachment to said wall panel material but leaving the remainder of said base surface inwardly from the secured minor width portion free from said wall panel material so that said strip is adapted to swing hingedly relative to said wall panel material.

4,430,071

FEED SEAL FOR BOTTOM FEED CENTRIFUGE

Charles A. Willus, Bethel; Kenneth D. Lewis, Wilton, and Julian Langer, Stamford, all of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed May 27, 1982, Ser. No. 382,732

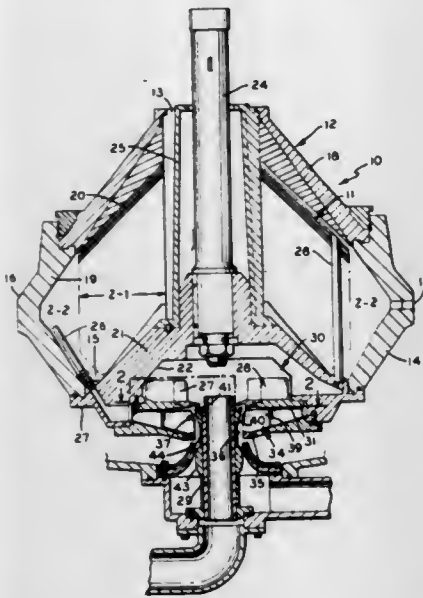
Int. Cl.³ B04B 11/00

U.S. Cl. 494-38

10 Claims

1. A nozzle type centrifuge adapted for a two-phase separation of a feed slurry into a nozzle discharge underflow slurry and an overflow of separated liquid, comprising (a) a rotor having a rotor bowl of double conical configuration with an upper conical portion having a top opening for discharging said overflow, a wide bottom opening and a peripheral intermediate portion having discharge nozzles for said underflow,

- (b) a first pumping chamber at said wide bottom of said rotor bowl and having a set of pumping vanes for delivering a feed slurry to vertical feed pipes to rotatable separating discs in said rotor bowl,
- (c) a bottom central slurry feed pipe at the base of said centrifuge having a discharge end in said first pumping chamber,



- (d) a second pumping chamber vertically spaced beneath said first pumping chamber and having pumping vanes for impelling underflow slurry returned from said peripheral portion of said rotor bowl to said discs,
- (e) a central passageway concentric with said rotor between said chambers, and
- (f) sealing means provided in said passageway between said chambers to prevent the feed slurry from said feed chamber from entering said lower return pumping chamber.

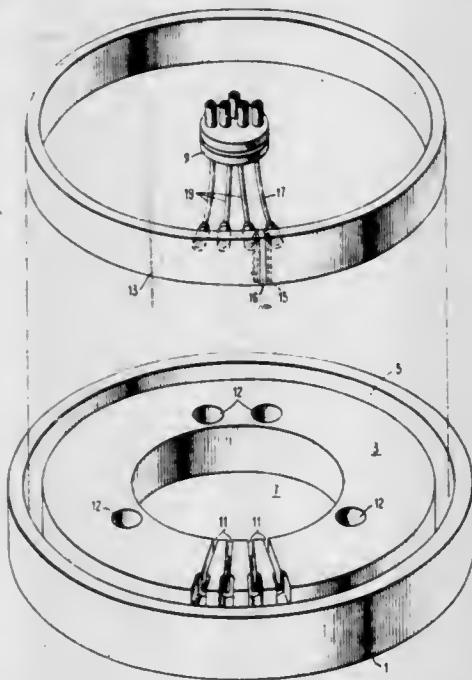
4,430,072 CENTRIFUGE ASSEMBLY

Robert M. Kellogg, Endwell; Victor R. Kruger, Apalachin, and Alfred P. Mulzet, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1977, Ser. No. 803,007
Int. Cl.³ B04B 7/08

U.S. Cl. 494—45

19 Claims



1. A centrifuge assembly comprising a rotor bowl, a circular filler piece received in said bowl and providing a space between the circumference of said filler piece and the inner wall of said bowl, the space between said filler piece and the wall of the bowl defining a circular channel in said assembly, a dispos-

able ring-like container of semirigid material having a substantially rectangular cross section contained in and conforming to said channel and having two ends, fluid connections to each end of said elongated container, and guide means for said fluid connections.

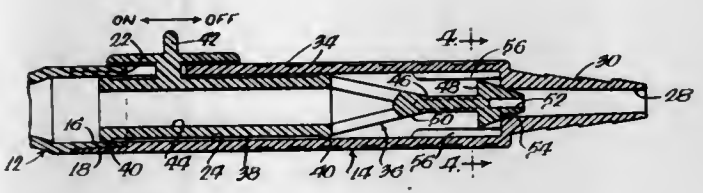
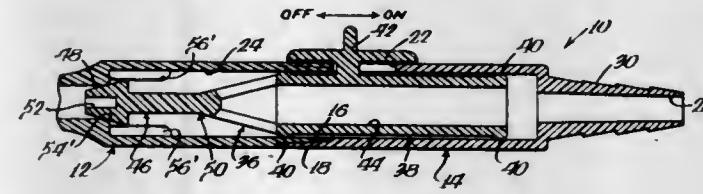
4,430,073 SURGICAL SUCTION PROBE WITH REVERSIBLE VALVE

Peter F. Bemis, Sheboygan, and Gerald W. Swart, Sheboygan Falls, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed May 3, 1982, Ser. No. 374,103
Int. Cl.³ A61M 31/00

U.S. Cl. 604—48

11 Claims



1. An improved surgical suction probe comprising:
- a tubular probe portion having an opening at one end for drawing flowable material therein,
 - a tubular handle portion, one end of which is joined to the other end of said probe portion and having an opposite end adapted to be operatively connected to an associated source of suction, said probe portion and said handle portion defining an internal bore when joined together,
 - one-piece valve means reciprocally disposed within said internal bore and movable between a flow position wherein flowable material is drawn in said opening and through said internal bore of said probe by said suction, and a non-flow position wherein said suction is blocked, flow through said probe being throttled when said valve means is between said flow and non-flow positions,
 - said valve means including a tubular body portion through which said flowable material flows as said material flows through said internal bore, a switch integral with said body portion and extending through a slot defined by said probe and handle portions for manipulation by a user to position said valve means within said internal bore, a pair of sealing lands integral with said body portion, respectively disposed on opposite sides of said switch portion and engaging the interior of said probe portion and handle portion and isolating said slot from the interior of said tubular body portion, and a stopper portion integral with said body portion including a frustoconical stopper plug spaced from said body portion adapted to sealingly engage a valve seat defined by one of said probe and handle portions when said valve means is in said non-flow position.

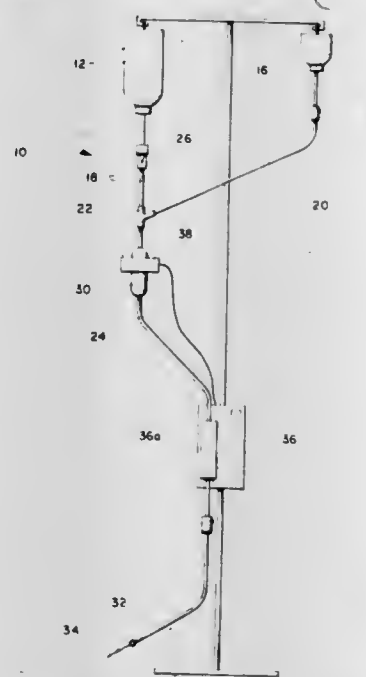
4,430,074 METHOD FOR THE INTRAVENOUS ADMINISTRATION OF PLURAL SOLUTIONS THROUGH A COMMON FLOW MONITORING STATION

William L. Mooring, Dudley, N.C., assignor to Samuel Ernest Douglass, Raleigh, N.C.

Filed Jul. 2, 1981, Ser. No. 280,089
Int. Cl.³ A61M 31/00

U.S. Cl. 604—49

1 Claim



1. An efficient method of automatically and sequentially intravenously administering two separate solutions to a patient with a Y-type IV set wherein during administration each solution is monitored by a single drip chamber control station disposed downstream from a Y-connecting point, thereby obviating the necessity of altering or changing the IV set and its control devices during the period in which the two solutions are being administered, said method comprising:

- (a) elevating a first solution container containing a first solution above a second solution container containing a second solution;
- (b) generating and forming a substantial intermediate pressure head between said solution containers and said monitoring station positioned below said Y-connecting point;
- (c) said step of forming said substantial intermediate head pressure between said solution containers and said control station including the step of forming an elongated column of solution in first and second legs leading from said first and second solution containers, respectively, to said Y-connecting point;
- (d) directing the first solution from the higher elevated first solution container to the first leg leading from said first solution container;
- (e) directing a portion of said first solution into operative engagement with a check valve interposed intermediately within the second leg leading from said second solution container to said Y-connecting point so as to effectively close said check valve and to prevent flow of said second solution from said second solution container to said Y-connecting point;
- (f) directing flow of said first solution from said Y-connecting point through the flow control station positioned in a delivery leg leading from said Y-connecting point such that the flow of said first solution is not monitored until the same moves downstream from said Y-connecting point;
- (g) utilizing the substantial intermediate head pressure formed in said first leg between said first solution container and said control station to drive and force solution passing from said first solution container through said first leg into said control station;
- (h) continuing to direct flow from said first solution container through said first leg and to said Y-connecting point

- and into said delivery leg where said solution passes through said control station formed therein, and continuing such delivery of said first solution until a selected volume of said first solution has been administered;
- (i) deactuating said check valve in said second leg branch, and directing a stream of second solution from said second solution container through said second leg to the Y-connecting point;
 - (j) utilizing the substantial intermediate head pressure formed in said second leg between said second solution container and said control station to drive and force solution passing from said second solution container through said second leg into said control station; and
 - (k) directing said second solution from said Y-connecting point through said delivery leg and the flow monitoring station therein, wherein the flow of said second solution is monitored subsequently of the Y-connecting point but prior to reaching the patient.

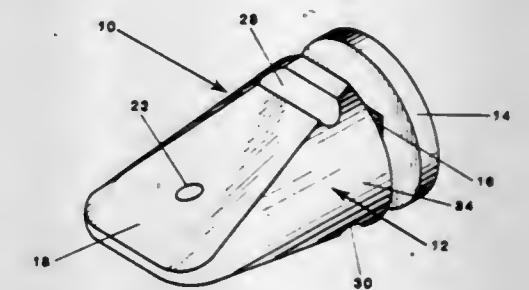
4,430,075 DOSING TIP

Joseph J. Urban, Richboro, Pa., and Herbert E. Huckel, Peapack, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jul. 31, 1981, Ser. No. 288,823
Int. Cl.³ A61J 7/00

U.S. Cl. 604—77

8 Claims



1. A dosing tip for administering a dose of material to a host comprising:

- (a) a body having a tapered end portion for insertion into the mouth of the host, said tapered end portion having at least one gripping means partially extending around the circumference of said tapered end portion for firmly engaging the host during the administration of the dose of material to the host and for disengaging the host by turning said body upon completion of the administration of the dose;
- (b) an outlet in said tapered end portion for passing the dose of material from said tapered end portion to the host; and
- (c) a conduit extending through said body for passing said dose through said body to said outlet.

4,430,076 COMBINED UTERINE INJECTOR AND MANIPULATIVE DEVICE

James H. Harris, 364 W. Lilburn Ave., Roseburg, Ore. 97470

Filed Feb. 4, 1982, Ser. No. 345,777
Int. Cl.³ A61M 25/00

U.S. Cl. 604—96

8 Claims

1. A device insertable into the human uterus for examination purposes, said device comprising,
- a catheter having an insertable end segment for passage into the cervical canal and fundus of the uterus,
 - an air line substantially coextensive with the catheter and including an air valve,
 - an elongate handle fixedly disposed about said catheter and serving to stiffen same,
 - a stop in place on one end of said handle and in a fixed relationship with the catheter and contactable during

catheter insertion with the external os of the cervix to thereby limit catheter insertion into the uterus, said stop defining one extremity of said catheter insertable end segment, said end segment projecting beyond said stop being of a length approximately 6 cm to 6.25 cm to prevent the inserted end of the catheter from forceful contact with the uterine wall, and an inflatable member disposed about said end segment of said



catheter and in communication with said air line, said inflatable member when inflated being expandable to engage the internal os of the cervix and adjacent uterine wall, said inflatable member upon inflation causing inward biasing of the catheter proportional to the extent of inflation to urge the stop on said handle against the external cervical os to exert a degree of compression on the cervix along with the inflatable member to attach the device in a secure manner to the uterus enabling positioning thereof for examination purposes.

4,430,077

INJECTION SITE WITH TAMPER INDICATOR

Herbert Mittleman, Deerfield, and William L. Rush, Park Ridge, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

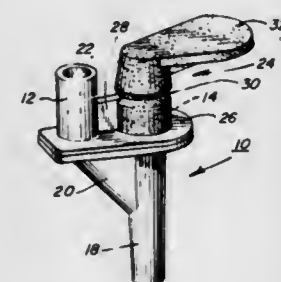
Continuation of Ser. No. 195,885, Oct. 10, 1980, abandoned.

This application Jun. 25, 1982, Ser. No. 392,413

Int. Cl.³ A61M 5/14

U.S. Cl. 604—111

3 Claims



1. An injection site having a main body portion, a first inlet, a second inlet including a pierceable self-sealing member, and an outlet, the first inlet, second inlet and outlet being in fluid communication with the main body portion, the improvement comprising:

tamper indicating means connected to said second inlet, said tamper indicating means comprising a cap covering said second inlet and rendering said pierceable self-sealing member inaccessible, said cap comprising a first portion connected to said second inlet and a second portion separated from said first portion by a frangible section, a handle extending from said second portion and operable when actuated to break the second portion away from the first portion at said frangible section, with the first portion remaining connected to said second inlet and with the

pierceable self-sealing member being accessible; said first portion comprising a ring member substantially encircling said second inlet, said second portion comprising a cup-shaped member and said frangible section comprising an annular thin section coupling said first portion to said second portion;

said second portion defining an opening adjacent said frangible section, said opening being defined in part by a wall which is above the plane of the top of said second inlet for enabling gas sterilization.

4,430,078

BLOOD INFUSION PUMP

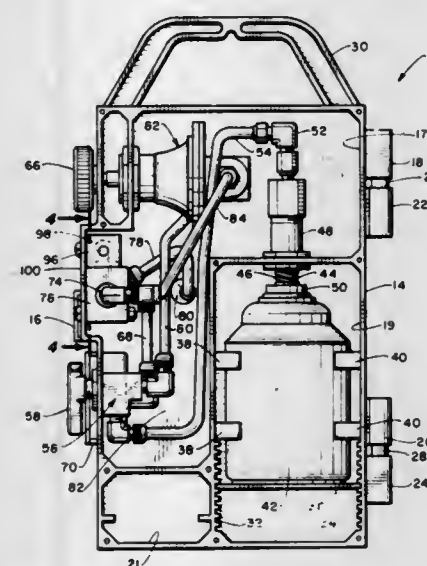
Leland L. Sprague, 1810 Marisol Dr., Ventura, Calif. 93001

Filed Apr. 24, 1981, Ser. No. 257,325

Int. Cl.³ A61M 5/00

U.S. Cl. 604—141

9 Claims



1. In combination with a blood bag, a blood infusion pump comprising:

a housing, said housing including a storage chamber for locating said blood bag; pressure applying means for applying an evenly distributed force to said blood bag; and pressure supply means for supplying a pressurized fluid through a conduit assembly to said pressure applying means, said pressure supply means comprising a container containing a quantity of pressurized fluid, said container being removable and replaceable within said housing, a valve assembly connected to said conduit assembly, said valve assembly to connect with said container to thereby supply the pressurized fluid from said container into said conduit assembly, said valve assembly being continuously spring biased into an airtight relationship with said container, said valve assembly being movable a limited amount in respect to said conduit assembly so as to positively engage in said airtight relationship with said container, whereby said pressurized fluid is conducted to said pressure applying means which causes blood to be discharged from said blood bag.

4,430,079

FLUID DISPENSING DEVICE

Gary A. Thill, Vadnais Heights, Minn., and Jerome E. Strand, St. Joseph Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

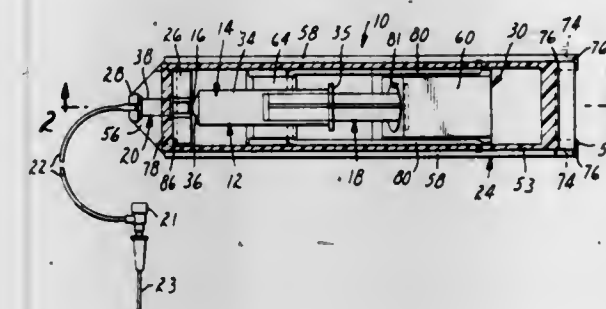
Continuation-in-part of Ser. No. 144,614, Apr. 28, 1980, Pat. No. 4,298,000, which is a division of Ser. No. 958,678, Nov. 8, 1981, Pat. No. 4,202,333. This application Nov. 2, 1981, Ser. No. 317,257

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

Int. Cl.³ A61M 5/20

U.S. Cl. 604—154

9 Claims



1. A fluid dispensing device adapted for engaging a fluid-filled syringe to dispense fluid from the syringe at a slow, steady rate, said syringe being of the type comprising an elongate housing including a tubular wall having an open end and an end wall having an outlet opening at the end of the tubular wall opposite its open end, and a plunger having one end portion positioned within and sealing against the inner surface of said tubular wall and an opposite end portion projecting from the open end of said tubular wall, with the fluid being within said tubular wall between said end wall and said plunger, said device comprising:

a hose assembly having first and second ends and defining a passageway between said ends, with at least a portion of said passageway being defined by a capillary tube having a diameter of less than about 0.02 cm and a length of at least 2 cm, and including a coupler at said first end adapted for releasably attaching said hose assembly to the housing of a said syringe with the outlet opening of the syringe communicating with said passageway; a frame comprising support means adapted for engaging and supporting said coupler; spring means adapted for applying a uniform force against the plunger of the syringe to cause fluid within said syringe to flow through said hose assembly; and activating means for moving said spring means between a disengaged position spaced from the plunger of a said syringe attached to said coupler to afford insertion or removal of the syringe and said hose assembly, and an engaged position engaged with said plunger to apply said uniform force, said activating means including securing means for securing the syringe and the coupler of said hose assembly in said support means when said activating means positions said spring means in said engaged position.

4,430,080

SYRINGE ASSEMBLY WITH SNAP-FIT COMPONENTS

Richard J. Pasquini, Hackensack, N.J.; Harold Brown, Spring Valley, N.Y., and Alan Kostiuk, deceased, late of Byram Township, Sussex County, N.J. (by Barbara Kostiuk, administratrix), assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Jun. 9, 1982, Ser. No. 386,554

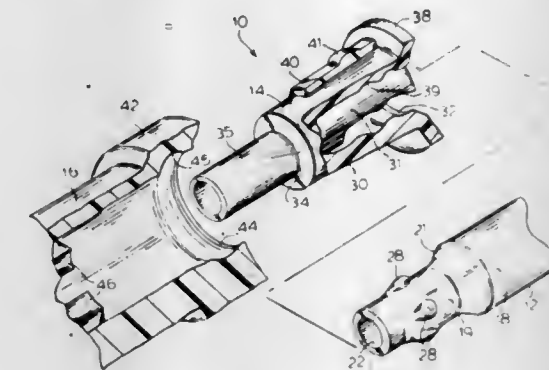
Int. Cl.³ A61M 5/00

U.S. Cl. 604—240

9 Claims

1. In combination, a syringe said shield and a hub connected thereto, said syringe comprising a hollow barrel having a

proximal end and a distal end, a slidable plunger in said barrel extending from the proximal end of said barrel, and a plurality of protuberances spaced around the outer periphery of the distal end of said barrel, said hub comprising a body with an open cavity therein and a cannula extending from said body in fluid communication with said cavity, said cavity being generally sized to receive the distal end of said barrel therein, said body having indentation means therein around the periphery



of said cavity with said protuberances being positioned therein, said combination further including a substantially hollow shield covering said cannula removably connected to said body, said hub including a plurality of protuberances spaced around its outer periphery and said shield including indentation means for receiving said hub protuberances therein, said hub protuberances and said shield indentation means being shaped to permit the ready removal of said shield from said hub.

4,430,081

HEMOSTASIS SHEATH

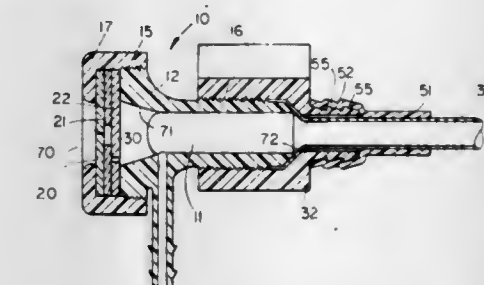
Hans A. Timmermans, Bloomington, Ind., assignor to Cook, Inc., Bloomington, Ind.

Filed Jan. 6, 1981, Ser. No. 199,655

Int. Cl.³ A61M 25/00

U.S. Cl. 604—256

5 Claims



1. A hemostasis cannula comprising:

A body having a passage therethrough adapted to receive a catheter; and first, second and third disc-like gaskets mounted in said passage, said first gasket having a slit therein, said second gasket having a hole therein and said third gasket having a flapper therein; said passage having one end adapted to be open to atmosphere and an opposite end adapted to be in communication with a patient's blood vessel; said first gasket being in contact with said second gasket and said second gasket being in contact with said third gasket; said first gasket being located toward said one end and said third gasket being located toward said other end with said second gasket between said first and third gaskets; said flapper being arranged and disposed to open only toward said other end; said second gasket being operable to maintain a sealing relationship with a catheter contained in said passage and, when a catheter is not contained in said passage, said first and second gaskets being operable to close said passage against flow into said blood vessel and said second and third gaskets being oper-

able to close said passage against flow out of said blood vessel.

4,430,082

HYPODERMIC SYRINGE ASSEMBLY

William Schwabacher, Wharton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 25, 1982, Ser. No. 392,201

Int. Cl.³ A61M 5/00

U.S. Cl. 604—263

3 Claims



1. An improved hypodermic syringe assembly of the type comprising:

- (a) a medication chamber having an interior for containing liquid and first and second ends;
- (b) a needle, attached to the first end of said medication chamber, through which liquid is expelled from said chamber;
- (c) an elastomeric stopper, movably disposed within said medication chamber, movement of said stopper from said second end of said chamber toward said first end serving to expel liquid from said chamber through said needle;
- (d) a first protective sleeve into which said needle is removably embedded; and
- (e) a second protective sleeve which removably covers said first protective sleeve and, in turn, said needle, said second protective sleeve having means at one end thereof for attachment to said stopper, whereby said second protective sleeve and said stopper when so attached serve as a plunger; the improvement in said syringe assembly comprising the provision in said second protective sleeve of flexible means for gripping said first protective sleeve, whereby simultaneous removal of both said first and second protective sleeves from said needle are effected by removing said second protective sleeve from over said needle while inwardly deflecting said flexible gripping means in order to grip said first protective sleeve.

4,430,083

INFUSION CATHETER

William Ganz, Los Angeles; Ronald J. Solar, Mission Viejo, and Clement Lieber, Yorba Linda, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 6, 1981, Ser. No. 241,291

Int. Cl.³ A61M 25/00

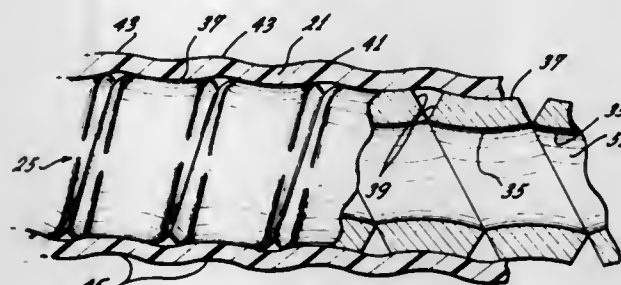
U.S. Cl. 604—283

5 Claims

1. A catheter comprising:

- an elongated flexible tube having a distal end, a peripheral wall, proximal and distal openings and an elongated passage extending generally axially through the tube between said openings;
- a helically wound wire engaging the peripheral wall of the tube, said helically wound wire including a plurality of

turns and providing increased column strength, said tube with said helically wound wire therein being flexible; said wire having an inner surface, an outer surface, end faces, an axial cross-sectional dimension which extends axially of said passage between said end faces and a radial cross-sectional dimension which extends radially of said passage between said inner surface and said outer surface, said axial cross-sectional dimension being greater than said radial cross-sectional dimension; and



said helically wound wire having an outer peripheral surface and being wound and configured so as to provide said outer peripheral surface with an anticlastic curvature, said tube being in tight engagement with the outer peripheral surface of said helically wound wire and being deformed thereby so as to provide the outer peripheral surface of the tube with an uneven contour over at least a portion of the length of the tube.

4,430,084

METHOD FOR PRE-USE STORAGE OF A MEDICAL RECEPTACLE

David W. Deaton, Abilene, Tex., assignor to American Hospital Supply Corp., Evanston, Ill.

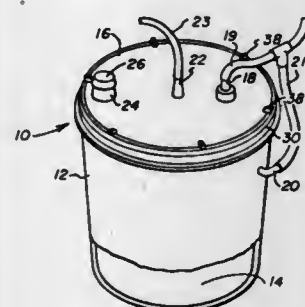
Division of Ser. No. 113,620, Jan. 21, 1980, Pat. No. 4,321,922.

This application Sep. 14, 1981, Ser. No. 301,526

Int. Cl.³ A61M 1/00

U.S. Cl. 604—317

6 Claims



1. An assembly method for receptacles which receive fluids from the body of a patient, providing space saving pre-use storage of receptacle components, and fast, simple assembly at time of use, comprising:

- stacking one within another a plurality of interchangeable re-usable rigid outer canisters for pre-use storage thereof;
- stacking one within another a plurality of interchangeable disposable semi-rigid inner containers for pre-use storage thereof;
- providing a plurality of interchangeable covers each having a first port means for fluid reception and a second port means for receiving a vacuum;
- removing one of the inner containers and one of the canisters from pre-use storage and inserting the container within the canister;
- covering the container and canister by pushing one of the covers thereon into coaction with the container;
- applying a vacuum source to the second port means for creating a vacuum in the inner container; and

attaching a tube between the body of the patient and the first port means for drainage of fluids therefrom.

4,430,085

SAFETY SEAL CHEST DRAINAGE UNIT WITH TIPOVER SEAL CONTROL

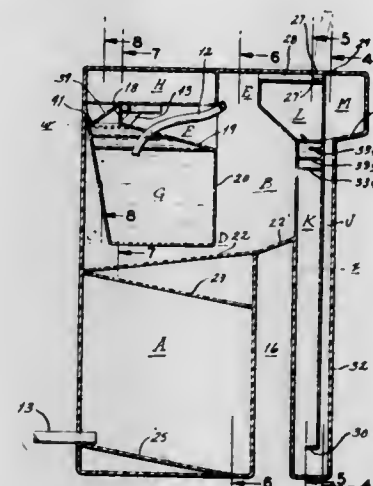
Thomas S. Ahrens, 2731 Meramar Dr., St. Louis, Mo. 63129

Filed Mar. 3, 1982, Ser. No. 354,175

Int. Cl.³ A61M 1/00

U.S. Cl. 604—321

10 Claims



1. A tip-safe underwater chest drainage unit for providing liquid sealed chest drainage, and for providing patient-protected drainage even when tipped over, said unit comprising an enclosure of unitary form constructed of synthetic resin material, said enclosure defining within it a liquid seal chamber, a chest drainage tube extending into said seal chamber, said seal chamber being configured for being normally substantially filled with liquid for submerging the end of said tube to provide atmospheric sealing thereof, a fluid collection chamber communicating with the seal chamber for receiving fluids via the seal chamber resulting from chest drainage through the drain tube, and characterized by equilibration means in the enclosure for receiving fluid upon tipping over of the unit to maintain the drain tube end submerged in fluid at all times, including when tipped over, and to permit continued receiving of chest fluids even in a tipped-over condition of the unit, said equilibration means comprising at least a first equilibration chamber for receiving fluid from the seal chamber upon tipping over of the unit and for returning the received fluid to the liquid seal chamber upon returning of the unit from its tipped-over condition to an upright position, the drain tube end being positioned within the seal chamber for remaining below the surface of liquid in the seal chamber when fluid is received in said first equilibration chamber when the unit is tipped over.

4,430,086

DISPOSABLE DIAPER WITH IMPROVED BODY CONFORMITY AND LIQUID RETENTION

Virginia L. Repke, Oak Forest, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Jan. 8, 1979, Ser. No. 1,615

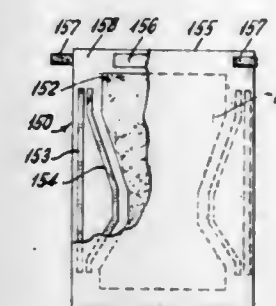
Int. Cl.³ A61F 13/16

U.S. Cl. 604—385

5 Claims

1. A disposable diaper comprising: a moisture-permeable facing layer; an absorbent panel at one side of said facing layer, said absorbent panel being smaller than said facing layer so that side marginal portions of the facing layer extend outwardly beyond the side edges of said absorbent panel; a moisture-impervious backing layer at the side of said absorbent panel opposite said facing layer, said backing layer being larger than said absorbent panel so that side marginal portions of the backing layer extend outwardly beyond the side edges of said absorbent panel; means bonding said facing and backing layers to one another; and gathering means disposed in said side

marginal portions, each of said gathering means including at least two spaced separate and distinct longitudinally extending, effectively elastic elements secured in each of said side marginal portions, said elastic elements being disposed in parallel relationship one to the other along only a portion of their



length, whereby said gathering means provide improved conformity about the legs of the wearer without undue application of pressure upon the skin of the wearer and each of said elastic elements applies a gathering force to a zone of a side marginal portion thereby defining more than one gasketing line at the leg of the wearer for improved liquid containment.

4,430,087

DISPOSABLE DIAPER

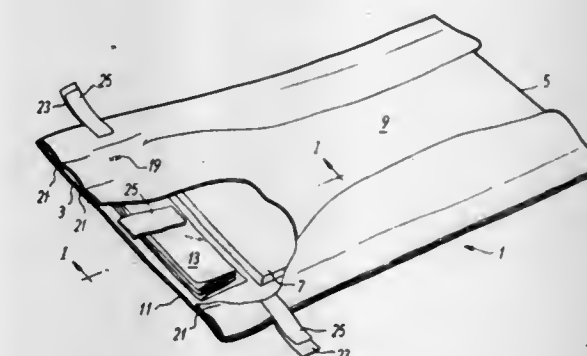
Rachel Azpuri, 11925 SW. 43rd St., Miami, Fla. 33175

Filed Feb. 5, 1982, Ser. No. 346,307

Int. Cl.³ A41F 13/02

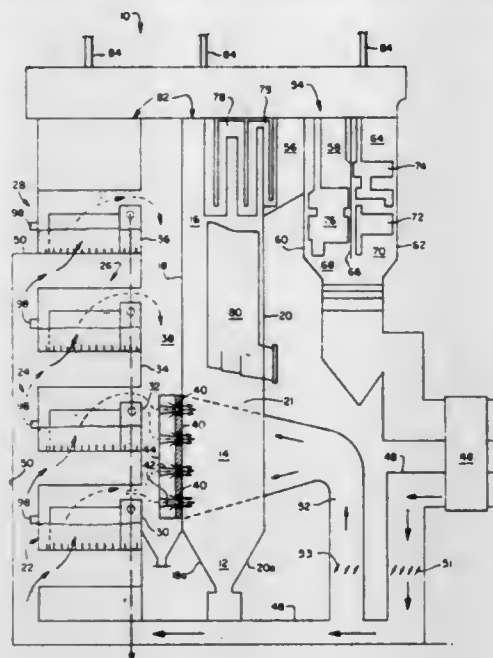
U.S. Cl. 604—385

9 Claims



1. In a disposable diaper having a folded generally rectangular pad of absorbent material positioned between an absorbent sheet and a flexible liquid-impervious backing sheet and a tubular storage bag formed of flexible, liquid-impervious sheet material, which is open at one end and closed at the other, affixed to one end of the diaper and dimensioned to receive the diaper after use when folded to the dimensions of the bag, the improvement wherein one end of the diaper is openable to expose the interior of the diaper, the bag is stored proximate the open end of and within the interior of the diaper, the bag is secured at its closed end to the interior of and proximate the open end of the diaper, and the open end of the diaper comprises means to retain the bag within the interior of the diaper prior to and during use of the diaper.

substantially sulfur-free product gas is produced which passes from said gasifier, through said openings and into said furnace



section, such that combustion of the gas and unreacted carbon occurs.

4,430,095

GASEOUS MIXTURE FROM LIQUID FUEL AND AIR

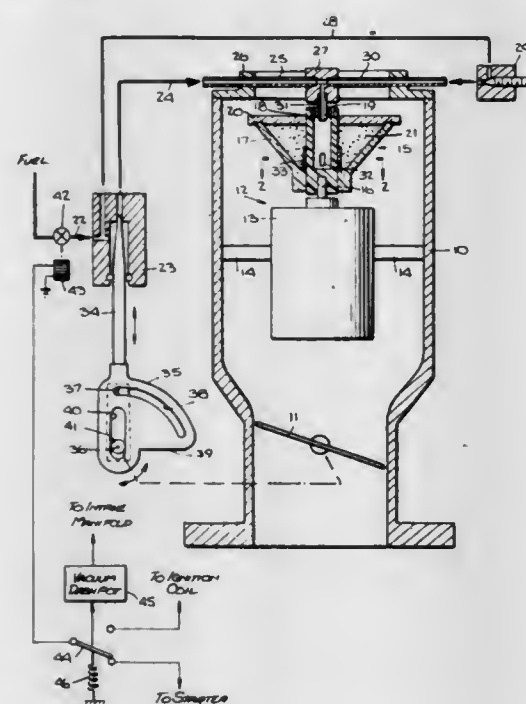
Jack J. Gilbert, 3 River Rd., Suffern, N.Y. 10901

Filed Apr. 14, 1982, Ser. No. 368,102

Int. Cl.³ F02M 9/12

U.S. Cl. 48—180 C

21 Claims



1. A device for supplying a flow of a gaseous mixture of fuel and air to a combustion apparatus, the device comprising:
 - a housing having an air intake passage with an inlet end communicating with the atmosphere and an outlet end; fuel chamber positioned within the intake passage in spaced relation to the passage wall to permit air to flow through the intake passage from the inlet end, around the fuel chamber, to the outlet end, said fuel chamber having an axis of symmetry and a microporous peripheral wall of a rigid material having a pore size of about 4.0 microns, the microporous wall encircling said axis, and said fuel chamber being enclosed so that essentially no air flowing through the intake passage can enter the fuel chamber;

means for supporting the fuel chamber for rotation about its axis of symmetry within the intake passage; a conduit for delivering liquid fuel to the fuel chamber via said supporting means; and means for rotating the fuel chamber about said axis of rotation to force the fuel centrifugally through said microporous wall, whereby the fuel emerges from the microporous wall in substantially gaseous form and with a velocity component tangential to said porous wall to assure thorough mixing with air flowing through the intake passage around the fuel chamber.

14. A method for providing a gaseous mixture of fuel and air to a combustion apparatus, the method comprising:
 - delivering a flow of air to a combustion apparatus via an intake passage;
 - delivering a flow of liquid fuel to a fuel chamber located inside the intake passage, the fuel chamber being completely enclosed such that all of said flow of air passes around the chamber without entering the chamber; and rotating the fuel chamber to urge the fuel by centrifugal force through a peripheral microporous wall of the chamber concentric with the axis of rotation.

4,430,096

PROCESS FOR THE PRODUCTION OF GAS MIXTURES CONTAINING HYDROGEN AND CARBON MONOXIDE VIA THE ENDOTHERMIC PARTIAL OXIDATION OF ORGANIC COMPOUNDS

Friedrich Schnur, Oberhausen; Boy Cornils, Dinslaken; Josef Hibbel, Oberhausen, and Bern-Hard Lieder, Bottrop, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

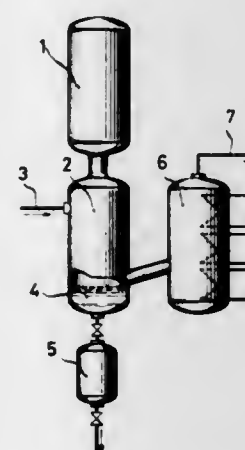
Continuation of Ser. No. 42,750, May 29, 1979, abandoned. This application Jun. 12, 1981, Ser. No. 272,857

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822862

Int. Cl.³ C10J 3/46, 3/54

U.S. Cl. 48—206

12 Claims



1. A process for the production of gas mixtures containing hydrogen and carbon monoxide which comprises:
 - A. gasifying an ash-forming solid carbonaceous fuel with oxygen or an oxygen containing gas mixture in the presence of steam in a gasifier; and
 - B. removing liquid ash from said gasifier by entraining it in the gaseous mixture formed in said gasifier and feeding the gasified products of step A including liquid ash contained therein to a vessel into which a partially oxidizable organic compound is fed together with steam and/or carbon dioxide and therein contacting the gaseous effluent and liquid ash with steam and/or carbon dioxide introduced with said organic compound while maintaining said vessel at a temperature of 900° to 1600° C. at a pressure up to 200 bar; said contacting resulting in the cracking of the organic compound and causing the liquid ash to deposit in the solid state and recovering said ash in the solid state,

and wherein said vessel contains a water bath located below the location where said contacting occurs to recover the solidified ash from the gaseous effluent.

4,430,097

LITHIUM ALUMINATES FOR SEPARATING HYDROCARBONS

John L. Burba, III, Angleton, Tex., assignor to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 217,613, Dec. 18, 1980; Pat. No. 4,321,065. This application Mar. 22, 1982, Ser. No. 360,702 The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.³ B01D 15/08

U.S. Cl. 55—67

10 Claims

10. A process for separating a hydrocarbon mixture into components, said process comprising providing a vessel or column containing particulate crystalline $\text{LiX} \cdot 2\text{Al}(\text{OH})_3 \cdot n\text{H}_2\text{O}$, where X is a monovalent, divalent, or trivalent anion and n is an integer having a numerical value in the range of about 1 to about 6, said vessel or column being adapted for the flow of gas-entrained fluids therethrough, entraining said hydrocarbon mixture in an inert gas carrier, passing the so-entrained mixture through the vessel, and collecting the effluent from the vessel in component fractions.

4,430,098

APPARATUS FOR DEGASSING HEMODIALYSIS LIQUID AND THE LIKE

Donald B. Bowman, 7635 NW. McDonald Cir.; Charles J. Filz, and James G. Osborn, both of 1930 SE. Stone St., all of Corvallis, Oreg. 97330

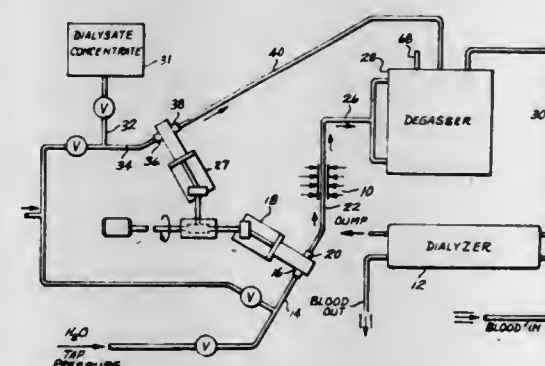
Division of Ser. No. 669,903, Mar. 24, 1976, Pat. No. 4,325,715.

This application Aug. 25, 1980, Ser. No. 181,107

Int. Cl.³ B01D 31/00

U.S. Cl. 55—191

10 Claims



1. Apparatus for removing gases from a hemodialysis liquid prior to introduction of such liquid into a hemodialyzer, said apparatus comprising:
 - wall means of filter material that is not wetted by liquid and which includes pores which normally remain open for passage of gas, defining a tubular coil having two ends;
 - means for delivering a gas-containing hemodialysis liquid into the interior of said coil, through both ends of said coil, and against said wall means under sufficient pressure to force said liquid through said wall means, said gas being freed from the liquid as it passes through the wall means; and
 - means for separating the freed gas from the hemodialysis liquid downstream of said wall means.

4,430,099

VAPORIZED FUEL ADSORBING CANISTER

Syozo Yanagisawa, Ibaraki, and Yuichi Tobita, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

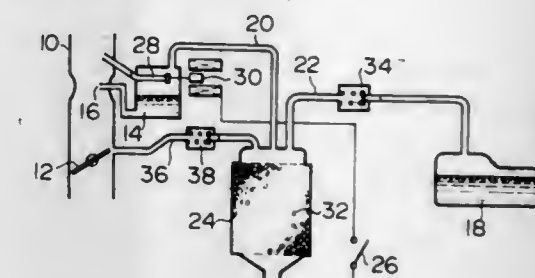
Filed Jun. 17, 1981, Ser. No. 274,678

Claims priority, application Japan, Jun. 18, 1980, 55-83214; Aug. 1, 1980, 55-108443[U]; Sep. 5, 1980, 55-122382; Sep. 22, 1980, 55-133809[U]

Int. Cl.³ B01D 50/00

U.S. Cl. 55—316

17 Claims



1. A vaporized fuel adsorbing canister, adapted to arrest oil or fat material contained in the fuel, comprising:
 - (a) a hollow body formed with a first opening at one end and a second opening at the other end;
 - (b) a first filter member mounted in said first opening and a second filter member mounted in said second opening;
 - (c) a charge of vaporized fuel adsorbing agent contained in said hollow body in a space defined between said first filter member and said second filter member;
 - (d) a first grid formed with a multiplicity of vaporized fuel permeating openings located adjacent said first filter member on a side thereof opposite said charge of vaporized fuel adsorbing agent and a second grid formed with a multiplicity of air permeating openings located adjacent said second filter member on a side thereof opposite said charge of vaporized fuel adsorbing agent;
 - (e) a cover affixed to said hollow body in closing relation to said first opening to provide a cover to said first filter member and said first grid;
 - (f) a vaporized fuel inlet port opening in said cover and adapted to communicate via a rubber tube with a portion of a fuel tank above its liquid level;
 - (g) a vaporized fuel outlet port opening in said cover and adapted to communicate via a rubber tube with a suction conduit of an engine; and
 - (h) a porous material member mounted between said first grid and said vaporized fuel inlet port, said porous material member being formed of a porous material that can arrest an oil or fat material contained in the fuel introduced into the canister, said porous material member being formed with, in addition to the pores of the porous material, more than one vaporized fuel permeating opening to which is led a fuel flowing along an inner wall surface of said cover, each said more than one vaporized fuel permeating opening having an extent such that a hole is formed through the porous material member.

4,430,100

SIDE STREAM SEPARATION SYSTEM FOR MECHANICAL COLLECTORS AND METHOD OF CONSTRUCTING SAME

Philip T. Cardo, 176 Forestwood Dr., Northfield, Ohio 44067

Filed Jun. 5, 1981, Ser. No. 270,969

Int. Cl.³ B01D 45/12

U.S. Cl. 55—344

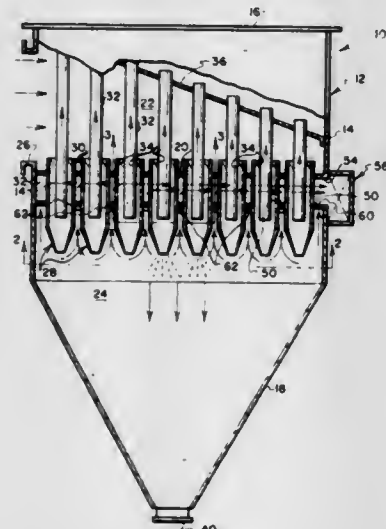
5 Claims

1. A method of modifying an existing mechanical separator to permit extraction therefrom of a side stream flow of fine-particulate-laden effluent gases, wherein the mechanical separator is of the type including an outer housing defining an enclosure, a collecting tube sheet extending through the enclosure and dividing the

enclosure into upper and lower chambers, and a plurality of collector tubes arranged in an array in the lower chamber and having upper portions opening through the collecting tube sheet for receiving particulate-containing effluent gases admitted to the upper chamber, each of the collector tubes being constructed to establish a cyclonic flow of gases passing therethrough for projecting particulate matter outwardly while utilizing a vortex effect to assist in reversing the direction of flow of cleaned gas and exhausting the cleaned gas from the tube along a path different from that followed by the separated particulate, the method including the steps of disposing sheet-like means in the lower chamber at a location about the collector tubes in spaced relation to the collector sheet to define a plenum therebetween and within said housing, providing the sheet-like means with a plurality of pickup openings between the collector tubes for communicating the plenum with locations spaced among the collector tubes and with the lower chamber, and providing exhaust means for withdrawing particulate-laden effluent gases from the plenum and for ducting such gases to separator means for removing particulate matter from such gases.

4. A mechanical separator for separating particulate matter from effluent gas within which the particulate matter is entrained, comprising:

(a) housing means defining an upstanding housing;



(b) first divider means extending substantially horizontally through the housing and dividing the housing into upper and lower chambers;

(c) the housing means including inlet structure defining an inlet for admitting particulate-laden effluent gases into the upper chamber, and outlet structure defining an outlet for discharging cleaned gas from the lower chamber;

(d) collector means including a plurality of collector tubes supported within the housing for receiving particulate-laden effluent gases admitted into the upper chamber, for discharging particulate from such gases into the lower chamber; and for discharging substantially cleaned gas toward said outlet structure;

(e) localized extraction means for withdrawing a portion of the particulate-laden effluent gases from selected locations in the lower chamber among the collector tubes, the extraction means including:

(i) second sheet-like divider means extending through the housing at a location spaced below the first divider means;

(ii) the first and second divider means and portions of the housing means defining a plenum about the collector tubes;

(iii) a plurality of pickup openings communicating the plenum with said selected locations; and

(iv) plenum outlet means, whereby effluent gases may be drawn through the pickup openings and into the

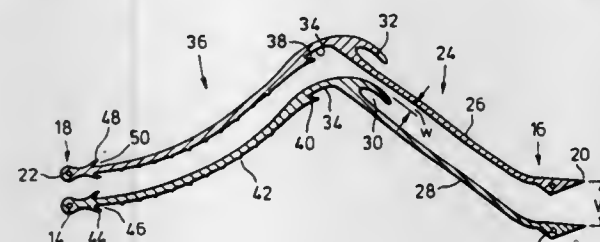
plenum before being ducted from the plenum for treatment to separate particulate from such gases.

4,430,101

SEPARATOR BLADES FOR MIST ELIMINATORS
Richard Sixsmith, Mississauga, Canada, assignor to Plasticair Systems 442829 Ontario Inc., Mississauga, Canada
Filed Dec. 31, 1981, Ser. No. 336,528
Int. Cl.³ B01D 45/08

U.S. Cl. 55-440

14 Claims



1. A separator blade assembly for a mist eliminator comprising:

a plurality of separator blades disposed parallel to one another to form a respective gas flow passage between each immediately adjacent pair of blades,

each blade consisting of an elongated body having a front face and a rear face, whereby in a mist eliminator containing the blade assembly each gas flow passage is formed between a respective blade front face and the facing rear face of the immediately adjacent blade,

each blade comprising in the order stated in the direction of gas flow in the respective gas flow passages at least an entry part including a leading edge, a first droplet impingement part, a primary collection channel, a blade junction, a second droplet impingement part, and an exit part including a trailing edge,

each blade entry part being inclined at an angle to the subsequent first droplet impingement part of the blade to cause a corresponding change in direction in the respective flow passages, the portion of the front face of the first droplet impingement part between the entry part and the primary collection channel constituting a respective first droplet impingement part front face,

each first droplet impingement part front face terminating at the primary collection channel which is formed by a channel-forming hook-like projection protruding from the blade front face into the respective gas flow passage, the outer face of each channel-forming hook-like projection being outwardly convex curved so as to cooperate with the said facing blade rear face of the adjacent blade to form a venturi throat in the respective flow passage,

each blade having the second droplet impingement part inclined at an angle to the first impingement part at the said blade junction so as to cause a corresponding change in direction in the respective flow passage at the said junction downstream of the respective venturi throat, the rear face of the second impingement part constituting a respective second droplet impingement part rear face,

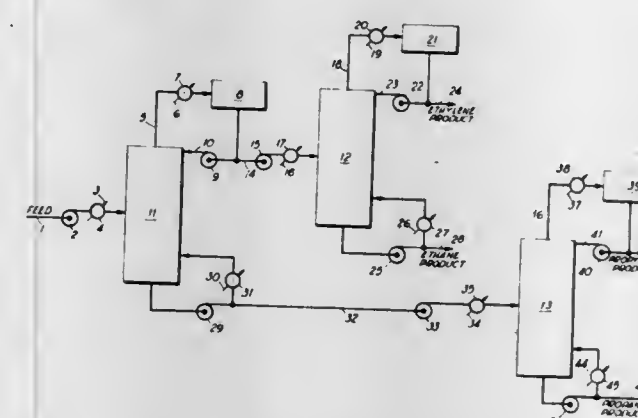
the second droplet impingement part having a portion of its rear face immediately following the said blade junction, disposed so as to be approximately at right angles to the direction of gas flow through the respective venturi throat for corresponding impingement of the gas flow thereon, the said second droplet impingement part rear face portion terminating in a secondary droplet collection channel formed by a channel-forming hook-like projection protruding from the rear face into the respective flow passage.

4,430,102

FRACTIONAL DISTILLATION OF C₂/C₃ HYDROCARBONS AT OPTIMUM PRESSURES
Daniel W. Tedder, Marietta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.
Continuation of Ser. No. 299,623, Sep. 4, 1981, abandoned. This application Nov. 3, 1982, Ser. No. 438,935
Int. Cl.³ F25J 3/02

U.S. Cl. 62-24

1 Claim



1. Method of optimizing the expense of the recovery of C₂/C₃ hydrocarbons from a fluid mixture through fractional distillation comprising operating a system of towers in which each tower receives a single feed and produces two effluents and maintaining the pressure of each tower within ± 15 psia of the pressure calculated from formulae:

$$\log_e(P^*) = 2.677 - \frac{309.4}{T_{FB}} + \frac{1147.6}{T_{\theta B}} + \frac{1087.4}{T_{BD}}$$

wherein:

P* = the pressure of each tower in psia

T_{FB} = tower feed mixture bubble point temperature (° R) evaluated at 485 psia

T_{θB} = tower overhead product mixture bubble point temperature (° R) evaluated at 485 psia

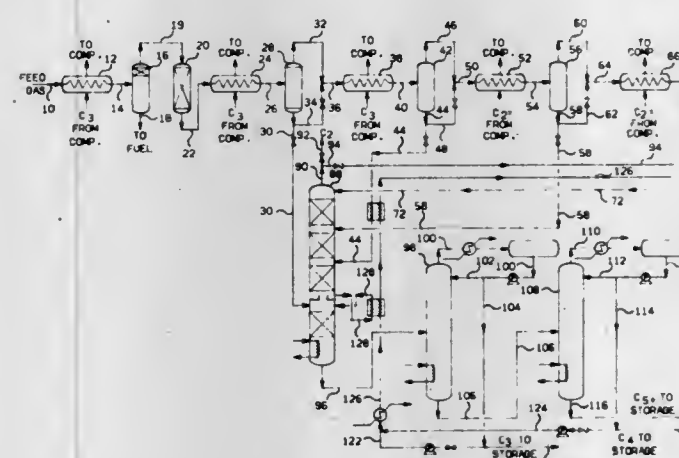
T_{BD} = tower bottom product mixture dew point temperature (° R) evaluated at 485 psia.

4,430,103

CRYOGENIC RECOVERY OF LPG FROM NATURAL GAS
Michael L. Gray, and William A. McClintock, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 24, 1982, Ser. No. 351,728
Int. Cl.³ F25J 3/02

U.S. Cl. 62-28

18 Claims



1. A process for cryogenically liquefying methane and separating C₂, C₃, C₄ and C₅ and higher molecular weight hydrocarbons from a natural gas feed predominating in methane and

containing significant amounts of C₂, C₃, C₄ and C₅ and higher molecular weight hydrocarbons, comprising:

(a) cooling said natural gas feed in at least one first cooling stage to a temperature sufficient to liquify at least a portion of said C₂, C₃, C₄ and C₅ and higher molecular weight hydrocarbons and to liquify said methane;

(b) separating at least one first liquid phase portion, predominating in C₂, C₃, C₄ and C₅ and higher molecular weight hydrocarbons, from the thus cooled natural gas feed, in at least one first separation step;

(c) further separating said at least one first liquid phase portion, predominating in C₂, C₃, C₄ and C₅ and higher molecular weight hydrocarbons, in at least one second separation step, to recover a third liquid phase fraction predominating in C₅ and higher molecular weight hydrocarbons, as a product of the process, and at least one fourth liquid phase portion, predominating in C₂, C₃, and C₄ hydrocarbons;

(d) recycling one portion of said at least one fourth liquid phase portion comprising a stream of at least part of one of (1) said C₂, C₃ and C₄ hydrocarbons, (2) said C₂, and C₃ hydrocarbons and (3) said C₃ and C₄ hydrocarbons, in its uncompressed liquid phase, to the thus liquified methane; and

(e) recovering the remaining portion of said at least one fourth liquid phase portion, which is not thus recycled to the thus liquified methane, as at least one product of the process.

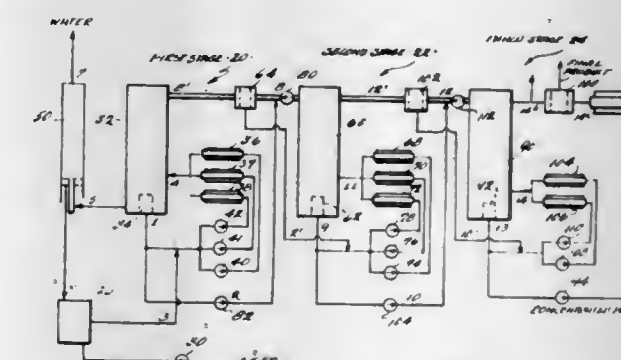
4,430,104

MULTI-STAGE COUNTERCURRENT CONCENTRATING SYSTEM AND METHOD AND SEPARATOR
Wilhelmus H. J. M. Van Pelt, and Jacobus P. Roodenrys, both of 's-Hertogenbosch, Netherlands, assignors to Grasso's Koninklijke Machine Fabrieken, N.V., 's-Hertogenbosch, Netherlands

Division of Ser. No. 202,429, Oct. 30, 1980, Pat. No. 4,316,368.
This application Jul. 19, 1982, Ser. No. 399,867
Int. Cl.³ B01D 9/04

U.S. Cl. 62-123

13 Claims



1. Apparatus for separating solids and liquids in a slurry comprising:

a vessel having a first inlet, a first outlet opposite said first inlet for solids which are separated and a second outlet for liquid which is separated;

a filter mounted in said vessel;

means for supplying from said first inlet at least liquid in a direction to contact said filter in a plane substantially tangential to the surface of said filter to pass along said surface and supplying said slurry to the filter so that at least a portion of said liquid passes therethrough to said second outlet and said solid accumulates on the surface of said filter; and

means for continuously removing said solids from said filter surface adjacent said first outlet so that a portion of said liquid from said first inlet transports the removed solids to said first outlet.

4,430,105

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

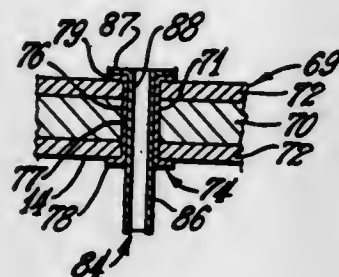
Mohinder S. Bhatti, and Alfred Marzocchi, both of Newark, Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Continuation of Ser. No. 200,676, Oct. 27, 1980, Pat. No. 4,342,577. This application May 14, 1982, Ser. No. 378,027. The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.³ C03B 37/025

U.S. Cl. 65—1

13 Claims



1. A feeder for supplying streams of molten glass to be attenuated into filaments comprising:

a plurality of layers of material wherein one of said layers is a refractory metal and another of said layers is an oxygen impervious, precious metal, said plurality of layers being intimately bonded together by the application of isostatic pressure and heat to form a unitary laminate, said laminate having a plurality of apertures extending therethrough; and

a plurality of elements bonded to the laminate and positioned in said apertures to prevent the oxidation of the refractory metal at elevated temperatures, said elements having an orifice adapted to permit the molten glass to flow therethrough to provide said streams of molten glass.

4,430,106

SPINNER ROTATING APPARATUS

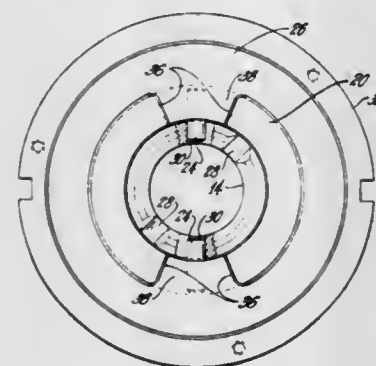
Paul A. Goodridge, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Apr. 5, 1982, Ser. No. 365,703

Int. Cl.³ C03B 37/04

U.S. Cl. 65—15

3 Claims



1. Apparatus for rotating a spinner for centrifuging mineral fibers from molten mineral material comprising a shaft on which said spinner is mounted, a pin slot in said shaft having an end portion, a pin mounted for engaging said pin slot in said shaft and applying torque to said shaft, a pin carrier for holding said pin and applying rotational force thereto, means for urging said pin carrier, and thus said pin, axially with respect to said shaft, thereby forcing said pin into fixed contact with said end portion of said pin slot, and means, separate from said means for urging, for rotating said pin carrier.

4,430,107

METHOD FOR MAKING SHAPED FOAM GLASS BODIES

Heinz Dennert, Trosdorfer Weg 6, 8602 Bischberg; Hans V. Dennert, Mozartweg 1, 8602 Schlüsselfeld, both of Fed. Rep. of Germany, and Alois Seidl, Lam, Fed. Rep. of Germany, assignors to Heinz Dennert, Bischberg; Hans Veit Dennert, Schlüsselfeld, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,790

Int. Cl.³ C03B 19/08

U.S. Cl. 65—22

12 Claims

1. Method for making shaped foam glass bodies from ground glass by hydrolysis in a hydrolysis mixture with solid alkali silicate and water, in which at least one foaming agent is added to the hydrolysis mixture, or to a resulting slip to form a foam producing mass, and in which the foam producing mass is foamed at an increased temperature, comprising:

mixing a mixture of two types of glass namely

(a) glass containing more than 16% by weight alkali oxide, (b) glass containing less than 16% by weight alkali oxide, 95% of each having a grain size of less than 0.1 mm, at a weight ratio of

$a:b = 1:1.5$ to $1:20$

with water at temperatures from 50° to 100° C. until the mixture thickens, the ratio of water to total solids being 1:1.4 to 2.5, and

processing further the resulting mass into shaped foam glass bodies.

4,430,108

METHOD FOR MAKING FOAM GLASS FROM DIATOMACEOUS EARTH AND FLY ASH

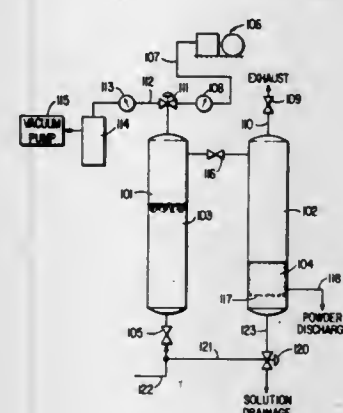
Hamid Hojaji, Kensington, Md.; Pedro B. de Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Theodore A. Litovitz, 3022 Friends Rd., Annapolis, Md. 21401, assignors to Pedro Buarque de Macedo, Bethesda and Theodore Aaron Litovitz, Annapolis, both of, Md.

Continuation-in-part of Ser. No. 311,317, Oct. 14, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 418,078

Int. Cl.³ C03B 19/08

U.S. Cl. 65—22

54 Claims



1. A process for making a foam glass body from diatomaceous earth, fly ash, volcanic ash and mixtures thereof comprising:

(a) impregnating diatomaceous earth, fly ash, volcanic ash or a mixture thereof with an impregnating solution comprising at least one water soluble glass former, at least one water soluble flux, at least one water soluble carbohydrate gas generator, and water to form an impregnated material; (b) heating the impregnated material above the glass transition temperature of the impregnated material; (c) cooling the impregnated material; (d) pulverizing the cooled impregnated material; and (e) heating the pulverized impregnated material in an oxidizing atmosphere to a sufficient temperature to cause foam-

ing of the impregnated material thereof thereby forming a foam glass body.

4,430,109

METHOD OF REGULATING FUEL AND AIR FLOW TO A GLASS MELTING FURNACE

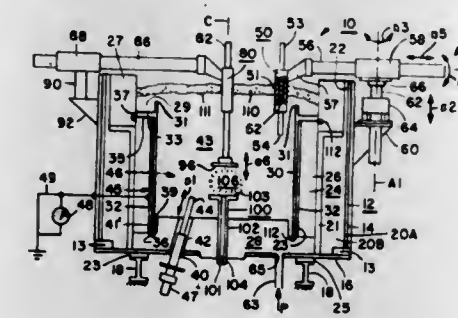
Ronald W. Palmquist, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 243,811, Mar. 16, 1981, Pat. No. 4,366,571. This application Sep. 7, 1982, Ser. No. 415,405

Int. Cl.³ C03B 5/00

U.S. Cl. 65—32

3 Claims



1. A method of operating a furnace having an oxidizable protective liner wherein batch materials containing within interstices thereof trapped deleterious gaseous constituents are fusible into a mass of molten thermoplastic material within said furnace, the method comprising the steps of: depositing said batch materials within said furnace, firing said furnace with a mixture of fossil fuel and air, regulating said air to fuel mixture to marginally stoichiometric conditions such that the fuel is fired under a neutral condition relative to oxidation thereby protecting the oxidizable liner from oxidation due to combustion air and the gaseous materials trapped between the interstices of said batch material.

4,430,110

SHAPING SHEETS OF GLASS OR OTHER DEFORMABLE MATERIAL TO A COMPOUND CURVATURE

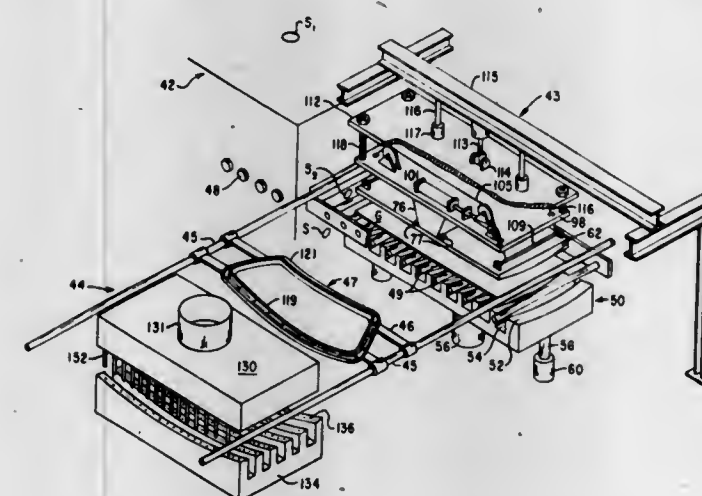
Robert G. Frank, Murrysville; George R. Claassen, New Kensington; John J. Ewing, Tarentum, and Michael T. Fecik, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1982, Ser. No. 402,670

Int. Cl.³ C03B 23/035

U.S. Cl. 65—104

11 Claims



1. A deformable mold for use in shaping sheets composed of glass or other deformable material to a compound shape comprising a first bend component about a first axis and a second bend component about a second axis transverse to said first axis comprising means adapted to connect said mold to a source of vacuum, an upper flexible sheet of fluid-impervious material,

an apertured lower flexible sheet of fluid-impervious material, flexible spacer means between said upper flexible sheet and said lower flexible sheet constructed and arranged to hold said lower flexible sheet with a convex downward configuration in elevation about the first axis of said mold and in an essentially flat plane about said second axis when said flexible sheets are clamped together in unstressed relation along a common dimension, and means to distort said mold about its second axis from a flat configuration to a desired curved configuration so that when vacuum is applied to said mold a hot sheet of deformable hot material is held against said apertured, lower flexible sheet by vacuum and when said mold is deformed with vacuum applied, said hot sheet is deformed in engagement with said deforming mold.

9. A method of shaping a sheet of deformable material to a compound curvature comprising a longitudinal bend component about a transverse axis and a transverse bend component about a longitudinal axis comprising engaging said sheet while it is hot enough to be deformed and while it is shaped transversely about its longitudinal axis to said transverse bend component with a deformable vacuum mold having a transversely curved configuration conforming to that of said sheet undergoing shaping by vacuum, and while holding said hot deformable sheet against said deformable mold by vacuum, distorting said mold about its transverse axis into a shape approximating said longitudinal bend component while said sheet is still hot enough to be deformed, whereby said sheet develops a compound bend comprising said longitudinal bend component and a transverse bend component.

4,430,111

METHOD AND APPARATUS TO REMOVE SHARPLY BENT, TEMPERED GLASS SHEETS FROM A COOLING STATION

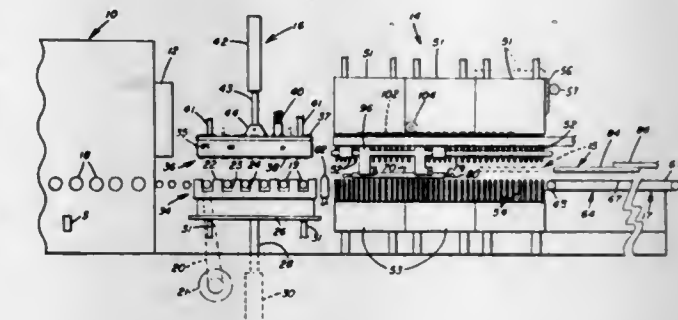
George R. Claassen, New Kensington, and John J. Ewing, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1982, Ser. No. 402,672

Int. Cl.³ C03B 23/035

U.S. Cl. 65—114

7 Claims



1. A method of removing a sharply bent, tempered glass sheet from a cooling station where said glass sheet is engaged against a ring-like member while blasts of tempering medium are applied from opposed, spaced pressure sources against the opposite major surfaces of said supported glass sheet from spaced opposed plenum chambers at a rate sufficient to impart at least a partial temper in the glass, and interposing elongated arms between one of said plenum chambers and the major surface of said bent, tempered glass sheet opposite the major surface engaging said ring-like member, characterized by moving one of said pressure sources away from the other of said pressure sources to cause a net flow of tempering medium to provide sufficient force in a direction such as to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, moving said arms beyond said one of said plenum chambers with said bent, tempered glass sheet engaged thereagainst in a downstream direction toward an unloading conveyor, tilting the leading edge of said bent, tempered glass sheet away from said elongated arms to transfer said bent, tempered glass

sheet gently from said elongated arms to an upper run of said unloading conveyor while preventing said bent, tempered glass sheet from falling uncontrollably from said elongated arms to avoid impacting said glass sheet sharply onto said upper run.

5. Apparatus for transferring a sharply bent, tempered glass sheet gently from a ring-like member to the upper run of an unloading conveyor comprising a cooling station having an upper plenum chamber and a lower plenum chamber, means to convey said ring-like member supporting said glass sheet through said cooling station between said plenum chambers, means to deliver tempering medium under pressure to said plenum chambers for delivery against the opposite major surfaces of said glass sheet when the latter is supported on said ring-like member, elongated arms adapted for movement along a path at a level between the level of the path taken by said ring-like member and a normal position occupied by said upper plenum chamber between an upstream position between said plenum chambers and a downstream position downstream of said cooling station, means to provide a net upward force of tempering medium in said upstream position between said plenum chambers when said elongated arms occupy said upstream position to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, means to lift the upper plenum chamber away from said elongated arms, means to move said elongated arms to said downstream position with said bent, tempered glass sheet engaged thereagainst, means to lower said upper plenum chamber to said normal position, and an unloading conveyor located downstream of said cooling station, said unloading conveyor having an upper run occupying a position at a level slightly below the level occupied by said elongated arms, whereby, when said bent, tempered glass sheet moves into said downstream position, it tilts with its leading edge moving downward to transfer gently from engagement with said elongated arms into engagement with said upper run.

4,430,112

SHEET GLASS PRODUCING APPARATUS

Kazuyuki Tanaka, Matsusaka, Japan, assignor to Central Glass Company, Limited, Ube, Japan

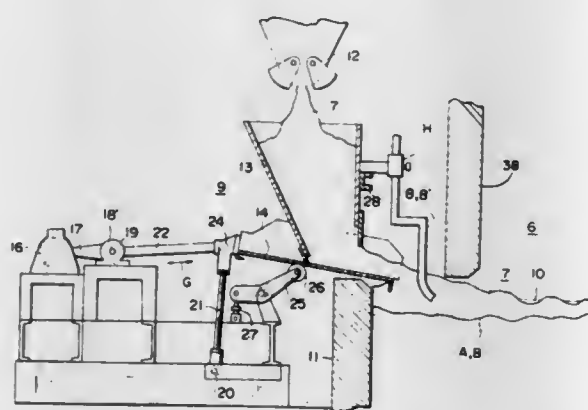
Continuation of Ser. No. 318,692, Nov. 6, 1981, abandoned, which is a continuation of Ser. No. 142,151, Apr. 21, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,326

Claims priority, application Japan, May 1, 1979, 54-53628

Int. Cl.³ C03B 3/00, 5/22

U.S. Cl. 65—335

6 Claims



1. An apparatus for producing sheet glass, comprising: an oblong glass melting tank for molten glass; said tank having heating means arranged such that said tank has its zone of highest temperature along the longitudinal axis of said tank; said tank having an extension provided at its axial one end terminating in a backwall; material feeding means located at said backwall for feeding raw materials of glass onto a surface of molten glass in said extension of said tank so that the heap of raw materials

riding on the surface of molten glass is forced to move in a downstream direction away from said backwall; a wall member located in the area of said extension and spaced from said backwall and defining with said backwall a dog house section; an obstruction member means associated with said material feeding means at said dog house section and projecting into said heap of raw materials entirely within said dog house section for imparting flow resistance to said heap of raw materials where the temperature is less than the temperature in the glass melting tank, the projecting end or ends of said obstruction member means being embedded in the heap of the raw material only at a position close to the laterally central portion of said tank.

4,430,113

PLANT GROWTH REGULATOR COMPOSITIONS AND METHOD

Jack R. Miller, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 148,115, May 9, 1980,

abandoned. This application Aug. 24, 1981, Ser. No. 295,437

Int. Cl.³ A01N 43/54, 41/00

U.S. Cl. 71—92

6 Claims

1. A composition suitable for controlling seedhead formation in turfgrasses consisting essentially of about 0.031 to about 0.125 part by weight of methylfluoride and about 0.5 to about 2.0 parts by weight of α -(1-methylethyl)- α -(4-(trifluoromethoxy)-phenyl)-5-pyrimidinemethanol, or a nonphytotoxic acid addition salt thereof.

4,430,114

2,6-DINITROANILINE HERBICIDES, AND USE THEREOF

Albert W. Lutz, Princeton, and Robert E. Diehl, Lawrenceville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 60,532, Jul. 25, 1979, Pat. No. 4,288,385.

This application May 4, 1981, Ser. No. 260,490

Int. Cl.³ A01N 37/34; C07C 121/52

U.S. Cl. 71—105

1 Claim

1. A method for the selective preemergence control of monocotyledonous and dicotyledonous plant species in the presence of graminaceous crops comprising: applying to the soil containing the seeds or seedlings of the plants a herbicidally effective amount of the compound 5-[(1-ethylpropyl)-amino]-4,6-dinitro-o-tolyl acetonitrile.

4,430,115

BORON STAINLESS STEEL POWDER AND RAPID SOLIDIFICATION METHOD

Ranjan Ray, Burlington, Mass.; Donald E. Polk, Washington, D.C., and Bill C. Giessen, Cambridge, Mass., assignors to Marko Materials, Inc., N. Billerica, Mass.

Filed May 27, 1980, Ser. No. 153,775

Int. Cl.³ B22F 1/00, 1/04

U.S. Cl. 75—0.5 R

2 Claims

1. An alloy in powder form wherein said powders have an average particle size of less than 60 mesh (U.S. Standard) comprising platelets having an average thickness of less than 0.1 mm and each platelet being characterized by an irregularly shaped outline resulting from fracture thereof and having the composition represented by the general formula $Fe_{0.8}Cr_{1.0-3.0}(Ni,Co)_{0.3-1.5}(Mo,W,Al,Cu,Ti,Cb,V,Ta,N)_{0.7-6}(Mn,Si)_{0.3-0.30}$ where the iron is present at a level of more than 50 wt% and may contain incidental impurities, said composition additionally alloyed with between 1.4 to 2.4 wt% boron, said alloy being prepared by the method comprising the steps:

- forming a melt of said alloy
- depositing said melt against a rapidly moving quench surface so as to quench said melt at a rate in the range of

approximately 10^5 to 10^7 °C./sec and thereby form a rapidly solidified strip of said alloy characterized by predominantly body centered cubic or face centered cubic structure and

(c) comminuting said strip into powders.

4,430,116

METHOD AND APPARATUS FOR HEATING OR HEATING AND REDUCTION RAW MATERIALS FOR A METALLURGICAL FURNACE UTILIZING WASTE GASES FROM THE SAME FURNACE

Shigeru Yamazaki, Kawasaki; Motoaki Hirao, Fujisawa; Tatuo Yamagishi, Urawa; Jun Nagai, Chiba; Hiroshi Ooi, Mitaka, and Yoshinobu Shinozaki, Yokohama, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha and Kawasaki Steel Corporation, both of Kobe, Japan

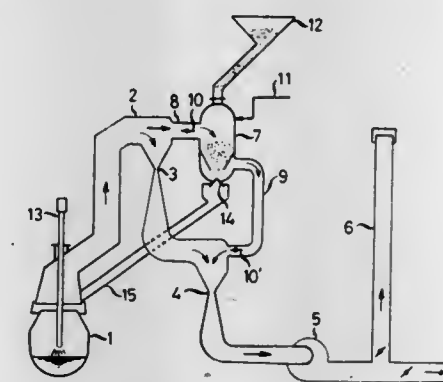
Filed Nov. 21, 1980, Ser. No. 209,178

Claims priority, application Japan, Nov. 22, 1979, 54-151785

Int. Cl.³ C21B 13/02, 13/14; C21C 5/32

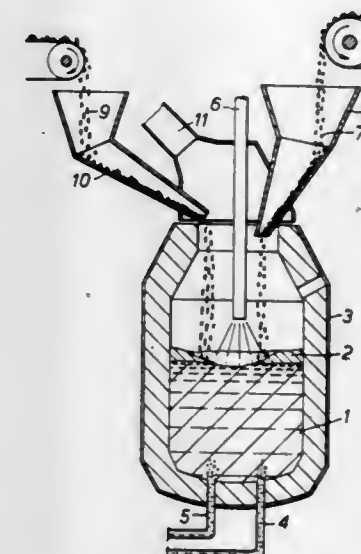
U.S. Cl. 75—34

1 Claim



1. A heating or a heating and reduction method for heating or heating and reducing raw material to be charged into a metallurgical furnace, comprising the steps of

- supplying said raw material which is to be charged into a metallurgical furnace, into a reactor which is interposed in a bypass means connected to a waste gas pipe of said metallurgical furnace,
- closing a waste gas inlet and a waste gas outlet of said reactor along said bypass at an initial stage of blowing of said furnace, to shut off the flow of waste gas through said reactor, and supplying inert gas to said reactor to prevent the raw material from being oxidized,
- opening the waste gas inlet and waste gas outlet of said reactor when blowing of said furnace is performed to full-scale, to introduce at least a part of the waste gas into said reactor to bring the waste gas into contact with the raw material for heating or heating and reduction of the raw material,
- closing the waste gas inlet and waste gas outlet of said reactor along said bypass at the final stage of blowing of said furnace, and supplying inert gas to said reactor to prevent the raw material from being oxidized,
- repeating steps (B), (C) and (D), until the raw material is heated or heated and reduced to a predetermined extent, and
- opening a raw material outlet of said reactor to charge the raw material into said metallurgical furnace.



1. A process for the production of steel, the steps of providing a ferrous melt in a container, introducing iron ore into the container and separately introducing carbonaceous material into the melt, blowing an oxidising gas at the upper surface of the melt by means of an overhead lance, and injecting a stirring gas directly into the melt below the upper surface thereof.

4,430,118

DESULFURIZATION AGENT

Alfred Freissmuth, Trostberg; Werner Gmöhling, Hufschlag, and Walter Meichsner, Krefeld, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 250,361, Apr. 2, 1981. This application Sep. 29, 1982, Ser. No. 427,110

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022752

Int. Cl.³ C21C 7/02

U.S. Cl. 75—58

16 Claims

1. An improved desulfurization agent comprising calcium carbide and diamide lime, wherein the improvement comprising said diamide lime having been treated by flotation or air sifting.

4,430,119

SELECTIVE REMOVAL OF MAGNESIUM IN THE CONSUMPTION OF ALUMINUM USED BEVERAGE CONTAINER SCRAP

Chester L. Zuber, Evansville, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 29, 1982, Ser. No. 454,269

Int. Cl.³ C22B 21/06

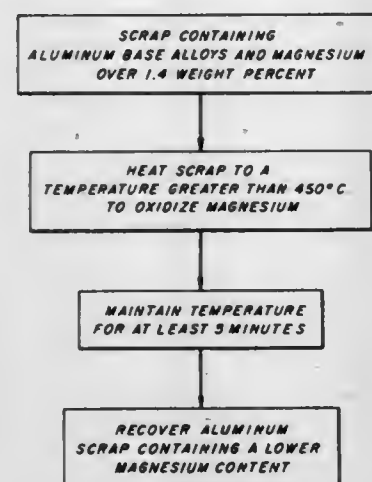
U.S. Cl. 75—63

12 Claims

1. A process for recovery of aluminum from aluminum-containing scrap wherein at least a portion of the aluminum scrap comprises one or more alloys of aluminum containing greater than 1.4 wt.% magnesium comprising:

- heating the aluminum scrap to a temperature of at least 850° F.; and

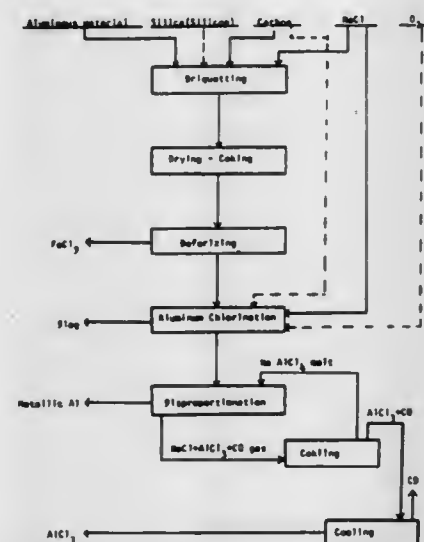
- (b) maintaining the aluminum scrap at this temperature for a period of time long enough to oxidize sufficient magne-



sium therefrom for purposes of lowering the overall level of magnesium in an aluminum melt of the scrap.

4,430,120
PROCESS FOR THE MANUFACTURE OF PURE METALLIC ALUMINUM FROM ALUMINUM ORES AND OTHER ALUMINUM-BEARING MATERIALS
 Moshe Fruchter, 104 Hagalil Str., Haifa 32683, and Anutza Moscovici, 11 Dov Hoz Str., Rehovot 76580, both of Israel
 Filed Jul. 24, 1981, Ser. No. 286,518
 Int. Cl.³ C22B 21/02

U.S. Cl. 75—68 B



1. A process for the manufacture of pure aluminum metal from aluminum-bearing materials, comprising the following steps:

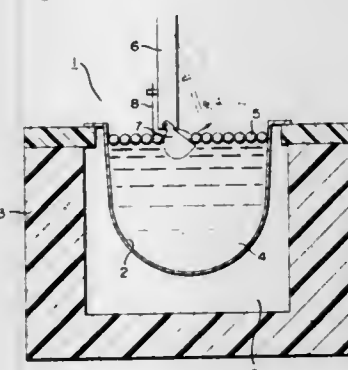
- homogeneously mixing the aluminum-bearing materials with a reducing agent, a chloridizing agent consisting essentially of an alkali metal chloride selected from the group consisting of sodium chloride, potassium chloride, lithium chloride and mixtures thereof, and optionally silica;
- drying the homogeneous mixture in a furnace at a temperature sufficient to cause coking of said mixture;
- heating the mixture in a furnace, to a temperature is the range of about 900° C. to 1200° C., whereby iron chloride is formed and volatilized;
- reacting the iron-free aluminum-bearing materials with said alkali metal chloride and reducing agent, optionally, oxygen and additional energetic coke, by heating to a temperature in the range of about 1200° C.-1800° C., resulting in aluminum monochloride gas and molten alkali metal silicate and,
- rapidly cooling the aluminum monochloride-carbon monoxide mixed gas to about 650°-800° C., with a molten

sodium-aluminum chloride mixture, whereby a disproportionation into volatile aluminum trichloride and pure aluminum metal occurs, and subsequently separating said products.

4,430,121
METHOD FOR COVERING THE SURFACE OF MOLTEN METAL, AND A COVERING MATERIAL THEREFOR
 Shigeru Shima, Tokyo, Japan, assignor to Nichias Corporation, Japan and Hiroyasu Iihoshi, both of, Japan
 Filed Jan. 26, 1982, Ser. No. 342,911
 Int. Cl.³ C22B 9/00

U.S. Cl. 75—96

14 Claims



1. A molten metal surface covering material for covering the surface of a molten metal to preserve the heat of the molten metal and to prevent oxidation of the molten metal by the surrounding atmosphere, comprising a plurality of floating elements, said floating elements being made of an inorganic refractory material which is insensitive to the molten metal to be covered.

4,430,122
FLUX-CORED ARC WELDING TUBULAR ELECTRODE
 Uldis Pauga, Freeport, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.
 Filed Sep. 29, 1982, Ser. No. 427,882
 Int. Cl.³ C22C 38/54; B23K 35/36

U.S. Cl. 75—123 B

9 Claims

1. A weld deposit consisting essentially of about 0.4 to 0.8% C, about 4.8 to 6.2% B, about 1.6 to 3.0% Mn, about 1.6 to 2.8% Ni, about 1.4 to 2.4% Si and the balance essentially iron.

4,430,123
PRODUCTION OF VERMICULAR GRAPHITE CAST IRON

William Simmons, Birmingham, England, assignor to Fosco International Limited, Birmingham, England
 PCT No. PCT/GB80/00193, § 371 Date Aug. 5, 1981, § 102(e) Date Aug. 5, 1981, PCT Pub. No. WO81/01861, PCT Pub. Date Jul. 9, 1981

PCT Filed Nov. 5, 1980, Ser. No. 290,802
 Claims priority, application United Kingdom, Dec. 19, 1980, 7943698

Int. Cl.³ C22C 33/08

U.S. Cl. 75—130 R

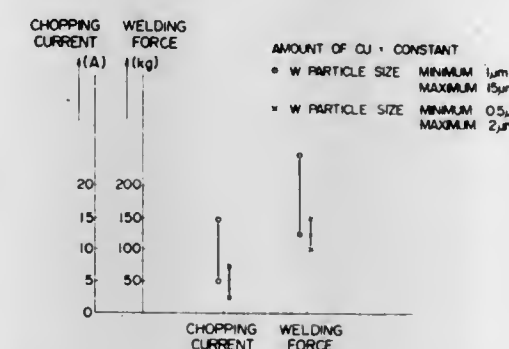
12 Claims

1. In a process for treating molten iron containing carbon and sulphur to produce a cast iron having a vermicular graphite structure, the improvement which comprises determining the sulphur content of the iron and adding to the molten iron simultaneously up to 0.3% by weight of the iron of one or more rare earth metals as such or as an alloy thereof and in excess of 0.2% by weight of the iron of calcium as such or as an alloy thereof, the quantity of rare earth metal added being within the range of 2 to 8 times the sulphur content of the molten iron and such as to give the iron when cast a vermicular graphite structure.

4,430,124
VACUUM TYPE BREAKER CONTACT MATERIAL OF COPPER INFILTRATED TUNGSTEN
 Masaru Kato, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 98,198, Nov. 27, 1979, abandoned. This application Mar. 22, 1982, Ser. No. 360,572
 Claims priority, application Japan, Dec. 6, 1978, 53-153381
 Int. Cl.³ H01H 1/02; B22F 3/26

U.S. Cl. 75—248

1 Claim



1. A vacuum type breaker contact material prepared by infiltrating copper into a sintered tungsten matrix, wherein the maximum value of tungsten particle size within the finished material is not larger than 2 μm and the minimum value of tungsten particle size within the finished material is not smaller than 0.5 μm.

4,430,125
PROCESS OF MANUFACTURE OF A COMPOSITE MATERIAL AND COMPOSITE MATERIAL MANUFACTURED BY THIS PROCESS
 Waldemar Hascic, Enzersdorf-Südstadt, Austria, assignor to Empex Mineral-Und Naturfaserprodukts AG, Villars-sur-Glane, Switzerland
 Filed Apr. 28, 1982, Ser. No. 372,713
 Claims priority, application Switzerland, May 11, 1981, 3029/81

Int. Cl.³ C04B 19/04

U.S. Cl. 106—81

15 Claims

1. A process for manufacturing a composite material consisting essentially of a mixture of a fibrous material, an alkali metal silicate, a fluosilicate, a member selected from the group consisting of a metallic oxide and a basic metallic silicate, which member is capable of reacting with the alkali metal silicate to form a silicate having a melting point which is higher than that of the alkali metal silicate, and, optionally, a filler, which comprises the steps of:

- forming a mixture of a fibrous material, an alkali metal silicate, a lower than stoichiometric amount of a fluosilicate relative to said alkali metal silicate, a member selected from the group consisting of a metallic oxide and a basic metallic silicate, said member being reactive with said alkali metal silicate and, optionally, a filler;
- forming said mixture into the desired configuration; and
- subjecting said formed mixture to heat and pressure to produce a hardened composite material having a high mechanical strength and fire-proof quality.

4,430,126
HYDRAULICALLY SETTING SHAPED BRICK, PARTICULARLY FOR CONSTRUCTION, AND METHOD FOR ITS PRODUCTION
 Manfred Ackermann; Rolf Köhling, both of Bochum, and Dieter Leininger, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany
 Filed Feb. 26, 1982, Ser. No. 352,847
 Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107374; Dec. 3, 1981, 3147855
 Int. Cl.³ C04B 31/02, 31/12

U.S. Cl. 106—97

33 Claims

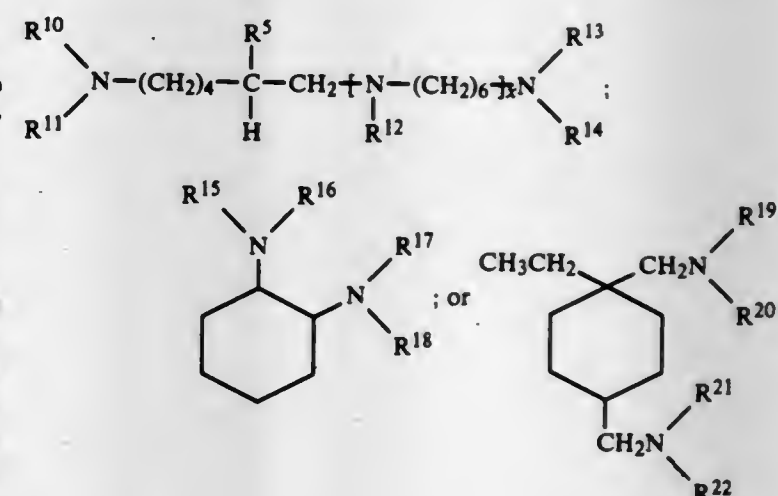
1. Hydraulically setting shaped brick for construction composed of
- 4-30% by weight hydraulically binding agent;
 - about 60-95% by weight mineral aggregate material as substitute for sand; and
 - 0-10% other admixtures, the aggregate material comprising country rock (mining waste material) with striking disintegration tendency, obtained from digestion and/or from extraction of mineral wealth from mining, and having a grain size up to 15 mm and a finest grain portion under 0.2 mm from 10 to 45% by weight.

4,430,127
EPOXYLATED AMINE ASPHALT ANTI-STRIPPING AGENT
 Dennis W. Gilmore and Raymond S. Dalter, both of Cincinnati, Ohio, assignors to Carstab Corporation, Reading, Ohio
 Filed Oct. 21, 1981, Ser. No. 313,520
 Int. Cl.³ C08L 95/00

U.S. Cl. 106—273 N

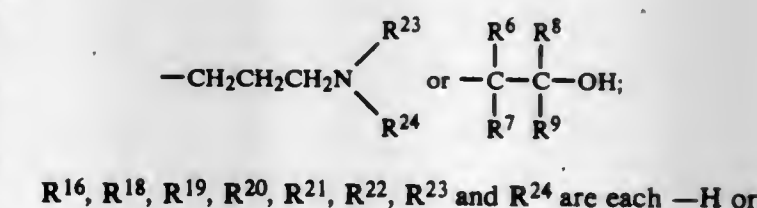
7 Claims

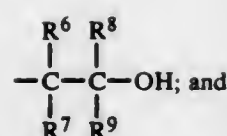
1. A composition comprising a bituminous material and, in an amount effective to impart anti-stripping properties to said bituminous material, an epoxylated polyamine anti-stripping agent comprising a compound or mixture of compounds having the formula:



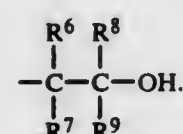
wherein

R⁵ is —H or —CH₂CH₂CH₂NH₂;
 x=0 or 1;
 R¹⁰, R¹¹, R¹², R¹³, R¹⁴, R¹⁵ and R¹⁷ are each —H,





R^6, R^7, R^8 and R^9 are each —H, alkyl, alkenyl, aryl, alkaryl or aralkyl; with the proviso that at least one of $R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23}$ and R^{24}



4,430,128

AQUEOUS ACID COMPOSITION AND METHOD OF USE

Wayne W. Frenier, Tulsa County, Okla., and David A. Wilson, Brazoria County, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 5, 1980, Ser. No. 213,280
Int. Cl.³ C23G 1/02

U.S. Cl. 134—3

5 Claims

1. A process for removing a predominantly iron oxide scale from a ferrous metal surface and for passivating said metal surface, said process comprising the steps of:

- (1) removing said iron oxide scale by contacting said scale with the aqueous acid composition having a PH of less than about 3 and comprising (a) at least about 1 weight percent of hydroxyethylethylene diaminetriacetic acid (HEDTA) dissolved therein, and (b) a compatible acid corrosion inhibitor, and
- (2) while the ferrous metal surface is free or substantially free of iron oxide-containing scale, contacting said metal surface with an aqueous alkaline liquid having an oxidant dissolved, dispersed, or entrained therein.

4,430,129

METHOD OF CLEANING HOLLOW CONDUCTORS OF COOLED ELECTRICAL MACHINES

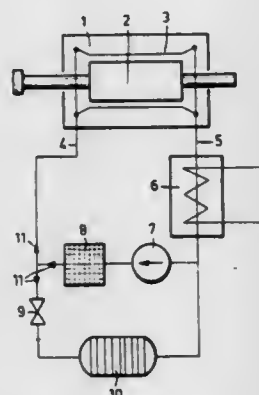
Gerold Gerner, Mannheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,771
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134903

Int. Cl.³ B08B 3/08, 9/06

U.S. Cl. 134—22.19

11 Claims



1. Method for chemical cleaning of water-cooled waveguides of electric machines whose interiors have become corroded which comprises circulating cooling water through waveguides of an electric machine, cooling the water after discharge from the waveguides, and returning the cooled

water to the waveguides by a pump which maintains the cooling cycle of the circulating water, and a closable bypass with an interposed ion exchanger connected to the cooling cycle, the combination therewith of closing the bypass and adding a complexing agent into the cooling cycle with the bypass closed to effect removal of at least some of the corrosion products in the waveguides into the circulating water, thereafter opening the bypass to cause the water containing impurities after cleaning the waveguides to flow in contact with the ion exchanger to effect purification of the water, and repeating said operations of closing the bypass and adding a complexing agent, and thereafter opening the bypass to purify the water by contact with the ion exchanger, until sufficient cleaning of the waveguides is effected.

4,430,130

BASKETBALL GOAL

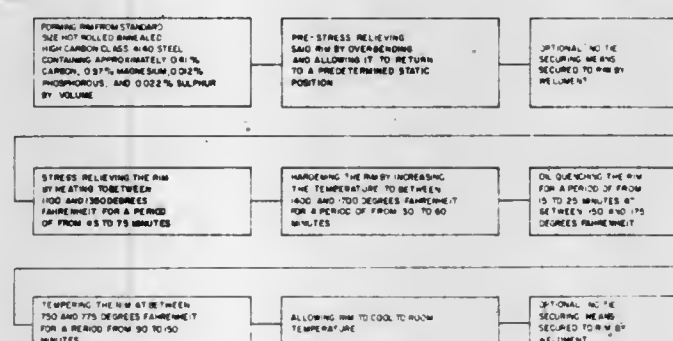
Roald H. Sorensen, 3224 Marie Dr., Raleigh, N.C. 27604

Filed Sep. 8, 1981, Ser. No. 299,808

Int. Cl.³ C21D 9/00; A63B 63/08

U.S. Cl. 148—12 B

11 Claims



5. The method of producing an improved basketball goal rim comprising: forming the rim from standard sized diameter hot rolled annealed high carbon spring steel rod; stress relieving the formed rim by heating it to between 1100 and 1350 degrees Fahrenheit for a period of from 45 to 75 minutes; increasing the temperature to between 1400 and 1700 degrees Fahrenheit and maintaining such temperature for a period of from 30 to 60 minutes; oil quenching the rim at 150 to 175 degrees Fahrenheit for a period of 15 to 25 minutes; tempering said rim at 750 to 775 degrees Fahrenheit for a period of 90 to 150 minutes; and allowing said rim to cool to room temperature whereby an improved basketball rim is provided which can withstand at least 800 pounds of static load and deflect at least two inches without permanent yield.

4,430,131

POLYURETHANE BINDERS

Meude Tremblay, Charlesbourg, Canada, assignor to Her Majesty the Queen in right of Canada, Ottawa, Canada

Division of Ser. No. 123,948, Feb. 25, 1980. This application Nov. 6, 1981, Ser. No. 318,804

Int. Cl.³ C06B 33/02, 33/06; C08G 18/08; C08L 75/06

U.S. Cl. 149—19.4

9 Claims

1. A process for the preparation of a polyurethane binder comprising reacting a diisocyanate with a block or sequenced co-polyester diol of the structural formula I



which comprises simultaneously reacting ϵ -caprolactone in the presence of a catalyst with

(i) a diol of structural formula II



II

as co-catalyst for the reaction wherein R is an alkyl group containing 1 to 8 carbon atoms or an alkyl group contain-

ing 1-12 carbon atoms having a nitrogen atom in its backbone; and

(ii) a di-carboxylic acid of structural formula III



III

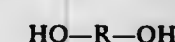
wherein m is an integer from 1 to 36, and wherein R_3 is the residual structure of a diol of structural formula II and R_4 is the residual structure of a diacid of structural formula III, and x and y are integers of about 1-10.

5. A polyurethane binder for use in a solid propellant comprising the reaction product of a diisocyanate and a block or sequenced co-polyester diol produced by the process of claim 1 and having the structural formula



I

wherein R_3 is the residual structure of a diol of structural formula II



II

in which R is an alkyl group containing 1 to 8 carbon atoms or an alkyl group containing 1-12 carbon atoms having a nitrogen atom in its backbone; and R_4 is the residual structure of a diacid of structural formula III



III

in which m is an integer from 1 to 36; x is an integer from about 1 to 10; and y is an integer from about 1 to 10.

9. A co-polyester-urethane propellant comprising by weight about 70% of ammonium perchlorate, about 18% of finely divided aluminum, and about 12% of a binder as defined in claim 5.

4,430,132

DESENSITIZING EXPLOSIVES

Alfred E. Painter, Bridgewater, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 903,838, May 8, 1979, abandoned. This application Jul. 29, 1980, Ser. No. 173,396

Claims priority, application United Kingdom, May 11, 1977, 19868/77

Int. Cl.³ C06B 45/22

U.S. Cl. 149—109.6

10 Claims

1. A process for desensitising a particulate explosive with a wax which comprises,

- (1) stirring a water-insoluble wax, having a softening point below the safe decomposition temperature of the explosive, with a paste of the water-insoluble explosive in an aqueous medium;
- (2) heating and stirring the resulting mixture of wax and explosive paste until the water has evaporated from the surfaces of the explosive particles and the wax has at least softened and has become coated onto the surface of the explosive particles; and
- (3) cooling and stirring the resulting wax-coated explosive particles to below the softening point of the wax until the wax on the explosive particles has solidified.

PROCESS FOR REPAIRING BODY PARTS ON VEHICLES OR THE LIKE

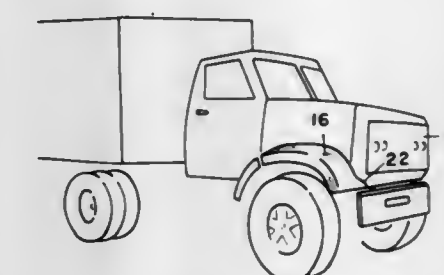
Frederick L. F. Griffith, 239 New Brunswick Ave., Perth Amboy, N.J. 08861, assignor to Frederick L. F. Griffith, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,078

Int. Cl.³ B32B 35/00

U.S. Cl. 156—94

6 Claims



1. Process for installation of an over-dimensioned replacement part of a damaged FRP or rigidized acrylic vehicle or the like, which comprises:

- (a) placing a premanufactured over-dimensioned, duplicate part over the damaged part,
- (b) the dimensions of said over-dimensioned duplicate part exceeding those of the damaged part, and
- (c) adhering said duplicate part to said damaged part,
- (d) the surface of said duplicate part generally conforming to the surface of said damaged part which is adhered thereto whereby said vehicle is repaired, the structure of said duplicate part being similar enough to that of the original to serve the same function.

4,430,134

METALLIZED BOTTOM CONTAINER AND PROCESS OF OBTAINING THE SAME

Augustin H. Gras, Rochefort du Gard, France, assignor to Lauragri S.A., Noves, France

Continuation of Ser. No. 120,033, Feb. 11, 1980, abandoned.

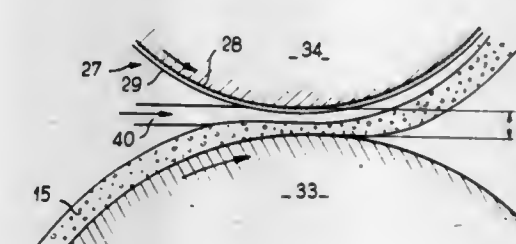
This application Aug. 12, 1981, Ser. No. 292,089

Claims priority, application France, Feb. 9, 1979, 79 03921; Dec. 28, 1979, 79 32039

Int. Cl.³ B31F 1/00

U.S. Cl. 156—224

6 Claims



1. The process of continuous manufacture of composite articles by manufacturing a composite band for packing products such as meat, said process comprising the steps of:

- unwinding a relatively thin film of bi-directional polystyrene coated with a layer of aluminum and simultaneously a relatively thick band of expanded polystyrene and circulating them between opposed calendaring cylinders with the non-aluminized surface of the film of bi-directional polystyrene facing the band of expanded polystyrene, and extruding a continuous intermediate film of polystyrene from an extruder head and inserting said extruded continuous film between the band of expanded polystyrene and said film of bi-directional polystyrene in a contact zone therebetween while applying pressure between said calendaring cylinders, and maintaining said extruded continuous film at a temperature

at least equal to its softening point to cause the surface of the film of bi-directional polystyrene and the surface of the band of expandable polystyrene contacting said continuous extruded film to soften to effect thermobond adhesion of said continuous extruded film to said band of expanded polystyrene and to said film of bi-directional polystyrene while heating the calendaring cylinder in contact with the aluminum layer of said film of bi-directional polystyrene to maintain a relatively high temperature for said layer of aluminum to prevent said layer of aluminum from drawing heat thereto and while cooling of said calendaring cylinder in contact with said polystyrene band to maintain that cylinder at near ambient temperature, whereby said expanded polystyrene band in contact with the cooled cylinder functions with the cooled cylinder to draw heat away from said extruded continuous intermediate film of polystyrene to prevent damage of said layer of aluminum, and thermal forming and cutting of said composite band to obtain a composite article.

4,430,135

ADHESIVE BLENDS AND METHODS OF MAKING COMPOSITE STRUCTURES

Seymour Schmückler, Palatine; John Machonis, Jr., Schaumburg, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.
Division of Ser. No. 452,873, Dec. 23, 1982, which is a division of Ser. No. 327,278, Dec. 4, 1981, Pat. No. 4,409,364. This application Jul. 1, 1983, Ser. No. 510,419
Int. Cl.³ C08J 5/00, 5/12

U.S. Cl. 156—244.11

2 Claims

1. A method of making a composite structure of components comprising:

- (a) a substrate, and adhered thereto;
- (b) an adhesive blend consisting essentially of
 - (i) about 0.1–40 parts by weight in said blend of a graft copolymer of about 70–99.999 wt. % of a polyethylene backbone grafted with about 30–0.001 wt. % of at least one grafting monomer comprising at least one polymerizable ethylenically unsaturated carboxylic acid or carboxylic acid anhydride for a total of 100% and
 - (ii) about 99.9–60 parts by weight of a blending resin mixture of about 25–90 wt. % of a high density polyethylene and about 75–10 wt. % of a polypropylene for a total of 100% and wherein said components are adhered together by methods including blown film coextrusion, cast film coextrusion coating, blow molding coextrusion, lamination, extrusion or coextrusion coating, powder coating, rotomolding, profile coextrusion or wire coating extrusion or coextrusion.

4,430,136

PROCESS FOR PREPARING OPEN-CELL STRUCTURE OF VINYL CHLORIDE RESIN

Toshio Tsuchiya, Tokyo; Syuichi Morizumi, Saitama; Hisashi Takeda, Chiba, and Akinori Arai, Saitama, all of Japan, assignors to Lonseal Corporation, Tokyo, Japan
Filed Aug. 23, 1982, Ser. No. 410,563

Claims priority, application Japan, Dec. 15, 1981, 56-202989
Int. Cl.³ B29C 19/00

U.S. Cl. 156—246

22 Claims

1. A process for preparing an open-cell structure from a vinyl chloride resin, said process comprising the steps of:

- (a) mixing a vinyl chloride resin, stabilizer, plasticizer, surface active agent, azodicarbonamide and 4,4'-oxybisbenzenesulfonyl hydrazide to form a vinyl chloride resin paste;
- (b) rendering the vinyl chloride resin paste of step (a) alkaline, and mixing the alkaline paste to form a uniformly-mixed paste;

line, and mixing the alkaline paste to form a uniformly-mixed paste;



- (c) permitting said uniformly-mixed paste of step (b) to expand; and
- (d) heating said paste of step (c) to cause gelation.

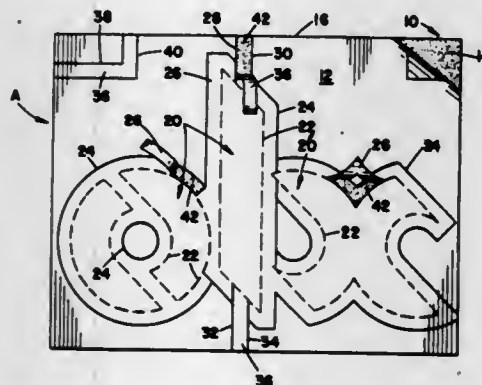
4,430,137

PAINT MASK AND METHOD

Wallace R. Jones, Waite Hill Village, Ohio, assignor to The Excellor Specialty Company, Cleveland, Ohio
Division of Ser. No. 316,925, Oct. 30, 1981, Pat. No. 4,397,261.
This application Jun. 3, 1983, Ser. No. 500,885
Int. Cl.³ B05C 21/00; B32B 31/18

U.S. Cl. 156—247

6 Claims



1. A method of masking a predetermined design configuration on a work surface, said method comprising the steps of:
 - (a) providing a mask structure having a first mask layer including an adhesive on one surface thereof and a second liner layer adhesively secured to said first layer one surface;
 - (b) defining a predetermined design configuration within said mask structure by means of discontinuous cuts extending through both said first and second layers;
 - (c) placing score cuts through said second layer in spaced relationship to said discontinuous cuts for defining band-like areas in said second layer between said discontinuous and score cuts;
 - (d) removing the band-like areas of said second layer for exposing corresponding bands of adhesive therebeneath on said first layer;
 - (e) affixing said mask structure to a work surface by said adhesive bands with said design configuration disposed in a desired orientation; and,
 - (f) thereafter removing that portion of said mask disposed on the other side of said discontinuous cuts from said score cuts from covering association with the work surface, said step of removing being performed along said discontinuous cuts.

4,430,138

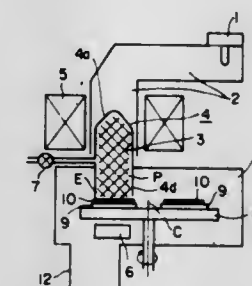
MICROWAVE PLASMA ETCHING APPARATUS HAVING FAN-SHAPED DISCHARGE

Keizo Suzuki; Sadayuki Okudaira; Shigeru Nishimatsu, all of Kokubunji, and Ichiro Kanomata, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 7, 1980, Ser. No. 138,082

Claims priority, application Japan, Apr. 6, 1979, 54-41109
Int. Cl.³ C23F 1/02

U.S. Cl. 156—345

1 Claim



1. A microwave plasma etching apparatus for exposing a sample to a microwave discharge plasma, comprising: a discharge tube which has an opening portion confronting the surface of said sample, said opening portion being formed into the shape of a fan; means to generate a microwave discharge plasma in said discharge tube; and means for moving said sample along a circular path whose center coincides with the pivot of said fan, wherein said discharge tube is gradually tapered from a portion having a circular sectional shape towards said fan-shaped opening portion.

4,430,139

APPARATUS FOR MANUFACTURING CABLE

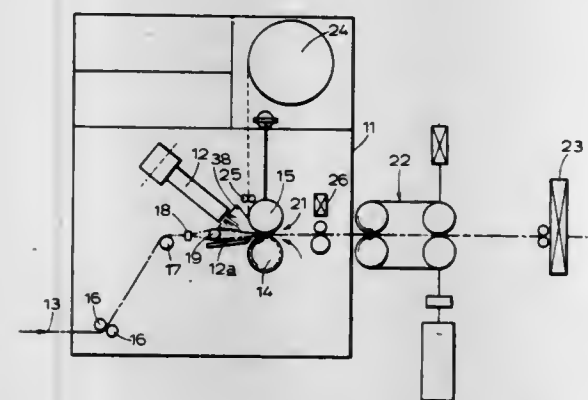
John R. Baverstock, Stoke-on-Trent, England, assignor to Lucas Industries Limited, Birmingham, England
Division of Ser. No. 65,854, Aug. 13, 1979, Pat. No. 4,381,208.
This application Sep. 30, 1982, Ser. No. 428,862

Claims priority, application United Kingdom, Aug. 15, 1978, 33340/78

Int. Cl.³ H01B 13/06

U.S. Cl. 156—353

32 Claims



1. Apparatus for manufacturing multi-core cable of the kind in which a plurality of conductive cores are held in parallel and side-by-side relation by surrounding insulation formed from thermoplastic material, the apparatus including drive means for continuously driving through the apparatus a plurality of substantially continuous conductive cores in side-by-side, substantially parallel and spaced relationship, simultaneously with surrounding insulation formed from thermoplastic material, a bonding station including hot air blower means for blowing hot air on the insulation of the cable as the cable passes through the bonding station to heat the insulation and cause fusion of the insulation throughout major portions of the length of the cable, and interruptor means for interrupting the heating of the

insulation at predetermined regions along the length of the cable which are short compared to said major portions, so that in the resultant cable the cores are insulated and held in position relative to one another throughout their length by the surrounding insulation except at said regions wherein the cores are separate from one another.

4,430,140

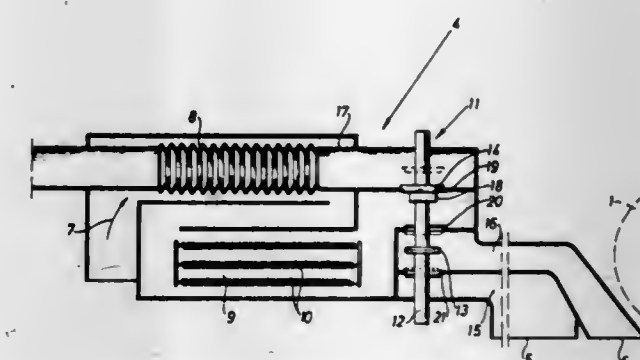
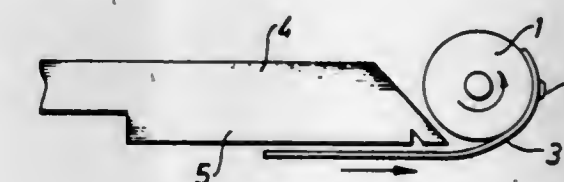
METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF CASINGS

Herwig Pupp; Otto B. Andersson, both of Lund, and Jan-Erik Nilsson, Staffanstorp, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Division of Ser. No. 972,802, Dec. 26, 1978, Pat. No. 4,284,448.
This application Mar. 18, 1981, Ser. No. 245,017

Claims priority, application Sweden, Dec. 23, 1977, 7714734
Int. Cl.³ B32B 31/00; G05G 15/00; H05B 3/02; B39C 27/00
U.S. Cl. 156—356

6 Claims



1. An arrangement for the manufacture of casings of thermoplastic, heat-shrinkable material comprising forming tool means for the winding of a material sheet to casing-shape and means for joining together ends of the material sheet in casing-shape, heating set means arranged along a feed track for the material sheet, said heating set means having a preheating unit for the heating of the main length of the material sheet, and an intensive heating unit for the heating of a front end of the sheet facing towards the forming tool means, the heating set means being a hot air type and comprising a valve which selectively conducts a hot air stream to the preheating unit and/or to the intensive heating unit.

4,430,141

MACHINE FOR LABELING OBJECTS, ESPECIALLY BOTTLES

Rudolf Zadow, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany
Continuation of Ser. No. 276,407, Jun. 22, 1981, abandoned.

This application Jun. 1, 1983, Ser. No. 499,414

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024164

Int. Cl.³ B32B 31/00; G05G 15/00; B29C 17/00

U.S. Cl. 156—360

10 Claims

1. In a labeling machine for objects such as bottles, comprising a bottle carrier having turntables for the bottles, a support, a label gripper cylinder with transfer members, drive means coupling the support and the gripper cylinder so as to drive pickup elements successively past a glue roller, label stack and the gripper cylinder and means for rotating each turntable comprising a fixed cam groove cam and cam follower so that

during transfer of a label from the gripper cylinder to a bottle there is substantially synchronism between the transfer members of the gripper cylinder and the bottle areas to which the labels are to be applied, the improvement comprising means for readily adjusting the movement of the pickup elements and turntables to handle bottles of different radius and/or labels of different size wherein the fixed cam groove cam in the area of the gripper cylinder includes a cam groove section normally traversed by the cam follower and which is movable with respect to the remainder of the fixed cam groove cam to effect replacement with another cam groove section which is thereafter traversed by the cam follower during use of the machine instead of the first mentioned cam groove section.

4,430,142

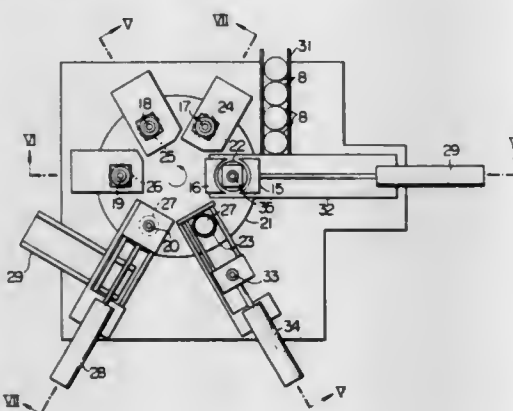
**APPARATUS FOR ATTACHING A BOTTOM PLATE
MADE OF A PLASTIC MATERIAL TO ONE END OF AN
OPEN ENDED, HOLLOW CYLINDER MADE OF A
PLASTIC MATERIAL**

Takashi Ochi, Wako, and Fumihiko Kaneko, Ibaraki, both of Japan, assignors to Sumitomo Bakelite Company, Japan
Filed Dec. 9, 1980, Ser. No. 214,817

Claims priority, application Japan, Mar. 6, 1980, 55-27365
Int. Cl.³ B32B 31/20

U.S. Cl. 156—379.9

6 Claims



1. An apparatus for securing a bottom plate made of a plastic material to one end of an open-ended, hollow cylinder comprising:

- a rotatable table;
- a plurality of bottom plate support posts each for supporting a bottom plate made of a plastic material to be welded to one end of an open-ended, hollow cylinder for producing a plastic container, said bottom plate support posts being at least six in number and arranged equidistantly from one another in an outer marginal portion of said rotatable table; and having an outer diameter slightly smaller than the inner diameter of the open-ended, hollow cylinder to be formed into a plastic container;
- means located in a first working station for placing one bottom plate made of a plastic material on each bottom plate support post;
- means located in a second working station for positioning one open-ended, hollow cylinder made of a plastic material in enclosing relation to each bottom plate support post and moving the open-ended, hollow cylinder downwardly until a portion alone of the open-ended, hollow cylinder to be welded is disposed above the bottom plate support post;
- means located in a third working station for heating and bending radially inwardly the portion to be welded, comprising a metallic die recessed in substantially the same shape as the bottom portion of the open-ended, hollow cylinder, a heater mounted in an outer marginal position of said metallic die, and a cylinder-piston arrangement for vertically moving said metallic die, said recessed portion of said metallic die being rounded in a portion thereof which is brought into contact with the portion of be welded of each open-ended, hollow cylinder not bent yet, whereby the portion to be welded is bent inwardly by

contact with said rounded portion of said recessed portion of said metallic die;

means located in a fourth working station for welding together the radially inwardly bent portion of the open-ended, hollow cylinder and the bottom plate both made of a plastic material to produce a bottomed, hollow cylinder, comprising a metallic die serving concurrently as a high frequency anode terminal cooperating with each bottom plate support post serving concurrently as a high frequency cathode terminal, a cylinder-piston arrangement for vertically moving said metallic die for applying pressure to the portion to be welded of each open-ended, hollow cylinder and each bottom plate held between said high frequency anode terminal and said high frequency cathode terminal, and a high frequency device for passing high frequency current between said anode terminal and said cathode terminal;

means located in a fifth working station for cooling the welded portion of the bottomed, hollow cylinder; and
means located in a sixth working station for removing the bottomed, hollow cylinder from the rotatable table as a cylindrical plastic container produced by the apparatus.

4,430,143

TIRE BUILDING MACHINE

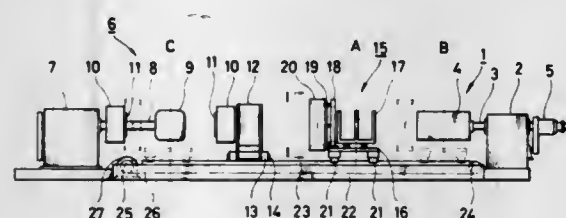
Tohru Aihara, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1982, Ser. No. 393,769

Claims priority, application Japan, Jul. 3, 1981, 56-104247
Int. Cl.³ B29H 17/22

U.S. Cl. 156—403

5 Claims



1. A tire building machine comprising:
- a band building device for building bands,
 - a tire building device provided at a position spaced from said band building device, said tire building device including a green tire building drum positioned in the center and bead setters on the both sides, that is, on the head stock side and the tail stock side, and
 - a band transfer device movably provided between said band building device and tire building device to transfer said band built by said band building device to the building drum of said tire building device,
 - said band transfer device having a bead supply means on the side facing said tire building device, said bead supply means comprising a bead retaining part having a plurality of divided segments arranged in a ring and movable in the radial direction of the ring, said ring being expansible, and a bead kicking means for kicking a bead retained on said bead retaining part out onto the bead ring of said tire building device while said band transfer device surrounds said building device, said bead supply means being adapted to supply beads on the bead retaining part to said bead setter on the head stock side.

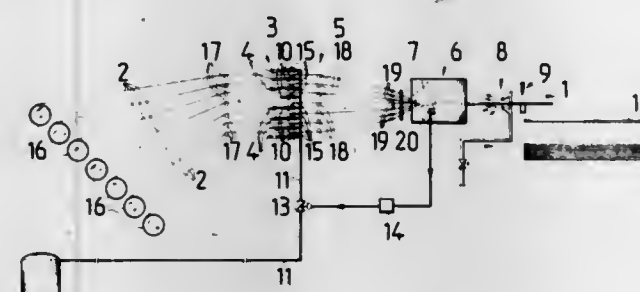
4,430,144

**MEANS FOR MANUFACTURING SECTION MULTI-PLY
CARDBOARD**

Nils P. E. Österman, Köpbacka, 07900 Loviisa, Finland
Continuation-in-part of Ser. No. 61,236, Jul. 26, 1979,
abandoned. This application Sep. 12, 1980, Ser. No. 186,755
Claims priority, application Finland, Dec. 9, 1978, 782788
Int. Cl.³ B32B 35/00

U.S. Cl. 156—497

3 Claims



1. In an apparatus for manufacturing multi-ply material including means for heating webs of thermoplastic coated material having a direction of movement and means for bonding the heated webs with pressure rollers to create a multi-ply material, the improvement comprising the means for heating the webs of thermoplastic material being flames, said flames being directed substantially opposite the direction of movement of the webs of thermoplastic coated material substantially parallel to such webs in close proximity thereto to directly heat the webs, the means for bonding the heated webs with pressure rollers also creating longitudinal channels in the bonded multi-ply material and the addition of a cooling means, said cooling means including means to introduce a liquid into the longitudinal channels in the bonded multi-ply material, means to remove such liquid from the longitudinal channels and forced air means to remove the residue of such liquid from the longitudinal channels.

4,430,145

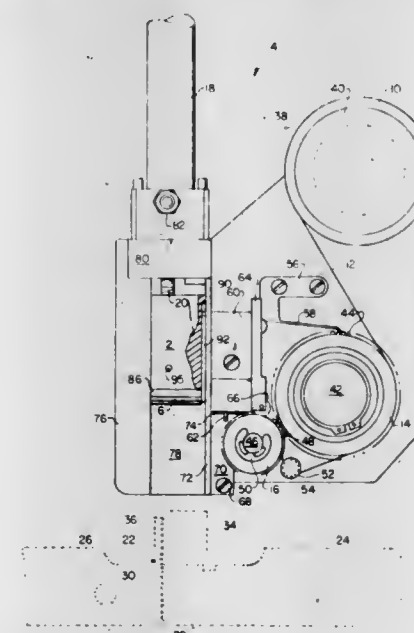
SPLICER PRESSER PAD

Richard G. Berube, Marlborough, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Jan. 26, 1983, Ser. No. 461,261

Int. Cl.³ B31F 5/06; B65C 9/36
U.S. Cl. 156—497

5 Claims



2. In combination with a machine for loading a selected supply tape into a cassette which includes a tape leader, said machine having a splicing block assembly for supporting the leading end of the supply tape and the leader of the cassette to be loaded, and improved splicing means for splicing a section

of said leader and said supply tape together, said improved splicing means comprising in combination:

- means for feeding an elongate splicing tape;
- tape feed operating means for operating said tape feed means so that a predetermined amount of tape is advanced by said tape feeding means;
- guide means for positioning the leading end of said tape as it is advanced by said tape feeding means;
- cutting means for severing a length of said tape including the leading end thereof at a selected point relative to said guide means;
- a plunger guide channel;
- means for dispensing said severed length of tape comprising a plunger disposed within said guide channel;
- means for releasably holding said severed length of tape against the bottom surface of said plunger; and
- a pressure member attached to said plunger bottom surface for forcing said severed length of tape onto materials to be spliced, said pressure member comprising a resilient pad having a bottom surface characterized by criss-crossed slots penetrating perpendicular to said surface, said pad having one or more apertures through its thickness to provide vacuum communication between said slots and one or more corresponding vacuum passageways within said plunger.

4,430,146

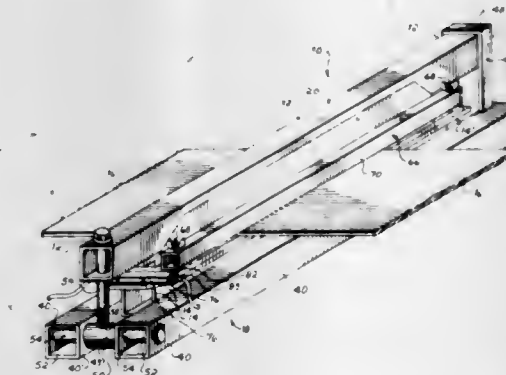
**BELT SPLICING APPARATUS AND METHOD AND
SPlice FORMED THEREBY**

Eric R. Johnson, Charlotte, N.C., assignor to Scandura, Inc., Charlotte, N.C.

Filed Feb. 22, 1982, Ser. No. 351,237

Int. Cl.³ B30B 15/34
U.S. Cl. 156—502

9 Claims



1. Apparatus for splicing two belt ends or the like having outer surfaces of thermoplastic material comprising a pair of electrically conductive longitudinal bar means adapted for opposed facing disposition for engaging therebetween said two belt ends in juxtaposed relation for splicing thereof and electrically conductive clamping means for selectively engagingly drawing said pair of bar means together to grippingly retain said belt ends therebetween and to electrically connect said pair of bar means for flow of electrical current therebetween, said pair of bar means including on their respective facing sides respective longitudinal platen means forming respective belt engaging surfaces for substantially continuous surface contact along said belt ends on opposite sides thereof, each said platen means including longitudinal electrical heating means for heating its respective engaging surface, each said heating means being electrically connected at one end thereof to its respective bar means and being electrically insulated from its respective bar means along its entire remaining length with the opposite end of each said heating means being electrically connected to one of two opposed terminals of an electrical source, thereby providing upon clamped assembly of said pair of bar means and said clamping means a complete electrical circuit between said terminals through each said heating means and respectively

therefrom through and between said pair of bar means and said clamping means for generating heat in each said heating means upon energization of said electrical source to splice said belt ends by fusion of the thermoplastic material thereof.

4,430,147

HOT MELT ADHESIVE APPLICATORS

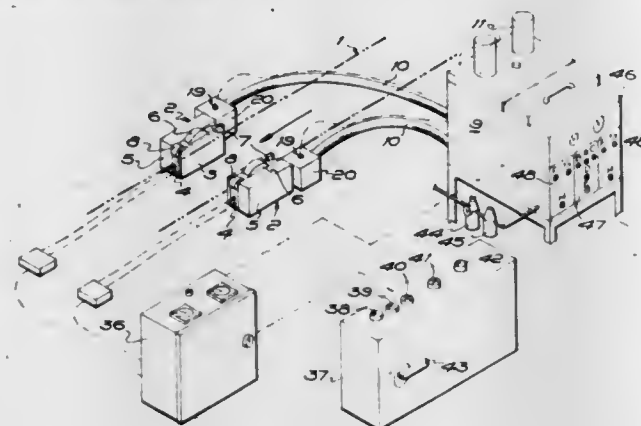
John C. Harston, and William E. Hampton, both of Clevedon, England, assignors to Kliklok Corporation, Greenwich, Conn.
Filed Aug. 27, 1982, Ser. No. 411,999

Claims priority, application United Kingdom, Sep. 3, 1981, 8126723

Int. Cl.³ B32B 31/00

U.S. Cl. 156—578

8 Claims



1. A hot melt adhesive applicator comprising an enclosed wheel glue pot the sides of which fit closely to the sides of the applicator wheel, a doctor blade preceding the applicator wheel, an anti-stringout wheel following the applicator wheel, a remote tank forming a reservoir for adhesive, a flexible hose from the tank to the glue pot, a pump for feeding adhesive from the tank through the hose, heating means for the tank and hose and glue pot, passages in one side of the glue pot for feeding adhesive from the hose to a pool between the underside of the doctor blade and the periphery of the applicator wheel, and switch means for actuating the pump, there also being provided a chamber between the hose and the passages in the glue pot, with an inlet from the hose and an outlet to the passages in the glue pot, and adhesive level sensing means in the chamber adapted to operate the switch means when the adhesive level in the chamber falls below a predetermined level.

4,430,148

ULTRASONIC BONDING APPARATUS

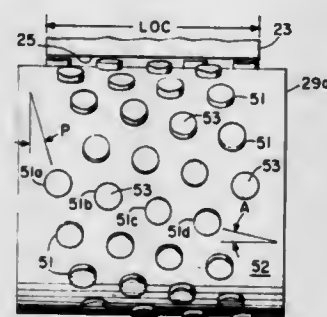
Jean E. Schaefer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 27, 1982, Ser. No. 372,404

Int. Cl.³ B29C 27/08

U.S. Cl. 156—580.2

7 Claims



1. In an apparatus for effecting discontinuous patterned ultrasonic bonding of laminae which apparatus includes an anvil having a discontinuous pattern surface corporately defined by outwardly facing areas of a multiplicity of discrete pattern protuberances and which areas have a common elevation, an ultrasonic bonding transducer having a tip which is

configured and disposed to contact said pattern surface along a predetermined line-of-contact, means for biasing said transducer tip towards the pattern surface, means for moving the pattern surface of the anvil relative to said transducer tip to so define a machine direction that said line-of-contact extends transverse the machine direction and so that pattern bonding of the laminae is effected as the laminae are forwarded in the machine direction while fixedly associated with the discontinuous pattern surface, the improvement wherein said discrete pattern protuberances are so configured and disposed in said machine direction that cobblestoning of said transducer tip relative to the pattern surface is obviated and so that every imaginary line which extends transverse said anvil at the common elevation of said outwardly facing areas touches some portion of said discontinuous pattern surface.

4,430,149

CHEMICAL VAPOR DEPOSITION OF EPITAXIAL SILICON

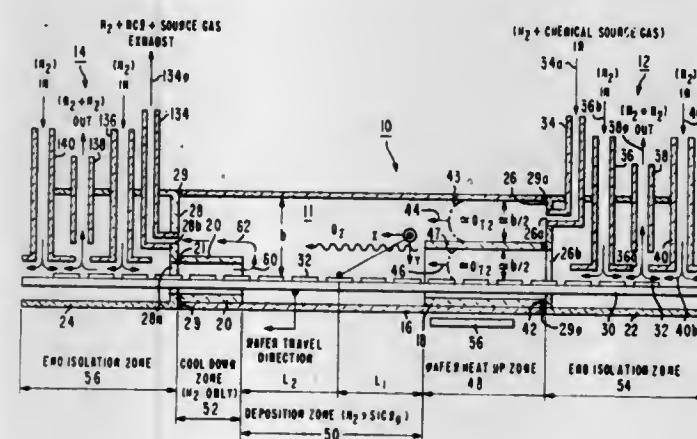
Samuel Berkman, Florham Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,683

Int. Cl.³ H01L 21/205

U.S. Cl. 156—613

5 Claims



1. A method for silicon epitaxial growth by continuous chemical vapor deposition of silicon material deposited continuously epitaxially on a flat substrate surface of crystalline material in a reactor tube defined by an elongated open chamber having a longitudinal axis and having respective ends connected to a gas input section and a gas output section, comprising the steps of:

providing at said input section a longitudinal substantially laminar flow of a first stream of a chemical source gas containing said material and a carrier gas through a first longitudinal passageway having a predetermined distance in a first zone of said chamber;

providing at said input section a longitudinal substantially laminar flow of a second gas stream through said chamber along a path in a second longitudinal passageway having the same said predetermined distance and isolated from but substantially parallel to said first passageway carrying said first gas stream through said first longitudinal zone of said chamber;

moving substrates at a rate of about 0.5 feet/minute serially and longitudinally through said chamber adjacent only to said second gas stream in said isolated passageway and in a path substantially parallel to said first and second passageways;

diffusing in a second longitudinal zone of said chamber said first gas stream into said second stream at the end of said first zone to effect epitaxial deposition of the silicon material from said first stream on the surface of said substrates such that the epitaxial deposition rate resulting from said diffusion at the entrance and exit portions of said second zone is less than the epitaxial deposition rate in the intermediate portion of the second zone;

heating to a predetermined temperature said substrates before passing into said second zone;
balancing the forward momentums of the first and second gas streams to be substantially equal and to thereby reduce turbulent flow of the gas streams towards a minimum as they diffuse together subsequent to passing through their said respective passageways for said predetermined distance; and

passing said substrates through a third passageway in a third longitudinal zone while passing a stream of purging gas through said third passageway, said second gas stream and said purging gas stream serving to provide a viscous seal at the input section and output section of said chamber; the first, second and third longitudinal zones extending along chamber axis whereby the substrates and gases are moved longitudinally substantially linearly along said longitudinal axis through said chamber;

whereby a significantly large throughput of substrates deposited with said material to a substantially uniform thickness can be achieved at a high rate as the turbulence of said respective gas streams is reduced to a minimum.

4,430,150

PRODUCTION OF SINGLE CRYSTAL SEMICONDUCTORS

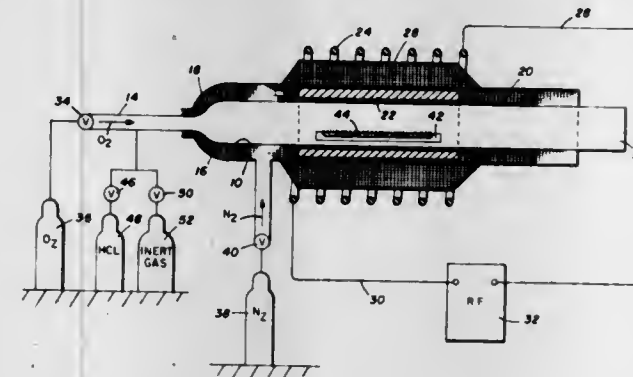
Jules D. Levine, Dallas; William R. McKee, Plano, and Kent R. Carson, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 7, 1981, Ser. No. 290,917

Int. Cl.³ C30B 29/60

U.S. Cl. 156—616 A

17 Claims



1. The method comprising:

(a) treating a polycrystalline semiconductor material in a reactive gaseous environment to form a skin thereon of a thermally stable compound;

(b) thereafter melting the material within said skin while in said gaseous environment with the molten material retained within said skin; and

(c) cooling the material to form a solid single crystal body within said skin.

4,430,151

METHOD OF MONITORING STATUS OF A SILICON LAYER BY DETECTING EMISSION SPECTRA VARIABLE DURING ETCHING

Tsutomu Tsukada, Tokyo, Japan, assignor to Anelva Corporation, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,461

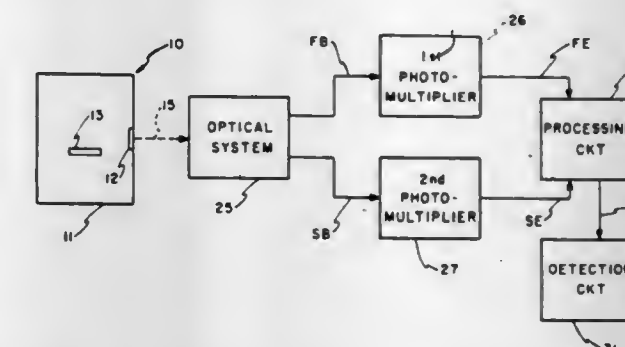
Claims priority, application Japan, Jun. 11, 1982, 57-100415
Int. Cl.³ H01L 21/306; C03C 15/00, 25/06; B44C 1/22

U.S. Cl. 156—626

13 Claims

1. A method for use in etching a layer of silicon by plasma in a chlorine including gas filled in a hollow space, to distinguish between a first and a second duration which said layer is being etched and not, respectively, said plasma producing CCl₃ and OH-radicals which result from said chlorine including gas and

from water remaining as a remnant in said hollow space, respectively, said method comprising the steps of:
selecting emission spectra which result from a preselected one of said CCl₃ and said OH-radicals and which are variable in



intensity at a transition time instant between said first and said second durations; and
monitoring said intensity of said emission spectra to detect said transition time instant and to, thereby, distinguish between said first and said second durations.

4,430,152

PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE

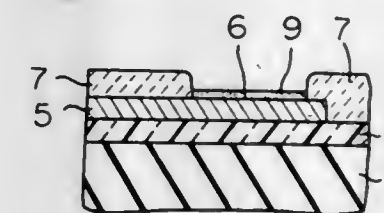
Takashi Okano, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 21, 1982, Ser. No. 435,746

Claims priority, application Japan, Oct. 23, 1981, 56-169766
Int. Cl.³ B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—643

8 Claims



1. A process for fabricating a semiconductor device having a semiconductor substrate, comprising the steps of:

- forming a metal layer on the semiconductor substrate;
- forming a phosphosilicate glass layer on the metal layer;
- dry etching a part of the phosphosilicate glass layer to expose a portion of the metal layer; and
- treating the exposed portion of the metal layer with an alkaline solution.

4,430,153

METHOD OF FORMING AN RIE ETCH BARRIER BY IN SITU CONVERSION OF A SILICON CONTAINING ALKYL POLYAMIDE/POLYIMIDE

Robert T. Gleason, Burlington, and Harold G. Linde, Richmond, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,516

Int. Cl.³ H01L 21/306; C23F 1/02; B44C 1/22; C03C 15/00
U.S. Cl. 156—643

1 Claim

1. A method of forming an etch barrier in the reactive ion etching of an aromatic polyamic acid/imide which comprises: coating a surface with a layer of an aromatic polyamic acid; at least partially curing the layer of aromatic polyamic acid to the corresponding aromatic polyimide; in situ converting the surface layer of the aromatic polyimide to a silicon containing alkyl polyamide/imide; applying, exposing, and developing a layer of photoresist over the silicon containing alkyl polyamide/imide to

selectively expose a portion of the silicon containing alkyl polyamide/imide surface layer;
 reactive ion etching the exposed portion of the surface layer of the silicon containing alkyl polyamide/imide with carbon tetrafluoride to remove the exposed portion of the silicon containing alkyl polyamide/imide surface layer;
 reactive ion etching the resultant structure with an oxygen agent to etch an interconnect in the aromatic polyimide while removing the photoresist down to the silicon containing alkyl polyamide/imide surface layer; and
 reacting the silicon containing alkyl polyamide/imide surface layer exposed upon removal of the photoresist by the oxygen reactive ion etching to thereby convert the same to a silicon dioxide etch barrier.

4,430,154

METHOD OF PRODUCING PRINTED CIRCUIT BOARDS

Fritz Stahl, Tönisvorst, and Horst Steffen, Geldern-Pont, both of Fed. Rep. of Germany, assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Mar. 15, 1982, Ser. No. 358,226

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110415

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06; B29C 17/08

U.S. Cl. 156—651

11 Claims

1. In a method for making printed circuit boards by the full- or semi-additive process on an adhesive coated surface of a base material in which the conductors are made first on the adhesive coated surface in the manner known, the improvement comprising the step of removing the adhesive coating on the base material between the conductors without substantially attacking the base material and the conductors thereon by treating said printed circuit board with said adhesive coated surface and said conductors thereon with a solution selected from the group consisting of an alkaline permanganate and a chromic acid and thereafter washing said treated board.

4,430,155

PRODUCTION OF MACROSPHERICAL PARTICLES

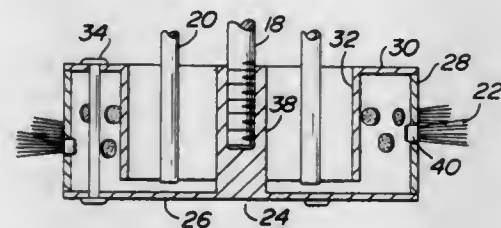
James F. Kozischek, Belyidere, and M. Donner Martin, Jr., Denville, both of N.J., assignors to Armour Pharmaceutical Company, Berkeley Heights, N.J.

Continuation of Ser. No. 226,311, Jan. 21, 1981, abandoned. This application Jun. 15, 1982, Ser. No. 388,576

Int. Cl.³ B01D 1/18, 1/20; B05B 1/34, 3/10

U.S. Cl. 159—4 S

8 Claims



1. A process for producing dry, thick-walled macrospherical particles of controlled particle size distribution comprising providing a solution from a generally centrally located source, said solution containing material from which said particles are made, dispersing said solution outwardly along a plurality of radially disposed bristles by centrifugal force to form discrete liquid droplets and drying said droplets in a stream of heated gas to form said particles after said droplets leave the free ends of said bristles.

PROCESS FOR DRYING PUMPABLE SUSPENSIONS

Clemens Casper, Krefeld; Dieter Grenner, Dormagen; Gerd-Rüdiger Klette, Krefeld, and Edzard Tholema, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

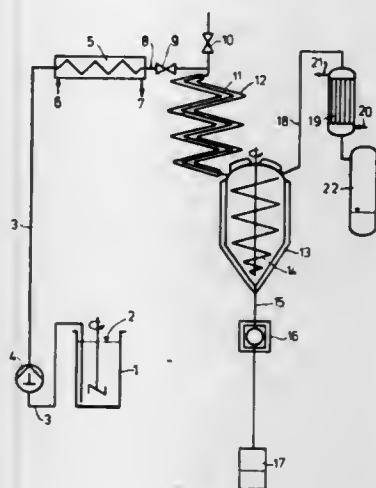
Filed Aug. 6, 1981, Ser. No. 290,444

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030662

Int. Cl.³ B01D 1/02

U.S. Cl. 159—47.1

5 Claims



1. A process for drying pumpable suspensions or crystal solutions in which the liquid having a solids content of up to 50% by weight is evaporated during transport by the indirect application of heat accompanied by the release of pressure, characterized in that, in a multiphase flow tube, in which the ratio of circumference to cross-sectional area is from 0.05 to 1.5 [mm⁻¹], and with a throughput of from 2 to 50 kg/h per square centimeter of cross-sectional area, any plug-like deposits in the tacky paste-to-solid transitional zone subjected to intense heating are sheared off from the wall of the flow tube by brief increases in pressure of from 0.5 to 10 bars beyond the system pressure of 5 to 20 bars, and in that the moisture still present in the solid particles is then removed by evaporation in the flow tube to a residue of 0.1% by weight.

4,430,157

CALCINED SERPENTINE AS INORGANIC CHARGE IN SHEET MATERIALS

Jean M. Lalancette, 470 Duvernay St., Sherbrooke, Quebec, Canada

Continuation-in-part of Ser. No. 251,913, Apr. 7, 1981, abandoned. This application Mar. 11, 1983, Ser. No. 474,455

Int. Cl.³ D21H 5/18

U.S. Cl. 162—145

8 Claims

1. An improved non-woven fibrous base felt which comprises a solid homogeneous sheet of a mixture of from about 2% to about 40% by weight of fibrous material, from about 10% to about 80% of the partially fibrous agglomerates devoid of asbestos fibers, free of magnesium oxide not bonded to silica and containing crystalline forsterite as the main constituent, the remainder being amorphous silica or a mixture of crystalline enstatite and amorphous silica obtained by calcination of asbestos tailings, at least 85% of which having a granulometry of between -60 to about +400 mesh and from about 2% to about 25% by weight of an organic binder, said felt being characterized by the total absence of asbestos fibers coming from the agglomerate.

4,430,158

METHOD OF IMPROVING THE WET TENSILE STRENGTH OF GLASS FIBER MATS

Philip A. Jackey, Manville, and V. Robert Canfield, Martinsville, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,663

Int. Cl.³ D21H 5/18

U.S. Cl. 162—156

10 Claims

1. A method of making a glass fiber mat having improved wet tensile strength properties comprising:
 (a) forming a plurality of enmeshed sized glass fibers in a wet-laid process;
 (b) adding a binder composition consisting essentially of urea-formaldehyde and a surfactant for said thus-formed mat, said surfactant being highly water soluble and capable of wetting the surfaces of the sized glass fibers and being selected from the group consisting of anionic surfactants, said anionic surfactants having hydrophobic segments containing from 8 to 30 carbon atoms and anionic segments selected from among carboxy, sulfate ester, phosphate ester, sulfonic acid and phosphonic acid groups; and
 (c) drying the glass mat having the binder thereon.

6. Glass fiber mat made according to the method of claim 1.

4,430,159

TWIN-WIRE PAPERMAKING MACHINE

Alfred Bubik, Ravensburg, and Siegfried Reutter, Gerbertshaus, both of Fed. Rep. of Germany, assignors to Escher Wyss Limited, Ravensburg, Fed. Rep. of Germany

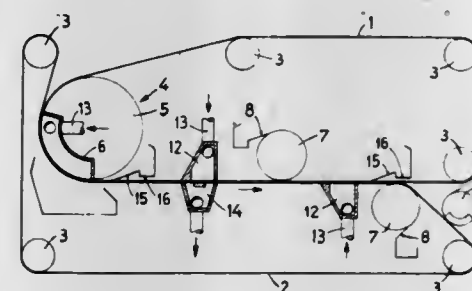
Filed Apr. 9, 1982, Ser. No. 367,076

Claims priority, application Switzerland, Apr. 27, 1981, 2727/81

Int. Cl.³ D21F 1/00

U.S. Cl. 162—292

11 Claims



1. A twin-wire papermaking machine comprising:
 two wires extending essentially parallel to one another and moving essentially at the same speed;
 at least one stock infeed means for the pressurized infeed of a fiber stock suspension at above atmospheric pressure between both of the wires through one of said wires in order to form a paper ply between the two wires from the infeed fiber stock suspension;
 means for guiding said wires so as to be in mutual contact with one another at least at the region of the stock infeed means;
 said stock infeed means possessing the form of a box member having an open side along which move both of the wires; and
 said stock infeed means has a guide surface at the open side thereof which is in guiding contact with one of the two wires located adjacent thereto in order to press said one wire against the other wire.

4,430,160

PROCESS FOR ENHANCING THE THERMAL DECOMPOSITION OF SOLID MATTER

Joel DuBow, 195 Berkeley Pl., Brooklyn, N.Y. 11217

Filed Jan. 25, 1982, Ser. No. 342,568

Int. Cl.³ C01G 49/02; C07C 4/04; C10B 57/00; C10J 3/18
U.S. Cl. 201—19

7 Claims

1. A process for thermally decomposing non-living solid matter comprising:
 applying a direct current electrical field of about 1000 volts/centimeter or greater and of an amperage of about 0.001 amp/square centimeter or less across said solid matter;
 simultaneously heating said solid matter using heating means other than said electrical field until said solid matter at least partially thermally decomposes, whereby amount of thermal energy required to carry out said at least partial decomposition is reduced by the application of said electrical field and
 separating off one or more components of said at least partially decomposed matter.

4,430,161

CASCADED COAL DRIER FOR A COKING PLANT

Vladan Petrovic, Karl Schmid, Friedrich Jokisch, and Heinz Rotthaus, all of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

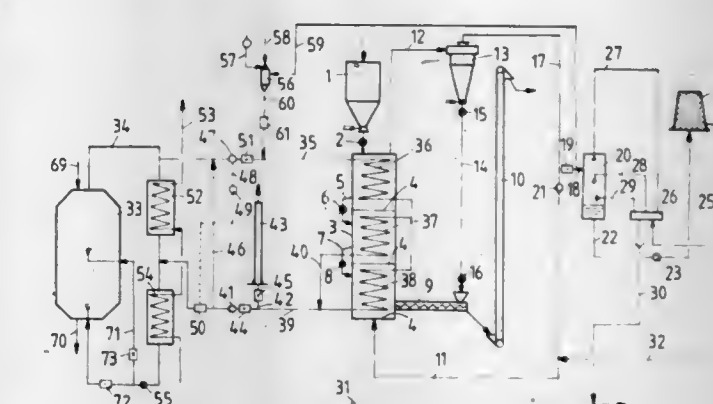
Filed May 10, 1982, Ser. No. 376,843

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118931

Int. Cl.³ C10B 39/02, 57/10

U.S. Cl. 202—228

4 Claims



1. In combination, a coking plant including means for preheating and drying coal to be charged into at least one coking oven, and means for dry cooling by a gaseous cooling medium hot coke after its discharge from the coking oven, whereby heat exchange between the hot coke and the coal to be preheated is effected by recirculating gas and steam generated during the cooling process between said preheating means and said dry cooling means, and multi-stage cascaded drier arranged in said preheating and drying means for receiving in its uppermost cascade coal to be preheated and for discharging the coal at its lowermost cascade, said cascaded drier including in each cascade a gas distributing box and an opposite gas collecting box, an array of parallel-connected and substantially horizontally oriented heating pipes interconnecting said boxes, and said heating pipes in the uppermost cascade having larger diameters than the pipes in the underlying cascades.

4,430,162

PROCESS FOR PURIFICATION OF CRUDE ACETONITRILE

Terumasa Higuchi, Yokohama, and Hiroshi Susumago, Chigasaki, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 131,611, Mar. 19, 1980, Pat. No. 4,308,108.

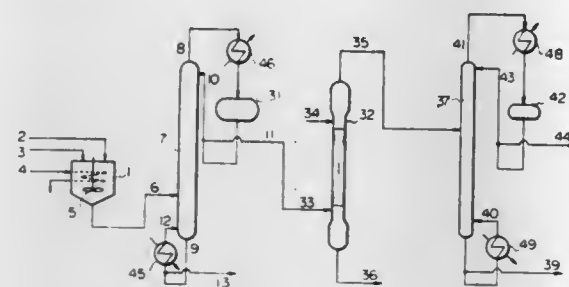
This application Aug. 3, 1981, Ser. No. 289,628

Claims priority, application Japan, Mar. 28, 1979, 54-36577; Apr. 26, 1979, 54-51978; Apr. 26, 1979, 54-51979; May 18, 1979, 54-61288

Int. Cl.³ B01D 3/34

U.S. Cl. 203—37

7 Claims



1. A process for purifying crude acetonitrile containing water as a major component, which comprises the steps of: treating the crude acetonitrile with from 10 to 50% of an alkali based on the weight of the water present in the crude acetonitrile, at a predetermined temperature and for a predetermined time such that no substantial hydrolysis of acetonitrile takes place, sufficient to divide the crude acetonitrile into an organic liquid phase, and then removing the aqueous liquid phase.

4,430,163

PROCESS FOR THE CONTINUOUS SEPARATION OF SLIGHTLY VOLATILE COMPONENTS FROM A CRUDE PHTHALIC ACID ANHYDRIDE

Manfred Albers, Dortmund; Gerhard Keunecke, Geyen, and Herbert Krimphove, Pulheim, all of Fed. Rep. of Germany, assignors to Davy McKee Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

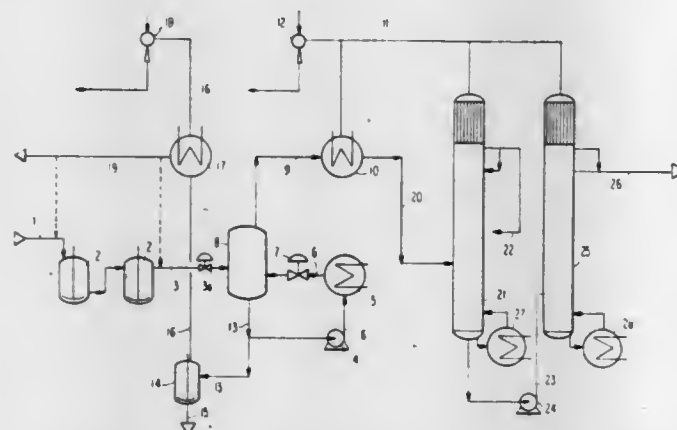
Filed Dec. 16, 1981, Ser. No. 331,234

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047489; Aug. 22, 1981, 3133310

Int. Cl.³ B01D 3/06

U.S. Cl. 203—75

17 Claims



1. In a process for the purification of a crude phthalic acid anhydride that contains slightly volatile impurities and is produced by oxidation of naphthalene, which process includes

- subjecting said crude phthalic acid anhydride to a thermal pretreatment;
- subjecting the thermally-pretreated crude phthalic acid anhydride to a first distillation in a flash evaporator to produce a distillate with elevated content of phthalic

anhydride and a residue which contains slightly volatile impurities;

- subjecting the distillate to rectification to obtain a purified phthalic acid anhydride; the improvements which comprise;
- removing residue from the first distillation and compressing a first portion of the residue to a pressure of from 1 to 5 bar and heating the residue to a temperature below the boiling point under the prevailing pressure;
- recirculating the heated compressed residue to said first distillation in the flash evaporator; and
- subjecting a second portion of the residue to residue distillation in a residue distillation vessel said second portion being of sufficient magnitude to reduce the formation of deposits on evaporator heating surfaces during rectification of the distillate.

4,430,164

FAULT-COMPENSATING ELECTRO-ANALYTICAL MEASURING PROCESS AND EQUIPMENT

Janos Daroczy; Janos Erdelyi; Jeno Havas; Lajos Kecskes, and Henrik Müller, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Műszergyártó Szövetkezet, Budapest, Hungary

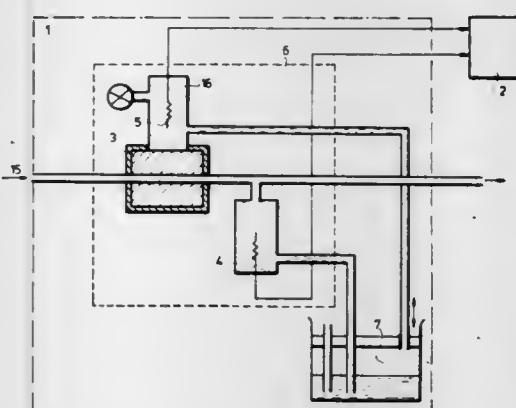
Filed Mar. 1, 1982, Ser. No. 353,290

Claims priority, application Hungary, Mar. 26, 1981, 758

Int. Cl.³ G01N 27/30

U.S. Cl. 204—1 T

5 Claims



1. In an electro-analytical measuring process wherein a measuring chain comprising at least one sensing element and reference electrodes is provided, the improvement comprising the steps of periodically galvanically short-circuiting at least one part of the measuring chain by a fluid clutch with an electrically conductive electrolyte and fault compensating the measuring signals obtained from the measuring chain when not short-circuiting with the measuring signals obtained during the short-circuiting thereof.

2. An electro-analytical measuring apparatus for the selective, rapid and high-precision determination of concentration, ion-activity of stationary or flowing solutions or of partial pressure of gases, comprising: a measuring cell and an electronic signal processor connected to the measuring cell, wherein the measuring cell comprises a measuring chain having at least one sensing element and reference electrodes and at least one means for galvanically short-circuiting at least one part of the measuring chain, the means comprising a fluid clutch having an electrically conductive electrolyte.

4,430,165

LASER-ACTIVATED ELECTRODEPOSITING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

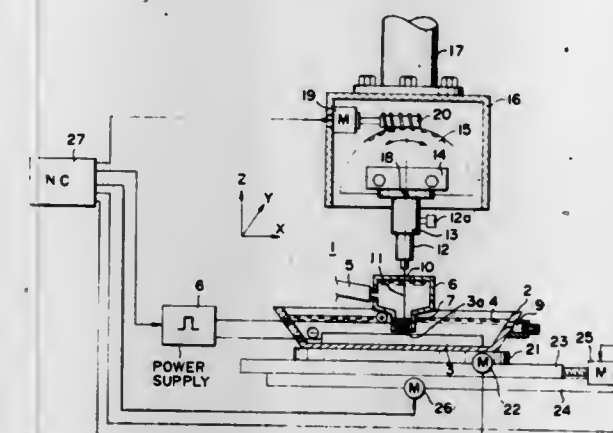
Filed Jul. 23, 1982, Ser. No. 401,247

Claims priority, application Japan, Jul. 24, 1981, 56-115369; Aug. 17, 1981, 56-127742; Apr. 7, 1982, 57-56494

Int. Cl.³ C25O 5/02, 17/00

U.S. Cl. 204—15

27 Claims



1. A method of electrodepositing a metal in a continuous layer of a uniform thickness onto a workpiece of an intricate surface contour, comprising the steps of:

- passing an electric current between an electrode and the workpiece in the presence of a metal electrodeposition solution flowing therebetween;
- directing a narrow thermal energy beam towards the surface of the workpiece to cause the beam to be incident upon a localized area thereon, thereby activating an interface between said area and said flowing solution to allow said metal to be electrodeposited therefrom selectively onto said area;
- relatively displacing said incident beam and said workpiece generally translationally in a scanning manner such as to shift said localized beam incidence continuously over a desired surface region on the workpiece surface whereby said metal is progressively electrodeposited in the continuous layer on said surface region; and
- increasing the uniformity of the thickness of said layer of electrodeposition by controlling at least one of the parameters: the rate of said displacement between the incident beam and the workpiece, the diameter and energy of the incident beam, the electrical parameters of said electric current and the rate of flow of said solution flowing between the electrode and the workpiece, as a function of the instantaneous position of the workpiece displaced relative to said incident beam in step (c).

4,430,166

METHOD AND APPARATUS FOR ELECTRO-TREATING A METAL STRIP

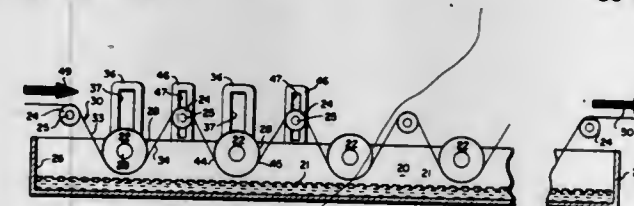
William A. Carter, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 424,858

Int. Cl.³ C25D 5/02, 17/00, 17/10

U.S. Cl. 204—15

83 Claims



1. An apparatus for electro-treating a continuous metal strip advancing in a downstream direction, said strip having a pair

of side edges and a pair of opposed flat surfaces, said apparatus comprising the following structure:

- a cylindrical roll having an outer surface composed of electrically conductive material;
- a layer of mesh on said outer surface of the roll;
- said mesh being composed of electrically insulating material;
- said roll outer surface and said mesh defining a multiplicity of non-communicating open-end sites each having an inner base defined by a part of said roll outer surface, site-enclosing side walls defined by a part of said mesh and an open outer end opposite said base;
- means for wrapping a portion of a continuous metal strip around a substantial portion of said roll to close the sites on that portion of the roll and to provide a pair of spaced-apart nips between said strip and said roll at the locations of initial upstream and final downstream contact between the strip and the roll;
- said mesh layer comprising means for preventing direct electrical contact between said strip and said outer roll surface;
- means for advancing said metal strip in a downstream direction and for simultaneously rotating said roll while maintaining the wrapped-around relationship between the strip and the roll and avoiding relative movement between (a) said strip and (b) said roll outer surface and mesh layer thereon, during said wrapped-around relationship;
- means for introducing an electrolytic liquid onto the outer surface of the roll to flood the sites closed by said strip as the strip advances and the roll rotates;
- means for charging said outer surface of the roll with a charge having a first polarity;
- and means for charging said strip with a charge having a second polarity opposite said first polarity.

4,430,167

METHOD OF AND APPARATUS FOR ELECTRODEPOSITING A METAL ON A SUBSTRATE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

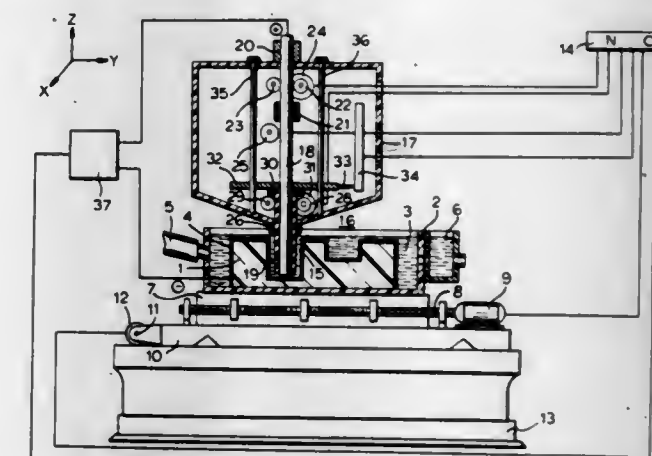
Filed Aug. 5, 1982, Ser. No. 405,604

Claims priority, application Japan, Aug. 7, 1981, 56-122939; Sep. 10, 1981, 56-141661; Sep. 11, 1981, 56-142402

Int. Cl.³ C25D 5/04, 7/04, 17/00

U.S. Cl. 204—25

22 Claims



1. A method of electrodepositing a metal on an uneven substrate having at least one recess of substantial depth to form a metal deposit throughout surfaces within the recess the method comprising the steps of:

- passing an elongate anode through a tubular insulator to provide an electrode assembly;
- positioning said electrode assembly relative to said substrate to dispose a forward end portion of said assembly in said recess and positioning said insulator on said elongate anode so as to allow only a forward end face portion of the anode to be substantially exposed from said insulator

- and said face portion to be juxtaposed with a floor portion of the substrate in said recess;
- (c) supplying an electrodeposition solution to said recess and passing an electric current between said anode and said substrate while maintaining the positional relationship achieved in step (b) to permit the metal from the solution to be at least preferentially electrodeposited on said floor portion;
- (d) subsequent to step (c), continuing supply of said solution and passage of said electric current while substantially maintaining the position of said elongate anode established in step (b) and gradually withdrawing said tubular insulator to progressively increase the lateral area of said elongate anode exposed from said insulator, thereby progressively displacing the region of electrodeposition on the wall surface in said recess; and
- (e) subsequent to step (d), withdrawing said elongate anode from said recess.

4,430,168

PROCESS FOR ELECTROLYTICALLY COLORING ALUMINUM AND THE ALLOYS THEREOF

Jose L. Gazapo Santa-Olalla; Juan Gonzalez Feliu, both of Alicante, and Isidoro de Miguel Lopez, Albufereta, all of Spain, assignors to Empresa Nacional del Aluminio, S.A., Madrid, Spain

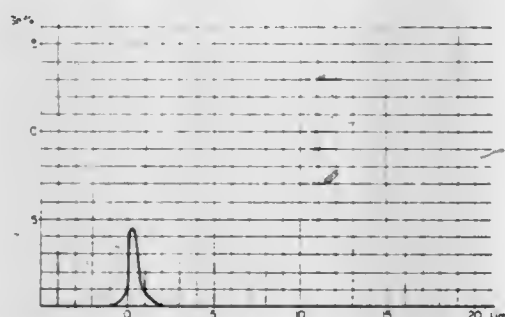
Filed Apr. 20, 1981, Ser. No. 255,665

Claims priority, application Spain, Apr. 22, 1980, 490,784

Int. Cl.³ C25D 11/22

U.S. Cl. 204—35 N

4 Claims



1. In a process for electrolytically colouring aluminum or an alloy thereof, comprising the sequential steps of anodizing, colouring, and fixing, the improvement wherein the colouring step is conducted in an electrolyte comprising sulfuric acid and a color-producing salt or salts under conditions wherein the ratio between the concentration of the sulfuric acid and the concentration of the color-producing salt or salts used is from 70:1 to 15:1, the concentration of the sulphuric acid being above 15 g/l and the salts used being metal sulphates, and wherein the peak voltage applied is from 10 to 45 volts and the temperature is about 25° C., and wherein at the beginning of the colouring step of the process the voltage is increased from 0 up to the peak voltage in a progressive manner.

4,430,169

METHOD OF PRODUCING GREEN COATINGS ON ALUMINUM AND ALUMINUM ALLOYS

Jack L. Woods, 1517 Ninth St., Ogden, Utah 84404

Filed Mar. 4, 1982, Ser. No. 354,528

Int. Cl.³ C25D 11/22

U.S. Cl. 204—35 N

10 Claims

1. A process for producing a green colored coating on aluminum or aluminum alloys comprising the steps of:

anodizing the aluminum or aluminum alloy article to form an anodic coating thereon;

passing an alternating current between an electrode system comprising the previously anodized aluminum or aluminum alloy article and a counter electrode, while said electrode system is immersed in an aqueous, acidic bath comprising from about 0.2 to 0.4 grams per liter of a

soluble silver salt, whereby the anodic coating on said anodized article is colored yellow; and

immersing the yellow colored, anodized article in a dye bath containing a lightfast blue dye, whereby the yellow colored anodic coating on said anodized article is converted to a green color.

4,430,170

ELECTRODEPOSITION OF REFRACTORY METAL CARBIDES

Kurt H. Stern, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 17, 1983, Ser. No. 458,597

Int. Cl.³ C25D 3/66, 9/08, 9/10

U.S. Cl. 204—39

20 Claims

1. A process for the electrodeposition of a refractory metal carbide upon the surface of an object, the steps of which comprise:

- preparing an essentially pure alkali fluoride melt in an inert container;
- adding carbonate ions to said melt in the form of alkali carbonate;
- adding the refractory metal, the carbide of which is desired to be coated upon said object, to said alkali fluoride melt in the form of a soluble, metal-containing compound;
- immersing the elemental form of the refractory metal in said melt as an anode electrode;
- immersing the object desired to be coated into said melt as a cathode electrode;
- applying a voltage across said electrodes until said cathode has the desired thickness of coating of said carbide of said refractory metal upon its surface.

4,430,171

ELECTROPLATING BATHS FOR NICKEL, IRON, COBALT AND ALLOYS THEREOF

Kenneth W. Lemke, Englishtown, and Maynard W. McNeil, Washington, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

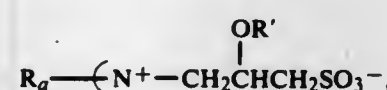
Filed Aug. 24, 1981, Ser. No. 295,349

Int. Cl.³ C25D 3/18, 3/56

U.S. Cl. 204—43 T

7 Claims

1. A plating bath for the electrodeposition of metal comprising an aqueous solution of at least one metal salt selected from salts of nickel, iron and cobalt, characterized by the presence of a brightening agent of the formula



wherein

(N⁺ is a heterocyclic tertiary amine group,
R is a halogen or lower alkyl group,
R' is hydrogen, lower alkyl or a R''C(O)—group,
R'' is a lower alkyl group and a is 0-5.

METHOD OF INCREASING CORROSION RESISTANCE IN GALVANICALLY DEPOSITED PALLADIUM/NICKEL COATINGS

Robert Brugger, Filderstadt, and Klaus Schulze-Berge, Remscheid, both of Fed. Rep. of Germany, assignors to Langbein-Pfahner Werke AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 406,956, Aug. 10, 1982, abandoned. This application Sep. 28, 1982, Ser. No. 426,081

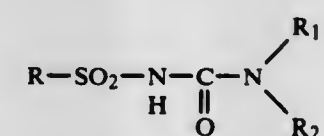
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136003

Int. Cl.³ C25D 3/56

U.S. Cl. 204—43 N

9 Claims

6. In an electroplating bath for the electrodeposition of a palladium/nickel coating which comprises an aqueous solution containing 5 to 30 g/liter each of palladium and nickel in the form of respective amines with the palladium and nickel in a ratio corresponding to the composition of the coating deposited and such that the coating contains 30 to 90% by weight palladium, the improvement which comprises 0.1 to 10 g/liter of a sulfonyl urea in said solution, said sulfonyl urea having the formula



wherein R is phenyl, tolyl, hydroxyphenyl, naphthyl or a nitrogen-containing heterocycle and R₁ and R₂ are the same or different and each is hydrogen or lower alkyl.

4,430,173

ADDITIVE COMPOSITION, BATH AND PROCESS FOR ACID COPPER ELECTROPLATING

Bernard Boudot, Paris; Georges Nury, Frepillon, and Andre Lambert, Louvres, all of France, assignors to Rhone-Poulenc Specialties Chimiques, Courbevoie, France

Filed Jul. 16, 1982, Ser. No. 398,805

Claims priority, application France, Jul. 24, 1981, 81 14394

Int. Cl.³ C25D 3/38

U.S. Cl. 204—52 R

12 Claims

1. An additive composition for an acid copper electroplating bath, comprising (1) the sodium salt of ω-sulfo-n-propyl N,N-diethyldithiocarbamate, (2) polyethylene glycol having an average molecular weight ranging from about 6,000 to 20,000, (3) crystal violet, and (4) sulfuric acid.

6. In an acid copper electroplating bath, the improvement which comprises, as an additive composition therefor, the additive composition as defined by claim 1.

4,430,174

METHOD FOR REFINEMENT OF IMPURE ALUMINUM

Yoshishige Tsumura, 39-7 Minami-Magome 1 chome, Ohta-ku, Tokyo, Japan, assignor to Mitsui Aluminium Co., Ltd. and Yoshishige Tsumura, both of Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,717

Claims priority, application Japan, Dec. 1, 1981, 56-191704

Int. Cl.³ C25C 3/06

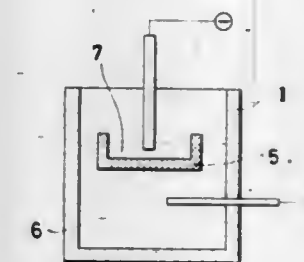
U.S. Cl. 204—67

11 Claims

1. A method for refining impure aluminum, which comprises:

- (a) placing said impure aluminum in a molten form into a container on one side of a porous article impregnated with a fused-salt electrolytic bath containing at least one metal selected from the group consisting of alkali metals and alkaline earth metals with electrical connection being made to said impure molten aluminum so that it serves as an anode;
- (b) disposing a cathode of molten aluminum on the remaining side of said impregnated porous article;
- (c) passing direct current between said cathode and said anode with the result that chlorine gas is generated in said

porous article which reacts with impurities in said molten impure aluminum functioning as an anode, thereby forming chloride salts which migrate across said porous article and accumulate in the molten aluminum cathode; and



- (d) recovering refined aluminum from the container of step (a).

4,430,175

PROCESS FOR THE ELECTROCHEMICAL CONVERSION OF COAL AND USE OF THE REACTION PRODUCTS

Gerhard Kreysa, Wehrheim, and Gerd Collin, Duisburg, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 449,952

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150729

Int. Cl.³ C25B 3/00, 3/02

U.S. Cl. 204—72

10 Claims



1. A process for the electrochemical conversion of coal comprising forming a finely divided coal suspension in a dilute mineral acid solution in an electrolyte cell, alternately subjecting said suspension to anodic and cathodic polarization to thereby obtain a change in the chemical composition of the coal as may be determined by an elemental analysis of the coal before and after electrolysis.

4,430,176

ELECTROLYTIC PROCESS FOR PRODUCING HYDROGEN PEROXIDE

John B. Davison, Mission Viejo, Calif., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,286

Int. Cl.³ C25B 1/30

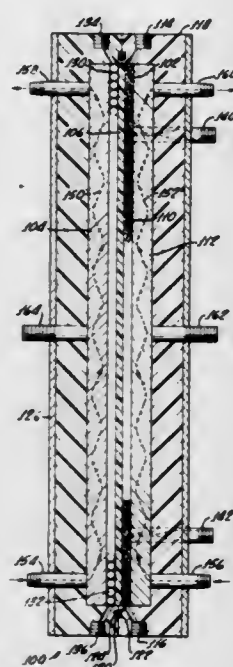
U.S. Cl. 204—84

5 Claims

1. An electrolytic process for producing hydrogen peroxide in an aqueous alkaline solution comprising:

- (a) simultaneously passing an aqueous alkaline electrolyte and oxygen through a fluid permeable cathode comprising reticulated vitreous carbon foam;

- (b) separating said fluid permeable cathode from an anode by a barrier wall; and,
(c) connecting said fluid permeable cathode and said anode with an external power source for causing the electrical



current density on the fluid permeable cathode to be at least 400 amperes per square meter and generating hydrogen peroxide ion within the aqueous alkaline solution, at a current efficiency of at least 85 percent.

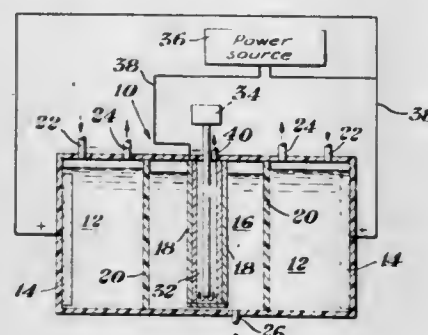
4,430,177

ELECTROLYTIC PROCESS USING OXYGEN-DEPOLARIZED CATHODES

James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 102,481, Dec. 11, 1979, Pat. No. 4,340,459, which is a continuation-in-part of Ser. No. 939,588, Sep. 5, 1978, abandoned. This application Apr. 22, 1982, Ser. No. 370,776
Int. Cl.³ C25B 1/16, 1/24, 11/03, 11/08

U.S. Cl. 204—98

17 Claims



1. A process for generating halogens and alkali metal hydroxide which comprises electrolyzing an aqueous alkali metal halide between a pair of electrodes separated by an ion exchange membrane or diaphragm, at least one of the electrodes having

a first electrically conductive, catalytically active porous layer having a plurality of interconnecting passageways therethrough with diameters of from about 7 to about 12 microns and of a size sufficient to permit an oxidizing gas to permeate therethrough, and

a second electrically conductive, catalytically active porous layer having a plurality of interconnecting passageways therethrough with diameters of from about 0.1 to about 3 microns and of a size sufficient to minimize said oxidizing gas from permeating therethrough, the layers being joined into a wall structure in a manner so that at least a portion

of the passageways of the first layer interconnect with the passageways of the second layer;
said wall being in the shape of a pocket, wherein at least a portion of an inner surface of the pocket is a surface of the first layer and at least a portion of an outer surface of the pocket is a surface of the second layer.

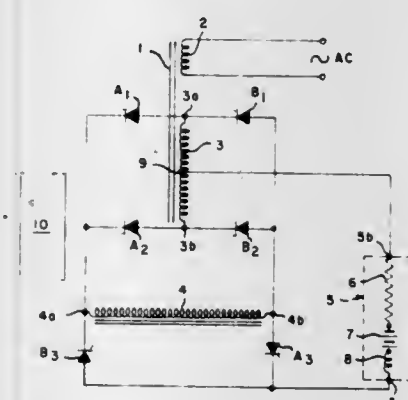
4,430,178

METHOD AND APPARATUS FOR EFFECTING CURRENT REVERSAL IN ELECTRO-DEPOSITION OF METALS

Harold J. T. Anderson, Oakville; Robert C. Kerby, Rossland; Clifford J. Krauss, Trail, and Hubert W. Neame, Mississauga, all of Canada, assignors to Cominco Ltd., Canada
Filed May 24, 1982, Ser. No. 381,725

Int. Cl.³ C25C 1/18
U.S. Cl. 204—114

18 Claims



1. A method for effecting periodic reversal of the polarity of the electrical current in a process for the electro-deposition of a metal, consisting of passing a controlled direct current between a multiplicity of electrodes including at least one cathode and at least one anode, immersed in an electrolyte in an electrolytic cell, which method comprises:

- rectifying an alternating electric current by passing the alternating current through rectifier means;
- filtering the rectified current by passing it through a filter reactor;
- passing the filtered rectified current to the electro-deposition process;
- controlling the polarity of the current provided by the rectifier means to the electro-deposition process by a control means; and
- periodically ordering the control means to reverse the polarity of the current passing through the electro-deposition process for desired periods of time without changing the polarity of the current passing through the filter reactor.

4,430,179

PORTABLE METHOD FOR FILTER PRESS CELL ASSEMBLY

James M. Ford, and David B. Wright, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 3, 1981, Ser. No. 289,449

Int. Cl.³ C25B 1/26, 9/00, 15/08

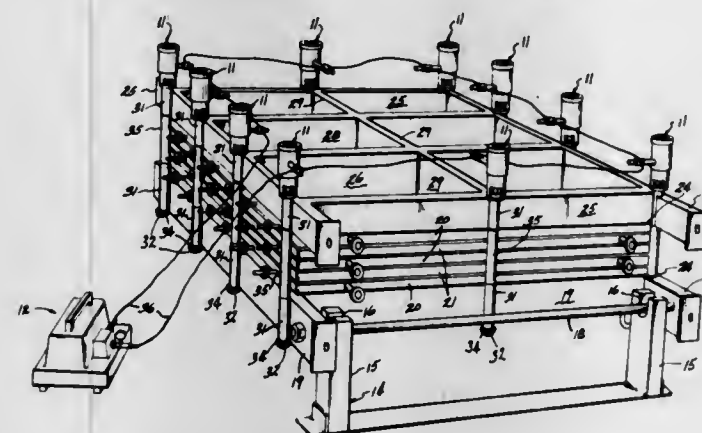
U.S. Cl. 204—128

20 Claims

12. A method of assembling a filter press type of electrolytic cell comprising the steps of:

- assembling a plurality of horizontally positioned electrodes in parallel side-by-side relationship; each adjacent pair of electrodes being sandwiched about a separator thereby forming a vertically rising stack, each electrode further having a periphery which cumulatively taken defines the periphery of the stack;
- placing a plurality of tightening means at selected locations about the periphery of the stack;

- connecting the tightening means to a tightening control means;
- activating the tightening control means to substantially simultaneously and substantially uniformly compress the stack via the tightening means at the selected locations;
- securing the compressed stack in its compressed state;
- deactivating the tightening control means to relieve the compression exerted via the tightening means while the stack is secured in its compressed state;
- disconnecting the tightening control means from the tightening means;



- removing the tightening means from the selected locations about the periphery of the cell;
- rotating the compressed vertical stack so that the horizontally positioned electrodes and the separators are positioned vertically in an assembled cell;
- connecting the vertically positioned assembled cell into an electrical circuit and to raw material supply lines and product withdrawal lines; and
- electrolytically operating the vertically positioned assembled cell.

4,430,180

APPARATUS FOR AND METHOD OF ELECTROEROSIVELY DRILLING A THIN HOLE IN A WORKPIECE

Akihiko Shimizu, Kawasaki, Japan, assignor to Japax Incorporated, Kanagawa, Japan

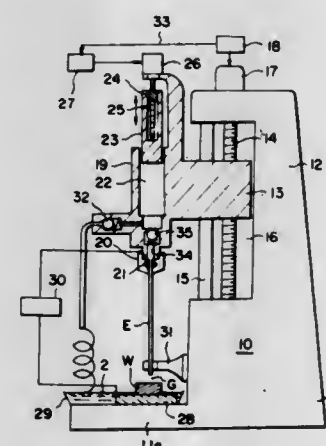
Filed Oct. 19, 1981, Ser. No. 312,663

Claims priority, application Japan, Oct. 21, 1980, 55-146356

Int. Cl.³ B23P 1/02, 1/12; B23K 9/16

U.S. Cl. 204—129.55

16 Claims



12. A method of electroerosively drilling a thin hole of a high depth-to-diameter ratio in a workpiece with a tubular electrode of corresponding high slenderness, comprising the steps of:

passing an electroerosive machining current between said tubular electrode and said workpiece across a machining gap flooded with a machining liquid delivered from the

internal bore of the tubular electrode open to the machining gap;
relatively advancing said tubular electrode axially into said workpiece to progressively form said hole in the workpiece; and
delivering said machining liquid into said machining gap by: providing a reservoir chamber communicating through an outlet opening thereof with said internal bore of the tubular electrode and a plunger member for operative reception in said chamber to be slidably movable therein longitudinally;

charging said chamber with a quantity of said machining liquid from a source thereof; and
relatively advancing said chamber and said plunger member received therein at a controlled rate of relative displacement to pressurize said charged machining liquid in the chamber with the plunger member, thereby causing said liquid to be progressively discharged out of the chamber and to be delivered through said internal bore at a regulated rate of flow to said machining gap.

4,430,181

PROCESS FOR THE PREPARATION OF BENZOYL CHLORIDE

Rainer Neumann; Karl Morgenstern; Karl-August Lipper; Friedrich Brühne; Walter Böckmann; Clemens Casper, and Siegfried Zingel, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Oct. 22, 1982, Ser. No. 436,108

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144316

Int. Cl.³ B01J 19/12; C07C 63/10

U.S. Cl. 204—158 HA

19 Claims

1. A process for the preparation of benzoyl chloride, which comprises treating the high-boiling residue obtained in the catalytic oxidation of toluene with oxygen or an oxygen-containing gas in the liquid phase to largely free the same of heavy metal salts and thereafter chlorinating the resultant material, largely freed of heavy metal salts, at an elevated temperature and thereafter separating off benzoyl chloride.

4,430,182

MANUFACTURE OF DISPLAY ELECTRODE LAYERS IN ELECTROCHROMIC DISPLAY DEVICES

Tadanori Hishida, Kashiwa; Hiroshi Kuwagaki, Joyo; Katubumi Koyanagi, and Yasuhiko Inami, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1981, Ser. No. 322,243

Claims priority, application Japan, Nov. 21, 1980, 55-165201

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 P

6 Claims

1. A method for preparing display electrode layers in an electrochromic display device, comprising the steps of:
forming a transparent, conductive film on a substrate;
forming an insulating film over the entire surface of the transparent, conductive film;
forming a mask of inorganic resist at portions on the insulating film other than a display pattern and a lead-in electrode;
removing the insulating film at the display pattern and the lead-in electrode;
forming an electrochromic material layer over entire portions other than the lead-in electrode; and
removing the mask formed on the insulating film.

4,430,183

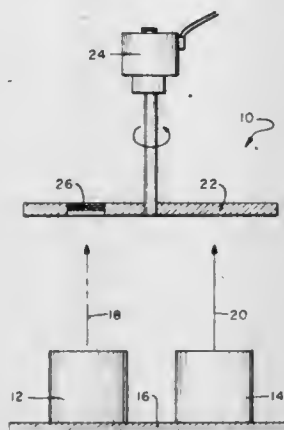
METHOD OF MAKING COHERENT MULTILAYER CRYSTALS

Ivan K. Schuller, and Charles M. Falco, both of Woodridge, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C. Division of Ser. No. 202,083, Oct. 30, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,702

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 C

6 Claims



1. A process for forming a multilayer, superlattice crystal having parallel, ultrathin alternating layers of two different metal elements comprising:

- placing a substrate suitable for epitaxial growth into a vacuum vessel;
- removing the ambient gas from the vessel;
- establishing a pressure of sputtering gas of at least 5×10^{-3} torr in the vessel;
- heating the substrate to about 150° to 450° C.;
- establishing two beams of sputtered atoms, one beam for each metal element of which the crystal is to be formed, the metals being elements which will grow epitaxially on each other;
- adjusting the thermal energy of the atoms in each beam so that the temperature of the atoms as they reach the substrate, whereby the atoms in the beam do not displace or eject atoms in layers already deposited on the surface but grow epitaxially on the layers to form a superlattice crystal structure; and
- alternately passing each beam of sputtered atoms over the substrate to deposit alternate layers of the two metal atoms epitaxially on the surface and on each other, each layer being from 2 to 2500 angstroms in thickness, thereby forming a multilayer, superlattice crystal having parallel, ultrathin alternating layers of two different metal elements.

4,430,184

EVAPORATION ARC STABILIZATION

William M. Mularie, Stillwater, Minn., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Filed May 9, 1983, Ser. No. 492,831

Int. Cl.³ C23C 15/00

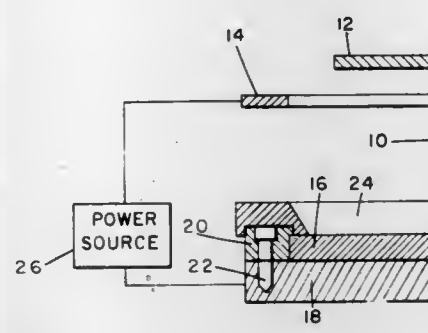
U.S. Cl. 204—192 R

30 Claims

21. A method of evaporation arc stabilization comprising the steps of

- establishing an arc on a surface of a target to evaporate the target, the arc being characterized by the presence of charged particles and a cathode spot which randomly migrates over said target surface; and
- confining the arc to the target surface with a confinement ring which contacts and surrounds the target surface, the

ring being composed of a material having (a) a secondary emission ratio less than one at the mean energies of the



charged particles of the arc and (b) a surface energy less than that of the evaporated target material.

4,430,185

METHOD OF PRODUCING PHOTOELECTRIC TRANSDUCERS

Yasuhiro Shimomoto; Toshihisa Tsukada; Akira Sasano, all of Tokyo; Yasuo Tanaka, Kokubunji; Hideaki Yamamoto, and Yukio Takasaki, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

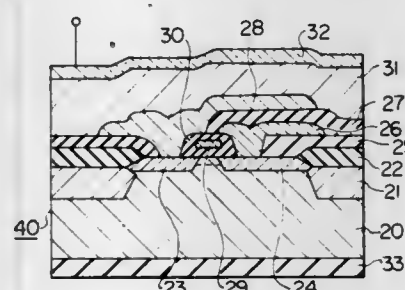
Filed Mar. 20, 1981, Ser. No. 245,749

Claims priority, application Japan, Mar. 24, 1980, 55-36056

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 P

21 Claims



1. A method of producing a photoelectric transducer including depositing a photoconductive layer of amorphous hydrogenated silicon on a predetermined substrate having an irregular surface including non-flat portions, said predetermined substrate being a semiconductor substrate comprising at least an impurity-doped region, an electrode contacting at least part of said impurity-doped region, and a predetermined insulating material layer thereby constituting semiconductor switch elements and interconnections therebetween for a photoelectric transducer, in an atmosphere containing a plasma, comprising the steps of:

- placing said predetermined substrate with an irregular surface on a first electrode such that said irregular surface is exposed, said first electrode constituting a holder for said predetermined substrate;
- providing a second electrode as a target to oppose said first electrode; and
- performing at least part of said depositing a photoconductive layer of amorphous hydrogenated silicon on the predetermined substrate with a negative bias potential of -5 V to -300 V being applied to said first electrode, and a ratio of power to be supplied to the substrate and the target being in the range of between $1/1$ and $1/10$, wherein the application of said negative bias voltage to said first electrode acts to sputter-etch a film deposited on said non-flat surface differentially from that on the flat surface to thereby produce a crack-free and pinhole-free photoconductive film of amorphous hydrogenated silicon on the substrate.

4,430,186

ELECTROLYTIC CELL WITH IMPROVED HYDROGEN EVOLUTION CATHODE

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

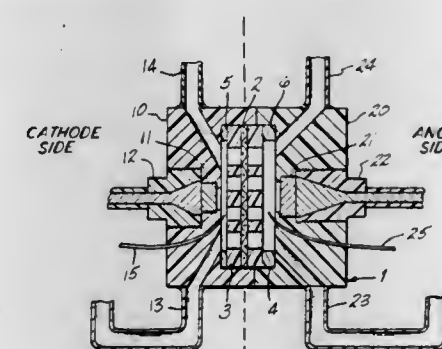
Division of Ser. No. 380,155, May 20, 1982, which is a continuation-in-part of Ser. No. 301,681, Sep. 14, 1981, Pat. No. 4,374,712, which is a continuation-in-part of Ser. No. 80,745, Oct. 1, 1979, Pat. No. 4,289,650, which is a continuation-in-part of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Mar. 28, 1983, Ser. No. 479,296

The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ C25B 9/00

U.S. Cl. 204—242

2 Claims



1. An electrolytic cell for generating hydrogen by passing an electric current through an aqueous electrolyte between the anode and a hydrogen evolution cathode, said cathode being comprised of a monolithic structure having a surface formed from an integral precursory, adherent Raney Beta phase quaternary alloy represented by the formula $Ni_xMo_yTi_zAl_3$, where x is the weight percent of nickel, y is the weight percent of molybdenum and z is the weight percent of titanium, in the combined weight of nickel, molybdenum and titanium, and where x ranges from about 75 to about 94 percent by weight, y ranges from about 20 to about 5 percent by weight and z ranges from about 5 to about 1 percent by weight, and which has had from about 75 to about 95 percent of the aluminum leached from said surface with a strong aqueous base so as to form an active porous Raney Beta phase nickel-molybdenum-titanium surface layer whereby the hydrogen overvoltage of said surface is reduced.

4,430,187

REDUCTION CELL POT

Sveinn Snaeland, Gardabae; Ragnar Halldorsson, Reykjavik; Alwis Franke, Gardabae, and Einar Gudmundsson, Kopavogur, all of Iceland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

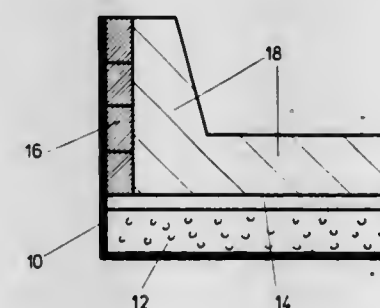
Filed Apr. 15, 1982, Ser. No. 368,723

Claims priority, application Switzerland, Apr. 22, 1981, 2626/81

Int. Cl.³ C25C 3/08

U.S. Cl. 204—243 R

6 Claims



1. An electrolytic cell used in the production of aluminum comprising an outer steel shell having a floor and side walls, a

layer of insulation in the form of volcanic ash is provided on said floor of said outer steel shell, a carbon lining for containing the aluminum produced and an insulating leakage barrier provided between said volcanic ash layer of insulation and said carbon lining.

4,430,188

ELECTRODES FOR USE IN AN ELECTROLYTIC PROCESS

Johann G. E. Cohn, West Orange, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 188,166, Sep. 17, 1980, abandoned. This application Dec. 22, 1982, Ser. No. 452,358

Int. Cl.³ C25B 11/10

U.S. Cl. 204—290 F

2 Claims

1. An electrode for use in an electrolytic reaction, said electrode comprising a base having a surface of a valve metal, at least a portion of said surface having a thin, electronically conductive, electrocatalytic coating having a thickness effective for conducting electrolysis, said coating comprising a matrix and a modifier, and said matrix, exclusive of any binder or modifier, being essentially amorphous and essentially a chalcogen glass comprising germanium-tellurium.

4,430,189

METHOD OF MANUFACTURING ALUMINUM IN A HALL-HEROULT CELL

James M. Clark, Johnson City, and Duane R. Secrist, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 241,536, Mar. 9, 1981, Pat. No. 4,379,033. This application Feb. 4, 1983, Ser. No. 463,967

Int. Cl.³ C25C 3/06, 3/12

U.S. Cl. 204—290 R

4 Claims

1. A method for manufacturing aluminum by the electrolysis of alumina in molten cryolite in a Hall-Heroult cell employing a non-consumable anode produced by the process of:

- (a) forming a first conductive ceramic material to produce a core having a substantially flat working surface and non-working surface;
- (b) forming a physically adherent coating over said non-working surface of said core, on at least the portion thereof which is to be exposed to the electrolyte bath in the cell, said coating consisting of a second conductive ceramic material having, as compared to said first conductive ceramic material,
 - (1) a coefficient of thermal expansion differing by no more than about $1.0 \times 10^{-6}/^\circ\text{C}$.,
 - (2) an essentially matched shrinkage during sintering,
 - (3) a higher electrical resistivity, and capable of being chemical diffusion bonded thereto; and
- (c) sintering the coated core thus formed to produce a monolithic ceramic anode having a substantially flat working surface and a non-working surface, said non-working surface having an impervious coating thereon, at least in the portion thereof exposed to the electrolyte bath, of higher resistivity than the core and chemical diffusion bonded thereto, whereby substantially all of the current applied to said anode is conducted into the electrolyte bath through said flat working surface.

4,430,190

DEVICE FOR CATHODE SPUTTERING OF AT LEAST TWO DIFFERENT MATERIALS

Carl-Ernst Eilers, Heidenheim, and Horst Pachonik, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Dec. 9, 1982, Ser. No. 448,220

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149910

Int. Cl.³ C23C 15/00

U.S. Cl. 204—298

4 Claims

1. Device for cathode sputtering of at least two different materials comprising a holder, means for cooling said holder, a heat-conducting layer disposed on said holder, a target connected to said holder with said heat-conducting layer disposed therebetween, said target being exchangeably screwed to said holder said target being formed of one of the materials to be sputtered and having a plurality of blind holes formed therein, and pins formed of another material to be admixed in the sputtering being fitted in at least some of said blind holes.

4,430,191

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE WITH MEANS TO CONTROL CURRENT SUPPLY TO OXYGEN SENSOR

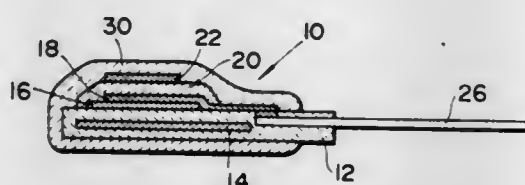
Kohki Sone, Tokyo, and Thuyoshi Kitahara, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 17, 1982, Ser. No. 389,380

Claims priority, application Japan, Jun. 25, 1981, 56-98624

Int. Cl.³ G01N 27/46

U.S. Cl. 204—401

4 Claims



1. A system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, comprising:

an oxygen sensor element which is disposed in an exhaust passage of the engine and has an electric heater and an oxygen concentration cell including an oxygen ion conductive solid electrolyte layer and reference and measurement electrode layers laid respectively on the solid electrolyte layer,

power supply means for applying a controlled voltage to said heater,

sensor control means for supplying a controlled DC current to said concentration cell such that the current flows in the solid electrolyte layer between the reference and measurement electrode layers to cause oxygen ions to migrate in the solid electrolyte layer toward the reference electrode layer to thereby maintain a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer,

fuel feed control means for controlling the rate of fuel feed to the engine so as to correct deviations of actual air/fuel ratio from a predetermined first air/fuel ratio by utilizing an output voltage of the oxygen sensor element as a feedback signal representative of actual air/fuel ratio but maintaining a constant fuel feed rate corresponding to a predetermined second air/fuel ratio lower than said first air/fuel ratio if the output voltage of the oxygen sensor element continues to indicate that the actual air/fuel ratio remains on one side of said first air/fuel ratio,

detecting means for detecting breaking of the heater in the oxygen sensor element during operation of the system and producing an electrical signal indicative of the occurrence of breaking of the heater, and

interruption means for interrupting the supply of said DC

current from said sensor control means to said concentration cell in the oxygen sensor element in response to said electrical signal produced by said detection means, whereby, upon breakage of said heater, said output voltage of said oxygen sensor element remains above said first air/fuel ratio irrespective of the actual value of the air/fuel ratio.

4,430,192

OXYGEN GAS ANALYZER USING SOLID ELECTROLYTE

Masato Maeda, Tokyo, Japan, assignor to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

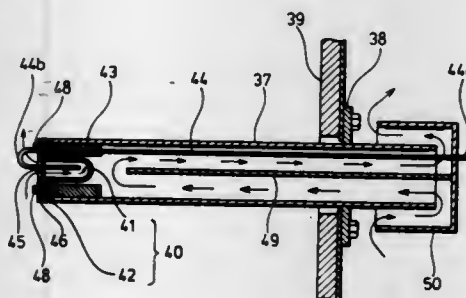
Filed Mar. 2, 1982, Ser. No. 353,920

Claims priority, application Japan, May 26, 1981, 56-79865; Mar. 6, 1981, 56-31125[U]

Int. Cl.³ G01N 27/58

U.S. Cl. 204—410

6 Claims



1. A solid electrolyte type oxygen meter having a probe type detecting section including a solid electrolyte unit fixed to the end thereof so as to form a partition wall and adapted to produce a signal corresponding to the difference in the oxygen concentration between the inner side and outer side of said partition wall;

said oxygen meter comprising a contact portion secured to the inner wall surface of said probe near the end of the latter through an electrically insulating member; a test tube type solid electrolyte unit inserted into and affixed to said end of said probe, a first electrode and a second electrode closely secured to the outer wall surface and the inner wall surface of the closed end wall of said solid electrolyte unit, or the portion of said solid electrolyte unit near said end wall, a first lead closely attached to said outer wall surface of said solid electrolyte unit and providing a connection between said first electrode and said contact portion, and a second lead closely attached to said inner wall surface of said solid electrolyte unit and providing an electrical connection between said second electrode and the open end surface of said solid electrolyte unit; and a first conductor and a second conductor connected to said contact portion and said open end of said solid electrolyte unit, respectively, thereby to transmit the signals produced by said first and second electrodes.

4,430,193

PROCESS FOR DISSOLVING COAL IN HYDROCARBON MIXTURES

Jürgen Stadelhofer, Dortmund, and Heinz-Gerhard Franck, Bad Soden-Neuenhain, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 283,869

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030723

Int. Cl.³ C10G 1/00

U.S. Cl. 208—8 LE

3 Claims

1. In a process for bringing ground coal or similar carbon-containing raw materials into solution with aromatic solvents under elevated pressure and at elevated temperature, the improvement wherein the solvents used are high-aromatic resi-

dues from the pyrolysis of petroleum fractions, having an average boiling point of above 380° C., and/or high-aromatic distillates from the pressure/heat treatment of coal tar pitch, having an average boiling point of above 380° C., as well as from 5 to 30% of aromatic products or mixtures of aromatic products, having a boiling point of below 250° C.; said process being carried out without hydrogenation, at temperatures of from 250° to 360° C.

4,430,194

METHOD FOR THE PRODUCTION OF A HIGHLY AROMATIC PITCH-LIKE COAL BY-PRODUCT

Jafar Omran, and Karl-Heinz Koch, both of Castrop-Rauxel, Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 289,936

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033228

Int. Cl.³ C10G 1/00, 73/00

U.S. Cl. 208—8 LE

8 Claims

1. In a method for the production of a highly aromatic pitch-like coal by-product by dissolving comminuted coal or similar solid carbon-containing raw materials with aromatic solvents at elevated temperature, the improvement which comprises dissolving these solid materials at atmospheric pressure using as solvent aromatic compound mixtures of coal origin with a mean boiling point above 350° C. selected from the group consisting of standard coal tar pitch, distillates with a mean boiling range of 350° to 500° C. obtained in the heat-pressure treatment or carbonization of coal-tar pitch, and mixtures thereof, under reflux of the condensable fractions of the reaction gas.

4,430,195

FLUID BED RETORTING PROCESS WITH LATERAL FLOW

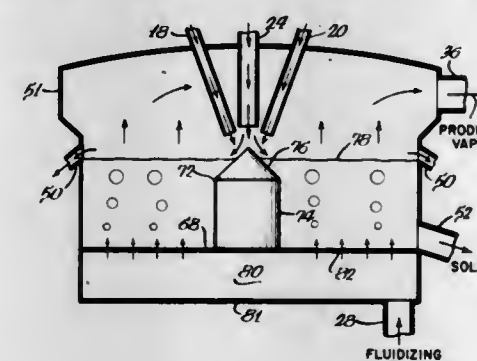
Robert D. Oltrogge, Wheaton, Ill., assignor to Standard Oil Company, (Indiana), Chicago, Ill. and Gulf Oil Corporation

Filed Dec. 21, 1981, Ser. No. 333,040

Int. Cl.³ C10B 49/00, 53/00; C10G 1/00

U.S. Cl. 208—8 R

22 Claims



20. A process for retorting solid hydrocarbon-containing material, comprising the steps of:

forming a single level laterally moving bed in an overflow fluid bed retort having only one level of perforated distributor plate means, said moving bed comprising solid hydrocarbon-containing material selected from the group consisting of oil shale, tar sands, coal, peat, lignite, untaite and oil saturated diatomaceous earth and solid heat carrier material selected from the group consisting of spent hydrocarbon-containing material, sand, ceramic balls and metal balls;

said solid hydrocarbon containing material and said solid heat carrier material being mixed and deflected generally downwardly and laterally outwardly into said bed by a conical baffle extending upwardly from said perforated distributor plate means;

fluidly moving said bed above said perforated distributor plate means in a lateral direction for a sufficient time and

at a sufficient temperature and at substantially only one level in said overflow retort to liberate hydrocarbons from said solid hydrocarbon-containing material in said bed;

spilling said bed over a generally upright barrier extending above said perforated distributor plate means into an overflow discharge outlet extending laterally outwardly of said retort for passage of the bed directly out of said retort; and

withdrawing said liberated hydrocarbons from said bed through a product outlet in said retort located above said bed.

4,430,196

METHOD AND COMPOSITION FOR NEUTRALIZING ACIDIC COMPONENTS IN PETROLEUM REFINING UNITS

Joseph H. Y. Niu, Houston, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 28, 1983, Ser. No. 479,386

Int. Cl.³ C10G 7/10

U.S. Cl. 208—47

19 Claims

1. A process for neutralizing acidic components of a distilling petroleum product in a refining unit comprising adding a neutralizing amount of a member selected from the group consisting of dimethylaminoethanol and dimethylisopropanolamine, and mixtures thereof, to said petroleum product.

4,430,197

HYDROGEN DONOR CRACKING WITH DONOR SOAKING OF PITCH

Paul C. Poyner, and Hugh E. Romine, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Apr. 5, 1982, Ser. No. 365,721

Int. Cl.³ C10G 9/14, 57/00

U.S. Cl. 208—56

6 Claims

1. In a hydrogen donor diluent cracking process in which a heavy hydrocarbonaceous material is thermally cracked in a cracking coil in the presence of hydrogen donor solvent, and in which spent donor is separated from cracked products, rehydrogenated and recycled to the cracking step, the improvement wherein at least part of the pitch fraction from the cracked products is heat soaked in a soaking tank separate from said cracking coil in the presence of hydrogenated donor solvent for a time and at a temperature sufficient to substantially reduce the amount of material in said pitch which is insoluble in pentane and said heat-soaked pitch is returned to said cracking coil.

4,430,198

HYDROTREATING HYDROCARBON FEEDSTOCKS

Roland H. Heck, Pennington; Edward J. Rosinski, Pedricktown, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 220,554, Dec. 29, 1980. This application Sep. 28, 1982, Ser. No. 425,846

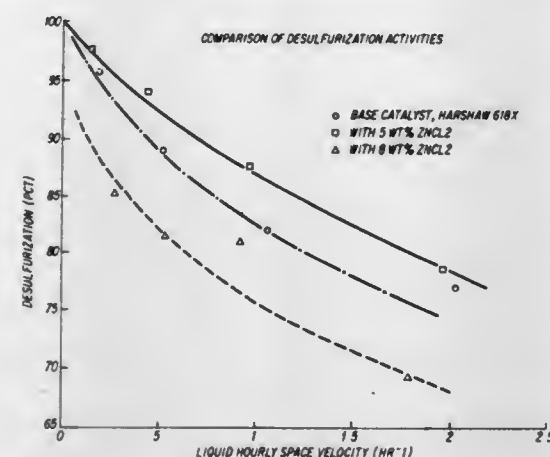
Int. Cl.³ C10G 45/06

U.S. Cl. 208—112

35 Claims

1. In a hydrotreating process comprising contacting a hydrocarbon feedstock with hydrogen in the presence of a catalyst comprised of at least one Group VIA metal, metal oxide or metal sulfide and at least one Group VIIIA metal, metal oxide or metal sulfide, deposited on an inorganic refractory oxide,

the improvement wherein said catalyst further comprises about 0.1% to about 7% by weight of a halogenated metal compound



selected from the group consisting of compounds of halogenated metals of Group IB, IIB, IIIB, titanium or tin.

4,430,199

PASSIVATION OF CONTAMINANT METALS ON CRACKING CATALYSTS BY PHOSPHORUS ADDITION
Vincent A. Durante, East Brunswick, N.J.; Dennis J. Olszanski, Erie, Pa.; William J. Reagan, Englishtown, and Stanley M. Brown, Scotch Plains, both of N.J., assignors to Engelhard Corporation, Edison, N.J.

Filed May 20, 1981, Ser. No. 265,516
Int. Cl.³ C10G 11/05; B01J 37/28

U.S. Cl. 208—114

16 Claims

1. In a process for cracking hydrocarbon feedstock contaminated with a metal poison comprising at least one of nickel, vanadium, iron and copper, by contacting the feedstock with a zeolite fluid cracking catalyst under cracking conditions, the improvement which comprises contacting said catalyst with an added phosphorus compound in amount sufficient to effect passivation of said metal poison, said added phosphorus compound being selected from the group consisting of tricresyl phosphate, an ammonium hydrogen phosphate, and mixtures thereof.

4,430,200

HYDROCARBON CONVERSION PROCESS
David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,416
Int. Cl.³ C10G 11/05, 97/20

U.S. Cl. 208—120

20 Claims

1. A method for making a hydrocarbon conversion catalyst, which comprises steaming a large pore, crystalline aluminosilicate zeolite having a silica:alumina ratio of at least 12:1 and a Constraint Index of less than 1 until the zeolite has a reduced alpha value and base exchanging the steamed zeolite with an alkali metal to reduce the acidity to an alpha value of less than 5.

4,430,201

REGENERATION OF FLUIDIZABLE CATALYST
Leonice F. Castagnos, Jr., Nederland, and Roy E. Pratt, Neches, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

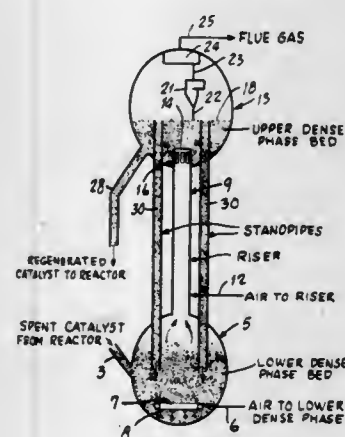
Filed Oct. 27, 1981, Ser. No. 315,470
Int. Cl.³ C10G 11/18

U.S. Cl. 208—164

2 Claims

1. In a fluidized catalytic hydrocarbon conversion process wherein spent catalyst from said hydrocarbon conversion reaction is stripped of volatile hydrocarbons prior to regeneration and stripped catalyst is regenerated by burning coke therefrom with an oxygen-containing gas, the improvement which

comprises passing stripped catalyst to a first catalyst regeneration zone of a catalyst regeneration system comprising multiple regeneration zones, maintaining a dense phase fluidized bed of catalyst in said first regeneration zone by the introduction of primary regeneration air into the lower portion of said zone at a rate sufficient to cause fluidization of said catalyst particles and partial regeneration of said catalyst with the production of gaseous reaction products comprising carbon monoxide, passing partially regenerated catalyst particles entrained in said gaseous reaction products from said first dense phase fluidized bed regeneration zone into a superposed disperse phase entrained catalyst regeneration zone, supplying secondary regeneration air to said riser regeneration zone in an amount sufficient to provide an excess of oxygen over that required for complete combustion of carbon monoxide and residual coke from said catalyst to carbon dioxide, discharging catalyst and flue gases resulting from the burning of coke from spent catalyst from the riser regeneration zone into the lower portion of a superposed second dense phase fluidized bed regeneration



zone, maintaining a dense phase fluidized bed of catalyst in said second regeneration zone with fluidization solely by flue gases from said riser regeneration zone, separating flue gases from regenerated catalyst in said second regeneration zone, discharging resulting flue gases containing 1 to 3 mole percent oxygen and less than 500 ppm carbon monoxide from second regeneration zone, withdrawing regenerated catalyst containing 0.01 to 0.1 weight percent carbon and at a temperature in a range of 1250° to 1450° F. from said second dense phase regeneration zone as regenerated catalyst for said reaction zone, and recirculating a further separate portion of said regenerated catalyst from said second dense phase fluidized bed catalyst regeneration zone to said first dense phase fluidized bed catalyst regeneration zone wherein the rate or recirculation of regenerated catalyst from said second dense phase bed to said first dense phase bed regeneration zone is governed solely by the relative rates of introduction of primary and secondary regeneration air to said first regeneration zone and to said riser regeneration zone.

4,430,202

DISTILLATE OIL MOISTURE DEHAZING PROCESS
J. J. Bloess, 313 Shenandoah Rd. East, Mobile, Ala. 36608

Filed Mar. 5, 1982, Ser. No. 355,145
Int. Cl.³ C10G 33/00

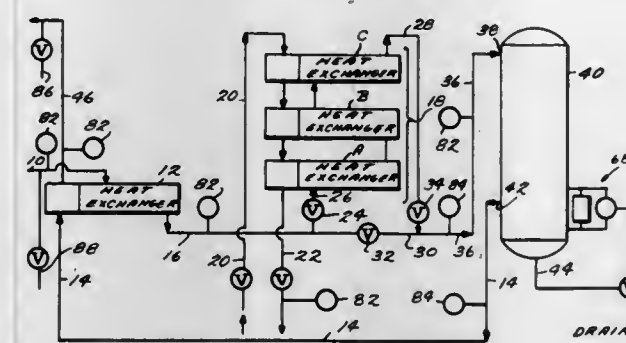
U.S. Cl. 208—187

8 Claims

1. A method of reducing the water content in liquid hydrocarbon distillate fuel oil that has been subjected to a steam treatment, and subsequently cooled prior to being sent to storage to about 120°-180° F., comprising the steps of:

- (A) gradually cooling the fuel oil by
(a) passing the oil to a first indirect cooling means to reduce the temperature of the oil by approximately 20° F.;
(b) passing the oil to a second indirect cooling means to further reduce the temperature of the oil;
(B) passing the oil from the second cooling means to and

through separation means where at least a substantial portion of the water is separated from the oil;



(C) heating the oil collected from said separation means prior to storage.

4,430,203

HYDROTREATING OR HYDROCRACKING PROCESS
Dennis R. Cash, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 5, 1982, Ser. No. 346,209
Int. Cl.³ C10G 65/04

U.S. Cl. 208—210

7 Claims

1. A process for hydroprocessing comprising:
(a) passing a two-phase reaction mixture of a hydrogen rich gas and a liquid hydrocarbon containing at least one of either a nitrogen impurity or a sulfur impurity through a single vessel hydroprocessing reaction zone containing a series of fixed spaced hydroprocessing catalyst beds, at least two adjacent beds being separated by a first perforated tray, a second perforated tray and a third perforated tray, said first perforated tray and said second perforated tray defining a vapor withdrawal space and said second perforated tray and said third perforated tray defining a hydrogen introduction space;
(b) withdrawing vapors containing at least one of either ammonia or hydrogen sulfide from said vapor withdrawal space;
(c) introducing hydrogen into the hydrogen introduction space wherein the amount of hydrogen is substantially equal to the amount of withdrawn vapors; and
(d) passing the liquid hydrocarbon directly to the next bed.

4,430,204

REMOVAL OF SURFACTANTS FROM HYDROCARBONS WITH ALCOHOL

Robert P. Aiello, Cypress; George Stefanidakis, and Dwayne E. Poling, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 24, 1982, Ser. No. 391,630
Int. Cl.³ C10G 29/22

U.S. Cl. 208—240

6 Claims

1. A method for removing hydrocarbon-soluble anionic surfactants from gasoline or kerosene boiling range hydrocarbons which comprises:

- (a) treating a hydrocarbon-surfactant mixture with an effective amount of methanol or ethanol for a time sufficient to permit a desired proportion of said surfactants in the hydrocarbon-surfactant mixture to associate intimately with the alcohol;
(b) contacting the hydrocarbon-surfactant-alcohol mixture with an effective amount of either water or caustic solution, or caustic solution followed by water, for a time sufficient to extract a major portion of said methanol or ethanol and surfactants from said hydrocarbons;
(c) separating the water or caustic solution containing said methanol or ethanol and surfactants from said hydrocarbons; and
(d) recovering said hydrocarbons.

4,430,205

METHOD FOR THE IMPROVEMENT OF THE OXIDATION RESISTANCE OF HYDROCARBON OIL, ESPECIALLY TRANSFORMER OILS BY THE SELECTIVE REMOVAL OF PRO-OXIDANT NITROGEN AND SULFUR COMPOUNDS THEREFROM

Gerald Felsky, Sarnia, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 13, 1983, Ser. No. 503,673
Int. Cl.³ C10G 29/08

U.S. Cl. 208—246

15 Claims

1. A method for improving the oxidation resistance of hydrocarbon oils comprising contacting a hydrocarbon oil stream containing nitrogen and sulfur containing compounds with a silver salt impregnated adsorbent whereby the nitrogen and sulfur containing compounds are taken up by the silver salt impregnated adsorbent, and thereby removed from the hydrocarbon oil, contacting an aromatic solvent with the silver salt impregnated adsorbent to remove the aromatic sulfur compounds from said silver salt impregnated adsorbent and combining said aromatic sulfur compounds with either the extracted hydrocarbon oil stream or a different hydrocarbon oil stream thereby improving the oxidation resistance of said hydrocarbon oil.

4,430,206

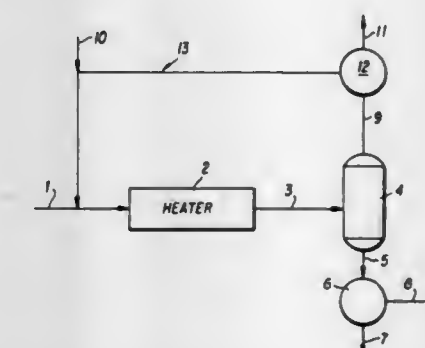
DEMETALATION OF HYDROCARBONACEOUS FEEDS WITH H₂S

Lillian A. Rankel, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 220,557, Dec. 29, 1980, abandoned. This application Dec. 9, 1982, Ser. No. 448,132
Int. Cl.³ C10G 7/00, 45/00

U.S. Cl. 208—251 R

28 Claims



1. A noncatalytic process for removing at least one metal contaminant from shale oil comprising contacting the shale oil with a gas comprised of about 40% to about 100% by volume of hydrogen sulfide and about 0% to about 60% by volume of hydrogen at a pressure of at least 15 psig and at a temperature of about 600° F. to about 800° F.

4,430,207

DEMETALLIZATION OF HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 17, 1983, Ser. No. 495,384
Int. Cl.³ C10G 45/08; B01J 27/14

U.S. Cl. 208—251 H

15 Claims

1. A process for the demetallization of a hydrocarbon containing feed stream, which contains metals, comprising the step of contacting said hydrocarbon containing feed stream under suitable demetallization conditions with hydrogen and a catalyst composition comprising zirconium phosphate and chromium phosphate.

4,430,208

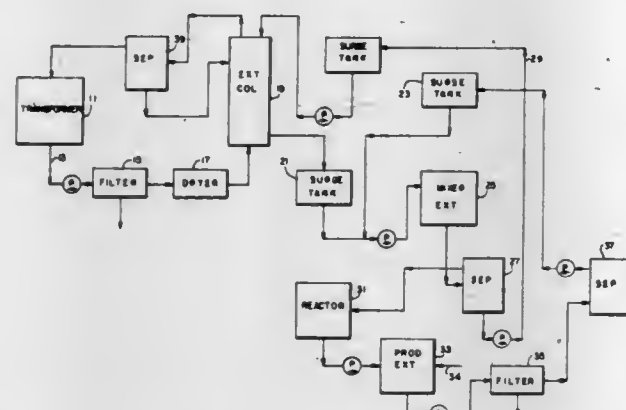
METHOD FOR THE SOLVENT EXTRACTION OF POLYCHLORINATED BIPHENYLS

Louis J. Pytlewski, and Edward J. Thorne, both of Philadelphia, Pa., assignors to The Franklin Institute, Philadelphia, Pa.
PCT No. PCT/US82/00749, § 371 Date Oct. 29, 1982, § 102(e) Date Oct. 29, 1982

PCT Filed Jun. 2, 1982, Ser. No. 440,232
Int. Cl.³ C10G 17/00

U.S. Cl. 208—262

33 Claims



1. A process for the removal of polychlorinated biphenyls from a fluid containing the same which comprises: contacting said fluid with polyethylene glycol for a period of time sufficient for said glycol to selectively extract at least a portion of the chlorinated biphenyl compounds from said fluid; and separating the polyethylene glycol and extracted polychlorinated biphenyls from said fluid.

18. A process for removing and detoxifying a polychlorinated biphenyl present in the dielectric fluid of an electrical transformer which comprises:

drawing off dielectric fluid from said transformer; contacting said drawn off fluid with polyethylene glycol in a primary extraction operation for a period of time sufficient for said glycol to selectively extract at least a portion of the chlorinated biphenyl from said fluid; separating from said fluid the polyethylene glycol containing extracted polychlorinated biphenyl; returning said fluid to said transformer; solvent extracting with cyclohexane the chlorinated biphenyl compound from the polyethylene glycol in a secondary extraction operation to form a cyclohexane-polychlorinated biphenyl extract; separating said cyclohexane-polychlorinated biphenyl extract from said polyethylene glycol and recycling the latter to said primary extraction operation; removing cyclohexane from said cyclohexane-polychlorinated biphenyl extract and dehalogenating the remaining polychlorinated biphenyl; and recycling said cyclohexane to said secondary extraction operation.

4,430,209

METHOD AND APPARATUS FOR ELUTRIATION OF SHOT FROM MINERAL FIBER

James Q. Merck, Largo, and Leon F. Barry, St. Petersburg, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.
Filed Feb. 16, 1982, Ser. No. 349,407

Int. Cl.³ B03B 7/00

U.S. Cl. 209—3

27 Claims

1. An apparatus for de-shotting shot-containing mineral wool comprising:

(a) a battery of washing vessels located in sequence, each of said washing vessels having (i) baffle means positioned therewithin for blocking the upper section of said washing vessel to the passage thereacross of a flowing liquid while leaving the lower section of said washing vessel open to the passage thereacross of said liquid so that said upper section of each washing vessel is divided into a receiving

compartment for receiving a flowing liquid and a discharge compartment into which said liquid flows after passing underneath said baffle means, and (ii) discharge means positioned at the lowest point of said lower section for discharging non-fibrous material which settles in said washing vessel,

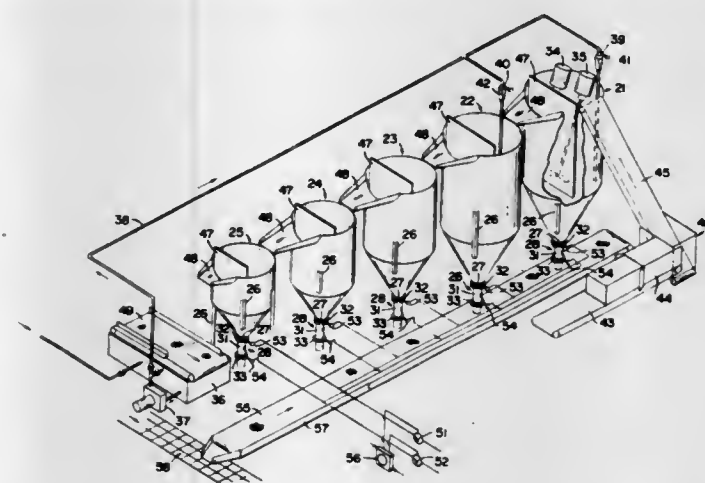
(b) liquid delivery means for continuously introducing a flowing liquid into the receiving compartment of the first washing vessel of said battery to one side of said vessel's baffle means,

(c) means for delivering shot-containing mineral wool to said receiving compartment of the first washing vessel,

(d) means for gently mixing said shot-containing mineral wool in said receiving compartment of the first washing vessel to convert said shot-containing mineral wool into a dispersion of fibrous and non-fibrous materials in said flowing liquid,

(e) a device located in sequence after the last washing vessel of said battery for separating said flowing liquid from the de-shotted fibrous material, and

(f) flow connection means positioned and arranged with respect to said discharge compartment of each of the washing vessels for conveying said flowing liquid and associated dispersed materials to the receiving compartment of the next washing vessel of the sequence or, in the case of said last washing vessel of the battery, to said device for separating said flowing liquid from said de-shotted fibrous material, whereby flowing liquid intro-



duced into said receiving compartment of the upper section of each of said washing vessels to one side of said vessel's baffle means flows downwardly and then under said baffle means and upwardly to said vessel's discharge compartment to the other side of said baffle means, a separation being thereby effected between the fibrous material which is conveyed along by said flowing liquid and the non-fibrous material which settles at the bottom of said vessel, said non-fibrous material being discharged from said vessel by said discharge means.

14. A method of de-shotting shot-containing mineral wool comprising the steps of:

(a) continuously flowing a liquid through a battery of washing vessels located in sequence, each of said washing vessels having baffle means positioned therewithin for blocking the upper section of said washing vessel to the passage thereacross of said flowing liquid while leaving the lower section of said washing vessel open to the passage thereacross of said liquid so that said upper section of each washing vessel is divided into a receiving compartment for receiving said flowing liquid and a discharge compartment into which said liquid flows after passing underneath said baffle means, said flowing liquid being introduced into said receiving compartment of each washing vessel,

(b) delivering shot-containing mineral wool to the receiving compartment of the first washing vessel of said battery,

4,430,211

VIBRATING SCREEN

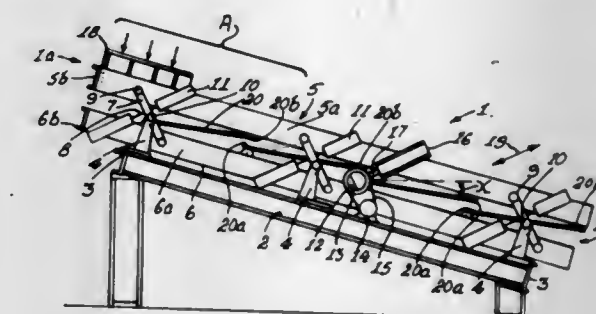
Otto H. J. Martin, Hattingspruit, South Africa, assignor to Damar Manufacturing Company, Hattingspruit, South Africa
Filed Dec. 21, 1981, Ser. No. 332,376

Claims priority, application South Africa, Oct. 13, 1980, 80/6290

Int. Cl.³ B07D 1/38

U.S. Cl. 209—314

4 Claims



1. A screening arrangement defining a feed end and a discharge end, comprising:

two frame-like movable masses being vertically spaced-apart and interconnected by linkage members, said two masses being movable in substantially opposite directions relative to each other,

an exciter connected to said arrangement to impart substantially reciprocable movement to said masses to move said masses in substantially opposite directions relative to each other,

a screen made of substantially non-stretchable, flexible material connected at one end thereof to one of said two masses and connected at its opposite end thereof to the other one of said two masses,

said screen being movable by said two masses between a first position wherein said screen is taut and a second position wherein said screen is slack,

said two masses being arranged to slant said screen downwardly from said feed end to said discharge end, said screen being secured at its end facing said feed end to the bottom one of said two masses and at its end facing said discharge end to the top one of said two masses.

4,430,210

SCREEN

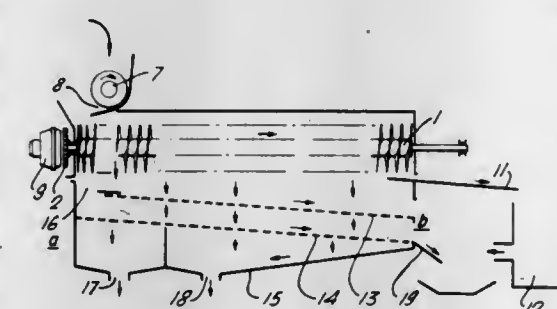
Rolf Tuuha, Pori, Finland, assignor to Rauma-Repola Oy, Finland

Continuation-in-part of Ser. No. 165,863, Jul. 7, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 243,073
Claims priority, application Finland, Jul. 13, 1979, 792212; Apr. 2, 1980, 801045; Apr. 2, 1980, 801046; Feb. 19, 1981, 810514

Int. Cl.³ B07B 1/15

U.S. Cl. 209—23.4

7 Claims



1. A screen for the separation of an oversize fraction from pulp chips on the basis of the thickness of the chips, comprising a screen face having at least two synchronously driven screw spirals, each of said screw spirals includes a core part having a mantle face and a spiral wing secured around the core part, said spiral wings are arranged to interlock in between each other, an outer circumference of each wing extends to the proximity of the mantle face of the core part of the adjoining spiral, adjoining spirals are opposite-handed and have opposite directions of rotation, and the distance between the interlocking portions of the wings being less than the distance between mantle faces of adjoining spirals and corresponding to the maximum acceptable thickness of the chips.

4,430,212

VOLUMETRIC FILTER FOR LIQUID LEVEL MEASUREMENT DEVICES

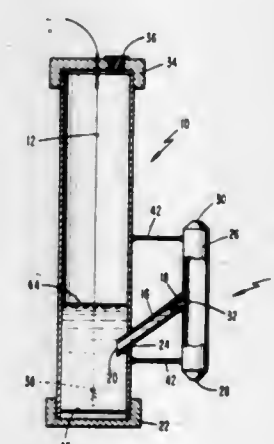
Manuel Gutierrez, 1273 Meadow Sweet Rd., Golden, Colo. 80401, and Michael A. Gutierrez, 636 S. Addison, Lexington, Ky. 40504

Filed Aug. 25, 1982, Ser. No. 411,146

Int. Cl.³ B03D 3/00

U.S. Cl. 210—104

3 Claims



1. A filter for a liquid level measurement apparatus having

an electrical level sensing probe within a sensing tube receiving liquid from a container, comprising:

- a connecting tube forming a passageway for liquids between said container and said sensing tube, said connecting tube having a first opening within the liquid container and a second opening within the sensing tube,
- said first opening disposed within said container for intaking and outletting liquids at a first level, and
- said second opening disposed within said tube for outletting and intaking liquids at a second level below said first level, said connecting tube having a volume selected to prevent passage of buoyant liquids floating in a layer of a particular height above the liquid in said container to said sensing tube,
- said volume selected to be no less than the volume displaced in said sensing tube by a layer of said buoyant liquid of said particular height in said container.

4,430,213

ULTRAFILTRATION UNIT

Soji Ishikawa, No. 6-22, Miyazaki 6-chome, Takatsu-ku, Kawasaki-shi, Kanagawa-ken, Japan

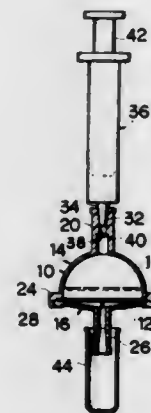
Filed Feb. 9, 1982, Ser. No. 347,161

Claims priority, application Japan, Jul. 8, 1981, 56-101327

Int. Cl.³ B01D 31/00

U.S. Cl. 210—136

1 Claim



1. An ultrafiltration unit for use with a syringe having a tapered snout, consisting of:

- a housing having a dome-shaped upper part provided with a flange at its peripheral edge and a funnel-shaped lower part provided with a flange at its peripheral edge which are airtightly connected and sealed together along the peripheral flanges, said upper part having a single inlet pipe at its top and a chamber therein for forcing a sample liquid and air in the chamber, a bore of the inlet pipe being partially flared from the intermediate toward its free end for allowing to engage with the snout of the syringe and being provided with a shoulder portion adjacent below the flared bore section, said lower part having an internal slanted surface and a single outlet pipe at its apex,
- a disc-shaped ultrafilter internally disposed in the housing held between the peripheral flanges of the upper and lower parts of the housing and supported on a plurality of radial support ribs integrally formed on the slanted surface of the lower part of the housing, and
- a check valve provided in the inlet pipe, said check valve being partially fixed to the shoulder portion in the inlet pipe so as to be bendable downwardly toward the chamber or thrustable against the shoulder portion, whereby a sample liquid and air can be forced into the chamber of the upper part of the housing while escape of the air is blocked.

4,430,214 STRAINER MILL FOR SWIMMING POOL PUMP INTAKE

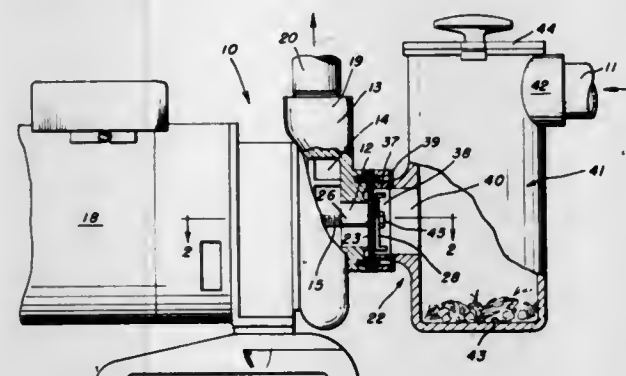
Marvin E. Baker, 815 Ewing Ave., Nashville, Tenn. 37203

Filed Sep. 15, 1982, Ser. No. 418,233

Int. Cl.³ E04H 3/20

U.S. Cl. 210—169

3 Claims



1. In a swimming pool water circulation system including a centrifugal pump having a rotary impeller shaft supporting an impeller, an intake opening coaxial with the impeller shaft and a discharge outlet, a strainer mill comprising:

- (a) a planar strainer plate having a plurality of flow holes therethrough for the passage of water and spanning the intake opening of the centrifugal pump, said strainer plate having an intake face on the opposite side of said strainer plate from the pump impeller,
- (b) a cutter shaft member extending coaxially from the impeller shaft through said strainer plate, for rotary movement with said impeller shaft and relative to said strainer plate,
- (c) a cutter blade fixed to and extending radially from said cutter shaft member and spaced closely adjacent and spanning said intake face of said strainer plate, said cutter blade having a sharp leading edge and terminating in a radially outer extremity,
- (d) a mill chamber having an imperforate cylindrical wall concentric with said cutter shaft member and mounted adjacent said intake face and in fluid communication with said strainer plate,
- (e) said mill chamber receiving said cutter blade, the radius of said mill chamber being slightly greater than the distance from the axis of said cutter shaft member to said outer extremity,
- (f) a collector receptacle having an inlet in fluid communication with an intake conduit from a swimming pool, and an outlet in fluid communication with said mill chamber,
- (g) said receptacle having a bottom wall below said mill chamber for collecting debris by gravitation.

4,430,215

ARRANGEMENT FOR BIOLOGICAL CLEANING OF WATER

Svatopluk Mackrle, Brno; Vladimir Mackrle, Prague, and Oldrich Dracka, Brno, all of Czechoslovakia, assignors to Agrotechnika, narodny podnik podnikove riaditelstvo, Zvolen, Czechoslovakia

Filed Mar. 26, 1982, Ser. No. 362,302

Claims priority, application Czechoslovakia, Apr. 2, 1981, 2484-81

Int. Cl.³ C02F 1/72, 3/20, 3/22

U.S. Cl. 210—195.4

14 Claims

1. Arrangement for the biological cleaning of water, comprising an activating system having pneumatic aeration and supply of raw water and a separating system on the principle of fluid filtration with automatic return of activated sludge into the activating system, said pneumatic aeration and supply of raw water and said separating system being contained in a single vessel having a self-supporting side walls and a bottom,

said activating system communicating with the separating system, the separating system having a number of part activating spaces, and the system of activating spaces having a number of separating spaces, both the system of separating spaces and the system of activating spaces being formed by a system of couples of inserted parallel arranged longitudinal partition walls converging in a downward direction, at least one lower edge of one partition wall of a couple forming with the oppo-

whereby to simultaneously develop both force reversals and centrifugal forces in said multi-layer coiled column.

4,430,217

ANTI-RADIAL CHROMATOGRAPHY DEVICE

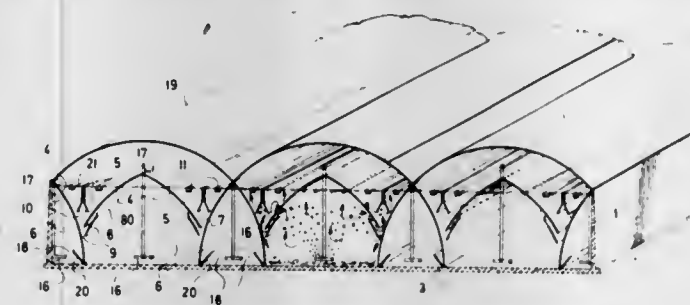
Haleem J. Issaq, Frederick, Md., assignor to Litton Bionetics, Inc., Kensington, Md.

Filed May 18, 1981, Ser. No. 264,751

Int. Cl.³ B01D 15/08

U.S. Cl. 210—198.3

1 Claim



site part of the adjacent partition wall of such couple, a passage for mutual communication between part activating spaces and part separating spaces, a channel provided adjacent to said passage, said channel being formed both by an inserted wall extending vertically beyond the level of the passage in both directions and by an opposite part of the longitudinal partition wall, the part activating spaces being mutually connected at their ends by transitory passages.

4,430,216

HIGH SPEED PREPARATIVE COUNTERCURRENT CHROMATOGRAPHY WITH A MULTIPLE LAYER COILED COLUMN

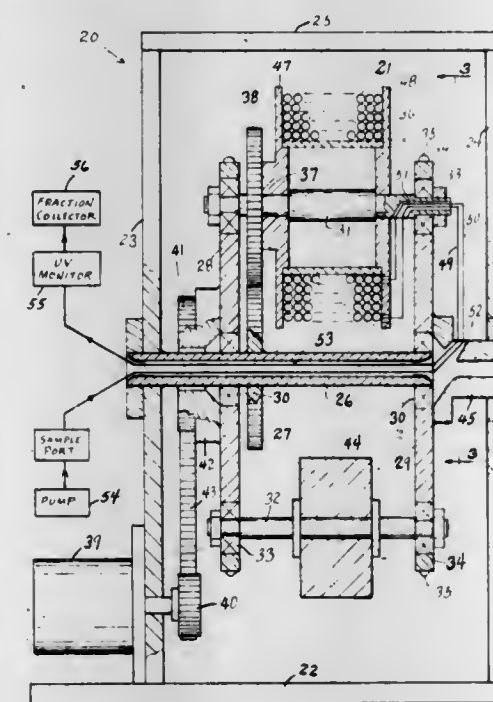
Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 9, 1982, Ser. No. 416,107

Int. Cl.³ B01N 15/08

U.S. Cl. 210—198.2

13 Claims



1. An apparatus for continuous countercurrent chromatography comprising a support, helical separation column means including means to retain a large volume of stationary phase comprising a multi-layer helically coiled column rotatably mounted on the support on a first axis, inlet and outlet flow tubes connected to the terminal ends of said multi-layer coiled column, and means to simultaneously rotate said multi-layer coiled column around said first axis and revolve it around a second axis spaced from and being parallel to said first axis,

4,430,218

SEPARATING DEVICE FOR FLUIDS, CONSISTING OF SUPPORT PLATES AND CUT SECTIONS OF A SEMI-PERMEABLE DIAPHRAGM

Horst Perl; Dietmar Nussbaumer, both of Gottingen; Hans-Weddo Schmidt, Hardeggen; Gunter Pradel, and Ulrich Grummert, both of Gottingen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 281,931

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027413

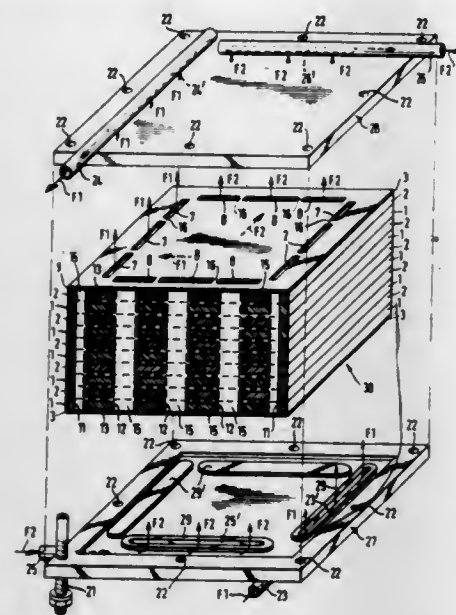
Int. Cl.³ B01D 31/00

U.S. Cl. 210—321.3

7 Claims

1. A separating device comprising support plates and cut diaphragm sections of a semi-permeable material, for a first and second fluid flowing on opposite sides of said diaphragm sections in separate flow paths, wherein said support plates are sealed from the outside of said device and additionally sealed to assure the separate flow of the first and second fluid by a sealing means, the support plates are provided with cutoff channel grooves, said cutoff channel grooves of adjacent facing support plates form conduits into which sealing material in a flowable state is injected, the sealing material is injected into said conduits through perforations in said support plates, said

perforations communicate with said conduits and other perforations in other adjacent facing support plates, and the sealing



material is allowed to solidify in said perforations and said conduits thus forming said sealing means.

4,430,219

HOLLOW FIBER PACKAGE BODY AND ITS PRODUCTION

Hideshi Kuzumoto; Tutomu Tanaka, and Hiroshi Matsumoto, all of Otsu, Japan, assignors to Tayo Boseki Kabushiki Kaisha, Japan

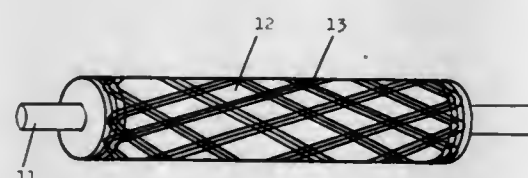
Continuation of Ser. No. 170,218, Jul. 18, 1980, abandoned, which is a continuation of Ser. No. 1,043, Jan. 4, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,771

Claims priority, application Japan, Jan. 10, 1978, 53-1775

Int. Cl.³ B01D 39/00; D02G 3/00

U.S. Cl. 210—321.3

8 Claims



1. A hollow fiber package body for separation of fluid comprising a core and layers of hollow fibers having a selective permeability arranged around said core, said hollow fiber, layers being formed by tape-like bundles of hollow fibers said bundles composed of an arrangement of hollow fibers in nearly parallel relations to one another and in a flat state, said bundles having been turned back near the end of said package body while being held by at least one string or band, the width of each hollow fiber bundle being from 15 to 50,000 d (where d is the outer diameter of a hollow fiber) and the ratio of the thickness to the width of each hollow fiber bundle being from 1/20,000 to 1/5, said hollow fiber bundles being arranged in multi-layers by intersecting at least at one spot between one end and the other end of said package body, and said hollow fiber bundles being arranged in mutually and up- and down-wardly intersecting relationships crossing two or more adjacent layers.

8. A membrane separation device comprising a tubular container having an entrance for fluid and a hollow fiber package body according to claim 1 accommodated in said container.

4,430,220 APPARATUS FOR CONTROLLING FLUID MEDIUM FLOW

Wolfgang Litzenburger, Hassloch, Fed. Rep. of Germany, assignor to Flutec Fluidtechnische Geräte GmbH, Fed. Rep. of Germany

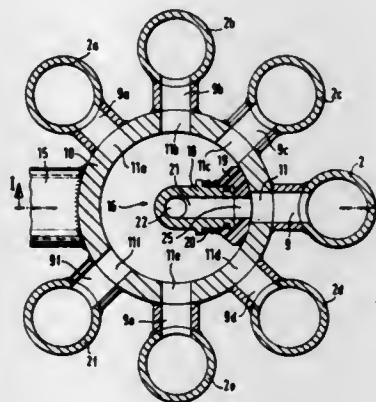
Filed Jul. 29, 1982, Ser. No. 403,138

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131281

Int. Cl.³ B01D 29/38

U.S. Cl. 210—333.1

4 Claims



1. An apparatus for controlling the flow of at least one fluid through a flowthrough element such as a filter comprising a first hollow housing having a circular cylindrical interior, an inlet opening for delivering fluid thereto and a plurality of outlet openings lying in substantially the same plane perpendicular to the axis of said cylindrical interior, said inlet opening being axially offset from said plane; means for supplying fluid under pressure to said inlet opening of said first housing; a plurality of second hollow housings, each capable of receiving a flowthrough element, each of said second housings having a conduit connected to receive fluid from one of said outlet openings of said first housing, and having an outlet opening; a rotary valve in said first housing having a discharge opening, an axially extending member at least a portion of which is hollow and communicates with said discharge opening, said axially extending member being rotatably mounted in said first housing, a radially extending tubular member communicating with said hollow portion of said axially extending member, the axis of said radially extending member lying in the plane containing said outlet openings, and a valve element selectively connectable to any one of said plurality of outlet openings, said valve element comprising a mouthpiece on said radially extending member for coupling to a selected outlet opening and spring means urging said mouthpiece toward the interior wall of said first housing; and means for receiving fluid under pressure from said second housing; whereby when said rotary valve is connected to a selected one of said plurality of outlet openings a fluid flow path is established from said means for receiving to said discharge opening, causing flow in the reverse direction through the one of said second housings connected to said selected outlet opening, said reverse direction flow operating to flush contaminants from said filter.

4,430,221

CENTRIFUGE SIEVE

Leonhard Splewok, Wallisellen, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

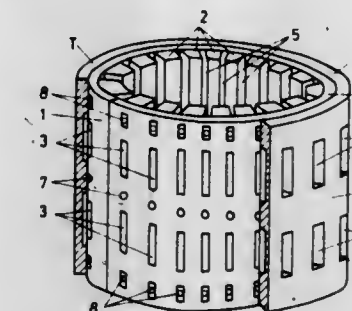
Filed Jul. 6, 1982, Ser. No. 395,142

Claims priority, application Switzerland, Jul. 24, 1981, 4826/81

Int. Cl.³ B04B 3/00, 7/16

U.S. Cl. 210—380.1

13 Claims



1. A centrifuge sieve comprising: a centrifuge drum having an inner surface; a support arrangement bearing at the inner surface of said centrifuge drum; sieve rods secured at the support arrangement at least at two locations and extending in axial direction of the centrifuge drum; said sieve rods being formed of a wear-resistant hard material; connection means for fixedly connecting the sieve rods at one location with the support arrangement; and connection means provided at the other of said two locations between the sieve rods and the support arrangement in order to enable a mobility of the sieve rods in relation to the support arrangement only in the axial direction.

4,430,222

WATER SHEDDING DEVICE

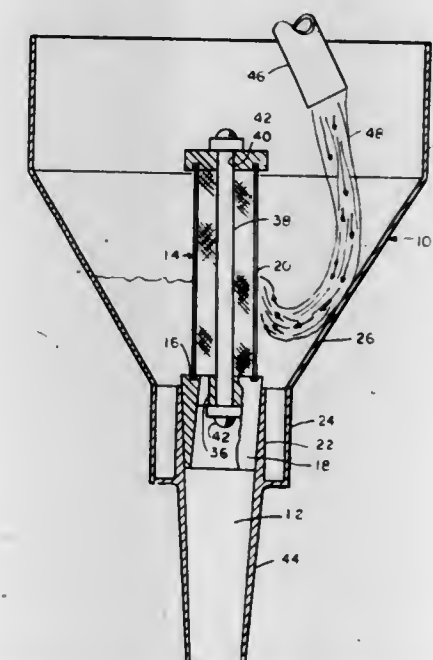
Richard E. Walker, 237 Charleston St., Cadiz, Ohio 43907

Filed Sep. 27, 1982, Ser. No. 424,845

Int. Cl.³ B01D 23/28

U.S. Cl. 210—477

18 Claims



1. In a container having container side walls and a drain opening therethrough from which fluid flows by gravity: a generally tubular boss sealed to said walls around said drain opening and projecting generally vertically into said container; a pervious enclosure in said container rising vertically and sealed to said boss, said pervious enclosure having openings

therethrough which communicate the inside of said container to the inside of said enclosure, said openings being no larger than about 100 mesh and being surrounded by a hydrophobic material which opposes water from entering said enclosure from said container, said walls of said container being shaped to provide a sump surrounding said boss, and being further constructed and arranged so that flow along said container walls proceeds toward said sump and then passes over said sump and reverses direction toward said pervious enclosure before proceeding downwardly and out of said drain opening, and means for visually detecting water between said boss and side walls of said container.

17. A water shedding assembly comprising: a tube having three distinct sections including a lower end impervious section with sealing means for effecting a seal with its external periphery, a middle impervious section projecting upwardly from said lower end sealing means for keeping a level of liquid external and above said sealing means, and an upper pervious section through which fluid must enter the inside of said tube, said pervious section having openings of no greater than about 100 mesh and being of a hydrophobic material; and said lower end impervious section being of a hydrophobic material to keep water from getting past said means for effecting a seal with its periphery.

4,430,223

FILTER ELEMENT FOR FILTERING FLUID AND METHOD OF PRODUCING SAME

Susumu Miyakawa, Kariya; Toshiaki Fukuta; Hajime Akado, both of Anjo, and Yoshihiro Taki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

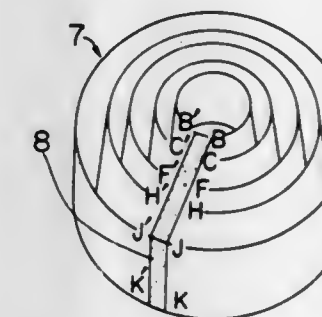
Filed Feb. 19, 1982, Ser. No. 350,146

Claims priority, application Japan, Feb. 25, 1981, 56-27242; Mar. 6, 1981, 56-32861; Mar. 6, 1981, 56-32862; Jul. 10, 1981, 56-108705; Oct. 28, 1981, 56-172428; Dec. 11, 1981, 56-200678

Int. Cl.³ B01D 27/06, 46/52

U.S. Cl. 210—493.5

7 Claims



1. A cylindrical filter element for filtering fluid, having two-dimensional wave forms spreading radially from the axis of said cylindrical element and including a plurality of closed wave crest lines, and being produced through the steps of preparing a filter material strip shaped symmetrical with respect to a center line extending from narrower one end to the wider other end of the strip, of folding said filter strip along a plurality of folding lines substantially perpendicular to the center line to form parallel wave forms between the two ends, and of curving and closing the folded filter strip in such a manner that said narrower end is located on the inner peripheral side of the curved filter strip and said wider end on the outer peripheral side, characterized in that at least one interval between adjacent two of said folding lines is different from at least one of the other intervals, and thus, at least one crest line or bottom line of said two-dimensional wave form is different from at least one of the other crest lines or bottom lines with respect to their heights.

4,430,224

PROCESS AND APPARATUS FOR BIOLOGICALLY TREATING WASTE WATERS

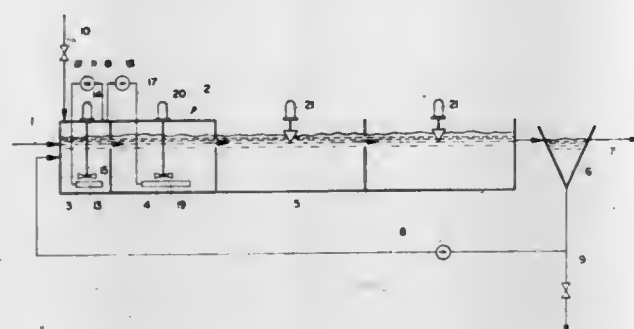
Uwe Fuchs, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany
Filed Dec. 1, 1981, Ser. No. 326,308

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1980, 3045158

Int. Cl.³ C02F 3/26

U.S. Cl. 210—604

9 Claims



1. In a process for biologically treating wastewater by the activated sludge process, wherein the wastewater is aerated in an activation basin comprising a plurality of sections, and wherein the mixture of wastewater and activated sludge is removed from the activation basin, and separated in a settling stage into purified water and sludge with at least a part of the separated sludge being recycled into the activation basin, the improvement comprising:

treating the wastewater in an activation basin having at least four separate sections, comprising the steps of passing the wastewater into a first of said sections and aerating the wastewater in the first section with a gas feed having a higher O₂ concentration than air, passing resultant aerated wastewater from the first section into a second section having a volume exceeding the volume of the first section by an amount equal to about the volume of the first section and further aerating the wastewater therein with a gas feed having a higher O₂ concentration than air, passing resultant further aerated wastewater from the second section into a third section having a volume exceeding the volume of the second section by an amount equal to about the volume of the first section and also still further aerating the wastewater therein, with the aerating feed being air, and passing resultant still further aerated wastewater from the third section into a fourth section having a volume exceeding the volume of the third section by an amount equal to about the volume of the first section and also still further aerating the wastewater therein, with the aerating feed also being air, before passing the latter to the settling stage.

4,430,225

AERATION TANK FOR ACTIVATED-SLUDGE PROCESS SEWAGE TREATMENT

Akira Takamatsu, and Hiroshi Higuchi, both of Tochigishi, Japan, assignors to Kabushiki Kaisha Mitsui Miike Seisakusho, Nihonbashi-Muromachi, Japan

Filed Jan. 7, 1982, Ser. No. 337,572

Claims priority, application Japan, Feb. 17, 1981, 56-21943

Int. Cl.³ C02F 3/16

U.S. Cl. 210—608

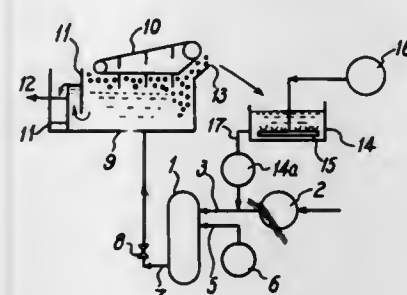
4 Claims

1. An activated sludge process sewage treatment method for fluid received in a pressurized aeration tank (1) with an inner barrel (19) and an axial flow impeller (23) mounted therein at a lower end thereof, said aeration tank forming an outer barrel (18), said inner barrel (19) having a cylindrical configuration and being arranged so that the ratio of the inside diameter d of the inner barrel (19) to the outside diameter d_a of the axial flow impeller (23) is selected within the range of $d/d_a \leq 1.01$, and said inner barrel is formed of such dimensions that the ratio d/D of the inside diameter d of the inner barrel (19) to the

inside diameter D of the outer barrel (18) of the aeration tank (1) is selected in the range of 0.2 to 0.4, comprising:

keeping pressure in the pressurized aeration tank (1) in the range of 2 to 5 Kg/cm²G;

driving an axial flow impeller in the tank at a peripheral speed selected in the range of 8 to 15 m/s, said axial flow impeller (23) including a plurality of blades (24) having an aerofoil sectional configuration with a specific speed in the range of 900 to 3000 rpm $\sqrt{m^3/min/m^{3/4}}$



including aerobic microorganisms of *Opercularia* group in the fluid;

flowing the fluid upwardly through an annular passage defined between outer and inner barrels (18) and (19) with a flow velocity V_0 in the range of 0.2 to 0.4 m/s the tank and flowing fluid downwardly through the inner barrel, and

circulating fluid in the aeration tank (1) with the mean number of recirculation cycle being at least 70.

4,430,226

METHOD AND APPARATUS FOR PRODUCING ULTRAPURE WATER

Ramesh S. Hegde, Chelmsford, and Gary C. Ganzi, Lexington, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Mar. 9, 1981, Ser. No. 241,792

Int. Cl.³ C02F 1/42, 1/04, 1/44

U.S. Cl. 210—638

12 Claims

1. The method for providing substantially de-ionized water with reduced organic contamination which comprises passing water through a cartridge containing a particulate admixture of activated carbon and mixed ion exchange resins.

5. The method according to any one of claims 1-4 wherein said water is pretreated by distillation, ion-exchange, ultrafiltration, reverse osmosis, or a combination thereof.

4,430,227

METHOD OF CONCENTRATING AQUEOUS SOLUTIONS

Donald N. Hanson, Orinda, and Scott Lynn, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 18, 1980, Ser. No. 178,870

Int. Cl.³ B01D 11/04

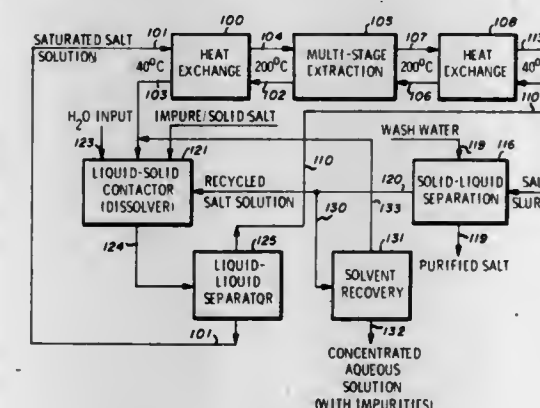
U.S. Cl. 210—642

10 Claims

1. A method of concentrating an aqueous solution of a non-volatile ionic solute in stages from a low concentration to an intermediate higher concentration and then to a highest concentration, said method comprising:

(a) providing first, second and third extraction zones for direct, intimate, countercurrent contact between such aqueous solution and a water immiscible, polar, organic solvent having low solubility for water at ambient temperatures and having an enhanced solubility for water at an elevated temperature, said polar organic solvent being stable and unreactive with the aqueous solution and solute and with the equipment employed and having low solvent power for the solute

- (b) causing continuous, intimate, countercurrent contact between such solution of lowest concentration and such solvent in the first contact zone and at an elevated temperature and continuously withdrawing from such zone a stream of wet solvent and a stream of solution of intermediate concentration,
- (c) cooling the effluent stream of wet solvent and a portion of the effluent stream of solution from the first zone,
- (d) separating water from the cooled stream of solvent,
- (e) causing continuous, intimate, counter-current contact in said second zone between the thus dewatered solvent and the thus cooled portion of solution, the contact being carried out at a temperature such that water is extracted from the solvent to provide a drier solvent and the solution is diluted,
- (f) continuously withdrawing the diluted solution and the drier solvent from the second zone,



- (g) heating the diluted solution so withdrawn and recycling it to the first zone,
- (h) reheating the drier solvent stream withdrawn from the second zone and causing continuous intimate, countercurrent contact thereof with the remainder of the solution withdrawn from the first zone, such contact being carried out in the third zone and resulting in the extraction of water from the solution and production of a solution of highest concentration and of solvent containing the water that is extracted,
- (i) continuously withdrawing from the third zone a stream of solution of highest concentration and a stream of solvent containing extracted water and,
- (j) recycling the solvent stream thus withdrawn from the third zone to the first zone.

4,430,228

PROCESS FOR REMOVING DISSOLVED IRON FROM WATER

Laurene O. Paterson, P.O. Box 953, 1219 E. Church St., Adrian, Mich. 49221

Continuation-in-part of Ser. No. 103,322, Dec. 14, 1979, abandoned, Ser. No. 145,657, May 2, 1980, abandoned, and Ser. No. 210,923, Nov. 28, 1980, abandoned. This application Mar. 5, 1982, Ser. No. 355,163

Int. Cl.³ B01D 15/00

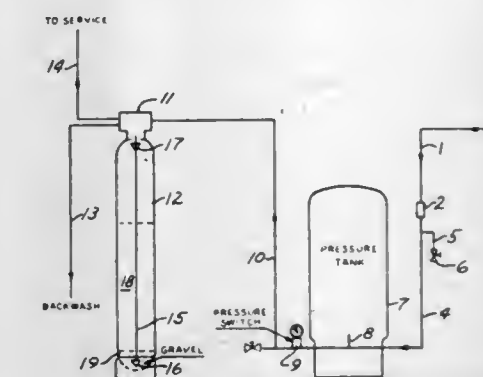
U.S. Cl. 210—665

22 Claims

1. A process for removing iron from water which comprises the steps of:

- (1) subjecting water having iron therein to high turbulence and high shear to a degree sufficient to colloidalize existing insoluble iron hydrates and form colloidal dispersed iron hydrates from substantially all the dissolved iron present, thereby providing the iron in the form of micelles having a surface charge;
- (2) maintaining the so-treated water under a pressure within the range from about 10 to 500 psig;
- (3) passing the water containing the iron hydrate micelles

within said pressure range through a bed of particulate material having electrostatically charged surface area



capable of adsorbing and removing from the water said iron hydrates; and

(4) recovering water having low iron residuals.

4,430,229

IMMUNE ADSORBENT AND ADSORBING DEVICE
Naokuni Yamawaki, and Katsunori Horikoshi, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

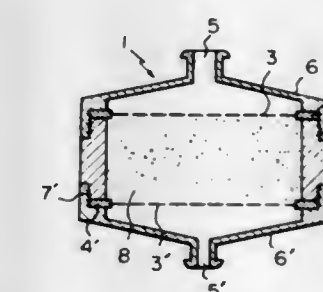
Filed May 17, 1982, Ser. No. 378,924

Claims priority, application Japan, May 22, 1981, 56-76776; Dec. 3, 1981, 56-193735

Int. Cl.³ B01D 15/00

U.S. Cl. 210—692

9 Claims



9. A method for removing at least one of an autoantibody and an immune complex from body fluid, comprising contacting body fluid containing at least one of an autoantibody and an immune complex with an adsorbing material comprising a water-insoluble carrier, which is a hydroxyl group-containing crosslinked copolymer having a specific surface area of at least 5 m²/g, and at least one member selected from low-molecular weight substances containing a purine base or pyrimidine base as a constituent element, which is fixed to said carrier.

4,430,230

METHOD FOR REMOVAL OF IMPURITIES FROM LIQUID MIXTURES

Takeo Satake, Wakayama, Japan, assignor to Nippon Chemtec Consulting Inc., Osaka, Japan

Filed Oct. 28, 1980, Ser. No. 201,605

Claims priority, application Japan, Oct. 30, 1979, 54-140974; Dec. 24, 1979, 54-168961; May 12, 1980, 55-063001

Int. Cl.³ B01D 15/00

U.S. Cl. 210—691

11 Claims

1. A method for removal of oily or solid impurities from an impurities-containing liquid mixture wherein the impurities are emulsified or finely suspended in a liquid medium, which comprises kneading the impurities-containing liquid mixture with a viscoelastic material in a viscoelastic state which has an affinity with said impurities, has substantially no affinity with said liquid medium, has a viscoelasticity and shows a spinnability when a shearing force is given thereto with a kneader at a temperature of 0° to 100° C. and thereby having the viscoelas-

tic material take up the impurities and separating out the purified liquid medium from the kneading system.

4,430,231

FILTERING APPARATUS AND METHOD

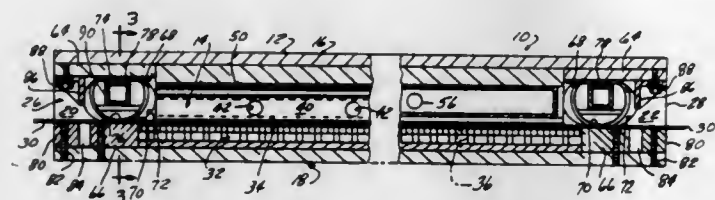
Jack Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48033

Filed Aug. 5, 1982, Ser. No. 405,524

Int. Cl.³ B01D 33/04

U.S. Cl. 210—783

14 Claims



1. A filtering apparatus comprising the elements of:
 - a rigid filter housing including an internal filter chamber;
 - said filter housing defining at least one elongated opening extending into said chamber;
 - a filter element adapted to be passed into said filter chamber through said opening so as to be movable into and out of said filter chamber;
 - said filter element located beneath a space in said filter chamber;
 - inlet means for directing fluid to be filtered under pressure into said filter chamber space above said filter element;
 - filter element support means mounted within said housing and having an upper face located to receive said filter element thereon, said support means including clearance spaces enabled to receive fluid flow through said filter element;
 - outlet means for collecting said fluid flow passed through said filter element and support means;
 - sealing means for sealing said filter chamber opening comprising a flexible tube segment and means mounting said tube segment extending across and within said opening, said tube segment configured to move into sealing engagement with the perimeter of said opening upon pressurization thereof;
 - said elongated opening defined by opposing top and bottom surfaces, and a pair of side members wherein said side members are each formed with a side opening through which each end of said tube segment passes to be coextensive with said top and bottom opposing surfaces, each of said side openings having an internal surface configured to be sealed by said respective tube segment ends upon pressurization thereof said elements being relatively positioned to enable sealing of said filter housing openings to be achieved solely by sealing engagement of said tube segment with said top and bottom member opposing surfaces and with said side openings internal surface;
 - control means for selectively pressurizing or depressurizing said tube segment, to thereby controllably seal said opening and said side openings during operation of said filtering apparatus.
14. A method of filtering comprising the steps of disposing a flexible element within the interior of a substantially rigid filter housing, said filter housing having an elongated opening through which said flexible filter element is disposed during a filtration cycle, with a filter chamber defined within said filtering housing above the upper surface of said flexible filtering element;
 - disposing said flexible filtering element overlying a support which is adapted to receive flow through said filter element;
 - sealing said elongated opening by the step of pressurizing a flexible tube segment disposed within said elongated opening extending thereacross, said flexible tube segment being passed through a pair of side openings formed in said

housing adjacent said elongated housing, such that upon pressurization the exterior thereof moves into sealing engagement with said filter element and said surfaces of said elongated opening and said side openings; establishing a filter cycle by directing a flow of liquid into said filter chamber and collecting the filtered liquid after passing through said filter elements; depressurizing and at least partially evacuating said tube segment after each filtration cycle; moving said filter element with the accumulated solids thereon out of said filter chamber and removing said accumulated solids.

4,430,232

DISC FILTER FOR LIQUIDS

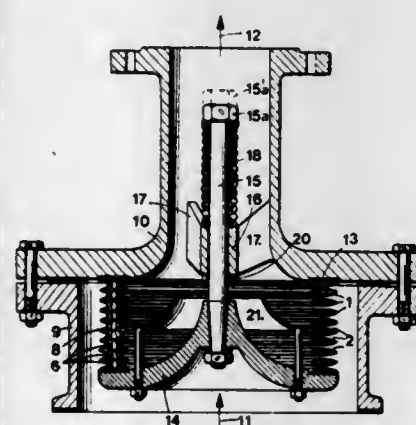
Charles Doucet, 20, avenue Tronchet, 1226 Thonex, Switzerland

Filed Feb. 1, 1982, Ser. No. 344,519

Int. Cl.³ B01D 25/18, 29/38

U.S. Cl. 210—798

15 Claims



1. A disc filter body for a filter of the counter-current flow cleaning type, comprising: a series of coaxial annular shaped solid filter elements having a hydrodynamic lenticular cross-section; said elements each having circumferentially-spaced alveoli located on opposite sides of the elements; resiliently yieldable spacer elements located in said alveoli, each spacer element having a central channel in alignment with the channels of adjacent spacer elements, capable of being opened or substantially closed by varying the pressure exerted on said spacer elements, thereby forming a generally cylindrical shaped assembly providing annular filtering passages between said filter elements and a central cylindrical flow channel extending axially along the length of said assembly; and means for varying the distance between said filter elements by varying pressure exerted on the spacer elements for changing said filter body from a filtering mode to a cleaning mode.

4,430,233

BRANCHED CHAIN KETONES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES, COLOGNES AND PERFUMED ARTICLES AND THE PROCESS FOR PREPARING SAME

Richard M. Boden, Monmouth Beach, and Theodore J. Tyszkiewicz, Sayreville, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 296,868, Aug. 27, 1981, Pat. No. 4,374,276.

This application Jun. 4, 1982, Ser. No. 384,960

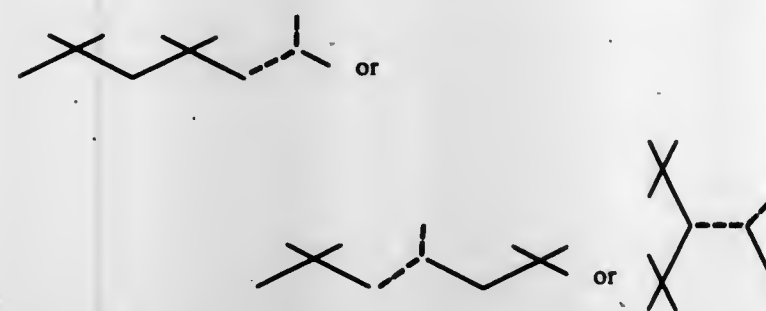
Int. Cl.³ D06M 13/20

U.S. Cl. 252—8.6

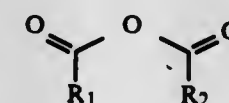
1 Claim

1. A process for augmenting or enhancing the aroma of a fabric softener composition or a drier-added fabric softener article comprising the step of adding to a drier-added fabric softener article component or a fabric softener composition, an aroma augmenting or enhancing quantity of a product prepared by the process of (a) trimerizing isobutylene to form

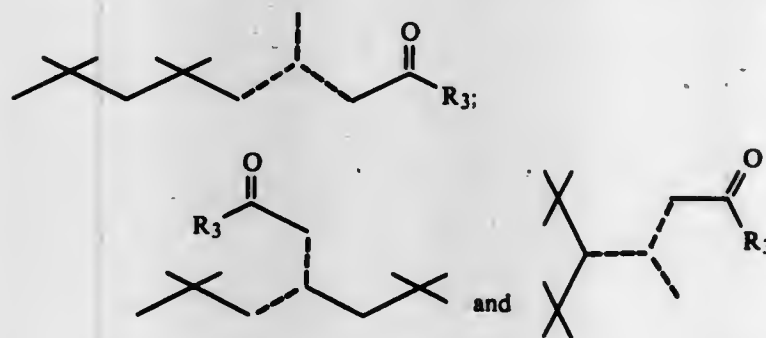
triisobutylene, a mixture of substances defined according to the structures:



wherein in each of the molecules one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond and (b) reacting the resulting triisobutylene composition of matter with an alkanolic acid anhydride having the structure:



wherein R₁ and R₂ are the same or different and are each selected from the group consisting of methyl and ethyl, in the presence of a Lewis acid catalyst thereby producing a mixture of compounds comprising the compounds defined according to the structures:



wherein R₃ represents methyl or ethyl and in each of the molecules one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond.

4,430,234

MACHINING FLUID OF WATER SOLUBLE TYPE USING ORGANIC SURFACTANTS

Masami Hasegawa, Fuji, and Takashi Kato, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 6, 1982, Ser. No. 395,838

Claims priority, application Japan, Jul. 10, 1981, 56-107757

Int. Cl.³ C10M 1/06

U.S. Cl. 252—49.5

17 Claims

1. A machining fluid for use in machining of metal materials, comprising:
 - water;
 - 5 to 20 parts by weight of a surface-active component which is selected from the group consisting of erythritol fatty acid esters and glycerol fatty acid esters;
 - 3 to 15 parts by weight of a sorbitan fatty acid ester;
 - 3 to 15 parts by weight of an alkylolamide of a fatty acid;
 - 3 to 10 parts by weight of propylene glycol;
 - 1 to 5 parts by weight of a chelating agent for metal ions; and
 - 0.5 to 3 parts by weight of a fluorine-containing surface-active agent.

4,430,235

POLYMERIC ANTIOXIDANTS

Nan S. Chu, Hartsdale, and Lawrence Marlin, Yorktown Heights, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

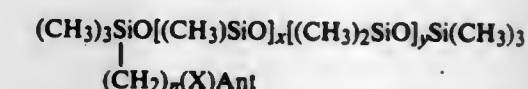
Filed Jul. 17, 1981, Ser. No. 284,389

Int. Cl.³ C07F 7/08, 7/10; C10M 3/22, 3/44

U.S. Cl. 252—49.6

5 Claims

1. A polymeric antioxidant of the formula:



wherein x ranges from 2 to 100, y ranges from 20 to 300, the ratio of x:y is at least 1:10, n ranges from 2 to 12, X is selected from the group consisting of —NH—, —NHR—, —O— and —CHN—, n ranges from 2 to 12, X is selected from the group consisting of —NH—, —NHR—, —O— and —CHN—, and Ant is an aromatic antioxidant moiety.

4,430,236

LIQUID DETERGENT COMPOSITION CONTAINING BLEACH

T. Chandler Franks, Mauldin, S.C., assignor to Texize, Division of Morton Thiokol, Greenville, S.C.

Filed Jun. 22, 1981, Ser. No. 275,791

Int. Cl.³ C11D 3/395, 7/54; D06L 3/00

U.S. Cl. 252—95

25 Claims

1. A generally single phase substantially phosphate free liquid aqueous solution for use as a laundry detergent and bleach comprising:
 - a detergency effective amount of a member selected from the group consisting of a nonionic surfactant or a mixture of a nonionic surfactant and an anionic surfactant;
 - hydrogen peroxide bleach present in an amount equivalent to about 1 to about 20 percent by weight of a 50 percent by weight aqueous solution of hydrogen peroxide;
 - a fluorescent brightening agent present in an amount of from about 0.01 to about 2.0 percent by weight; and
 - an aqueous medium;
- and wherein said single phase liquid has a loss of less than four and one half percent (4.5%) of original hydrogen peroxide content in two (2) months at 77 degrees F.

4,430,237

LIQUID DETERGENT HAVING HIGH GREASE REMOVAL ABILITY

Robert C. Pierce, Plainsboro, and Frank J. Bala, Jr., South Amboy, both of N.J., assignors to Colgate-Palmolive Co., New York, N.Y.

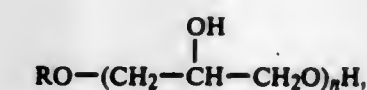
Filed Oct. 16, 1981, Ser. No. 311,824

Int. Cl.³ C11D 1/66, 1/83, 17/08

U.S. Cl. 252—173

3 Claims

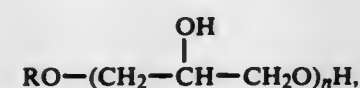
1. A liquid detergent composition consisting essentially of about 15% to 40% by weight of a nonionic mixture of higher alkyl glyceryl ether surfactants having the structural formula:



where R is an alkyl radical containing 8 to 16 carbons, and n has a value of 1 to 3, said mixture containing 12% to 40% by weight of glyceryl ethers where n is 1, 24% to 61% by weight of glyceryl ethers where n is 2 and 6% to 50% by weight of glyceryl ethers where n is 3, and an additional anionic or nonionic surface active agent in an aqueous vehicle, the weight ratio of said additional surface active agent to said glyceryl ether mixture being in the range of 10:1 to 1:10.

2. A water-soluble detergent composition consisting essen-

tially of, by weight, a nonionic mixture of higher alkyl glyceryl ether surfactants having the structural formula:



where R is an alkyl radical containing 8 to 16 carbons, and n has a value of 1 to 3, said mixture containing about 12% glyceryl ethers where n is 1, about 24% of glyceryl ethers where n is 2 and about 54% of glyceryl ethers where n is 3.

4,430,238

ESTERIFIED DICARBOXYLIC ACID AND ITS USE

Karl M. E. Hellsten, Ödsal, and Anders W. Klingberg, Henan, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed May 10, 1982, Ser. No. 376,338

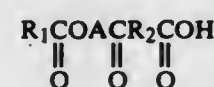
Claims priority, application Sweden, May 18, 1981, 8103099

Int. Cl.³ B03D 3/00; C22B 3/00

U.S. Cl. 252-61

7 Claims

1. A process for the froth flotation of oxide minerals and salt minerals which comprises carrying out the froth flotation in the presence as a collector reagent of an esterified dicarboxylic acid having the general formula



in which R₁ is aliphatic hydrocarbon having from seven to twenty-one carbon atoms, R₂ is hydrocarbon having from two to six carbon atoms and A is oxyalkylene having from two to four carbon atoms.

4,430,239

FERROFLUID COMPOSITION AND METHOD OF MAKING AND USING SAME

John E. Wyman, Lexington, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Continuation-in-part of Ser. No. 313,654, Oct. 21, 1981,

abandoned. This application Feb. 7, 1983, Ser. No. 464,480

Int. Cl.³ H01F 10/10

U.S. Cl. 252-62.51

29 Claims

1. A stable ferrofluid composition, which composition comprises a colloidal dispersion of finely-divided magnetic particles in a liquid carrier and a dispersing amount of a dispersing agent, which agent comprises an acid phosphoric acid ester of a long-chain alcohol, the long-chain alcohol compatible with the liquid polar carrier.

4,430,240

DE-ICING CHEMICALS AND THEIR PREPARATION FROM POLYSACCHARIDE SOURCES

Robert L. Sandvig; William A. Klemm; Jack R. Gaines, and Robert W. Looyenga, all of Rapid City, S. Dak., assignors to State of South Dakota as represented by the Department of Transportation, Pierre, S. Dak.

Filed Jan. 12, 1982, Ser. No. 338,848

Int. Cl.³ C09K 3/18

U.S. Cl. 252-70

48 Claims

1. The method of de-icing which comprises contacting an iced surface with a de-icing chemical, said chemical consisting essentially of a mixture of alkaline earth metal salts of acetic acid, lactic acid, and glycolic acid with the mixture being substantially free of alkaline earth metal salts of oxalic acid or formic acid.

4,430,241

MIXED NITRATE SALT HEAT TRANSFER MEDIUM AND PROCESS FOR PROVIDING THE SAME

Louis C. Fiorucci, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jul. 1, 1982, Ser. No. 394,192

Int. Cl.³ C09K 5/06

U.S. Cl. 252-70

25 Claims

1. A process for preparing particles of a non-friable, eutectic mixture of sodium nitrate and potassium nitrate for use as a heat transfer and thermal storage medium for solar power stations comprising steps of:

- preparing a fluid mixture of between about 70% and about 30% by weight sodium nitrate and about 30% and about 70% by weight potassium nitrate, wherein said fluid mixture has a combined level of sulfates, oxides, carbonates and chlorides of no more than about 0.7% by weight and with the chloride being no more than about 0.2% by weight;
- granulating said fluid mixture by a process selected from the group consisting of shock chilling and spray graining to form substantially homogeneous particles of said mixture; and
- recovering a salt product comprised of particles having a predetermined mesh size.

4,430,242

NOVEL ROAD AND HIGHWAY DEICER AND TRACTION AGENT, AND PROCESS FOR ITS MANUFACTURE

Alan B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207

Filed Aug. 2, 1982, Ser. No. 404,365

Int. Cl.³ C09K 3/18

U.S. Cl. 252-70

8 Claims

1. A process for manufacturing a combined deicing and traction agent comprising the following steps:

- introducing crushed raw limestone into a rotary kiln or equivalent agitated reaction vessel;
- adding aqueous acetic acid at a concentration of 50-90% by weight to the crushed raw limestone, with agitation;
- regulating the total relative amount of acetic acid such that the mole ratio of acid, anhydrous basis, to calcium compounds in the limestone is in the range 0.4-3.0;
- agitating the reaction batch for a period of time sufficient to achieve substantially complete reaction; and
- drying the damp intermediate product of said reaction in a conventional manner to produce a dry, free-flowing product.

4,430,243

BLEACH CATALYST COMPOSITIONS AND USE THEREOF IN LAUNDRY BLEACHING AND DETERGENT COMPOSITIONS

Charles D. Bragg, Newcastle upon Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 30, 1982, Ser. No. 403,376

Claims priority, application United Kingdom, Aug. 8, 1981, 8124302; Dec. 16, 1981, 8137967; Jun. 1, 1982, 8215890

Int. Cl.³ C11D 3/04, 3/39, 11/00; D06L 3/02

U.S. Cl. 252-91

7 Claims

1. A laundry detergent composition comprising from about 0% to about 40% of surfactant selected from anionic, nonionic, ampholytic and zwitterionic surfactants and mixtures thereof, from about 5% to about 90% of inorganic or organic detergent builder, from about 5% to about 35% of particulate peroxygen bleaching agent, and from about 0.05% to about 2% of a catalyst system soluble in water at pH 10 and comprising a dry mixture of:

- a first particulate component comprising a catalytic heavy metal cation having a catalytic activity for decomposition of the peroxygen bleaching agent of at least 10%, selected from the group consisting of cations of vanadium,

chromium, manganese, iron, cobalt, copper, osmium, platinum, palladium, silver, mercury, and lead,

- a second particulate component comprising an auxiliary metal cation having a catalytic activity for decomposition of the peroxygen bleaching agent of less than 10%, selected from the group consisting of cations of zinc, aluminum and nickel, and

- a water soluble sequestrant selected from the group consisting of ethylenediaminetetraacetic acid, diethylenetriaminepentaacetic acid, ethylenediaminetetra-(methylenephosphonic acid), diethylenetriaminepenta-(methylenephosphonic acid), and alkali-metal and alkaline-earth metal salts thereof,

wherein the molar ratio of the sum total of (auxiliary metal cation + catalytic heavy metal cation) to sequestrant is in the range from 1:1 to 20:1 and the molar ratio of sequestrant to catalytic heavy metal cation is in the range from 1:1 to 40:1.

4,430,244

SILICATE-FREE BLEACHING AND LAUNDERING COMPOSITION

Guy Broze, Grace-Hollogne, and Leopold Laitem, Orp-le-Grand, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 4, 1982, Ser. No. 354,861

Int. Cl.³ C11D 3/395

U.S. Cl. 252-94

9 Claims

1. A process for bleaching which comprises contacting the stained and/or soiled material to be bleached with an aqueous solution of a granular bleaching detergent composition comprising:

- a bleaching agent comprising a peroxygen compound in combination with an activator therefor; and,
- at least one surface active agent selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents; said bleaching detergent composition being substantially free of silicate compounds.

4,430,245

SOAP COMPOSITION

Ian A. M. Beattie, Birkenhead, England, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Apr. 6, 1981, Ser. No. 251,703

Int. Cl.³ C11D 9/30, 15/04, 9/22

U.S. Cl. 252-117

4 Claims

1. A thickened single liquid phase aqueous soap composition having a viscosity of from 2000 to 10,000 cps, said composition comprising in addition to water:

- from about 10 to about 25% by weight of a water-soluble or water-dispersible fatty acid soap selected from the group consisting of monoethanolamine fatty acid soaps, diethanolamine fatty acid soaps and mixtures thereof, the fatty acid moiety being derived from a mixture of fatty acids having a carbon chain of from 10 to 18 carbon atoms, the fatty acids being predominantly C₁₀ to C₁₄;
- a first thickening agent selected from the group consisting of C₁₂ to C₁₈ fatty acid alkanolamides and mixtures thereof;
- a second thickening agent selected from the group consisting of C₁₂ to C₁₈ fatty acids and mixtures thereof, the first and second thickening agents together forming from about 1% to about 4% by weight of the composition; and
- an effective amount of a perfume, the composition being characterized by its freedom from the problem of phase separation which may occur with other aqueous liquid soap compositions which have a viscosity exceeding 2000 cps and contain a perfume in combination with a soap other than as defined in (i).

4,430,246

GRANULATE CONSISTING OF HYDRATED SODIUM TRIPOLYPHOSPHATE AND WATER-INSOLUBLE ALUMINO SILICATE ION EXCHANGER MATERIAL

Günter-Sorbe; Horst-Dieter Wasel-Nielsen, both of Hürth, and Joachim Kandler, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 39,843, May 17, 1979, abandoned. This application Apr. 7, 1983, Ser. No. 482,839

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822231

Int. Cl.³ B01J 2/00; C11D 3/06, 3/12, 11/00

U.S. Cl. 252-140 3 Claims

1. In a granulate comprising particles having sizes substantially within the range 0.15 to 1.25 mm, the granulate consisting essentially of:

- about 1 to 99 weight % of partially or completely hydrated sodium tripolyphosphate containing water of hydration in a proportion of at least about 10 weight %, based on the theoretically possible water content and having been made from the anhydrous sodium tripolyphosphate, and
- about 99 to 1 weight % of a water-insoluble aluminosilicate ion exchanger material of the general formula



in which Cat stands for a calcium exchangeable cation with the valency n, x is 0.7 to 1.5, Me stands for Aluminum, y is 0.8 to 6, and z is 1.8 to 13.5

the improvement wherein the anhydrous sodium tripolyphosphate contains about 20 to 80 weight % of phase-I material prior to hydration and the balance being phase-II; the aluminosilicate ion exchanger material being a type A zeolite of the formula $[\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot (\text{SiO}_2)_{2.45} \cdot \text{H}_2\text{O}]$, the material being anhydrous and having the following particle size distribution according to Andreasen prior to granulation:

15 μm:	97-99%
10 μm:	94-97%
1 μm:	1-5%

corresponding to an average diameter of the particles of 3 to 5 microns;

and the granulate presenting the following particle size distribution (Tyler Standard Sieve Analysis Scale)

Mesh number	Retained on sieve, weight %
>12	3.6-13.4
>16	11.0-20.5
>20	19.4-29.1
>35	65.6-90.4
>65	91.7-98.9
>100	97.5-99.8
<100	2.5-0.1

4,430,247

PROCESS FOR PREPARING AN OXYALKYLATED PRODUCT

Arthur L. Austin, Southgate; William W. Levis, Jr., Wyandotte; Louis C. Pizzini, Trenton, and Robert J. Hartman, Southgate, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 590,332, Jun. 25, 1975, Pat. No.

4,097,399. This application Sep. 29, 1977, Ser. No. 837,935

Int. Cl.³ C09K 3/00

U.S. Cl. 252-182

10 Claims

1. A process for preparing an oxyalkylated product which comprises

- providing a mixture containing
- a phenol, at least in an amount sufficient to form a

complex with an aluminum or iron substance in the mixture,

- (b) an organic acid anhydride in an amount up to about 1:1 mole ratio of phenol to anhydride, and
- (c) a substance containing aluminum or iron which will form a complex with the phenol,
- (2) heating the mixture to a temperature in the range of from about 80 degrees to about 250 degrees C., and
- (3) oxyalkylating the heated mixture by adding thereto sufficient alkylene oxide having from 2 to 12 carbon atoms to form an oxyalkylated product.

4,430,248

CATIONIC POLYMERS FOR REDUCTION OF VISCOSITY OF A MAGNESIUM HYDROXIDE SLURRY

Paul R. Rey, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 271,469, Jun. 8, 1981, abandoned. This application Sep. 17, 1981, Ser. No. 303,305
Int. Cl.³ B01J 13/00; F17D 1/16, 1/18

U.S. Cl. 252-313 R

6 Claims

1. A method for reducing the viscosity of a magnesium hydroxide aqueous slurry which comprises adding 5 pounds/ton or less of a cationic polymer selected from the group consisting of methacryloyloxyethyl trimethyl ammonium methosulfate, vinyl benzyl trimethyl ammonium chloride, dimethylallyl ammonium chloride and 3-acrylamido-3-methyl butyl trimethyl ammonium chloride, to the magnesium hydroxide slurry.

4,430,249

PREPARATION OF AQUEOUS SUSPENSIONS OF TALC

Leonard F. Gate, St. Austell, England, assignor to English Clays Lovering Pochin & Co., Ltd., St. Austell, England

Filed Oct. 22, 1981, Ser. No. 313,816

Claims priority, application United Kingdom, Oct. 23, 1980, 8034180

Int. Cl.³ B01J 13/00; C04B 31/40; C08K 7/00; C09C 3/06

U.S. Cl. 252-313 R

10 Claims

9. A process for preparing an aqueous suspension of talc which process comprises contacting the talc, in a finely divided form, with an aqueous solution of an alkali metal hydroxide or ammonium hydroxide, washing the talc after contact with said aqueous solution, thermally drying the washed talc to remove at least a substantial proportion of the water associated therewith, and then suspending the thermally dried talc in water which contains a dispersing agent.

4,430,250

SURFACE-ACTIVE OLIGOMERS

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 20, 1981, Ser. No. 285,422

Claims priority, application Luxembourg, Jul. 21, 1980, 82646

Int. Cl.³ B01F 17/42

U.S. Cl. 252-351

9 Claims

1. A surface-active random oligomer having the formula



wherein

R_1 represents a linear or branched, saturated or unsaturated aliphatic hydrocarbon radical, a cycloaliphatic radical, an aromatic radical or an alkyl aromatic radical, containing up to 30 carbon atoms,

Z represents a mixture of (i) A and (ii) a group of the formula $R_2-O-(C_2H_3(A)-O)_m-CH_2-$ or a mixture of said groups, wherein A represents a hydrophilic group, R_2 represents a linear or branched, saturated or unsaturated aliphatic hydrocarbon radical, a cycloaliphatic radical, an aromatic radical or an alkylaromatic radical, containing 8 to 30 carbon atoms,

n represents an average statistical value ranging from 1 to 20, and
 m represents an average statistical value ranging from 0.5 to 10.

4,430,251

HIGH ENERGY EMULSIFIER

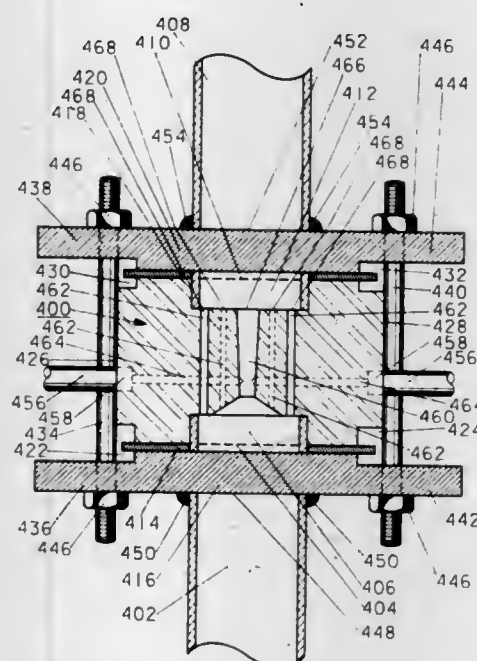
William P. Patterson, and Ronald J. Bailey, both of Jacksonville, Fla., assignors to Hoffert Manufacturing Co., Inc., Jacksonville, Fla.

Filed Sep. 29, 1981, Ser. No. 307,319

Int. Cl.³ B01F 5/08; B01J 13/00

U.S. Cl. 252-359 R

5 Claims



1. An emulsifying apparatus comprising:
an inlet side and a first chamber, having a first cross-sectional area;
an outlet side and a second chamber, having a second cross-sectional area;
a passageway having a cross-sectional area smaller than said first and second cross-sectional areas, an inlet in fluid communication with said first chamber and an outlet in fluid communication with said second chamber, said passageway being long enough and having a cross-sectional area small enough that fluids will vaporize during passage between said first and second chambers; and
said passageway comprising a central venturi tube in fluid communication with at least one inlet chamber, said venturi tube being surrounded by a plurality of fluid-carrying passageways of uniform cross-section extending parallel to the longitudinal axis of said venturi tube.

4,430,252

PROCESS FOR SYNTHESIZING A MULTICOMPONENT ACIDIC CATALYST COMPOSITION BY AN ORGANIC SOLUTION METHOD

Ji-yong Ryu, Ramsey, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 10, 1982, Ser. No. 448,697

Int. Cl.³ B01J 31/12, 21/02, 27/14

U.S. Cl. 502-162

27 Claims

1. A process for preparing a catalyst composition which comprises:

- (1) reacting in admixture at least one Metal Hydrocarboxide I, at least one Metal Hydrocarboxide II, at least one acidic phosphorus-oxygen containing compound, and water in the presence of at least one liquid organic medium comprising at least 50% by weight, based on the weight of said medium, of at least one member selected from the group consisting of organic aldehyde, organic ketone, and or-

- ganic ether, said reaction being conducted in a manner sufficient to (a) avoid contact of Metal Hydrocarboxides I and II with water prior to contact of Metal Hydrocarboxide I and II with the acidic phosphorus-oxygen containing compound, and (b) form a catalyst precursor composition;
- (2) separating said catalyst precursor composition from said reaction admixture;
- (3) calcining said catalyst precursor composition to form said catalyst composition;

wherein said process:

- (i) the metal M^1 , of said Metal Hydrocarboxide I is selected from at least one member of the group consisting of Al, Ga, In, and Tl; and
- (ii) the metal, M^2 , of said Metal Hydrocarboxide II is selected from at least one member of the group consisting of Si, Sn, and Ge.

4,430,253

SULFIDE-MODIFIED RUTHENIUM CATALYST

Michael Dubeck, Birmingham, and Gordon G. Knapp, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Feb. 11, 1982, Ser. No. 348,026

Int. Cl.³ B01J 27/02

U.S. Cl. 502-185

5 Claims

1. A process for the preparation of a catalyst for the conversion of higher polyhydric alcohols to lower polyhydric alcohols, said process comprising the steps of:

- (a) suspending a catalyst containing from about 0.1 weight percent to about 10 weight percent ruthenium on a support in a carbohydrate solution containing 30-70 weight percent of carbohydrate,
- (b) hydrogenating said carbohydrate solution at a temperature of from about 50° C. to about 200° C. at about 50 to about 3000 psig of hydrogen to convert said carbohydrate to a higher polyhydric alcohol,
- (c) adding a sulfide-containing solution in an amount sufficient to provide from about 0.2 to about 5.0 moles of sulfide per mole of ruthenium and
- (d) heating said carbohydrate solution from about 150° C. to about 300° C. for a period sufficient to convert said higher polyhydric alcohols to said lower polyhydric alcohols.

4,430,254

SPHERICAL CERIUM-ACTIVATED CATALYST FOR AMMONIA SYNTHESIS AND PROCESS FOR ITS MANUFACTURE

Attilio Passariello, Tivoli, Italy, assignor to Ammonia Casale S.A., Lugano, Switzerland

Continuation of Ser. No. 117,780, Feb. 1, 1980, Pat. No. 4,308,174. This application Sep. 23, 1981, Ser. No. 305,037

Claims priority, application Italy, Feb. 7, 1979, 47920 A/79

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

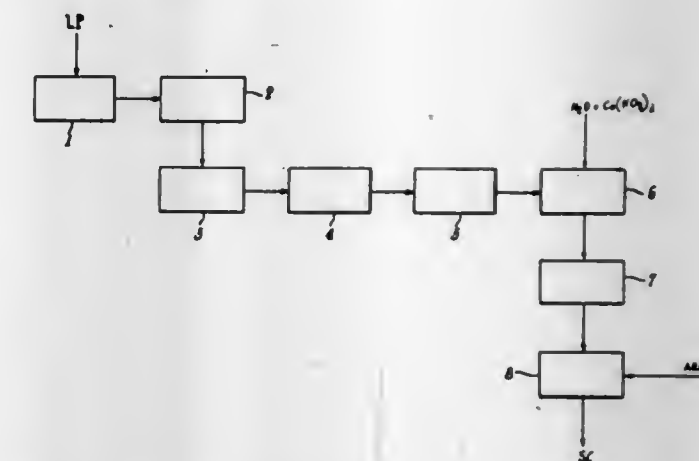
Int. Cl.³ B01J 29/06

U.S. Cl. 502-243

6 Claims

1. An unreduced, porous, non-brittle catalyst for ammonia synthesis demonstrating a resistance to thermal stress and chemical poisoning and having a low pressure drop and having catalytic activity in the temperature range of 370° C. to 450° C., consisting essentially of:
magnetite having a FeO content of 26-30%, based on the weight of the magnetite;
2.0-3.5% aluminum oxide;

0.1-0.4% magnesium oxide;
0.2-0.5% silica; and
0.5-2.5% metallic cerium,



in the form of pelletized spheres having diameters in the range of 1.0 to 25 mm.

4,430,255

NON-OHMIC DEVICE USING TiO₂

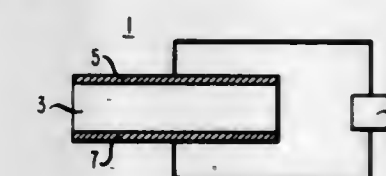
Man F. Yan, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 144,171, Apr. 25, 1980, abandoned. This application Sep. 1, 1982, Ser. No. 413,751

Int. Cl.³ H01B 1/02

U.S. Cl. 252-512

15 Claims



1. A device comprising a layer, said layer comprising TiO_2 and at least two additives; and
two electrical contacts to said layer;
characterized in that
a first said additive is at least one element selected from the group consisting of elements of Group IIA of the Periodic Table, said first additive being present in an amount greater than 0.0 mole percent and less than 1.0 mole percent and a second said additive is at least one element selected from the group consisting of elements of Group VB of the Periodic Table, said second additive being present in an amount greater than 0.0 mole percent and less than 5.0 mole percent; said device being a nonohmic device or a ceramic capacitor.

4,430,256

REVERSE THERMODYNAMIC CHEMICAL BARRIER FOR NUCLEAR WASTE OVER-PACK OR BACKFILL

Roy Rustum, 528 S. Pugh, State College, Pa. 16801

Filed Jul. 6, 1981, Ser. No. 280,193

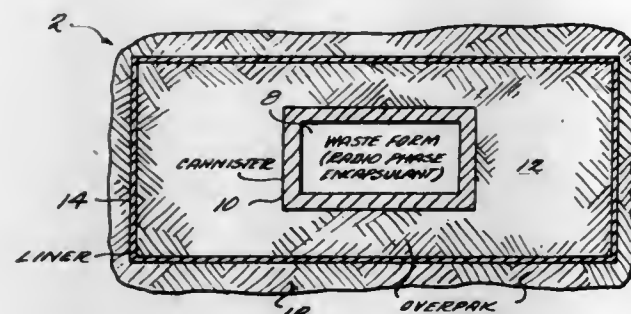
Int. Cl.³ G21F 9/16

U.S. Cl. 252-628

22 Claims

1. A nuclear waste package comprising any material containing a radionuclide and a surrounding overpack or backfill containing a non-radioactive compound of the element or

analogue of the element of the radionuclide or a natural or synthetic mineral containing an actinide which provides a



greater concentration of ions of the non-radioactive elements than are provided by the radionuclides.

4,430,257

ALCOHOL-FREE ALKOXIDE PROCESS FOR CONTAINING NUCLEAR WASTE

James M. Pope, Monroeville, and Edward J. Lahoda, Edgewood, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,852
Int. Cl.³ G21F 9/16

U.S. Cl. 252-629

14 Claims

1. A method of containing nuclear waste comprising:

- (A) preparing a composition which comprises
 - (1) about 25 to about 80% calculated as SiO₂, of a compound having the general formula SiR_m(OR')_nX_p, Si(O-SiR₃)₄, or mixtures thereof, partially hydrolyzed;
 - (2) up to about 30%, calculated as the metal oxide, of a compound having the general formula AlR'_q(OR'')_sX_t, Mg(Al(OR')₄)₂, CaR₄(OR'')_uX_v, or mixtures thereof, partially hydrolyzed if hydrolyzable;
 - (3) about 5 to about 20%, calculated as the metal oxide, of a compound having the general formula BR'_q(OR'')_sX_t, CaR₄(OR'')_uX_v, or mixtures thereof, partially hydrolyzed;
 - (4) about 3 to about 25% calculated as the metal oxide, of a compound having the general formula MOR'', MZR'₃, or mixtures thereof, partially hydrolyzed if hydrolyzable, where the total calcium content, calculated as CaO, does not exceed 15%, and

where each R is independently selected from alkyl to C₁₀ and alkenyl to C₁₀, and each R' is independently selected from R and aryl, each R'' is independently selected from R and hydrogen, each X is independently selected from chlorine and bromine, each M is independently selected from sodium, potassium, and lithium, each Z is independently selected from carbon and boron, m is 0 to 3, n is 0 to 4, p is 0 to 1, each q is independently selected from 0 to 3, each r is independently selected from 0 to 3, each s is independently selected from 0 to 1, each t is independently selected from 0 to 2, each u is independently selected from 0 to 2, each v is independently selected from 0 to 1, and m+n+p=4, q+r+s=3, and t+u+v=2,

- (5) alcohol in a weight ratio to hydrolyzed alkoxide of about 0.5 to about 3, calculated as alkoxide; and
- (6) sufficient water to remove at least 99% of said alkanol as an azeotrope;
- (B) boiling off said azeotrope;
- (C) mixing up to about 40%, based on solids in the product, calculated as oxide, of said nuclear waste into said composition;
- (D) evaporating said mixture to about 25 to about 45% solids; and
- (E) melting and cooling said mixture.

4,430,258 METHOD OF PRODUCING LIQUID EQUIVALENT SOLID GAMMA RAY CALIBRATION STANDARDS

Robert C. McFarland, and Patricia A. McFarland, both of 2392 Northside Pkwy., N.W., Atlanta, Ga. 30327

Filed May 28, 1981, Ser. No. 267,802

Int. Cl.³ G21G 4/04

U.S. Cl. 252-644

14 Claims

1. A method of producing solid gamma ray calibration standards, comprising the steps of:

- (a) preparing a calibrated aqueous solution of radioactive material;
- (b) adding a first volume of said calibrated aqueous solution of radioactive material to a second volume of a first solvent comprising an alcohol having less than 5 carbon atoms to form a first solution, and wherein said first volume is less than said second volume;
- (c) dissolving an unsaturated polyester resin in styrene;
- (d) mixing said resin dissolved in styrene with said first solution to form a mixture;
- (e) adding a hardening catalyst to said mixture;
- (f) stirring said mixture until a clear second solution is produced; and
- (g) curing said second solution for a selected period of time.

4,430,259

WATER-SOLUBLE DISAZO COMPOUNDS SUITABLE AS FIBER-REACTIVE DYE STUFFS

Peter Mischke, Bad Soden am Taunus; Hermann Fuchs, Königstein-Taunus, and Fritz Meininger, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,112

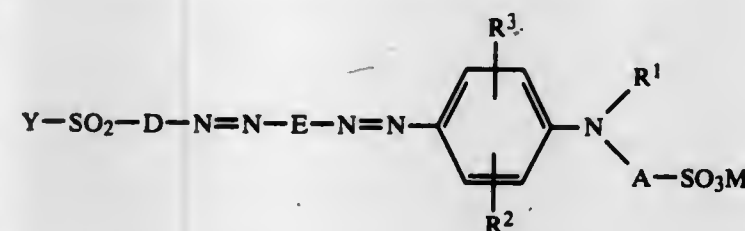
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041891; Oct. 6, 1981, 3139657

Int. Cl.³ C09B 62/513, 62/533; D06P 1/38, 3/10

U.S. Cl. 260-186

6 Claims

1. A water-soluble disazo compound of the formula



in which

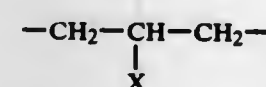
Y is vinyl or —CH₂—CH₂—Z, Z being sulfato, phosphato, halogen or hydroxy;

D is phenylene or phenylene substituted by 1 or 2 radicals selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, chlorine, bromine, fluorine, carboxy, nitro and sulfo, or

D is naphthylene or naphthylene substituted by 1 or 2 radicals selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, chlorine, bromine, fluorine, carboxy and sulfo;

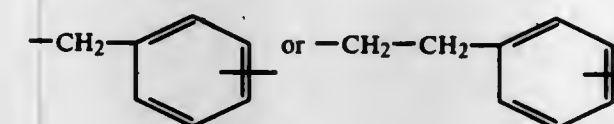
E is 1,4-phenylene or 1,4-naphthylene, or 1,4-phenylene or 1,4-naphthylene substituted by 1 or 2 radicals selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, ureido, lower alkanoylamino, chlorine, bromine, carboxy and sulfo;

A is ethylene of the formula —CH₂—CH₂—, or ethyleneoxy of the formula —CH₂—CH₂—O—, or propylene of the formula —CH₂—CH₂—CH₂—, or is of the formula



wherein

X is hydroxy, lower alkanoylamino, halogen, sulfato or phosphato, or is



M is hydrogen, a metal or the equivalent of a metal;

R¹ is hydrogen, lower alkyl, lower alkenyl or lower alkyl substituted by hydroxy or phenyl or by both, or in alkyl of from 2 to 4 carbon atoms substituted by acetoxy, propionyloxy or phenylsulfonyloxy, or is cyanoalkyl of from 2 to 4 carbon atoms in the alkyl, or is carboxyalkylene, carbonamidoalkylene or carbalkoxyalkylene, the alkyl or alkylene moiety being in each case of from 1 to 4 carbon atoms or is halogenoethyl or a group of the formula —A—SO₃M, A and M being as defined above;

R² is hydrogen, lower alkyl, lower alkoxy, halogen, lower alkanoylamino, ureido or trifluoromethyl; and

R³ is hydrogen, lower alkyl, lower alkoxy or halogen.

4,430,260

PENICILLIN-POLYVINYL ALCOHOL CONJUGATE AND PROCESS OF PREPARATION

Weng Y. Lee, 95 Rochester Pl., and Alec Sehon, 695 Academy Rd., both of Manitoba, Canada R3N 0E8

Division of Ser. No. 15,864, Feb. 27, 1979, Pat. No. 4,296,097.

This application Oct. 19, 1981, Ser. No. 312,890

Int. Cl.³ C07D 499/00; A61K 31/43, 39/385

U.S. Cl. 260-239.1

7 Claims

1. A process for the preparation of nonimmunogenic conjugates, suitable for suppressing the formation of reaginic antibodies to penicillin (BPO) in a host, the said conjugate being prepared by the reaction of penicillin G in the presence of a suitable salt, at alkaline pH, with an amino derivative of the water-soluble, nonimmunogenic polymer, polyvinyl alcohol (PVA).

6. A conjugate consisting of BPO groups coupled to polyvinyl alcohol, suitable for suppressing the formation of reaginic antibodies to penicillin in an allergic host, the conjugate containing an average of 0.7 to 3.9 BPO groups per molecule of polyvinyl alcohol, the said conjugate being prepared according to the process of claim 1.

4,430,261

PROPYLENE OXIDE REACTION PRODUCTS AND PROCESS FOR THEIR MANUFACTURE

Paul Schäfer, Riehen; Heinz Abel, Reinach, both of Switzerland, and Fritz Mayer, Weil am Rhein, Fed. Rep. of Germany, assignors to Clba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 52,363, Jun. 27, 1979, abandoned, which is a division of Ser. No. 814,376, Jul. 8, 1977, abandoned, which is a division of Ser. No. 671,874, Mar. 29, 1976, Pat. No. 4,055,393. This application Mar. 19, 1981, Ser. No. 245,420

Claims priority, application Switzerland, Apr. 4, 1975, 4293/75

Int. Cl.³ C09F 5/00

U.S. Cl. 260-404.8

11 Claims

1. A propylene oxide reaction product and a salt thereof obtained from an addition product of

- (a) an at least trihydric aliphatic alcohol containing 3 to 10 carbon atoms, and
- (b) 1,2-propylene oxide, by reaction with
- (c) an aliphatic dicarboxylic acid containing 2 to 10 carbon atoms, an aromatic dicarboxylic acid containing 8 to 12 carbon atoms, or an anhydride thereof,
- (d) an aliphatic diol with a molecular weight of at most 2000, and
- (e) a fatty acid containing 12 to 22 carbon atoms.

4,430,262 PREPARATION OF ISOCYANATES AND/OR DERIVATIVES THEREOF

Rainer Engels, and Jan H. H. Meurs, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 11, 1982, Ser. No. 357,011

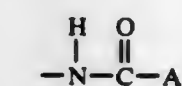
Claims priority, application United Kingdom, Jun. 5, 1981, 8117258

Int. Cl.³ C07C 118/00, 125/06, 127/19

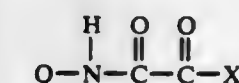
U.S. Cl. 260-453 P

11 Claims

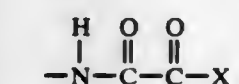
1. A process for the preparation of isocyanates and/or the corresponding carbamates containing at least one group having a structure selected from the group consisting of —N=C=O and



wherein A represents a group OB or NR¹R² wherein B represents an alkyl or aryl group which may or may not be substituted with one or more halogen atoms, alkyl or alkoxy groups and R¹ and R² which may be the same or different each represent a hydrogen atom or an alkyl or aryl group which may or may not be substituted with one or more halogen atoms, alkyl or alkoxy groups, which comprises oxidatively converting in a reaction zone as feed a compound selected from alkyl, aryl, alkaryl and aralkyl oxamic acids, salts thereof and oxanilides according to the general formula



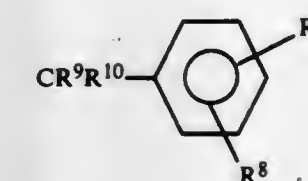
wherein Q represents a group selected from an alkyl group and an aryl group, which group may contain one or more substituents selected from a halogen atom or an alkyl or alkoxy group, a group



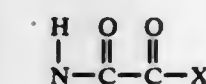
wherein X represents a group OY or



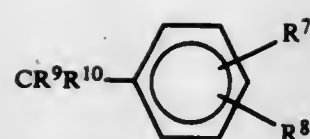
wherein Y represents a hydrogen atom, a metal ion or a group NR³R⁴R⁵R⁶ wherein each of R³, R⁴, R⁵ and R⁶ which may be the same or different, represent a hydrogen atom, an alkyl group having up to 8 carbon atoms, or an (alk)aryl group which may be substituted by one or more lower alkyl groups and Z represents an alkyl group or an aryl group which may be substituted by one or more substituents, or a group



wherein R⁷ and R⁸ which may be the same or different each represent a hydrogen or halogen atom or an alkyl or alkoxy group, a group



wherein X is as defined hereinbefore or a group



wherein R^9 and R^{10} which may be the same or different each represent a hydrogen atom or an alkyl group; and separating the conversion products from said reaction zone.

4,430,263

HAPTEN-INHIBITOR IMMUNOASSAY

Steven C. March, Libertyville; John W. Safford, Jr., Wauconda, and Susan E. Magic, Lake Bluff, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 943,073, Sep. 18, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 114,021

Int. Cl.³ G01N 31/54; C12N 9/99; C07G 7/00

U.S. Cl. 260—112 R

2 Claims

1. Hapten-trypsin inhibitor conjugate having 1-3 molecules of hapten per molecule of trypsin inhibitor wherein the trypsin inhibitor is a protein trypsin inhibitor having a molecular weight range of 2,000-75,000.

4,430,264

PROCESS FOR THE PREPARATION OF A SELECTIVE ANOREXOGENIC SUBSTANCE REGULATING FOOD INTAKE

Jozsef Knoll, Budapest, and Janos Nagy, Szentendre, both of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Sep. 28, 1982, Ser. No. 425,867

Claims priority, application Hungary, Sep. 28, 1981, 2783/81

Int. Cl.³ A23J 1/06; A23K 1/04; C07G 7/00

U.S. Cl. 260—112 R

3 Claims

1. A process for producing an endogenous anorexogenic substance which comprises the steps of:

- ultrafiltering, through a 50,000 dalton threshold membrane, blood serum to recover an ultrafiltrate, partially evaporating said ultrafiltrate to form a first concentrate, and removing insolubles from said first concentrate;
- precipitating proteins from the first concentrate following step (a) by treating it with trichloroacetic acid in an amount of substantially 5 to 25% w/v at a temperature of substantially 0° to 10° C., and separating precipitated proteins from the resulting solution;
- chromatographing said solution on a gel having a void volume under substantially 4000 dalton with a solution of substantially 0.5 to 1.0% sodium chloride of phosphate buffer at a pH of substantially 6.0 to 7.0 to recover anorexogenically biologically active fractions, and concentrating said fractions by lyophilization to form a second concentrate;
- chromatographing said second concentrate upon a gel column with a void volume of substantially 3000 dalton to recover anorexogenically biologically active fractions;
- lyophilizing the biologically active fractions of step (d) to yield a crude product forming said substance; and
- subjecting the crude product of step (e) to electrophoresis in a buffer of substantially pH 6.0 to 6.5, eluting the electrophoresed product, and lyophilizing the eluted electrophoresed product to form said substance in a semipure state.

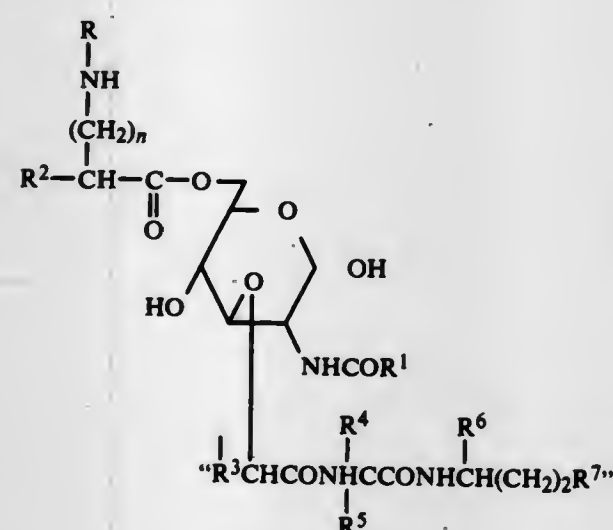
4,430,265
GLUCOSAMINE DERIVATIVES
Yuichi Yamamura, Takarazuka; Azuma Ichiro, Suita, and Shigeru Kobayashi, Hirakata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 249,902, Apr. 1, 1981, abandoned, which is a continuation of Ser. No. 962,033, Nov. 20, 1978, abandoned. This application Jun. 30, 1982, Ser. No. 393,870
Claims priority, application Japan, Dec. 2, 1977, 52-145415; Dec. 2, 1977, 52-145416; Mar. 10, 1978, 53-28012
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

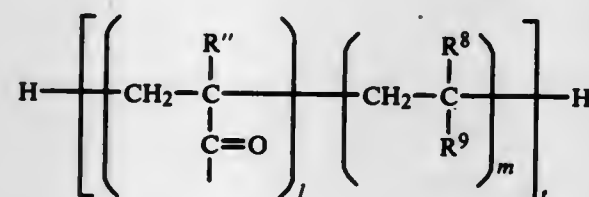
14 Claims

1. A compound of the following formula or a physiologically acceptable salt thereof:



wherein

- n is zero or an integer of 1 to 9;
 R^1 is lower alkyl;
 R^2 is hydrogen or lower alkyl when n is zero, and hydrogen or amino when n is an integer of 1 to 9;
 R^3 is lower alkyl;
 R^4 and R^5 , independently of each other, are hydrogen, lower alkyl or hydroxymethyl;
 R^6 and R^7 , independently of each other, are a carboxyl group which may be amidated;
 R is hydrogen or a group of the formula $R'CO-$ wherein R' is an acyclic hydrocarbon group which may be substituted by a cyclic hydrocarbon group at its ω -position or a group of the formula



wherein

- l is an integer of 1 to 9;
 m is zero or an integer of 1 to 9;
 t is an integer of 2 to 100;
 R'' is hydrogen or lower alkyl;
 R^8 is hydrogen or lower alkyl;
 R^9 is lower alkyl, a carboxyl group which may be esterified, a hydroxyl group which may be etherified or a pyrrolidino group which may be substituted by oxo, halogen, lower alkyl, nitro, amino or cyano;
 l and m are variable within the said respective ranges and R^8 and R^9 are variable within the said definition, in the respective repeating units.

4,430,266

PROCESS FOR PRODUCING AN INSULIN PRECURSOR

Bruce H. Frank, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
 Continuation of Ser. No. 210,696, Nov. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,389, Mar. 27, 1980, abandoned. This application Feb. 16, 1982, Ser. No.

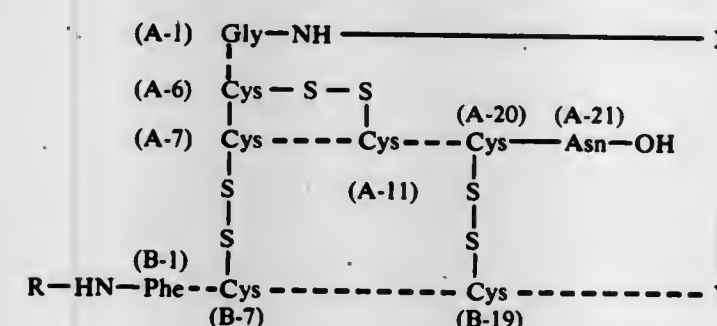
349,397

Int. Cl.³ C07C 103/52; C07G 7/00

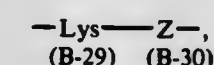
U.S. Cl. 260—112.7

17 Claims

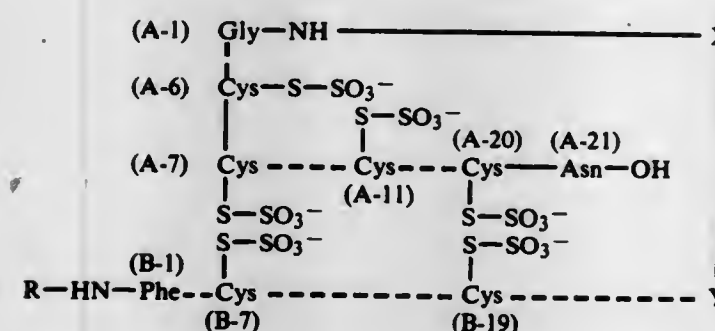
1. A process for the production of an insulin precursor of the formula



in which R is hydrogen, a chemically or enzymatically cleavable amino acid residue, or a chemically or enzymatically cleavable peptide moiety having at least two amino acid residues, Y is



in which Z is Ala, Thr, or Ser; the moiety from A-1 to A-21 is an insulin A-chain; the moiety from B-1 to B-30 is an insulin B-chain; and X is a moiety which is joined to the insulin A-chain at the amino group of A-1 and to the insulin B-chain at the ϵ -amino group of B-29 or the carboxyl group of B-30, which moiety can be enzymatically or chemically cleaved from and without disruption of both the A-chain and the B-chain, which comprises reacting an S-sulfonate of the formula



in which R , X , and Y are as aforedefined, with a mercaptan in an amount which provides from about 1 to about 5 —SH moieties per each —SSO₃⁻ moiety in an aqueous medium at a pH of from about 7 to about 11.5 and at an S-sulfonate concentration of up to about 10 mg. per ml. of aqueous medium.

4,430,267

METAL COMPLEX DYES DERIVED FROM 4-PHENYLAZO-5-AMINOPYRAZOLES

Johannes Dehnert, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,274

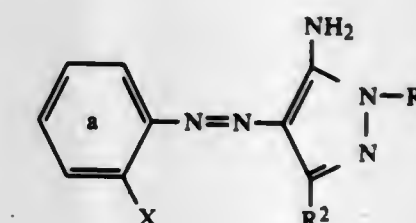
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007966

Int. Cl.³ C09B 29/036, 29/46; D06P 1/10, 3/52

U.S. Cl. 260—147

6 Claims

1. A nickel complex obtained by heating one or more compounds of the formula



where

- R_1 is cyclohexyl, methylcyclohexyl, phenyl C_1 - C_4 -alkyl, said phenyl being unsubstituted or substituted by chloro, methyl or is furylmethyl;
 R_2 is hydrogen;
 X is fluorine, chlorine, bromine or phenoxy, and the ring a is further unsubstituted or is further substituted by fluorine, chlorine, bromine, trifluoromethyl, C_1 - C_4 alkyl, chlorophenoxy, methylphenoxy, cyano, nitro, C_1 -to- C_4 -alkylsulfonyl, phenylsulfonyl, C_1 -to- C_{10} -alkoxycarbonyl, carbamyl, sulfamyl, phthaloyl, phenylazo or phenylazo substituted by fluorine, chlorine, bromine, methyl, ethyl, cyano, nitro or C_1 - C_{10} -alkoxy carbonyl, in an organic solvent in the presence of an acid acceptor and of a nickel compound.

4,430,268

ALLYLIC CHLORINATION PROCESS

Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

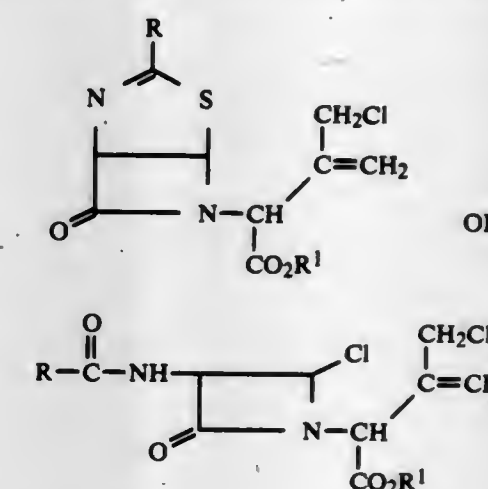
Continuation-in-part of Ser. No. 34,825, Apr. 30, 1979, abandoned. This application Mar. 17, 1980, Ser. No. 130,888

Int. Cl.³ C07D 205/08, 513/14; C07B 9/00

U.S. Cl. 260—239 A

12 Claims

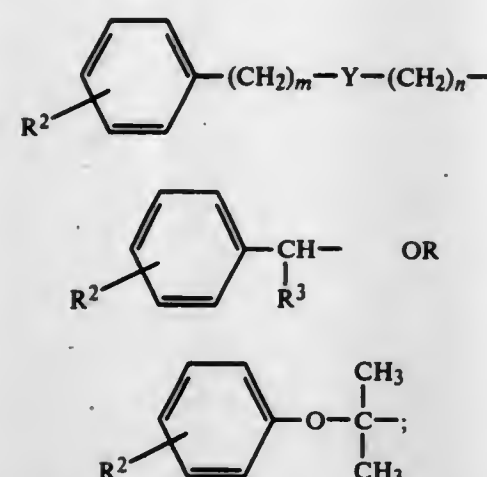
1. A process for preparing a compound of the formula



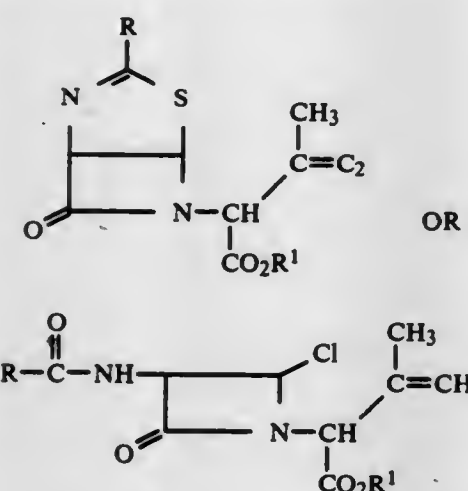
wherein

- R is hydrogen, methoxy, C_1 - C_2 alkoxycarbonyl, C_1 - C_8 alkyl, C_1 - C_8 alkyl monosubstituted with protected hydroxy, C_1 - C_3 alkoxy or cyano, C_2 - C_8 alkenyl,

C₂-C₈ alkenyl monosubstituted with protected hydroxy,
C₁-C₃ alkoxy or cyano,
C₃-C₈ cycloalkyl,
C₃-C₈ cycloalkyl substituted with protected hydroxy,
C₁-C₃ alkoxy or cyano,



R² is hydrogen, protected hydroxy, chloro, bromo, C₁-C₃ alkyl, C₁-C₃ alkoxy, nitro or cyano;
Y is oxygen or a carbon-carbon bond;
R³ is protected hydroxy, C₁-C₄ alkyl or protected amino;
m is 0-2;
n is 0-2;
R¹ is a carboxylic acid protecting group; provided that the 1- and 5-position C-H bonds in the resulting thiazolinoazetidinone are in the α-position; comprising reacting a compound of the formula



wherein the 1- and 5-position C-H bonds in the thiazolinoazetidinone are in the α-position, with molecular chlorine or t-butyl hypochlorite in the presence of a C₁-C₃ carboxylic acid; provided that, when the starting compound is a thiazolinoazetidinone, and molecular chlorine is used, an epoxide is also present.

4,430,269

12'-IODO DERIVATIVES OF DIMERIC INDOLE-DIHYDROINDOLE ALKALOIDS, AND PROCESS FOR PREPARING THEM

Homer L. Pearce, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

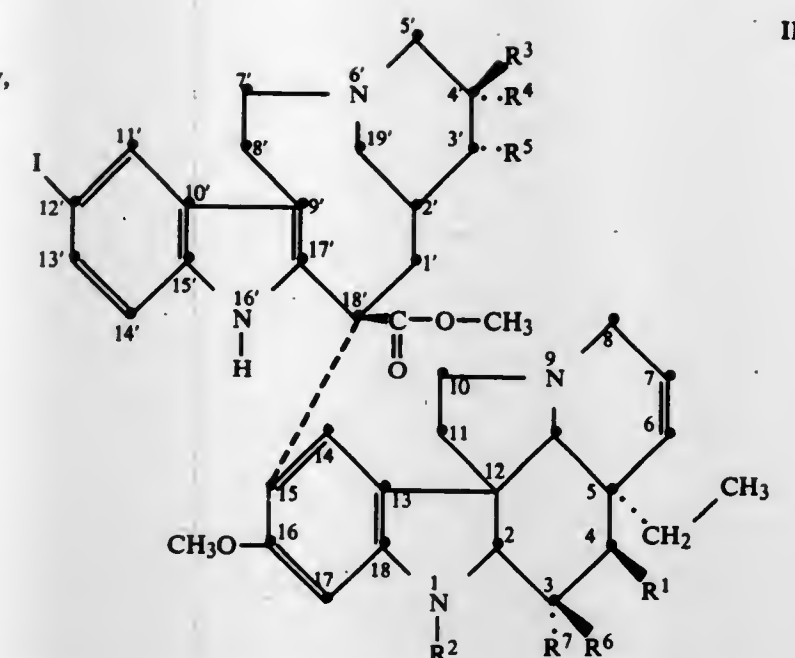
Filed Apr. 1, 1982, Ser. No. 364,384

Int. Cl.³ C07D 519/04, 471/22

U.S. Cl. 260-244.4

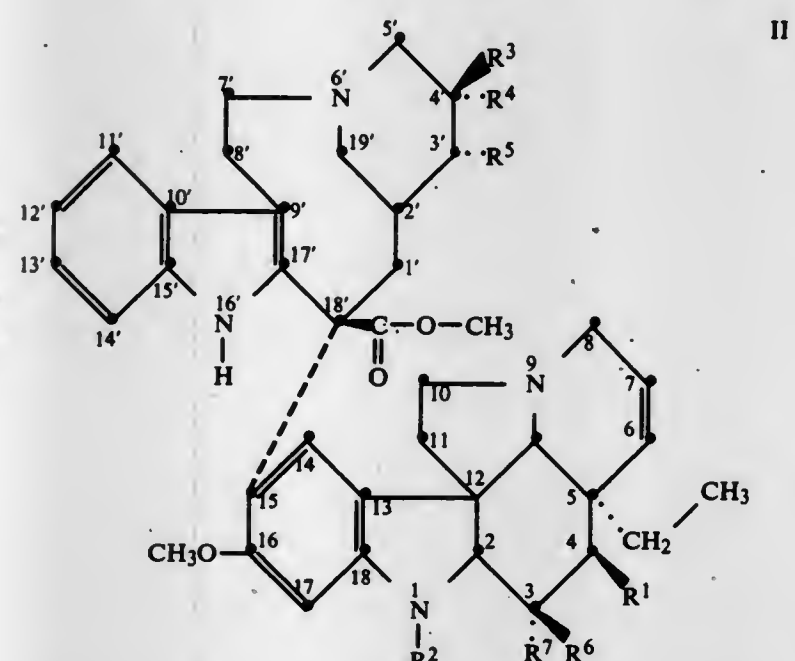
1. A compound of the formula

6 Claims



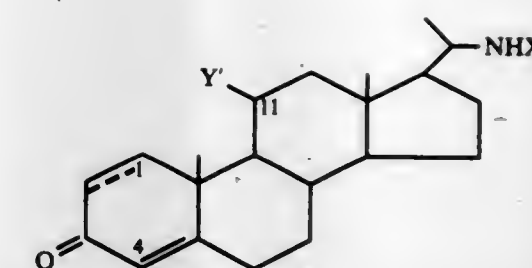
wherein R¹ is H, OH, O-CO-CH₃, or O-CO-CH₂R⁸, wherein R⁸ is Cl, morpholino, dimethylamino, cyclopropylmethylamino and methylamino, R² is H, CH₃ or CHO; when R³ and R⁵ are taken singly, R⁵ is H or OH, one of R³ and R⁴ is ethyl and the other is H or OH; when R³ and R⁵ are taken together with the carbons to which they are attached, they form an oxirane ring or a vinyl group, in either of which cases, R⁴ is ethyl; when taken singly, R⁶ is OH and R⁷ is CO-OCH₃ or CO-R⁹, wherein R⁹ is NH₂, NH₂-NH₂, NH-C₁₋₃ alkyl, NH-substituted-C₁₋₃ alkyl (wherein said substituents can be one or two members of the group chloro and bromo), or C₁₋₃ lower-alkanoyloxy; when R⁶ and R⁷ are taken together with the carbon atoms to which they are attached, they represent a spiro-oxazolidinedione ring permissibly substituted at N₃'' with C₁₋₃ alkyl or chloro-substituted C₁₋₃ alkyl; and pharmaceutically acceptable acid addition salts thereof formed with relatively non-toxic acids.

3. 12-iodocatharanthine.
4. The process of preparing a compound according to claim 1 which comprises reacting a compound of the structure



wherein R¹ is H, OH, O-CO-CH₃, or O-CO-CH₂R⁸, wherein R⁸ is Cl, morpholino, dimethylamino, cyclopropylmethylamino and methylamino, R² is H, CH₃ or CHO; when R³ and R⁵ are taken singly, R⁵ is H or OH, one of R³ and R⁴ is ethyl and the other is H or OH; when R³ and R⁵ are taken together with the carbons to which they are attached, they form an oxirane ring or a vinyl group, in either of which cases,

R⁴ is ethyl; when taken singly, R⁶ is OH and R⁷ is CO-OCH₃ or CO-R⁹, wherein R⁹ is NH₂, NH₂-NH₂, NH-C₁₋₃ alkyl, NH-substituted-C₁₋₃ alkyl (wherein said substituents can be one or two members of the group chloro and bromo), or C₁₋₃ lower-alkanoyloxy; when R⁶ and R⁷ are taken together with the carbon atoms to which they are attached, they represent a spiro-oxazolidinedione ring permissibly substituted at N₃'' with C₁₋₃ alkyl or chloro-substituted C₁₋₃ alkyl, or an acid addition salt thereof, with a reagent containing a soluble ferrous salt, a soluble periodate salt, RuO₂, acetic acid and an inert polar organic solvent.



in which Y' is a member selected from the group consisting of hydroxyl and, together with the C-atom substituted by Y', a carbonyl and X is a member selected from the group consisting of hydrogen, acetyl, carbonyloxy-lower alkyl and, together with the adjacent hydrogen atom on the nitrogen, a carbonyl.

4,430,270

PROCESS FOR THE PRODUCTION OF DELTA 4-C21-STEROID COMPOUNDS

Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

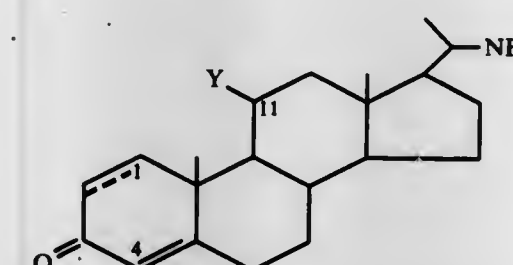
Continuation-in-part of Ser. No. 262,967, May 12, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,791
Claims priority, application Austria, May 12, 1980, 2536/80; May 16, 1980, 2630/80

Int. Cl.³ C07J 1/00

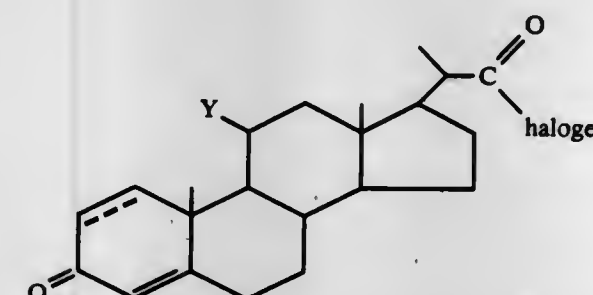
U.S. Cl. 260-397.1

21 Claims

1. A process for the production of Δ⁴-C₂₁-steroid compounds with an amine in the 20-position corresponding to general formula I:



in which Y is a member selected from the group consisting of hydrogen, hydroxyl, and together with the C-atom substituted by Y, a carbonyl and a 9(11)-ene bond characterized in that a C₂₀-carboxylic acid halide corresponding to general formula II:



in which Y is defined above, is reacted with a metal azide in an aqueous/organic two-phase reaction at a temperature of below about 25° C., the resulting carboxylic acid azide is recovered and heated to give the corresponding C₂₀-isocyanate by the elimination of nitrogen and the corresponding C₂₀-isocyanate thus obtained is converted into the C₂₀-amine, and recovering said Δ⁴-C₂₁-steroid compounds.

4. C₂₁-steroid compounds with an oxygen function in the 11-position and a nitrogen function in the 20-position corresponding to general formula IV:

4,430,271

ENERGY TRANSFER

Brandon H. Barton, 3712 Ledgewood, Cincinnati, Ohio 45207, and John A. Sagel, 10536 Gloria Ave., Mt. Healthy, Ohio 45231

Filed Jul. 1, 1976, Ser. No. 701,729

Int. Cl.³ C07C 141/02, 143/24

U.S. Cl. 260-458 R

26 Claims

1. In the process of removing thermal energy from an aqueous mixture of sodium sulfate and the sodium salt of an organic sulfuric or sulfonic acid or mixtures thereof the steps of:

(a) reacting the organic sulfuric or sulfonic acid and excess sulfating agent with an alkaline component thereby forming a super-saturated solution with respect to the sodium sulfate; and,
(b) cooling the reaction mass formed in step (a) in a heat exchanger while maintaining the heat exchanger cooling medium at a temperature below the point at which anhydrous sodium sulfate is formed,
whereby deposition of sodium sulfate in the heat exchanger is diminished.

4,430,272

FLUORINE-CONTAINING ALKYL SULFOBETAINES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Winfried Ehrl, Neuötting, and Siegfried Jung, Karben, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 9, 1982, Ser. No. 347,178

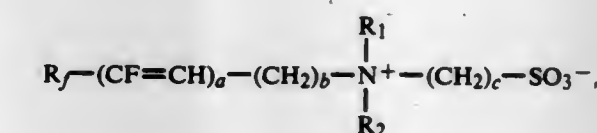
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104766

Int. Cl.³ C07C 143/14

U.S. Cl. 260-501.12

1 Claim

1. A fluorine-containing alkylsulfobetaine of the general formula



wherein R₇ denotes a perfluoroalkyl radical having 3 to 16 C atoms, R₁ and R₂, which can be identical or different, denote alkyl radicals or hydroxyalkyl radicals having 1 to 4 C atoms, a is zero or 1, b assumes the value 1 when a is equal to 1 and the values 1 to 4 when a is equal to 0, and c is 3 or 4.

4,430,273

PRODUCTION OF ACETIC ANHYDRIDE

Heinz Erpenbach, Cologne; Klaus Gehrmann, Erfstadt; Hans-Klaus Kübbeler, Swisttal, and Klaus Schmitt, Erfstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,344

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836084

Int. Cl.³ C07C 51/12

U.S. Cl. 260—546

7 Claims

1. A process for making acetic anhydride by reacting at least one substance selected from methyl acetate and dimethylether with carbon monoxide under substantially anhydrous conditions, at temperatures of 350 to 575 K. and under pressures of 1 to 300 bars in the presence of a catalyst system comprised of noble metals belonging to group VIII of the periodic system of the elements or their compounds and at least one substance selected from iodine and its compounds, which comprises using a promoter system consisting essentially of an aliphatic carboxylic acid with 1 to 8 carbon atoms and at least one heterocyclic aromatic compound, in which at least one hetero atom is a quaternary nitrogen atom.

4,430,274

CARBURETOR AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Mikio Suzuki, Zushi, and Masafumi Yamazaki, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

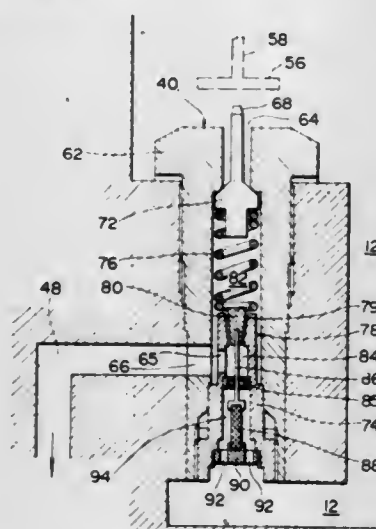
Filed Feb. 8, 1982, Ser. No. 346,743

Claims priority, application Japan, Feb. 9, 1981, 56-17866

Int. Cl.³ F02M 25/14

U.S. Cl. 261—18 B

16 Claims



1. A method of operating an internal combustion engine capable of running on gasoline and on a fuel mixture of gasoline and alcohol, comprising the steps of:

- determining the proportion of alcohol in the fuel currently used by the engine, using a material which expands and contracts in accordance with the proportion of alcohol;
- adjusting the amount of fuel supplied to the engine in accordance with said determined proportion; and
- adjusting the timing of fuel supplied to the engine in accordance with said determined proportion.

4,430,275

DUAL BOWL METERING BLOCK FOR ALCOHOL AND/OR NITRO-METHANE BURNING CARBURETOR AND METHOD OF CONVERSION

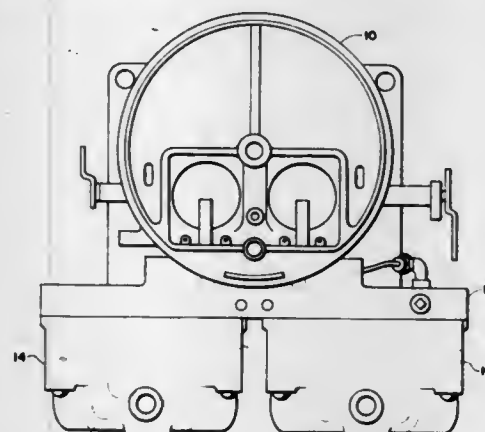
Johnnie A. Horton, Tulsa, Okla., assignor to Leroy Penrod; John A. Stutsman, both of Tulsa, Okla., part interest to each

Filed Aug. 13, 1982, Ser. No. 407,709

Int. Cl.³ F02M 11/02

U.S. Cl. 261—18 B

5 Claims



1. In a carburetor having at least one removable fuel bowl and metering block the specific improvement comprising: a carburetor metering block means adapted to attach to said carburetor and replace said removable fuel bowl and metering block and said carburetor metering block means is further characterized in that it is adapted to accept, simultaneously, a plurality of individual and separate fuel bowls.

4. A method of converting a gasoline fueled carburetor to alcohol and/or nitro-methane fuel comprising the step of: replacing the carburetor metering block with a carburetor metering block means adapted to attach to said carburetor and accept, simultaneously, a plurality of individual and separate fuel bowls.

4,430,276

METHOD OF MAKING STABLE UO₂ FUEL PELLETS

Kenneth C. Radford, Churchill Borough, and James M. Pope, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,316

Int. Cl.³ G21C 21/00

U.S. Cl. 264—0.5

13 Claims

1. In a method where a UO₂ powder which is sinterable to at least 97% theoretical density at 1600° C. in H₂ in one hour is produced from an aqueous solution of UO₂F₂, an improvement which enhances the dimensional stability of a fuel pellet made from UO₂ powder, comprising adding a water soluble dopant forming compound containing an element selected from the group consisting of aluminum, calcium, magnesium, titanium, zirconium, vanadium, niobium, and mixtures thereof, to said solution in an amount such that said UO₂ powder contains about 0.05 to about 1.7 mole% of said dopant.

4,430,277

METHOD FOR PRODUCING LARGE DIAMETER SPUN FILAMENTS

Leroy C. Lin, Richmond, Va., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 714,866, Aug. 16, 1976, Pat. No. 4,316,716. This application May 22, 1978, Ser. No. 908,028

Int. Cl.³ D01D 5/10

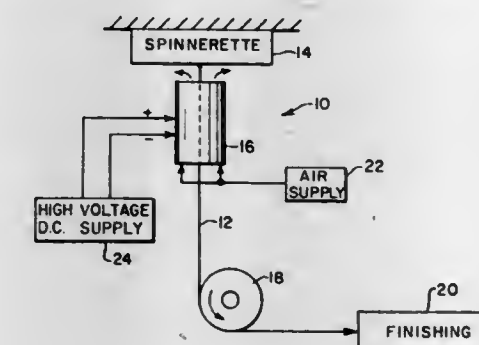
U.S. Cl. 264—22

2 Claims

1. A method of producing large diameter polymer filaments comprising the steps of:

- heating a polymer to a molten state;
- forcing the molten polymer through a spinnerette orifice to form a continuous length filament;

- directing two streams of cooling air in the vicinity of the orifice in a cross-flow pattern toward each other and said filament and transverse to the axis of the orifice;
- directing a balanced high-voltage, low-amperage ionic discharge from a plurality of cathode and electrode pairs



arranged radially symmetrically around the filament with the cathode and anode of each pair being diametrically opposed, said discharge occurring in the presence of the cooling air and transverse to the orifice axis; and

(E) drawing the polymer filament at a constant take-up speed through the cooling air and ionic discharge.

4,430,278

PROCESS FOR INCREASING THE PERMEABILITY OF PLASTIC MEMBRANE

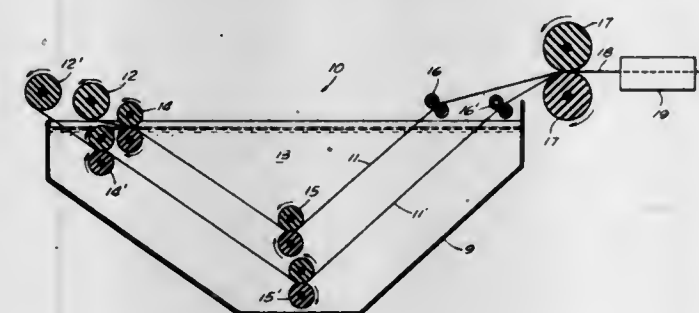
John L. Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105

Filed Feb. 1, 1982, Ser. No. 344,293

Int. Cl.³ B29D 27/00

U.S. Cl. 264—22

12 Claims



1. A process useful in increasing the permeability of a thermoplastic composition membrane to waste excreta molecules of human urine, comprising:

forming a thick wall, small diameter tube by extruding a thermoplastic composition, free of plasticizer, through a tubing die, disposing said tube in a water solution bath having a controlled temperature above room temperature, said water solution bath containing waste excreta crystalline molecules found in human urine, continuously injecting said controlled temperature water solution from said water bath into said tubing die and then into the plastic tubing interior at a water solution volume flow rate cooperating with the plastic tubing formation rate, causing tubing expansion into a thin wall membrane having a wall thickness not more than 0.005 cm, as the membrane tubing remains immersed in said water solution bath, said membrane tubing expansion being controlled to provide a selected outside stretched tubing membrane diameter, maintaining the stretched membrane in said controlled temperature water solution bath for a controlled time period, providing saturation of the membrane, removing said stretched membrane from said water bath and removing excess surface water from said stretched membrane, and, irradiating said stretched membrane with microwave energy

of the frequencies absorbed by water molecules in said stretched membrane, providing a more microporous membrane with increased permeability to waste excreta human urine chemical molecules found in human urine.

4,430,279

PROCESS FOR PRODUCING ZIRCONIA YTTRIA GRINDING MEDIA USED FOR GRINDING MAGNETIC COATING POWDER

Takehiko Hagio, Dazaifu, and Michito Miyahara, Fukuoka, both of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka, Japan

Division of Ser. No. 412,297, Aug. 27, 1982, abandoned. This application May 18, 1983, Ser. No. 495,816

Claims priority, application Japan, Aug. 28, 1981, 56-135765 Int. Cl.³ C04B 35/48

U.S. Cl. 264—65

2 Claims

1. A process for producing zirconia grinding media used for grinding a magnetic coating powder having an improved packing density comprising:

- preparing primary particle powder of zirconium oxide, said primary particle having monoclinic crystal structure and tetragonal crystal structure which includes about 3.6 to 8.0 percent by weight of yttrium oxide as dispersed solid solution, said primary particle powder having the mean grain size of less than 0.5 micron,
- compacting said primary particle powder at a pressure of more than 500 kg/square centimeter into a green compact, and
- sintering said green compact in the air or an inert gas atmosphere at a temperature of about 1400° C. to 1800° C. to obtain thereby a sintered body having a mean grain size of up to about 2 microns and a relative theoretical density of at least 98 percent.

4,430,280

PROCESS FOR THE PRODUCTION OF MIXED GRANULATE FROM CARBON BLACK AND LIGHT FILLER

Alfons Kreher, Frankfurt; Gerhard Kühner, Hanau; Lothar Rothbühr, Hürth; Günter Türk, Hanau, and Siegfried Wolff, Bornheim-Merten, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,533

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2910991

Int. Cl.³ B01J 2/00

U.S. Cl. 264—117

5 Claims

1. In a process for the production of mixed granulates of carbon black and a light colored filler selected from the group consisting of silica, kaolin, clay, silica chalk, natural zeolite, sodalite, synthetic zeolite, calcium silicate, aluminum silicate, and magnesium silicate by means of a pin containing screw granulator, the improvement comprising continuously supplying carbon black to the granulator and continuously spraying the light colored filler in the form of an aqueous dispersion on the carbon black in the granulator, simultaneously granulating this mixture and drying the granulated mixture so obtained.

4,430,281

PROCESS FOR PELLETIZING LIMESTONE FINES

David R. Boylan, and Mansur U. Hug, both of Ames, Iowa, assignors to Iowa Limestone Company, Des Moines, Iowa

Filed Aug. 30, 1982, Ser. No. 412,587

Int. Cl.³ B28B 1/08

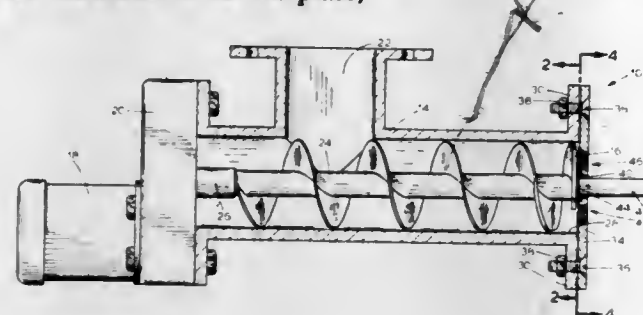
U.S. Cl. 264—118

8 Claims

1. A process for pelletizing limestone fines in substantially uniformly sized pellets having controlled liquid dispersion and low-powdering characteristics, comprising:

- intimately mixing in dry form of approximately 94% to

- 98% limestone fines with approximately 2% to 6% sodium bentonite by weight,
 (b) adding approximately 15% to approximately 25% water by weight to the dry mix,
 (c) mixing the water and the dry mix into a cohesive plastic state,
 (d) forming a die plate with orifices therethrough each of which has a diameter equal to approximately one-eighth the thickness of the die plate,



- (e) producing a zone for compacting the plastic mix as it enters each orifice,
 (f) extruding the plastic mix through the die plate orifices at a pressure of less than about 10 pounds per square inch to produce an extrudate mix, and
 (g) subjecting the extrudate mix adjacent the outlet of each orifice to a zone for producing and then relieving longitudinal stresses therein to form microstructure cracks in the surface of the extruded product.

4,430,282

METHOD FOR THE EXTRUSION OF TETRAFLUOROETHYLENE POLYMER TUBES

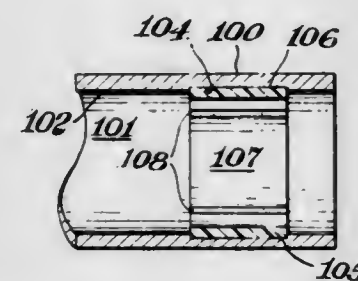
Eugene V. Stack, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1982, Ser. No. 378,673

Int. Cl.³ B29D 23/04

U.S. Cl. 264—127

2 Claims



1. A method for the fabrication of tetrafluoroethylene polymer tubes wherein a tetrafluoroethylene polymer resin is ram extruded in a ram extruder to generally fuse together particles of the tetrafluoroethylene polymer resin to provide a coherent tetrafluoroethylene polymer tube discharging the coherent tetrafluoroethylene polymer tube from the ram extruder, the ram extruder having a hollow cylindrical barrel, the barrel having a resin entrance end and a resin exit end, a hollow cylindrical ram reciprocally movable to a location within and external to the entrance end of the barrel, a generally cylindrical mandrel disposed within and passing through the hollow cylindrical ram, the mandrel extending into the barrel and terminating generally adjacent the discharge end of the barrel, the ram being in operative association with means to reciprocally position the hollow cylindrical ram generally along an axis of the direction of extrusion of the barrel and means to reciprocally position the mandrel along the axis of extrusion of the barrel, the improvement which comprises disposing a generally hollow cylindrical spacer between the hollow cylindrical ram and the mandrel at a location generally adjacent the entrance end of the barrel.

4,430,283

METHOD FOR THE EXTRUSION OF TETRAFLUOROETHYLENE POLYMER TUBES

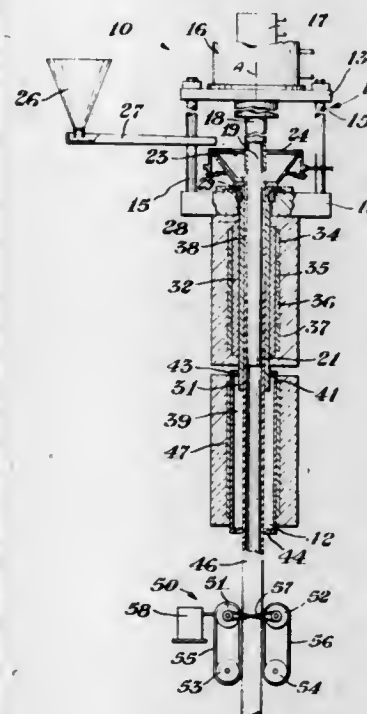
Edward L. Burnett, and Eugene V. Stack, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 206,212, Nov. 13, 1980, abandoned. This application May 17, 1982, Ser. No. 378,963

Int. Cl.³ B27J 5/00

U.S. Cl. 264—127

3 Claims



1. In a method for the fabrication of a tetrafluoroethylene article wherein tetrafluoroethylene polymer resins in the form of polytetrafluoroethylene particles are ram extruded in a ram extruder to generally fuse together the polytetrafluoroethylene particles at a temperature above the crystalline melting point of the particles to provide a coherent tetrafluoroethylene polymer tube, discharging the coherent tetrafluoroethylene polymer tube from the extruder and subsequently cooling the tetrafluoroethylene polymer tube to a self supporting condition, the improvement which comprises discharging the tetrafluoroethylene polymer tube from the extruder at a temperature above its crystalline melting point, cooling the tube below its crystalline melting point while the tube is radially unsupported and axially supported, thereby providing a tetrafluoroethylene polymer tube of reduced tendency to shrink in radial and axial directions, and having a desirable resistance to permeation of gases therethrough.

4,430,284

METHOD OF COEXTRUDING MECHANICALLY INTERCONNECTED MULTI-LAYER LAMINATES WITH MECHANICAL LAYER INTERCONNECTION

Ole-Bendt Rasmussen, Topstykke 7, 3460 Birkerød, Denmark Division of Ser. No. 926,244, Jul. 20, 1978, Pat. No. 4,229,394, which is a division of Ser. No. 607,695, Aug. 25, 1975, Pat. No. 4,125,581, which is a continuation of Ser. No. 421,270, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 75,229, Sep. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 871,688, Nov. 19, 1969, abandoned, which is a continuation of Ser. No. 694,433, Dec. 29, 1967, abandoned, and Ser. No. 694,660, Dec. 29, 1967, Pat. No. 3,547,761, and Ser. No. 751,205, Aug. 8, 1968, abandoned, and Ser. No. 751,237, Aug. 8, 1968, abandoned. This application May 30, 1980, Ser. No. 154,769

Claims priority, application United Kingdom, Dec. 30, 1966, 58429/66; Aug. 9, 1967, 36531/67

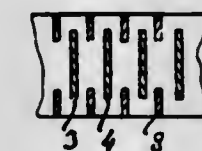
Int. Cl.³ B29D 7/02; B29F 3/10

U.S. Cl. 264—171

13 Claims

1. A method of forming a laminate of at least two plies which comprises the steps of co-extruding at least two layers of at

least one polymeric material in face-to-face contact with each such contacting layer face having at generally regular intervals thereacross toothlike projections projecting generally outwardly of the plane of such layer in embedded relation into the



adjacent layer to provide an improved surface interconnection between each adjacent pair of layers thereof, said toothlike projections in adjacent layer faces extending generally parallel along the laminate.

4,430,285

METHOD AND APPARATUS FOR PREVENTING THERMAL DAMAGE TO A PREFORMED PLUG DURING MOLDING OF A HOUSING THEREAROUND

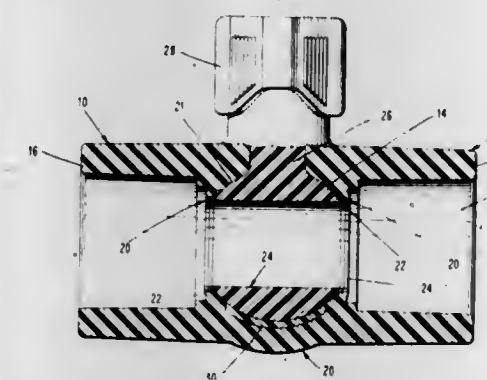
Gary L. Runyan, and Paul H. Sloan, Jr., both of Louisville, Ky., assignors to Nibco Inc., Elkhart, Ind.

Filed Oct. 23, 1981, Ser. No. 314,271

Int. Cl.³ B29C 6/02

U.S. Cl. 264—242

21 Claims



1. A method of forming a rotary plug valve of the type comprising a housing formed of a polymer and a rotary plug disposed in a through-passage of said housing;
 providing a rotary plug having a bore extending diametrically therethrough and formed of a polymer;
 forming a shell-like shield of a resilient polymeric material of a shape to closely seat against and cover a portion of the peripheral surface of the plug, attaching the shield by snap-fitting said shield onto said plug with its inner surface conforming to the peripheral surface of said plug;
 positioning said plug and shield assembly within a cavity of a mold on a mold core means for supporting said assembly and forming the through-passage, said cavity corresponding to the shape of said housing, and introducing a molten polymer into said cavity at a point whereat the shield is interposed between the polymer and the plug to shield the plug from the thermal energy of the molten polymer as the polymer is initially introduced into the cavity and to form said housing around said plug and bond said shield to the housing formed by the polymer.

4,430,286

VARIABLE DENSITY BOARD HAVING IMPROVED THERMAL AND ACOUSTICAL PROPERTIES AND METHOD AND APPARATUS FOR PRODUCING SAME

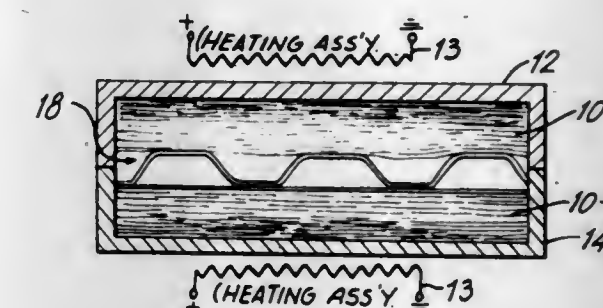
Edward W. Franz, Colts Neck, N.J., assignor to Celotex Corporation, Tampa, Fla.

Filed Jul. 14, 1980, Ser. No. 167,800

Int. Cl.³ B29D 3/02; B29C 11/00

U.S. Cl. 264—258

10 Claims



1. A method for producing as a porous molded end product, a member adapted to serve as a thermal and/or acoustic barrier and having improved thermal and/or acoustic properties comprising the steps of:

compressing a plurality of porous resilient compressible blankets of loosely gathered fibers treated with an uncured binder within a closed mold having a shape conforming to the desired configuration of the molded end product;
 interposing a collapsible medium formed of thermoplastic material and having a predetermined thickness between adjacent ones of said blankets, said medium occupying a predetermined region of said mold whereby said mold compresses a major portion of said blankets by a substantial amount and only slightly compresses an associated portion of said medium;
 heating said mold to develop a varying temperature profile across the interior of said mold to thereby heat said blankets and said medium, the temperature level in the region of said medium being such that said medium initially softens and contracts significantly and ultimately disperses into the interstices of said blankets while the binder adjacent to the region of said medium is uncured allowing adjacent uncured resilient portions of said compressed blankets to correspondingly expand into the region previously occupied by the contracting medium while portions of said blankets remote from said medium are being cured, said uncured binder ultimately being cured to thereby create a porous end product which gradually decreases in density from both major surfaces toward the center thereof.

4,430,287

REACTION INJECTION MOLDING OF NYLON

Peter J. Tilgner, Akron, Ohio, assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 21, 1982, Ser. No. 400,338

Int. Cl.³ B29F 1/08; B29C 3/00

U.S. Cl. 264—40.6

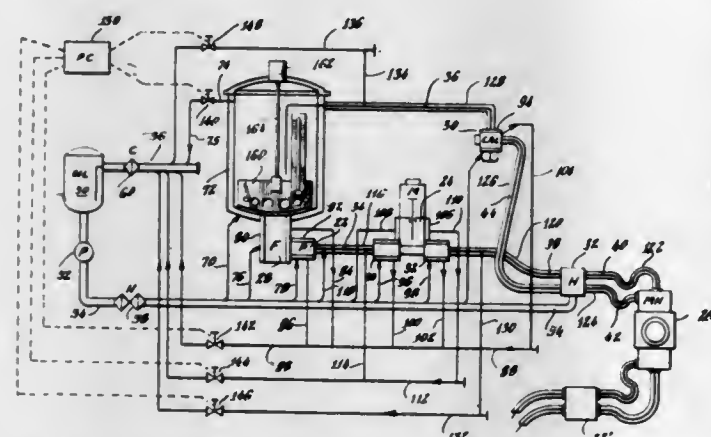
8 Claims

1. The method of molding polymeric materials by the reaction injection mixing (RIM) process of combining two or more chemically reactive polymer components in a mixing head immediately prior to introducing the combined components into a mold, comprising the steps of:

A. providing RIM equipment comprising:
 (1) a RIM mixing head;
 (2) a supply tank, feed pump, volumetric metering and pressurizing means, and supply and recycle ducting interconnecting said tank, pump and metering means with said metering head for each reactive component employed in the RIM process, establishing separate flow paths for each

of said reactive components to and from said mixing head; and

- (3) an attemping fluid system in heat-exchange but non-flow communication with each of said reactive component flow paths, said attemping system comprising for each reactive component flow path:
 - (a) an attemping fluid reservoir, a circulating pump, a supply manifold fed by said pump, a return manifold connected to said reservoir for return of attemping fluid thereto;
 - (b) heat exchange means in at least one of said manifolds for regulating the temperature of said attemping fluid;
 - (c) casings and jackets enclosing all portions of the reactive component flow path;



- (d) a supply duct system connecting said casings and jackets to said supply manifold for feeding attemping fluid to said casings and jackets and forming multiple zones along the reactive component flow path;
 - (e) a return duct system connecting said casings and jackets to said return manifold; and
 - (f) variable flow restrictor means in at least one of said duct systems;
- B. selectively varying the attemping fluid flow in a selected zone differently from that in other zones along the flow path of the reactive component by controlling the settings of said flow restrictor means.

4,430,288

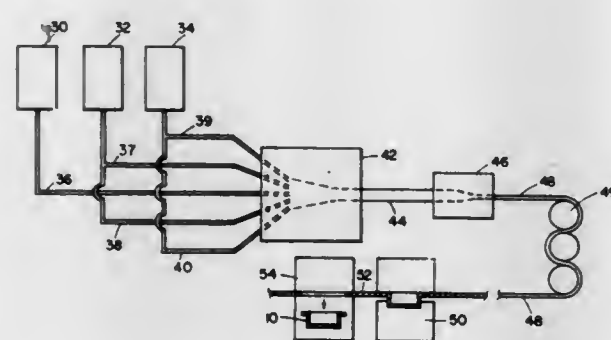
MAKING COEXTRUDED SHEETS AND CONTAINERS
Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Dec. 18, 1981, Ser. No. 331,911

Int. Cl.³ B29C 17/02

U.S. Cl. 264—510

6 Claims



1. A method of making a multilayered structure, said method comprising coextruding by
 - separately heating a polyolefin having moisture barrier properties and a specific gravity greater than 0.9 and polyester,
 - supplying said heated polyolefin and polyester to a coextrusion block to form a multilayer stream with

a layer of said polyolefin having moisture barrier properties and a specific gravity greater than 0.9, and a layer of said polyester, and

- flattening said multilayer stream in a coextrusion die to produce a multilayer sheet having a width greater than the width of said multilayer stream, a thickness less than the height of said multilayer stream, a polyester layer and a polyolefin layer,
- said polyester layer providing chemical resistance, microwave heatability and thermoformability during manufacture,
- said sheet having consistent and reliable bonds between layers owing to its having been coextruded.

4,430,289

PROCESS FOR REDUCING BLOCK AND INCREASING SLIP OF LINEAR LOW DENSITY POLYETHYLENE COPOLYMER EXTRUSION-BLOWN FILMS

Osborne K. McKinney, and David P. Flores, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 256,268, Apr. 21, 1981, Pat. No. 4,394,474. This application Apr. 5, 1982, Ser. No. 365,431

Int. Cl.³ B29D 7/02

U.S. Cl. 264—564

14 Claims

1. A process for reducing block, and increasing slip of blown films of linear low density ethylene copolymers which inherently exhibit high block and low slip, said process comprising incorporating into the said copolymer, prior to blowing into films, an effective fast-blooming amount in the range of about 0.05 to about 1.5 weight percent of at least one secondary fatty acid amide having a saturated alkyl group and an unsaturated alkyl group, and about 0.01 to about 2 weight percent of finely-divided inorganic, and extrusion blowing a melt of the mixture into a thin film wherein the linear low density ethylene copolymer comprises ethylene copolymerized with a sufficient amount of at least one alpha, beta-ethylenically unsaturated alkene having from 3 to 12 carbon atoms, to provide a copolymer having a density in the range of about 0.90 to about 0.94 gms./cc, said copolymers having a melt index in the range of about 0.1 to about 30 gm./10 min. as measured by ASTM-D-1238-(E).

4,430,290

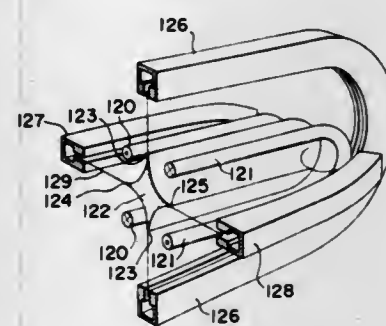
PLASMA CONFINING DEVICE

Yuichi Kiryu, 1-12-9, Naka-Cho, Koganei-Shi, Tokyo-To, Japan
Continuation of Ser. No. 63,318, Aug. 2, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,639

Claims priority, application Japan, Aug. 25, 1978, 53-103629
Int. Cl.³ G21B 1/00

U.S. Cl. 376—134

1 Claim



1. A plasma confining device comprising:
 - a plurality of cusp magnetic field means each for generating a cusp magnetic field confining a charged particle plasma,
 - said cusp magnetic field having a line cusp portion, and some of said charged particles escaping through said line cusp portion forming a sheet-shaped charged particle flow

substantially within a two-dimensional plane along said line cusp portion, and
a deflection magnetic field means for generating a deflection magnetic field having a magnetic flux perpendicular to said plane, an edge of the deflection magnetic field being perpendicular to the direction of advancement of the escaping charged particles so that each of the escaping particles enters the deflection magnetic field, is deflected, leaves the magnetic field, and returns substantially within said plane, toward and through the line cusp portion into the inside of the plasma, wherein said deflection magnetic field means further includes neutralizing coils which generate a neutralizing field which will weaken said cusp magnetic field at said deflection magnetic field means, thereby reducing the radius of said deflection field means.

4,430,291

PACKED FLUIDIZED BED BLANKET FOR FUSION REACTOR

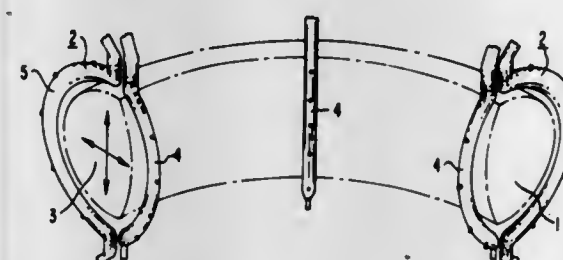
John W. H. Chi, Mt. Lebanon, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 12, 1981, Ser. No. 262,729

Int. Cl.³ G21B 1/00

U.S. Cl. 376—146

1 Claim



1. In a fusion plasma system having a circular cross section, said fusion system substantially surrounded by a blanket structure for the capture and transmittal of energy from said plasma, wherein said blanket structure comprises:
 - (A) a plurality of semicircular pressure tubes, each said tube including two spaced apart substantially parallel perforated walls having an enclosed volume therebetween and defining inlet and outlet conduits outside said enclosed volume said plurality of tubes substantially surrounding said plasma containing system;
 - (B) first supply means for supplying a fluid coolant flow in a first direction across each of said volumes by means of said inlet and outlet conduits, said first direction being radial to said reactor circular cross section;
 - (C) second supply means for supplying a fluidization fluid flow in a second direction, in each said volume along the length thereof of each of said tubes, which second direction is substantially opposite the direction of gravitational acceleration, and perpendicular to said first direction; and
 - (D) a plurality of fuel particles located within each of said volumes, and wherein the fluidization flow in the second direction passes through a particle bed path substantially greater in length than that particle bed path traversed by the coolant flow in the first direction,
- the combination with each pressure tube of a plurality of flow rakes, located at various elevations along the second direction, said flow rakes being annular tubes with a plurality of holes arranged to distribute said second supply means approximately uniformly over the cross section of said pressure tube, said plurality of flow rakes adapted as above to accomplish staged and distributed fluidization flow in said second direction.

4,430,292

RADIOACTIVE GASEOUS WASTE DISPOSING SYSTEM
Hirofumi Shimada, and Hisao Totsuka, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

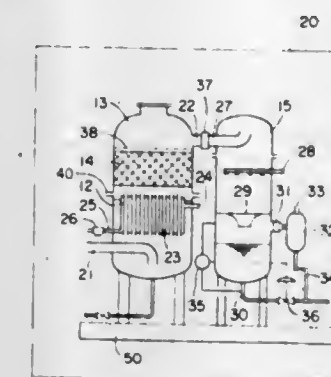
Continuation of Ser. No. 41,891, May 24, 1979, abandoned. This application Jan. 12, 1982, Ser. No. 338,968

Claims priority, application Japan, Jun. 1, 1978, 53-64941

Int. Cl.³ G21C 19/32; B01J 9/02

U.S. Cl. 376—301

1 Claim



1. In a system for disposing of radioactive gaseous wastes in a nuclear power plant of the type comprising:
 - a steam turbine;
 - a first condenser connected to the steam turbine;
 - a vertically cylindrical recombing unit connected to the first condenser and comprising preheating means for preheating to a predetermined temperature radioactive gaseous wastes fed from the first condenser and catalytic recombing means which forms water vapour from oxygen and hydrogen contained in the radioactive gaseous wastes;
 - a second condenser connected to an output of said recombing unit; and
 - means connected to an output of said second condenser for adsorbing and holding up the radioactive gaseous wastes with an adsorbing agent;
- the improvement in which said recombing unit is dividable into an upper half in which said recombing means is disposed and a lower half in which said preheating means is disposed, there being a space between said recombing means and said preheating means, said second condenser being disposed downstream of and in direct contact with said recombing unit, and in which the radioactive gaseous wastes are fed from said first condenser into said recombing unit at a portion of said recombing unit near the bottom thereof and pass through said preheating means, said recombing means, and into said second condenser through a portion of said recombing unit near its upper end.

4,430,293

CONTAINMENT HYDROGEN REMOVAL SYSTEM FOR A NUCLEAR POWER PLANT

Vincent M. Callaghan, West Granby; Edward P. Flynn, and Bohdan M. Pokora, both of Windsor, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 10, 1981, Ser. No. 300,770

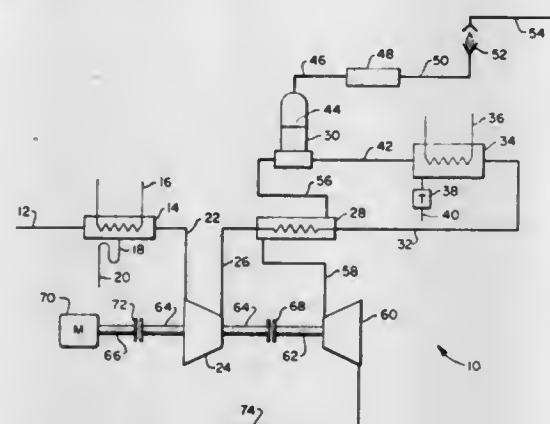
Int. Cl.³ G21C 19/00, 13/00

U.S. Cl. 376—314

13 Claims

1. In a nuclear power plant having a containment building for containing an atmosphere, a method of separating hydrogen gas from a mixture of hydrogen gas and other gases comprising the steps of:
 - a. withdrawing a gas stream from the atmosphere of said containment building;
 - b. cooling said gas to remove a major portion of the water vapor;

- c. returning the condensed water to said containment building;
- d. compressing said cooled gas;
- e. cooling said compressed gas to lower the temperature of said gas and remove additional water vapor;
- f. returning the condensed water to said containment building;



- g. separating said cooled gas into a first stream of gas rich in hydrogen and a second stream of gas that is hydrogen depleted;
- h. passing said first stream of gas rich in hydrogen to disposal; and
- i. returning said second stream to said containment building.

4,430,294

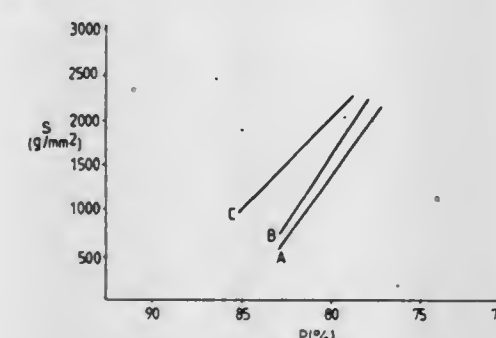
PROCESS FOR PRODUCING POROUS NICKEL BODIES

Victor A. Tracey, Solihull, England, assignor to Inco Europe Limited, London, England
Filed Jun. 3, 1981, Ser. No. 270,048
Claims priority, application United Kingdom, Jun. 9, 1980, 8018807

Int. Cl.³ B22F 3/10

U.S. Cl. 419—2

4 Claims



1. A process for the production of porous nickel bodies characterized by high strength, residual carbon content below about 0.08% (by weight), and a porosity exceeding 75%, the process consisting essentially of:

- (a) providing a carbonyl nickel powder,
- (b) forming a nickel-carbon mixture by adding carbon particles to the nickel powder in an amount sufficient to raise the carbon content thereof to about 0.35–2% (by weight) carbon, the particle size of the carbon no greater than the particle size of the nickel powder,
- (c) forming a green body from the mixture,
- (d) sintering the body in a reducing atmosphere, the temperature of the reducing atmosphere between 750° C. and 1050° C., the reducing atmosphere consisting essentially of hydrogen, nitrogen and 15–30% (by volume) carbonaceous gas, for the time necessary to maintain the porosity of the body above 75%.

4,430,295 ARTICLES PRODUCED FROM IRON POWDER COMPACTS CONTAINING HYPEREUTECTIC COPPER PHOSPHIDE POWDER

William F. Jandeska, Jr., Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 139,102, Apr. 10, 1980, abandoned.
This application Nov. 19, 1981, Ser. No. 322,868
Int. Cl.³ B22F 3/00

U.S. Cl. 419—46

5 Claims

1. A method for forming an article from iron powder comprising compacting a powder mixture comprising plain iron particles and a hypereutectic copper phosphorus sintering agent, and sintering the compact at a temperature between about 950° C. and 1120° C. to cause the copper phosphorus agent to form a liquid capable of wetting the surface of the iron particles, said sintering being carried out for a time sufficient for phosphorus to diffuse into the iron particles and for the remaining copper-enriched liquid to flow and wet iron surfaces in the compact and thereafter form a solidified copper-rich layer on pore surfaces within the product sintered article.

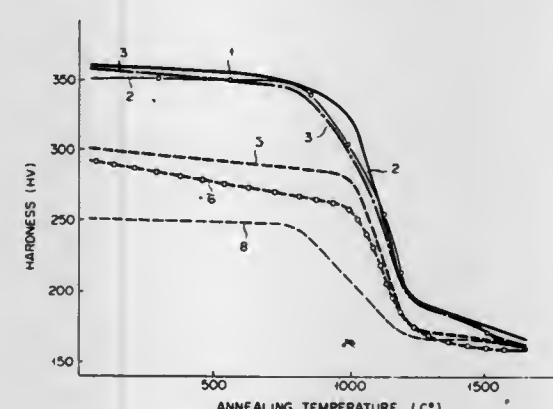
4,430,296

MOLYBDENUM-BASED ALLOY

Hideo Koizumi, Tokyo; Hideo Ishihara; Tatsuhiko Matsumoto, both of Yokohama, and Katsuhiko Kawakita, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jun. 24, 1982, Ser. No. 391,685
Claims priority, application Japan, Jun. 25, 1981, 56-97526
Int. Cl.³ C22C 27/04

U.S. Cl. 420—429

3 Claims



1. A molybdenum-based alloy resistant to embrittlement upon irradiation with neutrons and consisting of 0.1 to 2.5% by weight of vanadium, 10 to 100 ppm of boron, 10 to 1,000 ppm of carbon, and the balance of molybdenum.

4,430,297

HARD NICKEL-BASE ALLOY RESISTANT TO WEAR AND CORROSION

Paul Crook, Fairford, England, assignor to Cabot Corporation, Kokomo, Ind.

Filed Jan. 7, 1980, Ser. No. 110,264
Claims priority, application United Kingdom, Jan. 11, 1979, 7901144

Int. Cl.³ C22C 19/05

U.S. Cl. 420—442

16 Claims

1. A nickel-based hard alloy consisting essentially of the following composition (excluding impurities)

	% by weight of composition
(a) chromium	32 to 40

-continued

	% by weight of composition
(b) molybdenum plus tungsten	8 to 15
(c) carbon	0.55 to 2.5
(d) one or more elements selected from the group consisting of niobium, titanium, vanadium, tantalum, hafnium and zirconium	1 to 7.5
(e) silicon plus manganese	0 to 5
(f) copper	up to 5
(g) aluminum	0 to 2
(h) one or more elements selected from the group consisting of the rare earths	0 to 2
(i) boron	0 to 1
(j) iron	0 to 25
(k) nickel	balance

wherein

- (1) there is at least 42% by weight of the nickel in the composition;
 - (2) the combined weight of boron (if present) and carbon is not greater than 2.5%;
 - (3) one or more elements from the group consisting of vanadium, tantalum, hafnium and zirconium are present only when the carbon content exceeds 1.0%;
- said alloy being cobalt-free except as an adventitious impurity and made by first melting the alloy and then casting the molten alloy into a useful form.

4,430,298

COPPER ALLOYS FOR ELECTRIC AND ELECTRONIC DEVICES AND METHOD FOR PRODUCING SAME

Motohisa Miyafuji, Yamaguchi; Takashi Matsui, Shimonoseki; Hidekazu Harada, Shimonoseki; Masumitsu Soeda, Shimonoseki; Shin Ishikawa, Shimonoseki; Hiroshi Murakado, Shimonoseki; Hiroaki Kawamoto, Shimonoseki; Takeo Tabuchi, Shimonoseki; Kunio Kamada, Shimonoseki, and Yasuhiro Nakashima, Shimonoseki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 6, 1983, Ser. No. 501,110

Claims priority, application Japan, Jun. 5, 1982, 57-96484
Int. Cl.³ C22C 9/06

U.S. Cl. 420—481

3 Claims

1. A copper alloy for electric and electronic devices, comprising: 3.0–3.5 wt% of Ni, 0.5–0.9 wt% of Si, 0.02–1.0 wt% of Mn, 0.1–5.0 wt% of Zn and the balance Cu and the inevitable impurities.

4,430,299

APPARATUS FOR MONITORING CHEMICAL REACTIONS

Thomas Horne, Harpenden, England, assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jun. 18, 1981, Ser. No. 275,104

Int. Cl.³ G01N 35/04

U.S. Cl. 422—64

24 Claims

1. Apparatus for monitoring chemical reactions occurring or having occurred in a plurality of sample substances carried respectively by a plurality of cartridges of generally strip-like planar construction, the reaction occurring or having occurred in any cartridge being detected by directing a beam of radiant energy to illuminate a cartridge at a radiant energy receiving surface thereof which provides access to said substance carried by the cartridge and measuring the modified radiation reflected from the sample substance carried by said cartridge and the radiant energy receiving surface, said apparatus comprising:

- A. a stationary support structure,

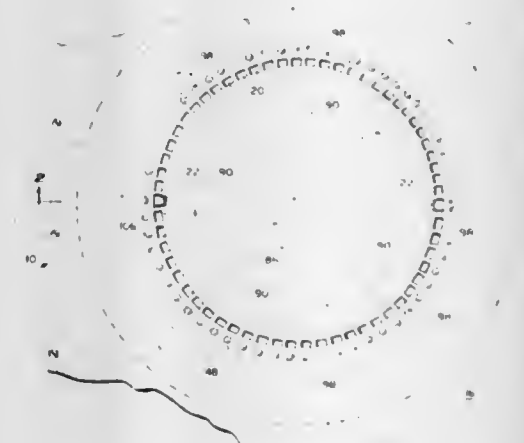
- B. a plurality of cartridges of generally strip-like planar construction,

- C. means on said structure for fixedly supporting a plurality of said cartridges in a geometric line array and each cartridge having a sample substance carried thereby and a radiant energy receiving surface providing access for radiant energy to said sample substance, the radiant energy receiving surfaces of all said cartridges facing to the same side of said array, said cartridges being supported by said supporting means in such a manner as to enable the removal and replacement of any one independently of all others,

- D. a movable carrier on said support structure and means mounting said movable carrier for guided movement substantially parallel to said geometric line,

- E. at least one photometer carried on said movable carrier, said photometer having a source of radiant energy and means forming a beam of said radiant energy and directing said beam to said cartridges, the formed beam being disposed to impinge against said cartridges at the radiant energy receiving surfaces thereof as the movable carrier moves relative to said array,

- F. the angle of impingement of said beam with said radiant



- energy receiving surfaces relative to the planes of said surfaces being such as to enable detection of reflected radiant energy,

- G. said photometer including photoresponsive means on the same side of said surface as said beam arranged to receive modified radiation reflected from said cartridges directly from said surfaces, the spatial relationship of the beam forming means and photoresponsive means being fixed,

- H. means for moving the movable carrier on a program of movement to direct said beam at the cartridges selectively if not sequentially, the cartridge support being such that said removal of any one of said cartridges from said support being accomplished without interruption of said program of movement of said movable carrier,

- I. the photoresponsive means being responsive to the modified reflected radiation to produce an electrical signal related to the chemical condition of the sample substance, if any, carried by the cartridge which the directed beam illuminates, movement of the movable carrier serving to produce a plurality of said signals from the sample substances of those cartridges which have been illuminated,

- J. means for generating usable data from said signals and
- K. means for coupling the signals from the carrier to said last-mentioned means.

4,430,300

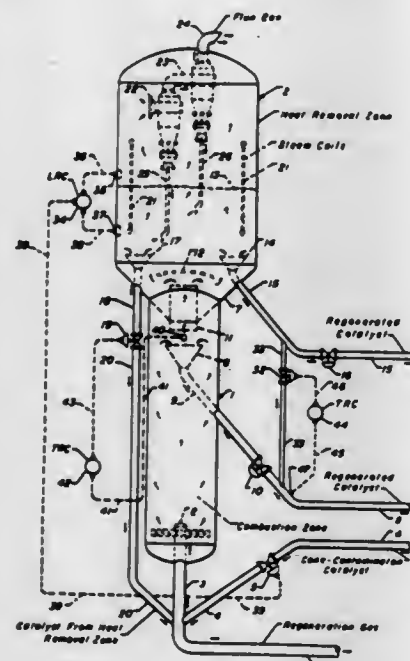
FLUID CATALYST REGENERATION APPARATUS
Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 303,256, Sep. 17, 1981, Pat. No. 4,371,501, which is a division of Ser. No. 118,372, Feb. 4, 1980, Pat. No. 4,309,308, which is a continuation-in-part of Ser. No. 969,607, Dec. 14, 1978, Pat. No. 4,219,442. This application Sep. 22, 1982, Ser. No. 421,696

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ B01J 21/20, 29/38, 8/26; C10G 11/18
U.S. Cl. 422—109

2 Claims



1. An apparatus for regenerating a coke-contaminated, fluid catalyst, which apparatus comprises:

- a vertically oriented combustion chamber having two sections, a lowermost and uppermost section, wherein said lowermost section is a relatively dense-phase lowermost combustion section containing fluidized catalyst in a relatively dense-phase and said uppermost section is a relatively dilute phase uppermost combustion section containing fluidized catalyst in a relatively dilute phase having a catalyst to gas mixtures of from about 2 to about 10 lbs. per cubic foot;
- a spent catalyst inlet conduit for gas and fluid catalyst connecting with said lowermost section of said combustion chamber containing said relatively dense-phase;
- a heat removal chamber located superadjacent with respect to said combustion chamber and in direct communication with said relatively dilute phase uppermost combustion section;
- a heat removal means disposed within said heat removal chamber;
- a catalyst withdrawal conduit connected at one end to said heat removal chamber for withdrawing regenerated fluidized catalyst from said heat removal chamber;
- a catalyst recycle conduit connecting said heat removal chamber with said spent catalyst inlet conduit, said inlet conduit providing communication of said heat removal chamber with said relatively dense-phase lowermost combustion section of said combustion chamber, whereby regenerated fluidized catalyst is passed from said heat removal chamber, through said recycle catalyst conduit and spent catalyst inlet conduit to said relatively dense-phase lowermost combustion section; and,
- a control system which comprises:
 - means to sense the temperature in said dilute-phase of fluidized catalyst at a locus within said relatively dilute phase uppermost combustion section;
 - temperature control means having an adjustable set

point connecting with said temperature sensing means and developing an output signal;

(iii) flow control means regulating the rate of flow of said regenerated catalyst through said catalyst recycle conduit; and

(iv) means for transmitting said output signal to said flow control means in said catalyst recycle conduit, whereby the latter is adjusted responsive to said dilute-phase catalyst temperature sensed in said relatively dilute phase uppermost combustion section.

4,430,301

APPARATUS FOR REMOVING A SAMPLE OF AT LEAST ONE PHASE FROM A MOVING MIXED PHASE

Heinz Evers, Linkenheim, Fed. Rep. of Germany, assignor to Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany

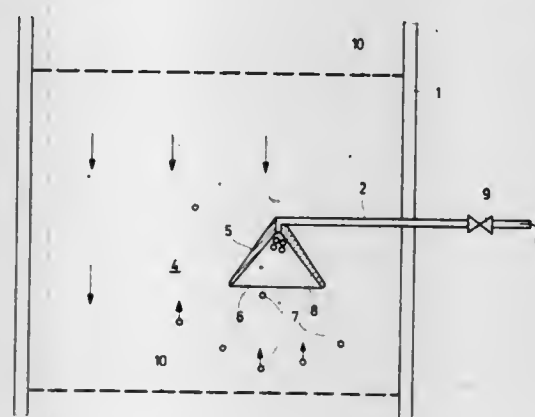
Filed Sep. 16, 1981, Ser. No. 302,531

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034961

Int. Cl.³ B01D 11/00

U.S. Cl. 422—119

9 Claims



1. An extraction apparatus for extracting a sample of at least one phase from a mixed phase moving through a walled transporting means with said mixed phase comprising two substantially mutually insoluble liquids of different densities which are moving in opposite directions in the transporting means and which form a dispersed phase and a continuous phase which are countercurrent to one another, said apparatus comprising: at least one pipe which passes through the wall of the transporting means and has a funnel-shaped end having a conical inner wall, said funnel-shaped end projecting into the mixed phase and presenting an opening for capture of only one of the dispersed and continuous phases, and said funnel-shaped end is oriented in the mixed phase such that the width of its said opening is at right angles to the direction of movement of the two countercurrent phases and faces in the direction of movement of the one of the two countercurrent phases to be extracted.

4,430,302

FLUIDIZED CATALYST REGENERATION APPARATUS
Bogdan J. Krause, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 12, 1982, Ser. No. 367,495

Int. Cl.³ B01J 8/24

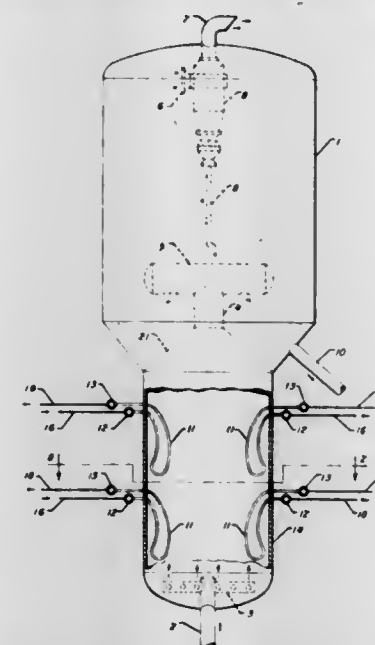
U.S. Cl. 422—144

4 Claims

1. An apparatus for performing a chemical reaction which comprises:

- an enclosed reaction vessel having a substantially vertical sidewall;
- means to maintain a fluidized bed of a particulate material within the reaction vessel;
- a plurality of heat exchange fluid manifold systems located at different points outside the reaction vessel, with

each manifold system comprising separate and independent fluid delivery and fluid collection conduits; and, (d) a plurality of heat exchange means located within said fluidized bed at different levels along said vertical sidewall having a length each of which comprises a plurality of U-shaped looped heat exchange coils, with each heat exchange coil having two terminal portions which pass through said sidewall of the reaction vessel, each of which



has at least two-thirds of said length located below said terminal portions, with one terminal portion of each heat exchange coil communicating with a fluid delivery conduit and with the other terminal portion of each heat exchange coil communicating with a fluid collection conduit of the same manifold system and wherein the entire said length of at least some of said U-shaped coils is situated at a point above the uppermost portion of at least some of said coils.

4,430,303

REMOVAL OF UNDESIRABLE GASEOUS COMPONENTS FROM A HOT WASTE GAS

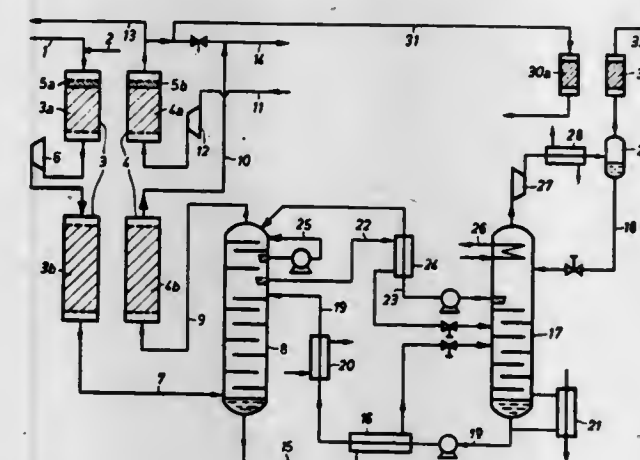
Gerhard Linde, Grunwald, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,409

Int. Cl.³ F01N 3/10

U.S. Cl. 422—170

6 Claims



1. Apparatus for conducting a process for the removal of undesirable gaseous components from a hot waste gas containing sulfur dioxide and nitrogen oxides, wherein the waste gas is catalytically reduced and then cooled, said apparatus comprising a waste gas conduit, a regenerator housing arranged in the flow path of the waste gas conduit, catalyst packing and heat-accumulating mass being serially arranged in the regenerator housing so that said waste gas first contacts the catalyst pack-

ing and then the heat accumulating mass within said regenerator housing; gas supply means for feeding ammonia into the waste gas, said gas supply means being in communication with the waste gas conduit upstream of the catalyst packing; and scrubbing means for removing sulfur dioxide from said waste gas, said scrubbing means arranged downstream of and in communication with said regenerator housing.

4,430,304

SLAB REFORMER

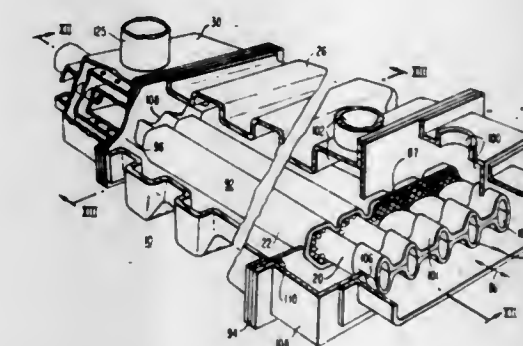
Francis R. Spurrier, Whitehall; Egon A. DeZubay, Mt. Lebanon; Alexander P. Murray, Murrysville, and Edward J. Vidt, Churchill, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 13, 1981, Ser. No. 321,131

Int. Cl.³ F28D 21/00

U.S. Cl. 422—204

12 Claims



1. A catalytic reformer comprising: a hollow elongated flat non-circular slab; a duct disposed horizontally within said slab and extending along a longitudinal axis of said slab, said duct forming a first annular region between said slab and said duct; a shell disposed within said duct forming a second annular region between said duct and said shell; a bed of catalytic material disposed within said second annular region within said slab; means for flowing a reformable gaseous medium through said bed; and means for heating said bed from within said slab.

4,430,305

DISPLACED CAPILLARY DIES

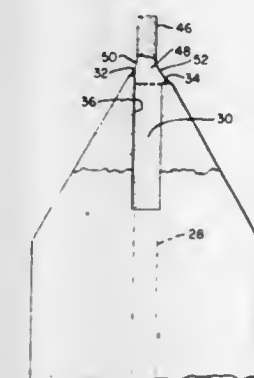
Juris P. Kalejs, Wellesley; Bruce Chalmers, Falmouth, both of Mass., and Thomas Surek, Englewood, Colo., assignors to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Feb. 12, 1979, Ser. No. 11,527

Int. Cl.³ C30B 15/34

U.S. Cl. 422—246

9 Claims

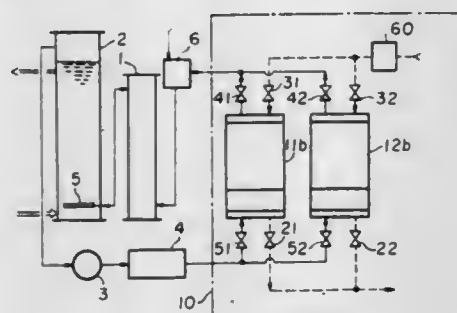


1. Apparatus for use in growing a crystalline body of silicon from a melt so that silicon carbide precipitating from the melt will be distributed asymmetrically in the crystalline body, said

apparatus comprising a crucible made of graphite or quartz and formed with a closed bottom end and an open top end, and a capillary die having a die body made solely of graphite and characterized by an upper end, a lower end and a capillary, said upper end comprising first and second end surfaces spaced from one another so as to provide an opening for said capillary, said first end surface being located at a greater distance from said lower end than said second end surface, and means for supporting said die so that said lower-end projects into the crucible in position to be immersed in a silicon melt contained in the crucible, whereby when a crystalline body of silicon is grown from a film of melt which is supported by said end surfaces and replenished via said capillary, said film will have a first meniscus extending between said die body and said first end surface and a second meniscus extending between said die body and said second end surface, with said second meniscus being longer and extending lower than said first meniscus.

4,430,306

OXYGEN RECYCLE TYPE OZONIZING APPARATUS
Keisuke Namba; Masaaki Tanaka; Takanori Ueno, and Norikazu Tabata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 152,318, May 22, 1980, abandoned.
This application Dec. 2, 1981, Ser. No. 326,760
Claims priority, application Japan, May 29, 1979, 54-66549
Int. Cl.³ A61L 2/20; B01D 53/04; C02F 1/50, 1/78
U.S. Cl. 422-292



1. An oxygen recycled type ozonizing apparatus for feeding ozonized oxygen to a liquid or solid object part containing organic materials to be treated with said ozonized oxygen and subsequently treating the gas discharge after the reaction to reuse it as a source of oxygen for producing ozone, comprising:
a source of oxygen with said source producing oxygen which is essentially substantially pure oxygen;
an ozonizing means for producing ozonized oxygen from said substantially pure oxygen;
a reacting means for reacting the liquid or the object to be treated with the ozonized oxygen produced in said ozonizing means;
a temperature-swing recovery means connected to said reacting means for recovering the discharged gas of the reacting means to adsorb and remove the impurities contained in the discharged gas and to feed the gas to resupply said source of substantially pure oxygen which is, in turn, fed to said ozonizing means, wherein said recovery means holds a first adsorbent of one of silica gel and activated aluminum for adsorbing mainly water in the discharged gas and a second adsorbent of one of Ca A type and X type zeolite for adsorbing mainly volatile organic materials and CO₂ gas in said discharge gas, said first adsorbent being located upstream of said second adsorbent, and heater means for heating said second adsorbent to a temperature of 250° C. in order to carry out said adsorbing operation.

4,430,307

METHOD FOR SEPARATING THE ISOTOPES OF AN ELEMENT IN PARTICULAR OF A METAL HAVING A HIGH ATOMIC WEIGHT

Raymond Peltier, 11 Square Jasmin, 75016 Paris, France
PCT No. PCT/EP78/00003, § 371 Date Feb. 28, 1979, § 102(e)
Date Feb. 28, 1979, PCT Pub. No. WO79/00025, PCT Pub. Date Jan. 25, 1979

PCT Filed Jun. 30, 1978, Ser. No. 159,225
Claims priority, application France, Jul. 4, 1977, 77 20491
Int. Cl.³ B03D 1/00, 1/02, 1/06; C01G 56/00
U.S. Cl. 423-3

8 Claims
1. A process for the separation of isotopes from a heavy metal comprising forming a tension active compound of said metal with a soap, dissolving said compound in a liquid having a strong surface tension, injecting a non-miscible body into the solution of said compound in said liquid and thereby forming a plurality of separation surfaces, and recovering the fraction of the solution adjacent said separation surfaces enriched in the lighter isotope.

4,430,308

HEATED ION EXCHANGE PROCESS FOR THE RECOVERY OF URANIUM

Argell Fletcher, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,125
Int. Cl.³ C01G 43/00; C22B 60/02
U.S. Cl. 423-7

20 Claims
1. A method for the recovery of uranium values from a uranium-containing lixiviant, comprising the steps of:
(a) passing said lixiviant through an ion-exchange resin to cause said resin to retain uranium values, wherein the ion exchange resin is heated to a temperature sufficient to cause a substantial increase in uranium loading capacity as compared to ambient temperatures; and
(b) recovering said uranium values from said ion-exchange resin.
15. A process for the recovery of uranium values from uranium-containing ore additionally containing molybdenum values, comprising the steps of:
(a) contacting the ore with an aqueous leaching solution to solubilize uranium and molybdenum values;
(b) passing the leachate through an anion-exchange resin wherein the resin is heated to a temperature sufficient to cause the resin to selectively retain uranium values and to cause a substantial increase in uranium loading capacity; and
(c) recovering said uranium values from said anion exchange resin.

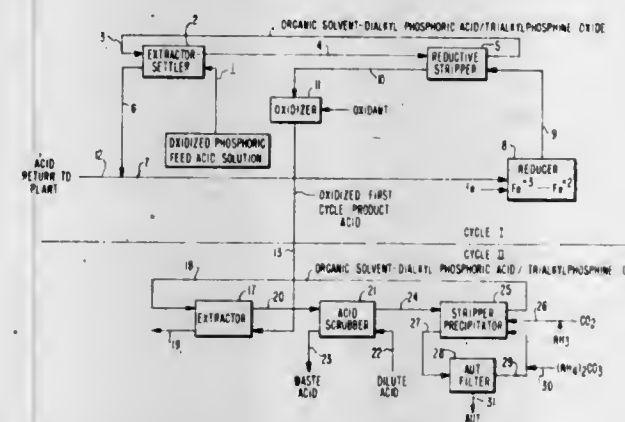
4,430,309

ACID WASH OF SECOND CYCLE SOLVENT IN THE RECOVERY OF URANIUM FROM PHOSPHATE ROCK

William R. York, Bartow, Fla., assignor to Wyoming Mineral Corporation, Lakewood, Colo.
Filed Aug. 12, 1981, Ser. No. 292,096
Int. Cl.³ C01G 43/00

6 Claims
1. In the process of recovering uranium from an aqueous solution of wet process phosphoric acid feed, comprising a first and a second cycle, where phosphoric acid is passed through extractor means and stripper means in both cycles, where the first cycle utilizes reductive stripping and both the first and second cycle utilize an organic extractant solvent containing a di-alkyl phosphoric acid having from about 4 to 10 carbon atoms in each alkyl chain and a synergistic additive agent; the improvement comprising treating the second cycle organic solvent stream, from the second cycle extractor means, containing entrained H₃PO₄, to remove H₃PO₄ therefrom, before said solvent has passed through the second cycle stripper means, said treating consisting of acid scrubbing said second cycle organic solvent stream containing entrained H₃PO₄ with,

an aqueous acidic solution consisting of water and from about 2 vol. % to about 10 vol. % of acid selected from the group consisting of sulfuric acid and nitric acid, said acidic solution added in an amount effective to remove entrained H₃PO₄ and



maintain the pH of the organic solvent stream exiting the acid scrubber at a value of between 3 and 6.5, to provide a substantially H₃PO₄ free organic solvent stream which is then fed directly into the second cycle stripper means.

4,430,310

PURIFICATION OF IMPURE BAYER PROCESS LIQUORS

John T. Malito, and Gordon C. Rogers, Jr., both of Baton Rouge, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 8, 1983, Ser. No. 464,817
Int. Cl.³ C01F 7/06

10 Claims
1. In the process of purifying impure caustic Bayer process liquors by addition of an organic solvent of low-boiling point to precipitate foreign salts, the improvement which comprises contacting the impure caustic liquor, after removal of substantially all of its dissolved alumina content by the conventional seeding and precipitation method, with a solvent selected from the group consisting of methanol, propanol, butanol, and mixtures thereof, the solvent selected being incapable of forming an azeotrope with the liquor and essentially miscible with the caustic liquor, maintaining the contact between the solvent-liquor mixture at a temperature below the temperature of about 90° C. for a time sufficient to at least induce the precipitation of sodium carbonate, sodium sulfate, or mixtures of these impurities, thus forming a solid phase consisting of impurities and a liquid phase containing the solvent and purified caustic liquor, separating the phases, recovering the solvent from the liquid phase and recycling the purified, solvent-free liquor to the Bayer process.

4,430,311

ALUMINA COMPOUNDS IN ION EXCHANGE RESINS
John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.
Division of Ser. No. 95,681, Nov. 19, 1979, Pat. No. 4,381,349.
This application Apr. 22, 1983, Ser. No. 487,540
Int. Cl.³ B01J 41/00, 41/12

12 Claims
1. In a process for recovering Li⁺ from brine by the use of a composite comprising an ion exchange resin having dispersed therein crystalline LiX.2Al(OH)₃, where X is halide, the improvement which comprises the use of a composite prepared by:
precipitating Al(OH)₃ in the reticules of a weak-base anion exchange resin by the in-situ ammonia precipitation of Al halide in aqueous media, thereby forming a composite of anion exchange resin having Al(OH)₃ dispersed therein, followed by the additional steps of
(a) slightly acidifying the so-formed composite in an aqueous medium with HX, X being halide, where the

amount of HX is an amount sufficient to provide an acid pH of not lower than about 5.0, thereby converting the anion exchange resin to the halide salt form,
(b) substantially separating the composite from the aqueous portion,
(c) substantially flooding the composite with an aqueous solution of Al halide, draining the excess solution,
(d) adding NH₄OH to precipitate additional Al(OH)₃ in the resin, and
(e) reacting with a Li compound at elevated temperature to form crystalline LiX.2Al(OH)₃ dispersed in the resin.

4,430,312

REMOVAL OF CO₂ FROM GAS MIXTURES

Allen G. Eickmeyer, 8126 El Monte, Prairie Village, Kans. 66208

Filed Jun. 23, 1982, Ser. No. 391,303
Int. Cl.³ B01D 53/34

9 Claims
1. In a method for absorbing CO₂ from a gas mixture containing the same wherein a hot absorption solution having from 15 to 40% by weight of potassium carbonate is continuously circulated at a circulation rate through an absorption stage and a regeneration stage, said gas mixture is contacted with said solution in said absorption stage to absorb CO₂ from the mixture, and said solution is thereafter regenerated in said regeneration stage by removal of CO₂ therefrom, the improvement which comprises the steps of:
adding to said solution from about 2 to 10% by weight equivalent V₂O₅ and from about 1 to 10% by weight of equivalent KBO₂, the weight ratio of equivalent KBO₂ to equivalent V₂O₅ being less than 1.5:1; and
reducing said circulation rate by an amount of up to about 45%.

4,430,313

SHIPPING BLACK PHOSPHORIC ACID

Mark D. LaVanture, and George L. Walker, both of Richmond, Va., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 177,033, Aug. 11, 1980, abandoned.
This application Apr. 11, 1983, Ser. No. 482,277
Int. Cl.³ C01B 25/16

5 Claims
1. A method for transporting black wet process phosphoric acid without the removal of settled material, said method comprising the steps of:
(i) admixing a small amount of HNO₃ with said black acid, said amount of HNO₃ being sufficient to render settled material in said black acid resuspendable with mild agitation; and
(ii) transporting said black acid of step (i) in a storage tank of a moving vehicle, wherein the movement of said vehicle creates sufficient agitation of said black acid to keep said solid material in suspension, whereby the settled material of said black acid in the absence of said mixing step (i) would have formed a cake material in said transporting step (ii), said cake material not being resuspendable by vigorous agitation.

4,430,314

METHOD OF PREPARING CRYSTALLINE ZEOLITE

Costandi A. Audeh, Princeton, and William J. Reagan, Englewood, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 156,902, Jun. 6, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,472
Int. Cl.³ C01B 33/20

4 Claims
3. A method of preparing in situ a catalyst composition

4,430,322

MODIFIED GLUCANS AS ANTI-CARIES AGENT AND METHOD OF USE

Thomas H. Stoudt, Westfield, and Karl H. Nollstadt, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 205,030, Nov. 7, 1980, Pat. No. 4,340,675.
This application Apr. 28, 1982, Ser. No. 372,509

Int. Cl.³ A61K 7/16, 31/715; C08B 37/00; C12P 19/18
U.S. Cl. 424—49 9 Claims

5. A glucan with a molecular weight in excess of 500,000, consisting predominantly of α -(1 \rightarrow 6)glucosidic bonds and inert to enzymatic attack by an endo- α -(1 \rightarrow 6)-glucan-6-glucanohydrolase produced by the process which comprises cell-free biosynthesis of plaque polysaccharides in a biosynthetic medium containing from 5–40 units/ml of the endo- α -(1 \rightarrow 6)glucan-6-glucanohydrolase for 24–48 hours at 37° C., inactivating the enzymes, removing insoluble polysaccharides and adding a miscible organic solvent to precipitate the desired glucan.

6. A glucan produced by the process of claim 5 wherein the endo- α -(1 \rightarrow 6)glucan-6-glucanohydrolase is dextranase.

9. A method of inhibiting dental plaque, caries and periodontal disease which comprises ingesting an effective amount of the glucan of claim 6 concomitantly with a sucrose-containing foodstuff.

4,430,323

METHOD FOR CONTROLLING ORAL MAL ODORS AND DENTAL PLAQUE

Jules Silver, 7 Ridgewood Rd., Niantic, Conn. 06357
Continuation of Ser. No. 144,929, Apr. 29, 1980, abandoned.

This application Jan. 15, 1982, Ser. No. 339,381
Int. Cl.³ A61K 7/18

U.S. Cl. 424—52 20 Claims

1. A method for control of chronic oral mal odors of adult persons of at least 25 years of age and suffering from chronic oral mal odors containing oral generated sulfides, comprising rinsing the oral cavity for a total time period of at least 1 minute per day and wherein each rinse time is at least 0.5 minute with an oral rinse where the active ingredient consists essentially of an aqueous solution of 0.01% to 1.0% of a water-soluble fluoride selected from potassium fluoride and sodium fluoride.

4,430,324

AMMONIUM FLUOROMETALLATE CONTAINING COMPOSITIONS

John P. Viccaro, Whitestone, N.Y., assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 325,458, Nov. 27, 1981, abandoned.
This application Sep. 7, 1982, Ser. No. 415,111

Int. Cl.³ A61K 7/18, 7/22, 33/16, 33/30

U.S. Cl. 424—52 22 Claims

1. A composition, comprising:
(i) an amount of ammonium fluorometallate selected from the group consisting of ZnNH_4F_3 , CoNH_4F_3 , CuNH_4F_3 , $\text{Sn}(\text{NH}_4)_2\text{F}_6$, MnNH_4F_3 , FeNH_4F_3 , $\text{Zr}(\text{NH}_4)_3\text{F}_7$, $\text{In}(\text{NH}_4)_3\text{F}_6$ and mixtures thereof, effective to treat, control or substantially prevent plaque formation and dental caries; and
(ii) a carrier for said fluorometallate suitable for use in the oral cavity.

4,430,325

TOPICAL TREATMENT OF SKIN LESIONS

Abdul Gaffar, and Calvin B. Davis, both of Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 23, 1981, Ser. No. 333,587
Int. Cl.³ A61K 33/42

U.S. Cl. 424—128 3 Claims

1. The method of treating skin lesions comprising topically applying a dermatological composition comprising a safe and

therapeutically effective amount of a peroxydiphosphate salt to the afflicted situs.

4,430,326

METHOD OF DIMINISHING GLUCOSE LEVELS RESULTING FROM ENDOGENOUS GLUCAGON

Victor J. Hruby, and Marvin D. Bregman, both of Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.

Filed Dec. 22, 1981, Ser. No. 333,376
Int. Cl.³ A61K 37/02

U.S. Cl. 424—177 15 Claims

1. A method of diminishing glucose levels resulting from endogenous glucagon in a mammal, said method comprising parenterally administering an antagonistically effective amount of an analog of glucagon having a positive charge neutralizing, lipophilic and/or steric-hindering substituent on the N⁶ amino group of the lysine-12 residue and either (1n) a positive charge neutralizing, lipophilic and/or steric-hindering substituent on the N² amino group of histidine, or (2) the N² histidine amino group deleted with the addition of a positive charge neutralizing, lipophilic and/or steric-hindering substituent in place thereof, or (3) the N² histidine amino acid residue deleted with the addition of a positive charge neutralizing, lipophilic and/or steric-hindering substituent to the amino group of serine-2.

4,430,327

METHOD FOR TREATING PREGNANT FEMALES FOR PAIN AND ANXIETY

Robert C. A. Frederickson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 18, 1982, Ser. No. 379,539
Int. Cl.³ A61K 37/02

U.S. Cl. 424—177 8 Claims

1. A method for preventing or minimizing the effects of a drug on an embryo or a fetus by placental transport while alleviating pain and anxiety of the pregnant female during such pregnancy, which comprises administering to said pregnant female a pharmaceutically effective amount of a compound of the formula



or a pharmaceutically acceptable salt thereof.

4,430,328

RUMINANT LACTATION IMPROVEMENT

Curtis C. Scheffinger, Morristown, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 255,902, Apr. 20, 1981, abandoned.
This application Jul. 1, 1982, Ser. No. 394,199

Int. Cl.³ A61K 37/00, 35/00

U.S. Cl. 424—177 8 Claims

1. A method for improving milk production in healthy lactating ruminants having a developed rumen function comprising orally administering a propionate increasing amount of a glycopeptide antibiotic.

4,430,329

SYNERGISTIC TREATMENT OF ADULT CANINE HEARTWORM WITH THIACTARSAMIDE AND IVERMECTIN

Lyndia S. Blair, Annandale, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1982, Ser. No. 379,233
Int. Cl.³ A61K 31/71, 31/285

U.S. Cl. 424—181 4 Claims

1. A synergistic method for the elimination of adult canine heartworms (*Dirofilaria imitis*) from dogs so infected which comprises the intravenous administration to said dogs of about 1 mg per lb. (2.2 mg/kg) of thiactarsamide followed by the administration either orally or parenterally of from 0.0125 to 5

mg/kg of ivermectin administered at from 3 to 6 weeks after the thiactarsamide administration in a single dose or multiple doses given at from 1 day to 1 month intervals.

4,430,330

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING A PHENOTHIAZINE AND CHOLINE

John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 229,894, Jan. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Apr. 8, 1982, Ser. No. 366,888

Int. Cl.³ A61K 31/34, 31/685

U.S. Cl. 424—199 10 Claims

1. The process for reducing or eliminating undesirable effects of a drug administered to a human which side effects result from inadequate release of brain acetylcholine, said drug being a thioxanthene, which comprises administering concomitantly with the drug an amount of a compound effective to release adequate amounts of brain acetylcholine selected from the group consisting of choline, a salt of choline, lysolecithin, and acylglycerophosphocholine, glycerophosphatidyl choline and mixtures thereof.

4,430,331

ANTIARRHYTHMIC BENZYLIMIDAZOLE

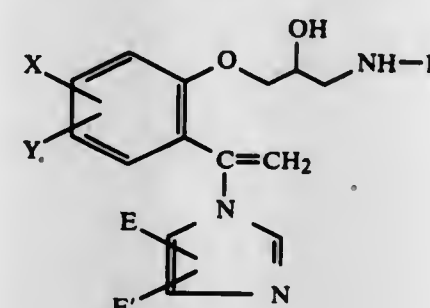
Masaru Ogata, Osaka, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 29, 1982, Ser. No. 372,951

Claims priority, application Japan, May 14, 1981, 56-72986
Int. Cl.³ A61K 31/415; C07D 233/90, 233/60

U.S. Cl. 424—273 R 11 Claims

1. A compound of the formula:



wherein

E and E' each is hydrogen, C₁–C₂ alkyl or C₂–C₃ alkoxy carbonyl;

R is C₃–C₄ alkyl; and

X and Y each is hydrogen, methyl, methoxy or chlorine; or a pharmaceutically acceptable acid addition salt thereof.

11. A method for treating a patient suffering from arrhythmia which comprises administering to said patient the pharmaceutical composition as claimed in claim 1.

4,430,332

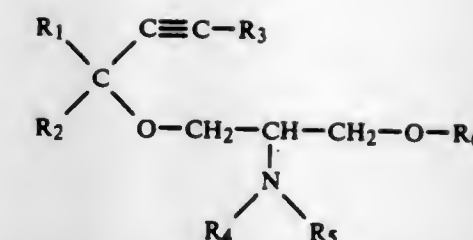
ETHERS OF**1-(2-PROPYNYLOXY)-2-AMINO-3-PROPANOL**

Patrick Carlier, Andre J. C. Montell, both of Chatel-Guyon, and Jacques A. L. Simond, Chamalieres, all of France, assignors to Centre Europeen de Recherches Mauvray, Riom, France

Filed Dec. 19, 1980, Ser. No. 218,176
Claims priority, application France, Dec. 28, 1979, 7932008

Int. Cl.³ A61K 31/535, 31/40; C07D 295/08, 207/04
U.S. Cl. 424—248.57 6 Claims

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, in which R₁ and R₂ each represent, independently of one another, a C₁–C₆ alkyl radical or a phenyl radical, or, together with the carbon atom to which they are attached, form a cycloalkyl radical having at the most 7 carbon atoms; R₃ represents hydrogen, a C₁–C₆ alkyl radical or the phenyl radical; R₄ and R₅, together with the nitrogen atom to which they are attached, form a pyrrolidinyl or morpholino radical, and R₆ represents a C₁–C₆ alkyl radical, a phenyl radical, a benzyl radical, or the 1-ethynylcyclohexyl radical.

2. Compound according to claim 1, in which R₁ is methyl, R₂ is phenyl, R₃ is hydrogen, R₆ is isobutyl and the group NR₄R₅ is the pyrrolidinyl radical.

3. Compound according to claim 1, in which R₁ and R₂ together with the carbon atom to which they are bound represent the cyclohexyl radical, R₃ is methyl, R₆ is isobutyl and the group NR₄R₅ represents the pyrrolidinyl radical.

4. Compound according to claim 1, in which R₁ is phenyl, R₂ is methyl, R₃ is hydrogen, R₆ is ethyl and the group NR₄R₅ is the morpholino radical.

6. A method of treating patients with angina pectoris wherein a compound according to any one of claims 1, 2, 3 or 4 is administered to said patients at daily doses of between 100 and 600 mg.

4,430,333

DIHYDROPYRIDINE ANTI-ISCHAEMIC AND ANTIHYPERTENSIVE AGENTS

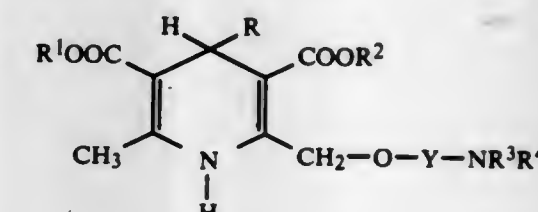
Simon F. Campbell, Deal; Peter E. Cross, Canterbury, and John K. Stubbs, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 11, 1982, Ser. No. 357,229
Claims priority, application United Kingdom, Mar. 14, 1981, 8108088

Int. Cl.³ C07D 213/55; A61K 31/44

U.S. Cl. 424—266 10 Claims

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein

Y is $-(\text{CH}_2)_2-$ or $-(\text{CH}_2)_3-$;

R is aryl;

R¹ and R² are each independently C₁–C₄ alkyl or 2-methoxyethyl;

and

R³ and R⁴ are each independently C₁–C₄ alkyl or aryl- (C₁–C₄ alkyl);

wherein said aryl is phenyl; phenyl substituted by one or two substituents selected from nitro, halo, C₁–C₄ alkyl, C₁–C₄ alkoxy, trifluoromethyl, and cyano; or is 1- or 2-naphthyl.

9. A method of treating ischaemia in an animal in need of treatment comprising administering to said animal an effective anti-ischaemic amount of a compound of claim 1.

4,430,334

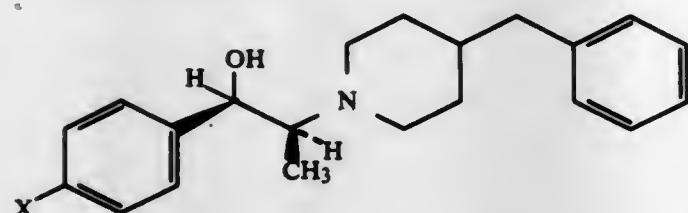
PHENETHANOLAMINE DERIVATIVES FOR USE AGAINST CEREBROVASCULAR DISEASE
Alexander E. Wick, Saint Nom La Breteche, and Jonathan R. Frost, Cachan, both of France, assignors to Synthelabo, Paris, France

Filed Apr. 13, 1982, Ser. No. 368,002
Claims priority, application France, Apr. 14, 1981, 81 07445
Int. Cl.³ A61K 31/445; C07D 211/14

U.S. Cl. 424-267

8 Claims

5. A pharmaceutical composition for the treatment of cerebrovascular disease which comprises an effective dose for such treatment of a phenethanolamine derivative in the (±)-erythro form of the formula:



wherein X represents a halogen atom, or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutical excipient suitable for oral or parenteral administration.

4,430,335

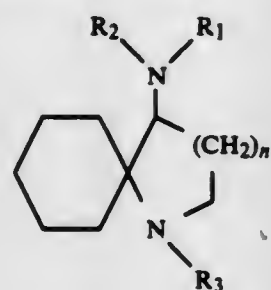
SUBSTITUTED 1-AZASPIRO[4,5]DECANES AND THEIR ANALGESIC COMPOSITIONS
Joseph T. Strupczewski, Flemington, N.J., and Beth A. Gardner, San Jose, Calif., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Feb. 9, 1983, Ser. No. 465,146
Int. Cl.³ C07D 221/20; A61K 31/445

U.S. Cl. 424-267

52 Claims

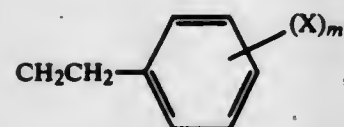
1. A compound having the formula



wherein R1 is hydrogen, CO2R4, R4; R2 is hydrogen,



R3 is hydrogen, -CO2R5, R5,



R4 is alkyl of 1 to 4 carbon atoms; R5 is alkyl of 1 to 8 carbon atoms; X is halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, CF3, and OH; m is an integer of 0, 1 or 2, and n is an integer of 1 or 2 or its pharmaceutically acceptable salts thereof.

4,430,336

N-SUBSTITUTED 2-METHYLNAPHTHYLAMIDES, THEIR PREPARATION AND FUNGICIDES CONTAINING THESE COMPOUNDS

Costin Rentzea, Heidelberg; Bernd Zeeb, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,033

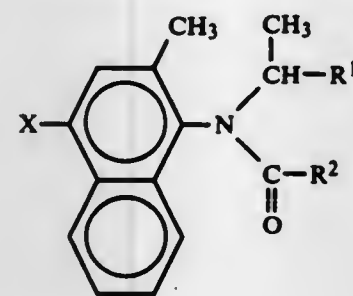
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948704

Int. Cl.³ A01N 43/80; C07D 261/14

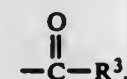
U.S. Cl. 424-272

4 Claims

1. An N-substituted 2-methylnaphthylamide of the formula



where R1 is



R3 being hydrogen or C1-4-alkoxy, and R2 is unsubstituted 3- or 5-isoxazolyl, or mono- or di-substituted 3- or 5-isoxazolyl, wherein the substituents are fluorine, chlorine, bromine, nitro, linear alkyl of 1-4 carbon atoms, methoxy, ethoxy, methylthio, ethylthio, n-propylthio, trichloromethyl, trifluoromethyl, tetrafluoroethoxy, cyano, methoxycarbonyl, acetyl or propionyl, and X is hydrogen, methyl, chlorine or bromine.

4,430,337

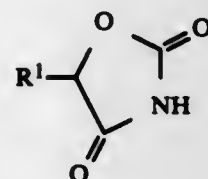
ALICYCLIC SUBSTITUTED OXAZOLIDINE-2,4-DIONES HAVING HYPOGLYCEMIC ACTIVITY
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,220
Int. Cl.³ C07D 263/44; A61K 31/42

U.S. Cl. 424-272

23 Claims

1. A compound of the formula



or a pharmaceutically-acceptable cationic salt thereof; wherein R1 is a hydrocarbon radical having a molecular formula which is either CnH2n-3 (having either two carbocyclic rings or one carbocyclic ring and one double bond) or CnH2n-5 (having two carbocyclic rings and one double bond), wherein n is an integer of value 5 to 9, which is further characterized by having within its structure:

- at least one of said rings comprising five or more carbon atoms; and
- up to one substituent (C1-C3)alkyl or (C1-C3)alkylidene group.

4,430,338

METHOD OF TREATMENT PATIENTS AT RISK OF SUDDEN DEATH

Frans H. J. Jansen, Gud-Turnhout, Belgium, and Peter R. Maroko, Cherry Hill, N.J., assignors to Akzo N.V., Netherlands

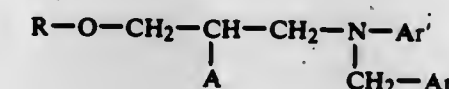
Continuation of Ser. No. 192,625, Sep. 30, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 359,133

Int. Cl.³ A61K 31/40, 31/495, 27/00

U.S. Cl. 424-274

2 Claims

1. A method of treating patients at risk of sudden death caused by atherosclerosis or atherothromboclerosis, characterized by the chronic administration to said patients of a compound of the formula I



or a pharmaceutically acceptable acid addition salt thereof, in which R represents isobutyl, Ar and Ar' both are phenyl and A is pyrrolidino in an effective daily dosage from 1-50 mg/kg body weight when administered orally or rectally and from 0.5-25 mg/kg when administered parenterally.

4,430,339

SUBSTITUTED OXIRANECARBOXYLIC ACIDS, THEIR PREPARATION AND THEIR USE AS MEDICAMENTS
Klaus Elstetter, Konstanz, and Erich Rapp, Radolfzell, both of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit beschränkter Haftung, Konstanz, Fed. Rep. of Germany

PCT No. PCT/EP81/00137, § 371 Date Apr. 6, 1982, § 102(e) Date Apr. 6, 1982, PCT Pub. No. WO82/00822, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 24, 1981, Ser. No. 371,294

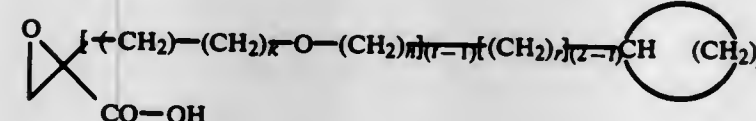
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032668; Switzerland, Feb. 25, 1981, 1243/81

Int. Cl.³ C07D 303/48

U.S. Cl. 424-278

13 Claims

1. An epoxycycloalkylalkanecarboxylic acid of the formula



wherein

k is an integer from 1 to 5, inclusive,
n is an integer from 0 to 6, inclusive,
p is an integer from 2 to 11, inclusive,
t is a positive whole number of at most 2,
r is an integer from 1 to 13, inclusive,
a lower alkyl ester of the carboxylic acid or a salt of said carboxylic acid; the sum of k, n and p being an integer of from 5 to 14, and the sum of r and p being an integer of from 7 to 16.

4,430,340

STABILIZATION OF PGI2 COMPOUNDS WITH SURFACTANTS

Moo J. Cho, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 17, 1978, Ser. No. 925,013

Int. Cl.³ A61K 31/34

U.S. Cl. 424-285

1 Claim

1. A pharmaceutical composition, suitable for parenteral administration, which comprises:

- a quantity of water;
- an amount of hexadecyltrimethylammonium chloride (CTAC); which, when mixed with said quantity of water,

is present therein in a stabilizing, pharmaceutically acceptable concentration; and

- (3) an amount of prostacyclin sodium salt; which, when mixed with said quantity of water, is present therein at a concentration acceptable for pharmaceutical administration.

4,430,341

WATER SOLUBLE PESTICIDAL QUATERNARY AMMONIUM SALT COMPOUNDS

Barbara W. Kaplan, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

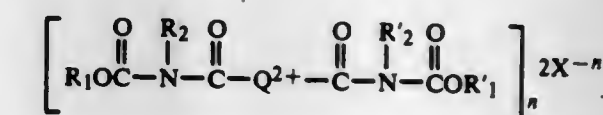
Filed Aug. 24, 1977, Ser. No. 827,263

Int. Cl.³ A01N 43/48; C07C 125/04

U.S. Cl. 424-250

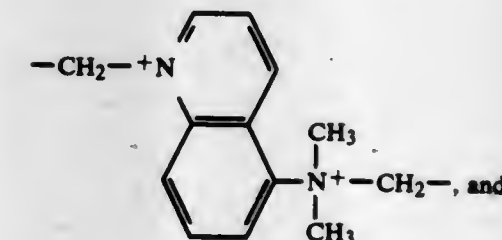
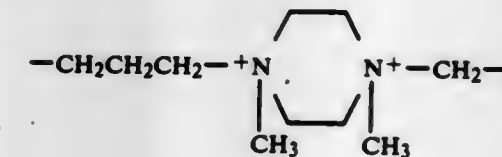
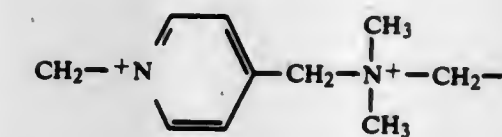
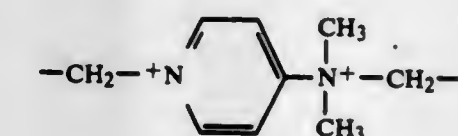
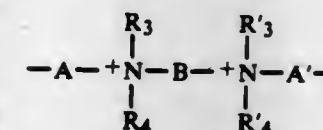
40 Claims

1. A compound of the formula:

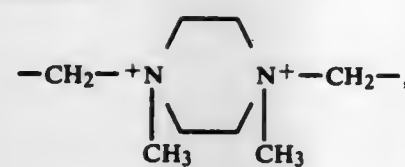


wherein:

n is 1, 2 or 3;
R1 and R'1 are the same or different and are benzofuranyl, benzodioxanyl, benzothienyl, 1-naphthyl, dihydrobenzothienyl, 1-tetrahydronaphthyl, benzodioxanyl or dihydrobenzofuranyl all of which may be either unsubstituted or substituted with one or more alkyl groups having from 1 to 8 carbon atoms;
R2 and R'2 are the same or different and are alkyl having from 1 to 8 carbon atoms;
X is a quaternising anion selected from the group consisting of mono-valent, divalent or trivalent inorganic or organic anion whose charge equal n;
Q2+ is an organic radical which contains two quaternary nitrogen moieties selected from the group consisting of:



-continued



wherein:

A and A' are the same or different and are divalent straight or branch chain alkylene or alkenylene having from 1 to 25 carbon atoms;

B is a divalent straight or branched chain alkylene or alkenylene which may include one divalent oxygen, sulfur, sulfinyl, sulfonyl, carbonyl or carbonyloxy group;

R₃, R₃', R₄ and R₄' are:

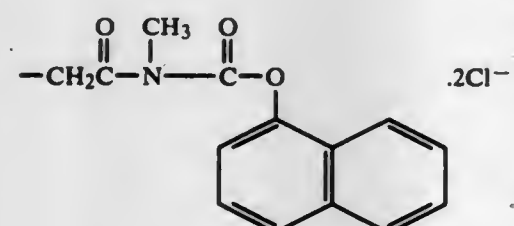
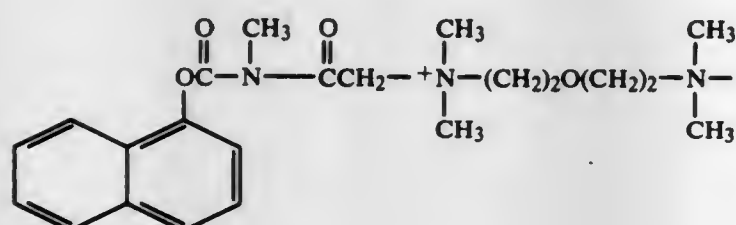
(a) individually, either substituted or unsubstituted alkyl, alkenyl or alkynyl; or

(b) when R₃ and R₃' are the same or different and are methyl or ethyl, R₄ and R₄' are the same or different and are either a substituted or unsubstituted phenyl, naphthyl, cycloalkyl, or cycloalkenyl;

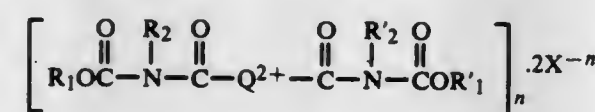
wherein the permissible substituents are one or more alkoxy, alkanoyloxy, alkoxy carbonyl, cyano, halo, nitro dialkylamino or alkanoyl groups.

2. A compound according to claim 1 wherein B is a linear or branched alkylene chain having from 1 to 25 carbon atoms which may include one divalent oxygen.

11. A compound of the formula:



31. A compound of the formula:



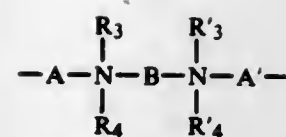
n is 1, 2 or 3;

R₁ and R₁' are the same or different and are individually 1-naphthyl or 1-tetrahydronaphthyl all of which may be eight unsubstituted or substituted with one or more alkyl groups having from 1 to 8 carbon atoms;

R₂ and R₂' are the same or different and are alkyl having from 1 to eight carbon atoms;

X is a quaternising anion selected from the group consisting of mono-valent, divalent or trivalent inorganic or organic anions whose charge equals n;

Q⁺ is an organic radical of the formula:



wherein:

A and A' are the same or different and are linear or branched alkylene or alkenylene chains having from 1 to 25 carbon atoms;

B is a linear or branched alkylene chain having from 1 to 25 carbon atoms which may include one divalent oxygen, sulfur, sulfinyl, sulfonyl, carbonyl or carbonyloxy group;

R₃, R₃', R₄ and R₄' are individually either substituted or unsubstituted alkyl, alkenyl or alkynyl wherein the permissible substituents are alkoxy, alkanoyloxy, alkoxy carbonyl, cyano, halo, nitro, dialkylamino or alkanoyl.

4,430,342

N-ACYL-3-[4-(BENZOYLALKYL)PIPERAZIN-1-YL]-SYDNONIMINE COMPOUND, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF

Hiroyoshi Hidaka, 799-75, Kannonji-cho, Tsu-shi, Mie-ken; Ikuo Matsumoto, Tokyo; Junji Yoshizawa, Machida, and Shigenori Kotani, Kodaira, all of Japan, assignors to Hiroyoshi Hidaka, Mie, Japan

Filed Sep. 21, 1982, Ser. No. 420,873

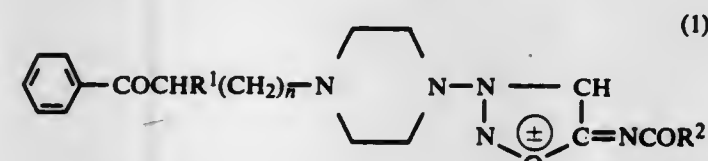
Claims priority, application Japan, Oct. 6, 1981, 56-158100

Int. Cl.³ C07D 413/04; A61K 31/495

U.S. Cl. 424-250

8 Claims

1. An N-acyl-3-[4-(benzoylalkyl)piperazin-1-yl]-sydnonimine compound represented by the following formula



wherein R¹ represents a hydrogen atom or an alkyl group having 1 to 8 carbon atoms,

R² represents a lower alkyl group, a lower alkoxy group or a phenyl group, and n represents zero or an integer of 1 to 10,

and its acid addition salt.

4,430,343

BENZIMIDAZOLE DERIVATIVES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Ryuichi Iemura, Kawanisi; Tsuneo Kawashima, Kobe; Toshikazu Fukuda, Osaka; Keizo Ito, Osaka; Takashi Nose, Nara, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Oct. 22, 1982, Ser. No. 436,032

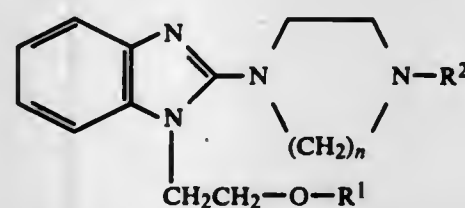
Claims priority, application Japan, Nov. 6, 1981, 56-178804

Int. Cl.³ A61K 31/495, 31/55; C07D 403/02

U.S. Cl. 424-250

10 Claims

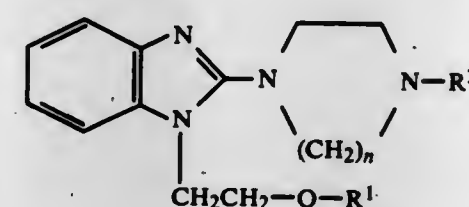
1. A benzimidazole derivative of the formula:



wherein R¹ is an alkyl group having 1 to 3 carbon atoms, allyl group, propargyl group, or phenyl group; R² is hydrogen atom

or an alkyl group having 1 to 3 carbon atoms; and n is 2 or 3, or a pharmaceutically acceptable acid addition salt thereof.

6. An antihistaminic composition, which comprises an effective amount of a benzimidazole derivative of the formula:



wherein R¹ is an alkyl group having 1 to 3 carbon atoms, allyl group, propargyl group, or phenyl group; R² is hydrogen atom or an alkyl group having 1 to 3 carbon atoms; and n is 2 or 3, or a pharmaceutically acceptable acid addition salt thereof as an active ingredient in admixture with a conventional pharmaceutically acceptable carrier or diluent.

4,430,344

ANTIHYPERTENSIVE 4-THIAZOLIDINECARBOXYLIC ACIDS

Junichi Iwao, Takarazuka; Masayuki Oya, Osaka; Toshio Baba, Suita; Tadashi Iso, Tondabayashi, and Takehisa Chiba, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 23, 1979, Ser. No. 23,397

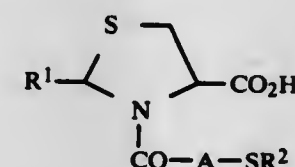
Claims priority, application Japan, Apr. 8, 1978, 53-41632; Apr. 25, 1978, 53-49657; Jul. 3, 1978, 53-81116

Int. Cl.³ C07D 277/04; A61K 31/425

U.S. Cl. 424-270

37 Claims

1. A compound of the formula



wherein

R¹ is phenyl substituted by at least one substituent selected from the group consisting of hydroxy, lower alkanoyloxy containing 1 to 6 carbon atoms, benzoyloxy, and benzyloxy carbonyloxy;

R² is hydrogen or benzoyl;

A is straight or branched alkylene with 1 to 3 carbon atoms; and pharmaceutically acceptable salts thereof.

4,430,345

PROSTAGLANDINS

Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, England

Division of Ser. No. 205,964, Sep. 3, 1980, Pat. No. 4,368,332.

This application Sep. 30, 1982, Ser. No. 431,554

Claims priority, application United Kingdom, Jan. 5, 1979, 7900368

Int. Cl.³ C07C 131/02; A61K 31/19; C07C 131/08

U.S. Cl. 424-305

35 Claims

1. A compound which is a bicyclo[2.2.1]heptane or hept-2Z-ene which is substituted at the 5-position by a group of the formula $\text{---R}^1\text{---COQ}$, where

R¹ is selected from the group consisting of C₄-C₈ alkyl; $\text{---CH}_2\text{---CH=CH---(CH}_2\text{)}_m\text{---}$, where m is an integer from 1 to 5;

$\text{---CH}_2\text{---CH}_2\text{---CH=CH---(CH}_2\text{)}_n\text{---}$, where n is an integer from 0 to 4;

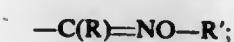
$\text{---X---(CH}_2\text{)}_p\text{---}$, where p is an integer from 3 to 7;

$\text{---CH}_2\text{---X---(CH}_2\text{)}_q\text{---}$, where q is an integer from 2 to 6;

$\text{---CH}_2\text{---CH}_2\text{---X---(CH}_2\text{)}_m\text{---}$; and $\text{---CH=CH---(CH}_2\text{)}_3\text{---}$; wherein X is O or S;

COQ is carboxy, a physiologically acceptable carboxylate salt, a branched or unbranched C₁-C₅ alkyl ester of CONHSO₂CH₃;

and wherein said bicyclo[2.2.1]heptane or hept-2Z-ene is substituted at the 6-position by a grouping of the formula:



wherein

R is selected from the group consisting of hydrogen, unsubstituted C₁-C₁₀ branched or unbranched aliphatic hydrocarbon residues and C₁-C₁₀ aliphatic hydrocarbon residues substituted by Ar, ---OAr or ---SAr , where Ar represents a monocyclic aromatic hydrocarbon or pyridyl residue, or such a residue substituted by one or more substituents selected from the group consisting of halogen, halogen substituted branched or unbranched C₁-C₅ alkyl groups, sulphonamido groups, amino groups, hydroxy and C₁-C₁₀ alkoxy; and

R' is selected from the group consisting of unsubstituted C₁-C₁₀ branched or unbranched aliphatic hydrocarbon residues, Ar and C₁-C₁₀ branched or unbranched aliphatic hydrocarbon residues substituted by Ar, ---OAr , or ---SAr .

4,430,346

NOVEL CARCINOSTATIC SUBSTANCE AND PROCESS FOR SYNTHESIS THEREOF

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Shinichi Kondo, Yokohama; Hironobu Iinuma; Daishiro Ikeda, both of Tokyo; Teruya Nakamura, Kusatsu, and Akio Fujii, Kamakura, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed May 7, 1982, Ser. No. 375,950

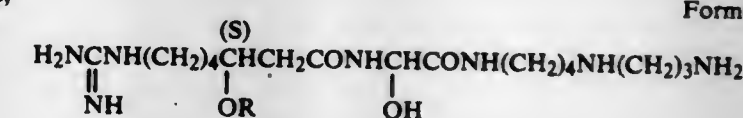
Claims priority, application Japan, May 11, 1981, 56-69340

Int. Cl.³ C07C 129/12; A61K 37/02

U.S. Cl. 424-311

15 Claims

1. A composition selected from the group consisting of the epimeric mixture at position 2 of substances of Formula I, and the acid addition salts thereof



Formula I

wherein R is hydrogen, alkanoyl of 1 to 14 carbon atoms, or benzoyl.

4,430,347

CYSTAMINE DERIVATIVES SUITABLE FOR USE AS MEDICAMENTS

Joël Oiry, 31, Lotissement Chateaubon Route de l'averune, 34100 Montpellier, and Jean-Louis Imbach, Chemin du Clos des Oliviers 1108 rue de las Sordes, 34000 Montpellier, both of France

Continuation of Ser. No. 160,183, Jun. 17, 1980, Pat. No. 1,314,076. This application Apr. 15, 1981, Ser. No. 254,498

Claims priority, application France, Jun. 19, 1979, 79 15672

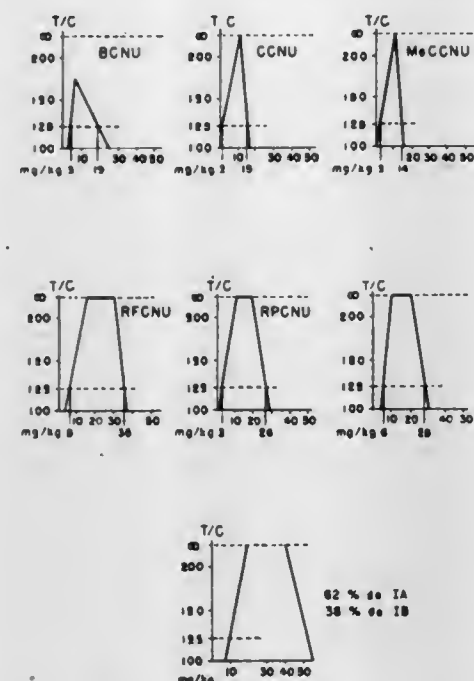
Int. Cl.³ A61K 31/17; C07C 127/15

U.S. Cl. 424-322

10 Claims

1. A pharmaceutical composition, useful for treating tumors

which composition comprises at least one compound of the formula



in which one of the substituents A and B is hydrogen and the other the radical $-N=O$, in an amount effective to inhibit tumor growth, in combination with a pharmaceutically acceptable vehicle.

4,430,348

IMMOBILIZED GLUCOAMYLASE REACTOR FOR PREPARING A LOW CALORIE BEER

George R. Duncombe, Grafton; William F. Line, West Allis, and Etzer Chicoye, Wauwatosa, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 116,377, Jan. 29, 1980, abandoned, and Ser. No. 253,468, Apr. 13, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 441,258

Int. Cl.³ C12C 11/04; C12N 11/14; C12M 1/40

U.S. Cl. 426—13 5 Claims

1. In the method of preparing a superattenuated low calorie beer by hydrolyzing the limit dextrins in beer with glucoamylase, the improvement which comprises passing the beer containing the limit dextrins during primary fermentation through a ceramic monolith having a plurality of open ended passages ranging from 50 to 3,000 microns in diameter extending therethrough to permit the rapid, sustained, unobstructed flow of a fermenting beer stream containing yeast and other suspended solids, said passages having surfaces to which glucoamylase has been covalently attached to form an immobilized glucoamylase reactor, which reactor effectively hydrolyzes the limit dextrins in the beer with which it comes in contact without releasing the attached enzyme.

4,430,349

ARTIFICIALLY SWEETENED GELLED YOGURT

Michael J. Malone, and Evelyn A. Miles, both of Houston, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 23, 1982, Ser. No. 452,636

Int. Cl.³ A23C 9/13, 9/137; A23L 1/236

U.S. Cl. 426—34 11 Claims

1. A method for preparing a gelled, sweetened yogurt comprising the steps of:

combining in the presence of water a mixture comprising (a)

an amount of high methoxyl pectin effective to inhibit

protein precipitation in a yogurt, (b) an amount of low methoxyl pectin effective to gel a yogurt, and (c) an effective amount of a sweetener comprising an aspartic acid-derived sweetener; to yield a sweetened stabilizing solution;

pasteurizing said sweetened stabilizing solution to yield a pasteurized sweetened stabilizing solution; and

mixing said pasteurized sweetened stabilizing solution with prepared yogurt.

4,430,350

COMPOSITE ICE CONFECTIONS AND PROCESSES FOR PREPARING THEM

David Tresser, Bedford, England, assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 244,794, Mar. 17, 1981, abandoned.

This application May 10, 1982, Ser. No. 376,633

Claims priority, application United Kingdom, Jul. 20, 1979, 7925402; Jul. 20, 1979, 7925446; Jul. 20, 1979, 7925447

Int. Cl.³ A23G 9/04, 9/24

U.S. Cl. 426—101 9 Claims

1. A composite frozen confection comprising an ice confection in contact with a layer of fat-based confectionery composition comprising a suspension of sweetening and flavoring solids in an edible fat, wherein the edible fat includes a fat composition which is an interesterified mixture of about 75% to 90% of a lauric acid or oil and about 10% to 25% of a non-lauric oil having

(a) solids content index (SCI) values (%) in each of the following ranges:

70-93 at -20°C ;

65-93 at -10°C ;

55-90 at 0°C ;

15-40 at 20°C ;

0-12 at 30°C ; and

0 at 35°C ;

(b) slip melting point in the range 23°C – 32°C ; and

(c) a brittleness time of at least 45 seconds.

4,430,351

CONFECTIONARY PRODUCT WITH A FILLING

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Apr. 13, 1982, Ser. No. 367,947

Claims priority, application Italy, Apr. 24, 1981, 67561 A/81

Int. Cl.³ A23G 3/00

U.S. Cl. 426—103 12 Claims

1. A confectionary product comprising an edible water-impermeable capsule bonded on its outer surface to the internal surface of a pair of edible wafer shell halves, said shell halves jointly forming a closed shell around said capsule, said capsule functioning to assist in holding said shell halves together, and said capsule containing an edible filling having a water content which would be detrimental to said wafer shell under conditions of direct contact between said filling and said wafer shell, said capsule preventing contact between said filling and said wafer shell.

4,430,352

PREPARATION OF FRESH CHOPPED ONIONS WHICH MAY BE DISPENSED FROM TUBES

Hermann Postner, Ludwigsburg, Fed. Rep. of Germany, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 12, 1982, Ser. No. 377,433

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118810

Int. Cl.³ A23L 1/212; B65B 55/04

U.S. Cl. 426—115 5 Claims

1. A preparation of fresh, chopped onions which may be dispensed from tubes, containing

- (a) from 88 to 92% of raw onion cubes having an edge length from 3 to 6 mm,
- (b) from 0.05 to 0.1% of sodium metabisulphite,
- (c) from 0.1 to 0.5% of tartaric acid and/or citric acid,
- (d) from 0.05 to 0.2% ascorbic acid,
- (e) from 0.05 to 0.2% of swelling agent,
- (f) about 1% of common salt
- (g) from 3 to 5% of sugar or a sugar alcohol,
- (h) from 3 to 5% of vegetable oil and
- (i) from 0.05 to 0.15% of emulsifying agent.

4,430,353

LOW-GRADE COFFEE

Slawko Yadowsky, Manville, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,966

Int. Cl.³ A23F 5/16

U.S. Cl. 426—388 5 Claims

1. A method of lessening the off-flavor notes of roasted low-grade coffee which comprises:

(a) contacting low-grade green coffee with a fatty material

at a temperature between about 80°C and 116°C for a period of time between about 15 min. and 60 min.;

(b) separating the low-grade green coffee of (a) from the fatty material;

(c) removing residual fatty material from the green coffee of step (b) by rinsing said coffee with acetone, separating said coffee from acetone and drying the green coffee prior to roasting; and

(d) roasting the low-grade coffee of step (c).

4,430,354

FLAVORING WITH HELIOTROPYL METHYL CARBONATE

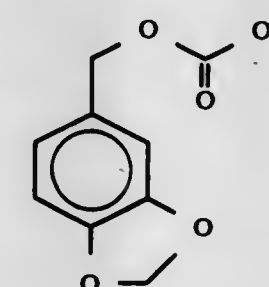
Richard M. Boden, Ocean; Theodore J. Tyszkiewicz, Sayreville; Michael Licciardello, Farmingdale; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Patrick Whalen, Matawan, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 384,924, Jun. 4, 1983. This application May 20, 1983, Ser. No. 496,648

Int. Cl.³ A23L 1/226

U.S. Cl. 426—536 1 Claim

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.1 parts per million up to about 20 parts per million based on the total weight of said foodstuff of heliotropyl methyl carbonate having the structure



4,430,355

CONDENSED ISOTHIAZOLO-3 (2H)-ONE-1,1-DIOXIDES

Günter Trummlitz; Ernst Seeger, and Wolfhard Engel, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

Continuation of Ser. No. 107,266, Dec. 26, 1979, abandoned, which is a division of Ser. No. 952,958, Oct. 10, 1978, Pat. No. 4,233,333. This application Aug. 27, 1981, Ser. No. 297,004

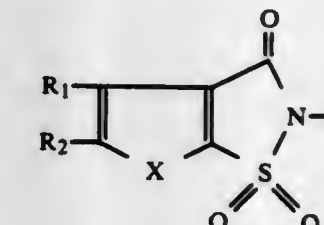
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749640; Sep. 9, 1978, 2839266

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ C07D 275/06; A23L 1/236

U.S. Cl. 426—548 4 Claims

1. A compound of the formula



wherein
X is oxygen or sulfur;
R1 is hydrogen, methyl or ethyl; and
R2 is methyl or ethyl;
provided, however, that when X is sulfur R1 and R2 are other than both methyl; or a non-toxic salt thereof formed with an inorganic or organic base.

4,430,356

METHOD FOR PRODUCTION OF FORMED FOOD PRODUCT OF MICROFIBRILLAR MILK PROTEIN

Shuzo Ohyaib; Syuji Kawai, and Keiji Matsumura, all of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Apr. 8, 1982, Ser. No. 366,731

Claims priority, application Japan, Apr. 13, 1981, 56-56166; Aug. 10, 1981, 56-125777

Int. Cl.³ A23J 3/00

U.S. Cl. 426—574 13 Claims

1. A method for the production of a formed food product of a microfibrillar milk protein, which comprises mixing an aqueous gel of a latently microfibrillar milk protein comprising mainly calcium caseinate with a dehydrating agent and a dispersant in an amount of 0.5×10^{-3} to 5.5×10^{-3} mol and 0.05 to 0.6 g, respectively, each per 1 g of the aqueous gel of a milk protein having a water content of 65% by weight at a temperature of 40° to 120°C , and forming the mixture at the same temperature range to obtain a product having microfibrillar structure.

4,430,357

METHOD OF CLEANING GRAIN

Alfred Batschelder, Casa Maralba, 6948 Porza S. Lugano, Switzerland, and G. Bernasek, Im Winkel 11, 3400 Göttingen, Fed. Rep. of Germany

Continuation of Ser. No. 223,299, Jan. 8, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,746

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952708

Int. Cl.³ A23L 1/20; A23N 12/00

U.S. Cl. 426—626 2 Claims

1. Method of cleaning grain, comprising the steps of washing the grain for 8-10 minutes with water-containing washing liquid wherein 1.2 grams of calcium hydroxide per each liter of water is used in said washing liquid whereby the washing liquid becomes saturated with calcium hydroxide so that the

pericarp becomes chemically solidified and at the same time substantially more elastic and the grain has an increase in its weight of approximately 4% by adsorption of the washing liquid; neutralizing the calcium hydroxide by addition thereto after the washing of carbon dioxide so as to convert it into calcium carbonate and thereby depositing a portion of the calcium carbonate in the hypodermis of the grain; and thereafter mechanically removing the two outermost layers of the four-layer pericarp of the grain.

4,430,358

METHOD OF MANUFACTURING A CUT TUBE TO BE USED FOR SYRINGE NEEDLES

Shoji Wada, 11-22, Katase Kaigan 2-chome, Fujisawa-shi, Kanagawa-ken, Japan

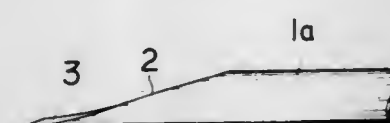
Filed Dec. 4, 1981, Ser. No. 327,737

Claims priority, application Japan, Dec. 18, 1980, 55-178022

Int. Cl.³ B65B 33/00

U.S. Cl. 427—2

4 Claims



1. A method of manufacturing a syringe needle which comprises the following steps:

- spreading a resin solution at ambient temperatures or under heating over the entire surface inside and outside, of a cut stainless steel tube having a diameter and length conforming to the standard requirements for producing a syringe needle;
- hardening the resin spread over said cut tube by leaving it at ambient temperature and/or by heating the resin coated tube, thereby forming a film of hardened resin on the entire inner and outer surface of said cut tube;
- removing said film of hardened resin from the outside surface of said cut tube;
- grinding the one end of the tube with a grinder at specified angles to form a main bevel;
- changing the contact angle between the grinder and the cut tube to guide both sides of the main bevel to form side bevels thereby producing a syringe needle tube having a piercing point at the ground edge of said tube; and
- washing and drying the syringe needle tube.

4,430,359

PROCESS FOR COATING OBJECTS ELECTROSTATICALLY

Roland A. Meisner, Schorndorf, Fed. Rep. of Germany, assignor to BASF Farben + Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 234,193, Feb. 13, 1981, abandoned. This application Jul. 2, 1982, Ser. No. 394,679

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005678

Int. Cl.³ B05D 1/06

U.S. Cl. 427—31

1 Claim

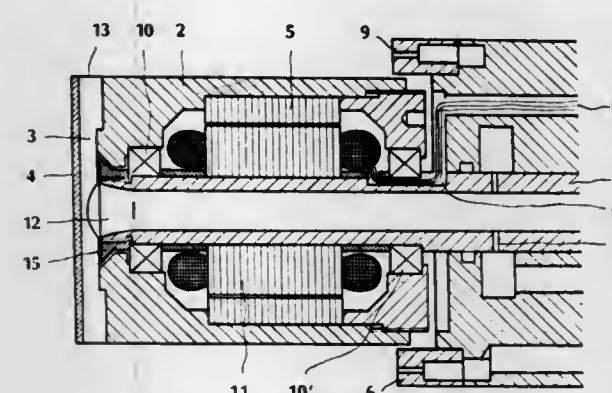
1. In the process for electrostatically coating objects with electrostatically charged powder grains by supplying a mixture of powder and air to a spray bell, fanning out the powder particles and centrifuging the powder particles off of the spray bell, conveying the powder particles onto the object to be treated by applying an electric field between the spray bell and the object,

the improvement comprising supplying a flow of powder in the fluidized state and at a low speed, centrally to the spray bell,

implementing the supply of the fluidized powder flow by suction from the spray bell,

controlling a partial vacuum produced by the bell by blowing air into a supply path of the mixture of powder and air,

and accelerating the mixture of powder and air together with the bell to 500 to 6,000 rpm, whereby said mixture



moves to the rim of the bell and is flung off by centrifugal force.

4,430,360

METHOD OF FABRICATING AN ABRADABLE GAS PATH SEAL

Robert C. Bill, Rocky River, and Donald W. Wisander, Columbia Station, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

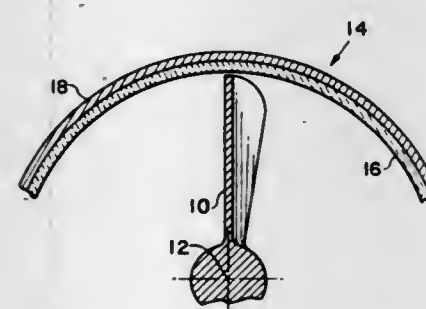
Division of Ser. No. 242,795, Mar. 11, 1981, Pat. No. 4,377,371.

This application Sep. 30, 1982, Ser. No. 431,448

Int. Cl.³ B05D 1/08

U.S. Cl. 427—34

9 Claims



1. A method of fabricating an abradable gas path seal between the tips of a plurality of blades rotating about an axis and an annular substrate forming a shroud concentric with said axis in spaced relationship with said blade tips comprising the steps of

plasma spraying a coating of a ceramic material onto the surface of said annular substrate facing said rotating blades, and

forming a fine microcrack network in the surface of said ceramic coating for precluding the formation of a catastrophic crack during thermal shock exposure.

4,430,361

APPARATUS AND METHOD FOR PREPARING AN ABRASIVE COATED SUBSTRATE

John W. Robinson, Levittown, Pa., and Grzegorz Kaganowicz, Belle Mead, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,288

Int. Cl.³ B05D 3/06

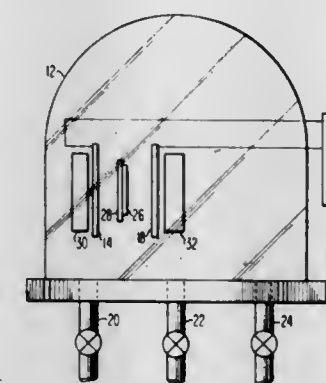
U.S. Cl. 427—39

7 Claims

1. In a method for preparing a coating in a magnetically enhanced glow discharge apparatus, comprising subjecting

gaseous precursors to a glow discharge and depositing the coating onto a substrate;

at least one surface and at least one information coded surface,
(d) polymerizing said polymerizable composition while it is being confined, and



the improvement comprising mounting said substrate onto a ferromagnetic backing plate whereby the rate of deposition of said coating in the electrode area is increased.

4,430,362

PRODUCTION OF MAGNETIC RECORDING MEDIA

Milena Melzer, Ludwigshafen; Norbert Schneider, Altrip; Helmut Kopke, Weisenheim; Klaus Schoettle, Heidelberg; Eberhard Koester, Frankenthal; Werner Balz, Limburgerhof, and Werner Grau, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,490

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151590

Int. Cl.³ H01F 10/02

U.S. Cl. 427—48

3 Claims

1. A process for the production of a magnetic recording medium by dispersing a finely divided magnetically anisotropic material in a solution of a film-forming binder mixture and, if desired, a further polymeric binder, in an organic solvent, with the addition of conventional assistants, applying a layer of the fluid dispersion to a non-magnetic base, orienting the magnetic particles by means of a magnetic field, crosslinking the binder components and drying the resulting layer, wherein the film-forming binder mixture comprises

- from 60 to 90 percent by weight of a polyurethane binder, obtained from a straight-chain or branched polyester containing 0.5-8% of hydroxyl groups and a di- or polyisocyanate, and
 - from 10 to 40 percent by weight of a thermoplastic hydroxyl-containing phenoxy resin having a molecular weight of from 10,000 to 50,000,
- with the proviso that the di- or polyisocyanate is added, in an amount of from 0.6 to 1.3 equivalents, based on one equivalent of hydroxyl groups of the polyester, only after the magnetically anisotropic material has been dispersed in components (A) and/or (B).

4,430,363

PROCESS OF MAKING INFORMATION CARRYING SYSTEMS

Michael P. Daniels, Hastings, and Robert J. Schoonover, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 10, 1982, Ser. No. 448,618

Int. Cl.³ B05D 3/06

U.S. Cl. 427—54.1

14 Claims

1. A process for producing an information carrying article comprising:

- providing a fluid polymerizable composition onto one face of a screen having between 50 and 450 mesh,
- passing the fluid polymerizable composition through said screen and onto at least one surface of a substrate,
- confining said polymerizable composition between said

METHOD FOR FORMING CONDUCTIVE LINES AND VIAS

Paul M. Schaible, Poughkeepsie, N.Y., and John Suirveld, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

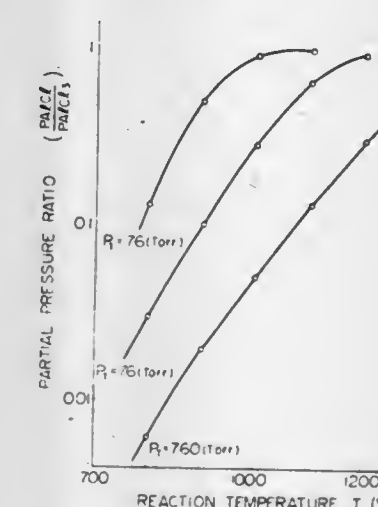
Filed Jul. 22, 1982, Ser. No. 400,800

Int. Cl.³ H01L 27/10

U.S. Cl. 427—96

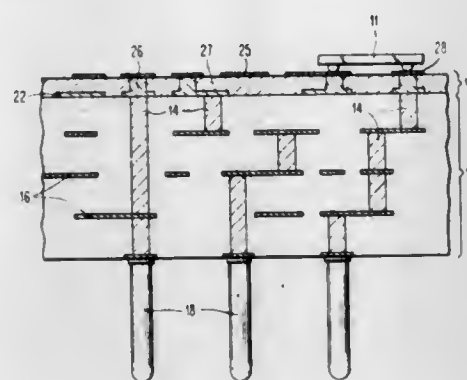
4 Claims

1. A method of fabricating on a multilayer interconnection ceramic body a metallurgical interconnection package for interconnection of a plurality of large scale integrated circuit semiconductor chips said ceramic body including an interconnection pattern and vias therein, the vias extending from said interconnection pattern and forming a planar surface with said ceramic body, said method comprising the steps of:



1. A method for forming an aluminum thin film by vapor phase growth on a semiconductor substrate having a step, comprising the steps of:
decomposing a monovalent aluminum halide into a trivalent aluminum halide and metallic aluminum; and
depositing said metallic aluminum on said semiconductor substrate which is maintained at a temperature lower than the melting point of said metallic aluminum and forming a substantially uniform aluminum thin film thereon which covers said step without breaks.

depositing a blanket layer of conductive material on said planar surface;
delineating said layer of conductive material into a circuit pattern connected to said vias;
forming a mask which is resistive to reactive ion etching on the surface of said circuit pattern to define the area where the via studs are to be formed;



subjecting to reactive ion etching unmasked areas of said circuit pattern to reduce the thickness of the circuit pattern and to form via studs;
forming a dielectric material on said ceramic body;
whereby said circuit pattern and via studs are formed as an integral structure from said blanket layer.

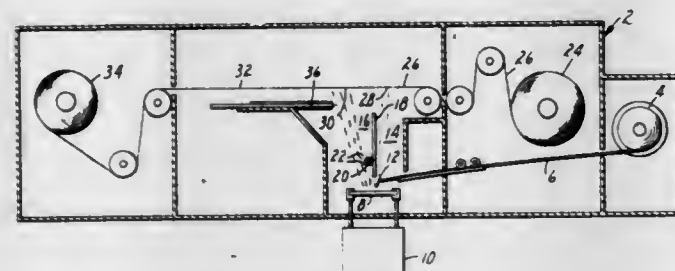
4,430,366

METAL/METAL OXIDE COATING

George H. Crawford, White Bear Lake; Edward J. Downing, St. Paul, and Roy G. Schlemmer, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 231,500, Feb. 4, 1981, Pat. No. 4,364,995.
This application Oct. 20, 1982, Ser. No. 435,489

Int. Cl.³ C03C 17/09, 17/245; C23C 13/02, 13/04
U.S. Cl. 427—162 8 Claims



1. A process for continuously depositing a layer having a composition of at least two components of metal and metal oxide and/or metal sulfide upon a moving substrate which process comprises applying onto at least one surface of said substrate the components of said layer from a metal vapor stream into which stream is introduced at least one substance from the group consisting of oxygen, water, sulfur, or hydrogen sulfide, and controlling the amount of oxygen, water, sulfur, or hydrogen sulfide introduced into different regions of said metal vapor stream as the surface to be coated is moved so as to coat the substrate with a layer having varying compositions of said at least two components.

4,430,367

TRANSLUCENT STAINABLE COATING

Geronimo E. Lat, Skokie, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 338,770, Jan. 11, 1982, abandoned. This application Jun. 15, 1983, Ser. No. 504,077
Int. Cl.³ C08K 3/26, 3/32

U.S. Cl. 427—388.4 17 Claims

1. An aqueous composition for forming a translucent, stain absorbent film, said composition comprising an acrylic latex

containing from about 8% to about 15% of an acrylic resin based on the total weight of the composition, and from about 11% to about 50% of a water-insoluble extender pigment having a mean particle size of from about 5 to about 7 microns and a Moh hardness of about 4 or less.

15. A method for imparting stainability to a non-absorbent substrate, said method comprising coating said substrate with an aqueous dispersion of from about 8% to about 15% of an acrylic resin and an extender pigment having a mean particle size of from about 5 to about 7 microns and a Moh hardness of about 4 or less, the ratio of extender pigment to acrylic resin being from about 1.5:1 to about 3.6:1.

4,430,368

WATER REDUCIBLE MODIFIED POLYESTER RESIN

Barbara R. Garland, Elizabeth Township, Allegheny County, and Mark D. Troutman, Greensburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 7, 1982, Ser. No. 415,097

Int. Cl.³ B05D 3/02

U.S. Cl. 427—385.5 6 Claims

1. In a water reducible modified polyester resin which contains a melamine resin, the improvement which comprises including in said resin about 20 to about 50% by weight, based on total solids weight of said water reducible resin, of a mixture of water soluble hexamethoxymethyl melamine and water soluble methylated melamine formaldehyde in a weight ratio of about 1 to 1.

4,430,369

SILICA SOL PENETRATION AND SATURATION OF THERMAL INSULATION FIBERS

Charles C. Payne, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 1, 1982, Ser. No. 383,720

Int. Cl.³ B05D 3/02; B01J 13/00

U.S. Cl. 427—397.7 5 Claims

1. In a process of manufacturing discrete, ceramic fiber insulation products wherein alumino-silicate fibers are first mixed into a slurry with colloidal silica and then formed into a mat which is thereafter dried, the steps of: providing an alkali-stabilized water suspension of colloidal silica; incorporating in said suspension a surface active amount of a complexing compound comprising the partial condensation product of a higher substituted aliphatic amine and an acid selected from the group consisting of phosphonic acid and aliphatic acids containing from 1 to 6 carbon atoms; and infusing said modified suspension throughout said pre-treated mat of alumino-silicate fibers.

4,430,370

THERMOPLASTIC MOLDED PART WITH STRESS REDUCING JUNCTURE

John E. Gallagher, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

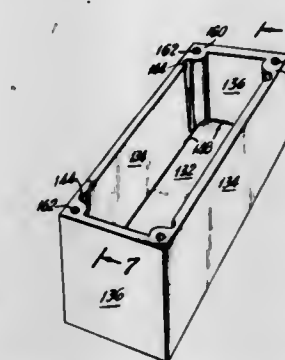
Filed May 5, 1981, Ser. No. 260,819

Int. Cl.³ B65D 1/22

U.S. Cl. 428—35 10 Claims

1. An improved thermoplastic injection molded part, said part including at least one wall member formed unitary with at least one other structural element such as another wall, flange, or boss area, with the improvement comprising a stress reducing juncture, said stress reducing juncture being defined by an elongated trough-like recess located in said one wall adjacent said other structural element, said stress reducing juncture being operative to reduce the differential shrinkage of the

molded plastic which would otherwise develop due to the uneven cooling of the plastic to room temperature, whereby



internal stresses are decreased thereby inhibiting the warping of said part.

4,430,371

WOOD VENEERS

David Boyes, Harrogate, England, assignor to Gerhard Kosche, Much, Fed. Rep. of Germany

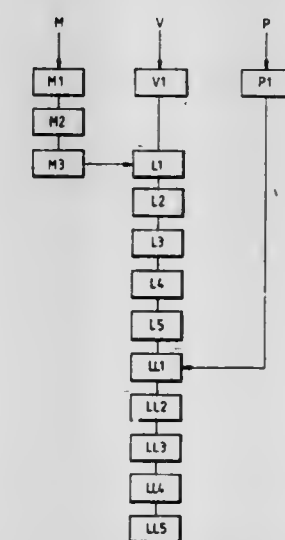
Filed Jan. 22, 1982, Ser. No. 341,759

Claims priority, application United Kingdom, Jan. 23, 1981, 8102085

Int. Cl.³ B27D 1/10; B32B 3/00

U.S. Cl. 428—61

6 Claims



1. A flexible wood veneer comprising a series of veneer leaves backed by a non-woven adhesive-absorbent backing material secured to the leaves by adhesive absorbed in the backing, said non-woven material backed veneer leaves being in butted-together end to end relation at mating finger joints, said finger joints of both the adjoining ends of the veneer leaves and the adjoining ends of the non-woven material backing being bonded together by adhesive between the finger joints, and a continuous plastics composite foil adhered to a rear surface of the non-woven backing material by the adhesive absorbed in the non-woven backing material to form a triple laminate with the non-woven material constituting the intermediate layer of the laminate.

4,430,372

NON-WOVEN FABRIC WITH IMPROVED HOT-PRESS PROPERTIES AND METHOD FOR MANUFACTURING SAME

Jürgen Knoke, Weinheim; Holger Buchwald, Hemsbach, and Jürgen Fehlhaber, Gornheimertal, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

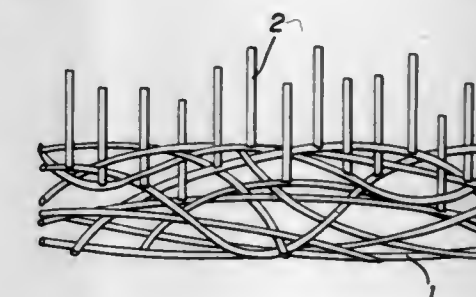
Filed Jun. 11, 1982, Ser. No. 387,612

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145137

Int. Cl.³ B05D 1/14

U.S. Cl. 428—90

10 Claims



1. A multilayer non-woven fabric having improved hot-press properties and a textile-like appearance, consisting essentially of a planar structure of several offset layers of natural and/or synthetic fibers, the fibers of each layer being coated either in whole or in part with a film of an elastic bonding agent and being joined together at their contacting points in the form of an open fiber structure and, protruding from the upper surface of each fiber layer in nap fashion, short fibers of equal length, each of which is bound to the body of one of said layer fibers only at the end face of said short fiber by means of said film; wherein the ratio of the length of the short fibers to the total thickness of the layered structure is about 2-7:1 and wherein the openings in the fiber structure of any layer have maximum diameters which are at least about 5-20 times as large as the diameters of the short fibers; and whereby said multilayered non-woven fabric is porous and exhibits a regular pattern of nap irregularities.

4,430,373

REINFORCED BEAM SECTION AND A METHOD OF PRODUCING IT

Lars Hammarberg, Avant, Poste 3, CH-1005 Lausanne, Switzerland

PCT No. PCT/SE81/00357, § 371 Date Dec. 5, 1980, § 102(e)
Date Jul. 30, 1982, PCT Pub. No. WO82/01906, PCT Pub.
Date Jun. 10, 1982

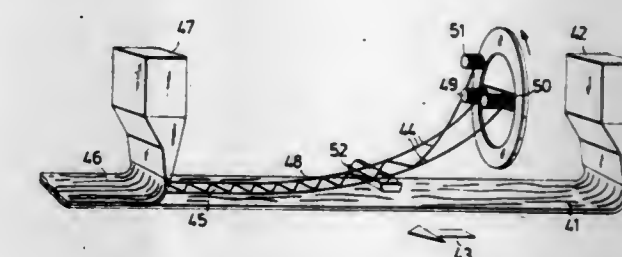
PCT Filed Dec. 7, 1981, Ser. No. 403,658

Claims priority, application Sweden, Dec. 5, 1980, 8008553

Int. Cl.³ B32B 5/12

U.S. Cl. 428—113

5 Claims



1. A reinforced beam section provided by forming, e.g., compression molding, a board-shaped semi-finished product, characterized in that said product is a wood pulp board known per se having reinforcing threads preferably of glass fiber embedded and bonded therein at least in predetermined zones, said zones are zones around areas of inflection, i.e. changes in

direction in the configuration of the finished section and said reinforcing threads are in the form of continuously running threads, crossing over from one side to another of said inflection points in the configuration of the section in a plurality of places in the longitudinal direction of said inflection points.

4,430,374

CHANNEL-SHAPED TRIM

Sazo Ezaki, Bisai, Japan, assignor to Toyoda Gosei Co., Ltd., Nagoya, Japan

Division of Ser. No. 58,385, Jul. 17, 1979, Pat. No. 4,355,448.

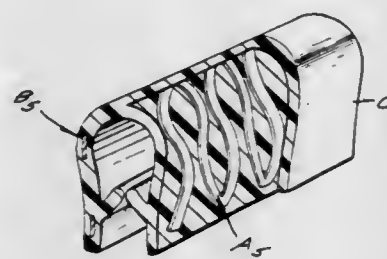
This application Aug. 10, 1982, Ser. No. 406,981

Claims priority, application Japan, Jul. 17, 1978, 53-98073; Apr. 30, 1979, 54-53618

Int. Cl.³ B32B 3/22, 3/24

U.S. Cl. 428—135

5 Claims



1. A channel-shaped trim having a longitudinally extending opening for embracing and clamping an edge flange of a support member comprising:

- a core member;
- flexible covering means for covering said core member;
- said core member being composed of a metal network of links and a plurality of connecting portions defining spaces therebetween which are linearly disposed in rows extending along the longitudinal and transverse directions of said trim, respectively;
- said metal network of links being composed of wave-shaped metal strips;
- each of the spaces being disposed between adjacent connecting portions in the longitudinal and transverse directions of said trim; and
- at least one part of said plurality of connecting portions of said network being broken in the transverse direction of said trim and being separated in the longitudinal direction of said trim.

4,430,375

ABRASION-RESISTANT LAMINATE

Herbert I. Scher, and Israel S. Ungar, both of Randallstown, Md., assignors to Nevamar Corporation, Odenton, Md.

Continuation of Ser. No. 298,548, Sep. 2, 1981, Pat. No.

4,395,452, which is a division of Ser. No. 136,220, Apr. 1, 1980, Pat. No. 4,305,987, which is a division of Ser. No. 879,848, Feb. 22, 1978, Pat. No. 4,255,480, which is a continuation-in-part of

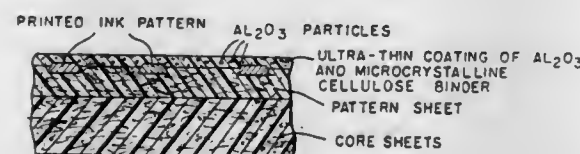
Ser. No. 758,265, Jan. 10, 1977. This application Apr. 15, 1983, Ser. No. 485,521

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.³ B32B 3/00

U.S. Cl. 428—148

15 Claims



1. A decorative sheet for use in the preparation of decorative laminates of high abrasion resistance, comprising: a decorative paper sheet substrate, and an ultra-thin abrasion resistant po-

rous coating over said decorative substrate, said ultra-thin abrasion resistant coating comprising a mixture of (1) an abrasion resistant hard mineral of particle size 20-50 microns in high concentration sufficient to provide an abrasion resistant layer without interfering with visibility and (2) binder material for said mineral compatible with a thermosetting laminating resin selected from the group consisting of melamine-formaldehyde resin and polyester resin, and being impregnable with said laminating resin, said binder material being present in an amount sufficient to bind and stabilize said abrasion resistant mineral to the surface of said paper sheet.

13. A method of producing a decorative sheet for use in the manufacture of decorative laminates, comprising:

- providing a substrate sheet having a decorative appearance and formed of a porous material;
- coating said decorative sheet with an ultrathin wet layer of a mixture of (1) an abrasion resistant hard mineral of particle size 20-50 microns in quantities sufficient to provide an abrasion resistant layer without interfering with visibility, and (2) binder material for said mineral, which binder material has the properties of being capable of withstanding heat and pressure, and being compatible with a thermosettable resin, said binder being present in an amount sufficient to bind said abrasion resistant mineral to the surface of said decorative sheet, and the binder-mineral layer in the dry state being permeable to said thermosettable resin;

drying said coated binder coated material mixture at a temperature sufficient to enhance the bonding of said abrasion resistant mineral by said binder material to said decorative sheet, to provide a porous, ultra-thin, dry layer of said binder-mineral mixture thereon.

4,430,376

GLASS-TO-METAL COMPRESSION SEALED LEAD-IN STRUCTURE

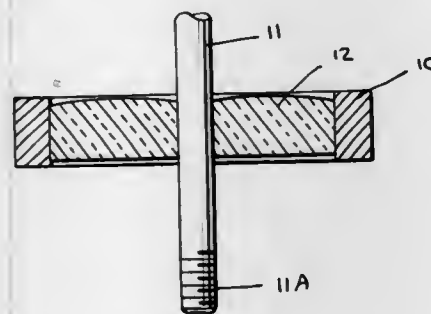
Leonard J. Box, 1325 Pleasant Valley Way, West Orange, N.J. 07052

Filed Jul. 13, 1982, Ser. No. 397,812

Int. Cl.³ B32B 1/04, 15/00

U.S. Cl. 428—174

5 Claims



1. A glass-to-metal compression sealed lead-in structure for electronic devices comprising:

- A an outer metal case having a high coefficient of thermal expansion;
- B a lead in conductor of predetermined form extending through the opening in the case, said conductor being formed of steel having a high coefficient of expansion which is machined to the required form of the conductor, the surface of the steel being treated after machining to impart to the conductor a relatively low coefficient of thermal expansion; and
- C a glass seal filling the space between the conductor and the case and having a coefficient of thermal expansion which is lower than that of the case and no lower than that of the conductor.

4,430,377

COLD DRAWN HIGH-ORIENTATION MULTILAYERED FILM AND PROCESS FOR MANUFACTURE OF SAID FILM

Isao Yoshimura, Fujisawa; Osamu Mizukami, Kawasaki; Hideo Hata; Junichi Kageyama, both of Yokohama, and Takashi Kaneko, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

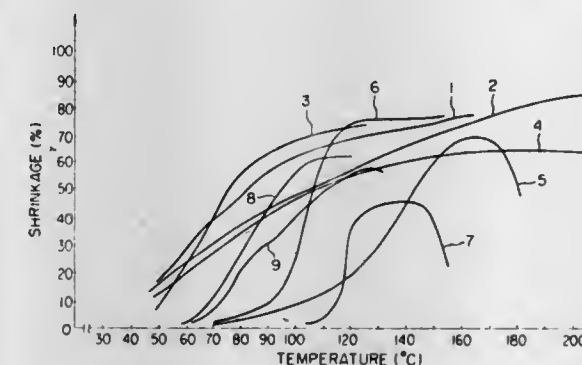
Division of Ser. No. 326,062, Nov. 30, 1981, Pat. No. 4,399,181, which is a continuation of Ser. No. 103,949, Dec. 14, 1979, abandoned. This application Jan. 21, 1983, Ser. No. 459,985

Claims priority, application Japan, Dec. 18, 1978, 53-154966; Mar. 7, 1979, 54-25642

Int. Cl.³ B32B 27/08

U.S. Cl. 428—213

33 Claims



1. A cold drawn high-orientation multilayered film, having a particle tensile strength of not less than 5.0 Kg/mm², the principal component layers of said film being highly oriented, said multilayer film comprising at least one layer preponderantly comprising a cold-drawable resin selected from the group consisting of blended and unblended specific polymers, [1] (B)+(A)+(C), [2] (B)+(A), [3] (B)+(C), [4] (D), and [5] (E), wherein,

(A) is at least one ethylene type polymer selected from the group consisting of copolymers of ethylene with another monomer selected from the group consisting of vinyl esters, aliphatic unsaturated carboxylic acids and alkyl esters of said carboxylic acids, ionically crosslinked resins derived from said copolymers and low-density polymers of ethylene,

(B) is a soft copolymer elastomer having a Vicat softening point of not more than 60° C.,

(C) is at least one polymer selected from the group consisting of crystalline polypropylene, high-density polyethylene, crystalline polybutene-1, and polymethyl pentene-1, (D) is a crystalline polybutene-1 having a concentration of 50 to 100% by weight, and

(E) is an ionically crosslinked resin, said multilayered film possessing at least two resin layers selected from the group consisting of at least one cold-drawable resin layer (CDR₅) preponderantly containing a polymer [5], at least one cold-drawable resin layer (CDR₁₋₃) preponderantly containing at least one cold-drawable resin selected from the group consisting of blended polymers [1], [2], [3], at least one cold-drawable resin layer (CDR₄) preponderantly containing a polymer [4], and at least one layer (S) formed of at least one polymer selected from the group consisting of crystalline polypropylene, polyethylene, ethylene-vinyl acetate copolymer, ethylene-aliphatic unsaturated carboxylic acid copolymers and ethylene-aliphatic unsaturated carboxylate copolymers,

and said film having a multilayer construction represented by the layer combination of

CDR₅/CDR₁₋₃,
CDR₅/CDR₁₋₃/CDR₅,
CDR₅/S/CDR₅, or
CDR₅/CDR₁₋₃/CDR₄/CDR₁₋₃/CDR₅.

4,430,378

COLD DRAWN HIGH-ORIENTATION MULTILAYERED FILM AND PROCESS FOR MANUFACTURE OF SAID FILM

Isao Yoshimura, Fujisawa; Osamu Mizukami, Kawasaki; Hideo Hata; Junichi Kageyama, both of Yokohama, and Takashi Kaneko, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

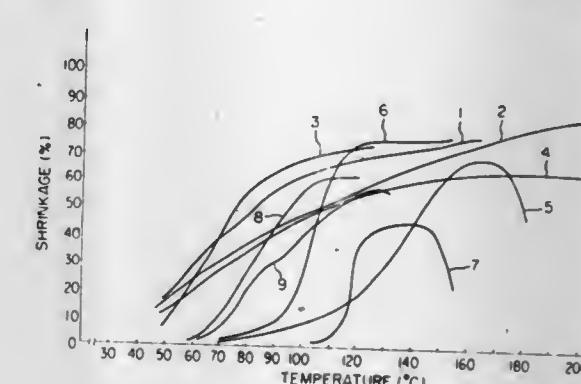
Division of Ser. No. 326,062, Nov. 30, 1981, Pat. No. 4,399,181, which is a continuation of Ser. No. 103,949, Dec. 14, 1979, abandoned. This application Jan. 21, 1983, Ser. No. 460,012

Claims priority, application Japan, Dec. 18, 1978, 53-154966; Mar. 7, 1979, 54-25642

Int. Cl.³ B32B 27/08

U.S. Cl. 428—213

33 Claims



1. A cold drawn high-orientation multilayered film, having a particle tensile strength of not less than 5.0 Kg/mm², the principal component layers of said film being highly oriented, said multilayer film comprising at least one layer preponderantly comprising a cold-drawable resin selected from the group consisting of blended and unblended specific polymers, [1] (B)+(A)+(C), [2] (B)+(A), [3] (B)+(C), [4] (D), and [5] (E), wherein,

(A) is at least one ethylene type polymer selected from the group consisting of copolymers of ethylene with another monomer selected from the group consisting of vinyl esters, aliphatic unsaturated carboxylic acids and alkyl esters of said carboxylic acids, ionically crosslinked resins derived from said copolymers and low-density polymers of ethylene,

(B) is a soft copolymer elastomer having a Vicat softening point of not more than 60° C.,

(C) is at least one polymer selected from the group consisting of crystalline polypropylene, high-density polyethylene, crystalline polybutene-1, and polymethyl pentene-1, (D) is a crystalline polybutene-1 having a concentration of 50 to 100% by weight, and

(E) is an ionically crosslinked resin, said multilayered film possessing at least two resin layers selected from the group consisting of at least one cold-drawable resin layer (CDR_{1-3,4}) preponderantly containing at least one cold-drawable resin selected from the group consisting of blended polymers [1], [2], [3], and [4], at least one layer (S) formed of at least one polymer selected from the group consisting of crystalline polypropylene, polyethylene, ethyl-vinyl acetate copolymer, ethylene-aliphatic unsaturated carboxylic acid copolymers and ethylene-aliphatic unsaturated carboxylate copolymers, and at least one cold-drawable resin layer (CDR₅), preponderantly containing a polymer [5],

and said film having a multilayer construction represented by the layer combination of

S/CDR_{1-3,4},
S/CDR_{1-3,4}/S,
S/CDR_{1-3,4}/S/CDR_{1-3,4}/S,
S/CDR₅,
S/CDR_{1-3,4}/CDR₅, or
S/CDR_{1-3,4}/S/CDR_{1-3,4}/CDR₅.

4,430,379

MASTER PLATE FOR DRY LITHOGRAPHIC PRINTING
 Elzi Hayakawa, Utsunomiya; Akio Kojima, Urawa; Yoshi Arai, Oyama; Masatoshi Sakuma, Urawa, and Yukichi Toyoshima, Tokyo, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo and Kawamura Institute of Chemical Research, Saitami, both of Japan

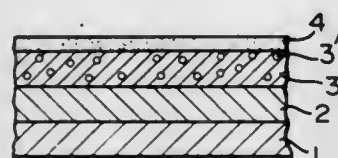
Filed Aug. 25, 1981, Ser. No. 296,189

Claims priority, application Japan, Aug. 26, 1980, 55-116392

Int. Cl.³ B32B 7/02; B41N 1/14

U.S. Cl. 428-216

6 Claims



1. In a master plate for dry lithographic printing comprising (1) a substrate and (3) an ink-repellent silicone layer formed thereon, the improvement wherein a toner anchoring layer (2) composed of a resin having compatibility with an image layer (5) to be superimposed on the silicone layer (3) during image making or a resin containing an active group capable of reacting with the image layer (5) during image making is formed between the substrate (1) and the silicone layer (3), and wherein the silicone layer (3) is composed of a silicone resin containing 0.1 to 10% by weight, based on the silicone resin, of a fluorine-containing surface-active compound of the formula



wherein Rf represents a fluorinated aliphatic radical having 3 to 12 carbon atoms, X represents a divalent linking group selected from the group consisting of $-(CH_2)_l-$ in which l is an integer of 1 to 6, $-CO-$ and $-SO_2-$, and Y represents a hydrophilic group having a nitrogen-containing linking moiety or a phosphorus containing linking moiety whereby a portion of said fluorine-containing surface active compound forms a surface-oriented layer (4) on the exposed surface of the silicone layer (3).

4,430,380

BONDED STRUCTURES OF TEXTILE MATERIALS

Hans Hönel; Walter Michel, both of Frankfurt am Main; Steffen Piesch, Oberursel; Karin Schlüter; Manfred Seidel, both of Frankfurt am Main, and Wolfgang Spieler, Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,217

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111936

Int. Cl.³ B32B 7/00

U.S. Cl. 428-254

11 Claims

1. In a bonded structure of textile materials bonded by a melamine-formaldehyde precondensate and cured at an elevated temperature and a elevated pressure, the improvement comprises said melamine-formaldehyde precondensate having been prepared by heating melamine in an aqueous solution or suspension with formaldehyde in a molar ratio of 1:(0.8 to 1.26) at a pH value of 7-11 in the presence of 1 to 25% by weight of modifying agents relative to the total weight of melamine and formaldehyde, and at least 1.0% being an alkali metal salt or alkaline earth metal salt of amidosulphonic acid, at temperatures of 105° to 160° C. until a limited dilutability with water is achieved or further heating until an unlimited dilutability with water is achieved.

4,430,381

MONOCARBOXYLIC ACID ANTIMICROBIALS IN FABRICS

Susan L. Harvey; James L. Cresswell, and B. Jerry L. Huff, all of Memphis, Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Jun. 25, 1982, Ser. No. 392,193

Int. Cl.³ B32B 23/00; B05D 3/02

U.S. Cl. 428-284

17 Claims

1. A process for imparting antimicrobial properties to a material, said process comprising:
 (a) applying an external binder system to said material, said external binder system comprising a salt of at least one monocarboxylate antimicrobial agent or mixtures thereof;
 (b) applying a waterproofing treatment to said material, said treatment comprising at least one substantially nonantimicrobial proton donor; and
 (c) drying said material.

4,430,382

CONDUCTIVE COATING

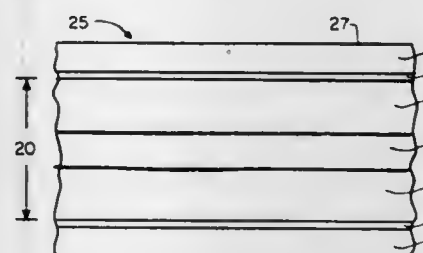
Joseph Savit, 751 Vernon Ave., Glencoe, Ill. 60022

Filed Dec. 15, 1980, Ser. No. 216,732

Int. Cl.³ B32B 5/16

U.S. Cl. 428-323

6 Claims



1. A translucent dielectric recording media comprising a through-conductive substrate having a dielectric coating and a conductive coating, the conductive coating consisting of nitrocellulose and at least one conductive pigment.

4. The translucent dielectric recording media of claim 1 wherein the conductive pigment is selected from the group consisting of conductive zinc oxide, carbon black, graphite metal particles, cupric oxide and mixtures thereof.

4,430,383

FILAMENTS OF HIGH TENSILE STRENGTH AND MODULUS

Paul Smith, Sittard, and Pieter J. Lemstra, Brunssum, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Division of Ser. No. 162,449, Jun. 24, 1980, Pat. No. 4,442,993.

This application Sep. 30, 1982, Ser. No. 428,821

Claims priority, application Netherlands, Jun. 27, 1979, 7904990

Int. Cl.³ D02G 3/00

U.S. Cl. 428-364

2 Claims

1. A solution-spun and drawn high molecular weight \bar{M}_w polyethylene filament of combined high modulus and high tensile strength wherein said molecular weight \bar{M}_w is at least 8×10^5 , said modulus is at least 20 GPa, said tensile strength is at least 2 GPa.

4,430,384

FLAME RESISTANT INSULATED ELECTRICAL WIRE AND CABLE CONSTRUCTION

Stephen George, Bronx, N.Y., assignor to Subtex, Inc., Hartsdale, N.Y.

Division of Ser. No. 73,362, Sep. 7, 1979, Pat. No. 4,282,284.

This application Jan. 19, 1981, Ser. No. 225,889

Int. Cl.³ B32B 17/00, 27/00; H01B 7/00

U.S. Cl. 428-377

6 Claims



1. A high temperature and flame resistant insulated wire or cable construction comprising:
 an electrical conductor;
 an insulating tape wrapped around said conductor, said insulating tape comprising:
 a porous flame resistant base fabric;
 a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said base fabric by applying said refractory coating to both sides of said fabric, and said refractory materials being capable of fusing with said porous base fabric at elevated temperatures;
 a polymeric coating formed on the outside surface of one of the refractory coatings; and
 an adhesive applied to the outside surface of the other of said refractory coatings.

4,430,385

COMPOSITELY INSULATED CONDUCTOR HAVING A LAYER OF IRRADIATION CROSS-LINKED POLYMERIC PLASTIC MATERIAL

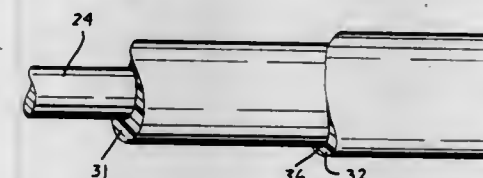
Harry M. Dillow, DeKalb County, Ga.; Anthony E. Sansone, Sarpy County, Nebr., and Raymond K. Swartz, Gwinnett County, Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,887

Int. Cl.³ B32B 7/02, 15/00; D02G 3/00

U.S. Cl. 428-380

7 Claims



1. A compositely insulated conductor, which comprises:
 an elongated metallic conductor;
 an inner layer of insulation which covers said conductor and which comprises a plasticized polyvinyl chloride composition; and
 an outer layer of insulation being disposed about said inner layer and having a thickness which is substantially less than that of said inner layer, said outer layer comprising an irradiation cross-linked, plasticized polyvinyl chloride composition and having an adhesion to said inner layer which is substantially greater than that of said inner layer to said elongated metallic conductor and which is sufficient to cause any elongation of the adhered inner and outer layers to be substantially unitary.

4,430,386

COMPOSITE METAL SINTERED ARTICLE AND METHOD OF MAKING SAME

Tadao Watanabe; Mitsuo Ohhori; Akio Ohta, and Yoshikazu Kondo, all of Kudamatsu, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

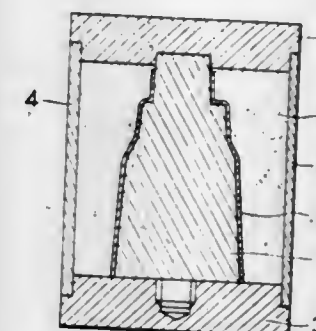
Division of Ser. No. 974,521, Dec. 29, 1978, Pat. No. 4,261,745.

This application Dec. 8, 1980, Ser. No. 214,429

Int. Cl.³ B22B 7/04

U.S. Cl. 428-555

7 Claims



1. A composite metal sintered article, comprising a porous metal sintered body and a metal shell formed on the inner or outer surface of said metal sintered body by electroforming and/or electroless plating and/or vapor deposition, said metal shell having a first metal layer which is hard and wear-resistant, and a second metal layer in contact with said metal sintered body and which is thicker and softer than said first metal layer.

4,430,387

BASE PLATE FOR MAGNETIC RECORDING DISC

Nobuo Nakagawa, Yokohama; Yoshiki Kato, Tokyo; Katsuo Abe, Yokosuka; Takao Edamura, and Takao Nakamura, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

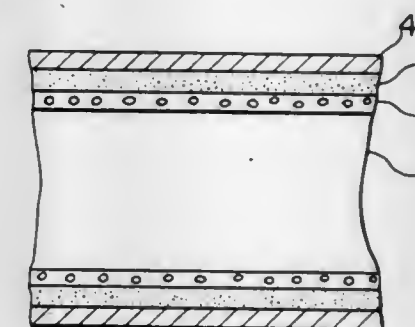
Filed Nov. 12, 1980, Ser. No. 206,175

Claims priority, application Japan, Nov. 14, 1979, 54-146572

Int. Cl.³ B21C 1/00

U.S. Cl. 428-579

14 Claims



1. A base plate for a magnetic recording disc comprising a light, durable, smooth-surfaced discoid substrate, a thin metal layer formed on at least one side of the substrate, and an anodized layer formed from the surface of said at least one thin metal layer to a depth of at least one-half of the thickness of the thin metal layer by an anodizing treatment, said at least one thin metal layer containing no element which produces surface pin-hole defect portions on the anodized layer formed by the anodizing treatment and being formed by a dry process using, as a vapor source or a target, (a) aluminum having a purity of at least 99.999%; (b) magnesium having a purity of at least 99.999%; or (c) an aluminum-magnesium alloy in which aluminum has a purity of at least 99.999% in an amount of 90.0 to 99.9% by weight and magnesium has a purity of at least 99.999% in an amount of 10.0 to 0.1% by weight.

4,430,388

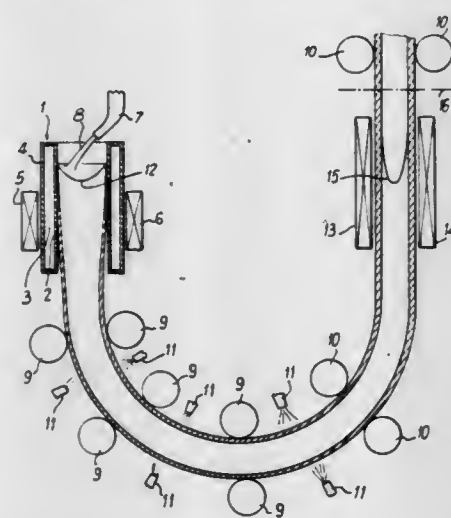
METHOD AND APPARATUS FOR CONTINUOUSLY CASTING A HOLLOW METAL BLANK, AND THE RESULTING BLANK

Michel Mola, Paris, France, assignor to Creusot-Loire-Vallourec, Paris, France

Filed Jan. 15, 1979, Ser. No. 3,662
Int. Cl.³ B22D 27/02

U.S. Cl. 428—595

4 Claims



1. A process for continuous casting of hollow metallic blanks comprising the steps of:

- (a) pouring molten liquid metal into a continuously cooled mold of circular cross-section,
- (b) rotating the liquid metal in the mold by submitting it to a low frequency first electromagnetic field,
- (c) substantially continuously withdrawing a blank having a solidified shell with liquid metal therein downwardly from the bottom of the mold and then directing the blank along a generally U-shaped curved path so that the blank has an ascending portion at a first location spaced horizontally from the mold at an elevation substantially the same as the elevation of the mold,
- (d) rotating at a speed over 100 r.p.m. the liquid metal in said ascending portion of the blank by submitting said blank adjacent said first location to a horizontally rotating second electromagnetic field of a frequency in the range of 50 Hz to 300 Hz, and
- (e) cutting off the hollow blank thus formed at a second location above said first location and at an elevation above that of the mold.

2. Apparatus for continuous casting of hollow metallic blanks comprising,

- an annular casting mold having a generally vertical axis,
- means for supplying liquid metal to the mold,
- means for rotating liquid metal in the mold generally about the axis of the mold comprising, a first inductive winding energized with a low frequency current and located within or adjacent said mold,
- means for continuously withdrawing a blank having a solidified shell containing liquid metal therein downwardly from the bottom of the mold,
- means for directing said blank along a generally U-shaped curved path first downwardly and then upwardly so that the blank has an ascending portion at a first location spaced horizontally from the mold and at substantially the same elevation as said mold,
- means comprising a second inductive winding adjacent said first location energized with current at a frequency in the range of 50 Hz to 300 Hz, for rotating the liquid metal in said ascending portion of the blank at a speed of rotation over 100 r.p.m., and
- means for cutting off the hollow blank thus formed at a second location above said first location and at an elevation above the elevation of the mold.

3. A hollow metal blank having excellent external and internal skin qualities each of equi-axial crystallization and free of

dendrites, said blank being formed by the process according to claim 1.

4,430,389

COMPOSITE CYLINDER AND CASTING ALLOY FOR USE THEREIN

Tony U. Otani, Lakewood, Calif., assignor to Wexco Corporation, Lynchburg, Va.

Filed Mar. 1, 1982, Ser. No. 353,236
Int. Cl.³ C22C 29/00, 32/00

U.S. Cl. 428—627

2 Claims

2. A composite cylinder comprising:
 - an outer housing; and
 - an inner layer around the inner circumference of said housing having a composition substantially as set forth below:

INGREDIENT	WEIGHT PERCENT
tungsten carbide	46-57
nickel	28-40
chromium	5.1-9.5
iron	1.5-2.9
silicon	1.5-2.9
boron	1.0-2.3
carbon	0.5 maximum

with the total of the ingredients being 100%.

4,430,390

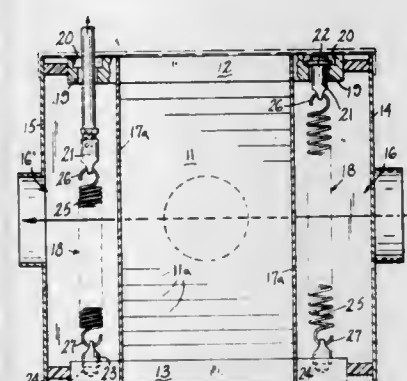
COMPACT FUEL CELL STACK

Imre Fekete, deceased, late of Piscataway, N.J. (by Anna M. Fekete, administrator), assignor to Engelhard Corporation, Iselin, N.J.

Filed Sep. 23, 1982, Ser. No. 422,046
Int. Cl.³ H01M 8/04

U.S. Cl. 429—34

14 Claims



1. A fuel cell stack comprising:

- a plurality of fuel cells connected in superposed, stacked relationship;
- first and second support end plates on opposite ends of the stack of fuel cells;
- resilient means engaging said first and second end plates to impose thereon a force urging said first and second end plates towards each other, whereby said fuel cells are held together under a predetermined compressive loading, said resilient means being disposed substantially entirely within the space defined between said first and second end plates and the planes within which said end plates lie, whereby the height of said resilient means is not substantially greater than the combined height of said fuel cells and end plates.

4,430,391

FUEL CELL CATHODE

Stanford R. Ovshinsky, Bloomfield Hills; Krishna Sapru, Troy, and Srinivasan Venkatesan, Royal Oak, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 19, 1982, Ser. No. 399,891
Int. Cl.³ H01M 4/90

U.S. Cl. 429—40

40 Claims

1. A fuel cell comprising:
 - at least one cathode means for efficient oxygen reduction, said cathode means being formed from a disordered multi-component material, said cathode means including a host matrix having at least one transition element and incorporating at least one modifier element;
 - a casing having said cathode means positioned therein;
 - at least one anode capable of hydrogen oxidation positioned within said casing and spaced from said cathode means; and
 - an electrolyte in contact with both said anode and said cathode means.

4,430,393

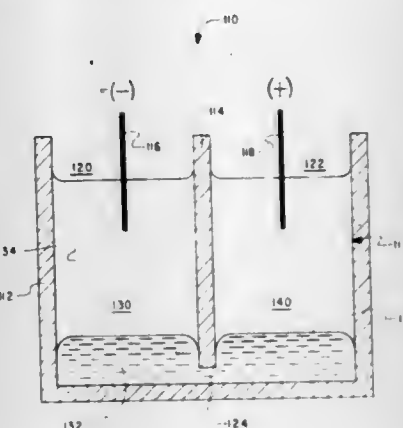
METAL AMALGAMS FOR SODIUM-SULFUR BATTERY SYSTEMS

John E. Bennett, and David E. Harney, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jan. 28, 1982, Ser. No. 343,502
Int. Cl.³ H01M 10/36

U.S. Cl. 429—101

10 Claims



1. In a rechargeable battery utilizing an electrochemical reaction pair of sulfur and a metal selected from the group consisting of the alkali metals and the alkaline earth metals comprising:

- (1) a chamber;
- (2) a partition, at least partially separating said chamber and thereby defining an anode compartment and a cathode compartment;
- (3) a cathode in said cathode compartment in electrical communication between said anode compartment and a point external to said chamber;
- (4) an anode at least partially contained in said anode compartment in electrical communication between said cathode compartment and a point external to said chamber; and
- (5) anhydrous ammonia electrolyte; characterized in that said anode is a liquid amalgam containing substantially mercury and said metal.

4,430,394

SEPARATOR FOR STORAGE BATTERY

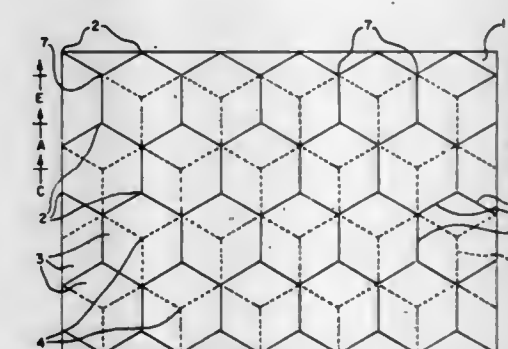
Dieter Bechtold, Frankfurt am Main, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,819
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108241

Int. Cl.³ H01M 2/16

U.S. Cl. 429—147

12 Claims



1. A separator for storage batteries, and particularly lead storage batteries, in the form of a porous plate provided with protrusions and having channels extending along both the front and the rear side for gas removal along the plate surface,

4,430,392

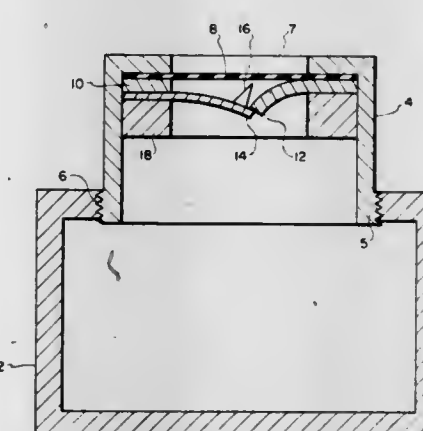
HEAT ACTIVATED VENT

John A. Kelley, Willingboro, N.J., and Curtis A. Michener, Hatfield, Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 11, 1983, Ser. No. 465,723
Int. Cl.³ H01M 2/12

U.S. Cl. 429—53

10 Claims



1. A vent comprising:

- a vent housing means having a fluid passage therein,
- a diaphragm means for sealing said passage,
- diaphragm piercing means within said housing,
- spring means for urging said diaphragm piercing means into said diaphragm and
- heat responsive means for spacing said diaphragm piercing means from said diaphragm means in opposition to said spring means below a predetermined temperature of the housing means and for allowing said spring means to propel said diaphragm piercing means into said diaphragm above said temperature, said heat responsive means including a memory material element having a first shape for restraining said spring means below said temperature to space said piercing means from said diaphragm means and a second shape above said temperature for releasing said spring means.

the plate being provided with protrusions and recesses on both sides, the protrusions extending substantially symmetrically in both directions perpendicularly from a virtual central plane, the protrusions on both sides being all of similar shape and being distributed over the surface in a uniform grid-like pattern, the protrusions on one side being displaced from each other in accordance with a fixed periodicity, and the protrusions on one side forming the recesses on the other side of the plate, the protrusions having oblique faces which collectively define a pyramid.

4,430,395

CELL WITH OVERFLOW SPOUT

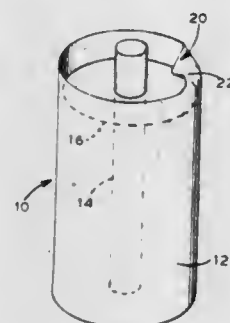
Stuart M. Davis, Madison, and Greg J. Davidson, Cross Plains, both of Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Jan. 4, 1982, Ser. No. 337,007

Int. Cl.³ H01M 2/24

U.S. Cl. 429—158

17 Claims



1. A galvanic cell comprising a container having side walls and an open end, the open end of the container having an edge, anodic material, cathodic material, and an electrolyte disposed within the container, a sealant sealing the open end of the container, a sealant overflow spout formed in the cell wall within or adjacent to the edge, the spout forming a passageway for an excess of the sealant to flow in a directed manner and harden outside the confines of the container.

4,430,396

BATTERY TERMINAL POST SEAL

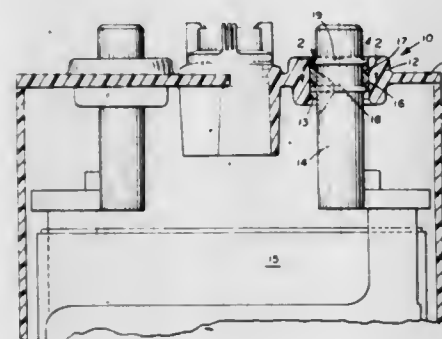
William B. Hayes, Jr., Cinnaminson, N.J., assignor to GNB Batteries Inc., Mendota Heights, Minn.

Filed Dec. 21, 1981, Ser. No. 332,708

Int. Cl.³ H01M 2/08

U.S. Cl. 429—184

19 Claims



1. In a battery, a terminal structure comprising: a case wall portion provided with a through opening defined by a peripheral cylindrical sealing surface; a terminal post extending longitudinally through said opening and having at least one integrally formed rigid, peripheral sealant-retaining dam disposed within said opening, projecting to and engaging the lower portion of said sealing surface to define a seal space extending laterally between said terminal post and the lower portion of said

sealing surface and longitudinally above said dam along said terminal post portion disposed within said opening; passage means for introducing and conducting flowable sealant material into said seal space from exteriorly thereof; and a body of viscous, flowable sealing material disposed in said sealing space, fixedly sealed to said terminal post and movably sealed to said peripheral sealing surface.

4,430,397

ELECTROCHEMICAL CELLS

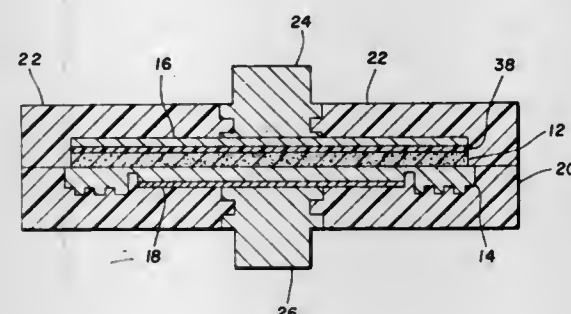
Darrel F. Untereker, Cedar, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 6, 1981, Ser. No. 280,902

Int. Cl.³ H01M 6/18

U.S. Cl. 429—191

61 Claims



1. An electrochemical cell comprising anode and cathode means in operative relationship, the cathode means comprising: an iodine-containing cathode; cathode current collector means, and a conductive liquid layer interposed between the cathode and the current collector for electrically interconnecting the two, the liquid layer comprising iodine dissolved in a solvent.

4,430,398

SEPARATOR MATERIAL FOR ALKALINE STORAGE CELLS

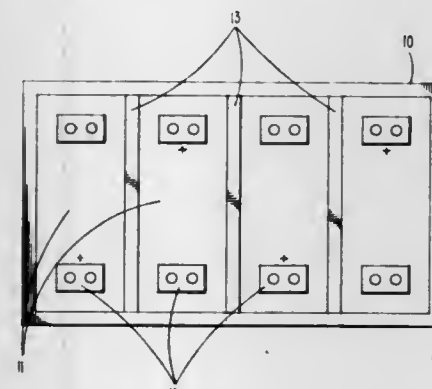
Erich F. Kujas, Vincentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1982, Ser. No. 374,696

Int. Cl.³ H01M 2/14

U.S. Cl. 429—206

9 Claims



1. A process of preparing a separator for an alkaline power cell comprising: (a) treating sheets of fibrous polypropylene to create surface porosity by passing them through a corona discharge; and (b) impregnating the sheets with a glycine selected from the group consisting of phenylglycine, parahydroxyphenylglycine and mixtures thereof.

4,430,399

METHOD OF ELECTRODE FORMATION AND ARTICLE

Robert J. Schoolcraft, Croton, N.Y., assignor to Duracell Inc., Bethel, Conn.

Division of Ser. No. 190,549, Sep. 25, 1980. This application Feb. 1, 1982, Ser. No. 344,345

Int. Cl.³ H01M 4/02

U.S. Cl. 429—218

8 Claims

1. An electrode for an electrochemical cell comprising a compressed mass of a plurality of agglomerates of an electrochemically active compound, a first conductive material substantially uniformly distributed throughout each agglomerate, and a matrix of a second conductive material interposed between the agglomerates.

4,430,400

METHOD OF PRODUCING COLOR FILTERS USING DEHYDRATING SOLUTION

Toshio Nakano, Tokyo; Yoshio Taniguchi, Hino; Ken Tsutsui, Tokyo; Akira Sasano, Tokyo; Tadeo Kaneko, Nishitama; Akiya Izumi, Mobara, and Michiaki Hashimoto, Yono, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

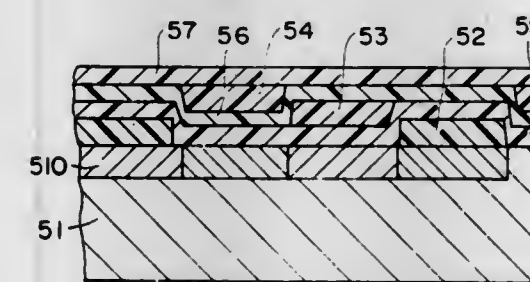
Filed Sep. 21, 1981, Ser. No. 304,153

Claims priority, application Japan, Sep. 19, 1980, 55-129320

Int. Cl.³ G03F 5/00; G03C 5/00

U.S. Cl. 430—7

16 Claims



1. A method of producing color filters, which comprises the steps of forming a layer of an organic polymeric material having a predetermined light-sensitive characteristic on a substrate, exposing the layer of the organic polymeric material to a predetermined pattern, developing the exposed layer of the organic polymeric material to form a filter base and dyeing the filter base, wherein after the development of the layer of the organic polymeric material but before said dyeing, said filter base is wetted with at least one dehydrating solution, and wherein after the step of wetting the filter base with the at least one dehydrating solution, said filter base is heated in an atmosphere maintained at 100° to 300° C.

4,430,401

METHOD FOR PRODUCING A RECORDING DISC STAMPER

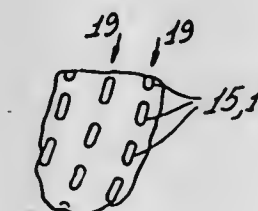
Richard L. Wilkinson, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 48,081, Jun. 19, 1979. This application May 5, 1980, Ser. No. 146,820

Int. Cl.³ G03C 5/04, 5/00, 11/00; G01D 15/10

U.S. Cl. 430—8

10 Claims



1. A method of producing a metallic stamper for use in

forming recording disc replicas, said method comprising the steps of:

depositing a light-absorbing coating on a smooth, planar surface of a substrate, to form a recording disc, the light-absorbing coating including an explosive material and having a uniform thickness of less than about 6000 Å; rotating the recording disc in a prescribed fashion relative to a beam of light that is modulated in intensity in accordance with a data signal to be recorded in the light-absorbing coating, said coating being selectively heated by the beam to induce spaced explosions, therein, to form corresponding irregularities in the outer surface of the coating, said irregularities having sizes substantially smaller than five microns and being formed without the need for a separate step of chemically developing the coating; depositing an outer layer of metallic material on the recording disc, after the surface irregularities have been formed in the light-absorbing coating; and removing the outer metallic layer from the underlying recording disc, to produce the metallic stamper.

4,430,402

DICHROMATIC ELECTROPHOTOGRAPHY USING TWO DEVELOPER COMPOSITIONS APPLIED SEQUENTIALLY

Suichi Tsushima, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

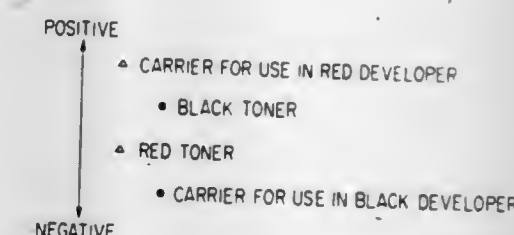
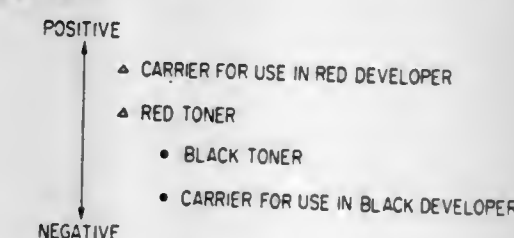
Division of Ser. No. 172,732, Jul. 28, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,235

Claims priority, application Japan, Aug. 2, 1979, 54-99216

Int. Cl.³ G03G 13/01, 13/08, 13/22

U.S. Cl. 430—45

1 Claim



1. A process for dichromatically developing a single electrostatic latent image having positively charged area or areas and negatively charged area or areas, comprising:

providing a set of first and second, separate, dry developer compositions, said first dry developer composition consisting essentially of a first mixture of first toner particles and first carrier particles adapted to be triboelectrically charged in opposite polarities, said second dry developer composition consisting essentially of a second mixture of second toner particles and second carrier particles adapted to be triboelectrically charged in opposite polarities, said first and second toner particles being respectively different in color and also being adapted to be triboelectrically charged in opposite polarities relative to each other by contact with their respective associated carrier particles, said first carrier particles being triboelectrically charged by contact with said first toner particles to a positive potential higher than those of said first and second toner particles and said second carrier particles being triboelectrically charged by friction with said second toner particles to a negative potential lower than those of

said first and second toner particles: applying to said electrostatic latent image one of said dry developer compositions so that the charged toner particles of said one dry developer composition adhere to the area or areas of said electrostatic latent image having a first polarity opposite to the polarity of said charged toner particles of said one dry developer composition whereby to develop said area or areas with a first color, then applying to said electrostatic latent image the other of said dry developer compositions so that the charged toner particles of said other dry developer composition adhere to the area or areas of said electrostatic latent image of a second polarity opposite to the polarity of said charged toner particles of said other dry developer composition whereby to develop the latter area or areas with a second color.

4,430,403

METHOD OF PREPARING A LITHOGRAPHIC PRINTING MASTER

Virgil W. Westdale, Barrington, and James L. Hanrahan, Mt. Prospect, both of Ill., assignors to AM International, Inc., Chicago, Ill.

Filed Mar. 26, 1982, Ser. No. 362,541

Int. Cl.³ G03G 15/20

U.S. Cl. 430—49

9 Claims

1. A process of preparing a lithographic printing master which comprises:

forming an electrostatic latent image on the surface of an electrophotographic lithographic member;
developing said latent image with a developer composition comprising a low melt viscosity polyamide resin having a melting point within the range of from about 70° to 165° C. and a melt viscosity of 1000 centipoises or less, a magnetic oxide component present in an amount ranging from about 40 to 75 percent by weight of said developer composition, and from about 0.5 to 4.0% of conductive carbon pigment imparting to said developer composition a resistivity ranging from 50 to 1×10^5 ohm-cm, said developer composition comprising developer particles ranging in size of from about 8 to 40 microns, with not more than 1 percent of the developer composition comprising particles having a size less than about 8 microns; and fixing said image to said member by the application of heat in the absence of pressure.

4,430,404

ELECTROPHOTOGRAPHIC PHOTOCENSITIVE MATERIAL HAVING THIN AMORPHOUS SILICON PROTECTIVE LAYER

Akira Hosoya, Kunihiro Tamahashi, Shigeharu Onuma, all of Hitachi; Atsushi Kakuta, Hitachiota; Yasuki Mori, Hitachi; Katsuhito Suzuki, Mito, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd.; Hitachi Koki Co., Ltd., both of Tokyo, Japan

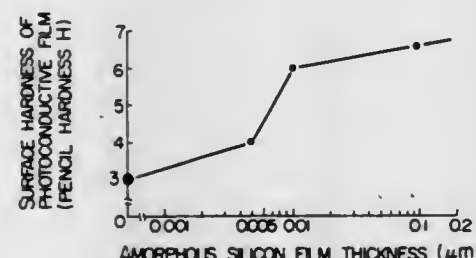
Filed Apr. 26, 1982, Ser. No. 371,956

Claims priority, application Japan, Apr. 30, 1981, 56-64182; May 8, 1981, 56-68141

Int. Cl.³ G03G 5/14

U.S. Cl. 430—58

13 Claims



1. An electrophotographic photosensitive material having an electrically conductive substrate; a photoconductive layer formed on said electrically conductive substrate; and a substan-

tially continuous amorphous silicon layer as a surface protection layer for the photoconductive layer, the thickness of which is so controlled that it has substantially no ability to absorb the light used.

5. An electrophotographic photosensitive material having an electrically conductive support; a carrier transportation layer and a carrier generating layer formed on said support; and a substantially continuous amorphous silicon layer which is formed in the outermost part as a surface protection layer, and the thickness of which is, when a light signal is irradiated thereto, such that it has substantially no ability to absorb the light.

4,430,405

XERORADIOGRAPHIC MATERIAL AND METHOD OF MAKING SAME

Yoshihiro Ono, and Hiroshi Sunagawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 421,071

Claims priority, application Japan, Oct. 1, 1981, 56-156695

Int. Cl.³ G03G 5/087

U.S. Cl. 430—95

13 Claims

1. A xeroradiographic material comprising a substrate at least one surface of which is electrically conductive, and an X-ray sensitive layer provided on the electrically conductive surface of said substrate, said X-ray sensitive layer essentially consisting of an organic binder, (i) γ -form crystal grains of a bismuth oxide-based compound oxide represented by the following general formula:



in which M designates at least one of germanium, silicon, titanium, gallium and aluminum, x denotes a number satisfying the condition $10 \leq x \leq 14$, and n denotes a number of oxygen atoms stoichiometrically determined depending on M and x, and (ii) inorganic n-type semiconductor grains, said constituents (i) and (ii) being dispersed in said organic binder.

4,430,406

FUSER MEMBER

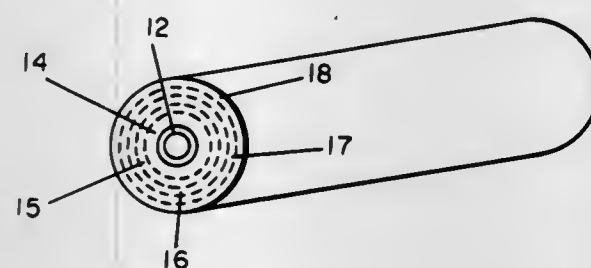
James S. Newkirk, LeRoy, and Robert A. Wiederhold, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,914

Int. Cl.³ B21B 31/08; B05D 1/02, 1/34

U.S. Cl. 430—99

40 Claims



39. The method of fusing a heat-softenable toner image to a receiver which comprises

pressure contacting a heat-softenable toner image carried by a receiver with a fusing member at a temperature effective to fuse said toner image to said receiver member, said fuser member having a composite layer including:

- (1) a first layer of a first material which is a high-temperature resistant elastomer;
- (2) a second layer of a second material which is a high-temperature resistant elastomer; and
- (3) a layer intermediate to and continuous with said first and second layers in which the proportion of the first material

to the second material gradually varies from substantially only said first material to substantially only said second material.

4,430,407

HEAT FUSIBLE SINGLE COMPONENT TONER HAVING A POLYAMIDE BINDER

Virgil W. Westdale, Barrington, Ill., assignor to AM International, Inc., Chicago, Ill.

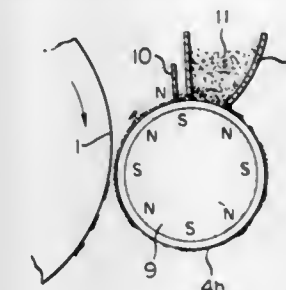
Filed Mar. 26, 1982, Ser. No. 362,534

Int. Cl.³ G03G 9/14

U.S. Cl. 430—106.6

4 Claims

1. An electrophotographic single-component heat-fusible developer composition comprising a low melt viscosity polyamide resin having a melting point within the range of from about 70° to 165° C. and a melt viscosity of 1000 centipoises or less, and magnetic oxide, wherein 90% of said composition comprises particles ranging from about 12 to 35 microns and not more than 1% of said composition comprises particles less than about 8 microns and a conductive carbon pigment in an amount of from about 0.5 to 4.0% of said composition, the conductivity of said carbon pigment being such so as to impart a resistivity to said developer ranging from 50 to 1×10^5 ohm-cm said developer composition having the capacity to develop an electrostatic latent image and being fixed by heat fusing, in the absence of pressure.



6 to 11 when suspended at a concentration of 4% by weight in distilled water.

4,430,410

METHOD AND APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Tatsuo Aizawa, Osaka; Shoji Matsumoto, Neyagawa; Kaoru Sakata, Hirakata; Toshikazu Matsui, Kishiwada; Akira Fukushima, Suita; Toshimitsu Ikeda, Himeji, and Nobuyoshi Hisao, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1979, Ser. No. 70,052

Int. Cl.³ G03G 13/09

U.S. Cl. 430—122

10 Claims

1. A method for developing a latent electrostatic image formed on the surface of an image-bearing material by applying a powdery developer thereto, which comprises magnetically retaining a layer of a relatively conductive one-component developer having a resistivity of not more than 10^{13} ohm-cm on the surface of a developer-retaining member, and bringing the developer on the surface of the developer-retaining member into contact with the surface of the image-bearing material, characterized in that said developer-retaining member has a resistance, measured by a point-plane resistance measuring method in an environment kept at a temperature of 20° C. and a humidity of 50%, of 3×10^7 ohms to 1×10^{10} ohms.

4,430,411

DEVELOPING METHOD FOR ELECTROSTATIC IMAGE
Yasuyuki Tamura, Kawasaki; Masashi Kiuchi, Toride; Tohru Takahashi, Tokyo; Yasuo Mitsuhashi, Yokohama, and Seiji Tomari, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

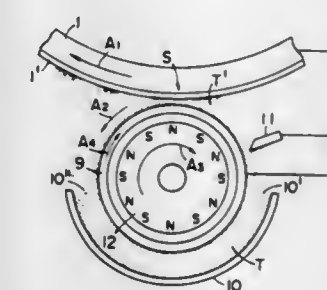
Continuation of Ser. No. 27,722, Apr. 6, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,973

Claims priority, application Japan, Apr. 11, 1978, 53-42487; Apr. 21, 1978, 53-47512

Int. Cl.³ G03G 13/09

U.S. Cl. 430—122

18 Claims



1. A development process comprising:
providing a one-component magnetic developer consisting of particles which have an insulating main component on the surface of which there are scattered areas in which

4,430,409

DEVELOPER FOR ELECTROPHOTOGRAPHY WITH WET PROCESS SILICIC ACID

Toru Matsumoto, Kita, and Masanori Takenouchi, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 314,438, Oct. 23, 1981, abandoned.

This application Jul. 29, 1983, Ser. No. 518,317

Claims priority, application Japan, Oct. 31, 1980, 55-154462; Nov. 4, 1980, 55-154938; Aug. 8, 1981, 56-124227

Int. Cl.³ G03G 9/10, 9/14, 9/08

U.S. Cl. 430—106.6

21 Claims

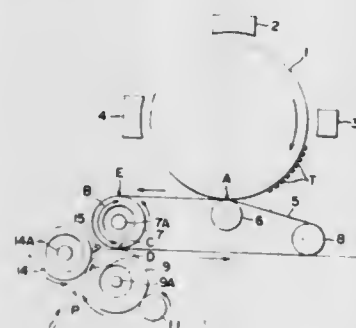
1. A positively charged developer for electrophotography,

electric charges are movable, said magnetic developer, as a whole, being electrically insulative under mechanically static conditions;
supplying the developer to a developer carrying member; forming a magnetic field around the developer carrying member by magnetic field forming means; and simultaneously moving the magnetic field and the developer carrying member in the same direction with the magnetic field moving at a speed high enough with respect to the speed of the developer carrying member to convey the developer on the developer carrying member in the opposite direction to the movement direction of both the magnetic field and developer carrying member and toward a developing station where the developer contacts an image bearing member, said movement stirring the developer and causing some of the developer to be attracted to the potential on the image bearing member in the developing station.

4,430,412

METHOD AND APPARATUS FOR TRANSFERRING AND FIXING TONER IMAGE USING CONTROLLED HEAT
Tadashi Miwa, Kunitachi; Kiyoshi Kimura, Iruma; Yukiharu Komiya, and Noriyoshi Tarumi, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1982, Ser. No. 439,426
Claims priority, application Japan, Nov. 13, 1981, 56-181195; Nov. 16, 1981, 56-182292; Nov. 16, 1981, 56-182293
Int. Cl.³ G03G 13/14, 13/20
U.S. Cl. 430-126 45 Claims

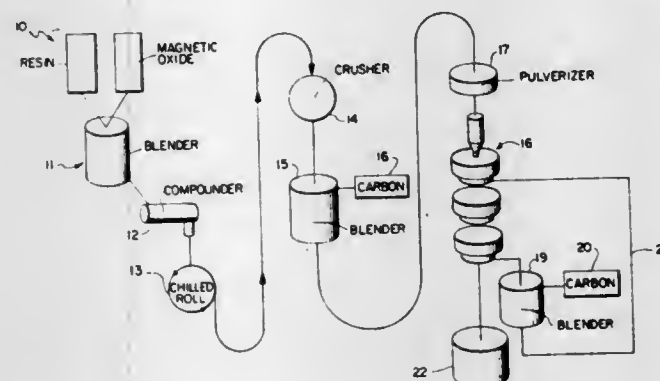


1. In a method for transferring and fixing toner image wherein a toner image is transferred to an intermediate transfer member from a toner image retainer and then transferred and fixed onto a transfer material from the intermediate transfer member, the improvement characterized in that the toner image on the intermediate transfer member is heated at a temperature lower than the toner fusion temperature, a unit to press the transfer material onto the intermediate transfer member is heated to the toner fusion temperature or over, and the transfer material heated to the toner fusion temperature or over is then fed into a position for transfer and fixation, thereby transferring and fixing the toner image onto the transfer material.

2. In an apparatus for transferring and fixing toner image wherein a toner image is transferred to an intermediate transfer member from a toner image retainer and then retransferred and fixed onto a transfer material from the intermediate transfer member, the improvement comprising means to heat the toner image on the intermediate transfer member to a temperature lower than the toner fusion temperature, heating means to heat a pressing unit to press the transfer material onto the intermediate transfer member at the toner fusion temperature or over and heating means to heat the transfer material at the toner fusion temperature or over, thereby feeding the transfer material into a position for transfer and fixation.

4,430,413
METHOD OF MAKING A SINGLE COMPONENT TONER
Virgil W. Westdale, Barrington, and James L. Hanrahan, Mt. Prospect, both of Ill., assignors to AM International, Inc., Chicago, Ill.

Filed Mar. 26, 1982, Ser. No. 362,536
Int. Cl.³ G03G 9/08, 9/14
U.S. Cl. 430-137 7 Claims



1. A process for preparing an electrophotographic single component developer composition which comprises:
providing a blend of a low melt viscosity polyamide resinous material having a melting point within the range of from about 60° to 165° C. and a melt viscosity of 1000 centipoises or less having incorporated therein a magnetic oxide component in an amount ranging from about 40 to 75 percent by weight;
processing said blend so as to produce a particulate developer composition containing developer particles ranging in size up to about 40 microns;
classifying said particulate developer composition so as to remove therefrom substantially all of the fine developer particles present therein having a size of up to about 8 microns;
blending said classified developer particles with conductive particles with conductive carbon particles such that said conductive carbon is present in an amount of from about 0.5 to 4.0% of said composition so as to effectively incorporate said carbon particles onto the surface thereof said developer particles having a resistivity of from 50 ohm-cm to 1.0×10^5 ohm-cm; and
reclassifying said developer particles so as to remove from said developer composition excess carbon particles present therein which are not attached to said developer particles.

4,430,414

IMAGE STABILIZERS FOR VESICULAR FILM
Jerome E. Swanson, Oakdale, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Nov. 12, 1982, Ser. No. 440,874
Int. Cl.³ G03C 1/60, 1/00

U.S. Cl. 430-176 14 Claims
1. In a vesicular imaging material capable of furnishing a record in the form of a distribution pattern of radiation scattering discontinuities formed within an optically clear thermoplastic hydrophobic film, comprising a homopolymer or copolymer of α -chloroacrylonitrile and a light decomposable material substantially uniformly dispersed therein, said material upon exposure to light decomposing into products which are volatile to form said radiation scattering discontinuities only in the light struck areas in said polymer to furnish thereby said record, the improvement wherein a derivative of benzoic acid is present in an image-stabilizing amount in said material.

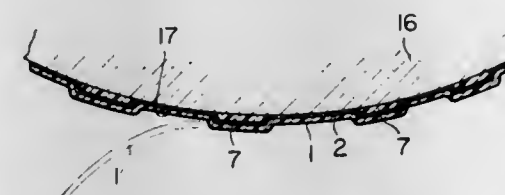
4,430,415
HEAT-DEVELOPABLE PHOTOGRAPHIC MATERIAL WITH FINE DROPLETS CONTAINING SILVER HALIDE, ORGANIC SILVER SALT OXIDIZING AGENT AND COLOR IMAGE FORMING SUBSTANCE
Toshiaki Aono, Hiroshi Hara, Hideki Naito, and Kozo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 2, 1982, Ser. No. 414,137
Claims priority, application Japan, Sep. 2, 1981, 56-138266
Int. Cl.³ G03C 5/54, 7/00, 1/40, 5/16
U.S. Cl. 430-203 55 Claims

32. A heat-developable diffusion transfer color photographic material comprising a support having coated in order thereon a photographic element (I) comprising a packet emulsion prepared by forming fine droplets of complex coacervate containing a light-sensitive silver halide, an organic silver salt oxidizing agent and a color image forming substance by complex coacervation and hardening the fine droplets with a hardening agent, a hydrophilic binder and a reducing agent; and an image receiving element (II) comprising a mordant for a dye image formed or released by heat development in the photographic element.

4,430,416

TRANSFER ELEMENT FOR SANDBLAST CARVING
Hiraku Goto, Owariasahi; Tsuneaki Usui, Nagoya, and Nobuyasu Kinoshita, Hirakata, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Akebono Process Co. Ltd., Aichi, both of Japan
Filed Jun. 27, 1980, Ser. No. 163,546
Int. Cl.³ B24C 1/04; B44C 1/22; G03C 11/12; G03F 7/26
U.S. Cl. 430-263 8 Claims



1. A transfer element for sandblast carving comprising, in order, a flexible substrate, an intermediate resin layer having a thickness of about 0.001 to about 1 mm which is strippable from the flexible substrate and is a pressure-sensitive adhesive to an etchable material, and a resist having a thickness of about 0.05 to about 5 mm comprising a photocured photosensitive resin, and the relationship of adhesions (a) between the flexible substrate and the intermediate resin layer, (b) between the intermediate resin layer and the resist and (c) between the resist and the etchable material being (a) < (b) < (c).

8. A process for sandblast carving which comprises:
(i) printing a photo positive design on the photosensitive resin layer of an element comprising, in order, a flexible substrate, an intermediate resin layer which is strippable from the flexible substrate and is a pressure-sensitive adhesive to an etchable material, and a photosensitive resin layer,
(ii) removing unexposed portions of the photosensitive resin layer to form a transfer element for sandblast carving comprising, in order, the flexible substrate, the intermediate resin layer and a resist of the photocured photosensitive resin,
(iii) closely contacting the resist and the intermediate resin layer of the transfer element with the surface of the etchable material,
(iv) stripping the flexible substrate from the intermediate resin layer, and
(v) conducting sandblast operation, wherein the relationship of adhesions (a) between the flexible substrate and the intermediate resin layer, (b) between the intermediate

resin layer and the resist and (c) between the resist and the etchable material being (a) < (b) < (c).

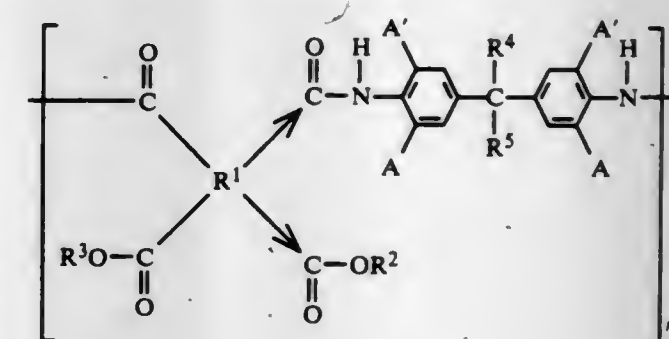
4,430,417
PHOTOPOLYMERIZABLE MIXTURES CONTAINING ELASTOMERIC BLOCK POLYMERS AND PHOTOCURABLE ELEMENTS PRODUCED THEREFROM

Gerhard Heinz, Weisenheim; Peter Richter, Frankenthal, and Wolfgang F. Mueller, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 17, 1982, Ser. No. 419,492
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137416
Int. Cl.³ G03C 1/68

U.S. Cl. 430-286 9 Claims
1. A photopolymerizable mixture which contains (a) from 40 to 99% by weight, based on (a) and (b), of at least one block copolymer which is soluble in a developer solvent and consists only of elastomeric non-theroplastic polymer blocks, at least two elastomeric polymer blocks having a glass transition temperature of from -20° C. to +15° C. and at least one elastomeric polymer block located between two such blocks and having a glass transition temperature of below -20° C., (b) from 1 to 60% by weight, based on (a) and (b), of at least one photopolymerizable ethylenically unsaturated low molecular weight compound compatible with the elastomeric block copolymer (a), (c) from 0.1 to 10% by weight, based on the total photopolymerizable mixture, of at least one photopolymerization initiator, and (d) from 0 to 40% by weight, based on the total photopolymerizable mixture, of further additives.

4,430,418
RADIATION-SENSITIVE POLYIMIDE PRECURSOR COMPOSITION DERIVED FROM A DIARYL FLUORONATED DIAMINE COMPOUND
David L. Goff, Springfield, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 30, 1982, Ser. No. 430,856
Int. Cl.³ G03C 1/68

U.S. Cl. 430-288 14 Claims
1. A radiation-sensitive polyimide precursor composition, comprising:
a. a polymer of the formula



wherein
n is a positive integer corresponding to the number of units in the polymer and is sufficiently large to provide the polymer with a number average molecular weight of about 1500-15,000 as determined by vapor pressure osmometry, and wherein for any particular unit in the polymer: → denotes isomerism;
R¹ is a tetra- or penta-arylene group, R² and R³ are selected from the group consisting of a hydrogen radical and any organic radical containing a

photopolymerizable olefinic double bond, at least one of R^2 and R^3 being said organic radical;

R^4 and R^5 are selected from the group consisting of perfluoro and perhalofluoro aliphatic hydrocarbons having 1 to 8 carbons; and A and A' are selected from the group consisting of H, Cl, Br, and NO_2 ;

b. a radiation-sensitive polymerizable polyfunctional acrylate compound; and

c. a photopolymerization initiator system comprising hydrogen donor initiator and aromatic biimidazole.

4,430,419

POSITIVE RESIST AND METHOD FOR MANUFACTURING A PATTERN THEREOF

Katsuhiko Harada, Mito, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,414

Claims priority, application Japan, Jan. 22, 1981, 56-8266; Sep. 4, 1981, 56-139353

Int. Cl.³ G03C 5/00

U.S. Cl. 430—296

11 Claims

1. A method of forming a pattern of a positive resist comprising:

- forming on a substrate a film of a positive resist consisting essentially of a copolymer having 60 to 90 mol% of phenylmethacrylate and 40 to 10 mol% of methacrylic acid;
- heating said positive resist film to cross-link said copolymer;
- selectively radiating said heated positive resist film with a high energy beam selected from the group consisting of an electron beam and X-rays to thereby form a latent image; and
- developing said latent image with a developing solution which has a strong ability to dissolve said resist.

4,430,420

PHOTOTHERMOGRAPHIC ELEMENT AND PROCESS COMPRISING AN AMMONIA OR AMINE RESPONSIVE IMAGING MATERIAL

Anthony Adin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,443

Int. Cl.³ G03C 1/02

U.S. Cl. 430—351

23 Claims

1. In a photothermographic element comprising a support bearing, in reactive association, a photothermographic layer comprising photographic silver halide, a dye-forming coupler and a hydrazone reducing agent which, in its oxidized form, reacts with the dye-forming coupler,

- the improvements comprising the combination of
- an ammonia or amine responsive imaging material, and
 - as said hydrazone reducing agent, an aminosulfonylhydrazone that is capable of developing an image in said photothermographic layer and that is capable of releasing an aminosulfonic acid which, in turn, thermally releases ammonia or an amine to generate an image in the ammonia or amine responsive imaging material.

4,430,421

METHOD OF DISPERSING PHOTOGRAPHIC ADJUVANTS IN HYDROPHILIC COLLOID COMPOSITIONS

Christian C. Van de Sande, Belsele; Jan J. Vandewalle, Mortsel; Raphaël K. Van Poucke, Berchem, and Andre K. Claes, Oevel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 29, 1982, Ser. No. 454,244

Claims priority, application United Kingdom, Jan. 26, 1982, 8202098

Int. Cl.³ G03C 5/14

U.S. Cl. 430—377

11 Claims

1. Method of dispersing photographic adjuvants in hydrophilic colloid compositions in the presence of one or more

oil-formers, characterized in that at least one of said oil-formers is a high-boiling substantially water-insoluble oil-former of the class of dihydroxymethyl(5,2,1,0^{2,6})tricyclodecane and carboxylic, phosphoric, or phosphonic di-ester derivatives thereof.

4,430,422

METHOD OF DISPERSING PHOTOGRAPHIC ADJUVANTS IN A HYDROPHILIC COLLOID COMPOSITION

Christian C. Van de Sande, Belsele; Jan J. Vandewalle, Mortsel; Luc K. Martens, and Raphaël K. Van Poucke, both of Berchem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 29, 1982, Ser. No. 454,251

Claims priority, application United Kingdom, Jan. 26, 1982, 8202100

Int. Cl.³ G03C 5/14

U.S. Cl. 430—377

11 Claims

1. Method of dispersing photographic adjuvants in a hydrophilic colloid composition in the presence of one or more oil-formers, characterized in that at least one of said oil-formers is a high-boiling substantially water-insoluble oil-former of the class of 1,3-dialkyloxy-2-propanols and carboxylic, phosphoric, or phosphonic esters thereof.

4,430,423

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kozo Aoki, and Michio Ono, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Dec. 20, 1982, Ser. No. 451,229

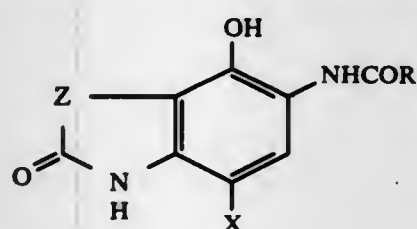
Claims priority, application Japan, Dec. 18, 1981, 56-204746

Int. Cl.³ G03C 7/16, 7/26

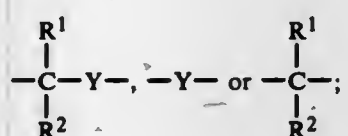
U.S. Cl. 430—384

19 Claims

17. A method of forming a color image comprising developing an imagewise exposed a color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, the color photographic light-sensitive material containing a cyan dye forming coupler represented by the following general formula (I):



wherein Z represents



R represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; X represents a hydrogen atom or a group capable of being released upon an oxidative coupling reaction with a developing agent; Y represents



—O— or —S—; R^1 and R^2 , which may be the same or different, each represents a halogen atom, a substituted or unsubstituted

tuted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted alkylcarbonyl group, a substituted or unsubstituted arylcarbonyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted acylamino group or a nitril group or R^1 and R^2 together represents an oxo group; and R^3 represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group with an alkaline aqueous solution containing an aromatic amine developing agent.

4,430,424

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Ken Okauchi, and Tatsuhiko Kobayashi, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,687

Claims priority, application Japan, Sep. 4, 1981, 56-140037

Int. Cl.³ G03C 1/76

U.S. Cl. 430—537

22 Claims

1. A color photographic light-sensitive material comprising a support and a hydrophilic colloid layer coated thereon, said layer comprising a non-diffusible coupler and a hydrophilic colloid layer having an aromatic primary amine developing agent and/or a precursor thereof, said material further comprising a polymer layer at the furthest position from the support on the same side of said support as said hydrophilic colloid layer wherein said polymer layer is permeable to an alkaline processing liquid but less permeable to said aromatic primary amine developing agent and/or a precursor thereof and said developing agent or precursor thereof has a diffusion rate, while dissolved in said alkaline processing liquid, in said polymer layer which is not greater than 5×10^{-8} cm²/second at room temperature.

4,430,425

COLOR PHOTOGRAPHIC MATERIALS CONTAINING STABILIZERS

David G. Leppard, Rheinfelden, Switzerland, assignor to Ciba-Gelby AG, Basel, Switzerland

Filed Jun. 18, 1982, Ser. No. 389,995

Claims priority, application United Kingdom, Jun. 19, 1981, 8119014

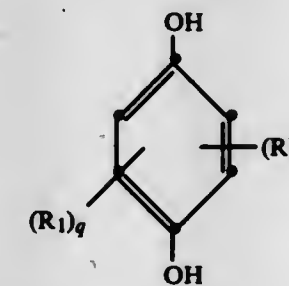
Int. Cl.³ G03C 7/26, 7/38

U.S. Cl. 430—551

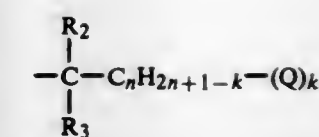
21 Claims

1. A colour photographic silver halide material which comprises on a support at least one colour coupler-containing silver halide emulsion layer, there being present in the silver halide emulsion layer(s) or in a layer adjacent to the silver halide emulsion layer(s)

(a) a hydroquinone compound of the formula

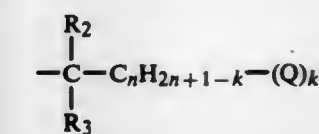


wherein p is 1 or 2 and q is 0 or 1, provided that p+q is 1 or 2, R is a radical of the formula



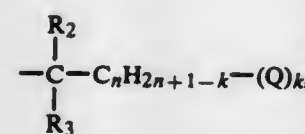
wherein Q is selected from the residues

- (1) —COZR₄, wherein Z is O or NR₅, and R₄ is hydrogen, alkyl having 1 to 20 carbon atoms, optionally interrupted by 1 to 5 oxygen atoms, and optionally substituted by a group OR₆, wherein R₆ is cycloalkyl having 3 to 12 carbon atoms, alkenyl having 3 to 20 carbon atoms, aryl having 6 to 10 carbon atoms optionally substituted by one or two alkyl groups (each) having 1 to 4 carbon atoms or aralkyl having 7 to 13 carbon atoms or R₄ is alkenyl having 3 to 20 carbon atoms or cycloalkyl having from 3 to 12 carbon atoms, aryl having from 6 to 10 carbon atoms optionally substituted by alkyl having 1 to 4 carbon atoms, or aralkyl having from 7 to 13 carbon atoms, a 5 or 6 membered heterocyclic ring containing an oxygen atom, and optionally substituted by one or two alkyl groups (each) having 1 to 4 carbon atoms, or methyl substituted by a 5- or 6-membered heterocyclic ring containing an oxygen atom and optionally substituted by one or two alkyl groups (each) having 1 to 4 carbon atoms, and when Z is —NR₅, R₅ is hydrogen or alkyl having 1 to 20 carbon atoms, or R₄ and R₅ together with the nitrogen atom to which they are bonded form a 5- or 6-membered heterocyclic ring, optionally substituted by one or two alkyl groups (each) having 1 to 4 carbon atoms;
- (2) —OX, wherein X is R₅ or COR₇, wherein R₅ is as defined above and R₇ is hydrogen or alkyl having 1 to 20 carbon atoms, alkenyl having 3 to 20 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, aralkyl having 7 to 13 carbon atoms or aryl having 6 to 10 carbon atoms, optionally substituted by one or two alkyl groups each having 1 to 4 carbon atoms;
- (3) —NR₈R₉ wherein R₈ is hydrogen or alkyl having 1 to 4 carbon atoms and R₉ is hydrogen, alkyl having 1 to 4 carbon atoms or —COR₇, wherein R₇ is as defined above, or R₈ and R₉, together with the nitrogen atom to which they are bonded, form a 5- or 6-membered ring, optionally substituted by one or two alkyl groups (each) having 1 to 4 carbon atoms;
- (4) —P(O)(OR_{10'})(OR_{11'}) where x is 0 or 1, and if x is 1, R_{10'} and R_{11'} are independently of each other hydrogen or alkyl having 1 to 20 carbon atoms or R_{10'} and R_{11'} are linked together to form an alkylene chain having 2 or 3 carbon atoms optionally substituted by one or more alkyl groups each having 1 to 20 carbon atoms, and if x is 0, R_{10'} is alkyl having 1 to 5 carbon atoms;
- (5) —SO₂R_{12'}, wherein R_{12'} is hydroxyl, chlorine or —NR₅R₇, wherein R₅ and R₇ are as defined above, provided that, if R_{12'} is hydroxyl, R₁ is a residue of formula



or
(6) cyano;
n is an integer from 1 to 20, k is 1 or 2,
R₂ and R₃ are independently of each other alkyl having 1 to 5 carbon atoms and, if Q is CO₂R₄, either R₂ or R₃ is optionally substituted by —CO₂R₄, or R₂ or R₃ is so linked to the residue C_nH_{2n+1-k} that there is formed a cycloalkylene residue having 5 to 12 carbon atoms substituted by —(CO₂R₄)_k, wherein R₄ and k are as defined above,

R₁ is alkyl having 1 to 8 carbon atoms, or a residue of formula



and if R₁ is a residue of this formula, then R₁ and R are the same or different; or
(b) there being present salts thereof with organic or inorganic acids or bases.

4,430,426

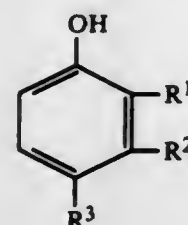
STABILIZATION OF SILVER HALIDE EMULSIONS
George W. Beebe, Roseville; Philip Hine, St. Paul; Nelson B. O'Bryan, Maplewood, and Steven M. Shor, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 4, 1982, Ser. No. 385,276
Int. Cl.³ G03C 1/06

U.S. Cl. 430—604

13 Claims

1. A photographic silver halide emulsion in a hydrophilic binder having therein a speed stabilizing amount of a stabilizing system comprising 5 to 95 percent by weight of said system of a uracil and from 95 to 5 percent by weight of said system of a substituted phenol of the formula:



wherein

R¹ is selected from the group consisting of aldoxime, amide, anilide, and ester,

R² and R³ are selected from the group consisting of hydrogen, hydroxy, alkoxy, and alkyl, with at least one of R² and R³ being hydrogen or together R² and R³ form a fused-on benzene ring.

4,430,427

RED ABSORBING COMBINATION OF ALCOHOL OXIDASE AND AN AZIDE COMPOUND

Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1980, Ser. No. 203,923

Int. Cl.³ C12Q 1/26; C12N 9/02, 9/04, 9/96

U.S. Cl. 435—25

28 Claims

1. A composition of matter comprising active alcohol oxidase; and

an azide compound selected from the group of compounds having the formula R''(N₃)_x wherein R'' is a metal atom, a hydrogen atom, or the ammonium radical, and N₃ is the moiety N=N=N,

the azide compound being present in an amount effective to form a red absorbing combination with active alcohol oxidase.

4,430,428

COMPOSITION OF MATTER AND PROCESS

Thomas H. Fraser, Kalamazoo, and Barbara J. Bruce, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 119,037, Feb. 5, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 327,835

Int. Cl.³ C12P 21/00; C12N 15/00, 1/18; C12R 1/865

U.S. Cl. 435—68

3 Claims

1. SHY 3 (pUC 1014) having the deposit accession number NRRL Y-12096.

4,430,429

PRODUCTION OF VITAMIN B₁₂-ACTIVITY SUBSTANCES

Joseph G. Zeikus, and Joseph A. Krzycki, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jul. 23, 1981, Ser. No. 286,247

Int. Cl.³ C12P 19/42; C12N 1/32, 1/20; C12R 1/01

U.S. Cl. 435—86

9 Claims

1. The process for producing vitamin B₁₂-active substances which comprises cultivating a vitamin B₁₂-active substance producing microorganism selected from the species of *Methanosarcina barkeri* DSM D800 and *Butyrivacterium methylophilum* ATCC 33266 under anaerobic conditions in a culture medium containing methanol as the main source of assimilable carbon, a source of assimilable nitrogen, essential minerals, growth factors and cobalt ions and then recovering the vitamin B₁₂-active substances from the culture broth.

4,430,430

METHOD FOR PRODUCING L-ARGININE BY FERMENTATION

Haruo Momose, Kamakura; Masaaki Ishida, Kawasaki, and Mahito Terabe, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,286

Claims priority, application Japan, Jun. 13, 1980, 55-79959

Int. Cl.³ C12P 13/10; C12N 1/20; C12R 1/19

U.S. Cl. 435—114

5 Claims

1. A method for producing L-arginine by fermentation which comprises culturing in a culture medium an L-arginine producing microorganism selected from the group consisting of transformant NRRL B-12426 and transformant NRRL B-12427.

4,430,431

PRODUCING FUSAFUNGINE

Jacques P. Servier, Neuilly sur Seine, France, assignor to Biofarm, Neuilly sur Seine, France

Filed Apr. 7, 1982, Ser. No. 366,371

Claims priority, application France, Apr. 7, 1981, 81 06917

Int. Cl.³ C12P 1/02; C12N 1/14; C12R 1/77

U.S. Cl. 435—171

1 Claim

1. In a process for the production of the antibiotic fusafungine which includes the step of aerobically growing a fusafungine-producing strain of *Fusarium lateritium* in a synthetic nutrient medium, the improvement which comprises: employing, as the fusafungine-producing strain of *Fusarium lateritium*, the strain identified as *Fusarium lateritium* servier CBS 675.80.

4,430,432

ENDO-DEOXYRIBONUCLEASE AND PROCESS FOR THE PRODUCTION THEREOF

Tadahiko Ando; Takehiko Shibata, and Hiroomi Watabe, all of Tokyo, Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Mar. 1, 1982, Ser. No. 353,226

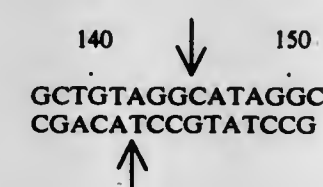
Claims priority, application Japan, Mar. 9, 1981, 56-33321

Int. Cl.³ C12N 9/22, 15/00; C12R 1/84, 1/85

U.S. Cl. 435—199

5 Claims

1. Endo-deoxyribonuclease A (Endo-DNase A) which has the substrate specificity of recognizing specific base sequence in double-stranded deoxyribonucleic acid (DNA) molecules and cleaving the strands at specified site(s) in the DNA to produce specific DNA fragments: the DNase A being capable of recognizing the following nucleotide sequence in the molecule of pBR 322 DNA and cleaving the said DNA in one position sequence at the indicated vertical arrows,



and cleaving ϕ 105C phage DNA and M2 phage DNA in several positions, and λ phage DNA, ϕ NR2 phage DNA, ϕ 1 phage DNA, SPP1 phage DNA and ρ 11 phage DNA in many positions; having the optimum pH of 6.5 to 10.0 in 50 mM Tris-HCL buffer; having the working temperature of about 30° to about 37° C.; being activated with Mg⁺⁺ or Mn⁺⁺; being inhibited with more than 0.2 M of NaCl or KCl, and having molecular weight of about 80,000 daltons measured by a gel filtration method using Ultro gel AcA 44, said enzyme being obtained from a cell-free extract of a DNaseA-producing microorganism belonging to the genus *Saccharomyces* or *Pichia* in a culture medium, collecting the cells thereof, obtaining cell-free extract therefrom, separating and collecting the DNase A.

4,430,434

PLASMID AND ITS USE

Johan P. M. Sanders, Delft, Netherlands, and Andrew J. P. Docherty, Bristol, England, assignors to Gist Brocades NV, Wateringseweg, Netherlands

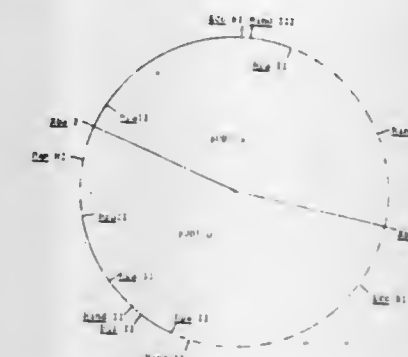
Filed May 7, 1980, Ser. No. 147,483

Claims priority, application United Kingdom, May 11, 1979, 7916377

Int. Cl.³ C12N 1/20, 15/00, 1/00; C12P 21/00

U.S. Cl. 435—253

21 Claims



1. Plasmid conferring resistance to streptomycin (Sm^R) and neomycin (Neo^R) upon its host, constructed from derivatives or segments of plasmids pUB109 and pUB110, which is capable of replicating and expressing genetic information in *Bacillus* and which after having taken up a foreign DNA fragment at one of its restriction sites with loss of its Sm^R or Neo^R phenotype but not both, is still capable of replicating and expressing genetic information in its host.

4,430,435

ASSAY SYSTEM

James V. Patzke, and Burton J. Rosenberg, both of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

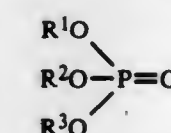
Filed Dec. 24, 1980, Ser. No. 220,105

Int. Cl.³ G01N 33/16; A61K 43/00; G01T 1/00

U.S. Cl. 436—504

38 Claims

18. The method of measuring the concentration of neuroleptic drug and any active metabolites thereof in blood plasma or blood serum containing same which comprises (a) mixing together blood plasma or blood serum with radioactive dopamine receptor binder, blocking agent of formula (1)



wherein R¹, R² and R³ are the same or different and are each lower alkyl or lower alkoxy lower alkyl and dopamine receptor material and measuring the amount of the radioactive dopamine receptor binder on the dopamine receptor material and (b) mixing together a concentration of a standard amount of non-radioactive dopamine receptor binder, dopamine receptor material and the same radioactive dopamine receptor binder as in (a) and measuring the amount of radioactive dopamine receptor binder on the dopamine receptor material.

4,430,433

PRODUCTION OF ARYL ACYLAMIDASES

Peter M. Hammond, Melton Mowbray; Christopher P. Price, Stapleford, and Michael D. Scawen, Salisbury, all of England, assignors to Public Health Laboratory Service Board, London, England

Filed Dec. 1, 1981, Ser. No. 326,275

Claims priority, application United Kingdom, Dec. 2, 1980, 8038633

Int. Cl.³ C12N 9/80, 1/20; C12R 1/39, 1/40

U.S. Cl. 435—228

26 Claims

1. A process for producing an aryl acylamidase enzyme which comprises

a. culturing bacteria of one of the strains *Pseudomonas fluorescens* ATCC 39005 or arylacylamidase producing mutants or variants thereof, or *Pseudomonas putida* ATCC 39004 or aryl acylamidase producing mutants or variants thereof in a culture medium in which said bacterial strains produce aryl acylamidase, to produce an enzyme containing material consisting of the aryl acylamidase enzyme and other unwanted substances, and

b. collecting the enzyme containing material.

4,430,436

ANALYTICAL ELEMENT AND METHOD OF USE
Mikio Koyama; Shozo Kikugawa; Kenichiro Okaniwa, and Kiyoshi Tamaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

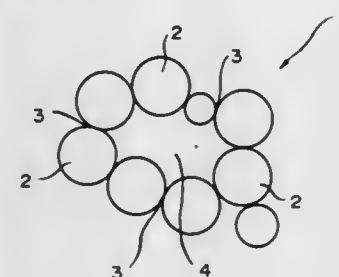
Filed Dec. 9, 1981, Ser. No. 329,034

Claims priority, application Japan, Dec. 17, 1980, 55-179614

Int. Cl.³ G01N 21/78, 33/52, 33/54

U.S. Cl. 436—531

29 Claims



1. In an analytical element for the determination of the presence of an analyte in a liquid containing the same, said analytical element having an interconnected void structure zone positioned on one side of a liquid-impermeable, light-transmissive support, the improvement comprising:

said interconnected void structure zone comprising a plurality of heat-stable organic polymer particle units having reactive groups and having a particle size of from 1 to 350 microns, said particle units being chemically bonded directly to each other through said reactive groups, said particle units being arranged in the form of a bound particulate structure having a three-dimensional lattice, said bound particulate structure being non-swelling in said liquid and having interconnected voids wherein the void volume of said bound particulate structure is between 25 and 85% to thereby permit said liquid to permeate there-through.

4,430,437

TEST METHODS EMPLOYING MONOCLONAL ANTIBODIES AGAINST HERPES SIMPLEX VIRUS TYPES 1 AND 2 NUCLEOCAPSIDS PROTEINS

Berge Hamper, Middletown; Martin Zweig, Walkersville, and Harvey Rabin, Braddock Heights, all of Md.; Conrad J. Heilman, Jr., Chester, N.Y.; Ralph F. Hopkins, III; Russell H. Neubauer, both of Frederick, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 27, 1980, Ser. No. 181,954

Int. Cl.³ G01N 33/54, 33/56, 33/58

U.S. Cl. 436—548

10 Claims

1. In a method of clinical testing and differentiating antibodies to *Herpes simplex* virus, HSV-1 and HSV-2, employing a competition immunoprecipitation test, the improvement which comprises employing in said test as reagents monoclonal antibodies to the respective viruses HSV-1 and HSV-2 nucleocapsid p. 40 and p. 45 proteins of which antibodies are produced by hybrid cell lines ID4 (HSV-1) and 3EI (HSV-2).

5. The method of testing and differentiating *Herpes simplex* virus, HSV-1 and HSV-2, in a test sample which comprises reacting the infected samples with monoclonal antibodies against the nucleocapsid p. 40 and p. 45 proteins of HSV-1 and HSV-2, respectively, and noting the reaction thereof by immuno-peroxidase assay, immunofluorescence assay, enzyme-linked immunoabsorbent assay immunoprecipitation assay, or radioimmunoassay.

4,430,438

ENAMEL FRIT AND A PROCESS FOR TWO-LAYER AND MULTI-LAYER ONE-FIRE ENAMELLING

Otto Krist, Overath, Fed. Rep. of Germany; Heinz Drave, Baltimore, Md., and Jozef Luypaert, Brussels, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 371,029

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117706; Mar. 13, 1982, 3209140

Int. Cl.³ C03C 5/00

U.S. Cl. 501—17

9 Claims

1. A process for two-layer and multi-layer one-bake enamelling of metal sheets by the successive wet application of aqueous ground enamel slips, optionally intermediate enamel slips and cover enamel slips, followed by baking, characterised in that saccharides and/or their oxidation, reduction and/or conversion products and/or polyethylene glycol are added during preparation of the ground enamel slip and, optionally, the intermediate enamel slip, the additives containing up to 50, preferably up to 25, carbon atoms per molecule.

4,430,439

MONOLITHIC REFRACTORIES

Thomas R. Klee, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 12, 1983, Ser. No. 457,345

Int. Cl.³ C04B 35/80

U.S. Cl. 501—95

4 Claims

1. Monolithic refractories consisting essentially of, by weight, 0.2 to 0.6% vinyl chloride acetate fibers, and the balance non-basic refractory aggregates, and a binding agent, said monolithic refractories having improved steam spalling resistance.

4,430,440

MAGNETIC HEAD SLIDER MATERIAL

Toshiaki Wada, Osaka; Mitsuhiro Furukawa, Fukuoka; Michito Miyahara, Fukuoka; Masaharu Shiroyama, Fukuoka; Kiyohito Misumi, Kurume, and Takashi Kitahira, Fukuoka, all of Japan, assignors to Sumitomo Special Metal Ltd., Osaka and Nippon Tungsten Co., Ltd., Fukuoka, both of Japan

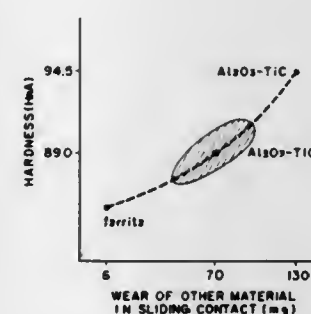
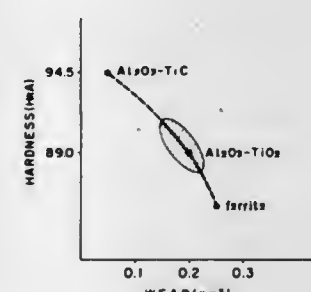
Filed May 28, 1982, Ser. No. 383,329

Claims priority, application Japan, May 29, 1981, 56-83150

Int. Cl.³ C04B 35/49, 35/10; B23B 27/14

U.S. Cl. 501—105

5 Claims



1. A wear-resistant product which is useful in fabricating magnetic head sliders, said product consisting essentially of 40

4,430,443

SUPPORTED CARBON-CONTAINING MOLYBDENUM AND TUNGSTEN SULFIDE CATALYSTS, THEIR PREPARATION AND USE

Robert L. Seiver, Baton Rouge, La., and Russell R. Chianelli, Sommerville, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 20, 1982, Ser. No. 400,005

Int. Cl.³ B01J 27/02, 31/12, 27/24, 27/20

U.S. Cl. 502—220

20 Claims

1. A process for the preparation of supported carbon-containing molybdenum sulfide and tungsten sulfide catalysts which comprises

compositing a preselected quantity of a porous, refractory inorganic oxide with a salt characterized by the formula



where B is an organo or hydrocarbyl substituted diammonium ion, an organo or hydrocarbyl substituted ammonium ion or quaternary ammonium ion, or an ionic form of a cyclic amine containing one or more basic N atoms, x is 1 where B is an organo or hydrocarbyl substituted diammonium ion, or 2 where B is an organo or hydrocarbyl substituted ammonium ion or quaternary ammonium ion or an ionic form of a cyclic amine containing one or more basic N atoms, M is molybdenum or tungsten, and y is 0, or a fraction or whole number ranging up to 3, and heat decomposing the salt of said catalyst precursor composite in the presence of a gaseous admixture containing hydrogen and hydrogen sulfide to form said supported carbon-containing molybdenum sulfide or tungsten sulfide catalyst.

4,430,444

METHOD OF MAKING METHANOL USING A SLAGGING GASIFIER

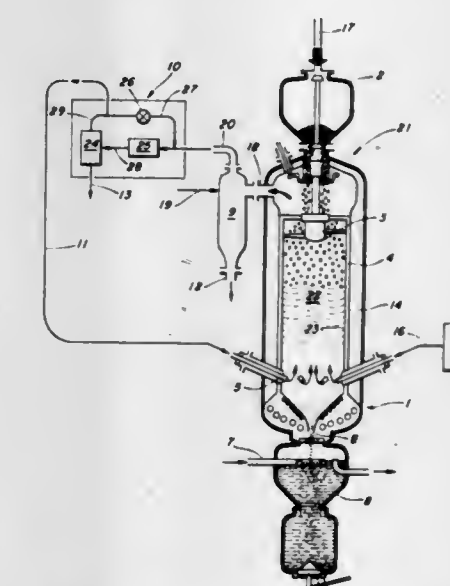
Eric H. Reichl, Greenwich, Conn., assignor to Conoco Inc., Wilmington, Del.

Filed Mar. 8, 1982, Ser. No. 356,017

Int. Cl.³ C07C 27/06, 31/04

U.S. Cl. 518—703

2 Claims



1. A process for producing methanol from solid coal consisting essentially of the steps as follows:

(a) providing

(i) a slagging gasifier (1),

said slagging gasifier comprising a coal hopper (2), a coal distributor stirrer (3), tuyeres (5), a slag quench chamber wall enclosing a slag quench chamber (8), a circulating quench water inlet conduit (7) and a slagging tap (6),

(ii) a gas quencher (9)

(iii) methanol formation reactor (25)

4,430,441

COLD SETTING SAND FOR FOUNDRY MOULDS AND CORES

Sergel S. Zhukovsky, ulitsa Profsojuznaya 17, korpus 1, kv. 15; July M. Junovich, ulitsa Veshnyakovskaya, 11, korpus 1, kv. 201; Viktor N. Pertovsky, ulitsa Ordzhonikidze, 6"A", kv. 5; Vyacheslav S. Kolesnikov, Volgogradsky prospekt, 145/8, kv. 117, Moscow; Igor P. Renzhin, ulitsa Kalinina, 72, kv. 12, Sverdlovsk, and Semen I. Rivkin, Kolpino, Pavlovskaya, 84, kv. 46, Leningrad, all of U.S.S.R.

PCT No. PCT/SU80/00095, § 371 Date Jan. 18, 1982, § 102(e) Date Jan. 18, 1982, PCT Pub. No. WO81/03445, PCT Pub. Date Dec. 10, 1981

PCT Filed May 30, 1980, Ser. No. 342,011

Int. Cl.³ C04B 35/04

U.S. Cl. 501—109

20 Claims

1. A cold setting sand comprising: from 95 to 99 weight percent of a refractory filler containing magnesium oxides, iron oxides, silicon oxides or mixtures thereof and from 1 to 5 weight percent of an organic acid having a dissociation constant of 10^{-5} to 10^{-1} .

4,430,442

CATALYSTS FROM MOLYBDENUM POLYSULFIDE PRECURSORS AND THEIR PREPARATION

Willard H. Sawyer, and Howard L. Mitchell, III, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 20, 1982, Ser. No. 399,947

Int. Cl.³ B01J 27/02, 31/12, 27/24

U.S. Cl. 502—220

20 Claims

1. A process for the preparation of a new and improved highly active, highly selective hydrotreating catalyst which comprises

contacting together and decomposing in the presence of hydrogen, hydrocarbon, and sulfur a catalyst precursor salt characterized by the formula



where

B is an ammonium ion, polyammonium ion, or quaternary phosphonium ion, or a hydrocarbyl substituted ammonium ion, hydrocarbyl substituted polyammonium ion, or hydrocarbyl substituted tertiary or quaternary phosphonium ion,

x is 1 where B is a divalent cationic moiety, or 2 where B is a monovalent cationic moiety,

$[Mo_3S_2]$ is a divalent anionic moiety wherein z is an integer ranging from about 10 to about 46, to form said hydrotreating catalyst.

- (iv) a condenser (24) and
(v) valve (26)
said coal hopper being disposed above said coal distributor stirrer,
said coal distributor stirrer being disposed above said tuyeres,
said slagging gasifier being connected to said gas quencher by gasifier output conduit (18),
said gas quencher being connected to said methanol formation reactor by scrubber outlet gas conduit (20), said methanol formation reactor being connected by conduit (28) to said condenser, said condenser being connected by conduit (29) to said valve, said conduit (29) being connected to conduit (11),
said conduit (11) being connected to said tuyeres and said valve being connected by conduit (27) to said scrubber output gas conduit,
said methanol formation reactor containing catalyst suitable for formation of methanol from hydrogen and carbon monoxide,
(b) gasifying said coal in said slagging gasifier by heating coal in said gasifier to form ash and gaseous gasifier output mixture comprising tar, solids, hydrogen sulfide, hydrogen, carbon monoxide and methane, said gasifying consisting of:
(i) feeding said coal through said hopper and over said distributor stirrer,
(ii) feeding steam, oxygen and an uncondensed gaseous mixture through said tuyeres,
(iii) feeding water through said circulating quench water inlet conduit into said slag quench chamber to cool ash passing to said quench chamber,
(c) contacting said gaseous gasifier output mixture with liquid water in said gas quencher to form a gaseous quencher output mixture comprising hydrogen, carbon monoxide and methane,
(d) adding a recycle portion of gaseous condenser output mixture comprising hydrogen, carbon monoxide and methane to said gaseous methanol formation reactor feed mixture,
(e) contacting said methanol formation catalyst with said gaseous methanol formation reactor feed mixture in said methanol formation reactor to form a condenser feed mixture comprising methanol vapor, methane, hydrogen and carbon monoxide,
(f) condensing said methanol from said condenser feed mixture in said condenser to form liquid methanol product and a gaseous condenser output mixture comprising methane, hydrogen and carbon monoxide,
(g) feeding a gasifier portion of said gaseous condenser output mixture into said slagging gasifier through said tuyeres,
whereby liquid methanol is produced and substantially all of the methane formed is ultimately returned to said slagging gasifier.

4,430,445

NOVEL BASIC IMIDAZOLYMETHYLSTYRENE COMPOUND, ITS POLYMER, A PROCESS FOR THE PREPARATION THEREOF AND A USE AS ION EXCHANGE RESIN

Tetsuya Miyake, Suganami, Kunihiro Takeda, and Keishi Tada, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

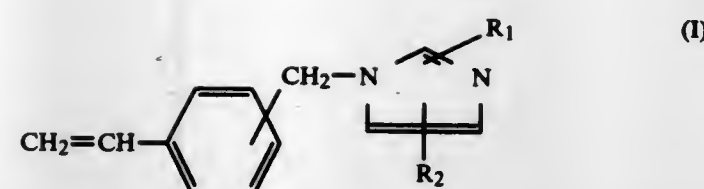
Continuation-in-part of Ser. No. 165,451, Jul. 2, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,943
Claims priority, application Japan, Jul. 19, 1979, 54-90901; Jan. 16, 1981, 56-3739; Jan. 19, 1981, 56-4954; Jan. 19, 1981, 56-4955

Int. Cl.³ B01J 39/20; C08F 26/06

U.S. Cl. 521-38

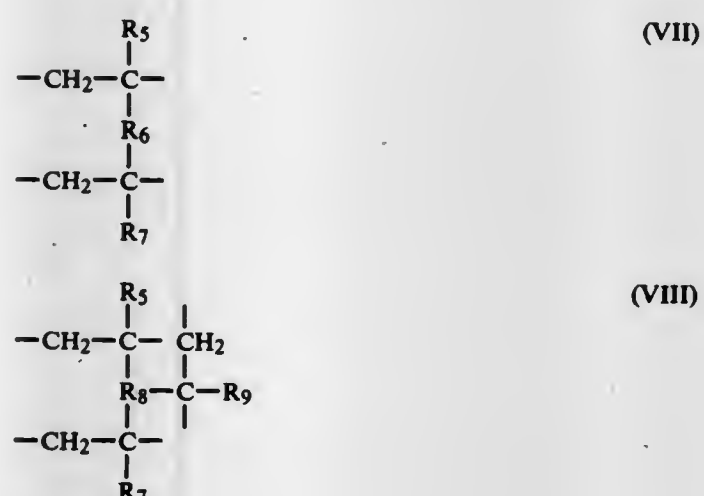
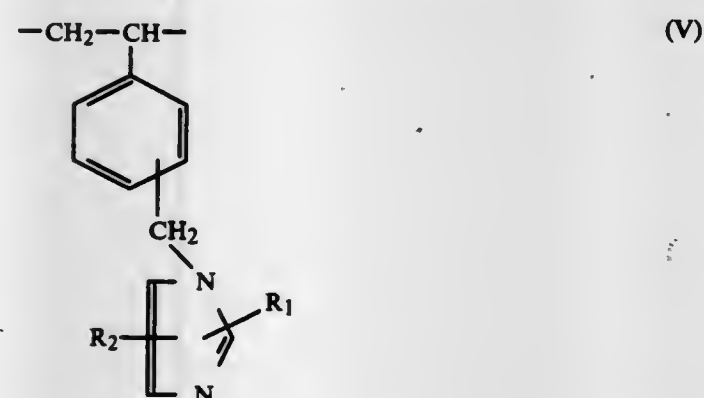
46 Claims

1. A basic compound represented by the following structural formula (I):



wherein R₁ and R₂ each independently stand for a hydrogen atom, a straight chain or branched alkyl group having 1 to 17 carbon atoms, a phenyl group unsubstituted or substituted with one or more substituents selected from C₁-C₈ straight chain or branched alkyl groups, halogen atoms and an amino group, a naphthyl group, an aralkyl group having as an alkyl moiety a C₁-C₄ straight chain or branched alkylene group and as an aryl moiety a phenyl group unsubstituted or substituted with one or more substituents selected from halogen atoms and an amino group, a pyridyl group unsubstituted or substituted with one or more substituents selected from C₁-C₄ straight chain or branched alkyl groups, halogen atoms and an amino group, or a nitro group.

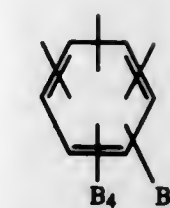
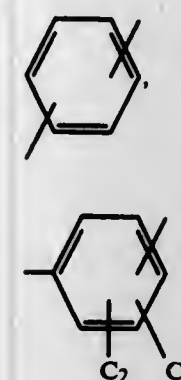
43. A method of ion exchange which comprises contacting with an aqueous ferric chloride solution a cross-linked copolymer consisting of a structural unit of the formula (V), and either or both of the structural units of the formula (VII) and (VIII):



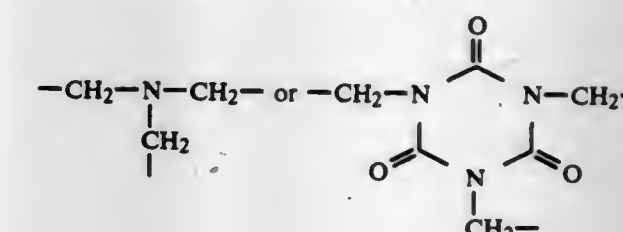
wherein

R₁ and R₂ each independently stand for a hydrogen atom, a straight chain or branched alkyl group having 1 to 17 carbon atoms, a phenyl group unsubstituted or substituted with one or more substituents selected from C₁-C₈ straight chain or branched alkyl groups, halogen atoms and an amino group, a naphthyl group, an aralkyl group having as an alkyl moiety a C₁-C₄ straight chain or branched alkylene group and as an aryl moiety a phenyl group unsubstituted or substituted with one or more substituents selected from halogen atoms and an amino group, a pyridyl group unsubstituted or substituted with one or more substituents selected from C₁-C₄ straight chain or branched alkyl groups, halogen atoms and an amino group, or a nitro group;

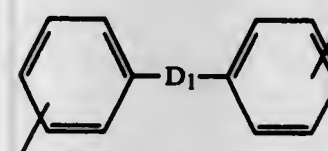
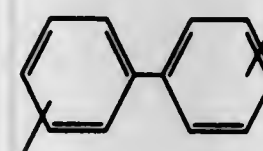
R₅, R₇ and R₉ each independently stand for a hydrogen atom or a methyl group;
R₆ stands for



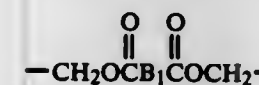
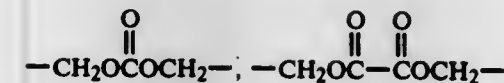
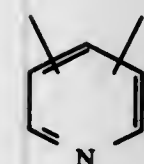
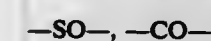
in which B₄ and B₅ each independently represents a C₁-C₅ hydrocarbon residue,



in which C₁ and C₂ each independently represent a C₁-C₅ hydrocarbon residue,



in which D₁ represents —O—, —S—, —NH— or a C₁-C₅ alkylene group,



in which B₁ represents a divalent C₁-C₈ hydrocarbon residue,

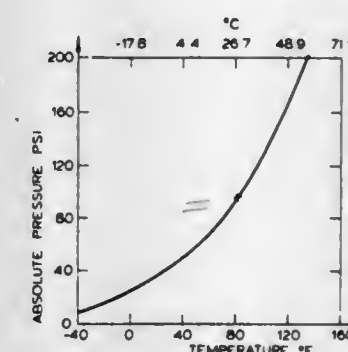


in which B₂ represents a divalent C₁-C₅ hydrocarbon residue, or



in which B₃ represents a divalent C₁-C₃ hydrocarbon residue;
and R₈ represents

4,430,446
PLASTICS FOAM PRODUCTION
Kenneth C. Lynn, 34 Gilhams Ave., Banstead, Surrey, England
Continuation-in-part of Ser. No. 331,800, Dec. 12, 1981, abandoned, which is a continuation of Ser. No. 90,988, Nov. 5, 1979, abandoned. This application Nov. 19, 1982, Ser. No. 443,040
Claims priority, application United Kingdom, Nov. 6, 1978, 43298/78
Int. Cl.³ C08G 18/14; B01F 3/04, 5/06
U.S. Cl. 521-50 10 Claims



1. A method of forming a pre-froth plastics foam which comprises the steps of:
mixing the plastics component with a volatile liquid under a pressure sufficient to maintain the volatile liquid in a liquid state;
causing the mixture to flow to a point of use;
maintaining in a first region through which the flow passes a first pressure such that at the temperature prevailing a small but effective quantity of the liquid volatilizes to form vapor bubbles providing nuclei;
causing the flow after passing said first region to undergo a pressure drop to cause volatilization of some but not all of the remaining liquid; and
maintaining in a second region through which the flow passes after the pressure drop a second pressure lower than the first and allowing volatilization of further liquid in said second region.

4,430,447

OPEN-PORE MOLDED ARTICLE BASED ON POLYVINYL ACETALS, AND A PROCESS FOR ITS PREPARATION

Günther Pospich, Frankfurt am Main, and Wolfgang Zimmermann, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,035

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143272

Int. Cl.³ C08J 9/30

U.S. Cl. 521—53

3 Claims

1. A method for making an open-pored molded article comprising polyvinyl acetal, which method comprises
 - (A) forming a foam by stirring air into a mixture of
 - (i) an aqueous solution containing 10 to 50 percent by weight of polyvinyl alcohol,
 - (ii) an aqueous dispersion containing 40 to 60 percent by weight of a copolymer of vinyl acetate and ethylene, and
 - (iii) a wetting agent; the ratio by weight of solution (i) to dispersion (ii) being from 100:5 to 100:150,
 - (B) acetalizing the polymers in the foamed mixture so produced by mixing therewith an aliphatic aldehyde having one to four carbon atoms, in the presence of an acid, and
 - (C) permitting the mixture to stand in a closed mold at a temperature from 65° C. to 100° C.

4,430,448

ELASTIC MOLDED BODY COMPRISING A CELL STRUCTURE AND PROCESS FOR PRODUCING SUCH A MOLDED BODY

Philipp Schaefer, Oberstrasse 16; Carsten Picker, Arndtstrasse 24, both of D-3000 Hannover 1, and Helmut Schaefer, Winklerstrasse 114, D-6780 Pirmasens-Pfalz, all of Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,589

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123062

Int. Cl.³ C08J 9/32

U.S. Cl. 521—54

15 Claims

1. An elastic molded body comprising a cell structure and consisting of an elastomeric synthetic plastics material produced by a polyaddition reaction of a liquid diisocyanate or polyisocyanate with a reactant containing at least 18 percent by weight polybutadiene selected from the group which consists of polybutadiene having terminal hydroxy groups, a polybutadiene blended with a polyol, a polybutadiene blended with a polyester, a polybutadiene blended with a polyether and a polybutadiene blended with butane-diol-1,4 and having embedded therein elastic hollow microspheres the thin shells of which consist of a vinylidene chloride copolymer and are firmly and unseparably connected with the elastomeric synthetic plastics material and the interior of which contains a gas, said hollow microspheres forming closed cells within the synthetic plastics material.

4,430,449

FAST-COOL VINYL AROMATIC EXPANDABLE POLYMERS

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 462,158, Jan. 31, 1983, Pat. No. 4,407,979.

This application May 16, 1983, Ser. No. 494,828
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ C08V 9/18

U.S. Cl. 521—56

4 Claims

1. Expandable vinyl aromatic polymer particles consisting of vinyl aromatic polymer particles containing dispersed throughout (1) 1 to 10 percent by weight of a thermoplastic, branched, block copolymer of 55-95 weight percent of poly-

merized vinyl aromatic monomer and 5-45 weight percent of polymerized conjugated diene and (2) a blowing agent; said expandable particles exhibiting fast-cooling properties in molded products produced therefrom.

4,430,450

EXPANDABLE THERMOPLASTIC POLYMER PARTICLES AND PROCESS FOR PRODUCING THE SAME

Kenichi Senda, Akashi, and Masao Nakagawa, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1983, Ser. No. 499,041

Claims priority, application Japan, May 28, 1982, 57-91898

Int. Cl.³ C08V 9/18

U.S. Cl. 521—60

1 Claim

1. In a process for producing expandable thermoplastic polymer particles, improvement which comprises pelletizing styrene polymer powder obtained by emulsion polymerization and coating or impregnating the resulting pellets with a volatile blowing agent in an aqueous suspension medium containing a suspending agent and a water-soluble inorganic salt selected from the group consisting of calcium chloride, sodium sulfate, magnesium chloride, sodium chloride and mixtures thereof, in a range of from 3 to 20 parts by weight based on 100 parts by weight of the aqueous suspension medium, whereby the amount of inside moisture contained in said particles immediately after preparation is not more than 1% based on the weight of the polymer particle.

4,430,451

LOW DENSITY, MICROCELLULAR FOAMS, PREPARATION, AND ARTICLES

Ainslie T. Young, Los Alamos; Robert G. Marsters, Jemez Springs, and Dawn K. Moreno, Espanola, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 3, 1982, Ser. No. 354,553

Int. Cl.³ C08J 9/26

U.S. Cl. 521—64

9 Claims

1. A method of forming a machinable composition of matter which after being leached forms a microcellular, low density foam of poly(4-methyl-1-pentene), said method comprising:
 - (a) forming a mixture of poly(4-methyl-1-pentene) and solvent comprising bibenzyl such that the relative percent by weight of poly(4-methyl-1-pentene) in said mixture is within the range from about 1.0 to about 10.0 and the relative percent by weight of solvent in said mixture is within the range from about 99.0 to about 90.0;
 - (b) heating said mixture to a first temperature sufficient so that complete solution of poly(4-methyl-1-pentene) and solvent occurs;
 - (c) cooling said mixture down to a second temperature of about 180° C. and maintaining said second temperature for a period of time sufficient to enable said mixture to come to temperature equilibrium;
 - (d) then cooling said mixture from about 180° C. at a rate within the range from about 0.9 to about 1.1° C. per minute down to a third temperature of about 160° C., thereby allowing reverse phase separation of said mixture to occur at a particular rate between said second temperature and said third temperature;
 - (e) holding said mixture at said third temperature for a period of time sufficient to enable said mixture to come to temperature equilibrium; and
 - (f) then allowing said mixture to cool down to room temperature, thus solidifying both said poly(4-methyl-1-pentene) and said solvent comprising bibenzyl.

4,430,452

STABILIZER-CONTAINING REACTIVE COMPONENTS FOR PU-FOAMS, NEW STABILIZERS AND A PROCESS FOR PRODUCING THESE STABILIZERS

Hans-Josef Buysch, Krefeld; Hans-Walter Illger, Roesrath, and Karl H. Dorner, Pulheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,552

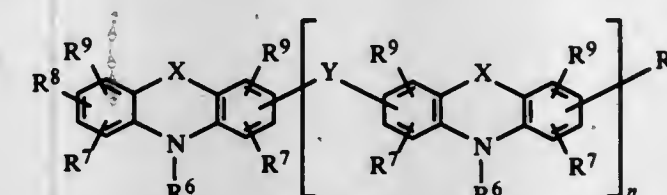
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127750

Int. Cl.³ C08J 9/36

U.S. Cl. 521—107

6 Claims

1. Stabilizer-containing reactive components for the production of polyurethane foams having little or no tendency toward core discoloration, which are based on polyisocyanates, polyols and optionally, water, blowing agents, catalysts, other stabilizers and standard additives, characterized in that said components contain, as stabilizers, monomeric and/or oligomeric derivatives of the diphenylamine series, including the phenothazine series, in stabilizing quantities of from 0.02 to 5%, by weight, of compounds corresponding to the formula:



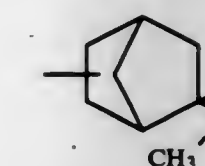
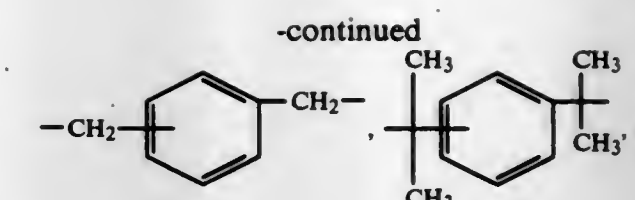
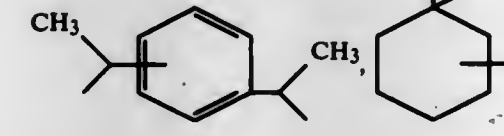
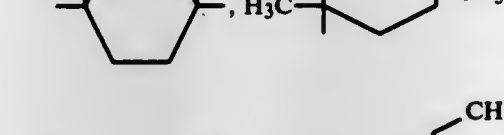
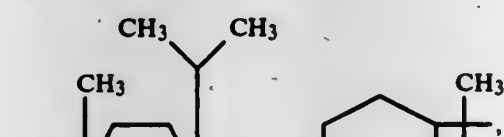
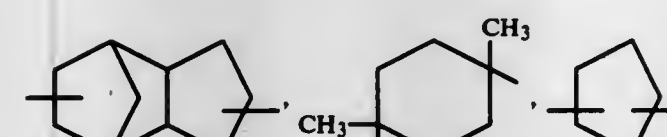
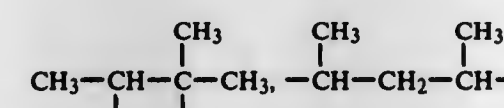
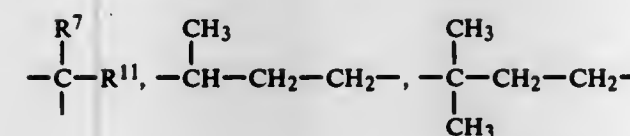
wherein

X represents a single bond, >CH₂, ≡CH, >S, >O, >NR⁵,

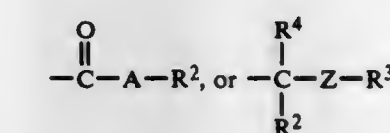
—CR⁷R¹¹

or >POH;

Y represents



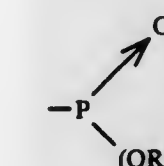
and, up to 60 mole percent, —S—, —CH₂—, —CH₂—S—CH₂— or —CH₂—O—CH₂—; n represents an integer of from 1 to 29; R⁶ represents H, or a C₁-C₁₈-alkyl, a C₅-C₁₂-cycloalkyl, a C₅-C₁₂-cycloalkenyl, C₇-C₁₈-aralkyl which may optionally be substituted by OH—, SH—, ether, thioether, carbonic ester, carbonamide and carboxyl groups or which may be interrupted by such groups other than OH, SH and COOH— groups and olefinic double bonds,



wherein

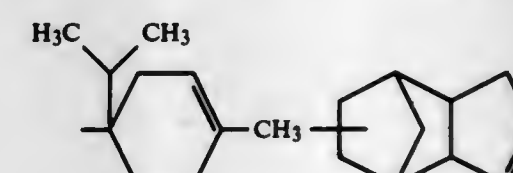
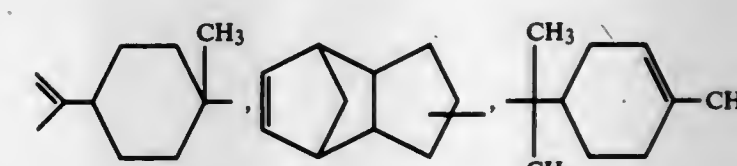
R², R³ and R⁴ may be the same or different and represents H, a C₁-C₁₂-alkyl, a C₅-C₁₂-cycloalkyl, a C₅-C₁₂-cycloalkenyl, or a C₇-C₁₂-aralkyl, in addition to which, R² represents optionally-substituted aryl and, together with R⁴ and the central C-atom, may form a 5- to 12-member aliphatic ring;

Z represents O, S, NH, NR⁵, wherein R⁵=R², or a radical of the formula CO—A—R², wherein A is a single bond, S, O, NH or NR², but where R² does not form a ring with R⁴, or Z together with R³ also represents

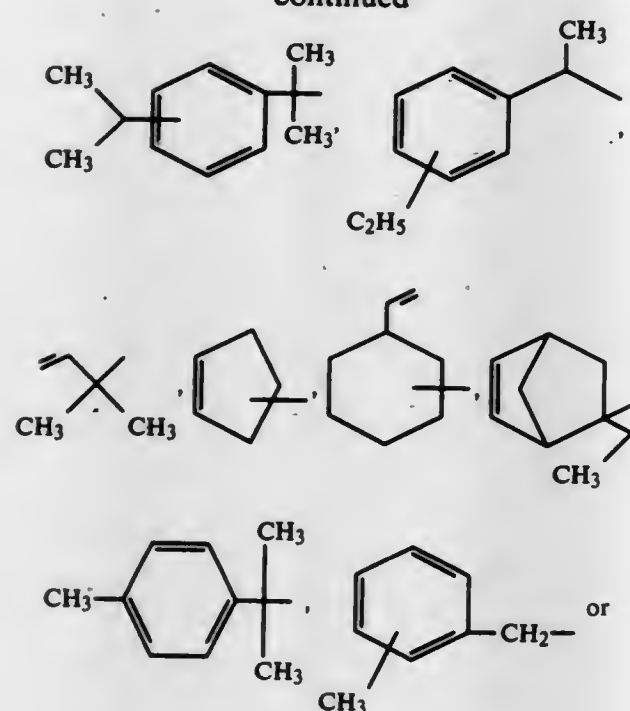


R⁷ and R⁹ may be the same or different and represent H, CH₃ or C₂H₅;

R⁸ represents H, benzyl, styryl, α-methyl-styryl, tert.-butyl, tert.-amyl, isononyl, cyclohexyl, methyl cyclohexyl,



-continued



R¹¹ represents a C₁-C₇-alkyl, cyclohexyl, cyclohexenyl or aryl.

4,430,453

POLYURETHANE FOAMS SUITABLE FOR HIGH FREQUENCY WELDING AND PROCESS FOR PRODUCING THE SAME

Peter Selfert, Berg-Gladbach, and Peter Haas, Haan, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,471

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143706

Int. Cl.³ C08G 18/14

U.S. Cl. 521-107

9 Claims

1. A process for the production of polyurethane foams suitable for high frequency welding by the reaction of relatively high molecular weight compounds having molecular weights of from 400 to 10,000 and containing at least two isocyanate-reactive hydrogen atoms with polyisocyanates in the presence of catalysts and blowing agents, characterized in that ammonium salts of phosphorus-containing acids are added to the reaction mixture in an amount of from 0.1 to 10% by weight based on the total weight of the reaction mixture, said phosphorus-containing acids being selected from the group consisting of monoalkylphosphoric acids, dialkylphosphoric acids, dialkylphosphinic acids, monoalkylphosphonic acids, and monoalkylesters of monoalkylphosphonic acids.

4,430,454

POLYMERIC FOAM DERIVED FROM POLYMALEIC ANHYDRIDE AND ITS PREPARATION

Harry M. Castrantas, Newtown, Pa., and Sidney Berkowitz, Highland Park, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 9, 1983, Ser. No. 493,110

Int. Cl.³ C08G 18/14, 18/62, 18/16, 18/67

U.S. Cl. 521-107

46 Claims

1. A polymeric foam comprising the product of polymaleic anhydride reacted with a hydroxyl-containing compound selected from C₂-C₁₀ diols, C₃-C₆ triols, C₄-C₅ tetraols and their derivatives, in the presence of an organic isocyanate.

4,430,455 N'-(2-HYDROXYALKYL)-N, N, N'-TRIMETHYL-PROPYLENE DIAMINES AS CATALYSTS FOR POLYURETHANE FOAMS

Daniel S. Raden, Hawthorn Woods; Russell O. Carlsen, Barrington, and Kenneth W. Narducy, Bloomington, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

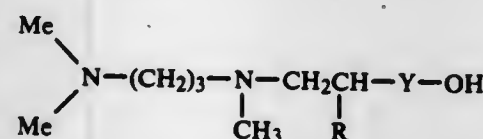
Filed Mar. 9, 1981, Ser. No. 241,816

Int. Cl.³ C08G 18/14, 18/22

U.S. Cl. 521-118

5 Claims

1. The method for manufacturing a polyurethane foam consisting essentially in carrying out the reaction between a polyol and a polyisocyanate in the presence of a catalytic amount of a compound of the formula



wherein R is hydrogen or methyl and Y stands for a single bond or a methylene group.

5. The method of claim 1 wherein said catalyst is used in an amount of between 0.05 and 10.0% by weight of said polyol.

4,430,456

POLYURETHANE-FORMING PROCESS USING AMINO AND AMIDO DIALKYL TIN CARBOXYLATES

Ibrahim S. Bechara, Boothwyn, and Rocco L. Mascioli, Media, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 230,849, Feb. 2, 1981, Pat. No. 4,360,670.

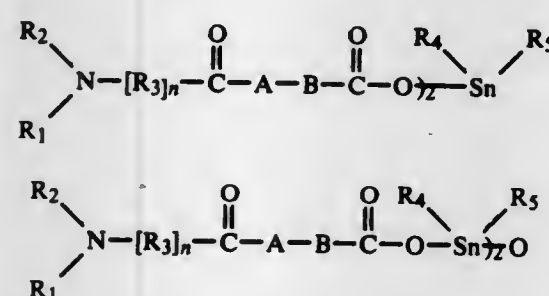
This application Sep. 16, 1982, Ser. No. 418,519

Int. Cl.³ C08G 18/14, 18/24; C07F 7/22; C07D 207/00

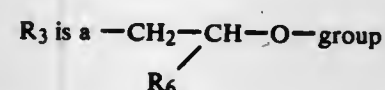
U.S. Cl. 521-128

12 Claims

1. The method of catalyzing the reaction between an organic isocyanate and an organic compound having at least one active hydrogen containing group, which comprises effecting said reaction in the presence of a catalytic amount of an organotin compound corresponding to either of the formulae set out below:



wherein R₁ and R₂ are independently H, alkyl of 1 to 20 carbon atoms; hydroxyalkyl of 2 to 20 carbon atoms; or R₁ and R₂ together with N form a nitrogen-containing heterocyclic ring of 5 or 6 atoms;



in which n equals zero or one and R₆ is hydrogen or an alkyl or an alkyl hydrocarbyl group of up to 20 carbon atoms;

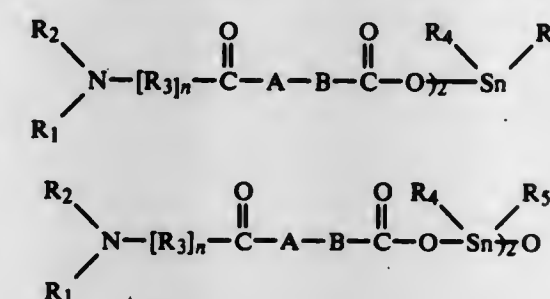
A and B are carbon atoms linked by a single or double bond or together comprise part of a six membered ring from the group consisting of cyclohexane, cyclohexene and benzene;

R₄ and R₅ are independently alkyl groups of 1 to 20 carbon atoms, phenyl or cycloalkyl groups of 6 to 20 carbon atoms.

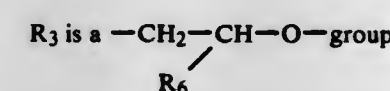
9. In a premix composition for the preparation of flexible foam comprising:

polyol
methylene chloride
silicone surfactant
water

the improvement comprising a catalytic amount of an organotin catalyst corresponding to either of the formulae below:



wherein R₁ and R₂ are independently H, alkyl of 1 to 20 carbon atoms; hydroxyalkyl of 2 to 20 carbon atoms; or R₁ and R₂ together with N form a nitrogen-containing heterocyclic ring of 5 or 6 atoms;



in which n equals zero or one and R₆ is hydrogen or an alkyl or an alkyl hydrocarbyl group of up to 20 carbon atoms;

A and B are carbon atoms linked by a single or double bond or together comprise part of a six membered ring from the group consisting of cyclohexane, cyclohexene and benzene;

R₄ and R₅ are independently alkyl groups of 1 to 20 carbon atoms, phenyl or cycloalkyl groups of 6 to 20 carbon atoms, said premix being reactable with organic polyisocyanate to form polyurethane.

4,430,457

CLING/STRETCH WRAP COMPOSITIONS

David V. Dobreski, East Windsor, N.J., assignor to Cities Service Company, Tulsa, Okla.

Filed May 10, 1982, Ser. No. 376,892

Int. Cl.³ C08K 5/13

U.S. Cl. 523-100

5 Claims

1. A composition suitable for a cling/stretch wrap film consisting essentially of:

a. from about 90 to 97.5 wt. % of an ethylene polymer selected from the group consisting of ethylene-vinyl acetate copolymers having a vinyl acetate content of from about 3 to about 15 wt. %, low density polyethylene homopolymers, and linear low density polyethylene resins, said ethylene polymer having a melt index value from about 0.2 to about 6.0 and

b. from about 2.5 to about 10 wt. % of an amorphous low molecular weight ethylene-propylene copolymer, the copolymer having an ethylene content of from about 1 to about 7 wt. %, and wherein the ratio of the viscosity of the ethylene polymer to the viscosity of the ethylene-propylene copolymer varies from about 100 to about 100,000.

4,430,458

HYDROGEL-FORMING POLYMERIC MATERIALS

Brian J. Tighe, Birmingham, and Howard J. Gee, Derbyshire, both of England, assignors to Kelvin Lenses Limited, Manchester, England

Filed Oct. 8, 1981, Ser. No. 309,688

Int. Cl.³ C08F 220/20, 226/10; C08L 31/02; G02C 7/04

U.S. Cl. 523-108

11 Claims

1. A contact lens in the form of a hydrogel containing at least 65% by weight of water and comprising a crosslinked poly-

meric material containing units derived either by simultaneous copolymerization and crosslinking or by copolymerization and subsequent crosslinking of the following monomers:

- (1) 20 to 40 mole % of an amide of acrylic or methacrylic acid;
- (2) 25 to 55 mole % of an N-vinyl lactam of the N-vinyl pyrrolidone type;
- (3) 5 to 20 mole % of an hydroxyalkyl ester of acrylic or methacrylic acid;
- (4) 1 to 10 mole % of acrylic or methacrylic acid; and
- (5) at least about 5 up to about 10 mole % of a polymerizable hydrophobic vinyl monomer which is at least one monomer selected from the group consisting of vinyl aromatic hydrocarbons of the styrene type and hydrophobic esters of acrylic or methacrylic acid;

the monomers (1) to (5) totalling 100 mole %, the crosslinking having been effected with crosslinking amounts of a crosslinking agent, which, in the case of simultaneous copolymerization and crosslinking, is an ester of a diol and acrylic or methacrylic acid or is divinylbenzene, or, in the case of crosslinking subsequent to copolymerization, is a latent crosslinking agent which is a diamide of an unsaturated aliphatic carboxylic acid, an anhydride of an aliphatic or aromatic carboxylic acid, a diepoxide or dicumyl peroxide, the crosslinking agent having been used in an amount of up to 5 weight % based on the total weight of monomers (1) to (5).

4,430,459

METHOD AND COMPOSITION FOR A FURAN-MODIFIED PHENOLIC NOVOLAK BINDER SYSTEM

Denis W. Akerberg, Huntley; George W. Huffman, Crystal Lake, and Carl A. Rude, Cary, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 194,118, Oct. 6, 1980, Pat. No. 4,348,343.

This application Feb. 5, 1982, Ser. No. 346,309

Int. Cl.³ C08K 3/34, 3/04

U.S. Cl. 523-144

6 Claims

1. A free-flowing particulate solid material capable of being integrated into a unitary mass by heat or pressure and capable of being converted into a thermoset unitary mass, comprising: solid particulate material having coated thereon a furfural solution of a solid non-sticky resin soluble in furfural, wherein the solution has been transformed into an uncured solid thermoplastic condition by reaction of the furfural in the solution with the amine capable of forming a reaction product with the furfural, said amine being used in an amount sufficient to convert the furfural solution to a solid.

4,430,460

PROCESS FOR PREPARING CONDUCTIVE PVC MOLDING COMPOSITIONS

Carl J. Martin, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 41,747, May 23, 1979, abandoned. This application Oct. 8, 1982, Ser. No. 433,504

Int. Cl.³ C08L 27/06; C08J 3/20

U.S. Cl. 523-174

4 Claims

1. In a process for mixing low density conductive carbon black particles with polyvinyl chloride resin particles in such amount so that the resultant particulate composition has a bulk resistivity below about 500 ohm-cm at 900 MHz, the improvement which comprises

- (a) weighing a first portion of carbon black particles,
- (b) dividing the carbon black particles to a particle size of 0.044 millimeter or less,
- (c) weighing the polyvinyl chloride resin particles and additives into a high intensity mixer,
- (d) transporting the carbon black particles to said mixer in a closed system,

- (e) mixing the carbon black with the polyvinyl chloride particles until the carbon black particles are adsorbed,
- (f) weighing, dividing and adding another portion of carbon black particles to the mixer,
- (g) mixing until the carbon black is adsorbed,
- (h) repeating steps (f) and (g) until all of the carbon black has been added to said mixer, and
- (i) mixing until all the ingredients are uniformly dispersed and no unadsorbed carbon black is present.

4,430,461

METHOD OF REMOVING VOLATILES IN THE PREPARATION OF SILICONE COMPOSITIONS

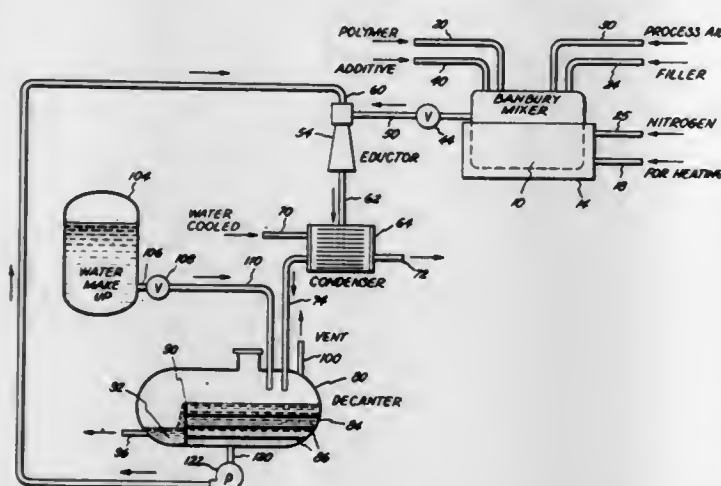
Dana F. Deering, Clifton Park, and Edward I. Stein, Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 155,690, Jun. 6, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 347,808

Int. Cl.³ C08G 77/34; C08J 3/00

U.S. Cl. 523-340

6 Claims



1. An improved process for removing low molecular weight organosilicon volatiles in the mixing of an uncured heat vulcanizable silicone rubber composition consisting essentially of:

- (A) mixing:
 - (a) a diorganopolysiloxane polymer having a viscosity varying from 1,000,000 to 300,000,000 centipoise at 25° C. where the organo groups are monovalent hydrocarbon radicals;
 - (b) a filler selected from the class consisting of fumed silica and precipitated silica and
 - (c) a process aid in a Banbury-type mixing vessel which encloses the mixture; said Banbury-type mixing vessel having an external heating jacket, means for adding additional ingredients and means for removing volatile ingredients; and
- (B) heating and continually mixing the mixture at 140° to 170° C. for 5 minutes to 30 minutes, the improvement consisting essentially of the additional steps of:
- (C) continuously removing the low molecular weight organosilicon volatiles from said mixture by the utilization of aspirator means, said aspirator means being operated by passing effluent through an eductor wherein the suction end of said eductor is connected to the area of said Banbury-type mixing vessel above said mixture;
- (D) condensing volatiles entrained in said effluent by cooling said effluent to about room temperature in a condenser means;
- (E) separating the condensed volatiles from said effluent by collecting the volatiles in a decanter vessel wherein the condensed volatiles are collected by means of a weir arrangement in the decanter vessel and wherein effluent is recycled to said eductor and new effluent being passed to the decanter vessel as needed; and
- (F) removing said condensed volatiles from said decanter vessel for disposal or reuse.

4,430,462
CATHODICALLY DEPOSITABLE AQUEOUS ELECTRO-DIP LACQUER COATING COMPOSITION
Kurt E. Jaeger; Klausjörg Klein; Hans-Peter Patzschke, and Dietrich Saatweber, all of Wuppertal, Fed. Rep. of Germany, assignors to Herberts GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,059

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122641

Int. Cl.³ C09D 3/58, 5/40; C25D 13/06

U.S. Cl. 523-402

8 Claims

1. A cathodically depositable aqueous electro-dip lacquer coating composition which contains a synthetic resin binder containing amino groups that can be made soluble in water by protonation with acids, and which optionally contains pigments, fillers, corrosion inhibitors, lacquer auxiliaries, catalysts and in a quantity of up to 20% by weight, based on the total weight of the coating composition-organic solvents, characterized in that it contains as synthetic resin binder,

(A) from 50 to 99% by weight, based on the total quantity of synthetic resin binder, of one or more amino-1,2-epoxy resins, the amino-1,2-epoxy resins or—where several amino-1,2-epoxy resins are present, the mixture of amino-1,2-epoxy resins

(a) having an average molecular weight (Mn) of from 700 to 10,000,

(b) containing from 0.2 to 3.6 lateral or terminal ethylenic double bonds per 1000 molecular weight units, corresponding to a hydrogenation iodine number of from 5 to 90,

(c) containing primary and/or secondary alcoholic hydroxyl groups corresponding to a hydroxyl number of from 30 to 450 and

(d) having an amine number of from 30 to 150,

(B) from 1 to 50% by weight of a substantially non-acid polyester of a polycarboxylic acid which contains at least 2 terminal or lateral, saturated and/or unsaturated β -hydroxy ester groups per molecule and which has an average molecular weight of from about 1500 to 10,000 and

(C) soluble and/or insoluble transesterification catalysts for the thermal crosslinking of (A) and (B) at temperatures above 140° C.

4,430,463

ACRYLIC POLYMER PORTLAND CEMENT COATING COMPOSITION

Perry D. Mullenax, Youngstown, Ohio, assignor to Michigan Hanger Company, Inc., Hubbard, Ohio

Filed Sep. 15, 1982, Ser. No. 418,579

Int. Cl.³ C08L 33/02, 33/18, 83/04

U.S. Cl. 524-5

6 Claims

1. An improved coating composition comprising:
- (1) between about 5% and about 7% by weight of an aqueous dispersion of an acrylic polymer,
 - (2) between about 23% to about 38% by weight of a type 1 Portland cement,
 - (3) 50% by weight sand,
 - (4) about 0.015% by weight of an aqueous solution of propylene glycol,
 - (5) approximately 0.2% by weight of a defoaming agent, and
 - (6) the balance to 100% by weight water, the % by weight based on the total weight of the composition.

4,430,464

PAVEMENT BINDER COMPOSITION

John W. H. Oliver, Glen Iris, Australia, assignor to Australian Road Research Board, Victoria, Australia

Filed Dec. 30, 1981, Ser. No. 335,815

Claims priority, application Australia, Apr. 1, 1981, PE8261

Int. Cl.³ C08L 95/00

U.S. Cl. 524-59

12 Claims



1. A pavement binder composition comprising a digestion of rubber particles in a bituminous material, characterised in that said rubber particles are of the porous nodular surface morphological type which are substantially free of smooth surfaces, and in that said particles have a maximum bulk density of 200 kg/m³.

4,430,465

ASPHALT COMPOSITION

Clifford E. Abbott, Norton, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 22, 1982, Ser. No. 360,303

Int. Cl.³ C08L 95/00; B32B 27/08

U.S. Cl. 524-64

16 Claims

1. A composition comprising (a) asphalt, (b) at least one alkadiene-vinylarene copolymer, (c) at least one petroleum hydrocarbon resin, and (d) at least one antistripping agent; wherein said antistripping agent is a highly branched organic amine.

4,430,466

BENZOTHAZYL SULFENAMIDES AS SCORCH RETARDANTS FOR MERCAPTOSILANE-COUPLED SILICA FILLED-RUBBER COMPOUNDS

William T. Cooper, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 350,685, Feb. 22, 1982, abandoned. This application Jun. 10, 1982, Ser. No. 387,097

Int. Cl.³ C08K 3/36, 3/34, 5/54, 5/46

U.S. Cl. 524-83

24 Claims

1. A sulfur-vulcanizable rubber compound exhibiting prolonged time-to-scorch comprising at least one sulfur-vulcanizable diene rubber, a siliceous filler, a silane coupling agent consisting of a mercaptoalkyltrialkoxysilane coupling agent represented by (OR)₃SiR¹SH wherein R and R¹ each represent an alkyl group of 1 to 10 carbon atoms per molecule, and a benzothiazyl sulfenamide accelerator at a level of about 2 phr and above.

4,430,467

SELF-EXTINGUISHING PROPYLENE POLYMER

Joseph M. Lesniewski, Hopewell, and Michael J. Breza, Trenton, both of N.J., assignors to Saytech, Inc., Sayreville, N.J.

Filed Jan. 7, 1982, Ser. No. 337,577

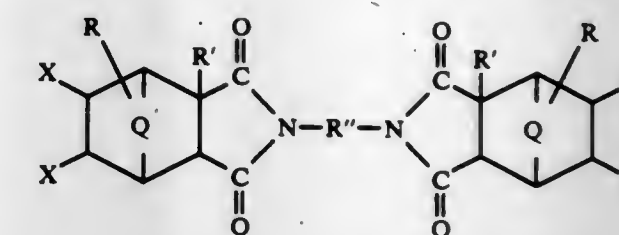
Int. Cl.³ C08K 5/01, 5/34

U.S. Cl. 524-89

3 Claims

1. A flame retardant polymer composition comprising: (a) a polypropylene polymer selected from the group consisting of polypropylene and copolymers containing at

least 50% by weight of co-polymerized propylene monomer, (b) a halogenated aliphatic bisimide corresponding to the formula:



wherein Q is methylene or oxygen, X is chlorine or bromine, R is hydrogen or an alkyl group containing 1-5 carbon atoms, R' is hydrogen or methyl and R'' is an organic group containing 1-15 carbon atoms and (c) 2,3-dimethyl-2,3-diphenylbutane.

4,430,468

SURFACTANT-CONTAINING FILLED AND PLASTICIZED THERMOPLASTIC COMPOSITIONS BASED ON ETHYLENE INTERPOLYMERS

Frederick G. Schumacher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 21, 1982, Ser. No. 400,243

Int. Cl.³ B32B 27/30; C08K 5/01; C08L 23/26, 93/00

U.S. Cl. 524-109

18 Claims

1. A composition comprising (a) from 0 to about 50% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- and dicarboxylic acids of 3 to 5 carbon atoms, salts of said unsaturated acids, and esters of said unsaturated acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being from about 40 to about 95% by weight, the comonomer content of said copolymer being from about 5 to about 60% by weight, and the melt index of said copolymer being from about 0.1 to about 400, provided that when said copolymer of ethylene is an ethylene/vinyl ester or ethylene/unsaturated mono- or dicarboxylic acid ester copolymer said copolymer can contain up to about 15 percent by weight of carbon monoxide or sulfur dioxide; provided, that when the olefin polymer of paragraph (e) is absent, the amount of ethylene copolymer is at least about 5% by weight;

(b) from 0 to about 20 percent by weight of at least one plasticizer selected from the group consisting of processing oils, epoxidized oils, polyesters, polyethers, and polyether esters;

(c) from about 40 to about 90% by weight of filler;

(d) from about 0.05 to about 5% by weight of at least one surface active agent selected from the group consisting of alkanol amides; betaine derivatives; block copolymers comprising a series of condensates of ethylene oxide with hydrophobic bases formed by condensing propylene oxide with propylene glycol; ethoxylated compounds comprising alcohols, alkyl phenols, amines and amides; sulfonated derivatives comprising alkyl sulfonates, aryl sulfonates, alkyl-aryl sulfonates, amine and amide sulfonates, olefin sulfonates, sulfosuccinates, sulfonated fatty acid esters, sulfonates of ethoxylated alkyl phenols and of oils and of fatty acids, naphtholene and alkyl naphtholene sulfonates, condensed naphtholene sulfonates, naphthalene and alkyl naphthalene sulfonates and petroleum sulfonates, and dodecyl and tridecyl benzene sulfonates; dodecyl and tridecyl sulfonic acids; sulfates of alcohols, of ethoxylated alcohols, of ethoxylated alkyl phenols, of oils, of fatty acids, of fatty esters, alkaryl sulfates, and sodium, ammonium and amine salts thereof; phosphate derivatives comprising phosphate esters, phosphate alcohol ethoxylates,

- phosphate ether ethoxylates, phosphate alkyl acids and phosphate alkyl quaternaries; and quaternary surfactants;
- (e) from 0 to about 55% by weight of olefin polymer selected from the group consisting of low density branched polyethylene, high density linear polyethylene, linear copolymers of ethylene and another olefin comonomer, polypropylene and copolymers of propylene and ethylene where the ethylene content is up to 20% by weight provided, that when the ethylene copolymer of paragraph (a) is absent the amount of olefin polymer is at least about 5% by weight;
- (f) from 0 to about 50% by weight of elastomeric polymer; and
- (g) from 0 to about 30% by weight of tackifier.

4,430,469

PROCESS FOR PREPARING HIGHLY CONCENTRATED AQUEOUS SOLUTIONS OF LOW VISCOSITY OF MELAMINE/ALDEHYDE RESINS

Theodor A. Bürge, Geroldswil; Jürg Widmer, Zurich; Theodor Meyer, Regensdorf, and Ulrich Sulser, Oberengstringen, all of Switzerland, assignors to Silka AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Filed Feb. 24, 1982, Ser. No. 351,915

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107852

Int. Cl.³ C08L 61/28

U.S. Cl. 524—247

19 Claims

1. A process for preparing highly concentrated aqueous solutions of low viscosity of melamine/aldehyde resins, characterized by reacting to a precondensate in a first step melamine and an aldehyde in an alkaline medium and in the presence of water together with at least one compound (I), selected from the group, consisting of an alkali sulfite, an alkaline earth sulfite, an amino sulfonic acid, an amino carboxylic acid, a hydroxycarboxylic acid, a hydroxycarboxylic acid lactone, and a polyhydroxy carboxylic acid lactone reacting then the thus obtained mixture in a second step with at least one compound (II), selected from the group, consisting of an amino carboxylic acid, a carboxylic acid, a hydroxy carboxylic acid, a hydroxy carboxylic acid lactone, including sulfamic acid, an amino sulfonic acid, a polyhydroxy carboxylic acid and a polyhydroxy carboxylic acid lactone, and then making alkaline the obtained resin solution by adding at least one basic compound (III).

4,430,470

FLAME RETARDANT ADDITIVES BASED ON ALUMINA TRIHYDRATE AND ETHYLENE POLYMER COMPOSITIONS, CONTAINING SAME, HAVING IMPROVED FLAME RETARDANT PROPERTIES

Seiho Taniguchi, Yokohama; Yuichiro Sakuma, Nagareyama, and Tadashi Yoshii, Yokohama, all of Japan, assignors to Nippon Unicar Company Ltd., Tokyo, Japan

Filed Jun. 30, 1982, Ser. No. 392,782

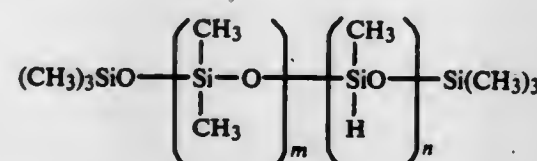
Claims priority, application Japan, Oct. 8, 1981, 56-159447

Int. Cl.³ C08K 3/22, 5/54

U.S. Cl. 524—269

19 Claims

4. A composition comprising an ethylene polymer, alumina trihydrate having an average particle size of from about 0.01 μ m to about 30 μ m and a methyl hydrogen polysiloxane of the formula:



wherein m is an integer from 0 to 50 and n is an integer from 10 to 100, said alumina trihydrate being present in an amount of about 25 to 65 percent by weight, based on the total weight of

the composition and said polysiloxane being present in an amount of about 0.05 to about 2 percent by weight, based on the weight of the alumina trihydrate.

4,430,471

ELASTOMERS DERIVED FROM THIODIETHANOL HAVING REDUCED ODOR

Richard B. Toothill, Warren; Ignazio S. Megna, Lebanon, and Ajit K. Chaudhuri, Somerville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 28,017, Apr. 6, 1979,

abandoned. This application May 24, 1982, Ser. No. 381,493

Int. Cl.³ C08K 5/09, 3/30, 3/28, 3/26, 3/22, 3/16

U.S. Cl. 524—356

8 Claims

1. A composition of matter comprising an elastomer of thiodiethanol having incorporated therein an effective odor reducing amount of a halide, nitrate, carbonate, thiocyanate, sulfide, oxide, acetyl acetate, ethylacetate or carboxylic acid salt of a metal of Groups IB, IIB or VIII of Medeleff's Periodic Table of the Elements or mixtures thereof.

4,430,472

ELASTOMERIC COMPOSITIONS WITH IMPROVED CHEMICAL, WATER AND HEAT RESISTANCE

Raymond L. Guzy, Tulsa, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 17, 1982, Ser. No. 450,692

Int. Cl.³ C08K 5/01

U.S. Cl. 524—483

2 Claims

1. In a process of producing a curable elastomeric jacketing composition having improved chemical and heat resistance when cured from an ethylene/acrylic elastomer which is a copolymer of ethylene and methyl acrylate plus a cure site monomer and which has a polymer content of approximately 81% by weight, a specific gravity of 1.12±0.03 and a Mooney Viscosity at 100° of 29±5, the improvement comprising: the step of blending said ethylene/acrylic elastomer with a polybutadiene having greater than 50% 1,2 polymerized units and having a molecular weight between 1,500 and 25,000 grams/mole.

4,430,473

COMPOSITES MADE FROM THERMOSETTING COMPOSITIONS CONTAINING HEMIFORMALS OF PHENOL

George L. Brode; Sui-Wu Chow, and Warren F. Hale, all of Bridgewater Township, Somerville County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 242,995, Mar. 12, 1981,

abandoned. This application Jan. 19, 1982, Ser. No. 340,695

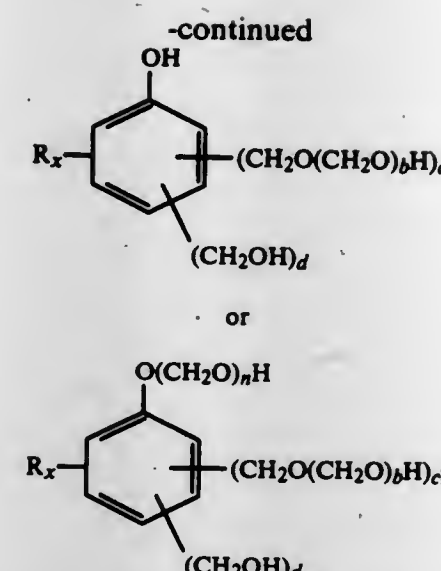
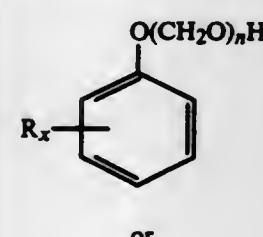
Int. Cl.³ C08K 7/14

U.S. Cl. 524—492

4 Claims

1. A reinforced composite made by a liquid injection molding process said composite comprising from 20 to 70 weight percent of a reinforcing material, based in the weight of the composite, and from 30 to 80 weight percent, based on the weight of the composite, of a liquid thermosetting solution, the solution comprising:

(I) from 40 to 70 weight percent, based on the total weight of the solution, of a hemiformal composition of a phenol having any one of the formulas:



wherein n is a positive number of greater than 1, b is 1 to about 5, and c is 1 to about 3, d is 0 to about 2, the sum of c and d is at least 1 and no greater than 3, the sum of c, d and x is at least 1 and no greater than 5, x is 0 to 3, R is a monovalent radical selected from the group consisting of alkyl from 1 to 18 carbon atoms, cycloalkyl from 5 to 8 carbon atoms, aryl containing from 1 to 3 aromatic rings, aralkyl, alkaryl, alkoxy containing from 1 to 18 carbon atoms, aroxy containing 1 to 3 aromatic nuclei, a halide radical, alkyl sulfides having from 1 to 18 carbon atoms, aryl sulfides having from 1 to 3 aromatic nuclei, and a radical derived from linseed oil or tung oil, wherein x is 0 for at least 50 mole percent, based on the hemiformal composition, of the hemiformal composition; and

(II) from 20 to 60 weight percent, based on the total weight of the solution, of a polymer capable of forming solution with the hemiformal composition of (I), said polymer being from the group: phenol-formaldehyde resoles, phenol formaldehyde novolacs, aromatic polyesters, aromatic polycarbonates, unsaturated polyesters, aromatic polyethers, urea-formaldehyde resins and melamine-formaldehyde resins.

4,430,474

STOVING ENAMEL CONTAINING BLOCKED ISOCYANATES

Horst Schnurbusch; Rainer Gras, both of Herne, and Elmar Wolf, Recklinghausen, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,689

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030554

Int. Cl.³ C08L 67/02

U.S. Cl. 524—590

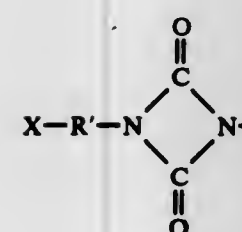
5 Claims

1. A stoving enamel comprising:

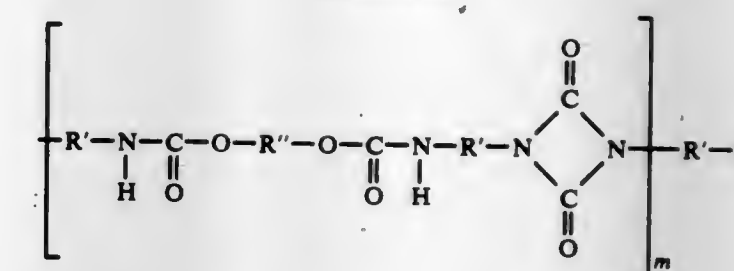
a. 40-70% by weight of a mixture of:

(1) a polymer containing hydroxyl groups having a hydroxyl number between 50 and 240 mg KOH/g, and

(2) an isocyanate-free derivative of isophorone diisocyanate containing blocked isocyanate groups having the formula:

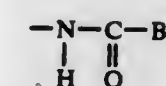


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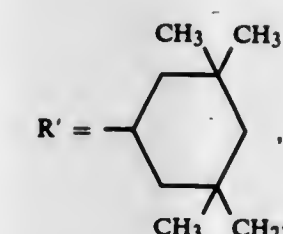


wherein:

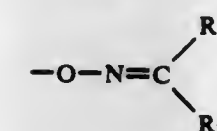
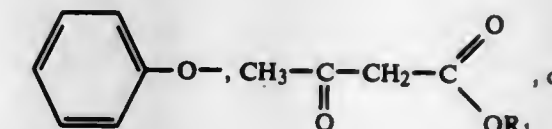
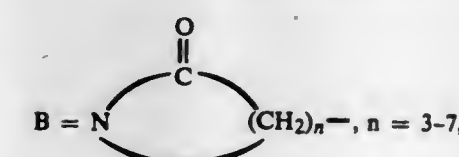
X=—N=C=O or



m=0-6,



R''=divalent residue of a diol of 2-12 carbon atoms,



R₁ and R₂=identical or different aliphatic hydrocarbon radicals having 1-4 C-atoms or R₁ and R₂ together with the C-atom bound to the nitrogen atom by a double bond form a cycloaliphatic hydrocarbon ring having 5-6 C-atoms,

wherein said mixture contains 0.8-1.2 equivalents of blocked isocyanate groups per equivalent of hydroxyl group;

b. 0-3% by weight of a cross-linking catalyst; and

c. 30-60% by weight of an organic solvent.

4,430,475

ALKYLATED AROMATIC POLYCARBONATE COMPOSITIONS OF IMPROVED IMPACT STRENGTH

Sivaram Krishnan, Moers, Fed. Rep. of Germany, assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1981, Ser. No. 336,211

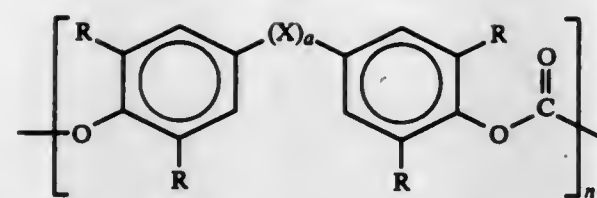
Int. Cl.³ C08L 69/00

U.S. Cl. 525—67

3 Claims

1. A thermoplastic molding composition comprising

(i) a polycarbonate resin characterized in that its structural units conform to



wherein R is $-\text{CH}_3$, $-\text{C}_2\text{H}_5$ or $-\text{CH}(\text{CH}_3)_2$, X denotes an alkylene or an alkylidene group having 1 to 5 carbon atoms, a cycloalkylene or a cycloalkylidene radical having 5 to 15 carbon atoms, an ether bond or a keto bond, a is either 0 or 1 and n is at least 55 and

(ii) a dispersed acrylic rubber interpolymeric composite comprising

- (a) about 25 to 95% by weight of a first elastomeric phase polymerized from about 75 to 99.8% by weight C_1 to C_6 acrylate, about 0.1 to 5% by weight of a cross-linking monomer and about 0.1 to 5% by weight of a graft-linking monomer and
- (b) about 75 to 5% by weight of a second, rigid thermoplastic phase,

said composition further characterized in that said (ii) is present at an amount of about 3 to 40 percent relative to the total weight of said (i) plus said (ii).

4,430,476

RESINOUS COMPOSITION COMPRISING A POLYCARBONATE RESIN, A LINEAR LOW DENSITY POLYOLEFIN AND AN ALKENYL AROMATIC COPOLYMER

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 29, 1982, Ser. No. 343,949

Int. Cl.³ C08L 23/16, 55/02, 69/00

U.S. Cl. 525—67

8 Claims

1. A composition which comprises
 - a. from about 35 to 90 weight percent of an aromatic polycarbonate resin;
 - b. from about 0.5 to 20 weight percent of linear low density polyethylene having a density of from about 0.89 to 0.96 gms/cc; and
 - c. from about 9.5 to 45 weight percent of an acrylonitrile-butadiene-styrene resin or an acrylonitrile-butadiene-alphamethyl styrene resin;

the weight percent of each of a, b and c based upon the total weight of a, b and c and the impact strength of said composition as measured by the ASTM D-256 double gate test being above about 7.0 ft./lbs.

4,430,477

POLYPROPYLENE COMPOSITION

Kohichi Kunimune, Ichiharashi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed May 26, 1983, Ser. No. 498,504

Claims priority, application Japan, Jun. 3, 1982, 57-95359

Int. Cl.³ C08L 51/06, 23/12, 23/28

U.S. Cl. 525—70

8 Claims

1. A high-impact polypropylene composition comprising 60 to 95 parts by weight of polypropylene and 40 to 5 parts by weight of a chlorinated polyolefin having styrene graft-polymerized thereon (hereinafter abbreviated to Cl.PO-g-St).

4,430,478

THERMOPLASTIC MOLDING MATERIALS

Burghard Schmitt, 3 Hermannstrasse, 6520 Worms; Klaus Benker, 52 Fuerstenweg, 6730 Neustadt; Edmund Priebe, 7A Bensheimer Ring, 6710 Frankenthal, and Gerhard Lindenschmidt, 11 Buchenweg, 6906 Leimen, all of Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,748

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044110

Int. Cl.³ C08L 51/00, 55/02

U.S. Cl. 525—71

9 Claims

1. A molding material which essentially contains
 - (A) a copolymer, constituting a hard phase, which contains, as copolymerized units,
 - (a1) one or more vinyl-aromatic monomers in amounts of from 80 to 60% by weight and
 - (a2) one or more ethylenically unsaturated monomers in amounts of from 40 to 20% by weight,
 - (B) a graft copolymer which contains
 - (ba) a hard phase and
 - (bb) an elastomer phase with a number-average particle diameter of from 0.5 to 5 μm , the graft copolymer B containing, as copolymerized units,
 - (bc) one or more vinyl-aromatic monomers,
 - (bd) one or more ethylenically unsaturated monomers which make up the hard phase ba and
 - (be) one or more aliphatic diene monomers, the graft copolymer having been prepared by polymerizing 100 parts by weight of a mixture of the monomers (bc+bd) which form a hard polymer in the presence of from 10 to 20 parts by weight of an elastomeric polymer or copolymer as the grafting base, the said grafting base being dissolved in the monomers (bc+bd), with or without addition of an inert organic solvent, and the said base having been synthesized from the monomers (be), (be)+(bc), or (be)+(bd), where 20 to 50% by weight of the total amount of the monomers (bc+bd) forming a hard polymer have been grafted onto the grafting base and
 - (C) a graft copolymer which consists of
 - (ca) a hard phase grafted onto
 - (cb) an elastomer phase as the grafting base, the latter essentially containing particles of two different sizes with mean number-average diameters,
 - (cb1) from 0.05 to 0.18 μm , and
 - (cb2) from 0.25 to 0.6 μm , the graft copolymer C containing, as polymerized units,
 - (cc) one or more vinyl-aromatic monomers,
 - (cd) one or more ethylenically unsaturated monomers, cc and cd forming said hard phase ca, and
 - (ce) one or more aliphatic diene monomers, one or more alkyl acrylates with alkyl of 2 to 8 carbon atoms or mixtures of said diene and said alkyl acrylates, the graft copolymer C having been prepared by grafting, in aqueous emulsion, the monomers (cc and cd) forming a hard phase onto a polymer of the monomers (ce), which form an elastomer phase and act as the grafting base, the proportion of (cc) and (cd) being from 20 to 60% by weight, based on the sum of (cc), (cd) and (ce), optionally plus
 - (D) effective amounts of fillers, pigments, stabilizers, lubricants and slip agents, wherein the copolymer A constitutes from 5 to 80% by weight, and the graft copolymers B+C together constitute from 20 to 95% by weight of the molding material of the sum of A+B+C, and where the proportion of the elastomer phase (cb1) of the graft copolymer C is less than 60% by weight of the sum of the elastomer phases (cb1), (cb2) and (bb), and the weight ratio of the elastomer phases (cb1) to (cb2) is from 80:20 to 20:80.

4,430,479

HEAT ACTIVATABLE ADHESIVE WITH IMPROVED TEMPERATURE RESISTANCE

W. Randolph Merton, Stillwater, and Wayne A. Pletcher, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 247,251, Mar. 25, 1981, abandoned, which is a continuation of Ser. No. 173,178, Aug. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 78,596, Sep. 14, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,903

Int. Cl.³ C08L 75/04

U.S. Cl. 525—127

21 Claims

1. A heat activatable thermoplastic adhesive composition comprising: (a) 100 parts by weight of a thermoplastic polymer; (b) about 1 to 100 parts by weight of an organic polymer having a plurality of functional groups available for crosslinking reactions, said organic polymer being selected from the group consisting of hydroxy-substituted polyesters, hydroxylated acrylates and polyamines; and (c) a sufficient amount of crosslinking agent capable of effecting the desired degree of crosslinking of said organic polymer; said adhesive composition exhibiting delayed tack on heat activation and exhibiting high temperature resistance.

4,430,480

TWO-PART COMPOSITION WITH ACTIVATOR

ENRICHED WITH DIHYDROPYRIDINE INGREDIENTS
David P. Melody; Seamus M. Grant, and Francis R. Martin, all of Dublin, Ireland, assignors to Loctite Corporation, Newington, Conn.

Filed Nov. 16, 1981, Ser. No. 321,643

Claims priority, application Ireland, Nov. 21, 1980, 2423/80

Int. Cl.³ C08L 61/26

U.S. Cl. 525—160

6 Claims

1. A two-part adhesive composition comprising
 - (i) a first part comprising a solution of a chlorosulfonated polyethylene in at least one polymerizable vinyl monomer, a polymerization catalyst, said catalyst comprising at least one free-radical initiator;
 - and
 - (ii) A second part comprising an activator composition, the activator composition consisting of condensation reaction products formed by the reaction of butyraldehyde and aniline, said activator composition including at least about 70% by weight of N-phenyl-3, 5-diethyl-2-propyl-1,2-dihydropyridine.

4,430,481

SECONDARY RECOVERY METHOD

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed May 3, 1982, Ser. No. 374,203

Int. Cl.³ C08F 8/36

U.S. Cl. 525—328.4

7 Claims

1. An N-substituted sulfated, ethoxylated acrylamide-diacetone acrylamide copolymer bearing N-substituents of the formula:



wherein e is an integer of from 1 to 6 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium.

4,430,482

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 246,760, Mar. 23, 1981, abandoned. This application Mar. 22, 1982, Ser. No. 360,941

Int. Cl.³ C08F 8/36

U.S. Cl. 525—329.4

4 Claims

1. An N-substituted polyacrylamide bearing N-substituents of the formula:



wherein m is an integer of from 1 to 5 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium.

4,430,483

PROCESS FOR THE PRODUCTION OF WATER-RESISTANT, FILM-FORMING CHLORINATED POLYMERS

Franz Alfes; Hermann Perrey; Karl-Heinrich Meyer, all of Krefeld; Diez Heine, Leverkusen, and Friedrich Kowitz, Dornmagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,232

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102511

Int. Cl.³ C08F 8/22; C08C 19/14, 2/02

U.S. Cl. 525—356

3 Claims

1. A process for the production of a chlorinated polymer having a chlorine content of from 30 to 70%, by weight, which comprises chlorinating a polymer selected from the group consisting of natural rubber, polyisoprene, polybutadiene, polyethylene, polypropylene, ethylene/propylene copolymers and mixtures thereof in a chlorinated hydrocarbon solvent, removing the solvent using steam, hot water or a mixture thereof in the presence of at least 1 to 10%, by weight, based on the chlorinated polymer, of an alkoxylation product of 1 mole of a primary aliphatic alcohol containing from 12 to 18 carbon atoms and from 2 to 18 moles propylene oxide and drying the precipitated chlorinated polymer.

4,430,484

POLYESTER-CARBONATE RESIN BLENDS

Clayton B. Quinn, Mount Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

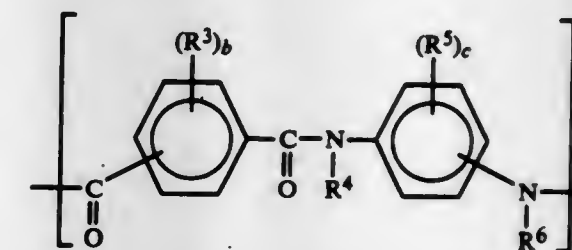
Continuation of Ser. No. 225,058, Jan. 14, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 412,719

Int. Cl.³ C08L 67/00, 69/00, 77/10, 79/08

U.S. Cl. 525—425

15 Claims

1. A thermoplastic composition comprising in admixture
 - (a) an aromatic polyester-carbonate and
 - (b) an aromatic polyester-carbonate heat distortion improving effective amount of at least one polymer selected from the group consisting of
 - (i) aromatic polyamide of the formula



wherein

R^3 and R^5 are independently selected from halogen, alkyl of one to twelve carbon atoms, and substituted alkyl wherein the substituent is halogen or OR^7 wherein R^7 is an alkyl of one to ten carbon atoms;

R^4 and R^6 are independently selected from alkyl of one to twelve carbon atoms, hydrogen, aryl of six to eighteen carbon atoms, aralkyl of seven to eighteen carbon atoms, and alkaryl of seven to eighteen carbon atoms;
 a is from 10 to about 500;
 b and c are independently selected from an integer of 0 to 4.
 (ii) aromatic polyamideimides
 (iii) polyimides.

4,430,485

FLAME RETARDANT POLYCARBONATE COMPOSITIONS

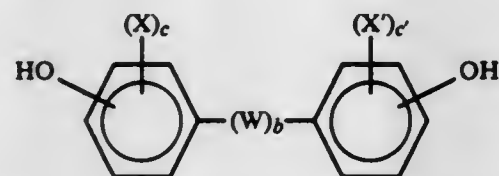
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 176,868, Aug. 11, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,484
 Int. Cl.³ C08G 63/12, 63/62; C08L 67/00

U.S. Cl. 525-439 19 Claims

1. A thermoplastic, amorphous, halogen-free, high molecular weight, aromatic copolyester-carbonate resin comprised of the coreaction products of:

(i) at least one halogen-free and sulfur-free diphenol, of the formula



wherein:

X is independently selected from monovalent hydrocarbon radicals;

X' is independently selected from monovalent hydrocarbon radicals;

W is selected from the group consisting of non-polycyclic divalent hydrocarbon radicals, the $-O-$ radical, and the



radicals;

c and c' are independently selected from whole numbers having a value of from 0 to 4 inclusive; and

b is either zero or one;

(ii) at least one halogen-free thiodiphenol;

(iii) at least one dicarboxylic acid or a polyester forming derivative thereof; and

(iv) a carbonate precursor.

4,430,486

FILM-FORMING URETHANE RESINS CONTAINING ALKOXY SILANE GROUPS AND ACRYLYL GROUPS

Wen-Hsuan Chang, Robert Piccirilli, and Walter F. Kasper, all of Gibsons, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1982, Ser. No. 445,315

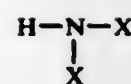
Int. Cl.³ C08F 283/00

U.S. Cl. 525-44 18 Claims

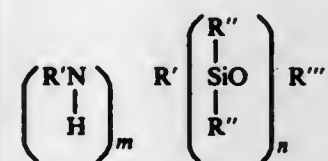
1. An ungelled reaction product characterized in having an acrylyl content of from about 0.2 to about 2 meq. per gram is derived from the reaction of:

(a) a urethane resin having an average of greater than 1 amine reactive acrylyl residue per molecule and a free isocyanate content of up to about 15 percent; and

(b) an amino silane of formula



where X is independently (1) hydrogen, (2) an alkyl, aryl, or cycloalkyl group having from 1 to 10 carbon atoms, or (3)



where R' is independently an alkylene group having from 2 to 10 carbon atoms, m is from 0 to 2, R'' is independently a hydrogen, alkyl, aryl, cycloalkyl, alkoxy, or aryloxy group having from 1 to 8 carbon atoms, n is from 1 to 5 and R''' is an alkyl group having from 1 to 8 carbon atoms, with the proviso that at least one X is a radical containing silicon.

4,430,487

SHORTSTOP FOR SYNTHETIC CIS-1,4-POLYISOPRENE

Paul H. Sandstrom, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 16, 1982, Ser. No. 418,918

Int. Cl.³ C08F 2/42

U.S. Cl. 526-83 7 Claims

1. An improved polymerization process which comprises polymerizing isoprene under solution polymerization conditions in a hydrocarbon solvent with a catalyst system comprising a mixture of titanium tetrachloride and a trialkylaluminum or a trialkylaluminum etherate compound, wherein the polymerization is shortstopped with 4,7-diaza-decane-1,10-diamine, in an amount of 0.10 to 2.00 parts per hundred (phr) of rubber.

4,430,488

DEACTIVATION OF CATALYST IN SOLUTION PROCESS FOR POLYMERIZATION OF α -OLEFINS

Vaclav G. Zboril, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 250,904, Apr. 3, 1981. This application Nov. 19, 1982, Ser. No. 443,060

Claims priority, application United Kingdom, Dec. 11, 1980, 8039684

Int. Cl.³ C08F 2/42, 10/02

U.S. Cl. 526-84 7 Claims

1. A solution polymerization process for the preparation of high molecular weight polymers of α -olefins selected from the group consisting of homopolymers of ethylene and copolymers of ethylene and C_3 - C_{12} α -olefins, said process comprising feeding monomer selected from the group consisting of ethylene and mixtures of ethylene and at least one C_3 - C_{12} α -olefin, a coordination catalyst and inert hydrocarbon solvent to a reactor, said catalyst containing vanadium, polymerizing said monomer at a temperature in the range of 105°-320° C. and a pressure of less than 25 MPa, deactivating the catalyst in the solution so obtained by admixing therewith a solution of a salt of an alkaline earth metal or zinc and an aliphatic monocarboxylic acid having 6 to 12 carbon atoms dissolved in hydrocarbon solvent, said solution containing sufficient excess aliphatic monocarboxylic acid to solubilize said salt, separating hydrocarbon solvent, aliphatic monocarboxylic acid and other volatile matter from the resultant solution and recovering a composition comprising said high molecular weight polymer, the amount of said salt being controlled so that the composition contains less than 5000 ppm of alkaline earth metal or zinc.

4,430,489

ONE-PACKAGE, HEAT-CURABLE SEALANT COMPOSITIONS COMPRISING A BLOCKED POLYISOCYANATE AND A BLOCKED POLYAMINE

MacMillan John H., Ambler; Eugene R. Bertozzi, Yardley, and Bruce E. Streeter, Morrisville, all of Pa., assignors to Thiokol Corporation, Chicago, Ill.

Filed Apr. 28, 1982, Ser. No. 372,587

Int. Cl.³ C08G 18/80

U.S. Cl. 528-45 12 Claims

1. A composition comprising
 (A) the reaction product, at temperatures below about 100° C., of
 (i) an isocyanate-terminated prepolymer
 (ii) an isocyanate blocking agent, and
 (B) the reaction product, at temperatures below 100° C., of
 (i) an aliphatic polyamine curing agent
 (ii) a polyamine blocking agent.

4,430,490

POLYETHER POLYOLS AND THEIR METHOD OF PREPARATION

Herman P. Doerge, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 10, 1982, Ser. No. 406,814

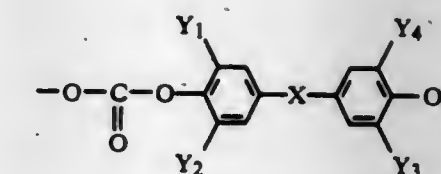
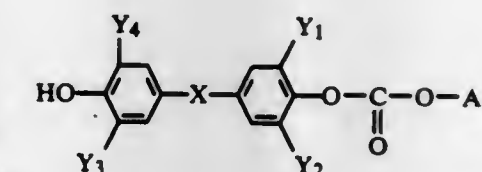
Int. Cl.³ C08G 18/48

U.S. Cl. 528-77 15 Claims

1. In a process for the preparation of a liquid polyether polyol wherein a polyhydric alcohol is reacted with an alkylene oxide in the presence of an alkaline catalyst, the improvement which comprises treating the polyether polyol with a hydroxy-carboxylic acid adapted to neutralize the alkaline catalyst to provide a soluble neutralized catalyst and produce a clear reaction mixture without otherwise removing the alkaline catalyst from the reaction mixture.

7. A liquid polyether polyol composition containing a salt of a hydroxy-carboxylic acid and an alkaline catalyst used in the preparation of the polyether polyol; the salt being soluble in the polyether polyol.

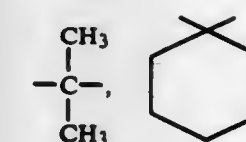
14. A polyurethane composition comprising the reaction product of an organic polyisocyanate and the polyether polyol composition of any of claims 7, 8, 9, 10, 11, 12 or 13.



wherein

$-O-A-O-$ is a bivalent diolate radical of an aliphatic dimeric saturated fatty acid ester having hydroxyl end groups and a number-average molecular weight of 1,000 and 15,000

X is a single bond, $-CH_2-$,



$-O-$, $-S-$, $-SO_2-$, or

4,430,491

POLY(ETHER-AMIDE) POLYMERIC COMPOSITIONS

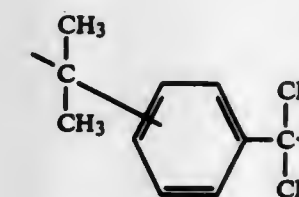
Billy M. Culbertson, Worthington, and Timothy A. Tufts, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 30, 1982, Ser. No. 429,748

Int. Cl.³ C08G 65/40, 69/44, 69/40

U.S. Cl. 528-153 7 Claims

1. A thermosetting polymeric composition prepared by effecting the step-growth polymerization reaction in the melt phase of a first reactant consisting of an oligomer containing a plurality of aromatic hydroxyl groups and a second reactant consisting of a compound having at least two 2-oxazoline groups.



and Y_1 to Y_4 , independently denote hydrogen, C_1 to C_4 alkyl or a halogen atom with diphenols, monophenolic chain stoppers and carbonic acid halides, said polycarbonates being characterized in that they contain between 5 and 70 weight percent of segments derived from said esters.

4,430,493

PROCESS FOR THE PREPARATION OF AROMATIC POLYESTERS

Werner Rieder, Vienna, Austria, assignor to Isovolt Oesterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

Continuation-in-part of Ser. No. 260,939, May 6, 1981, abandoned. This application Feb. 3, 1983, Ser. No. 463,590
Claims priority, application Austria, May 7, 1980, 2425/80; European Pat. Off., May 7, 1981, 81890076.3
Int. Cl.³ C08G 63/18

U.S. Cl. 528—179

4 Claims

1. In a process for the preparation of aromatic polyesters by a two phase, interfacial polycondensation wherein a fine dispersion is produced from an aqueous phase consisting of a diphenol, approximately an stoichiometric amount of an alkali metal hydroxide and a phase transfer catalyst in a mixture of water and an organic solubilizer and an organic phase of a solution of at least one aromatic dicarboxylic acid halide in a halogenated organic solvent with the polyester being dissolved in the organic phase, the improvement comprising using as the organic solubilizer an alkanol of 2 to 5 carbon atoms or an alkoxy alkanol of 2 to 5 carbon atoms.

4,430,494

MELAMINE RESINS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AND MOLDING COMPOSITIONS PRODUCED FROM THE RESINS

Hans Hönel; Walter Michel, both of Frankfurt am Main; Steffen Plesch, Oberursel; Karin Schlüter, Frankfurt am Main, and Alfons Wolf, Seligenstadt; all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

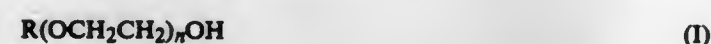
Filed Sep. 30, 1982, Ser. No. 429,464
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104420

Int. Cl.³ C08G 12/30

U.S. Cl. 528—254

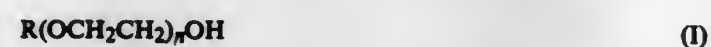
12 Claims

1. A modified melamine-formaldehyde resin in powder form having a melamine:formaldehyde molar ratio of 1:(1.27 to 0.7) and a content of 1 to 25% by weight, relative to the total weight of melamine and formaldehyde, with formaldehyde being calculated as 100% strength, of one or more glycol ethers of the formula I



in which R denotes alkyl having 1 to 4 C atoms and n denotes an integer from 1 to 5, and/or of p-toluenesulfonamide.

9. A process for the preparation of the melamine-formaldehyde resins as claimed in claim 1 or 2 which comprises heating melamine in an aqueous solution or suspension with formaldehyde in a melamine:formaldehyde molar ratio of 1:(1.27 to 0.7), preferably 1:(1.25 to 1.01) at a pH value of 8 to 11 and at temperatures of 105° to 160° C. until the finished resin has reached a dilutability with water of 1:(0.1 to 4) at 20° C. and thereafter drying the liquid resin to obtain the resin in powder form and adding before, during or after the condensation reaction, 1 to 25% by weight, relative to the total weight of melamine and formaldehyde, with formaldehyde being calculated as 100% strength, of one or more glycol ethers of the formula I



in which R denotes alkyl having 1 to 4 carbon atoms and n denotes an integer from 1 to 5, and/or of p-toluenesulfonamide.

PROCESS FOR PREPARING LINCOMYCIN AND CLINDAMYCIN RIBONUCLEOTIDES

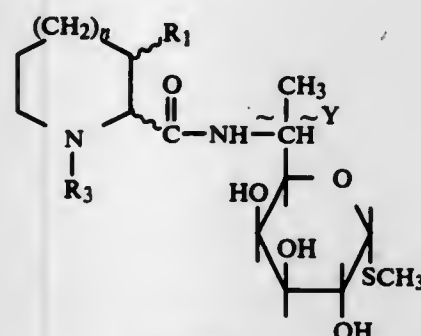
Tom E. Patt, Kalamazoo; Alexander D. Argoudelis, Portage, and Vincent P. Marshall, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 17, 1982, Ser. No. 419,244
Int. Cl.³ C07H 15/16

U.S. Cl. 536—16.3

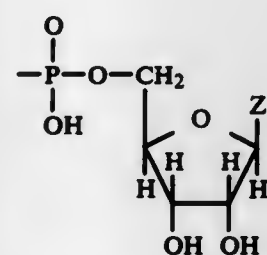
5 Claims

4. A process for preparing 3-(5'-ribonucleotides) of a compound of the of the formula



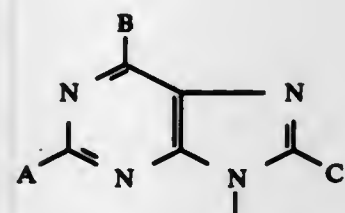
Ribonucleotide

wherein R₁, which can be singly or multiply substituted in the 3, 4, 5, 7, 8 or 9 position of the ring, is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and branched chain isomers thereof, cycloalkyl and substituted cycloalkyl, substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, $-(CH_2)_n-OH$, $-(CH_2)_n-NR_4R_5$, and branched chain isomers thereof, wherein n is an integer of from 1 to 8, inclusive, RHD 4 and R₅ are H or alkyl of from 1 to 8 carbon atoms, inclusive, and branched chain isomers thereof; wherein R₃ is selected from the group consisting of H, CH₃, C₂H₅, and $-CH_2-CH_2-OH$; wherein n is an integer of from 1 to 4, inclusive, wherein Y is selected from the group consisting of 7(S)-halo and 7(R)-halo; and the pharmaceutically acceptable salts thereof; wherein the ribonucleotide can be represented by the following formula:



wherein Z can be:

(1) purines of the general formula



(2) pyrimidines of the general formulae

4,430,497

PROCESS FOR THE PREPARATION OF 2-OXA-BICYCLO [3.3.0] OCTANE DERIVATIVES AND PRODUCTS PRODUCED THEREBY

Werner P. Vollenberg, and Horst R. E. Boehlke, both of Stolberg, Fed. Rep. of Germany, assignors to Gruenthal GmbH, Stolberg, Fed. Rep. of Germany

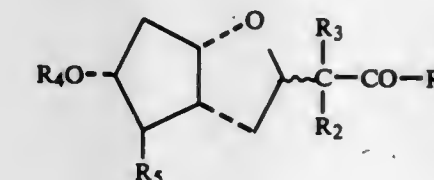
Filed Feb. 17, 1982, Ser. No. 349,678
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107248

Int. Cl.³ C07D 307/935

U.S. Cl. 542—429

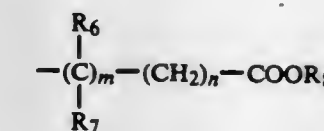
14 Claims

1. Process for the preparation of 2-oxa-bicyclo[3.3.0]octane derivatives having the formula



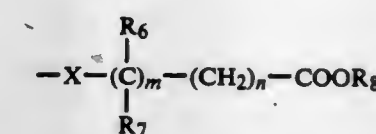
wherein

R₁ is an alkyl radical containing 1 to 5 carbon atoms, or represents the group



in which R₆ and R₇ have the same or a different meaning and each is a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms or R₆ and R₇ together represent the group $-(CH_2)_p-$ wherein p is four, five or six, and m is zero or one, n is zero, one, two or three and R₈ is an easily removable ester residue, or

is the group $-(CH_2)_q-OR_9$, in which q is one, two or three and R₉ is a member of the group consisting of acetyl, benzoyl, trimethylsilyl, tert-butyl-dimethylsilyl and tert-butyl-diphenylsilyl, or is an unsubstituted phenyl group or a phenyl group substituted by methyl, ethyl, trifluoromethyl or methoxy or by a group OR₉ in which R₉ has the same meaning as above, or by fluorine, chlorine or bromine or by the group



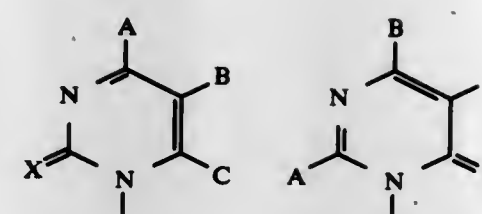
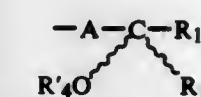
in which X is a single bond or an oxygen atom and in which R₆, R₇, R₈, m and n have the same meaning as above, or

represents together with the radical R₃ the group $-(CH_2)_r-$ in which r is three, four or five;

R₂ is a hydrogen atom, an alkyl radical containing 1 to 4 carbon atoms or the group $-(CH_2)_s-COOR_8$, in which R₈ has the same meaning as above and s is zero, one or two;

R₃ is a hydrogen atom, an alkyl radical containing 1 to 4 carbon atoms or together with R₁ is the group $-(CH_2)_t$, defined above;

R₄ is an acyl radical, a tri-lower-alkylsilyl group, a tert-butyl-diphenylsilyl group or a triphenylsilyl group and R₅ is the group $-CH_2-OR_4'$ or the group



wherein A, B, and C can be alkyl (C₁-C₈); OH, NH₂, -SH; OR; NHR; NR₁R₂; SR; wherein R, R₁ and R₂ are alkyl (C₁-C₈); CN, COOH and NO₂; wherein X is O, S or NH; which comprises contacting resting cell or cell-free extracts of *Streptomyces rochei*, NRRL 3533, with a compound of the above formula, and recovering the desired 3-(5'-ribonucleotide) from the reaction mixture.

4,430,496

STRONG ANION EXCHANGE COMPOSITION AND METHODS

Seth R. Abbott, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 112,964, Jan. 17, 1980, Pat. No. 4,322,542. This application Mar. 16, 1982, Ser. No. 359,173

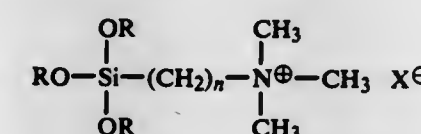
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.³ C07H 17/00; B01D 15/08

U.S. Cl. 536—27

29 Claims

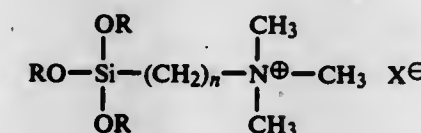
12. A liquid chromatographic column comprising an elongated tube, a strong anion exchange composition packed into said tube, said strong anion exchange composition comprising an inert porous particle having a size of about 5 to 20 microns and having attached to the surface of said inert porous particle by covalent bonding a silyl alkyl ammonium compound having the general formula:



wherein R is methyl or ethyl; n is an integer ranging from 2 to 5; and X is an exchangeable anion, said strong anion exchange composition being capable of simultaneous separation of mixtures of polyfunctional compounds and isomers thereof.

25. A method for the separation of nucleotide isomers on a chromatographic column, the steps of the method comprising:

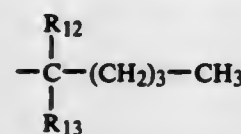
(a) packing a column with a strong anion exchange composition comprising a microparticulate silica having a particle size of about 3 to about 20 microns which has covalently attached to the silica surface a silyl alkyl ammonium compound having the general formula:



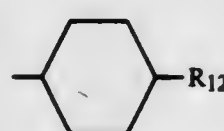
wherein R is methyl or ethyl; n is an integer ranging from 2 to 5; and X is an exchangeable anion;

(b) passing said nucleotide isomer composition through said chromatographic column; and
(c) recovering the separated components.

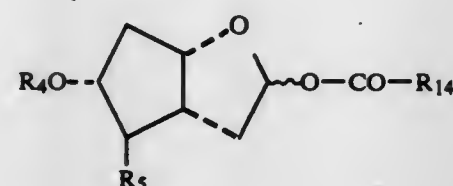
in which groups R_4' within the scope of the definition of R_4 has the same or a different meaning as R_4 has and in which A represents a member of the group consisting of the groups $-\text{CH}_2-\text{CH}_2-$, (trans)- $\text{CH}=\text{CH}-$ and $-\text{C}=\text{C}-$, R_{10} is hydrogen, methyl, ethyl or trifluoromethyl and R_{11} is an alkyl radical of the formula



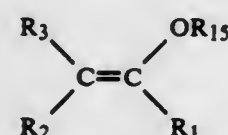
in which R_{12} and R_{13} have the same or a different meaning and each is hydrogen, methyl or ethyl, or R_{11} is a cyclohexyl radical



in which R_{12} has the same meaning as above, comprising reacting at temperatures from about -80°C . to about $+60^\circ\text{C}$. a compound of the formula

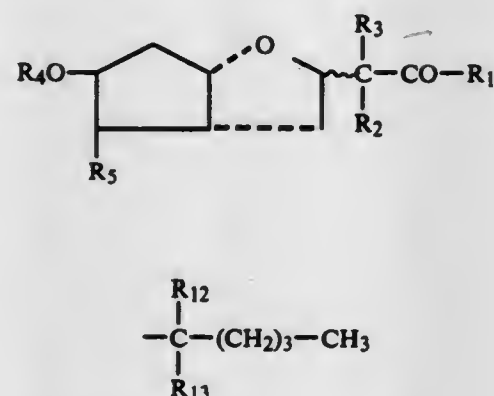


wherein R_4 and R_5 have the same meaning as in formula I and wherein R_{14} represents an alkyl radical containing 1 to 4 carbon atoms or the phenyl group with a compound of the formula



wherein R_1 , R_2 and R_3 have the same meaning as in formula I and wherein R_{15} represents a trimethylsilyl group or a lower alkanoyl group, in presence of one or more Lewis acids and in an inert solvent.

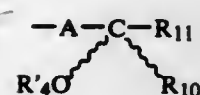
14. A compound of the formula:



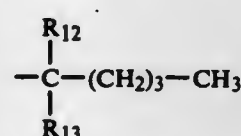
wherein

R_3 is hydrogen or alkyl of 1-4 carbons; R_2 is COOR_8 wherein R_8 is methyl or ethyl group; R_4 is alkanoyl containing 1-5 carbon atoms, benzoyl; 4-phenyl benzoyl, tri-lower alkyl silyl group, a tert-butyldiphenylsilyl group or a triphenylsilyl group; R_1 is an alkyl radical containing 1-5 carbon atoms, or represents together with the radical R_3 the group $-(\text{CH}_2)_r$, in

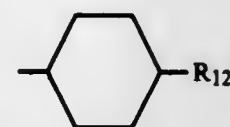
which r is three, four, or five or is an unsubstituted phenyl group or a phenyl group substituted by methyl, ethyl, trifluoromethyl, fluorine, chlorine or bromine; R_5 is the group



in which group R_4' within the scope of the definition of R_4 has the same or a different meaning as R_4 has and in which A represents a member selected from $-\text{CH}_2-\text{CH}_2-$, (trans)- $\text{CH}=\text{CH}-$ and $-\text{C}=\text{C}-$, R_{10} is hydrogen, methyl, ethyl, or trifluoromethyl and R_{11} is an alkyl radical of the formula



in which R_{12} and R_{13} have the same or a different meaning and each is hydrogen, methyl, or ethyl or R_{11} is a cyclohexyl radical



in which R_{12} has the same meaning as above, in the form of their pure isomeric forms or mixtures thereof.

4,430,498 8-OXO-5-THIA-1-AZABICYCLO(4,2,0)OCT-2-ENE COMPOUNDS

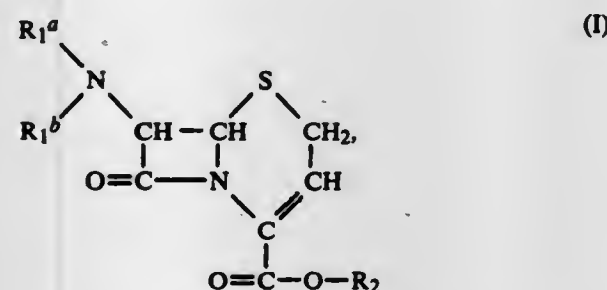
Karl Heusler, Basel; Hans Bickel, Binningen; Bruno Fehdig, Reinach; Heinrich Peter, Riehen, and Riccardo Scartazzini, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 16,598, Mar. 1, 1979, abandoned, which is a continuation of Ser. No. 544,473, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 188,503, Oct. 12, 1971, abandoned. This application Jan. 23, 1981, Ser. No. 227,832 Int. Cl.³ C07D 501/18; A61K 31/545

U.S. Cl. 544-16

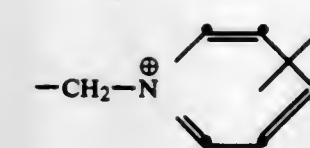
4 Claims

1. A compound selected from the group consisting of 7β-amino-ceph-3-em-4-carboxylic acid compounds of the formula:



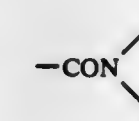
wherein R_{1a} and R_{1b} are hydrogen, and R_2 is a member selected from the group consisting of hydrogen, 2,2,2-trichloroethyl, 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, phenacyl, 3- or 4-methoxybenzyl, 3,5-dimethoxybenzyl, 2-nitrobenzyl, 4,5-dimethoxy-2-nitrobenzyl, tert-butyl, tert-pentyl, benzhydryl, 4,4'-dimethoxybenzhydryl, 2-(4-biphenyl)-2-propyl, 2-furyl, adamantyl, 2-tetrahydrofuryl, 2-tetrahydropyranyl, 2,3-dihydro-2-pyranyl, 4-nitrophenyl, 2,4-dinitrophenyl, 4-nitrobenzyl, trichlorophenyl, pentachlorophenyl, phthaliminomethyl, succinyliminomethyl, trityl, bis-(4-methoxyphenoxy)-methyl,

benzyl, and lower alkanoyloxymethyl, and alkali metal salts, alkali earth metal salts, or an ammonium salt formed with ammonia, a lower alkylamine, hydroxylower alkylamine, lower alkyleneamine, cycloalkylamine, pyridine, collidine, or quinoline.

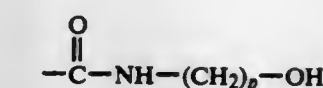


wherein T is

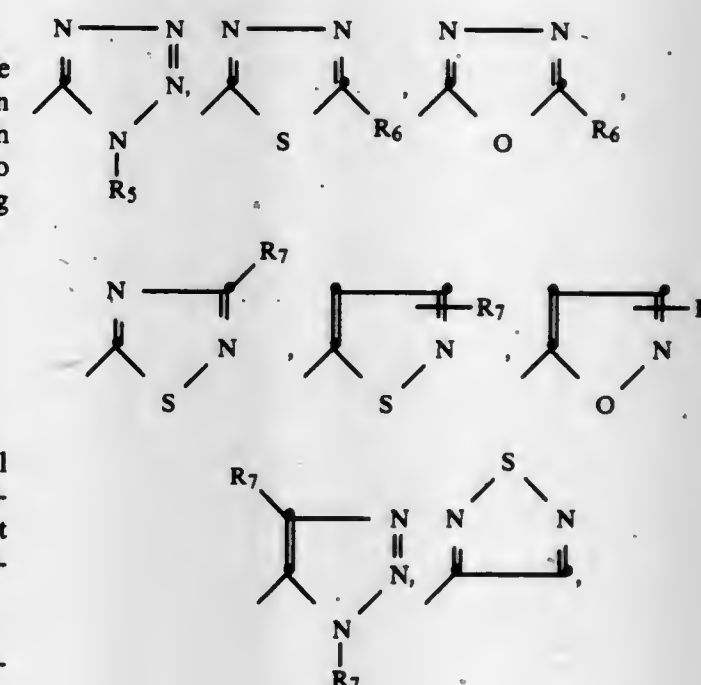
- (i) hydrogen, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, hydroxy, cyano, halo or hydroxymethyl; or
- (ii) carboxy, C_1 - C_4 alkoxy, C_1 to C_4 alkanoyl or C_1 to C_4 alkanoyloxy; or
- (iii) an amido group of the formula



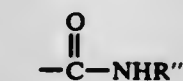
wherein c is hydrogen, methyl, ethyl or cyclopropyl and d is hydrogen, methyl or ethyl; or (iv) a group of the formula



wherein p is 2 to 4; provided that: (a) when the pyridinium ring is substituted with the above substituents in (iv), the pyridinium ring is additionally substituted with R_4 , wherein R_4 is hydrogen or C_1 to C_4 alkyl; and (b) when T is hydroxy or halo, T is only bonded to the 3 position of the pyridinium ring; or (e) a heterocyclic thiomethyl group of the formula $-\text{CH}_2-\text{S}-\text{Y}$, wherein Y is selected from the group consisting of:



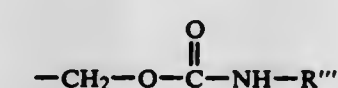
wherein m is 0 to 3, a and b when taken separately are independently hydrogen or C_1 to C_3 alkyl, or when taken together with the carbon to which they are attached form a C_3 to C_7 carbocyclic ring; R' is hydroxy, amino, C_1 to C_4 alkoxy, or $-\text{OR}''$, where R'' is a carboxy protecting group; or R_1 is a secondary amido group of the formula



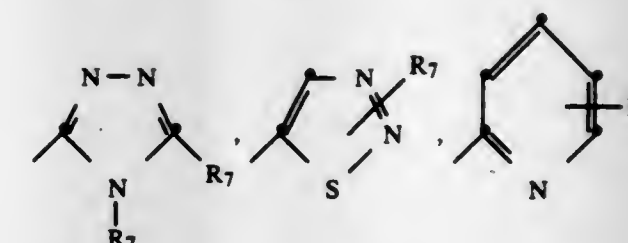
wherein R''' is C_1 to C_4 alkyl, phenyl or C_1 to C_3 alkyl substituted by phenyl; R_2 is hydrogen, a carboxy protecting group or a pharmaceutically acceptable, non-toxic salt thereof, the hydrates of said salt, or the non-toxic metabolically labile esters thereof;

R_3 is

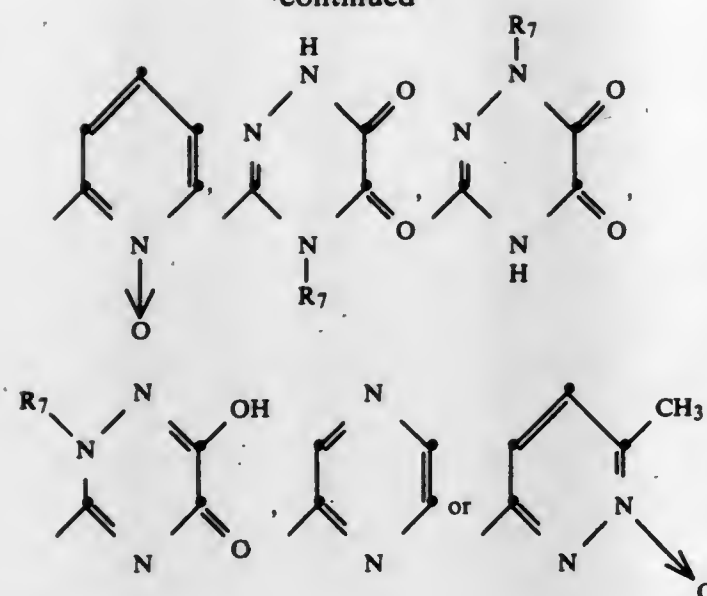
- (a) hydrogen, fluoro, bromo, chloro, hydroxy, or methoxy; or
- (b) $(C_2$ to C_4 acyloxy)methyl; or
- (c) a methyl carbamate group of the formula



wherein R''' is hydrogen or C_1 to C_4 alkyl; or (d) a methyl pyridinium group of the formula



-continued



wherein

R₅ is hydrogen, C₁ to C₄ alkyl, —CH₂COOH, or —CH₂SO₃H;

R₆ is hydrogen, C₁ to C₄ alkyl, phenyl or amino; and R₇ is hydrogen or C₁ to C₄ alkyl; provided that when R₂ is hydrogen R₃ is not hydroxy.

4,430,500

PROCESS FOR PURIFYING CEPHALOSPORIN COMPOUNDS

Hideomi Saito, Sagami-hara; Tomoya Yamamoto; Masayuki Nomura, both of Yokohama, and Tomoyoshi Hachiya, Kunitachi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 15, 1982, Ser. No. 388,656

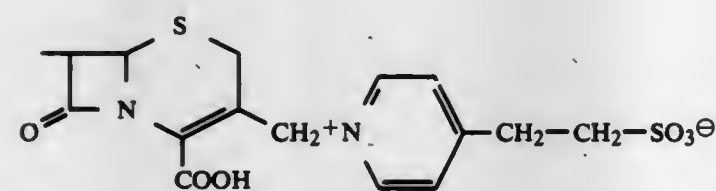
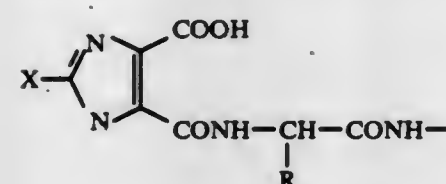
Claims priority, application Japan, Jun. 16, 1981, 56-92837

Int. Cl.³ C07D 501/04

U.S. Cl. 544—25

9 Claims

1. A method for purifying a cephalosporin compound of the formula:



wherein X is hydrogen, halogen, hydroxy, alkoxy, phenylalkoxy, phenoxy, mercapto, alkylthio, phenylalkylthio, phenylthio, alkylsulfonyl, phenylalkylsulfonyl, phenylsulfinyl, alkylsulfinyl, phenylalkylsulfinyl, phenylsulfinyl, amino, mono- or di-alkylamino, mono- or di-phenylalkylamino, mono- or di-phenylamino, alkanoylamino, a sulfonic acid group, nitro, alkyl, phenylalkyl, or phenyl; and R is hydrogen, alkyl, phenylalkyl, or phenyl, with all of the alkyl, phenylalkyl, and phenyl groups in radicals X and R optionally being substituted with at least one substituent, comprising:

(a) adjusting the pH of an aqueous solution containing said cephalosporin compound to be purified to within the range of 1.0 to 3.5;

(b) removing the compound which precipitates from said solution, whereby a mother liquor is left behind;

(c) concentrating the mother liquor, adding the mother liquor after said concentrating to an organic solvent,

isolating the precipitated compound and agitating the obtained compound in an aqueous solution in the presence of an absorbing resin which is a hydrophilic, high molecular weight material having a fine network structure; and (d) isolating the purified compound.

4,430,501

1,4-BIS(SUBSTITUTED-AMINO)-5,8-DIHYDROXY-ANTHRAQUINONES AND LEUCO BASES THEREOF

Keith C. Murdock, Pearl River, N.Y., and Frederick E. Durr, Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 63,285, Aug. 2, 1979, Pat. No. 4,278,689, which is a division of Ser. No. 923,602, Jul. 11, 1978, Pat. No. 4,197,249, which is a continuation-in-part of Ser. No. 873,040, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,872, Aug. 15, 1977, abandoned. This application Nov. 2, 1981, Ser. No. 244,452

Int. Cl.³ C07D 263/06, 265/06

U.S. Cl. 544—72

4 Claims

1. A compound selected from the group consisting of 1,4-bis[2-(1,3-oxazolidin-1-yl)ethylamino]-5,8-dihydroxyanthraquinone, the leuco base and tautomer thereof, and the pharmaceutically acid-addition salts thereof.

4,430,502

PYRIDINYL SUBSTITUTED BENZIMIDAZOLES AND QUINOXALINES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

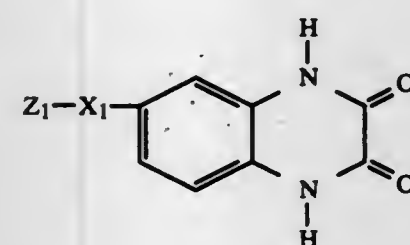
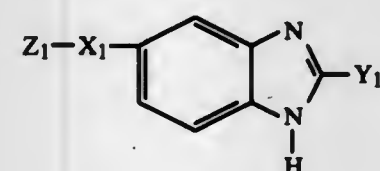
Filed Aug. 13, 1982, Ser. No. 407,853

Int. Cl.³ C07D 401/12, 401/06; A61K 31/44

U.S. Cl. 544—354

7 Claims

1. A compound of the formula I or II

wherein Z₁ is

(a) 4-pyridinyl,

(b) 3-pyridinyl, or

(c) 3-pyridinyl substituted by (C₁-C₄)alkyl;wherein X₁ is(a) —(CH₂)_n—,

(b) —O—,

(c) —CH₂—O—, or(d) —O—CH₂—;wherein Y₁ is —(CH₂)_m—R₇;

wherein R₁ is hydrogen, a pharmacologically acceptable cation, (C₁-C₁₂) alkyl, (C₃-C₁₀) cycloalkyl, (C₇-C₁₂) aralkyl, phenyl, phenyl mono-, di-, or trisubstituted by chloro, or (C₁-C₃) alkyl, or phenyl para-substituted by

(a) —NHCO—R₂₅,(b) —O—CO—R₂₆,(c) —CO—R₂₄,(d) —O—CO—(p-Ph)—R₂₇, or(e) —CH=N—NH—CO—NH₂,

wherein R₂₄ is phenyl or acetamidophenyl, R₂₅ is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R₂₆ is

methyl, phenyl, amino or methoxy; and R₂₇ is hydrogen or acetamido, and wherein —(p-Ph) is 1,4-phenylene;

wherein R₇ is(a) —CH₂OH,

(b) —CHO, or

(c) —COOR₁;

wherein m is an integer of from 0 to 4; and n is an integer of from 1 to 3, inclusive;

including, pharmacologically acceptable acid addition salts thereof, and tautomeric forms thereof.

4,430,503

PREPARATION OF α-DICYNOTRIMETHYLSILOXY COMPOUNDS

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,514

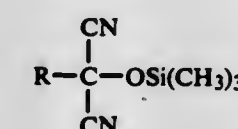
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140632

Int. Cl.³ C07F 7/10

U.S. Cl. 556—417

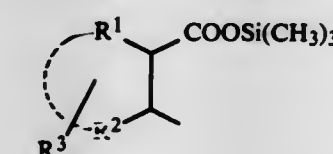
8 Claims

1. A process for the preparation of an α-dicyanotrimethylsilyloxy compound of the formula



in which

R represents an optionally substituted alkyl group having 1 to 8 carbon atoms, an optionally substituted cycloalkyl group having 3 to 12 carbon atoms, an optionally substituted aryl group or an optionally substituted 5- or 6-membered heterocyclic ring, which can additionally be fused with a benzene ring, or a radical of the formula

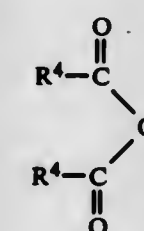


in which

R¹ and R² are identical or different and represent a hydrogen atom, an optionally substituted alkyl group having 1 to 8 carbon atoms or together with the adjacent carbon atoms form a cycloaliphatic ring having 1 to 5 carbon atoms or together with the adjacent carbon atoms represent an aromatic or heteroaromatic ring and

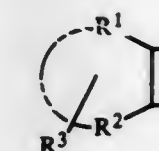
R³ represents a hydrogen or halogen atom or a nitro, alkoxy or carbalkoxy group, a cyclic anhydride radical, an optionally substituted alkyl group having 1 to 8 carbon atoms, an optionally substituted cycloalkyl group which is optionally fused with the aromatic ring formed by R¹ and R², an optionally substituted aryl radical which is optionally fused with the aromatic ring formed by R¹ and R², or an optionally substituted 5- or 6-membered heterocyclic radical, which is optionally fused with the aromatic ring formed by R¹ and R²,

comprising reacting a carboxylic acid anhydride of the formula



in which the radicals

R⁴ represents an optionally substituted alkyl radical having 1 to 8 carbon atoms, an optionally substituted cycloalkyl radical having 3 to 12 carbon atoms, an optionally substituted aryl radical or an optionally substituted 5- or 6-membered heterocyclic ring, which can additionally be fused with a benzene ring, or both radicals R⁴ together represent a radical of the formula



with trimethylsilyl cyanide at a temperature between about 10° and 250° C.

4,430,504

SILYL ETHERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS POLYMERIZATION INITIATORS

Knud Reuter, and Rolf Dhein, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,732

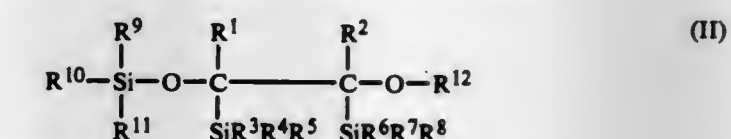
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151444

Int. Cl.³ C07F 7/08, 7/18

U.S. Cl. 556—482

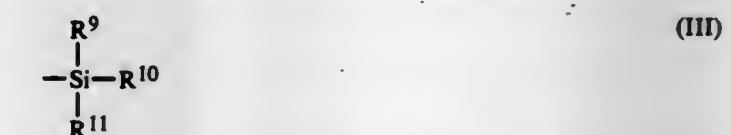
4 Claims

1. Silyl ethers corresponding to the formula:

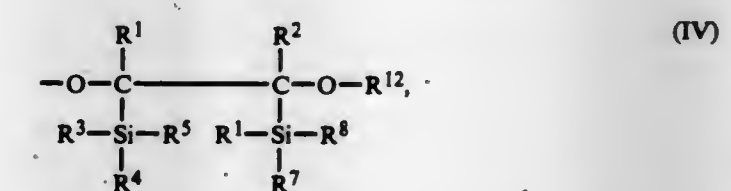


in which

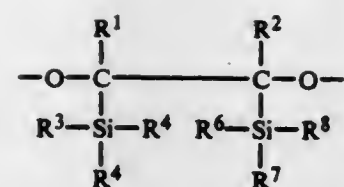
R¹ and R² represent phenyl, tolyl, p-tert-butyl phenyl, o- and p-chlorophenyl, 2,4-dichlorophenyl, or m-methoxyphenyl, R³ to R⁸ independently of one another represent methyl, ethyl or phenyl, R⁹ represents methyl or A, R¹⁰ and R¹¹ represent chlorine, methyl or A, R¹² represents a silyl radical corresponding to the formula:



and A represents a radical corresponding to the formula:

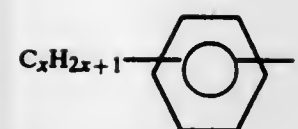


the compounds of the formula II optionally containing the partial structure

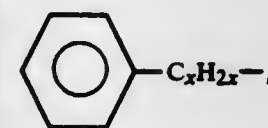


from one to twenty times.

(v)



with x being an integer ranging from 1 to 6, and R' represents a linear or branched chain alkyl radical having 1 to 5 carbon atoms or a radical



with x being as above defined and further in which R and R' may be the same or different, comprising reacting the alkyl carboxylate with carbon monoxide and hydrogen, in an aqueous medium, in the liquid phase and in the presence of a catalytically effective amount of (i) ruthenium, (ii) cobalt, (iii) at least one iodine-containing promoter, and (iv) vanadium.

4,430,505

PROCESS FOR THE PREPARATION OF N,O-DISUBSTITUTED URETHANES USEFUL FOR THE PREPARATION OF ISOCYANATES

Peter Heitkamp, Dormagen; Klaus König, Leverkusen; Kurt Findelsen, Odenthal; Rudolf Fauss, Cologne, and Rudolf Sundermann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,032

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943551

Int. Cl.³ C07C 125/065, 125/073

U.S. Cl. 560—24

15 Claims

1. A process for the preparation of N,O-disubstituted urethanes by reacting

- (a) urea or polyurets with
- (b) primary amines and
- (c) alcohols

at temperatures of from 120° to 350° C. in which N-mono- or N,N'-disubstituted ureas or polyureas are also used as reactants.

11. A process for the preparation of N,O-disubstituted urethanes by reacting

- (a) urea or polyurets with
- (b) aliphatic primary amines and
- (c) alcohols

at temperatures of from 120° to 350° C., characterized in that

- (d) N-unsubstituted urethanes and/or
- (e) N-mono- or N,N'-disubstituted ureas or polyureas are also used as reactants.

4,430,506

HYDROCARBONYLATION/CARBONYLATION OF ALKYL CARBOXYLATES

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 6, 1981, Ser. No. 280,219

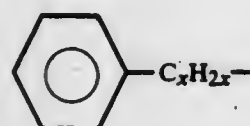
Claims priority, application France, Aug. 7, 1980, 80 17703

Int. Cl.³ C07C 67/36, 51/12, 45/49, 29/36

U.S. Cl. 560—105

24 Claims

1. A process for the hydrocarbonylation and/or carbonylation of an alkyl carboxylate having the formula R—CO—O—R', in which R represents a linear or branched chain alkyl radical having from 1 to 16 carbon atoms, a cycloalkyl radical having from 3 to 6 carbon atoms, a phenyl radical, a radical



or a radical

4,430,507

SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 220,628, Dec. 29, 1980, abandoned.

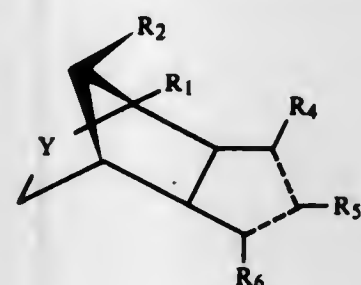
This application Dec. 29, 1981, Ser. No. 335,563

Int. Cl.³ C11B 9/00; C07C 69/03

U.S. Cl. 560—256

3 Claims

1. A product comprising a major proportion of at least one compound defined according to the structure:



4,430,507

4-METHYL-2-OXO-CYCLOPENTANECACETIC ACID PROSTAGLANDIN INTERMEDIATES

Percy Manchand, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 279,492, Jul. 1, 1981, Pat. No. 4,390,718.

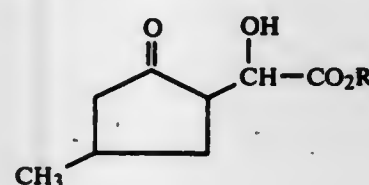
This application Mar. 11, 1983, Ser. No. 474,370

Int. Cl.³ C07C 59/46, 69/732

U.S. Cl. 560—122

4 Claims

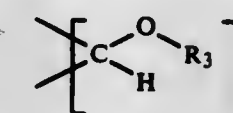
1. A compound of the formula:



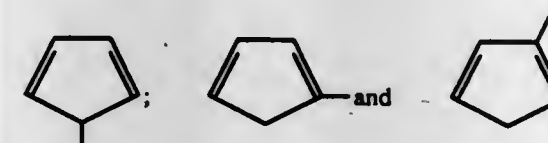
wherein R represents hydrogen or a lower alkyl.

4. The compound of claim 1 wherein said compound is alpha-hydroxy-4-methyl-2-oxocyclopentane acetic acid ethyl ester.

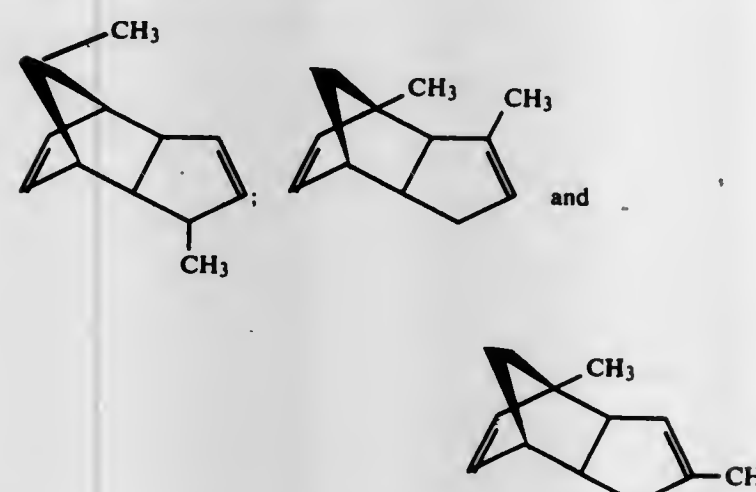
wherein Y is the moiety having the structure:



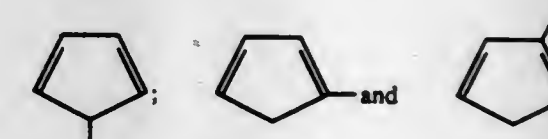
wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond; wherein R₁ and R₂ represent hydrogen or methyl with the proviso that one of R₁ or R₂ is hydrogen and the other of R₁ and R₂ is methyl; wherein R₄, R₅ and R₆ represent hydrogen or methyl with the proviso that one of R₄, R₅ and R₆ is methyl and the other two of R₄, R₅ and R₆ are hydrogen; and wherein R₃ is formyl; produced by the process comprising the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one methyl cyclopentadiene isomer having a structure selected from the group consisting of:



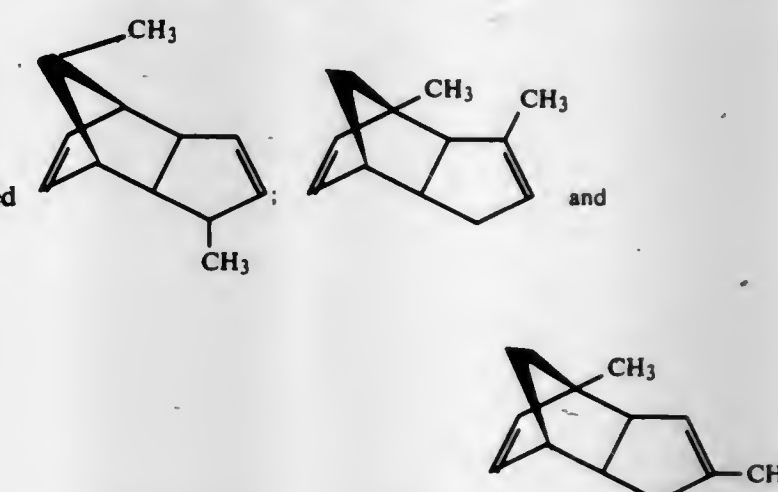
or at least one precursor thereof having a structure selected from the group consisting of:



carbon-carbon double bond; wherein R₁ and R₂ represent hydrogen or methyl with the proviso that one of R₁ or R₂ is hydrogen and the other of R₁ and R₂ is methyl; wherein R₄, R₅ and R₆ represent hydrogen or methyl with the proviso that one of R₄, R₅ and R₆ is methyl and the other two of R₄, R₅ and R₆ is hydrogen; and wherein R₃ is acetyl; produced by the process comprising the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one methyl cyclopentadiene isomer having a structure selected from the group consisting of:

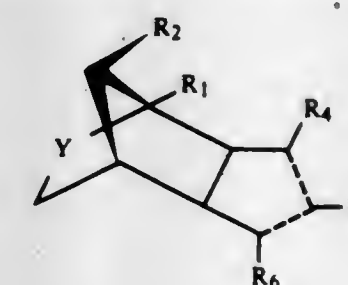


or at least one precursor thereof having a structure selected from the group consisting of:

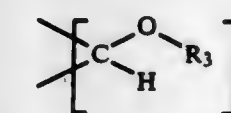


with acetic acid or acetic anhydride at a temperature in the range of from about 0° C. up to about 50° C. with the concentration of acid catalyst in the reaction mass varying from 0.01% up to 1 mole % based on the weight of reaction mass.

3. A product comprising a major proportion of at least one compound defined according to the structure:



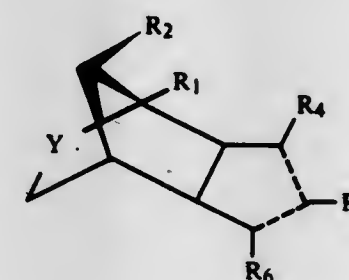
wherein Y is the moiety having the structure:



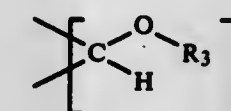
wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond; wherein R₁ and R₂ represent hydrogen or methyl with the proviso that one of R₁ or R₂ is hydrogen and the other of R₁ and R₂ is methyl; wherein R₄, R₅ and R₆ represent hydrogen or methyl with the proviso that one of R₄, R₅ and R₆ is methyl and the other two of R₄, R₅ and R₆ is hydrogen; and wherein R₃ is hydrogen; produced by the process comprising the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one

formic acid or a formic acid precursor at a temperature in the range of from about 0° C. up to about 50° C. with the concentration of acid catalyst in the reaction mass varying from 0.01% up to 1 mole % based on the weight of reaction mass.

2. A product comprising a major proportion of at least one compound defined according to the structure:

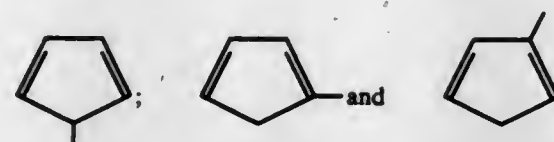


wherein Y is the moiety having the structure:

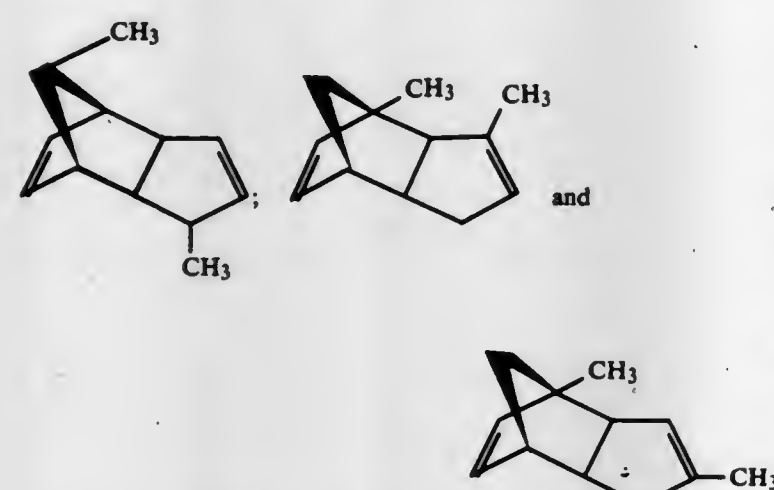


wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a

methyl cyclopentadiene isomer having a structure selected from the group consisting of:



or at least one precursor thereof having a structure selected from the group consisting of:



with a C₁-C₂ alkanolic acid or alkanolic acid anhydride at a temperature in the range of from about 0° C. up to about 50° C. with a concentration of acid catalyst in the reaction mass varying from 0.01% up to 1 mole % based on the weight of reaction mass, and then hydrolyzing the resulting esters using from 10 up to 50% by weight of a strong alkali metal hydroxide at a hydrolysis temperature of from about 40° C. up to reflux.

4,430,509

PROCESS FOR THE SEPARATION OF THE RACEMATE (R,S)-CYSTEINE

Horst Bethge, Hanau; Karlheinz Drauz, Freigericht; Axel Kleemann, Hanau; Jürgen Martens, Alzenau, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 25, 1983, Ser. No. 460,858

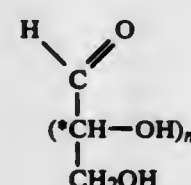
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202295

Int. Cl.³ C07B 19/00

U.S. Cl. 562-401

22 Claims

1. A process for the separation of the racemate (R,S)-cysteine comprising condensing the (R,S)-cysteine in a solvent which is water, a water miscible alcohol or ether having up to 5 carbon atoms or a mixture of such solvents with an enantiomerically pure monosaccharide of the formula



where n is a whole number from 2 to 5 inclusive and *C is an asymmetrical carbon atom to form a 2-position substituted thiazolidin-4-carboxylic acid of the formula



separating the diastereomers in the mixture obtained from each other and reacting the isolated diastereomer in a solvent which is water, a water miscible alcohol, or ether having up to 5 carbon atoms or a mixture of such solvents with a ring splitting compound containing the group -NH₂ and capable of condensing with a carbonyl group and isolating the enantiomerically pure cysteine obtained as such or as the corresponding cystine by oxidation.

4,430,510

PROCESS FOR THE PREPARATION OF 2-(2,4-DICHLOROPHENOXY)-PHENYLACETIC ACID

Jacques Gosteli, Basel, Switzerland, assignor to Schering Corporation, Kenilworth, N.J.

Filed May 24, 1982, Ser. No. 381,250

Claims priority, application Switzerland, Jun. 18, 1981, 4016/81

Int. Cl.³ C07C 59/00, 65/00

U.S. Cl. 562-465

20 Claims

1. A process for the preparation of salts of 2-(2,4-dichlorophenoxy)-phenylacetic acid, comprising reacting a 2-halo-phenylacetic acid or a salt thereof under basic conditions in the presence of metallic copper with 2,4-dichlorophenol or a salt thereof.

4,430,511

METHOD FOR PRODUCING TEREPHTHALIC ACID

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 894,068, Apr. 6, 1978, Pat. No. 4,356,105.

This application Aug. 23, 1982, Ser. No. 410,765

Int. Cl.³ C07C 51/347

U.S. Cl. 562-481

3 Claims

1. In a method of producing terephthalic acid wherein potassium benzoate is disproportionated to form dipotassium terephthalate which is converted to terephthalic acid, the improvement comprising:

- forming aggregates of crystals of potassium benzoate by the method of direct precipitation;
- mixing said aggregates of said crystals with terphenyl to form a low viscosity slurry; and then
- transporting said low viscosity slurry to a disproportionation reactor.

4,430,512

PROCESS AND EQUIPMENT FOR THE UTILIZATION OF THERMAL ENERGY OF WASTE HAVING BEEN SUBJECTED TO OIL CONTAMINATION

Gyorgy Vajdovich, and Istvan Csorba, both of Budapest, Hungary, assignors to Csozzereloipari Vallalat, Budapest, Hungary

PCT No. PCT/HU81/00010, § 371 Date Nov. 2, 1981, § 102(e) Date Nov. 2, 1981, PCT Pub. No. WO81/02618, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 11, 1981, Ser. No. 320,964

Claims priority, application Hungary, Mar. 11, 1980, 567/80

Int. Cl.³ B01D 17/00

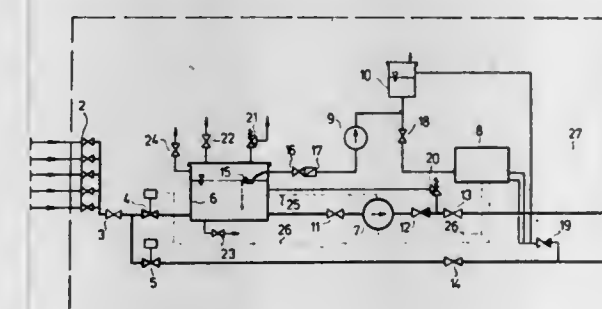
U.S. Cl. 210-745

3 Claims

1. A process for recovering the heat content of oil-contaminated waste water, which comprises collecting the waste water and conducting it through a plurality of waste water carrying ducts with shut-off valves, from an oil manipulating system into a single duct with a shut-off valve; a duct with two branches attached to and leading from said shut-off valve; each branch of said branched duct having therein a magnet valve

which operates contrarily to the magnet valve in the other branch; each of said magnet valves connected by means of a cable to an instrument which senses the oil content of the waste water, wherein if the instrument does not sense oil, one magnet valve is open and the other is closed, and if the instrument senses oil, the other magnet valve is open and the one magnet valve is closed; a pressurized sample collector connected via a duct to the one magnet valve intermediate said valve and said sensing instrument; said pressurized collector having therein a sampling place on a float connected by a duct to a sampling vessel which is intermediate said pressurized collector and said sensing instrument; a duct for carrying the waste water from the collector is connected to a shut-off means and a pump which is connected to and controlled by a sensing instrument, transporting the uncontaminated waste water through a check valve for further utilization; and carrying the contaminated waste water through a duct leading from the other magnet valve to an external repository.

2. Apparatus for the utilization of the thermal energy of hot waste water from oil manipulating systems comprising a plurality of waste water carrying ducts with shut-off valves lead-



ing from an oil manipulating system into a single duct with a shut-off valve; a duct with two branches attached to and leading from said shut-off valve; each branch of said branched duct having therein a magnet valve which operates contrarily to the magnet valve in the other branch; each of said magnet valves connected by means of a cable to an instrument which senses the oil content of the waste water, wherein if the instrument does not sense oil, one magnet valve is open and the other is closed, and if the instrument senses oil, the other magnet valve is open and the one magnet valve is closed; a pressurized sample collector connected via a duct to the one magnet valve intermediate said valve and said sensing instrument; said pressurized collector having therein a sampling place on a float connected by a duct to a sampling vessel which is intermediate said pressurized collector and said sensing instrument; a duct for carrying the waste water from the collector is connected to a shut-off means and a pump which is connected to and controlled by the sensing instrument for transporting the uncontaminated waste water through a check valve and a duct for further utilization; a duct leading from the other magnet valve for carrying contaminated waste water to an external repository.

4,430,513

ALKYLATION OF AMINE COMPOUNDS

Edwin H. Homeler, Maywood, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 31, 1981, Ser. No. 297,909

Int. Cl.³ C07C 85/02, 85/00

U.S. Cl. 564-469

11 Claims

1. A process for the self-alkylation of an amine compound which comprises reacting a reactant material consisting of an amine compound containing at least two alkyl substituents at alkylation conditions in the presence of a cobalt carbonyl, a rhodium carbonyl, or a cobalt or rhodium containing compound which is capable of forming a carbonyl under alkylation conditions, and recovering the resultant alkylated amine product.

4,430,514

NOVEL METHOD FOR THE PREPARATION OF CF₃NF₂

Carl J. Schack, Chatsworth, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

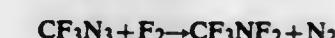
Filed Jun. 21, 1982, Ser. No. 390,160

Int. Cl.³ C07C 87/08

U.S. Cl. 564-496

4 Claims

1. A process for the production of difluoroamino trifluoromethane comprising reacting azidotrifluoromethane with fluorine in equal molar quantities to produce difluoroamino trifluoromethane according to the equation



4,430,515

CATALYST COMPOSITIONS

Rex L. Bobsein, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1982, Ser. No. 415,201

Int. Cl.³ C07C 2/10

U.S. Cl. 585-530

5 Claims

1. A process of producing olefin polymers in which one or more C₂-C₂₀ olefin reactants are contacted with a catalyst consisting essentially of a tantalum halide under oligomerization conditions.

4,430,516

CONVERSION OF OLEFINS TO LOW POUR POINT DISTILLATES AND LUBES

Rene B. La Pierre, Medford, N.J., and Stephen S. Wong, Langhorne, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,099

Int. Cl.³ C07C 2/02

U.S. Cl. 585-533

7 Claims

1. A process for the conversion of olefins to distillate and the range (C₁₀+) hydrocarbons, said process comprising contacting an olefin feed with a high SiO₂/Al₂O₃ ratio large pore crystalline aluminosilicate zeolite catalyst at a pressure in the range of from about 200 psig to about 2000 psig and at a conversion temperature in the range of from about 200°-750° F. and weight hourly space velocity of about 20 to 0.1 wherein the large pore crystalline aluminosilicate zeolite catalyst has pore dimensions of greater than about 6 angstroms and a constraint index of about 0.5 to less than 2.

4,430,517

DEHYDROGENATION PROCESS USING A CATALYTIC COMPOSITION

Tamotsu Imai, Mt. Prospect, Ill., and Chi-Wen Hung, San Rafael, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 326,969, Dec. 2, 1981, abandoned. This application Mar. 22, 1983, Ser. No. 477,699

Int. Cl.³ C07C 5/333

U.S. Cl. 585-660

3 Claims

1. A process for the dehydrogenation of a C₂ to C₃₀ paraffin hydrocarbon which comprises contacting said hydrocarbon at dehydrogenation conditions with a catalyst comprising from about 0.01 to about 5 wt % of a platinum group component, from about 0.01 to about 5 wt % of a tin component, from about 0.01 to about 15 wt % of an alkali or alkaline earth component and a halogen component while concomitantly maintaining during said process both:

- an atomic ratio of said alkali or alkaline earth component to said platinum group component of more than 10, and
- a halogen content of more than 0.2 wt % and up to 15 wt %.

ELECTRICAL

4,430,518

PROTECTING TUBE FOR THERMOCOUPLE

Takashi Nakajima, Iwatsuki, and Fujio Matsui, Nagareyama, both of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 326,100

Int. Cl.³ H01L 35/02

U.S. Cl. 136—234

8 Claims



1. A protecting tube for a platinum/platinum-rhodium thermocouple, comprising an outer shell made of a tubular molded body of boron nitride having a density of 1.7 to 2.2 g/cm³ and an inner sheath made of a tubular molded body of ceramics, said outer shell and said inner sheath having one end opening to define a port through which the thermocouple is inserted, said outer shell being formed by the steps of molding boron nitride powders at a temperature of higher than 1500° C. while applying a pressure of from 100 to 500 kg/cm² to form a molded block of boron nitride, cutting out a rod having desired dimensions and shape from said block, and boring said rod to form a cylinder.

4,430,519

ELECTRON BEAM WELDED PHOTOVOLTAIC CELL INTERCONNECTIONS

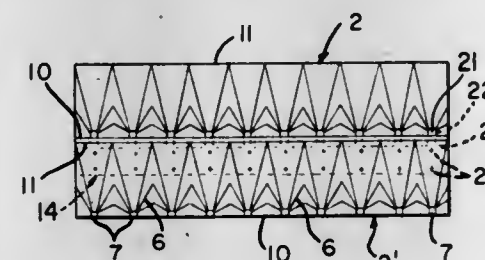
Walter M. Young, Largo, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 28, 1982, Ser. No. 383,061

Int. Cl.³ H01L 31/18, 31/04

U.S. Cl. 136—244

2 Claims



1. A photovoltaic generating module of the type comprising a plurality of elongate photovoltaic cells, each said cell having a light-receiving first surface and an opposed second surface, said surfaces being bounded by parallel opposed elongate first and second edges, said first edge of at least one cell being proximate to the second edge of an adjacent cell, said first surface having a plurality of current collection grids thereon, each grid having a collector pad adjacent said first edge, said pads having a uniform spacing, said at least one cell having electrical connecting means between said collector pads and the second surface of said adjacent cell, characterized in that said interconnecting means comprises a strip of metal foil having opposed first and second surfaces and parallel opposed first and second edges, said first and second surfaces being fully insulated by respective first and second laminas of dielectric

material, said strip having tabs extending normally of said first edge, said tabs having a like uniform spacing, said first surface of each said tab having a contact point which is electron beam welded to a respective said collector pad of said at least one cell, said second surface of said strip having a contact point proximate to each said tab which is electron beam welded to said second surface of said adjacent, said contact points being formed by disintegrating said laminas during welding.

4,430,520

TRANSDUCER SHIELDING ENCLOSURE

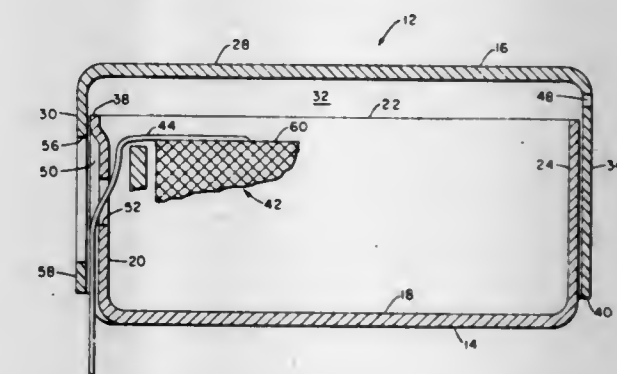
George C. Tibbetts, and Joseph A. Sawyer, both of Camden, Me., assignors to Tibbetts Industries, Inc., Camden, Me.

Filed Apr. 7, 1982, Ser. No. 366,332

Int. Cl.³ H04R 1/02; H05K 9/00

U.S. Cl. 174—35 R

10 Claims



1. The combination of
a magnetic device having at least one electrical lead and means to produce magnetic flux in response to a current in said lead, and
a magnetic shielding enclosure substantially surrounding said device and comprising fitted inner and outer casings of high permeability magnetic material, each casing comprising a first wall and side walls each integral with and extending from said first wall to an unbroken annular skirt edge, a number of said side walls of each casing having major areas closely fitting with corresponding side walls of the other casing, a side wall of one of said casings having a portion formed away from a corresponding side wall of the other casing and being adapted to provide a clearance space therebetween for said lead extending to the skirt edge of the outer casing, the side wall of the outer casing having a closed aperture located to permit said lead to be threaded out from said clearance space and extended through said aperture.

4,430,521

OPTIONAL REAR ENTRY BACK CONNECTOR FOR A BASEBOARD HEATER

L. Ronald Ofield, Islington; Leonhard Puurits, Toronto, and Roy A. Patterson, Mississauga, all of Canada, assignors to Westcan Electrical Manufacturing Inc., Brantford, Canada

Filed Aug. 24, 1981, Ser. No. 295,604

Claims priority, application Canada, Oct. 10, 1980, 362241

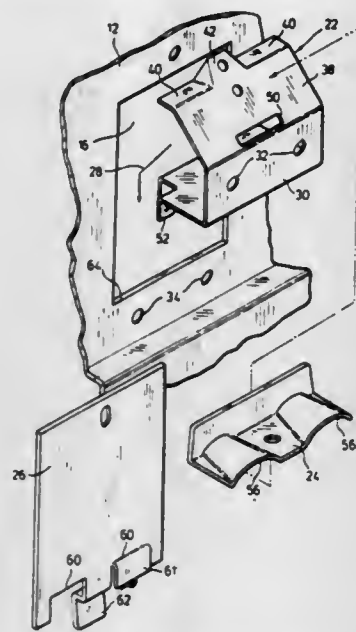
Int. Cl.³ F24H 9/02

U.S. Cl. 174—65 R

12 Claims

1. In combination with an electrical heating apparatus having an enclosed terminal section, a rear wall and an aperture in said rear wall permitting access to said terminal section; a back connector assembly comprising: a bracket member including a supporting portion and secured within said terminal section to locate the supporting portion in proximity to said aperture, the bracket member and the aperture being so dimensioned so as to leave a substantial part of the aperture unobstructed, an electrical power cable passing over the bracket member, through the aperture and into the terminal section; a clamping plate clamping said cable between said supporting portion and said clamp-

ing plate, said unobstructed part of said aperture permitting access therethrough to an end of the electric power cable



within the terminal section and a notched cover plate covering substantially said aperture and allowing passage of said cable between edge surfaces of said cover plate and said rear wall.

4,430,522

LAMINATED BUS BAR WITH CAPACITORS AND METHOD OF MAKING SAME

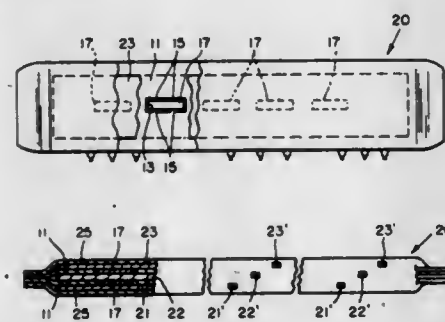
Craig C. Bader, Rochester, N.Y., assignor to Eldre Components, Inc., Rochester, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,877

Int. Cl.³ H01B 7/00

U.S. Cl. 174—72 B

9 Claims



1. A method of producing a laminated bus bar, comprising providing a resin-coated layer of plastic, dielectric material having therethrough a plurality of spaced openings, and having formed thereon around each opening a plurality of spaced, integral tabs which project part way into the opening,

placing over each of said openings and its associated tabs a thin capacitor, which is similar in configuration to but smaller than the associated opening, and whereby marginal portions of each capacitor at one side thereof are supported on said associated tabs adjacent the inner ends thereof,

partially curing said layer to secure the capacitors thereto, and

laminating said layer and capacitors between a pair of strip conductors to form a bus bar in which said capacitors are secured in said openings with opposite sides thereof engaged with said conductors, and with marginal portions of their peripheries engaged by said inner ends of the associated tabs.

4. A laminated bus bar, comprising a pair of electrically conductive metal strips, a layer of dielectric insulation laminated between said strips, and at least one thin capacitor secured in an opening in said layer

with opposite sides thereof in contact with the confronting surfaces on said strips, said capacitor being generally similar in configuration to and slightly smaller than said opening, and said layer having formed thereon around the periphery of said opening a plurality of spaced, integral tabs which project into engagement with the periphery of said capacitor at spaced points thereabout.

4,430,523

GRIPPING JAW DEVICE FOR ELONGATED MEMBERS SUCH AS ELECTRICAL CONDUCTORS

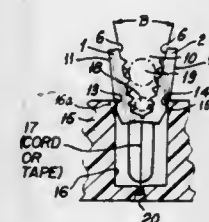
Derek Hayes, Home Farm Cottage, St. Michael, Bungay, Suffolk NR35 1NF, England

Filed May 18, 1981, Ser. No. 264,955

Int. Cl.³ H01R 13/58; F16G 11/04

U.S. Cl. 174—135

22 Claims



1. The combination of a pair of jaws and a camming means into which the pair of jaws is insertable for the purpose of urging the jaws toward one another in order to locate or grip an elongated member, arbitrarily selected from a range of elongated members of different cross-sectional areas, between confronting faces of the two jaws, wherein said jaws are interconnected by a hinged connection at one end of the jaws, said hinged connection providing a hinging axis which, in use of the jaws, is disposed substantially parallel to the longitudinal direction of said elongated member, and the elongated member-engaging face of at least one of said jaws is provided with a plurality of spaced-apart projections which, when said pair of jaws is inserted into said camming means to bring said faces into confrontation with one another, project toward the elongated member-engaging face of the other jaw, at least some of said spaced-apart projections being in the form of ridges disposed substantially parallel to said hinging axis.

2. The combination of a pair of jaws and a camming means into which the pair of jaws is insertable for the purpose of urging the jaws toward one another in order to locate or grip an elongated member, arbitrarily selected from a range of elongated members of different cross-sectional areas, between confronting faces of the two jaws, wherein said jaws are interconnected by a hinged connection at one end of the jaws, said hinged connection providing a hinging axis which, in use of the jaws, is disposed substantially parallel to the longitudinal direction of said elongated member, and the elongated member-engaging face of at least one of said jaws is provided with a plurality of spaced-apart projections which, when said pair of jaws is inserted into said camming means to bring said faces into confrontation with one another, project toward the elongated member-engaging face of the other jaw, at least some of said spaced-apart projections being in the form of pimples.

4,430,524

BRIDGING CLIP COVER

Donald Santucci, 1708 Shire Ct., Wheaton, Ill. 60187

Filed Mar. 22, 1982, Ser. No. 360,198

Int. Cl.³ H01R 13/44

U.S. Cl. 174—138 F

5 Claims



1. An integral one-piece cover for an electrically conductive bridging clip comprising:

- a body having an electrically insulative portion comprised of substantially electrically non-conductive semi-rigid plastic material for enclosing the exposed surfaces of a bridging clip when installed on a terminal block and for preventing unintended electrical contact between adjacent bridging clips on a terminal block; the body having surfaces facilitating manual application of the integral one-piece cover to a bridging clip prior to or after installation thereof on a terminal block; the body including a pair of spaced apart generally facing rectangular sidewalls, each sidewall having an upper edge, a lower edge and two end edges; a bridge disposed between and extending along respective sidewall upper edges, wherein said bridge and sidewalls define a surface having a generally U-shaped cross-section; a pair of opposed partial end walls between adjacent sidewall end edges extending from the bridge downwardly to a point above the sidewall lower edges;
- retention means on the body for maintaining firm but selectively releasable engagement of the one-piece cover with a bridging clip, the retention means including said body sidewalls shaped to closely conform to a bridging clip, the lower sidewall edges being spaced apart a distance less than the upper sidewall edges and less than the width of a bridging clip whereby interfering engagement of closely spaced lower portions of the sidewalls with a bridging clip when positioned within the one-piece cover will function to inhibit outward movement of the bridging clip from the one-piece cover, said pair of opposed partial end walls functioning to maintain the sidewalls, including their lower edges, at said spaced distance.

4,430,525

CIRCUIT ARRANGEMENT FOR CONNECTING TELEX SUBSCRIBER STATIONS TO TELETIX SUBSCRIBER STATIONS WHICH ARE CONNECTED TO THE SAME DATA EXCHANGE SYSTEM

Dietmar Franz, Puchheim, and Norbert Torggler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 8, 1982, Ser. No. 338,005

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110791

Int. Cl.³ H04L 13/08

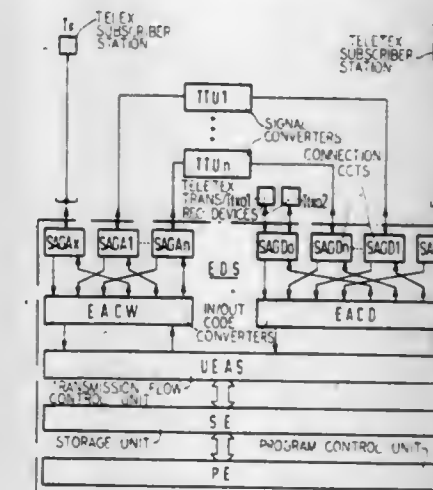
U.S. Cl. 178—3

2 Claims

1. In a circuit arrangement of the type in which a data exchange system is connected to both telex and teletex subscriber stations and includes termination circuits for selectively establishing connections therebetween, and at least one signal converter connected to the system via respective termination circuits and operable to convert the digital signals emitted by a telex subscriber station into digital signals which may be processed by a teletex subscriber station and to convert digital

signals emitted by a teletex subscriber station into digital signals which may be processed by a telex subscriber station, the improvement in combination therewith comprising:

at least one teletex transmitting/receiving device connected to an individual termination circuit; special call signal generating means operable to produce a special call signal when a subscriber station is not accessible; and means responsive to a special call signal to cause connection



of the teletex transmitting/receiving device for receiving and storing the digital signals transmitted from the accessible subscriber station along with additional items of information identifying the inaccessible subscriber station, and, in response to an inaccessible subscriber station becoming accessible, to interconnect the teletex transmitting/receiving device to the previously inaccessible subscriber station in response to the additional items of information for retransmission of the digital signals thereto.

4,430,526

INTERACTIVE GRAPHICS TRANSMISSION SYSTEM EMPLOYING AN ADAPTIVE STYLUS FOR REDUCED BANDWIDTH

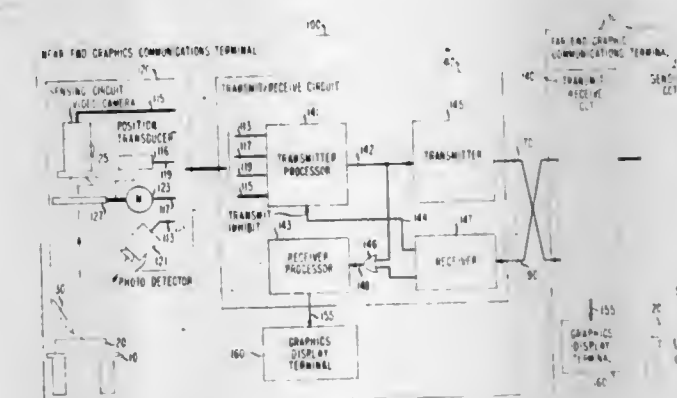
Earl F. Brown, Piscataway, and Arthur B. Larsen, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1982, Ser. No. 342,112

Int. Cl.³ G08C 21/00

U.S. Cl. 178—18

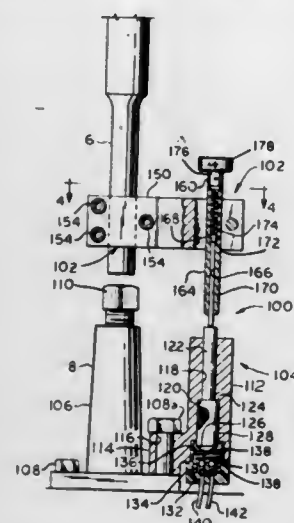
31 Claims



1. Apparatus for communicating modifications to an image of a previously transmitted graphic, comprising means responsive to locations of a tip of a stylus with respect to the graphic for specifying addresses of image portions which are to be changed, means for defining instructions for changing the image of the graphic, means responsive to said specified addresses and said defined instructions for forming a modification communication, and

first switch portion and the spring loaded plunger of said second switch portion, the first switch portion includes:

- a bracket attached to said one of said relatively movable parts, and
- a housing attached to the bracket in threadably adjustable



relation, the spring-loaded plunger being slidably mounted in the housing, and the second switch portion includes:

- a bracket attached to said other of said relatively movable parts, and
- a housing attached to the bracket, the spring-loaded plunger being slidably mounted in the housing.

4,430,534

SWITCH CONSTRUCTION

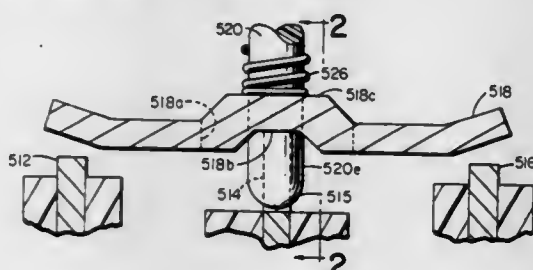
Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 328,828, Dec. 9, 1981, Pat. No. 4,389,352, which is a division of Ser. No. 234,664, Feb. 17, 1981, Pat. No. 4,347,417. This application Mar. 16, 1983, Ser. No. 475,953

Int. Cl.³ H01H 5/06

U.S. Cl. 200—68.3

3 Claims



1. A "center-off" switch comprising a base defining an upwardly open cavity, at last three fixed contacts spaced along the bottom wall of said cavity, said switch having means defining actuator support regions, an actuator including support means cooperating with said support regions to movably support said actuator, said actuator including a depending post portion, a movable contact element slidably received inside said base cavity for movement generally across the upper ends of said fixed contacts to selectively bridge certain of them, said movable element having at least one upwardly open recess to receive the lower end of said actuator post portion, said element being moved in response to actuator movement, a spring retained by said actuator post portion to bias said element toward said fixed contacts, said fixed contacts including a center contact with an upper end shaped to receive a central recess in the underside of said element in a "center-off" element position wherein said other fixed contacts do not engage said movable contact element, and said element having generally flat lands on either side of said actuator post recess for engagement with the lower end of said spring, said spring

lower end also being generally flat to provide a stable "center-off" position for said movable element.

4,430,535

DAMPING DEVICE FOR ELECTRIC CIRCUIT BREAKERS

Samuel Berg, and Carl E. Sölver, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

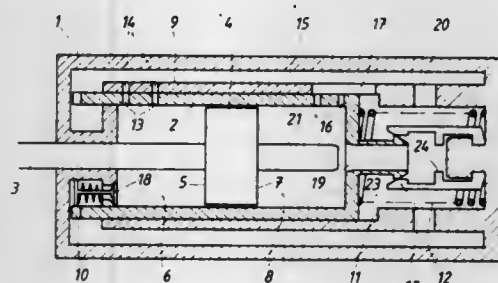
Filed Nov. 20, 1981, Ser. No. 323,572

Claims priority, application Sweden, Nov. 27, 1980, 8008317

Int. Cl.³ H01H 35/38

U.S. Cl. 200—82 R

4 Claims



1. A damping device for electric circuit breakers, said damping device comprising: a housing (1) filled with a damping liquid, a damping cylinder (2) within said housing, said cylinder being movable in its axial direction,

a piston (4) within said cylinder, said piston being connectible to the movable contact of a circuit breaker and being movable between a first end position and a second end position, said first and second end positions corresponding to the closed and open positions of the circuit breaker, respectively, said piston limiting two cylinder spaces (6, 8) positioned on opposite sides of the piston and having restricted outlet openings (13, 16), a spring means (12) for biasing said damping cylinder axially, said damping cylinder being moved by said piston against the action of said spring means to a lock position when said piston is moved from said first to said second end position, latching means (22) for retaining the damping cylinder (2) in said lock position,

said outlet openings of the cylinder space on that side of the piston facing said first end position being blocked in said locking position, whereby reverse movement of the piston is prevented.

4,430,536

VACUUM INTERRUPTER

Yukio Kurosawa; Akira Wada; Kiyoji Iwashita, and Hideaki Tsuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

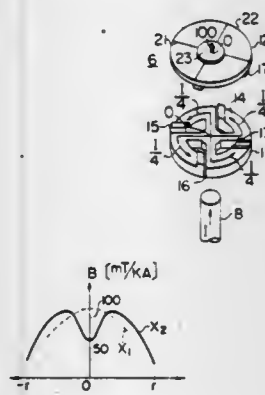
Filed Jun. 18, 1982, Ser. No. 389,969

Claims priority, application Japan, Jun. 24, 1981, 56-96523

Int. Cl.³ H01 33/66

U.S. Cl. 200—144 B

6 Claims



1. A vacuum interrupter comprising:

a vacuum vessel;

at least a pair of electrical conductor rods extending from interior to exterior of said vacuum vessel; and
a pair of separable composite electrodes respectively connected to said electrical conductor rods within said vacuum vessel, each of said composite electrodes having a main electrode and parallel magnetic field generator means for generating a magnetic field substantially parallel to an arc developing between the main electrodes when one main electrode is separated from the other in response to movement of one of said electrical conductor rods so as to extinguish the arc,

in which each of said main electrodes has, at a central portion on its major surface, magnetic field suppressing means which projects toward the opposing main electrode to cancel partly the parallel magnetic field near the central portion.

4,430,537

GETTER AND ELECTRICAL SWITCHING SYSTEM USING SUCH GETTER

Hans Sauer, Fichtenstrasse 5, D-8024 Deisenhofen, Fed. Rep. of Germany; Takashi Takada, Shijonawate, and Yukihiro Kondo, Hirakata, both of Japan, assignors to Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,584

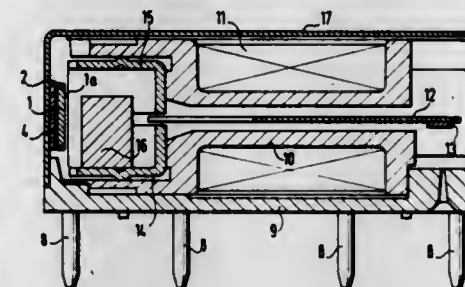
Claims priority, application Japan, Mar. 31, 1981, 56-48766;

Fed. Rep. of Germany, Jan. 8, 1982, 3200392

Int. Cl.³ H01H 9/04

U.S. Cl. 200—302.1

15 Claims



1. A getter for use in a sealed contact chamber, consisting of a porous getter material adapted to adsorb substances capable of creating resistive films on electrical contacts, the majority of the pores in said getter material having diameters greater than 3 nm and smaller than 100 nm, the pore diameter mean value ranging from about 7 nm to about 20 nm.

4,430,538

HIGH-FREQUENCY HEATING DEVICE

Yukio Suzuki, and Syozo Kobayashi, both of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha

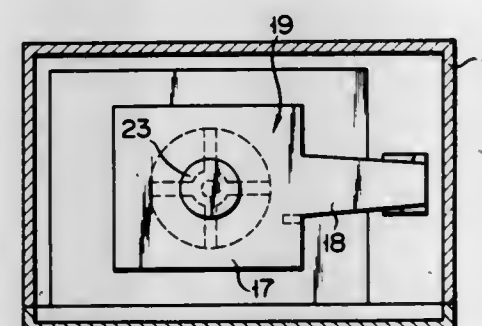
Filed Aug. 19, 1981, Ser. No. 294,419

Claims priority, application Japan, Aug. 28, 1980, 55-122212[U]; Nov. 11, 1980, 55-161054[U]; Nov. 11, 1980, 55-161056[U]

Int. Cl.³ H05B 6/72

U.S. Cl. 219—10.55 F

16 Claims



1. A high-frequency heating device comprising:

a housing;

a heating chamber within said housing, said heating chamber having an opening therein for the introduction of high-frequency energy into the heating chamber;

a high-frequency generator;

means for transmitting high-frequency energy from said generator to said opening in said heating chamber;

a rotating disk, mounted for rotation within said opening, for guiding energy from said transmitting means into said heating chamber, said disk having a base plate made of a low dielectric loss material and a plurality of high-frequency screening pieces arranged on the base plate and defining high-frequency exciting slots between the screening pieces which extend radially from the central axis of the base plate to the outer circumference thereof so that a distribution of high-frequency energy across said opening has a maximum value at a central axis of said opening and is supplied there-through to said heating chamber; and

driving means for rotating said rotating disk.

4,430,539

HIGH-FREQUENCY HEATING DEVICE

Yukio Suzuki, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

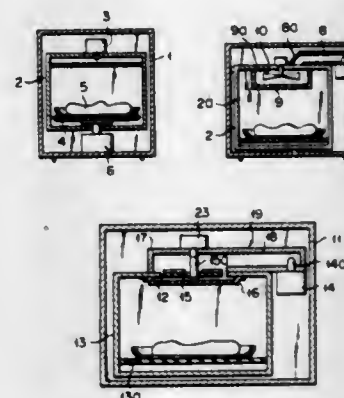
Filed Nov. 5, 1981, Ser. No. 318,560

Claims priority, application Japan, Nov. 11, 1980, 55-161055[U]

Int. Cl.³ H05B 6/72

U.S. Cl. 219—10.55 F

10 Claims



1. A high-frequency heating device comprising:

a housing;

a heating chamber housed in said housing, said heating chamber having an opening therein;

a high-frequency generator;

means for transmitting high-frequency energy from said generator to said opening in said heating chamber;

a rotating disk guiding the energy mounted for rotation within said opening, said disk having a base plate made of a low dielectric loss material and a plurality of high-frequency screening pieces arranged on the base plate and defining high-frequency exciting slots between the screening pieces which extend radially from the central axis of the base plate to the outer circumference thereof so that a distribution of high frequency energy across said opening has a maximum value at a central axis of said opening and is supplied therethrough to said heating chamber;

means for spacing said screening pieces a predetermined distance from said base plate; and

driving means for rotating said rotating disk.

4,430,540

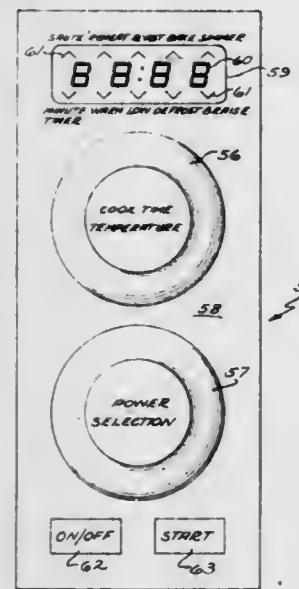
DATA INPUT APPARATUS FOR MICROWAVE OVEN CONTROLLERS

Gerald W. Sealf, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 274,017, Jun. 15, 1981, abandoned. This application Dec. 28, 1981, Ser. No. 335,022 Int. Cl.³ H05B 6/68; G09G 3/00

U.S. Cl. 219—10.55 B

14 Claims



1. Cooking data display apparatus for displaying actual cooking data for a microwave oven control having digital electronic processor means for providing an output to energize a magnetron and having a plurality of cooking data inputs to effect such output comprising

means to provide power to the processor means, analog input means indicative of selected cooking control parameters, said analog input means including a potentiometer having a rotatable shaft, means converting an analog signal from the analog input means to a digital signal to input to the processor means as cooking data inputs,

feedback means to effect rotation of said rotatable shaft as an indication of the fulfillment of a cooking control parameter, said feedback means including motor means coupled to the shaft to turn the shaft in either of two opposite directions,

means to energize the motor means, the processor means including means to monitor the position of the said potentiometer shaft through the means converting an analog signal to a digital signal, and means to compare the position of the shaft to stored cooking control parameters to energize the motor in response to said comparison to display actual cooking data.

4,430,541

COMBINATION MICROWAVE GAS CONVECTION OVEN

William J. Day, Jr., Allentown, Pa., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 225,078, Jan. 14, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 447,359

Int. Cl.³ H05B 6/64

U.S. Cl. 219—10.55 R

4 Claims

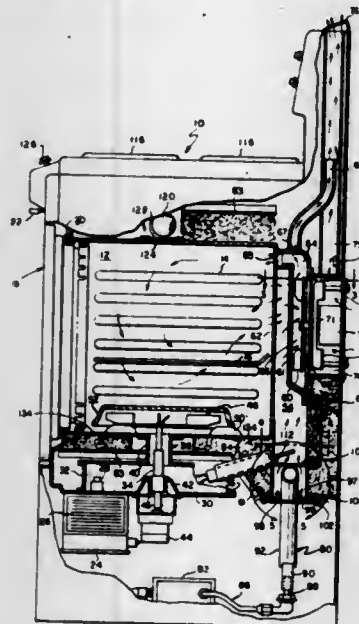
1. A combination microwave gas convection oven comprising:

a microwave cavity having a bottom with an opening; a magnetron positioned below said cavity; a waveguide for coupling microwave energy from said magnetron to said cavity through said opening; a chamber positioned behind the back wall of said cavity and communicating therebetween by a plurality of perforations in said back wall, said chamber having a floor with an aperture;

means for recirculating air between said chamber and said

cavity, said recirculating means comprising an outlet vent for exhausting a small percentage of recirculating air from said oven, said recirculating means creating a slight negative pressure in said chamber wherein an induced draft is provided into said chamber through said aperture;

a tubular gas burner positioned below said chamber for providing a gas air mixture to said chamber through said aperture in said floor of said chamber, the size of said



aperture restricting the amount of secondary combustion air flowing therethrough in said induced draft toward said slight negative pressure thereby increasing the efficiency of said burner; and

said burner having a plurality of top ports, said burner having a port loading of less than 25,000 Btu per hr-sq in. of port area at the maximum operating Btu rate of said burner.

4,430,542

ELECTROMAGNETIC COOKING APPARATUS

Shigeki Kondo, Tachikawa; Yoshio Yamazaki, Saitama; Tomofumi Iketani, Fuchu; Seiji Tanaka, Yamatokoriyama, and Keiichi Doi, Izumi, all of Japan, assignors to Riccar Co., Ltd., Tokyo and Sharp Kabushiki Kaisha, Osaka, both of Japan

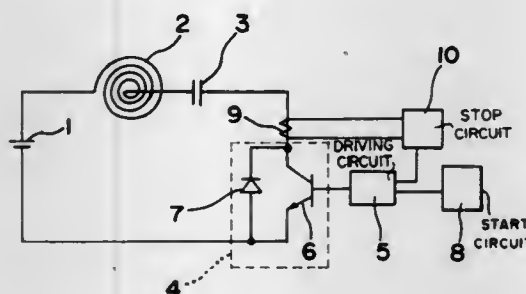
Filed Sep. 11, 1981, Ser. No. 301,129

Claims priority, application Japan, Sep. 20, 1980, 55-131121

Int. Cl.³ H05B 6/06; H02M 7/537

U.S. Cl. 219—10.77

3 Claims



1. An electromagnetic cooking apparatus which comprises a resonance circuit composed of a heating coil and a capacitor,

an inverter circuit including a switching power transistor having a base and a diode connected between a collector and an emitter of said switching transistor in the reverse direction, said resonance circuit and inverter circuit being connected in series across terminals of a DC power source,

a start-signal generating circuit for periodically developing a start pulse signal,

a stop-signal generating circuit which receives value of current flowing through said heating coil as an input signal so as to develop a stop pulse signal when the value of said current becomes zero, and

a driving circuit coupled to said inverter circuit and also to said start-signal generating circuit and said stop-signal generating circuit so as to receive said start pulse signal and said stop pulse signal as inputs and to develop a signal for rendering said switching transistor conductive after developing said start pulse signal until developing of said stop pulse signal,

whereby the timing of switching of said transistor is controlled through detection of current flowing through said heating coil and said stop pulse signal is produced when the current value flowing through said heating coil becomes zero.

4,430,543

INDUCTOR FOR INDUCTION WELDING AND A METHOD FOR THE MANUFACTURE OF THE SAME

Bo H. O. Olofsson, Kävlinge, Sweden, assignor to Tetra Pak Developpement SA, Pully-Lausanne, Switzerland

Continuation of Ser. No. 125,752, Feb. 28, 1980, abandoned.

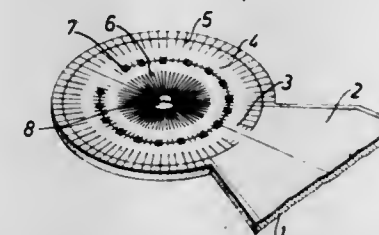
This application Apr. 26, 1982, Ser. No. 371,942

Claims priority, application Sweden, Mar. 8, 1979, 7902078

Int. Cl.³ H05B 6/42

U.S. Cl. 219—10.79

10 Claims



1. An inductor for induction welding comprising a base of an electrically insulating material having a surface, an induction coil of an electrically conducting material, said electrically conducting material being a thin, planar copper foil, said foil being laminated to the surface, said induction coil being defined by ends of a plurality of slits extending completely through the copper foil, at least a portion of said plurality of slits extending to an edge of the foil and defining cooling tongues between adjacent slits, said tongues extending in the plane of the foil.

4,430,544

EDM MACHINE TOOL WITH COMPOUNDED ELECTRODE-RECIPROCATION AND SERVO-FEED DRIVERS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Japan

Filed Aug. 3, 1981, Ser. No. 289,147

Claims priority, application Japan, Aug. 5, 1980, 55-106726

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 V

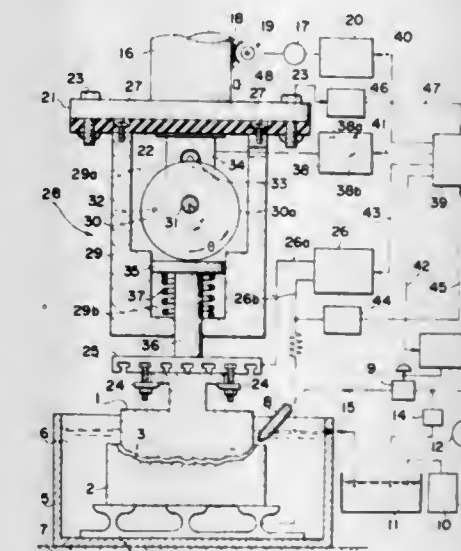
20 Claims

1. In an EDM machine tool for machining a workpiece electrode wherein a tool electrode and the workpiece electrode one of which is movable are spacedly juxtaposed with one another to define a machining gap therebetween in the presence of a liquid machining medium and a succession of electrical discharges are effected between the tool electrode and the workpiece electrode across the machining gap to electroerosively remove material from the workpiece electrode, the combination of:

a machine-head spindle for supporting said movable electrode; first motor means drivingly coupled with said machine-head

spindle and responsive to electrical conditions in said machining gap for axially displacing said spindle to move said movable electrode towards and away from the other electrode so as to maintain said machining gap in size substantially constant; and

an electrode reciprocating assembly mechanically coupled between said machine-head spindle and said movable electrode and including a rotary member, second motor means operable independently of said first motor means and drivingly coupled with said rotary member for reciprocatingly angularly displacing said rotary member through only a



limited angle θ of rotation where $0^\circ < \theta \leq 180^\circ$ and link means coupled between said rotary member and said movable electrode for converting the reciprocating angular displacement of said rotary member into a corresponding rectilinear reciprocating movement of said movable electrode; and

reciprocation stroke setting means associated with said second motor means for determining said limited angle θ of reciprocating angular displacement of said rotary member so as to set the stroke of rectilinear reciprocating movement of said movable electrode at a desired value.

4,430,545

METHOD FOR SUBMERGED-ARC WELDING A VERY LOW CARBON STEEL

Naomichi Mori, Yamato; Hiroyuki Homma, Isehara; Masakuni Wakabayashi, Sagami, and Masanobu Yamaguchi, Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

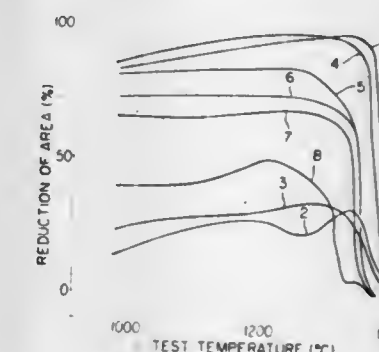
Filed Sep. 15, 1981, Ser. No. 302,357

Claims priority, application Japan, Sep. 24, 1980, 55-131578

Int. Cl.³ B23K 9/18

U.S. Cl. 219—73

13 Claims



1. A method for submerged-arc welding steel, which comprises submerged-arc welding steel containing 0.005–0.06%C using a welding wire containing more than 0.18%, up to 0.55%C, and also using a welding flux, wherein at least one

member selected from the group consisting of Ti and B is added to at least one member selected from the group consisting of said welding wire and said welding flux, whereby the resultant weld metal contains 0.07-0.13%C and also contains Ti and B.

4,430,546

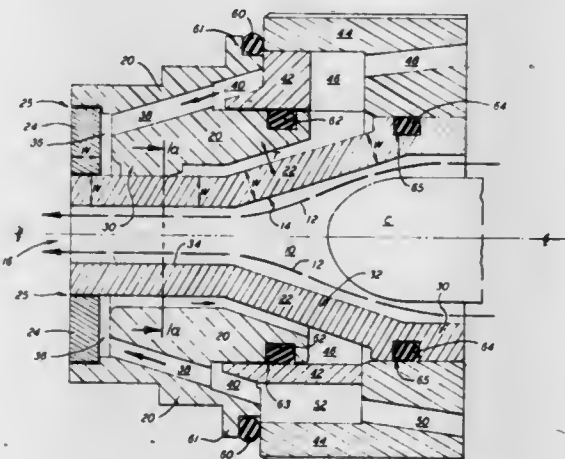
PLASMA SPRAY GUN NOZZLE

Gary C. Irons, Sea Cliff; Dennis K. Buzzelli, Old Bethpage; John F. Klein, Port Washington, and Richard T. Smyth, Huntington, all of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed Aug. 14, 1981, Ser. No. 292,762
Int. Cl.³ B23K 9/00

U.S. Cl. 219-121 PY

11 Claims



1. In a plasma spray gun, a nozzle comprising, in combination:

an inner member made of a fluid impervious material defining a passage for channeling of gases through an electrical arc terminating in an area of the inner surface of said inner member, said inner member having a uniform wall thickness in substantially the entire region of where the arc terminates in the range of about 1.9 to 2.8 mm; and an outer member at least partially surrounding said inner member and forming a substantially single coolant passage between said outer member and said inner member in the region radially outward of where said electrical arc terminates, said coolant passage having a uniform distance T between said outer member and said inner member in the range of about 0.76 mm. to 1.27 mm. in substantially the entire region radially outward of the area where said arc terminates on said inner member.

4,430,547

CLEANING DEVICE FOR A PLASMA ETCHING SYSTEM

Masahiro Yoneda, Itami; Shiro Hine, Minoh, and Hiroshi Koyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,098
Claims priority, application Japan, Oct. 9, 1980, 55-141480
Int. Cl.³ B23K 9/00

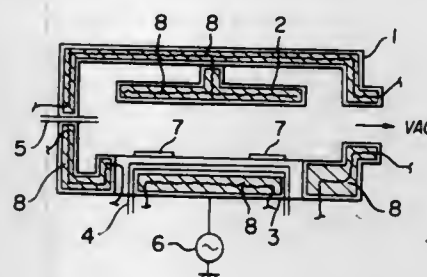
U.S. Cl. 219-121 PD

6 Claims

1. A cleaning apparatus for a plasma etching system for etching a sample, comprising:

a chamber having an inlet and an outlet;
a sample table positioned in said chamber and which further comprises a first electrode;
a counter electrode positioned in said chamber opposite said first electrode; and
a plurality of heating mechanisms respectively positioned in said inlet and said outlet of said chamber, in said counter

electrode and in said sample table for desorbing a reaction product adsorbed on surfaces of said inlet and outlet of



said chamber, said counter electrode and said sample table prior to plasma etching of said sample.

4,430,548

LASER APPARATUS AND PROCESS FOR CUTTING PAPER

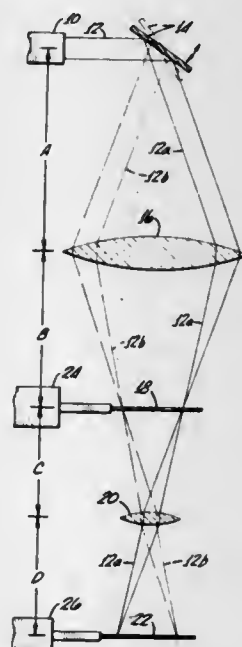
John A. Macken, P.O. Box 696, Santa Rosa, Calif. 95402

Filed Apr. 26, 1982, Ser. No. 371,535

Int. Cl.³ B23K 9/00

U.S. Cl. 219-121 LG

15 Claims



1. In a laser apparatus, the combination comprising:
laser means for providing a laser beam;
scanning means for directing said laser beam along a predetermined path;
first optical means for intercepting the so-called laser beam and for directing it to a point where the undiffracted rays of the scanned laser beam are superimposed;
template means at or near the plane of the focus of said laser beam, said template means having means therein for passage therethrough of a portion of the so-scanned laser beam for creating an image;
second optical means for intercepting the so-scanned laser beam passing through said template means, said second optical means being positioned at or near the point where all undiffracted rays of the so-scanned laser beam passing therethrough are superimposed; and
a work-piece positioned at the focal plane of said second optical means for imaging the scanned laser energy passing through said template means, this imaged laser energy being of sufficient power density to vaporize a portion of said workpiece thereby reproducing the image of said template means thereon.

4,430,549

METHOD AND APPARATUS FOR PRODUCING DECKLE-EDGED PAPER

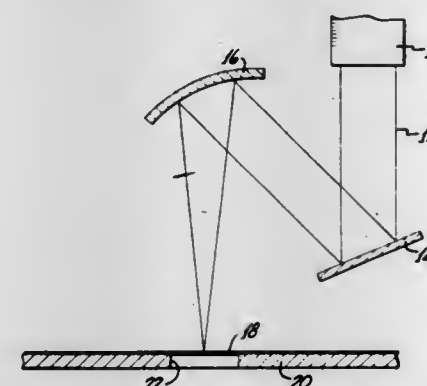
John A. Macken, P.O. Box 696, Santa Rosa, Calif. 95402

Filed Apr. 26, 1982, Ser. No. 371,539

Int. Cl.³ B23K 27/00

U.S. Cl. 219-121 LG

10 Claims



1. In a laser apparatus for cutting paper, the combination comprising:

means for supporting the paper to be cut;
a laser source for projecting a laser beam;
means for providing relative movement between the paper and said laser beam; and
means for providing a line focus of the laser beam at the surface of the paper having an energy density gradient at the paper surface in a direction generally perpendicular to the direction of relative movement, the energy density gradient having a first zone for completely vaporizing the paper and at least one other zone for at least partial reduction of thickness of the paper whereby to form an irregular deckle edge on said paper.

4,430,550

ELECTRON BEAM WELDING

Bruno J. M. de Sivry, Paris; Claude R. Carsac, St. Leu La Foret, and Christian Bonnet, St. Gervais, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Division of Ser. No. 186,078, Sep. 11, 1980, Pat. No. 4,358,656.

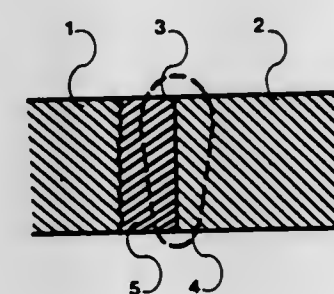
This application Jun. 7, 1982, Ser. No. 385,964

Claims priority, application France, Sep. 14, 1979, 79 22948

Int. Cl.³ B23K 15/00

U.S. Cl. 219-121 ED

8 Claims



1. An apparatus for welding cylindrical pieces by means of an electron beam welding operation, comprising:

a leak-tight chamber having a shape of a torus, said chamber having a high vacuum therein, said chamber having a sheath which has an inlet located on an outer wall of said chamber and an outlet located on a radially inner wall of said chamber, said chamber having an inner boundary forming an inner space which accommodates said cylindrical pieces;
at least one electron gun located in said chamber;
a wire obtained by arc welding a mild or slightly alloyed steel or by melting under slag a mild or slightly alloyed steel, said wire being made of a material which is different

from a material of said cylindrical pieces, said wire material having between 100 and 800 ppm oxygen;
means for displacing said wire through said sheath; and
sealing gaskets, said sealing gaskets being connected to said sheath at said inlet and outlet thereof.

4,430,551

SEMI-AUTOMATIC CONTROL AND METHOD FOR MIG WELDING

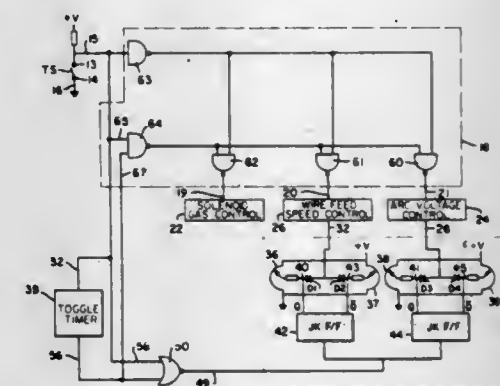
Tibor E. Toth, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 12, 1982, Ser. No. 348,346

Int. Cl.³ B23K 9/10

U.S. Cl. 219-132

4 Claims



1. In a method of MIG welding in which the energization and deenergization of the welding operation is controlled from a single toggle switch having only a first and second position and in which selected operational parameters of the welding operation such as wire feed speed, arc voltage, and shielding gas are controllably varied between a first preset schedule of welding parameters and a second preset schedule in response to the position of said toggle switch, the improvement comprising:

detecting the state of the toggle switch;
initializing the welding operation using the first preset schedule of welding parameters in response to detection of the second position of the toggle switch;
enabling a timing operation of a predetermined relatively short time duration in response to the detection of the toggle switch in its first position;
detecting a reoperation of the toggle switch within said predetermined time duration for switching from said first preset schedule to said second preset schedule;
deenergizing said welding operation upon the concurrence of said relatively short time duration and the absence of a reoperation of the toggle switch;
repeating said reevaluation of the state of said toggle switch for reenabling said timing operation each time said toggle switch is in the first position and switching between said preset schedules each time said toggle switch is reoperated within the predetermined time duration of said timing operation.

4,430,552

THERMAL RELEASE DEVICE

David D. Peterson, 6434 Old Chesterbrook Rd., McLean, Va. 22101

Filed Jul. 29, 1981, Ser. No. 287,886

Int. Cl.³ H05B 3/02

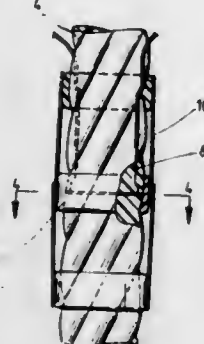
U.S. Cl. 219-200

9 Claims

1. A remotely actuated device for releasing a buoyant object connected to an anchor on the floor of a body of water which comprises:

a thermoplastic fiber rope connective link between the buoyant object and the anchor;
a high resistance wire heating element embedded across a cross-section of said rope;

a thermal barrier to prevent heat loss from said heating element to the surrounding water, said barrier comprising a sealant impregnated zone in said rope above and below said heating element and a sheath encircling said con-



nective link in the area of said heating element, said sheath being readily partable in the vicinity of the heating element upon melting of the link; remotely activated means to supply an alternating electric current to said wire to melt said rope.

4,430,553

HEAT ACCUMULATING IRON

Antim Antimovski, u/"Oslo", 91000 Skopje, Yugoslavia

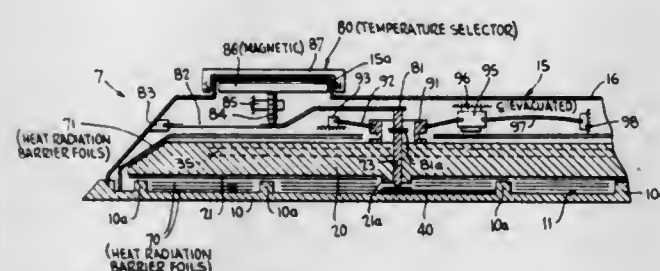
Filed Oct. 9, 1980, Ser. No. 195,592

Claims priority, application Yugoslavia, Oct. 9, 1979, 2447/79

Int. Cl.³ D06F 75/24, 75/26; H05B 1/02; F28F 27/00

U.S. Cl. 219-258

14 Claims



1. A cordless flatiron which includes

a bottom sole plate and a protective hood attached to said sole plate to form an evacuated, sealed chamber therebetween, said sole plate including an exposed bottom surface which defines an ironing surface and a top surface which faces the sealed chamber, the top surface having a number of projections which extend away from the top surface into the chamber, each of the projections having a flat upper end surface,

a heat storage element positioned in the sealed chamber, said heat storage element having a top face and a planar bottom face, said heat storage element being movable toward and away from the upper end surfaces of the projections extending away from the top surface of said sole plate such that its bottom face will be in and out of heat conduction relationship therewith,

an electric heating means positioned in contact with said heat storage element to heat said heat storage element, said electric heating means being electrically connected to an electrical connector means on the hood and which is removably connectable with an external electrical supply means,

a temperature-responsive regulator element positioned between said heat storage means and the top surface of said sole plate, the regulator element being capable of moving said heat storage element with respect to the upper end surfaces of the projections extending away from the top surface of said sole plate and thus control the temperature to which said sole plate is heated by said heat storage element, said regulator element being responsive to the temperature of said sole plate, and

a heat radiation barrier means positioned between said heat

storage element and said sole plate, said heat radiation barrier means being shaped such that it shields the entire sole plate, including its projections, from heat radiation from the heat storage element when the heat storage element is moved away from its closest position with respect to said sole plate by the temperature-responsive element yet forms a direct heat conductive path between the bottom of the heat storage element and the upper end surfaces of the projections of said sole plate, while shielding the areas of the sole plate between said projections, when the heat storage element is at its closest position with respect to said sole plate.

4,430,554

ELECTRICAL SAFETY DEVICE FOR HEATERS WITH A HIGH CURRENT CONSUMPTION

Karl-Heinz Fleischmann, Saal, Fed. Rep. of Germany, assignor to Forbach GmbH & Co. KG, Bad Neustadt, Fed. Rep. of Germany

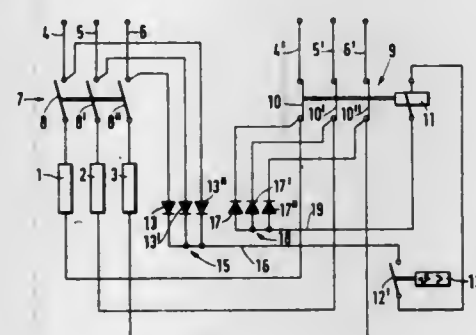
Filed Dec. 23, 1981, Ser. No. 333,689

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048643

Int. Cl.³ H05B 1/02

U.S. Cl. 219-483

5 Claims



1. A safety device for an electrical heater having at least one heating element which operates with high current consumption, comprising: two power leads for connection to a power supply;

thermostatic switching means for monitoring the temperature within the heater and having a temperature-actuated movable contact;

circuit breaker means including at least one normally closed movable contact arranged for connection, in series with a heating element, between the power leads, and a power responsive actuating coil for opening said normally closed contact in response to supply of electrical power to said coil, one side of said coil being connected to one side of said thermostatic switching means movable contact;

at least one first diode connected in series between one power lead and the other side of said thermostatic switching means movable contact; and

at least one second diode connected in series between the other side of said coil and the other power lead and poled, with respect to the voltage across the power leads, in the same direction as said first diode;

whereby closing of said thermostatic switching means movable contact will cause power from the power supply to be supplied to said coil for opening said normally closed movable contact and disconnecting the heating element from the power supply.

4,430,555

ELECTRODE STEAM BOILER AND METHOD OF OPERATION THEREOF

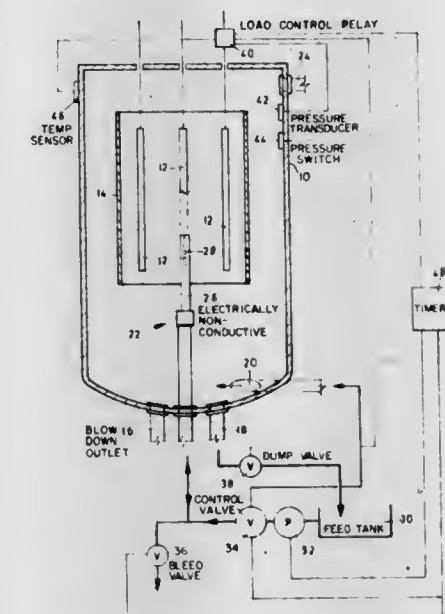
Ian D. Stokes, Krugersdorp-North, South Africa, assignor to Marshall-Fowler Limited, South Africa

Filed Sep. 15, 1980, Ser. No. 187,061

Claims priority, application South Africa, Sep. 17, 1979, 79/4905; Mar. 25, 1980, 80/1733

Int. Cl.³ F22B 1/30; H05B 1/02, 3/60
U.S. Cl. 219-286

12 Claims



1. A method of operating an electrode boiler having a boiler shell and spaced electrodes disposed in an electrode zone located above a relatively cold water zone in the boiler shell including the steps of energizing the electrodes, continuously sensing steam pressure in the boiler, establishing a pre-set boiler steam pressure, introducing water into the boiler while the boiler is below or substantially at the pre-set steam pressure, directly into the electrode zone of the boiler, and when the steam pressure in the boiler is above the pre-set pressure, introducing the water only into the relatively cold water zone below the electrode zone.

4,430,556

ELECTRIC LIQUID HEATING APPLIANCE

Michael Inskip, Stoke-on-Trent, and Alan Warren, Western Downs, both of England, assignors to TI Russell Hobbs Limited, England

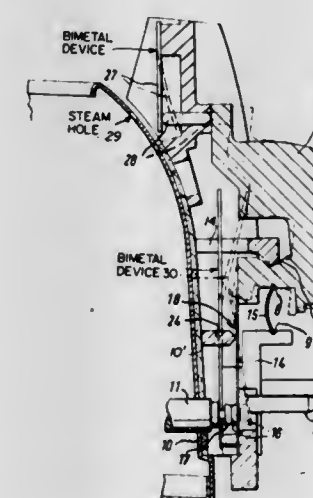
Filed Jun. 16, 1981, Ser. No. 274,265

Claims priority, application United Kingdom, Jun. 18, 1980, 8019848

Int. Cl.³ F24H 1/00; H05B 3/02

U.S. Cl. 219-328

5 Claims



1. An electric liquid heating appliance comprising a body

shell, a heating element within the body shell and having two ends which project through the body shell to the outside thereof, a switch housing mounted on the outside of the body shell, a switch comprising a pair of switching contacts and a switch operating member which is supported by the switch housing and which is manually operable both to close and open the switching contacts, said switch having a resilient blade-like electrically conductive element movable by said switch operating member, one of the switching contacts comprising a fixed contact provided directly on one end of the heating element and the other switching contact comprising a movable contact provided on the blade-like electrically conductive element, and means supported by the switch housing and mounted to sense steam from within the body shell for moving the switch operating member to move said blade-like element and open the contacts when a liquid in the appliance boils.

4,430,557

COOKING APPARATUS HAVING INTERNAL PRESSURIZING SOURCE AND INTEGRAL HEAT SOURCE

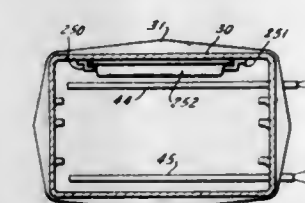
Charles W. Elchelberger, Schenectady, and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,805

Int. Cl.³ F27D 11/02; A21B 1/00

U.S. Cl. 219-401

31 Claims



1. An interior oven structure, comprising:

a hermetically-sealable metal container having a metal door which is operable to offer access to the interior of said container and closeable to seal the interior of said container;

means for supporting within said container foodstuff to be cooked;

heating means within said container and energizable to produce infrared heat for browning said foodstuff while said container is pressurized; and

means totally contained within said container, and separated from but cooperating with said heating means in said container, for producing steam, to pressurize the interior of said container when said door seals the interior of said container.

4,430,558

ELECTRIC RADIANT HEATER UNIT FOR A GLASS CERAMIC TOP COOKER

Joseph A. McWilliams, Hadzor, England, assignor to Micropore International Ltd., Hadzor Droitwich, England

Filed Jul. 21, 1981, Ser. No. 285,484

Claims priority, application United Kingdom, Jul. 22, 1980, 8023929

Int. Cl.³ H05B 3/68

U.S. Cl. 219-449

15 Claims

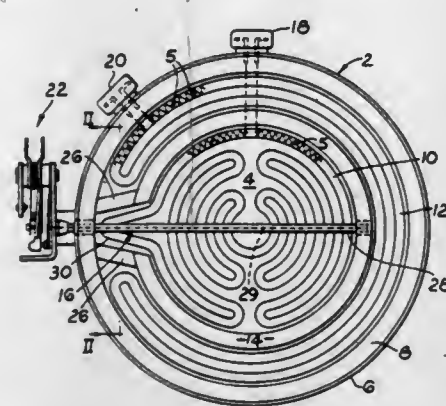
1. An electric radiant heater unit of the type comprising: a support of thermal insulating material, the support having a peripheral wall;

at least first and second heater elements arranged adjacent to one another on the support;

a dividing wall of thermal insulating material separating said first and second heater elements;

means for energising said first heater element independently of said second heater element; and

a thermal cut-out device which extends from said peripheral wall across said first heater element and across a zone normally occupied by at least a part of said second heater element,



wherein the improvement comprises extending a zone of the heater unit which is heated by said first heater element such that substantially the entire effective length of the cut-out device is influenced by said first heater element.

4,430,559

ELECTRIC GRILL

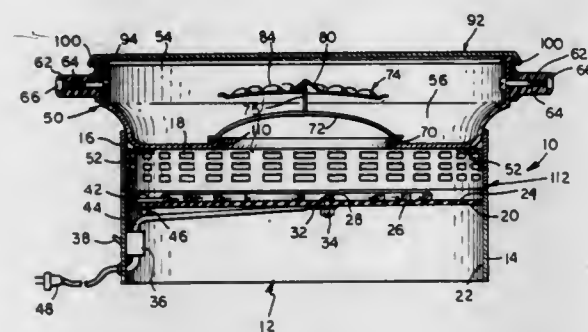
Michel N. R. Rabay, Avenida Cuauhtemoc No. 891-502, Colonia Narvaret, Mexico 12, D. F.

Filed May 24, 1983, Ser. No. 497,668

Int. Cl.³ H05B 3/68

U.S. Cl. 219-460

11 Claims



1. An electric cooking grill comprising: a base including side walls defining an open space interiorly thereof and including an upper portion and a lower portion, a convoluted electric resistance element mounted in a lower portion of said base, a plurality of rows of ventilation openings in the side wall of the upper portion of said base, a plurality of interior support brackets on said side walls, a crown-like tray having a central opening therein and supported on said brackets above said resistance element, a bridge support supported on said tray, a rotatable, perforated disc element rotatably supported on said bridge support for rotation in a generally horizontal plane, and a circular grill element supported on said tray above said disc.

4,430,560

ELECTRICAL HEATING APPARATUS OVERHEAT PROTECTION CIRCUITS

Edwin R. Mills, Raleigh, and Ernest L. Elmore, Smithfield, both of N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Continuation-in-part of Ser. No. 184,200, Sep. 5, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,391

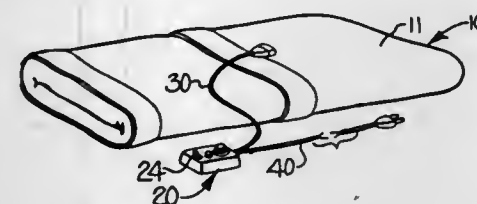
Int. Cl.³ H05B 1/02

U.S. Cl. 219-505

8 Claims

1. An electrical heating apparatus protected against an overheating condition and comprising electrical heating means for generating heat upon flow of electrical current therethrough, overheat protection means including temperature sensitive impedance means having a negative temperature coefficient and being thermally coupled to said electrical heating means

for sensing the occurrence of an overheating condition therein, a pair of gate controlled bidirectional semiconductor switches electrically connected to one another in series, means electrically connecting said pair of semiconductor switches to said heating means for controlling the flow of electrical current thereto, and means electrically coupling the gate of each one of said semiconductor switches to another terminal of the same



one of said semiconductor switches through said temperature sensitive impedance means for triggering the semiconductor switches from a conductive to a nonconductive state in response to the sensing of an overheating condition by said temperature sensitive impedance means, said semiconductor switches being triggered to a nonconductive state by a change in resistivity of said temperature sensitive impedance means.

4,430,561

HUBODOMETER

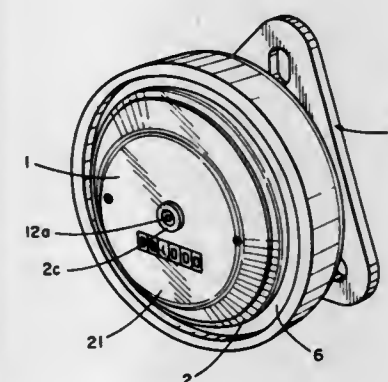
Patrick L. Powell, Franklin Park, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Filed Dec. 28, 1981, Ser. No. 335,159

Int. Cl.³ G01C 22/00

U.S. Cl. 235-95 B

17 Claims



1. In a hubodometer having an odometer mechanism assembly contained within an enclosed casing supported by a mounting bracket adapted to be fixed to a rotating object, the improvement comprising a casing formed by two joined cup-like shells each having a circular flange integrally formed at a mouth of the shell and lying against the flange of the other shell to define an enclosed cavity, an elastic-like gasket seated upon the joined flanges, and a rigid retainer ring seated upon the gasket and fitted tightly to a circular wall of the mounting bracket to nest the casing at least partially within a socket cavity defined by the mounting bracket.

4,430,562

BANKNOTE DISPENSING APPARATUS

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

Filed May 24, 1982, Ser. No. 381,656

Claims priority, application Sweden, Jun. 4, 1981, 8103515

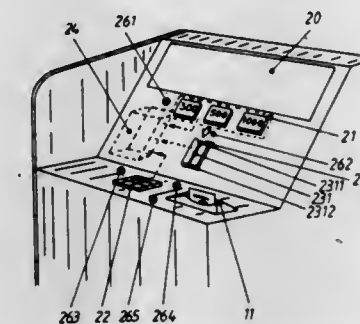
Int. Cl.³ G06F 15/30

U.S. Cl. 235-379

2 Claims

1. An apparatus for dispensing banknotes from a store (10) of banknotes to a receipt opening (11) arranged in the apparatus and accessible to a client, said apparatus comprising first conveying means (13-14) for conveying banknotes from the store (10) to a collecting chamber (15) and second conveying means (16-17) for conveying the collected banknotes from the col-

lecting chamber (15) to the receipt opening (11), characterized by a first keyboard (21) for disclosing the number of banknotes required or the sum required; a card reader (23) located adjacent the first keyboard (21); a second keyboard (22) arranged adjacent the card reader (23) at a location substantially further from the first keyboard (21) than the card reader (23), and on which the individual code of the customer is to be inserted; and an electronic unit (24) for controlling the outfeed of banknotes



from the store (10) to the receipt opening (11) in response to activation of the two keyboards (21,22) and activation of the card reader (23) by the customer, the electronic unit (24) being so designed that it is necessary for the customer to have activated the first keyboard (21) and the card reader (23) in order for the first conveying means (13-14) to be activated, and that it is necessary for the second keyboard (22) to have been activated in order for the second conveying means (16-17) to be activated.

4,430,563

DATA PROCESSING FORM

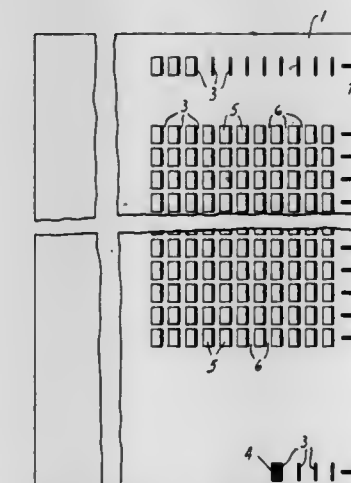
John A. Harrington, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1982, Ser. No. 373,666

Int. Cl.³ G06K 19/06

U.S. Cl. 235-494

7 Claims



1. A data processing form provided by a generally rectangular sheet of paper or like material having longitudinal and transverse axes, and at least one generally straight edge parallel with one of said axes for use with an apparatus capable for providing a plurality of scanning actions as the sheet is moved in the general direction of said straight edge, each of said scanning actions beginning near said straight edge and continuing in a direction generally transverse to said straight edge, said scanning actions serving to sense light and dark areas on the sheet, said form including: a plurality of like, generally rectangular darkened areas that extend lengthwise and generally parallel to said straight edge; a plurality of rows defined by said rectangular darkened areas, equally spaced apart in said rows; each of said rows extending transverse to said straight edge with the space presented between adjacent ones of said rectangular darkened areas in any given row being greater than the width of one of said rectangular darkened areas; said rectangular darkened areas in a given row being aligned co-

lumnwise with said rectangular dark areas presented in the remaining rows of said plurality of rows; the first of said plurality of rows to be scanned by an apparatus, having at least one darkened area formed in part by one of said rectangular darkened areas and extending from the side of such rectangular darkened area that is away from said straight edge; another row of said plurality of rows having at least two defined areas wherein each of the defined areas is defined in part by a different one of said rectangular darkened areas of such row and is located on the side of such rectangular darkened area that is away from said straight edge and an edge mark for each of said plurality of rows, said edge mark for each row positioned between the first rectangular darkened area of the row and said straight edge.

4,430,564

IMAGE CONVERSION APPARATUS WITH GAS DISCHARGE SWITCHING

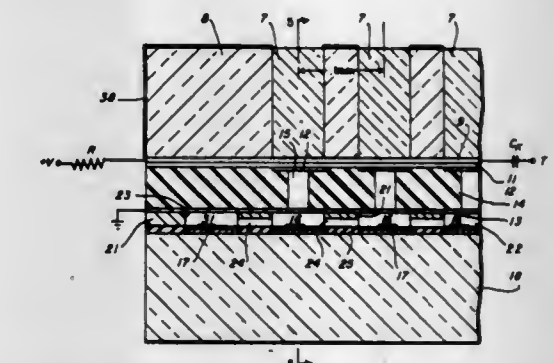
Dieter Fischer, Frankfurt, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. für Büround Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,620

Int. Cl.³ H01J 40/14

U.S. Cl. 250-211 R

9 Claims



1. An image converter for generating a signal proportional to light incident thereon comprising a first light responsive capacitor, a second capacitor connected in series with said first capacitor across a voltage source whereby the charge distribution in said capacitors is proportional to light incident on said first capacitor, means for shorting out said second capacitor whereby said first capacitor charges to the voltage of said source, and means for measuring the change in voltage across said first capacitor.

4,430,565

CORRELATING FIBER OPTICAL MEASURING DEVICE

Torgny Brogardh, and Lars Sander, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 23, 1981, Ser. No. 304,955

Claims priority, application Sweden, Sep. 24, 1980, 8006679

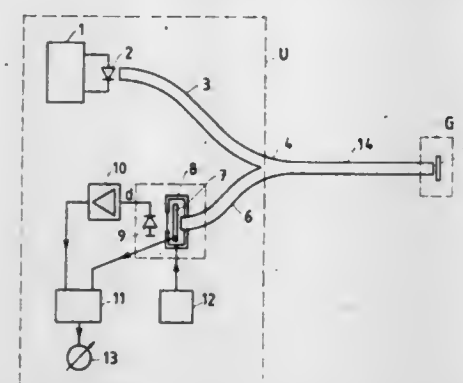
Int. Cl.³ G01J 3/34; G01D 5/34

U.S. Cl. 250-227

17 Claims

1. A fiber optical measuring device for measuring, at a measurement point, at least one parameter of an object comprising: a transducer unit at the measuring point having at least one optical transducer filter with a response spectrum subjected to wavelength displacement by said at least one parameter to be measured, an evaluating unit separated from the transducer unit, said evaluating unit including at least one source of incident light and an optical detector arrangement for analyzing light emanating from the transducer unit, and at least one light conductor for feeding incident light to the transducer unit and for feeding light emanating from said at least one optical transducer filter to the evaluating unit, wherein the detector arrangement includes at least one opti-

cal detector filter, means to subject the response spectrum thereof to wavelength displacement by the light emanating from said at least one optical transducer filter and means to measure the correlation between the spectra of a



transducer filter and a corresponding detector filter to determine the spectral condition of the said transducer filter and thus determine the magnitude of the at least one parameter being measured.

4,430,566

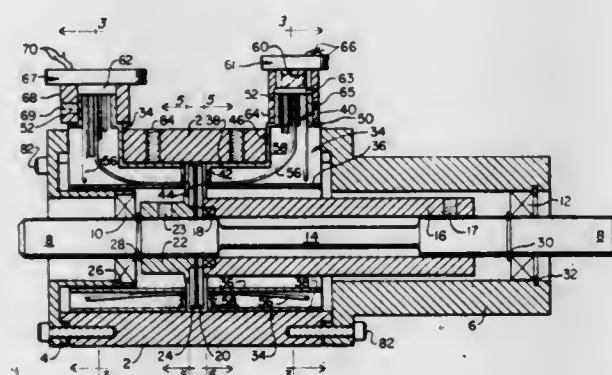
ELECTRO-OPTICAL ANGULAR DISPLACEMENT
Robert F. Searle, Amherst, N.H., assignor to Vibrac Corporation, Amherst, N.H.

Filed Apr. 21, 1981, Ser. No. 256,080

Int. Cl.³ G01D 5/34

U.S. Cl. 250—231 SE

9 Claims



1. In a device for providing an electrical signal having a magnitude which varies in accordance with the angular displacement about an axis between a pair of disks substantially coaxially and radially mounted about said axis, each disk providing a series of alternately occurring relatively high light transmitting areas and relatively low light transmitting areas arranged in an array about said axis, illuminating means on one side of said disks for illuminating said disks, and detector means including a photosensitive light detector for providing an electrical signal that varies in response to the amount of light passing through both of said disks,

the improvement comprising first and second optical means included respectively in said illuminating means and said detector means, said first and second optical means each being provided with means defining a first annular aperture and a second aperture, said first optical means being disposed between a light source and said disks and said second optical means being disposed between said disks and said light detector, the annular apertures of said optical means having substantially equal respective inner and outer diameters and facing one another through said disks, said annular apertures being disposed substantially coaxially with said axis and said second apertures being disposed away from said axis, and the second apertures of said optical means facing respectively said light source and said light detector.

4,430,567 METHOD AND APPARATUS FOR NEUTRON INDUCED GAMMA RAY LOGGING FOR DIRECT POROSITY IDENTIFICATION

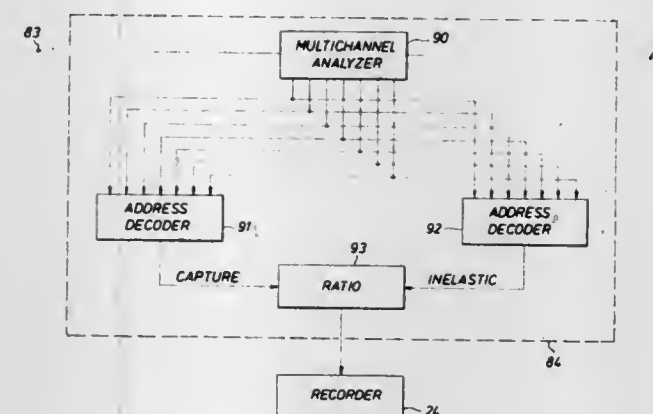
Donald W. Oliver, and David M. Chace, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 22, 1981, Ser. No. 227,331

Int. Cl.³ G01V 5/10

U.S. Cl. 250—270

11 Claims



6. A method of determining the porosity of subsurface formations, comprising the steps of:
irradiating said formations with neutrons of an energy level sufficient to induce inelastic scattering and capture gamma ray production;
detecting capture gamma rays and inelastic scattered gamma rays emanating from said irradiated formations;
generating first electrical signals responsive to said detected capture gamma radiation having energies consisting of substantially the total energy spectrum of detected capture gamma radiation;
generating second electrical signals responsive to said detected inelastically scattered gamma radiation having energies consisting of substantially the total energy spectrum of detected inelastically scattered gamma radiation;
and
combining said first and second electrical signals to form a ratio functionally related to substantially the total energy spectrum of detected capture gamma radiation to substantially the total energy spectrum of detected inelastically scattered gamma radiation to provide a third electrical signal representative of said formation porosity.

4,430,568

CONTAINER INSPECTION SYSTEM

Osami Yoshida, Tokyo; Hidekazu Tsuji, Amagasaki, and Yoshitada Nomura, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

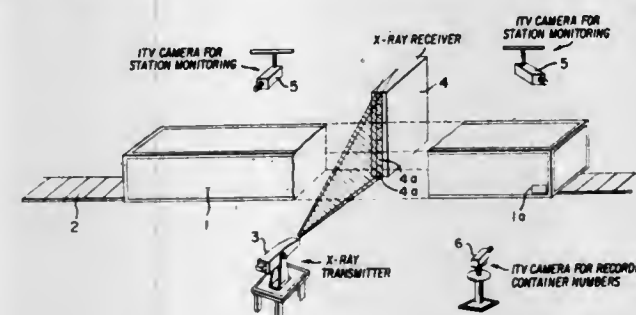
Filed Sep. 21, 1981, Ser. No. 303,989

Claims priority, application Japan, Sep. 22, 1980, 55-131854

Int. Cl.³ G01N 23/00

U.S. Cl. 250—358.1

3 Claims



1. A container inspection system which comprises means for transmitting a container; means for generating an energy flux

which is transmitted inside of said container; at least one sensor for detecting an energy level and spatial location of energy flux transmitted through the inside of said container; and a processing unit for performing a predetermined image processing based on an output signal received from said at least one sensor whereby a signal for variable density of image data for a transmission factor of said container is processed by said processing unit to inspect said container without disturbing said container, said processing unit comprising means for storing an index defining a size and a respective predetermined energy flux level, means for comparing said index with the detected energy level and spatial location of said energy flux detected by said at least one sensor; and display means for automatically indicating when said comparing means determines that the energy level and spatial location of the energy flux detected by said at least one sensor matches the stored index.

4,430,569

POCKET RADIATION DOSIMETER-DOSIMETER CHARGER ASSEMBLY

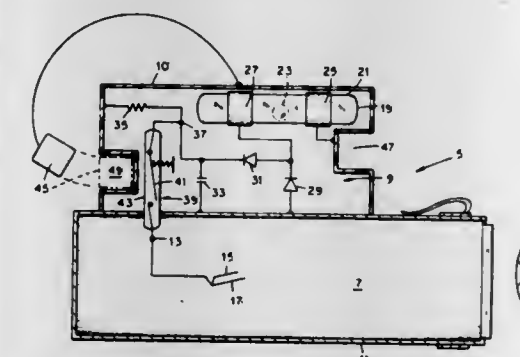
Frank W. Manning, Norris, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 358,960

Int. Cl.³ G01T 1/18

U.S. Cl. 250—377

11 Claims



1. An electrometric system comprising:
 - (a) an electrometric radiation dosimeter having a pair of charging contacts, and
 - (b) a dosimeter-charging circuit, said circuit including:
 - (1) an electrostatic charge generator including a wall of dielectric material, a mobile and electrically conductive body in contact with a face of said wall, and means confining said body for movement along said face while in contact therewith for generating electrical charges on said wall,
 - (2) a cascade voltage-doubler circuit capacitively coupled to said generator to integrate generator voltage pulses of like polarity and thus provide an integrated-voltage output, and
 - (3) switch means for selectively impressing said output across said contacts of said dosimeter.

4,430,570

ELECTRON BEAM EXPOSING APPARATUS

Tadahiro Takigawa, Tokyo, and Isao Sasaki, Chiba, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 4, 1980, Ser. No. 213,026

Claims priority, application Japan, Dec. 5, 1979, 54-156915

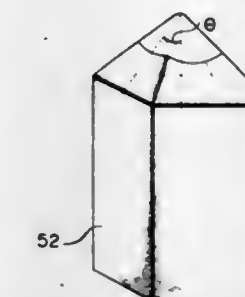
Int. Cl.³ H01J 1/16

U.S. Cl. 250—423 R

6 Claims

1. An electron beam exposing apparatus comprising:
an electron gun having a cathode which is made of a single-crystal lanthanum hexaboride and which is shaped into a cone with half the vertical angle being between 60° and 85° such that the spread of the electron beam is kept below a predetermined value, that the luminous intensity of the electron beam is increased while still keeping said spread

below said predetermined value and that the current density in a variably shaped aperture is kept uniform;
means for heating said cathode at a given temperature to irradiate an electron beam of which a crossover image and an emission pattern are circular;



means, including openings of variable shape, for shaping the electron beam irradiated from said cathode into the shapes of the openings; and
means for focusing the shaped beam to form a beam spot having an area of 2 to 50 μm^2 on a sample.

4,430,571

METHOD AND APPARATUS FOR EXPOSING MULTI-LEVEL REGISTERED PATTERNS INTERCHANGEABLY BETWEEN STATIONS OF A MULTI-STATION ELECTRON-BEAM ARRAY LITHOGRAPHY (EBAL) SYSTEM

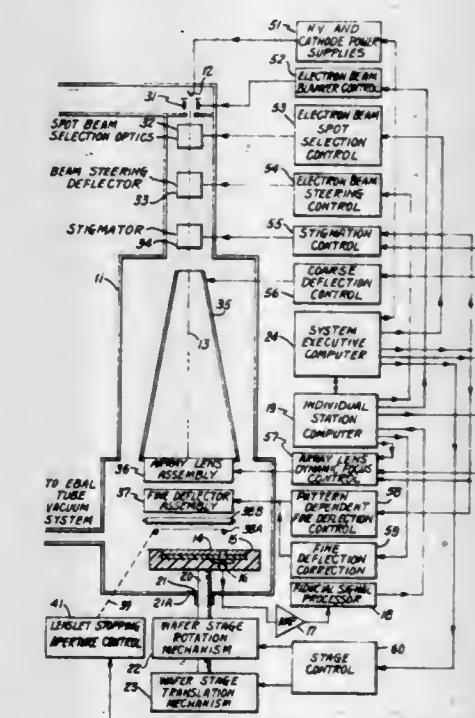
Donald O. Smith, Lexington, and Kenneth J. Harte, Carlisle, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 16, 1981, Ser. No. 254,870

Int. Cl.³ H01J 37/147

U.S. Cl. 250—492.2

35 Claims



1. The method of operating an electron beam array lithography system employing an electron beam column of the array optics type having an array lenslet assembly, an array fine deflector assembly and a coarse deflector assembly for selectively directing an electron beam to a desired element of the array of lenslets and its associated fine deflector element which directs the electron beam to a desired point on a target surface; the method comprising fabricating a lenslet stitching calibration grid having formed thereon a grid-like network of fiducial marking elements, using said calibration grid to derive fiducial marking signals indicative of the boundaries of the field of view of the individual elements of array lenslet assembly, using

said fiducial marking signals to control the electron beam column so as to stitch together the individual fields of view of the elements in the array lenslet assembly in order to cover a desired area of a target workpiece to be exposed to the electron beam and which is greater in surface area than the area covered by the field of view of an individual array lenslet element, and correcting for height displacement differences due to difference between vertical placement of the lenslet stitching calibration grid and the target surface along the electron beam path axis within the array optic electron beam column.

4,430,572

DEVICE FOR SEPARATING TWO LIGHT SIGNALS EMITTED BY SOURCES HAVING DIFFERENT WAVELENGTHS AND TRANSMITTED IN A SINGLE OPTICAL FIBER

Michel Eve, and Bernard Floch, both of Conflans Ste. Honorine, France, assignors to Lignes Telegraphiques Et Telephoniques, Conflans Ste. Honorine, France

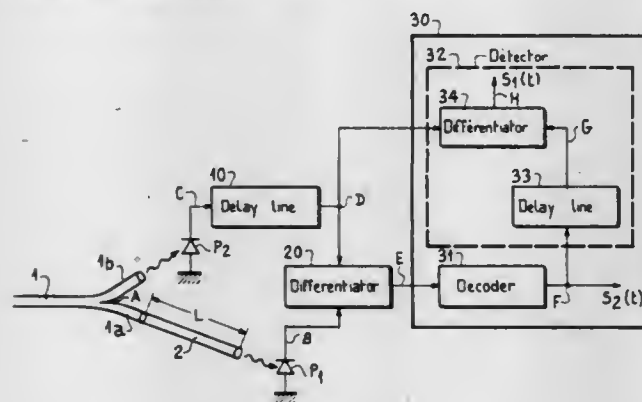
Filed Sep. 14, 1981, Ser. No. 302,031

Claims priority, application France, Sep. 12, 1980, 8019743

Int. Cl.³ G02B 27/00

U.S. Cl. 250—551

8 Claims



1. A device for separating two light signals emitted by two sources having different wavelengths, each light source being modulated by a periodic signal, said light signals having different wavelengths being transmitted in one and the same optical fiber with first propagation times of different value and the optical fiber being terminated in a first branched-off portion of fiber and in a second branched-off portion of fiber, a part of the light signals transmitted being shunted to each portion, wherein the first branched-off portion of fiber is provided with a predetermined extension in which the shunted light signals are transmitted with second propagation times of different value, and wherein said device comprises:

a first photodetector and a second photodetector which are placed respectively opposite to the extension of the first branched-off portion of fiber and opposite to the second branched-off portion of fiber, said first photodetector being intended to detect part of the periodic modulation signals having respective time-delays corresponding to the sum of said first and second propagation times and said second photodetector being intended to detect the other part of the periodic modulation signals having respective time delays corresponding to said first propagation times; first delay means connected to said second photodetector and adapted to introduce a time delay equal to one of the second propagation times;

first means for differentiation between the delayed periodic signals generated by said first delay means and the delayed periodic signals detected by said first photodetector, said differentiating means being intended to deliver a delayed periodic signal corresponding to a coding of one of the periodic signals which modulates one of the two light sources having different wavelengths;

an electronic circuit for processing the delayed periodic signals and comprising means for detecting the other periodic signal which modulates the other light source,

said detection means being connected between the output and one of the inputs of the first differentiating means.

4,430,573

LOAD CONTROL FOR ENERGY CONVERTERS

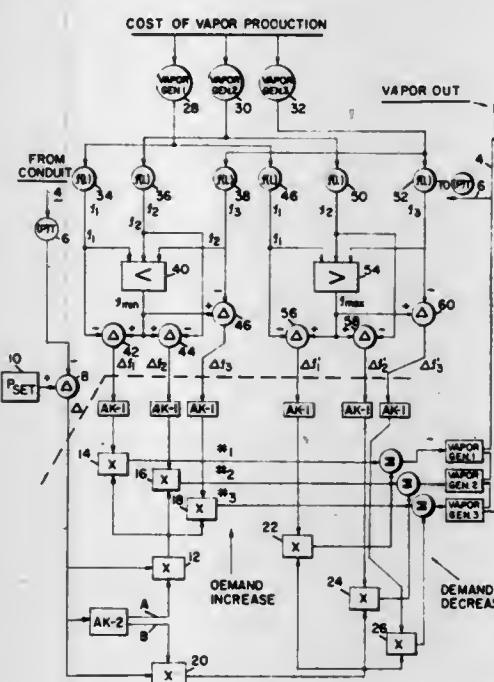
Azmi Kaya, Akron, and Marion A. Keyes, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1981, Ser. No. 330,994

Int. Cl.³ G05B 15/00

U.S. Cl. 290—40 R

3 Claims



1. A load control for a system comprised of a plurality of energy converters, comprising, a first means generating a System Control Signal corresponding to system load, means generating signals corresponding to the cost of production of each of said plurality of converters, means selecting the least cost signal from among said last named signals, means generating output signals during an increase in the System Control Signal and means under the control of the System Control Signal to increase the rate of production of the converter having lowest cost of production while inhibiting a change in the ratio of production of the other converters in said plurality of converters to thereby maintain equilibrium between the total rate of energy conversion by said plurality of converters and demand.

4,430,574

METHOD FOR SWITCHING OPERATION OF WATER WHEEL OR PUMP WATER WHEEL

Kenzu Ogiwara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,262

Claims priority, application Japan, Sep. 1, 1980, 55-119770

Int. Cl.³ F03B 3/10

U.S. Cl. 290—52

4 Claims

1. A method for switching an operation of a water wheel or a pump water wheel that is coupled to a motor-generator connected to a power system from its spinning-in-air mode into its power generating mode with supplying compressed air into a water wheel chamber to force down the level of water charged in the chamber below the water wheel runner, said method comprising the steps of:

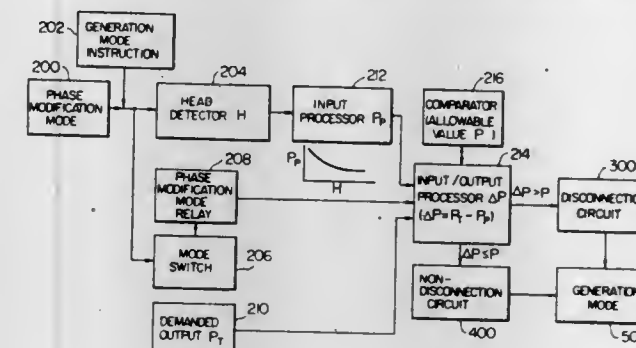
monitoring the head of the water wheel or the pump water wheel and producing an output representing the monitored head;

comparing the output with a predetermined reference; and switching to the generation mode without disconnecting

said motor-generator from said power system when the monitored head is such that an input amount is below an allowable value of said power system, and switching to

first means for providing a plurality of discrete momentary voltage levels;

a plurality of sensing means coupled to and remotely located from said first means, each of said plurality of sensing



the generation mode with said motor-generator disconnected from said power system when the head is such that the input amount exceeds the allowable value.

4,430,575

TURBINE TURNING GEAR WITH HYDRAULIC OVERSPEED DRIVE

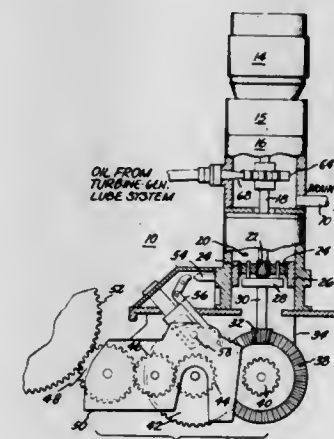
Allen B. Quigg, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,537

Int. Cl.³ F16H 35/00, 57/00

U.S. Cl. 290—52

16 Claims



4,430,578

DEVICE FOR THE INPUT OF ADJUSTMENT VALUES IN ELECTRONIC SWITCHING SYSTEMS

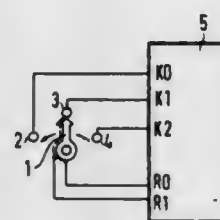
Helmut Waigand, St. Georgen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,432

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039302

Int. Cl.³ H01H 7/24, 47/00

U.S. Cl. 307—115



1. Multistage switching device for the input of adjustment values in electronic switching systems, comprising a counter circuit having counting stage inputs for counting orders of magnitude and oppositely counting directional inputs, an input switching part being movable into a plurality of adjustment positions, a plurality of contact points each being disposed at one of said adjustment positions and being connected to one of said counting stage inputs, and a changeover contact device of said input switching part being connected to said oppositely counting directional inputs, the counting magnitude and the counting direction of said counter circuit being switched to predetermined settings by moving said input switching part in any direction and at any speed into said adjustment positions.

4,430,579

ELECTRICALLY OPERATED, MECHANICALLY HELD ELECTRICAL SWITCHING DEVICE

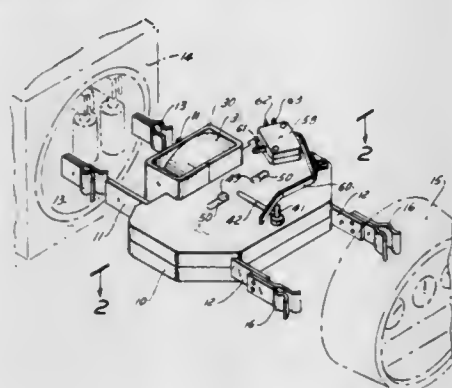
Dominik M. Wiktor, Cranford, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

Filed Aug. 23, 1982, Ser. No. 410,804

Int. Cl.³ H01H 15/00

U.S. Cl. 307—134

32 Claims



1. An electrical switching device comprising:
 - (a) switch means having an open position and a closed position,
 - (b) actuator means reciprocable between two extreme positions, the switch means being open when the actuator means is in one of its extreme positions and the switch means being closed when the actuator means is in the other of its extreme positions,
 - (c) an electrical operator for controlling movement of the actuator means, the operator being a single electrical solenoid and a single armature movable within the solenoid,
 - (d) means for momentarily energizing the operator to move the actuator means from each of its extreme positions to the other, each successive momentary energization of the operator causing movement of the actuator means in a

direction opposite to that of its immediately preceding movement, and

- (e) means for mechanically holding the actuator means in each of its extreme positions after termination of the momentary energization of the operator which caused the actuator means to reach that position.

4,430,580

BISTABLE SWITCHING CIRCUIT

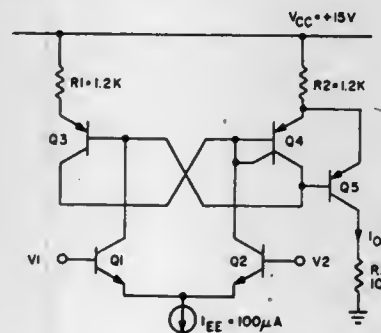
Ralph E. Lovelace, Los Gatos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Sep. 4, 1981, Ser. No. 299,275

Int. Cl.³ H03K 3/023, 3/288, 3/295

U.S. Cl. 307—288

25 Claims



1. A bistable switching circuit comprising:
 - a substantially constant current source;
 - like-polarity first and second input transistor means, each having an input control electrode for receiving an input signal, a first flow electrode, and a second flow electrode, the first flow electrodes being coupled in common to the current source;
 - like-polarity first and second load transistor means complementary to the input means, each load means having a first flow electrode, the first load means having a second flow electrode coupled to the second flow electrode of the second input means and having a control electrode coupled to the second flow electrode of the first input means, and the second load means having a second flow electrode coupled to the second flow electrode of the first input means and having a control electrode coupled to the second flow electrode of the second input means;
 - an output transistor complementary to the input means, the output transistor having a control electrode coupled to the second flow electrode of the first input means, a first flow electrode, and a second flow electrode from which an output signal is available; and
 - first and second resistive elements, the first resistive element being coupled between a voltage supply and the first flow electrode of the first load means, one end of the second resistive element being coupled to the voltage supply, and the other end of the second resistive element being coupled in common to the first flow electrodes of the output transistor and the second load means.

4,430,581

SEMICONDUCTOR SUBSTRATE BIAS CIRCUIT

Jun-ichi Mogi, Kawasaki; Kiyoshi Miyasaka; Seiji Enomoto, both of Yokohama, and Shigeki Nozaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 197,774, filed as PCT/JP79/00274, Oct. 29, 1979, published as WO80/01021, May 15, 1980, § 102(e), Jun. 25, 1980, abandoned. This

application May 13, 1981, Ser. No. 263,279

Claims priority, application Japan, Oct. 30, 1978, 53-133384

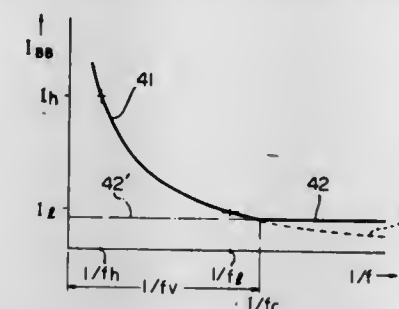
Int. Cl.³ H03K 3/01, 3/353

U.S. Cl. 307—296 R

15 Claims

1. A semiconductor circuit having a dynamic-type circuit and a bias-voltage generating circuit both mounted on the same substrate, wherein the bias-voltage generating circuit com-

prises: first means for absorbing from the substrate a first part of a substrate current, the magnitude of said first part of the substrate current being proportional to the operating frequency of the dynamic-type circuit; and second means, func-



tioning simultaneously with said first means, for absorbing from the substrate a second part of the substrate current, said second part of the substrate current corresponding to the junction leak current developed in the substrate.

4,430,582

FAST CMOS BUFFER FOR TTL INPUT LEVELS

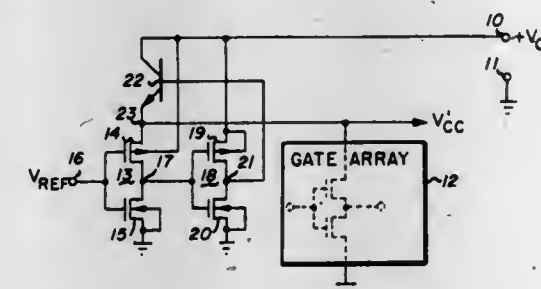
Bidyut K. Bose, Fremont, and John M. Jorgensen, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 16, 1981, Ser. No. 321,839

Int. Cl.³ H03K 17/30, 17/14

U.S. Cl. 307—297

9 Claims



1. In a CMOS integrated circuit in which at least one gate is designed to switch at a predetermined output reference level and operate with a plurality of other gates from a common power supply, the improvement comprising operating said gates from a regulated supply potential that is derived from said common power supply and is varied to compensate for changes in operating temperature and fabrication parameters, said regulated potential being determined by a representative operating gate that has its input terminal coupled to a TTL compatible reference potential.

4,430,583

APPARATUS FOR INCREASING THE SPEED OF A CIRCUIT HAVING A STRING OF IGFETS

Masakazu Shoji, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 30, 1981, Ser. No. 316,560

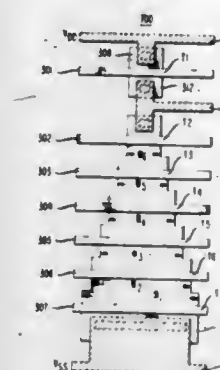
Int. Cl.³ H03K 19/017, 19/094, 19/09

U.S. Cl. 307—448

6 Claims

1. An IGFET circuit comprising:
 - a first terminal for receiving a first operating voltage;
 - a second terminal for receiving a second operating voltage;
 - an output terminal for providing an output signal;
 - load means coupled between the second terminal and the output terminal;
 - a series string of transistors each having a gate electrode and a conduction channel of a specified width, the string including at least three transistors responsive to input

signals at their gate electrodes and coupled between the output terminal and the first terminal and having a posi-



tive gradient in conduction channel width in the direction from the output terminal to the first terminal.

4,430,584

MODULAR INPUT/OUTPUT SYSTEM

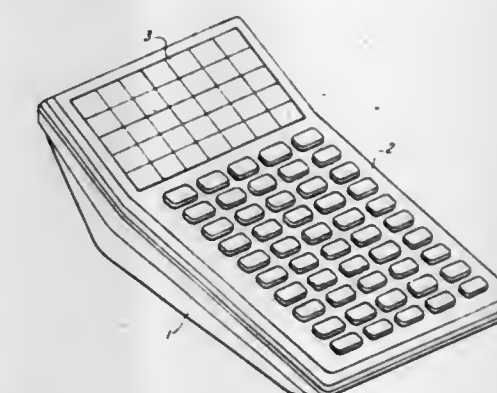
Ashok H. Someshwar, Austin; Kenneth A. Lies, Lubbock, and Jeffrey R. Teza, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1980, Ser. No. 154,342

Int. Cl.³ H03K 17/693

U.S. Cl. 307—465

5 Claims



1. An integrated circuit coupled to means external to said integrated circuit including a plurality of coupling elements comprising:

- (i) bus means for providing an address signal and a data signal,
- (ii) interconnect means coupled to said bus means comprising a plurality of individual amplifiers for isolating, amplifying and re-outputting a received data signal in response to receiving a decode signal and a plurality of individual decoders each coupled to a corresponding amplifier for providing a decode signal in response to a particular address signal, said interconnect means selectively coupling the received data signal to a corresponding one of said coupling elements in response to decoding a particular address signal defined prior to its reception by said interconnect means.

4,430,585

TRISTATE TRANSISTOR LOGIC CIRCUIT WITH REDUCED POWER DISSIPATION

Edward W. Kirk, Jr., Lower Macungie Township, Lehigh County, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1981, Ser. No. 335,624

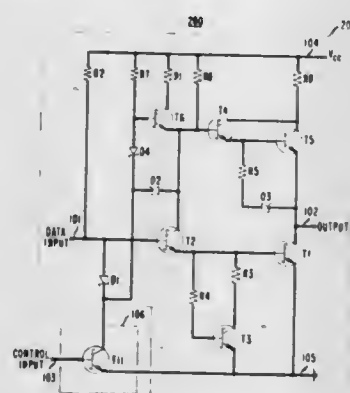
Int. Cl.³ H03K 19/088, 17/62

U.S. Cl. 307—473

5 Claims

1. A tristate logic circuit comprising:
 - a data input means;
 - an output terminal;

control input means;
 first and second terminals for receiving a first and a second operating voltage, respectively;
 pullup means coupled between the first terminal and the output terminal for sourcing current from the first terminal to the output terminal when activated;
 pulldown means coupled between the second terminal and the output terminal for sinking current from the output terminal to the second terminal when activated;
 phase splitter means coupled between the first and second terminals and being responsive to a data signal from the data input means for selectively activating the pullup means or the pulldown means;



disabling means coupled to the control input means, the phase splitter means and the second terminal and being activated by a control signal from the control input means for sinking current from the phase splitter means to the second terminal so as to inactivate both the pullup means and the pulldown means;

characterized in that there are included power-down means coupled in series with the phase splitter means and to the disabling means for interrupting current flow through the phase splitter means and for providing a relatively high impedance current path from the first terminal to the disabling means in dependence upon the disabling means being activated.

4,430,586

SWITCH WITH AN MIS-FET OPERATED AS A SOURCE FOLLOWER

Ernst Hebenstreit, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

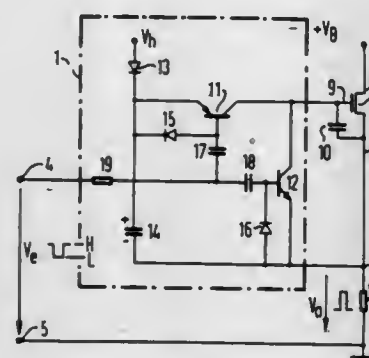
Filed May 11, 1981, Ser. No. 262,648

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018501

Int. Cl.³ H03K 17/12, 17/56, 17/687

U.S. Cl. 307—570

7 Claims



1. Switch, comprising an MIS-FET having a source and a control electrode defining a gate-source capacitance and being operated as a source follower for switching a given voltage; a first capacitor; a first auxiliary transistor; a second auxiliary transistor cutting off said first transistor when switched into a conducting state; said transistors each having a base, a collec-

tor and an emitter electrode defining a switching path; the collectors of each of said transistors being connected to the control electrode of said FET; a control input terminal; and second and third capacitors each being connected between said control input terminal and the bases of said first and second transistors, respectively; the emitter electrode of said second transistor being connected to the source electrode of said FET; said first capacitor having one lead connected to the emitter electrode of said second transistor and to the source electrode of said FET for charging the gate-source capacitance of said FET through the switching path of the first transistor, and another lead connected to the emitter electrode of said first transistor and to a terminal of a voltage source having a lower voltage than the given voltage to be switched by said FET for charging said first capacitor when said first transistor is cut off.

4,430,587

MOS FIXED DELAY CIRCUIT

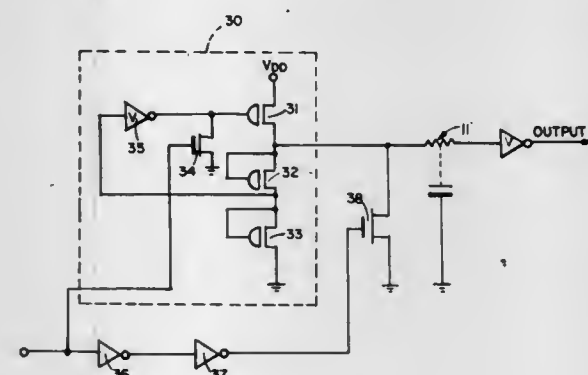
Mark R. Tennyson, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 13, 1982, Ser. No. 339,030

Int. Cl.³ H03K 5/159, 3/01

U.S. Cl. 307—590

2 Claims



1. A MOS time delay circuit comprising:

a signal input;

a MOS regulated voltage supply circuit for supplying a voltage proportional to a predetermined trigger voltage;

a RC delay circuit having a first input connected to said regulated voltage supply circuit, and a second input connected to said signal input, and an output; and

a first variable trigger point inverter having an input connected to the output of said RC delay circuit, and an output comprising means for supplying a relatively positive first and a relatively negative second source of electric potential to said circuit; a first depletion mode FET having one conduction path terminal connected to said first source of electric potential, the other conduction path terminal connected to a first intermediate node, at its control terminal connected to said first intermediate node;

a first enhancement mode FET having one conduction path terminal connected to said first intermediate node, the other conduction path terminal connected to a second intermediate node, and its control terminal connected to the output of said RC delay circuit; a second enhancement mode FET having one conduction path terminal connected to said second intermediate node, the other conduction path terminal connected to said second source of potential, and its control electrode connected to said output of said RC delay circuit; and a second depletion mode FET having one conduction path terminal connected to said first source of electrical potential, the other conduction path terminal connected to said second intermediate node, and its control terminal connected to said second intermediate node.

4,430,588

MHD ELECTRODE AND WALL CONSTRUCTIONS

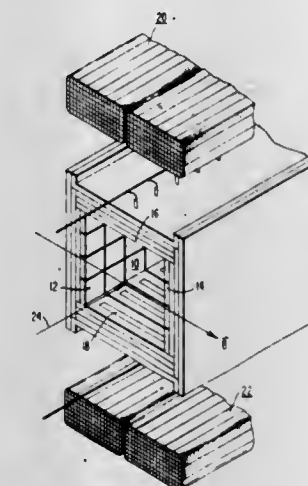
Stewart Way, Columbia, Md., and Joseph Lempert, Penn Hills, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 921,021

Int. Cl.³ H02K 45/00

U.S. Cl. 310—11

2 Claims



1. An electrode construction adapted for use in a wall of an MHD channel in which a plasma flows at an operating temperature, comprising:

a ceramic holder being approximately one inch by one inch in lateral cross section, said holder being electrically insulating at said operating temperature;

a ceramic electrode contained within said holder and having a frontal face only exposed to said plasma, said electrode being electrically conductive at said operating temperature;

a metallic bar mounted to said holder and spaced from said plasma and said electrode;

means for conducting a current between said electrode and said bar; and

means for flowing a cooling fluid through said metallic bar.

4,430,589

ROTOR OF A SUPERCONDUCTIVE ROTARY ELECTRIC MACHINE

Masaki Sakuyama, Ashiya; Norio Oishi; Kouichi Okamoto, both of Kobe; Masatami Iwamoto; Tatsuei Nomura, both of Itami, and Shiro Nakamura, Takarazuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

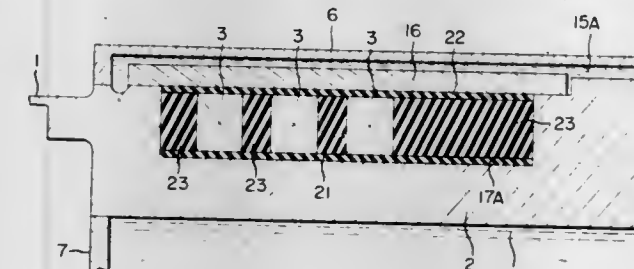
Filed Mar. 31, 1982, Ser. No. 363,773

Claims priority, application Japan, Apr. 2, 1981, 56-50878; May 29, 1981, 56-84139

Int. Cl.³ H02K 9/00

U.S. Cl. 310—52

4 Claims



1. A rotor of a rotary electric machine comprising:

a coil-carrying shaft having a cylindrical outer surface having therein a plurality of parallel grooves running in the axial direction of the coil-carrying shaft and a pair of annular indentations running in the circumferential direction of the coil-carrying shaft, each of said indentations

being connected to one end of each of said plurality of parallel grooves;

at least one winding formed of electrically conductive linear superconductive material having axially running portions disposed in said grooves and circumferentially running portions disposed in said indentations;

means for cooling said winding below a transition temperature of said superconductive material;

electrically insulating fillers fitted into spaces left by said winding in said indentations;

electrically insulating layers interposed between said circumferentially running portions of said winding and said indentations;

a pair of hollow cylindrical sleeves shrink fitted over said indentations onto said outer surfaces of said coil-carrying shaft; and

electrically insulating covers in said indentations between said circumferentially running portions of said winding and said shrink fitted sleeves, said shrink fitted sleeves tightly holding said electrically insulating layers, electrically insulating fillers, said circumferentially running coil portions and said insulating covers in said indentations.

4,430,590

ELECTRIC MOTOR WITH UNITARY ROTOR HOUSING

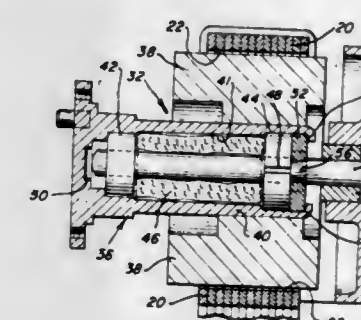
William L. Davis, Milford, Ill., assignor to MSL Industries, Inc., Milford, Ill.

Filed Feb. 5, 1982, Ser. No. 346,009

Int. Cl.³ H02K 7/00

U.S. Cl. 310—67 R

10 Claims



1. An electric motor, comprising:

a stator having a frame,

a rotor assembly, said rotor assembly including rotor housing means having an open end,

a rotor shaft fixedly cantilevered from said frame and fixed with respect to said stator for rotatably supporting said rotor assembly, said rotor shaft having a free end, and

retaining means disposed within said rotor housing means for holding said rotor assembly against axial movement on said rotor shaft, said retaining means being insertable through said open end during fabrication of said rotor assembly so that said rotor assembly is mountable on said rotor shaft after said shaft has been fixedly cantilevered from said frame by inserting said free end of said shaft into said open end and advancing the assembly axially along said rotor shaft until said retaining means cooperate with said rotor shaft to hold said rotor assembly against axial movement on said rotor shaft.

4,430,591

STATOR COIL OF A HIGH-VOLTAGE GENERATOR

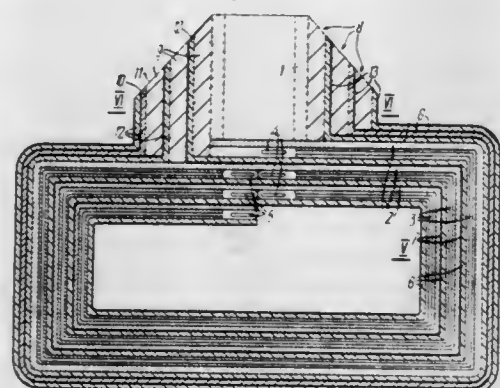
Tibor M. Nemeni, ulitsa Khalturinskaya, 11, kv. 245; Alexandr I. Nikolsky, ulitsa Dubninskaya, 14, korpus 2, kv. 59, and Sergei S. Mosolov, bulvar Yana Rainisa, 7, kv. 9, all of Moscow, U.S.S.R.

PCT No. PCT/SU80/00211, § 371 Date Aug. 23, 1982, § 102(e) Date Aug. 23, 1982, PCT Pub. No. WO82/02289, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 24, 1980, Ser. No. 413,387
Int. Cl.³ H02K 11/00

U.S. Cl. 310—71

1 Claim



1. A stator coil of a high-voltage generator, comprising an electrical lead-in of conductive material connected electrically to the beginning of a first turn of the coil, with the coil turns of conductive material being coated with several layers of turn-to-turn insulation having a screen layer applied on top, while the turn-to-turn insulation and the screen layer of each subsequent turn, starting with the first turn, envelop all the preceding turns, characterized in that the electrical lead-in (1) is fashioned as a tube while the stator coil of a high-voltage generator further comprises cooling pipe (3) adjoining the respective turns (2), closed at their ends and provided with side openings (4, 5) for the inlet and outlet of a cooling agent, insulating members (9) arranged concentrically with the electrical lead-in tube (1) and consisting of two parts (10, 11) made integral with each other, a first one (10) of said two parts facing the coil turns (2) presenting a half of a hollow cylinder separated from the latter by a diametral plane accommodating the longitudinal axis of said cylinder while a portion of said first part facing the coil turns (2) has two projections (15) provided each on the inner side thereof with holes (16) communicated with the side openings (4 or 5) in the cooling pipes (3), a second part (11) of the insulating member presenting a half of a truncated hollow cone separated from the latter by a diametral plane accommodating the longitudinal axis of said truncated cone coinciding with the longitudinal axis of said cylinder, the greater base of the second part (11) coinciding with the base of the first part (10) most removed from the coil turns (2), the insulating member (9) being further provided along the axis thereof with passages (14) communicated with spaces (17) in the projections (15), insulating tubes (8) for the supply of the cooling agent, each one of said insulating tubes formed by a pair of insulating members (9) being made of two parts integral with each other, one of said parts presenting a hollow cylinder with projections facing the coil turns while the other one of said parts presents a truncated hollow cone whose greater base coincides with the base of cylinder most removed from the coil turns (2), the holes (16) in the projections (15) of one of the insulating members (9) communicating with the corresponding side openings (4) of the cooling pipe (3) for the inlet of the cooling agent and the holes (16) in the projections (15) of the other insulating member (9) communicating with the corresponding side openings (5) provided in the same cooling pipe (3) for the outlet of the cooling agent, while each insulating tube (8) for the supply of the cooling agent is separated from the subsequent tube by several insulation layers (12) presenting a continuation of the corresponding layers (6) of turn-to-turn insulation, with a screen layer (13) applied on top and present-

ing an unbroken continuation of the corresponding screen layer (7) of the turn-to-turn insulation layers (6), the truncated cone of the insulating tube (8) for the supply of the cooling agent adjoining the electrical lead-in tube (1) being most removed from the first turn (2) of the coil while the truncated cone of each subsequent insulating tube (8) for the supply of the cooling agent tightly adjoining the preceding insulation layers is less removed from the first turn (2) of the coil and the greater bases of the truncated cones of the insulating tubes (8) for the supply of the cooling agent are located at a preset distance from each other.

4,430,592

ELECTROMAGNETIC BRAKE

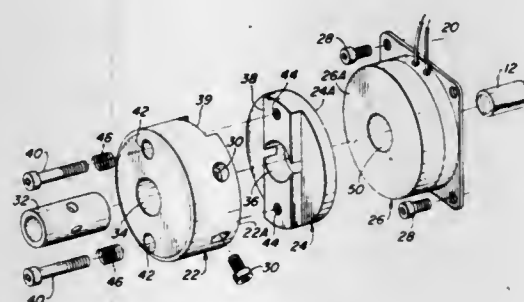
Peter Manktelow, McHenry Shores, Ill., assignor to Tape Research, Inc., Cary, Ill.

Filed Aug. 31, 1981, Ser. No. 297,763

Int. Cl.³ F16D 27/04

U.S. Cl. 310—93

2 Claims



1. An electromagnetic brake for use with an electric motor having a stator and a rotatable drive shaft, said brake comprising in combination an electromagnet mounted in fixed relationship with said stator and having an opening through which said shaft rotatably extends; a non-magnetic support member affixed to said shaft in spaced relationship with said electromagnet for rotation with said shaft; said support member including: a generally cylindrical block member having a central bore receiving a tubular bushing into which said shaft extends and which extends into a central bore in said disc member, radially extending screw means extending through said block member into engagement with said shaft for fixing said block member to said shaft, a plurality of countersunk holes extending through said block member in parallel relationship with said shaft, a plurality of headed screws slidably extending through said holes into threaded engagement with said brake disc member, and said coil springs respectively surrounding the shanks of said screws and being compressed between the heads of said screws and said block member to bias said screws in an axial direction away from said electromagnet; a brake disc member formed of a ferromagnetic material and mounted to said support member for axial movement between a braking position in engagement with said electromagnet when said electromagnet is energized and a non-braking position away from said electromagnet when said electromagnet is deenergized; mutually interlocking means on said support member and on said disc member for preventing relative rotation between said disc member and said support member; said interlocking means including a diametrically extending groove in one of said members, and a diametrically extending rib on the other of said members; and spring means carried by said support member for resiliently

biasing said disc member toward said non-braking position.

4,430,593

ACOUSTIC TRANSDUCER

Christian Göhlert, Bergisch Gladbach; Peter Kanngiesser, Overath-Steinenbrück; Hansjakob Weiss, Bergisch Gladbach, and Werner Wilke, Cologne, all of Fed. Rep. of Germany, assignors to Interatom, Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

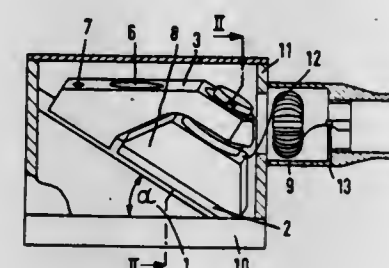
Filed Dec. 17, 1980, Ser. No. 217,408

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951075

Int. Cl.³ H01L 41/08

U.S. Cl. 310—327

12 Claims



1. Acoustic transducer having a piezo-electric element, comprising a lead section having a region connected to a piezo-electric element having a given surge impedance and said lead section having another region for coupling to a medium to be tested having another given surge impedance, said lead section being in the form of a metallic body having pores formed therein and having a sound interface, the number and size of said pores being adjusted for providing a surge impedance in vicinity of said sound interface being between the surge impedances of the piezo-electric element and the medium to be coupled thereto.

4,430,594

DEVICE FOR CONTACTING TUBULAR PIEZO-ELECTRIC TRANSDUCERS

Klaus Bork; Rolf Humbs, and Karl Trey, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

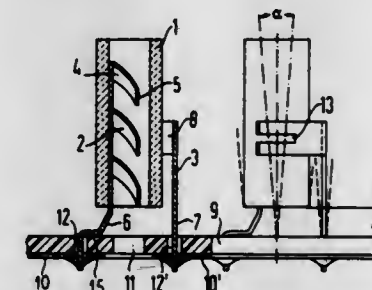
Filed Feb. 9, 1983, Ser. No. 465,120

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208679

Int. Cl.³ H01L 41/08; G01D 15/18

U.S. Cl. 310—328

5 Claims



1. A device for contacting each of a plurality of tubular piezo-electrical transducer elements which are arranged in rows and encapsulated in a synthetic material to form a printing head for an ink printing device, said device comprising a printed circuit board; a first contacting element and a second contacting element for each transducer element, each of the first contacting elements consisting of an inside contact sleeve having a contact surface resiliently pressing against an inside wall surface of a transducer element, said inside contact sleeve being connected to a flexible spacer extending out of the transducer element, each of the second contact elements comprising

a resilient connector with a resilient clamp for elastically embracing the outside of the transducer element extending therefrom, said circuit board having a row of feedthrough holes for each row of elements with one feedthrough hole for each of the transducer elements, each feedthrough hole having a first acceptance opening extending into an electrical conductor path and a second acceptance opening extending into a different conductor path; means for securing the flexible spacer of each first conducting element in the first openings and in electrical contact with the conductor path associated therewith; and means for securing each of the resilient connectors of the second conducting elements in the respective second openings and in electrical contact with the conductor path associated therewith so that each of the transducer elements are situated at a fixed distance from each of the feedthrough holes and aligned therewith.

4,430,595

PIEZO-ELECTRIC PUSH BUTTON SWITCH

Hiroyuki Nakasone, Tokyo, and Takayasu Sakamoto, Kawagoe, both of Japan, assignors to Toko Kabushiki Kaisha, Tokyo, Japan

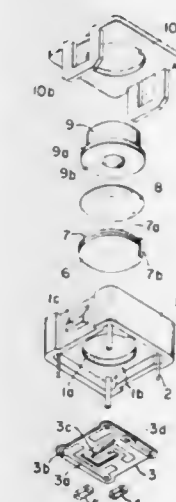
Filed Aug. 4, 1982, Ser. No. 405,156

Claims priority, application Japan, Aug. 7, 1981, 56-117874[U]; Aug. 7, 1981, 56-117875[U]

Int. Cl.³ H01L 41/08

U.S. Cl. 310—339

4 Claims



1. A piezo-electric push button switch comprising: a housing having a plurality of terminals embedded therein; a depressing member which is movably mounted in said housing; a flexible printed circuit board in said housing which electrically is conductively secured to said terminals for being mounted thereon; an electrically conductive plate in said housing between said circuit board and said depressing member and having a plate part and a lead part, said lead part being electrically conductively secured to said flexible printed circuit board; a piezo-electric plate which has electrodes on both surfaces thereof and is polarized in the direction of the thickness thereof, said piezo-electric plate being fixedly secured to the surface of said electrically conductive plate which is toward said circuit board; a further lead part between said flexible printed circuit board and said electrode on said piezo-electric plate which is toward said flexible circuit board and mechanically and electrically conductively connecting said electrode and said circuit board; and striking means constituted by a dome-shaped metal spring and interposed between said depressing member and said electrically conductive plate and which is deformed by depression of said depressing member to thereby strike a blow on said electrically conductive plate.

4,430,596

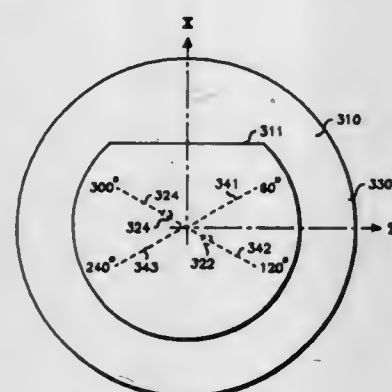
TEMPERATURE INSENSITIVE PIEZOELECTRIC CRYSTAL MOUNTING ARRANGEMENT

Charles W. Shanley, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1982, Ser. No. 408,409
Int. Cl.³ H01L 41/08

U.S. Cl. 310—348

16 Claims



1. A piezoelectric crystal mounting arrangement comprising:

a substrate of electrically insulative material;
an AT cut piezoelectric crystal plate having a center and opposed upper and lower surfaces with at least one electrode disposed on the upper surface of said crystal plate and at least one electrode disposed on the lower surface of said crystal plate, said crystal plate exhibiting X, Y, and Z reference coordinate axes, and

four support pedestals, each pedestal being situated on said substrate and being oriented so as to contact and support said crystal plate along a respective one of four axes of said crystal plate situated at angles of approximately 60°, 120°, 240°, and 300° with respect to the X axis of said crystal plate, the angle of each of said axes being selected to minimize stress exerted on said crystal plate by the differential thermal expansion of said crystal plate with respect to said substrate and pedestals, said four pedestals being substantially centrally situated on said crystal plate, said four pedestals being arranged on said substrate so as to form the four corners of a four-sided polygon, the center of said crystal plate being situated above and laterally within said four-sided polygon formed by said pedestals.

4,430,597

AMBIENT PRESSURE LAMP

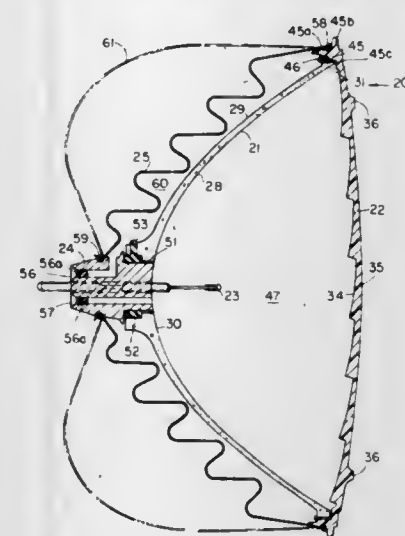
William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356
Filed Jul. 2, 1981, Ser. No. 280,112Int. Cl.³ H01K 1/18, 1/34, 1/52

U.S. Cl. 313—113

10 Claims

1. An ambient pressure lamp comprising:
a reflector member having an inner reflective surface, an outer surface, a base portion and an outer peripheral edge;
an enclosing cover member having an outer peripheral lip portion, said lip portion being assembled to said outer peripheral edge so as to define an inner chamber between said inner reflective surface and said enclosing cover member;
a lamp filament;
a lamp socket assembled to said reflector member adjacent said base portion and cooperatively adapted for receipt of said lamp filament; and
an expandable membrane sealingly joined around said outer surface and around said filament socket so as to define an

expansion chamber between said outer surface and said expandable membrane, said expansion chamber being



completely enclosed except for being in flow communication with said inner chamber.

4,430,598

FLUORESCENT DISPLAY TUBE

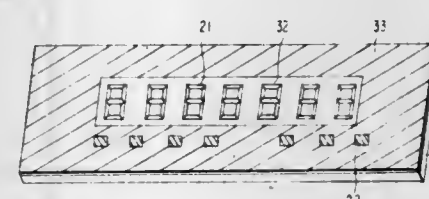
Toshio Okada; Katsumi Motoyama, and Takashi Yoshii, all of Izumi, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,741

Claims priority, application Japan, Jun. 24, 1980, 55-88241[U]
Int. Cl.³ H01J 1/62, 63/04

U.S. Cl. 313—497

7 Claims



1. A fluorescent display tube comprising:
a hermetically sealed casing having a substrate and a transparent window opposing each other, said substrate having different colored first and second background regions on its surface opposing said window, said first background region being surrounded by said second background region,
a filament disposed between said substrate and window,
a grid disposed between said substrate and filament, said grid having a mesh portion opposing said first background region,
a plurality of anode segments provided within said first background region and opposing said mesh portion,
a layer of a fluorescent material provided on each of said anode segments and having a color similar to that of said first background region,
external electrodes fixed to said casing, and
lead means for electrically connecting said filament, grid and anode segments to said external electrodes, the exposed portions of said lead means being located on said second background region and having a color similar to that of said second background region, whereby the readability of the displayed information in a bright environment is improved and the exposed portion of said lead means is indistinct against said second background region and thus achieving an excellent display quality.

4,430,599

TUNGSTEN-HALOGEN LAMP WITH FREE FLOATING GETTER

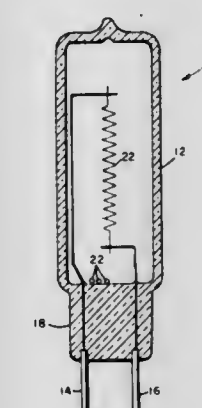
Carl F. Kackenmeister, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,594

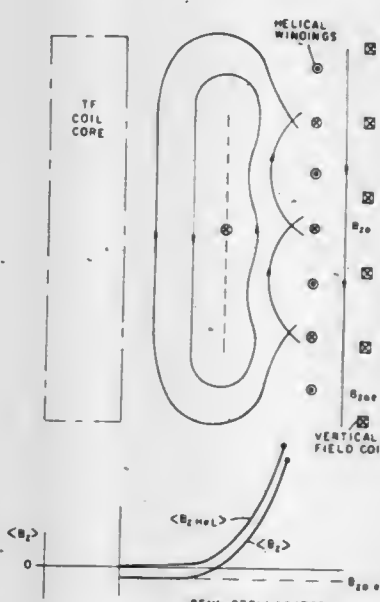
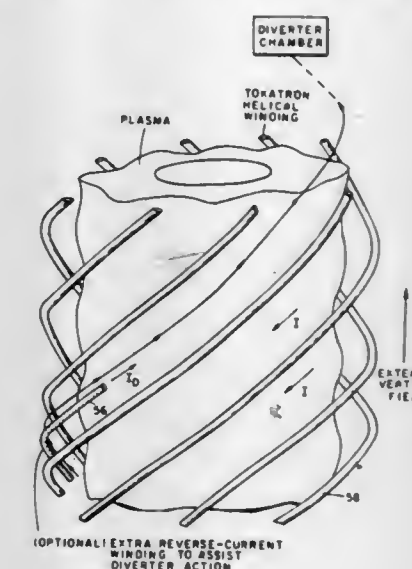
Int. Cl.³ H01K 1/50, 1/56

U.S. Cl. 313—554

3 Claims



1. A tungsten-halogen incandescent lamp comprising: a light transmitting, hermetically sealed, glass envelope; two lead-in wires sealed in said envelope at a glass press and extending internally and externally of said envelope; a tungsten filament attached between the internal ends of said lead-in wires; a fill gas within said envelope comprising an inert gas and a halogen; and a quantity of loose copper particles within said envelope.



along said minor axis, k is a constant and ϕ_i is the value of ϕ in the i'th plane at z equal to zero.

4,430,600

MODULAR LOW ASPECT RATIO-HIGH BETA TORSATRON

George V. Sheffield, Hopewell, and Harold P. Furth, Princeton, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 1, 1982, Ser. No. 364,276

Int. Cl.³ H01J 7/24; G21B 1/00

U.S. Cl. 315—111.71

15 Claims

1. A device for magnetically confining a plasma, comprising: semi-torsatron coil means, including a plurality, n in number, of electrically conductive coils, for generating a first toroidal field and a first poloidal field within said toroid, said plurality of coils forming closed loops in separate spaced-apart planes i, i = 1 . . . n, n being a positive integer greater than 2;
each of said plurality of coils surrounding and lying on the boundary of said toroid, said toroid having a major axis, and a minor axis encircling said major axis lying in the equatorial midplane perpendicular to said major axis; and
the cylindrical coordinates of every point (r, ϕ , z) in each of

4,430,601

SELECTIVE SHIFTING AC PLASMA PANEL

Gary D. Boyd, Rumson, and Peter D. T. Ngo, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1982, Ser. No. 365,252

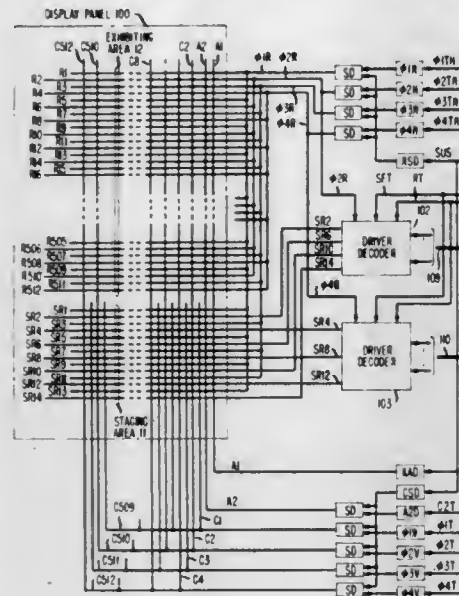
Int. Cl.³ H05B 41/00

U.S. Cl. 315—169.4

8 Claims

1. A plasma panel display of the type being capable of charge cloud transportation in response to the output of driver circuitry for propagating the status of display data between site locations, said plasma display having at least a first conductor arrangement in a first portion of the panel and a second conductor arrangement in a second portion of the panel, the first and second portions having common continuous conductors

extending between the two portions, and each conductor arrangement serving to provide selective propagation of the



status of display data between site locations in its portion in a predetermined direction.

4,430,602

ELECTRONIC FLASH DEVICE

Kouichi Ohmori, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,247

Claims priority, application Japan, Jun. 11, 1981, 56-88899

Int. Cl.³ H05B 41/32

U.S. Cl. 315-241 P

8 Claims



1. An electronic flash device comprising:

- (a) a DC-DC converter for boosting the output of a battery;
- (b) a capacitor to be charged with the output of said converter and for storing electrical energy to be converted into light energy;
- (c) a neon tube for becoming operative when the charge of the capacitor reaches a first predetermined level; and
- (d) control means for rendering said converter inoperative in response to said neon tube becoming operative and to render the converter operative again when the charge of the capacitor drops to the first predetermined level after the neon tube becomes operative.

4,430,603

BRUSHLESS DIRECT CURRENT MOTOR HAVING A ONCE-AROUND PULSE GENERATING MEANS

Rolf Müller, Ackerstr. 13, DT-7742 St. Georgen, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,385

Claims priority, application Switzerland, Jul. 18, 1980, 5498/80

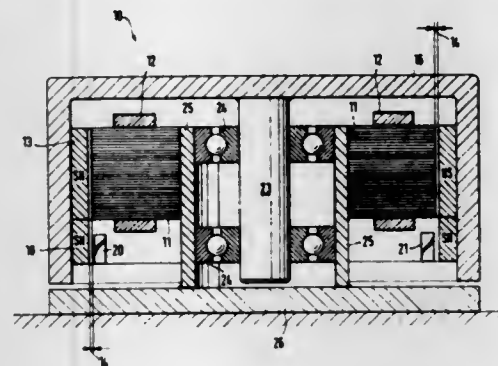
Int. Cl.³ G05B 19/40

U.S. Cl. 318-254

10 Claims

1. In a brushless direct current motor including a rotor, a stator, said rotor supporting a permanently magnetized exciter

magnet having at least two pairs of poles and a permanently magnetized control magnet, the poles being alternately magnetized in a circumferential direction, said stator supporting a winding means, and commutating means for controlling the current to the winding means, means for supplying a commutation signal to said commutating means and providing a once-around rotor position control signal, said means comprising two rotary position detectors circumferentially spaced the



4,430,604

RECTIFIER SWITCH FOR ELECTRIC LAWN MOWERS

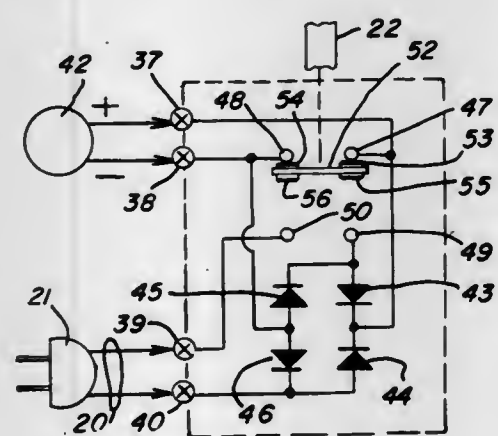
Ernest L. Loganbill, and William E. Taylor, both of Independence, Kans., assignors to Echlin Inc., Branford, Conn.

Filed Mar. 24, 1982, Ser. No. 361,143

Int. Cl.³ H02P 3/12

U.S. Cl. 318-379

12 Claims



1. A switch for energization of a DC motor of an electric mower or the like from AC supply lines, comprising: a switch housing, terminals accessible from the outside of said housing for connection to said motor and to said AC supply lines, contact means within said housing, an actuating member mechanically connected to said contact means and having a portion projecting from said housing for actuation of said contact means between an off condition and an on condition, rectifier means within said housing, and connection means within said housing connecting said contact means and said rectifier means and said terminals for connecting said motor through said rectifier means to said AC supply lines in said on condition of said contact means and for short circuiting said motor in said off condition of said contact means.

4,430,605

MOTOR CONTROL SYSTEM UTILIZING SWITCHED CONTROLLER

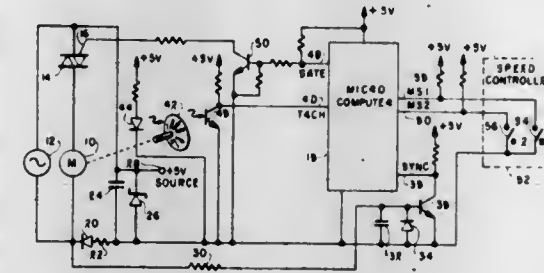
Bruce E. Arnold, Clinton, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 276,435

Int. Cl.³ H02P 3/06

U.S. Cl. 318-386

7 Claims



1. A system for controlling the speed of a motor comprising: switching apparatus selectively settable to any of four states; operator actuable means for setting said switching apparatus to a desired one of said states, said operator actuable means being arranged to effect changes between states of said switching apparatus only in a defined order; stopping means responsive to said switching apparatus being in a first of said states for stopping said motor; deceleration means responsive to said switching apparatus being in a second of said states for decreasing the speed of said motor; speed maintaining means responsive to said switching apparatus being in a third of said states for maintaining constant the speed of said motor; and accelerating means responsive to said switching apparatus being in a fourth of said states for increasing the speed of said motor.

4,430,606

SHEET FEEDING APPARATUS

Haruaki Otsuki; Hiromu Hirai, both of Ibaraki, and Masataka Kawauchi, Ishioka, all of Japan, assignors to Hitachi, Ltd.

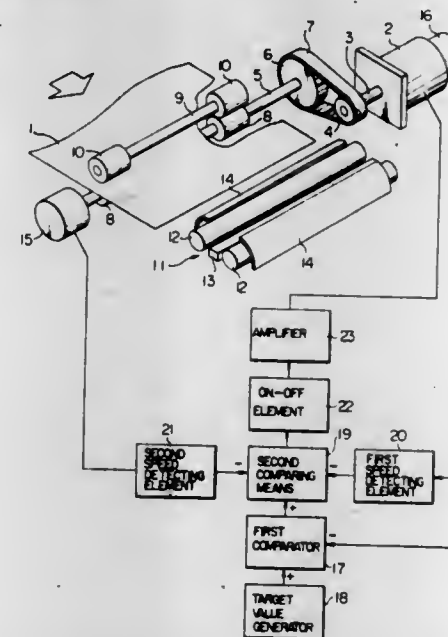
Filed Aug. 28, 1981, Ser. No. 297,404

Claims priority, application Japan, Sep. 8, 1980, 55-123566

Int. Cl.³ G05B 19/28

U.S. Cl. 318-601

10 Claims



1. A sheet feeding apparatus for transmitting the rotation of a motor shaft of a motor to a sheet feeding shaft for feeding a sheet by an elastic transmission mechanism, comprising: a target value generator for generating a target position signal;

a position detector for detecting the position of at least either of said sheet shaft or said motor shaft as a signal; first comparing means for comparing said two signals to produce a signal indicative of a positional deviation; a speed detecting element for generating a signal indicative of a speed of at least either of said sheet shaft or said motor shaft; second comparing means for comparing said positional deviation signal and a signal indicative of the speed to produce a deviation signal therebetween; and control means for controlling said motor in accordance with the deviation signal from said second comparing means.

4,430,607

CIRCUIT ARRANGEMENT

Wolfgang Muth, Erich-Ollenhauerstrasse 50B, 6200 Wiesbaden, Fed. Rep. of Germany

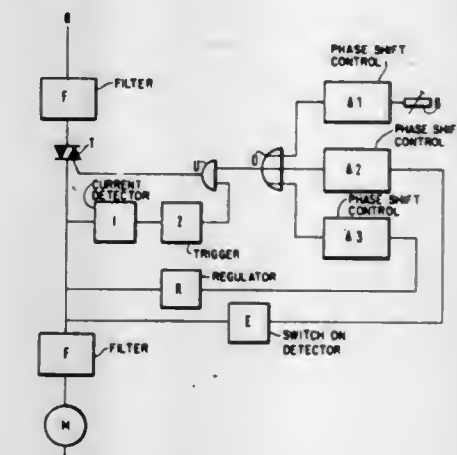
Filed May 18, 1982, Ser. No. 379,454

Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3120141

Int. Cl.³ G05F 1/70

U.S. Cl. 323-217

5 Claims



1. A circuit arrangement for continuously adjusting the power intake to a load with respect to the power demand of the load comprising: a voltage control power switch connected in series with the load; means for detecting the instantaneous phase shift between the load current and voltage, the phase shift detecting means generating an output in proportion to the amount of the detected phase shifts; first phase shift control means, responsive to the output of the phase shift detecting means, for generating a control signal for controlling the phase angle of conduction of the power switch to reduce the load current upon increasing phase shift between the load current and voltage; switch on detector means for detecting a switch-on of the load, the switch-on detector means generating an output for a pre-determined period of time after the load is switched on; second phase shift control means, responsive to the output of the switch on detector means, for generating a control signal suppressing conduction of the power switch for a pre-determined time after the switch-on of the load; and logic means, responsive to the control signals from the first and second phase shift control means, for generating an output control signal upon receiving an input from one of the first and second phase shift control means for controlling the phase angle of conduction of the power switch.

4,430,608 BASE DRIVE CIRCUIT

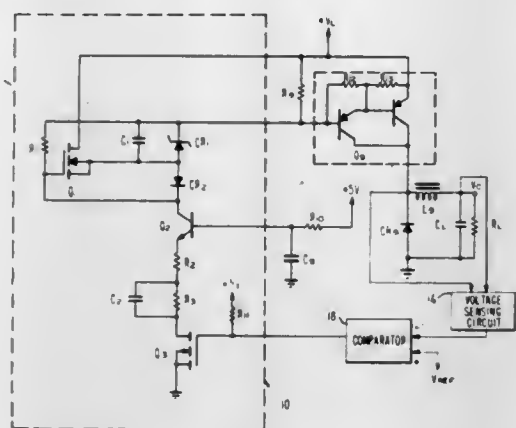
John J. Nesler, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 22, 1981, Ser. No. 333,355

Int. Cl.³ G05F 1/56

U.S. Cl. 323—282

16 Claims

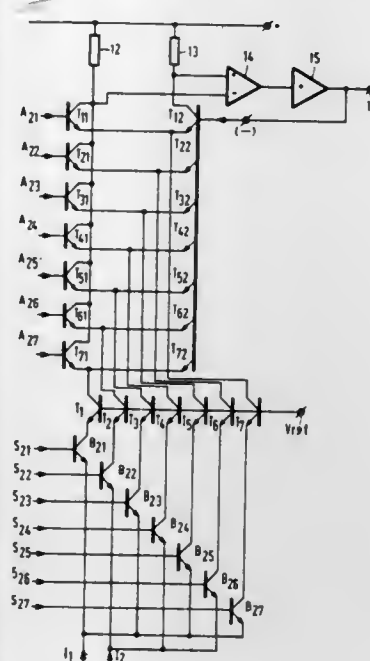


1. In a power supply having a power transistor with at least three terminals and means for sensing the output at the first terminal thereof, a circuit for providing forward and reverse base drive for the power transistor comprising:

first switching means coupled to the means for sensing the output of the power transistor for selectively closing a direct current path from a second terminal of the power transistor to a first terminal to provide forward base drive therefor;

current regulating means in said direct current path for minimizing the effect of variations in the potential applied at the second terminal of the power transistor; and second switching means coupled to said current path and a source of potential energy for applying said source of potential energy to the second terminal of the power transistor to provide reverse base drive therefor.

for gradually turning on a specific switch of said group, and for generating a second control signal complementary to the first



4,430,610

NON-GROUNDING CHECKING SYSTEM

Kenichi Yoshida; Junichi Hiramoto, and Shinya Takenaka, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

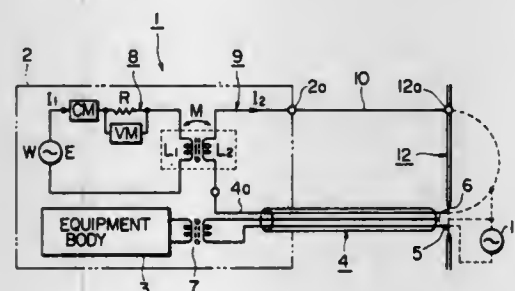
Filed Dec. 22, 1981, Ser. No. 333,509

Claims priority, application Japan, Dec. 22, 1980, 55-180471

Int. Cl.³ G01R 31/02

U.S. Cl. 324—51

4 Claims



4,430,609

SIGNAL TRANSFER DEVICE HAVING A TRANSFER CHARACTERISTIC WHICH IS ADJUSTABLE IN STEPS

Theodorus J. Van Kessel; Eise C. Dijkmans, and Albertus J. P. M. Van Uden, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,896

Claims priority, application Netherlands, Jan. 7, 1981, 8100033

Int. Cl.³ H03G 3/30

U.S. Cl. 323—350

14 Claims

1. A signal transfer device having a transfer characteristic which is adjustable in steps comprising, at least one group of controllable switches for transferring a signal from different inputs to an output, control means for turning on said switches one at a time with the switches being turned on and off by means of a control signal, and a control-signal generator for generating a first control signal which gradually varies in time

1. In an electrical apparatus having a power cord with a first grounding line therein, said apparatus having a grounding terminal to which a second grounding line is connected, a non-grounding checking circuit comprising:

a primary circuit including a primary coil and electrical source for providing a current through said primary coil; a secondary coil connected in series between said first grounding line and grounding terminal inductively coupled to said primary coil, the impedance of said primary circuit indicating the grounding state of said electrical apparatus; and means for detecting a magnitude of said current in said primary coil to provide an indication of said grounding state.

4,430,611 FREQUENCY SPECTRUM ANALYZER WITH PHASE-LOCK

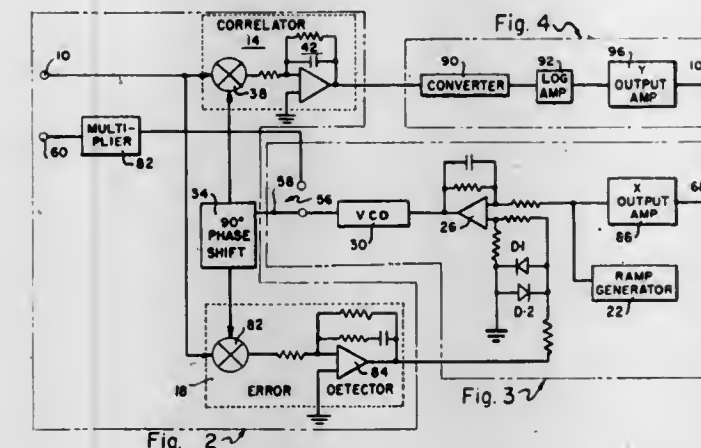
Thomas J. Boland, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 288,234

Int. Cl.³ G01R 23/16

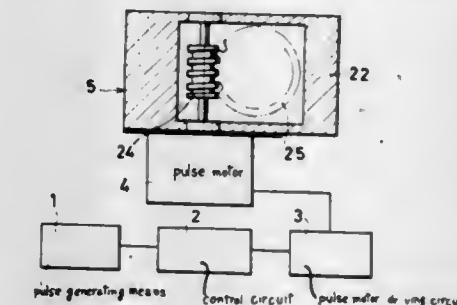
U.S. Cl. 324—77 C

8 Claims



1. A sweep frequency spectrum analyzer for determining the frequency spectrum components of an input signal comprising: a cross correlator means having first and second input means and an output means; a phase detector means having first and second input means and producing an error signal at an output means; sweep frequency means having an input means for coupling to an error signal, said sweep frequency means responsive to said error signal to produce a sweep frequency signal whose frequency is proportional to said error signal; means for coupling the input signal to said first input means of said cross correlator means and said phase detector means; means for coupling said sweep frequency signal to said second input means of said said cross correlator means and said phase detector means; means for coupling said input of said sweep frequency means to said error signal of said phase detector means; said phase detector means and said sweep frequency means comprising a phase lock loop which matches the phase of the sweep frequency signal to the phase of said input signal for a predetermined time period; and said cross correlator output means producing during said predetermined time period, an output signal which is directly proportional to the maximum amplitude of a frequency spectrum component of said input signal.

ling the pulse motor in either a forward direction or a reverse direction and an indicator means operable in response to the pulse motor for indicating a speed corresponding to the speed of the vehicle, wherein said control circuit means comprises a counter means for counting the number of pulses generated by the pulse generating means, holding circuit means for counting and holding the number of pulses counted by the counter means during the predetermined time interval and a preceding time interval, a first comparator means coupled to the pulse motor for discriminating between the positive and negative difference of the values of the holding circuit means and generating either a forward rotational signal or a reverse rotational signal for the pulse motor, subtractor circuit means coupled to



the holding circuit means for providing a difference between the number of pulses counted during each time interval and during the preceding time interval, oscillator means for generating pulses corresponding to a predetermined motor rotational speed, second counter means for counting the number of pulses applied to the pulse motor by the oscillator means, second comparator means for comparing the output of the subtractor means and the second counter means and an AND circuit having one input coupled to the oscillator means and the other input coupled to the second comparator means and the output thereof coupled to the motor and the second counter means, wherein the number of pulses applied to the motor by the oscillator means is controlled and the rotational speed of the motor is thereby controlled.

4,430,613

PIPELINE INSPECTION AND MAINTENANCE METHOD INCLUDING MOVING A MAGNETIC FIELD RESPONSIVE DEVICE ALONG THE ROUTE OF THE PIPELINE

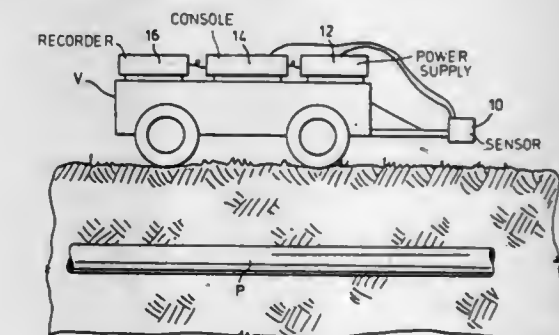
Hartley A. French, 67 Aldershot Crescent, Willowdale, Ontario, Canada

Filed Jul. 28, 1980, Ser. No. 172,796

Int. Cl.³ G01R 33/12; G01N 27/72

U.S. Cl. 324—200

8 Claims



1. A method of inspecting and maintaining a pipeline including the steps of passing an inspection pig through the pipeline and making a record of the pipeline characteristics observed by said pig including areas of said pipeline suspected of weakness and of specific identifiable features of the pipeline; recording the output of an odometer carried by said pig so that the observed characteristics can be related to said recording of the output of the odometer;

4,430,612 ELECTRIC TYPE SPEED METER

Nobuyuki Onitsuka; Masaaki Fukamachi, and Masahiko Sueyoshi, all of Miyazaki, Japan, assignors to Kabushiki Kaisha Honda Rukku, Miyazaki, Japan

Filed Sep. 22, 1981, Ser. No. 304,569

Claims priority, application Japan, Sep. 22, 1980, 55-130599

Int. Cl.³ G01P 3/489

U.S. Cl. 324—166

2 Claims

1. An electric speed meter comprising a pulse generating means for generating a pulse signal corresponding to a vehicle speed, a control circuit means for counting the number of output pulses of the pulse generating means during predetermined time intervals and for discriminating between a positive and negative difference between the number of pulses counted during a predetermined time interval and the number of pulses counted in a preceding time interval and for generating a pulse signal corresponding to the difference therebetween, a pulse motor driving circuit for applying in sequence the output pulses of the control circuit means to a pulse motor for control-

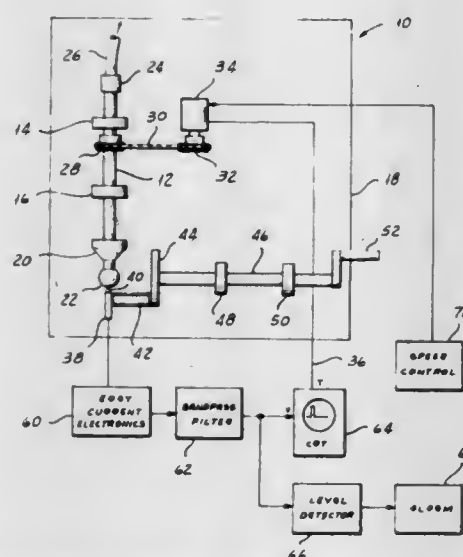
moving a magnetic field responsive device along the route of the pipeline and exterior of the pipeline, identifying the geographical location of a selected one of said specific identifiable features of the pipeline using that device, correlating that feature with the same feature in the record and observing the distance between that feature and an area of suspected weaknesses recorded by said odometer and, using the geographical location of said feature as a datum from which to measure off said distance, finding the geographical location of said area suspected of weakness.

4,430,614

EDDY CURRENT BEARING BALL FLAW DETECTOR

Charles V. Gereg, Bethel, Conn., assignor to The Barden Corporation, Danbury, Conn.
Filed Dec. 10, 1980, Ser. No. 214,777
Int. Cl.³ G01N 27/82; G01R 33/00
U.S. Cl. 324—238

9 Claims



1. Apparatus for inspecting the surface of a generally spherical article having a center including in combination first means operable to rigidly hold said article, an inspection probe, means for positioning said probe in contact with the surface of said article, means for rotating said first means about a first axis passing substantially through said center to cause said probe to scan a strip of said surface, and means including means for revolving said positioning means about a second axis passing substantially through said center to vary the location of said strip.

4,430,615

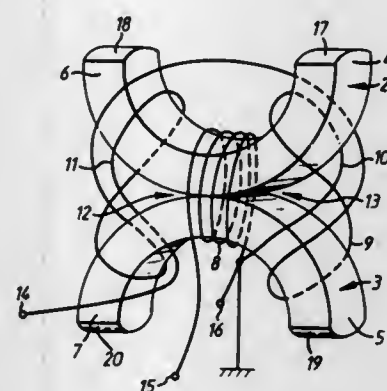
REFLECTION TYPE PROBES FOR EDDY CURRENT TESTING INSTRUMENTS

John H. Calvert, Hertfordshire, England, assignor to Hocking Electronics Limited, Great Britain
Filed Aug. 13, 1981, Ser. No. 292,628
Claims priority, application United Kingdom, Aug. 23, 1981, 8027498
Int. Cl.³ G01N 27/72; G01R 33/12; H01F 27/28, 27/38
U.S. Cl. 324—239

6 Claims

1. A reflection type probe for use with an eddy current testing instrument, said probe comprising a ferromagnetic core, a driver coil system and a pick-up coil system, both of said systems being mounted on the core, said core having four limbs each with a free end, one of said coil systems being

wound on the four limbs with its turns equally distributed between the four limbs and the other coil system being wound



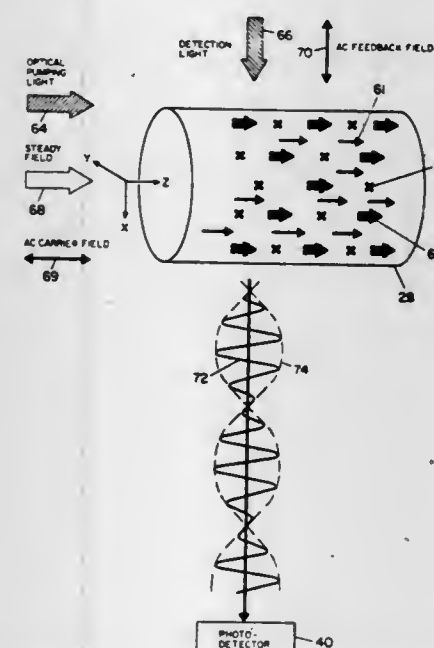
on a part of the core remote from the turns of said one coil system and which interconnects the core limbs at least in pairs.

4,430,616

NUCLEAR MAGNETIC RESONANCE GYRO SCOPE

Bruce C. Grover, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Continuation-in-part of Ser. No. 162,337, Jun. 23, 1980, abandoned. This application Jan. 29, 1982, Ser. No. 344,249
Int. Cl.³ G01R 33/08
U.S. Cl. 324—304

6 Claims



1. In a nuclear magnetic resonance detection device including a nuclear magnetic resonance cell, a gas vapor of a first optically pumpable substance that possesses a magnetic moment and is capable of being optically pumped, said pumpable substance being contained in said cell, at least one nuclear moment gas each having a nuclear magnetic moment also contained in said cell, the nuclear magnetic moments of each said nuclear moment gas being at least partly aligned, means for applying a steady magnetic field to said cell, first means for illuminating said cell with pumping light capable of partly aligning the magnetic moments of said optically pumpable substance in one direction by absorption of said light, means for precessing said aligned nuclear magnetic moments of each said nuclear moment gas about the direction of the steady magnetic field at the respective Larmor precession frequencies of each said nuclear moment gas, means for applying an AC carrier magnetic field to said cell, the improvement comprising:

a gas vapor of a second optically pumpable substance that possess a magnetic moment and is capable of being opti-

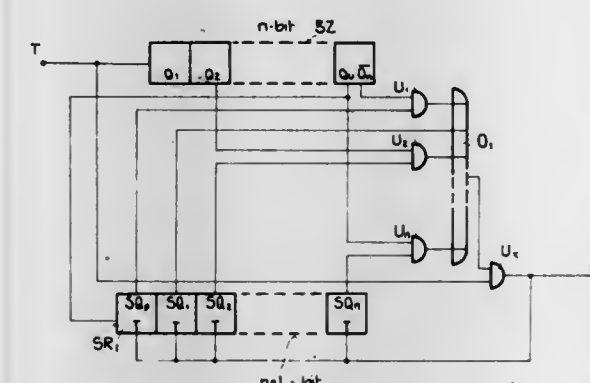
cally pumped, said second optically pumpable substance being contained in said cell;
second means for illuminating said cell with detection light of a wavelength approximately equal to a wavelength which can be absorbed by said second optically pumpable substance;
means for applying said detection light with a component orthogonal to the direction of said AC carrier magnetic field to produce modulations in the intensity of the transmitted part of said detection light substantially at the frequency of at least one harmonic, including the fundamental of said AC carrier magnetic field; and
means for detecting at least one of said modulations in the intensity of the transmitted part of said detection light.

4,430,617

CLOCK GENERATOR

Joachim Kuhlmann, Heilbronn, Fed. Rep. of Germany, assignor to TELEFUNKEN electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Dec. 2, 1981, Ser. No. 326,923
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046772
Int. Cl.³ H03K 3/78, 3/017, 3/86
U.S. Cl. 328—61

5 Claims



1. A clock generator comprising: a binary counter having n-stages and an input to which is supplied a basic clock signal with separate timing pulses at a constant period; a shift register having a complete shift interval and n+1 stages; and a logic circuit having an output and linking the individual stages of said shift register and of said binary counter together so that a clock output signal, which has a period which increases in binary form during one complete shift interval of the shift register and a period ratio such as (1:1:2:4:8: ... :2n) as compared to the basic clock signal, appears at said output of said logic circuit; and wherein said logic circuit has an OR gate and n+1 AND gates, said OR gate has n+1 inputs with n of said inputs being formed by the outputs of n of said AND gates, each of said n AND gates connects one stage of said binary counter with a corresponding stage of said shift register, the logic signal in one of said stages of said shift register is applied directly to the n+1th input of said OR gate, the n+1th AND gate has inputs connected to the output of said OR gate and to said basic clock signal, and said clock output signal appears at the output of said n+1th AND gate.

4,430,618

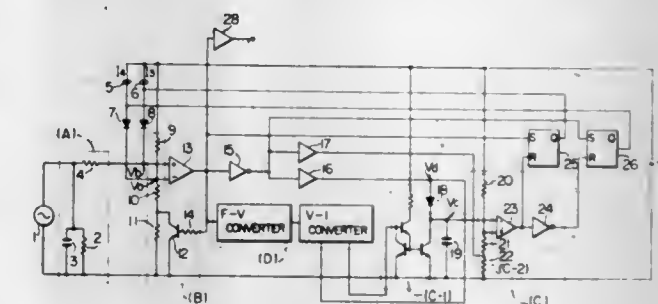
INPUT BUFFER CIRCUIT

Hisami Mitsueda, Toyota; Kazuyoshi Tamaki, Nagoya, and Hiromi Ariyoshi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jul. 30, 1981, Ser. No. 288,373
Claims priority, application Japan, Aug. 4, 1980, 55-106997
Int. Cl.³ H03K 5/24, 17/16
U.S. Cl. 328—149

2 Claims

1. An input buffer circuit comprising:

a filter circuit for eliminating noise included in a signal from a signal source;
a voltage setting circuit for establishing a first and a second predetermined voltage;
a comparator circuit for comparing an output signal of said filter circuit with each of said predetermined voltages to generate a comparison output signal;
flip-flop circuit means responsive to said comparison output signal of said comparator circuit to generate a gate signal;



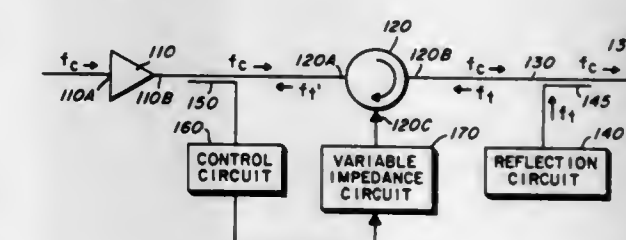
constant current circuit means responsive to said gate signal to selectively supply a third and a fourth predetermined voltage to said comparator circuit;
frequency-to-current converter means for converting said comparison output signal to a current signal corresponding to the frequency thereof; and
time setting circuit means responsive to said current signal to determine a holding time of said third and fourth predetermined voltages, respectively.

4,430,619

ADAPTIVE RADIO FREQUENCY INTERMODULATION MINIMIZING APPARATUS

Robert L. Epsom, Hanover Park; Paul H. Gallus, Chicago, and Anthony P. van den Heuvel, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 31, 1981, Ser. No. 336,194
Int. Cl.³ H03F 1/26; H04B 15/00
U.S. Cl. 330—149

13 Claims



1. An apparatus for inhibiting generation of intermodulation products affecting an amplifier circuit amplifying a radio frequency signal exhibiting a predetermined frequency comprising:

a circulator including at least input, output and isolation ports, said input port being electrically coupled to the output of said amplifier;
reflection circuit means, electrically coupled to the output port of said circulator, for generating a reflected radio frequency signal coupled back to said circulator output port, said reflected radio frequency signal exhibiting a frequency sufficiently different from said predetermined frequency signal so as to be distinguishable therefrom, said reflection circuit means being adapted to couple said predetermined radio frequency signal to an antenna;
control circuit means, electrically coupled to said amplifier, for generating a control signal exhibiting indicia of the portion of the reflected radio frequency signal reaching the input port of said circulator, and
electronically variable impedance means, coupled to the isolation port of said circulator and to said control circuit

means, for providing an appropriate impedance to said isolation port in response to said control signal such that the isolation achieved by said circulator is maximized.

4,430,620

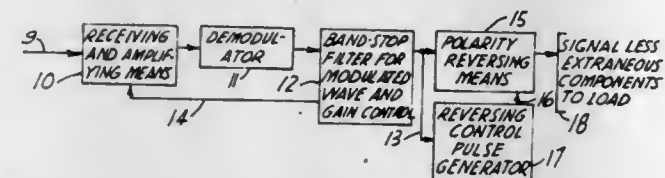
DEMODULATOR SYSTEM FOR DOUBLE SIDEBAND SUPPRESSED CARRIER AMPLITUDE MODULATION
Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, H3R 1K3, Canada

Filed Apr. 29, 1983, Ser. No. 489,947

Int. Cl.³ H03D 1/00

U.S. Cl. 329-166

6 Claims



5. Receiving means for deriving a signal from a carrier double sideband amplitude modulated by said signal, with said carrier suppressed to a low amplitude, said signal having no material dc component, which comprises:

means for accepting and amplifying said modulated carrier, automatically controlled in gain by dc voltage from a rectifier and filter receiving said low amplitude carrier; wherein the improvement over means of the prior art consists of:

a demodulator for said amplified modulated carrier, which produces a wave containing substantially only a low amplitude dc from the low amplitude carrier and the harmonics of said signal but not said signal, and

a filter which removes substantially only said modulated wave from the output of said demodulator, and a pulse generator receiving the output of said demodulator, for generating control pulses at instants of minimum amplitude of said output which correspond to zero crossings of said signal, and

reversing means which receives said control pulses and reverses the polarity of alternate portions of said filtered demodulator output, between instants at which said pulses successively occur, and

means which delivers to a load said portions, alternately reversed in polarity and freed from extraneous components, as said signal.

4,430,621

CMOS POLARITY SWITCH

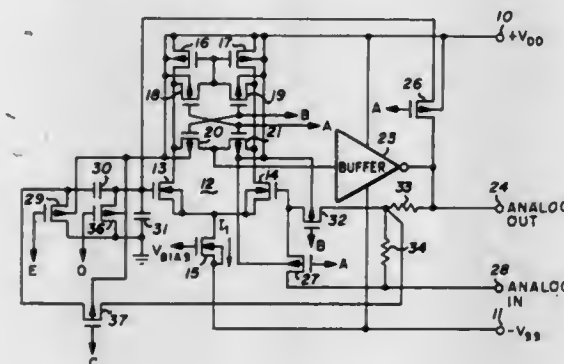
James B. Wieser, and Suman H. Patel, both of Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 21, 1981, Ser. No. 265,876

Int. Cl.³ H03F 3/45

U.S. Cl. 330-9

4 Claims



1. In a polarity switch having a differential amplifier and

digital control means for controlling the coupling of an analog signal wherein in one state said differential amplifier is connected as a unity gain voltage follower and in a second state said differential amplifier is connected as a unity gain inverter, the improvement comprising:

means responsive to said digital control means for reversing the sense of said differential amplifier whereby the effect of amplifier offset potential is reduced as a result of switching between said two states;

first and second capacitors;

means responsive to said digital control means for periodically coupling said first capacitor across the input terminals of said differential amplifier to develop a charge equal to the offset potential of said amplifier;

means responsive to said digital control means for connecting said first and second capacitors in parallel whereby the offset potential charge developed across said first capacitor is shared between the two capacitors thereby to develop a fraction of said offset potential; and

means responsive to said digital control means for connecting said parallel combination of said first and second capacitors to said differential amplifier when connected as a unity gain inverter whereby the offset potential of said amplifier is compensated as a result of said switching.

4,430,622

OFFSET CORRECTION CIRCUIT

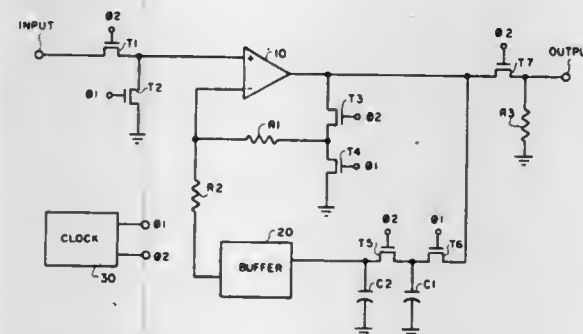
Richard M. Simoes, Natick, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 19, 1981, Ser. No. 322,818

Int. Cl.³ H03F 1/08

U.S. Cl. 330-9

1 Claim



1. An offset correction amplifier consisting of:

an input connection (Input);

an output connection (Output);

a differential amplifier (10) having a positive input, a negative input, and an output;

a clock for generating pulses of a first phase and a second phase;

means (T1, T2) for coupling the positive input to the input connection only during the second phase;

means (T7) for coupling the output to the output connection only during the second phase;

a first feedback loop (R1) arranged between the negative input and the output;

means (T3, T4) for closing the first feedback loop only during the second phase;

a second feedback loop including a first capacitor (C1), a second capacitor (C2), and a buffer (20) arranged between the output and the negative input, said first capacitor (C1) having a capacitance less than the second capacitor (C2); the buffer (20) arranged to couple any voltage of the second capacitor (C2) to the negative input;

means (T6) for coupling the first capacitor to the output only during the first phase; and

means (T5) for coupling the first capacitor (C1) to the second capacitor (C2) during the second phase.

4,430,623

MONOLITHIC AMPLIFIER COMPRISING A POWER DIVISION AND RECOMBINATION SYSTEM GROUPING A PLURALITY OF TRANSISTORS

Alain Bert, and Didier Kaminsky, both of Paris, France, assignors to Thomson-CSF, Paris, France

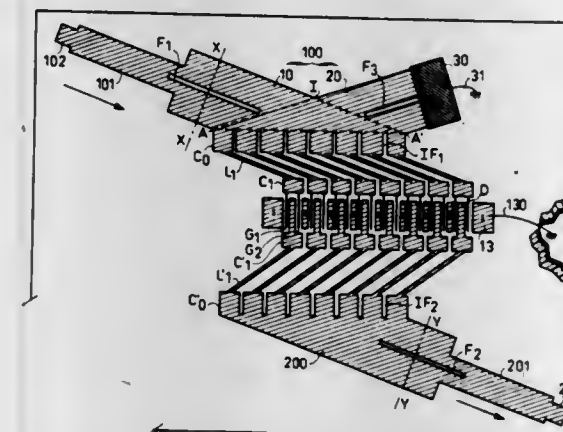
Filed Aug. 31, 1981, Ser. No. 297,965

Claims priority, application France, Sep. 2, 1980, 80 18926

Int. Cl.³ H03F 3/60

U.S. Cl. 330-286

10 Claims



1. A monolithic amplifier of the type having a power division and recombination system grouping a plurality of transistors, said amplifier comprising on a single semi-conductor wafer;

a first bent transmission line having an input branch and a tap branch wherein said tap branch forms a reflection and absorption line leading to a resistive load etched on said wafer;

a plurality of distribution lines said distribution lines having impedance transformation line elements connected at one end in parallel to the bent part of said bent transmission line and on the other end to the inputs of a plurality of parallel-connected transistor amplifiers wherein said impedance transformation line elements are separated from each other by a plurality of variable tilting slots in order to distribute energy; and

a second plurality of impedance transformation lines being connected to the output of said transistor amplifiers and to the input of an output transmission line wherein said input branch, said tap branch and said output transmission line each have a transversal reflections slot made in the longitudinal axis of each of the said tap branch, said input branch and said output transmission line to provide for elimination of traveling waves in the transverse direction, and wherein the angle between said tap branch and said input branch of said bent transmission line is chosen so that reflected waves are in phase in said tap branch.

4,430,624

CURRENT MIRROR CIRCUIT ARRANGEMENT

Anthony D. Newton, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1982, Ser. No. 391,633

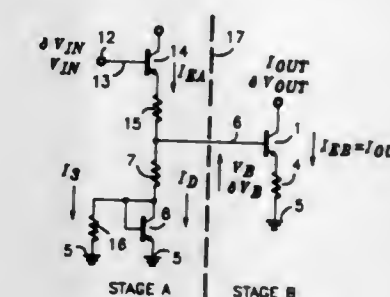
Int. Cl.³ H03F 3/10

U.S. Cl. 330-288

7 Claims

1. A current mirror circuit arrangement comprising a transistor having a base electrode, a collector electrode for providing an output current and an emitter electrode coupled to a supply terminal; an input terminal for receiving an input signal voltage; impedance means coupled between the input terminal and the base electrode of the transistor; a series combination of resistive means and a diode coupled between the base electrode of the transistor and a supply terminal; and an impedance connected to share current with the diode such that a combina-

tion formed by the diode and the impedance is in series with the resistive means wherein the linearity of the output current-



/input signal voltage characteristic may be controlled in dependence upon the magnitude of said impedance.

4,430,625

POWER AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

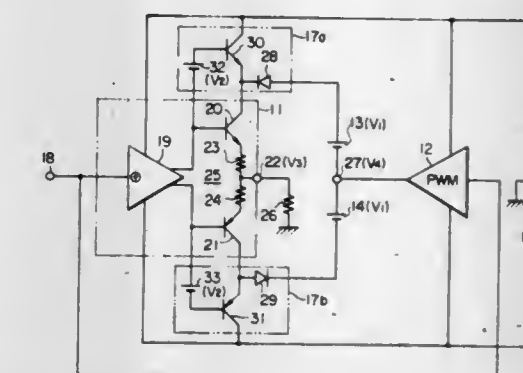
Filed Jan. 23, 1981, Ser. No. 227,999

Claims priority, application Japan, Jan. 24, 1980, 55-7324

Int. Cl.³ H03F 3/04, 3/38

U.S. Cl. 330-297

12 Claims



1. A power amplifier, comprising:

a first amplifying circuit having amplifying elements for amplifying an input signal in either class-A, class-B or class-AB mode, to drive a load;

a second amplifying circuit using, as an input, a signal corresponding to said input signal for supplying to said amplifying elements an output voltage as a first power supply voltage;

fixed power supplies supplying a second power supply voltage to said second amplifying circuit; and

switching circuits for switching between said first power supply voltage and said second power supply voltage to be delivered to said amplifying elements in accordance with a potential difference between an output voltage of said first amplifying circuit and the output voltage of said second amplifying circuit.

4,430,626

NETWORKS FOR THE LOG DOMAIN

Robert W. Adams, Medford, Mass., assignor to dbx, Inc., Newton, Mass.

Continuation of Ser. No. 97,901, Nov. 28, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,712

Int. Cl.³ G06G 7/24; H04B 1/64

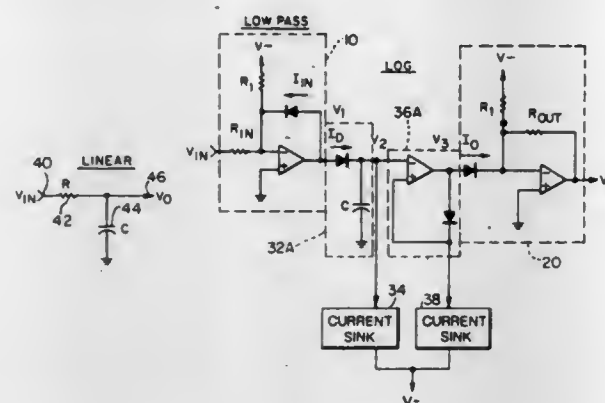
U.S. Cl. 331-108 B

9 Claims

1. A system for processing an input signal and having a variable system frequency response, said system comprising: signal log converting means responsive to said input signal for providing a first log signal as a function of the logarithm of said input signal;

filter means coupled to said signal log converting means and responsive to said log signal and a control signal for pro-

viding a modified log signal as a function of said first log signal and said control signal; and
signal antilog converting means coupled to said filter means and responsive to said modified log signal for providing an



antilog signal as a function of the antilogarithm of said modified log signal;
wherein said variable system frequency response includes a cut-off frequency as a function of said control signal.

4,430,627

AMPLITUDE CONTROLLED SINE WAVE OSCILLATOR
Kenji Machida, 3-3, Nishiogiminami 2, Suginami-ku, Tokyo 167, Japan

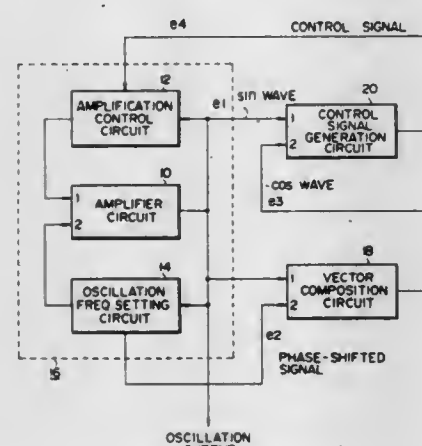
PCT No. PCT/JP78/00040, § 371 Date Jun. 3, 1980, § 102(e)
Date Jun. 3, 1980, PCT Pub. No. WO80/01224, PCT Pub.
Date Jun. 12, 1980

PCT Filed Dec. 5, 1978, Ser. No. 212,086

Int. Cl.³ H03B 5/26

U.S. Cl. 331-109

12 Claims



3. An amplitude controlled sine wave oscillator comprising:
first means (10) having first and second feedback loops, for generating an output signal (e1);
second means (12) provided in said first feedback loop for varying the feedback amount of said first feedback loop;
third means (14) provided in said second feedback loop for determining a frequency of said output signal (e1) and generating a first signal (e2) whose phase is shifted from said output signal (e1) by a given amount;
fourth means (18) coupled to said first and third means (10,14) for composing a second signal (e3) from said output signal (e1) and said first signal (e2), said second signal (e3) being phase-shifted from said output signal (e1) by a predetermined amount;
fifth means (20) coupled to said first and fourth means (10,18) for composing a third signal (e4) from signals (e1a, -e1a, e3a, -e3a) corresponding to said output signal (e1) and said second signal (e3), said third signal (e4) containing higher harmonic frequencies of the oscillation frequency of said output signal and having a DC potential

corresponding to the amplitude of said output signal (e1); and
sixth means (C20, R20) coupled to said second and fifth means (12,20) for reducing said higher harmonic frequencies of said third signal (e4) and supplying said second means (12) with a control signal (I4) to vary the feedback amount of said first feedback loop so that the amplitude of said output signal (e1) is kept constant.

4,430,628

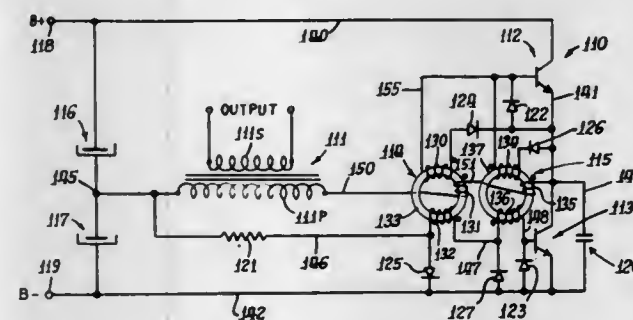
HIGH EFFICIENCY INVERTER AND BALLAST CIRCUITS

Ole K. Nilssen, Caesar Dr., R.R.-5, Barrington, Ill. 60010
Division of Ser. No. 973,741, Dec. 28, 1978, abandoned. This
application Dec. 14, 1981, Ser. No. 330,159

Int. Cl.³ H03K 3/282, 3/30

U.S. Cl. 331-113 A

4 Claims



1. In a self-oscillating inverter circuit operable to be powered from a source of DC voltage and to provide an AC voltage at an output to a load, said inverter circuit having a pair of switching transistors connected in series across said source of DC voltage, with each of said transistors having a base-emitter junction, the improvement comprising:

a saturable current-transformer connected in circuit with said output, said saturable current-transformer being responsive to the current flowing through said load and operative to provide alternately intermittent positive feedback-current to the base-emitter junction of each of said transistors, thereby providing for alternating conduction of said transistors; and

a non-saturable current-transformer connected in circuit with said output, said non-saturable current-transformer being responsive to the current flowing through said load and operative to provide alternately intermittent negative feedback-current to the base-emitter junction of each of said transistors, said negative feedback current being provided immediately upon saturation of said saturable current transformer, thereby to aid in the rapid switching off of said transistors.

4,430,629

ELECTRICAL FILTER CIRCUIT OPERATED WITH A DEFINITE SAMPLING AND CLOCK FREQUENCY F_T WHICH CONSISTS OF CTD ELEMENTS

Hermann Betzl; Johann Magerl, both of Munich, and Wilhelm Volejnik, Sauerlach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,058

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016082

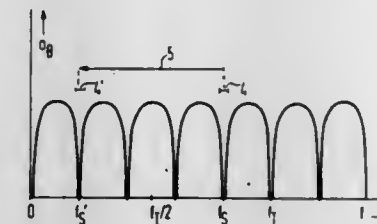
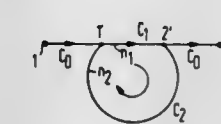
Int. Cl.³ H03H 15/02, 17/06, 7/00

U.S. Cl. 333-165

1 Claim

1. In an electrical filter circuit for use with a frequency translation system, a plurality of CTD lines, each of said lines having a plurality of charge storage cells, a pulse generator operating at a clock frequency f_T for supplying inputs to said storage cells for moving charges therethrough, one of said CTD lines being connected in a closed loop to form a resona-

tor, and means interconnecting said CTD lines to give each of said CTD lines a unidirectional transmission behavior, said clock frequency f_T being selected so that the frequency to be



filtered out by said filter circuit lies between $f_T/2$ and $3f_T/2$, and the frequency to be filtered out is translated to a frequency lying below $f_T/2$.

4,430,630

TUNING CIRCUIT

Masaharu Sakamoto, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

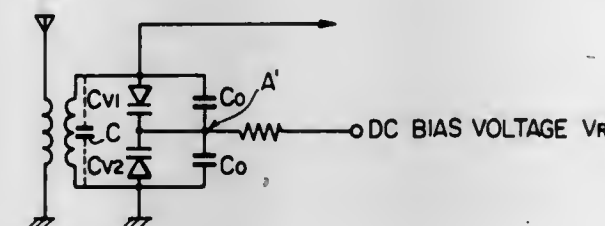
Filed Nov. 19, 1981, Ser. No. 322,839

Claims priority, application Japan, Nov. 21, 1980, 55-167204[U]

Int. Cl.³ H03J 3/20

U.S. Cl. 334-15

2 Claims



1. A tuning circuit of the type including first and second variable capacitance diodes each of said diodes having first and second terminals said diodes connected in series opposition with their first terminals connected to a common connection point, means for applying a d.c. bias voltage to said common connection point between said diodes, and means for applying a signal across said second terminals of said diodes, the improvement comprising:

a first capacitor connected in parallel between said first and second terminals of said first diode; and
a second capacitor connected in parallel between said first and second terminals of said second diode.

4,430,631

CIRCUIT BREAKER WITH INCREASED CURRENT INTERRUPTING CAPACITY

Kenneth A. Forsell, Brown Deer; William E. Grass, Whitefish Bay; Peter J. Thelsen, West Bend, and Michael J. Fajner, Bayside, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 10, 1982, Ser. No. 376,801

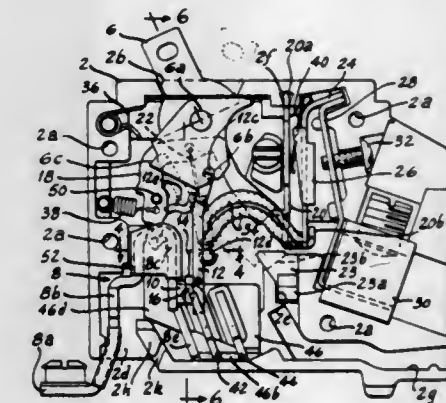
Int. Cl.³ H01H 75/00, 77/10, 83/00

U.S. Cl. 335-16

15 Claims

1. An electric circuit breaker comprising, in combination:
an insulating enclosing case;
separable contacts disposed within said case;
trip means for causing separation of said contacts in response to overload currents through said contacts;

arc extinguishing means positioned in said case in proximity to said separable contacts;
a contact arm pivoted at an upper end and having spaced legs extending from said pivoted upper end, said legs being joined at the free end of said contact arm; a first one of said separable contacts being secured to a front surface of said contact arm at said free end;
support means positioning a second one of said separable contacts in the arcuate path of travel of said first contact, said support means comprising conductive means extending upwardly from said second contact parallel to said contact arm when said contacts are engaged;



an operating mechanism for selectively causing said pivoted contact arm to move said first contact into and out of engagement with said second contact;
means connected to one of said spaced legs and to said conductive means for causing current to flow in opposite directions therein when said contacts are engaged whereby electromagnetic forces generated by said current flow causes said contact arm to move said first contact out of engagement with said second contact independently of said trip means and said operating mechanism; and
said conductive means being offset laterally with respect to said second contact to substantially align said conductive means with said one leg of said contact arm in the direction of motion of said contact arm.

4,430,632

COAXIAL COUPLING AND LOCKING MECHANISM

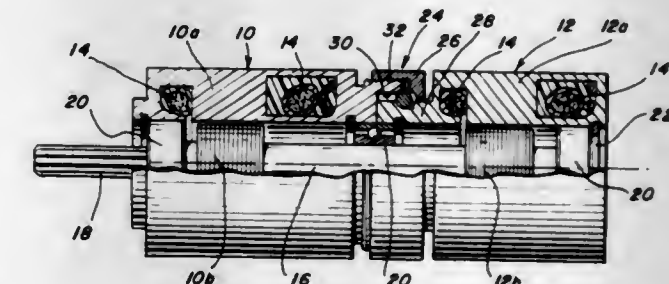
Richard K. Carlson, Wilmette, Ill., assignor to MPC Products Corporation, Skokie, Ill.

Filed May 26, 1982, Ser. No. 381,950

Int. Cl.³ H01F 21/06

U.S. Cl. 336-120

31 Claims



1. In an axially coupled rotary position-indicating transducer assembly, including a pair of transducers in end-to-end coaxial disposition, coupling means comprising:
a first transducer including a first coil stator assembly;
a second, coaxial transducer including a second coil stator assembly;
a coupling ring carried by said first coil stator assembly for rotation relative thereto;
complementary interengaging coupling means between said

support body and an exposed position extending perpendicularly from the cylindrical support body, means for energizing the arms for illuminating the words and borders in bright safety colors, means for disconnecting the arms from the energizing means of the device when the arms are folded down to the position parallel to the cylindrical support body, and each of the illuminating word light arms expressing a driver's distress message in bright safety colors.

4,430,639

VISUAL MESSAGE INTERCOMMUNICATION UNIT AND SYSTEM

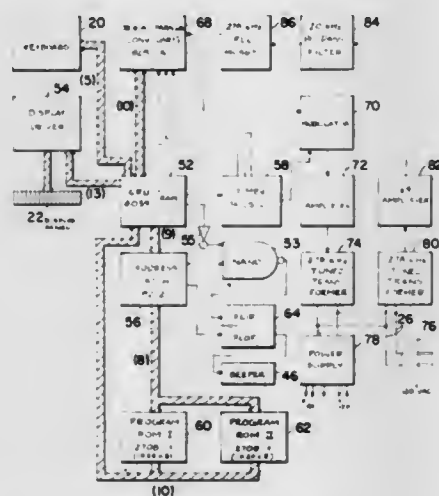
Dale L. Bennett, Lafayette, Calif.; Robert J. Grady, Huntsville, Ark.; James L. Konseich, San Jose, Calif.; Perry H. Vartanian, Woodside, Calif., assignors to Benvar Associates, c/o Dale Bennett, New York, N.Y.

Filed May 21, 1981, Ser. No. 265,773

Int. Cl.³ H04B 3/54

U.S. Cl. 340—310 A

18 Claims



1. For use in a visual message intercommunication system, a message terminal unit, said unit comprising:

- a keyboard comprising a plurality of data entry keys and visible message display means,
- display control means for causing data entered on said keyboard to be displayed on said display means,
- transmitting means for causing data entered on said keyboard and displayed on said display means to be transmitted upon user command to an output of said unit,
- receiving means for automatically storing and displaying a message received from another unit and for transmitting an automatic response message to an output of said unit upon receipt of such message, and
- means for alerting a user in response to any reception of an incoming automatic response message from another unit.

4,430,640

STEP DATA TO SYNCHRO CONVERTER

James E. Hermansdorfer, and William T. Spurgin, both of Charlottesville, Va., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,478

Int. Cl.³ H03K 13/00

U.S. Cl. 340—347 SY

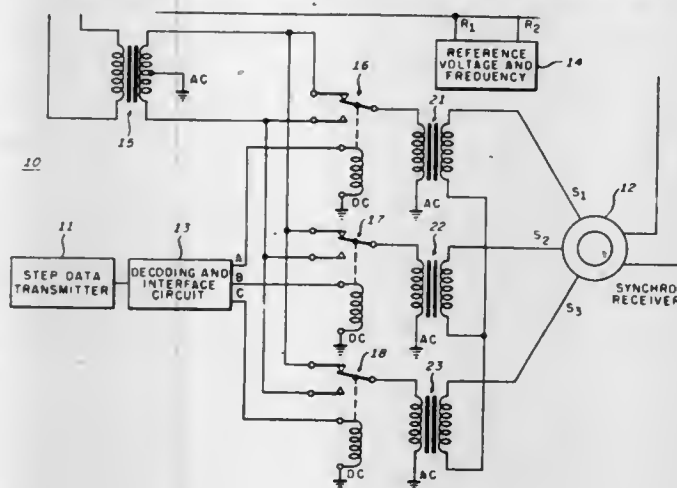
3 Claims

1. A step data-to-synchro converter adapted to receive data signals from a step data transmitter in a three bit binary step data format, and provide therefrom analog signals to a synchro receiver, comprising:

- a reference signal source having a selected frequency;
- a reference transformer, coupled to said reference signal source, for providing in-phase and out-of-phase a.c. signals having a fixed amplitude;
- switching means, coupled to said reference transformer and responsive to said data signals from said step data trans-

mitter, for selecting combinations of said in-phase and out-of-phase a.c. signals; and

a plurality of output transformers, for providing analog data signals to drive said synchro receiver, each of said output



transformers coupled to a corresponding output terminal of said switching means, and each having terminal means for coupling to a corresponding input terminal of said synchro receiver.

4,430,641

CHARGE-PUMP GLITCH FILTER

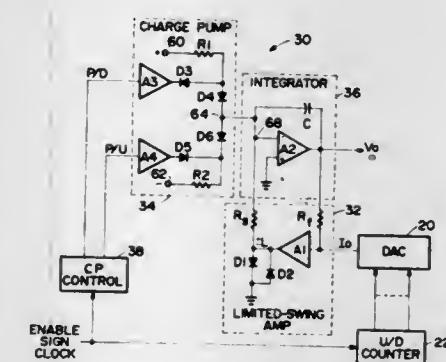
Bruce K. Baur, Milwaukie, and John R. Ollis, Canby, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 11, 1981, Ser. No. 262,718

Int. Cl.³ H03K 13/02, 5/08; H03H 11/12; H04B 15/00

U.S. Cl. 340—347 DA

10 Claims



7. A circuit responsive to a digital input signal defining a series of unit changes in a digital value for filtering undesirable aberrations from an analog signal produced by a digital-to-analog converter also responsive to said digital input signal, said circuit comprising:

- a slew-rate filter responsive to said analog signal produced by said digital-to-analog converter, and having a slew-rate substantially less than the maximum rate of unit changes in said digital value, for integrating each change in said analog signal over several periods of said digital input signal, and for producing a second analog signal representative of said integrating change;
- means responsive to said digital input signal for producing a third analog signal representative of the direction and timing of each change in said digital value; and
- means within said slew-rate filter for impressing said third analog signal onto said second analog signal to produce an analog output signal representative of the instantaneous sum of the integrating changes in said analog signal and the direction and timing of the unit changes in said digital value.

4,430,642

DIGITAL-TO-ANALOG CONVERTER

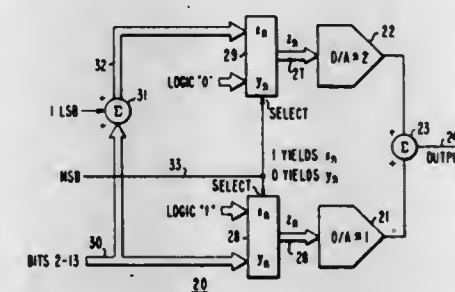
Benjamin F. Weigand, Cantonville, and John W. Frech, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,010

Int. Cl.³ H03K 13/02

U.S. Cl. 340—347 DA

3 Claims



1. Apparatus for converting binary coded digital input signals having most significant and least significant bits into corresponding analog signals, comprising:

- at least a pair of digital to analog converters, each said converter being effective when activated to receive at its respective input a digital signal and generate at its output a corresponding analog signal;
- means combining the output of each converter to provide a common analog output;
- means to apply the digital input signal to at least both said converters, including means modifying the digital input signal to one of said converters to generate an offset of at least one significant bit from the input to another of said converters; and
- means to apply the digital input signal selectively to one of said converters in accordance with the binary state of a more significant bit of the input signal to obtain the analog signal of the common analog output from the selected converter whereby switching errors are reduced at times when the more significant bits change their respective binary state.

4,430,643

BINARY-CODED-DECIMAL TO BINARY CONVERTER

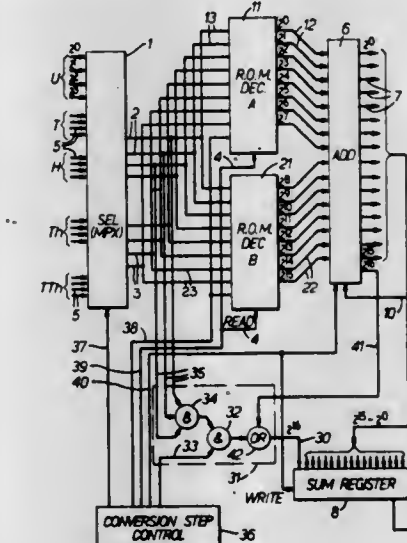
Ernesto G. Sevilla, Herkimer, N.Y., assignor to International Computers Limited, London, England

Continuation of Ser. No. 171,972, Jul. 24, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,849

Int. Cl.³ G06F 5/02

U.S. Cl. 340—347 DD

4 Claims



1. Binary-coded-decimal to binary conversion apparatus for converting a multidigit binary-coded-decimal number to its pure binary equivalent comprising:

- two similar memories each having eight address lines and a

further address line, corresponding address lines of the two memories being connected in common, first and second groups of storage locations, locations of the first group being addressable by address signals on said eight address lines in combination with a first signal on said further address line and locations of the second group being addressable by address signals on said eight address lines in combination with a second signal on said further address line, and a plurality of output lines;

control means operative in one step to generate said first signal and a first control signal and operative in a further step to generate said second signal and a second control signal; input means connected to said eight address lines operative in response to the first control signal in said one step to apply binary-code components of a first binary-coded-decimal digit to four of said eight address lines and binary-code components of a second binary-coded-decimal digit to the remainder of said eight address lines to address one location of the first group in each of the memories and thereby read out a pure binary equivalent of said first and second digits stored in said addressed location onto the output lines and operative in response to the second control signal in said further step to apply binary-code components of a third binary-coded-decimal digit to said four of said eight address lines and binary-code components of a fourth binary-coded-decimal digit to said remainder of said eight address lines to address one location of the second group in each of the memories and thereby read out a pure binary equivalent of said third and fourth digits stored in said addressed location onto the output lines;

and means connected to said output lines operative to sum the pure binary equivalent of said first and second digits and the pure binary equivalent of said third and fourth digits.

4,430,644

ENCODING APPARATUS HAVING AN ACOUSTIC MEMBER WITH MIRROR-IMAGE TABS

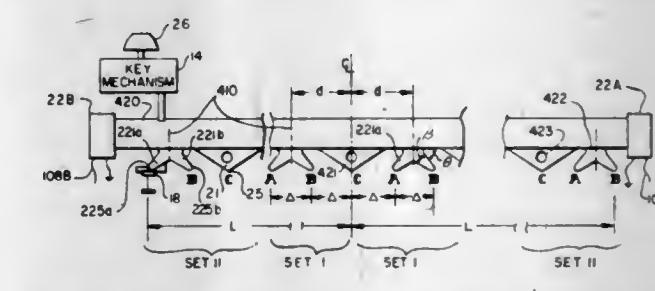
Raymond A. Blanchard, Jr., Freeville, N.Y., and Kenneth E. Garey, San Jose, Calif., assignors to SCM Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,038

Int. Cl.³ G06F 3/02; H04L 15/03

U.S. Cl. 340—365 R

19 Claims



1. In an encoding apparatus of the acoustic type comprising an acoustic member of the kind having diverging wave fronts traveling within the member upon selective activation of any one of a plurality of tabs on the member, the wave fronts being of the same or different polarity; transducers operatively connected to the member for sensing the diverging wave fronts and producing signals with an elapsed time therebetween, the improvement wherein said plurality of tabs are arranged in sets comprising a non-polarizing tab producing wave fronts of the same polarity and at least one polarizing tab producing wave fronts of different polarity, said sets of tabs being disposed along the member in mirror-image pairs with respect to the midpoint of the member; time-responsive units connected to the transducers for generating from the elapsed time a discrete output signal for each said mirror-image pair of tab sets, together with first means connected to the transducers and responsive to the polarity of each wave front for providing a first

signal on sensing wave fronts indicative of an impact against said non-polarizing tab of a set and a second signal on sensing wave fronts indicative of an impact against said polarizing tab of the set; means connected to the transducers and responsive to the relative sequence of said sensed wave fronts for producing a third signal indicating the side of said member on which a wave front is first sensed, and code-generating means producing a unique code identifying the particular tab inducing said acoustic energy, said code-generating means being responsive to said discrete output signal and one of said first and second signals in conjunction with said third signal.

4,430,645

SURVEILLANCE SYSTEM EMPLOYING A DUAL FUNCTION FLOOR MAT RADIATOR

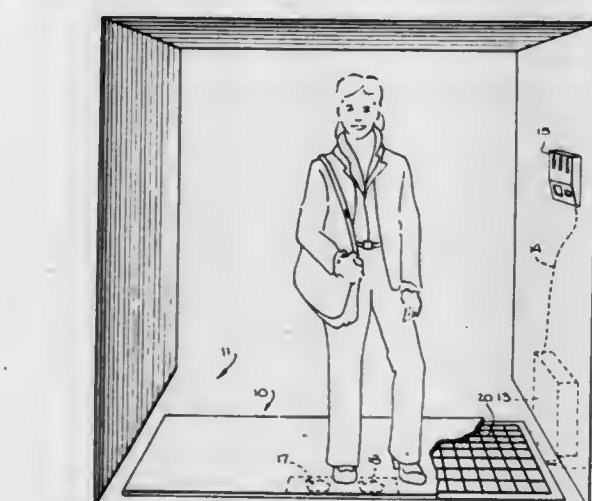
Ezra D. Eskandry, Pompano Beach, and Jon N. Weaver, Boca Raton, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Apr. 7, 1981, Ser. No. 251,933

Int. Cl.³ G08B 13/24

U.S. Cl. 340—572

15 Claims



1. A surveillance system for detecting the presence in a controlled space of a miniature electromagnetic wave receptor-radiator with signal mixing capability, comprising in combination means for propagating through said space an electromagnetic microwave signal, a source of low frequency signals, an electrode coupled to said source of low frequency signals and disposed in a capacitor structure constructed and arranged for disposition in said space along the path of travel of said receptor-radiator through said space for direct capacitive coupling to said receptor-radiator whenever the latter is present in said space, signal detecting means arranged to be coupled to said space, for receiving signals therefrom and detecting signals related to said low frequency signals only when received as modulation on a carrier signal whose frequency bears a predetermined relationship to that of said microwave signals, and means coupled to said detecting means for providing an alarm responsive to detection of said signals that are related to said low frequency signals, characterized in that said means for propagating a microwave signal through said space comprises a microstrip antenna with a signal feed constructed and arranged to propagate said signal through said space, said microstrip antenna being disposed in association with said capacitor structure in a common structure.

4,430,646

FORWARD SCATTER SMOKE DETECTOR

Robert B. Enemark, Duxbury, Mass., assignor to American District Telegraph Company, Jersey City, N.J.

Filed Dec. 31, 1980, Ser. No. 221,524

Int. Cl.³ G08B 17/10

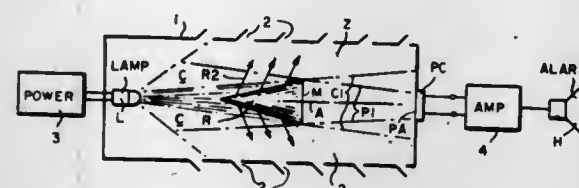
U.S. Cl. 340—630

5 Claims

1. A particle detector comprising:
a source of light directed on a first path accessible to particles;
a photocell having a photosensitive area viewing on a sec-

ond path into a zone of intersection of the two paths and responsive to light scattered from particles in the zone; and

a body masking direct light from the source to the photosensitive area and having a periphery outside which light passes to the intersection zone;



wherein the detector includes a reflective surface disposed between the masking body periphery and the light source having reflective components at an angle relative to direct rays from the source toward the masking body such as to direct such rays away from the body into a substantial value of the intersection zone; and wherein the reflective surface is cone like.

4,430,647

MONITOR FOR DETECTING MALFUNCTION OF A ROTATION-ANGLE TRANSDUCER

Heinz Möller, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

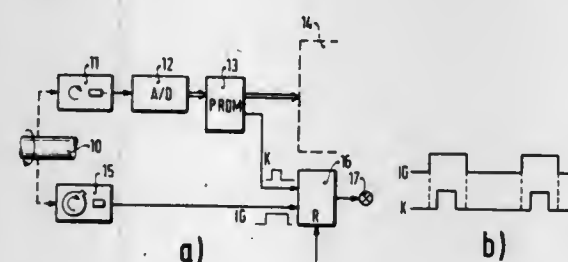
Filed May 21, 1981, Ser. No. 265,959

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025379

Int. Cl.³ G08B 21/00

U.S. Cl. 340—679

8 Claims



1. Apparatus for monitoring the output signal of a first rotation transducer driven by a rotary part of a Diesel engine for timing fuel injection, comprising:

means for generating a first recurrent pulse signal (K) in synchronism with the occurrence of a first particular angular position of said rotation transducer and for providing said first recurrent pulse signal at a first signal output;

a supplementary transducer driven by said rotary part for producing a second recurrent pulse signal (IG) in synchronism with occurrence of a particular angular position of said rotary part relative to a reference mark and for providing said second recurrent pulse signal at a second signal output, said second recurrent pulse signal being of a duration which is different from that of said first recurrent pulse signal;

time comparison means, having inputs respectively connected to said first and second signal outputs, for producing an output when the shorter of said first and second pulse signals is present during the absence of the longer of them, and

first alarm means responsive to said output of said time comparison means.

4,430,648

COMBINATION MATRIX ARRAY DISPLAY AND MEMORY SYSTEM

Selgo Togashi, and Akira Tsuzuki, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

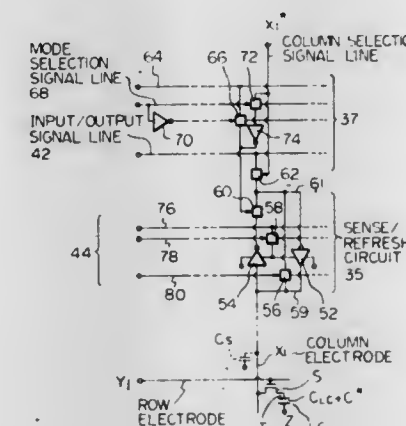
Filed Jan. 12, 1981, Ser. No. 224,600

Claims priority, application Japan, Jan. 22, 1980, 55-006479

Int. Cl.³ G09G 3/00

U.S. Cl. 340—718

4 Claims



1. A matrix array display and memory system, comprising:
a display panel comprising a set of row electrodes and a set of column electrodes, a plurality of switching elements each disposed at a respective intersection of said row and column electrodes and being coupled to one of said row electrodes and responsive to signals applied to said one of the row electrodes for selective switching to a conductive and a non-conductive state, and a plurality of display elements each coupled through a corresponding one of said switching elements to one of said column electrodes, each of said display elements having a predetermined amount of capacitance and being selectively settable to a first display state in which said capacitance is in a charged condition and a second display state in which said capacitance is in a discharged condition;

row drive circuit means coupled to said row electrodes for generating row drive signals to successively set rows of said switching elements into the conductive state during periodically repeated sense/refresh intervals, to thereby successively and periodically couple rows of said display elements to said column electrodes;

distribution circuit means coupled to said column electrodes for applying signals representing digital data thereto, for thereby selectively charging the capacitances of said display elements coupled to said column electrodes, to thereby simultaneously display and memorize said digital data by said display elements;

a plurality of sense/refresh circuits each coupled to a corresponding one of said column electrodes, each of said sense/refresh circuits acting during each of said sense/refresh intervals to first sense a potential appearing upon the corresponding column electrode representing the charge condition of one of said display elements, to then produce an output potential in accordance with said sensed potential, and to thereby drive said one of the display elements to said output potential;

said sense/refresh circuits thereby acting during said sense/refresh intervals to periodically refresh said digital data memorized in said display elements.

4,430,649

VIDEO PROCESSING SYSTEM

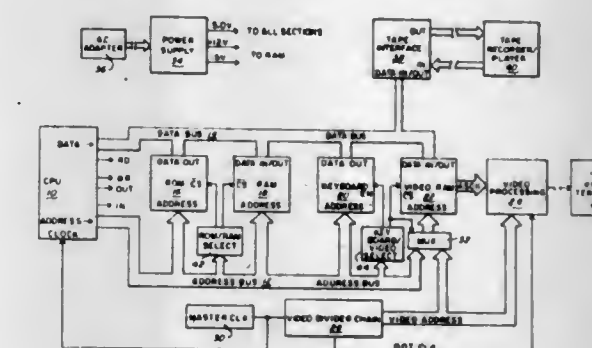
Steven Leininger, Arlington, Tex., assignor to Radio Shack, Fort Worth, Tex.

Continuation of Ser. No. 926,957, Jul. 21, 1978. This application May 8, 1981, Ser. No. 261,976

Int. Cl.³ G09G 1/16

U.S. Cl. 340—731

13 Claims



1. Video processing logic for providing a video serial signal to a receiver in accordance with an alternate mode control to provide different width characters to be displayed by the receiver, comprising:

memory means for storing a plurality of character codes, storage means coupled from the memory means for holding a character code at a time transferred from the memory means,

a video divider chain comprising a plurality of successively coupled counters and including means defining a character line code,

character generator means receiving said character code and said character line code for providing line dot signals representative of a portion of the character,

parallel-to-serial shift means coupled from said character generator means receiving the line dot signals in parallel and including a clock input for providing a serial video signal,

and control means for controlling said parallel-to-serial shift means to provide at least two different video rate signals representative of different width characters to be displayed by the receiver,

said control means comprising, means for establishing a mode control signal having alternate states for indicating different width characters, clock means for providing a first frequency signal, divider means coupled from said clock means for providing a second frequency signal lower in frequency than said first frequency signal,

and logic circuit means responsive to said first and second frequency signals and said mode control signal for providing a shift control signal coupling to the parallel-to-serial means and in one state of the mode control signal coupling the first frequency signal and in another state of the mode control signal coupling the second frequency signal, said logic circuit means also having means for providing an input signal to said video divider chain that is maintained at the same constant frequency during either of the states established by said means for establishing a mode control signal having alternate states.

4,430,650

DISPLAY PROCESS USING A THERMO-OPTICAL EFFECT WITH A MEMORY IN A THIN DISC-LIKE LIQUID CRYSTAL LAYER AND DISC-LIKE LIQUID CRYSTALS HAVING SUCH AN EFFECT

Jean Billard; Jean-Claude Dubois; Michel Hareng; Serge Le Berre, and Jean-Noël Perbet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 31, 1981, Ser. No. 298,185

Claims priority, application France, Sep. 2, 1980, 80 18924

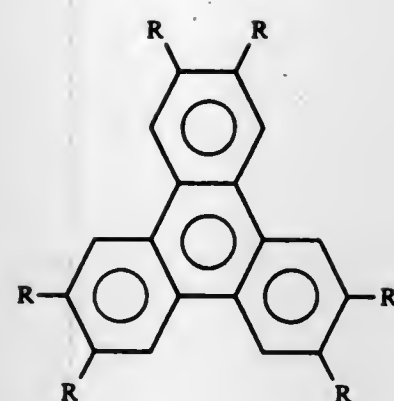
Int. Cl.³ C09K 3/34; G02F 1/133, 1/137; G09F 9/35

U.S. Cl. 340—784

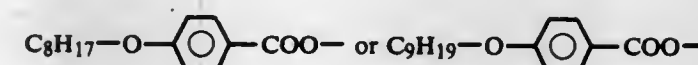
6 Claims

1. A display process having information memory using a cell which comprises a liquid crystal layer uniformly oriented between 2 transparent supporting plates, said cell being scanned by an inscription light beam, the process comprising:

- (a) modulating the intensity of said light beam as a function of the information to be inscribed, thereby raising the temperature of some points of said liquid crystal layer so as to change said liquid crystal layer points from an initial phase to a second phase, and
- (b) rapidly cooling said points changed to the second phase to a temperature corresponding to the initial phase, thereby causing said points to exist in a diffuse state, wherein said liquid crystal has the formula (I):



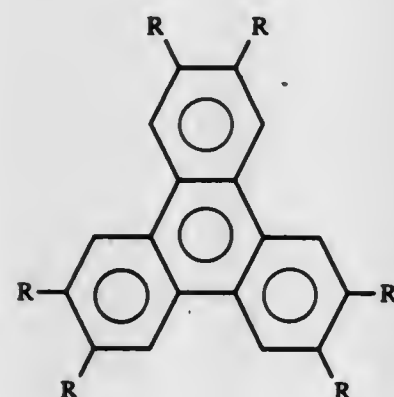
wherein R is



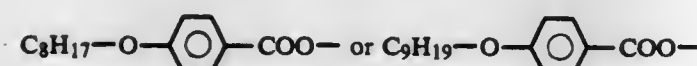
and wherein said initial phase is a D_B mesophase having a mosaic texture and said second phase is a D_F disk-like mesophase or isotropic phase.

6. A display process having information memory using a cell which comprises a liquid crystal layer uniformly oriented between 2 transparent supporting plates, each plate being covered on its internal face with two sets of electrodes forming a matrix system of lines and columns, the electrodes of one set being selectively heated, the two sets cooperating in order to apply voltage pulses to the layer as a function of the information to be inscribed, the process comprising:

- (a) heating the points of the liquid crystal layer, by means of a heating electrode, thereby raising the temperature of said points so as to change said points from an initial phase to a second phase, and
- (b) cooling said points changed to the second phase to a temperature corresponding to the initial phase, said voltage pulses being applied during cooling, wherein said liquid crystal has the formula (I)



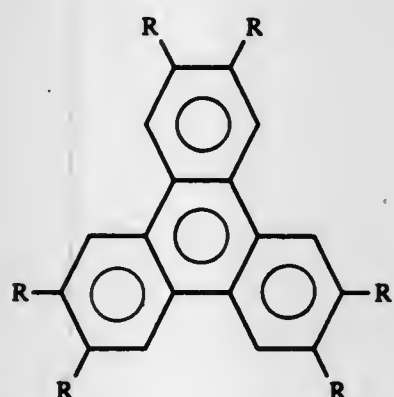
wherein R is



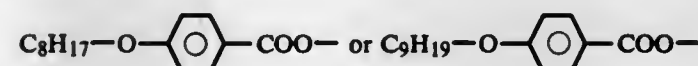
and wherein said initial phase is a D_B mesophase having a mosaic texture and said second phase is a D_F disk-like mesophase or isotropic phase.

3. A display process having information memory using a cell which comprises a liquid crystal layer uniformly oriented between 2 transparent supporting plates, each plate being covered on its internal face with at least one transparent electrode, said cell being scanned by an inscription light beam and being subjected to voltage pulses applied by said electrodes, the process comprising:

- (a) scanning different points of said cell with a light beam of constant intensity, thereby raising the temperature of said points so as to change said points from an initial phase to a second phase, and
- (b) rapidly cooling said points changed to the second phase to a temperature corresponding to the initial phase, said voltage pulses being applied during cooling, wherein said liquid crystal has the formula (I)



wherein R is



and wherein said initial phase is an inclined disk-like phase and said second phase is a D_F disk-like mesophase or isotropic phase.

4,430,651

EXPANDABLE AND CONTRACTIBLE LOCAL AREA NETWORK SYSTEM

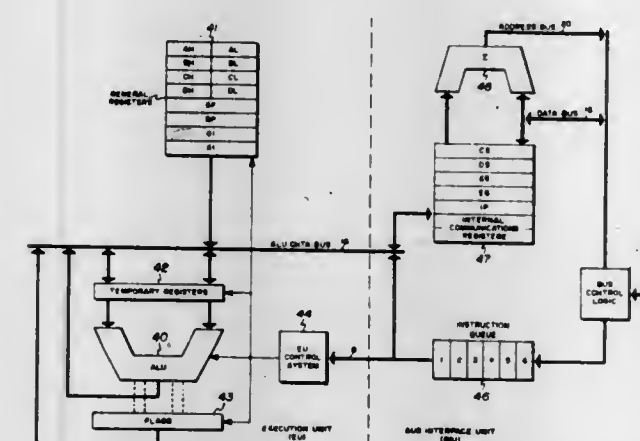
David M. Bryant, Cardiff, Calif.; Ryn C. Corbell, Bridgewater, N.J.; Michael A. Malcolm, Waterloo, Canada; Lawrence D. Rogers, Del Mar, and Donald R. Thompson, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 27, 1981, Ser. No. 296,952

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—825.52

10 Claims



1. A station in a communications network including a communications channel for the transmission of packets of information, and a plurality of stations coupled to said channel, said station comprising:

- address selection means for randomly selecting a potential address from a range of permissible addresses;
 - transmitting means for transmitting an information packet to said selected address so as to test said communications network for possible existence of another station having said selected address; and
 - receiving means for receiving an acknowledgment from said another station;
- said address selection means being adapted to randomly select a new potential address if said another station acknowledges receipt of said information packet.

4,430,652

REMOTE CONTROL SYSTEM

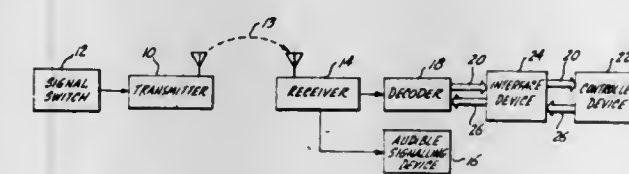
Dan E. Rothenbuhler, Acme, and Galen A. Blery, Jr., Bellingham, both of Wash., assignors to Rothenbuhler Engineering Co., Sedro-Woolley, Wash.

Filed Nov. 25, 1981, Ser. No. 325,016

Int. Cl.³ G08C 19/00

U.S. Cl. 340—825.69

20 Claims



1. A remote control system comprising:
- transmitting means for transmitting a manually encoded signal consisting of a sequence of pulses and interpulse spaces;
- receiving means for receiving said manually encoded signal; and
- decoding means for decoding the manually encoded signal received by said receiving means, said decoding means including first means for determining the duration of each pulse and each interpulse space, second means for digitizing the duration of each pulse and each interpulse space so as to form a digital representation of said manually encoded signal, third means for correlating said digital rep-

resentation with a plurality of reference digital representations each corresponding to one of a plurality of predetermined output control signals and for selecting one of said output control signals upon determination of a match between said digital representation and one of said plurality of reference digital representations, and, fourth means for supplying said selected output control signal to a controlled device.

4,430,653

EARTH PROBING RADAR SYSTEM

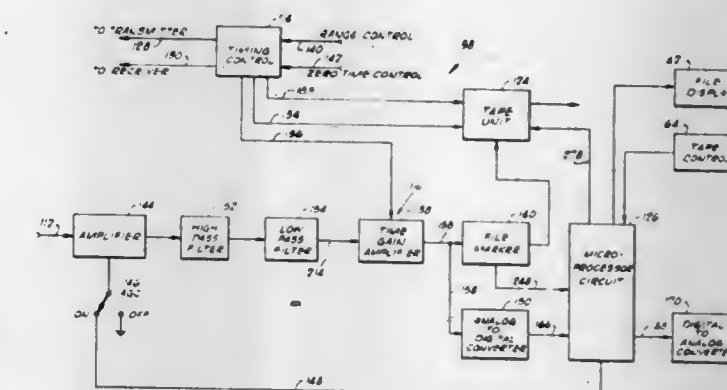
Julian B. Coon, and Charles J. Schafers, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 90,584, Nov. 2, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,437

Int. Cl.³ G02S 13/04

U.S. Cl. 343—5 NA

30 Claims



1. A method for determining condition and homogeneity of the structure of coal seams, comprising:
- transmitting pulsed electromagnetic energy into the face of a coal seam;
- receiving said energy transmitted into said face to develop a return signal per transmitted pulse;
- processing selected successive return signals to eliminate source coherent interference while increasing the signal to noise ratio; and
- indicating visually any structural inhomogeneities within said coal seam.

4,430,654

METHOD AND APPARATUS FOR SUPPRESSING CLUTTER

Hanspeter K pfer, Uitikon, Switzerland, assignor to Siemens-Albis Aktiengesellschaft, Zurich, Switzerland

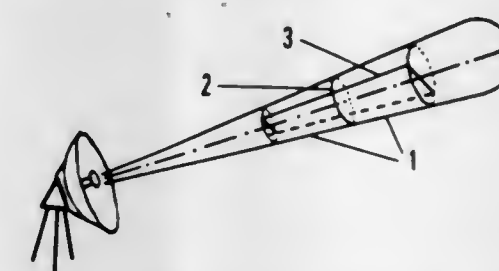
Continuation of Ser. No. 112,197, Jan. 15, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,624

Claims priority, application Switzerland, Feb. 5, 1979, 1093/79

Int. Cl.³ G01S 13/00

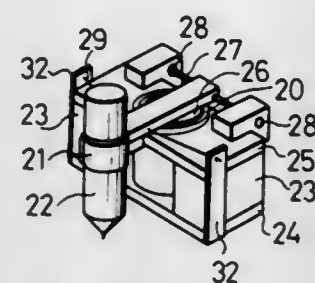
U.S. Cl. 343—5 NQ

3 Claims



1. Apparatus for suppressing Doppler clutter signals arising apart from the flying-target Doppler signal as further Doppler signals in a pulse-Doppler-tracking radar system including a transmitter-receiver, an evaluation device and a clutter compensation device and containing a quadrature and inphase channels, the improvement which comprises:

a pair of magnetic circuits arranged so as to interlink their magnetic fluxes to said moving coil;
a holder member for holding said recording pen; and



a supporting device for supporting said holder member;
said moving coil being supplied with an electric current to drive said recording pen.

4,430,661

METHOD AND APPARATUS FOR IMAGE REPRODUCTION

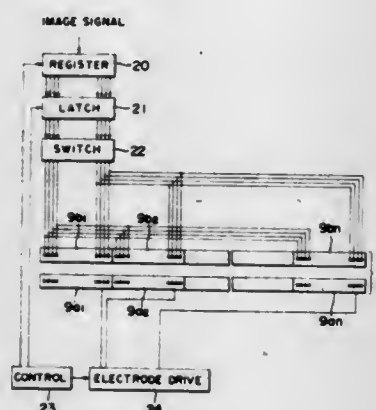
Noriyoshi Tarumi, Masahiko Matsunawa, and Hiroshi Tokunaga, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed May 20, 1981, Ser. No. 265,353

Claims priority, application Japan, May 26, 1980, 55-69000
Int. Cl.³ G01D 15/06

U.S. Cl. 346—153.1

9 Claims



5. In an image recording apparatus,
an ion generator,

an ion modulation electrode for modulating an ion flow generated by said ion generator and divided electrically into a plurality of groups disposed in end-to-end relation, a charge receptor for receiving the modulated ion flow and disposed for relative movement with respect to said electrode in a direction transverse to the end-to-end relation of said electrode groups, and

means for receiving an information containing signal formed of sequential information elements and for applying to said groups a predetermined sequentially received number of said information elements for impression on said charge receptor of an ion flow modulated concurrently by said sequentially received number of information elements, thereby effectively increasing the rate at which an image corresponding to an information signal is impressible on the charge receptor.

4,430,662 SUPERCONDUCTIVE TUNNEL JUNCTION INTEGRATED CIRCUIT

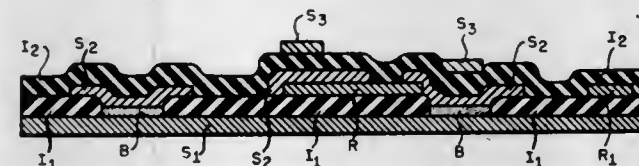
Don W. Jille, Jr., Arlington, and Lawrence N. Smith, Lexington, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,528

Int. Cl.³ H01L 39/22, 27/12

U.S. Cl. 357—5

30 Claims



1. A superconductive integrated circuit including at least one superconductive tunnel junction, said tunnel junction including first and second tunnel junction electrodes superposed with respect to each other with a superconductive tunneling barrier therebetween for conducting superconductive tunneling current between said first and second tunnel junction electrodes, said integrated circuit comprising,

a first layer of superconductive material, said first layer including said first tunnel junction electrode, and
a second layer of superconductive material superposed with respect to first layer, said second layer including said second tunnel junction electrode,
one of said first and second layers of superconductive material forming a ground plane for said integrated circuit as well as forming said tunnel junction electrode included therein.

4,430,663

PREVENTION OF SURFACE CHANNELS IN SILICON SEMICONDUCTOR DEVICES

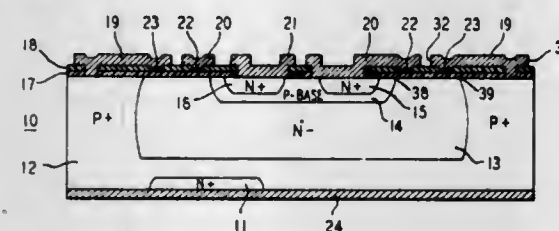
Frederick A. D'Altroy, Center Valley, and Richard Lindner, Bethlehem, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1981, Ser. No. 247,519

Int. Cl.³ H01L 29/40

U.S. Cl. 357—53

6 Claims



1. A semiconductive device comprising a silicon body having a substantially planar major surface which is intersected by at least one PN junction separating two surface zones of the body of opposite conductivity type, a dielectric film over the portion of said planar surface which includes the PN junction and the portions of the two zones contiguous to the PN junction, the dielectric film comprising a continuous layer of silicon dioxide overlying and contiguous to the planar surface and a layer of silicon nitride overlying and contiguous to the silicon dioxide layer, the silicon nitride layer being segmented to provide an intermediate region spaced from the PN junction boundary where the silicon oxide is free of overlying silicon nitride, and field electrode means comprising a conductive film overlying and contiguous with the silicon nitride layer and the portion of the silicon oxide layer free of overlying silicon nitride.

4,430,664

GLASS-MOULDED TYPE SEMICONDUCTOR DEVICE

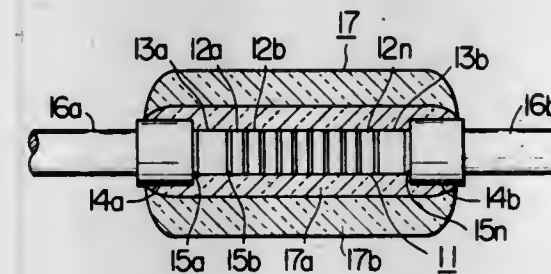
Akira Matsunaga, and Keiichi Morita, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 911,309, Jun. 1, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,628
Claims priority, application Japan, Jun. 6, 1977, 52-65785; United Kingdom, May 31, 1978, 25535/78; Fed. Rep. of Germany, Jun. 5, 1978, 2824606

Int. Cl.³ H01L 23/30, 29/34, 23/02, 23/42

U.S. Cl. 357—73

1 Claim



1. A glass-moulded type semiconductor device comprising:
a semiconductor arrangement composed of at least one semiconductor pellet having at least one P-N junction, edges of which are exposed to peripheral surfaces of the semiconductor pellet;

a pair of electrodes secured to opposite ends of said semiconductor arrangement through a brazing material;

a first mould glass layer secured to the entire circumferential surface of said semiconductor arrangement and extending to the surfaces of said electrodes for passivating the P-N junction of said semiconductor arrangement; and

a second mould glass in the form of at least one layer secured to the surface of said first mould glass layer by sintering the second mould glass layer on the first mould glass layer after the first mould glass layer is formed, wherein said second mould glass layer has a thermal expansion coefficient sufficiently greater than the thermal expansion coefficient of the first mould glass layer so that after cooling said second mould glass layer following sintering a compressional pre-stress force is exerted by said second mould glass layer on said first mould glass layer,

the thermal expansion coefficient of each of said mould glass layers being selected in such a manner that the thermal expansion coefficient of said first glass layer is larger than an apparent thermal expansion coefficient of a semiconductor assembly comprising said semiconductor arrangement and said brazing material, and

wherein the thermal expansion coefficient of the second mould glass layer is set to be sufficiently greater than the thermal expansion coefficient of the first mould glass layer so that said compressional pre-stress force exerted by the second mould glass layer on the first mould glass layer will be sufficient to prevent breakage of the first and second mould glass layers during heating and expansion of the first mould glass layer when the semiconductor arrangement is in a conductive condition, said heating and expansion of the first mould glass layer being caused by the contacting relationship between the first mould glass layer and the semiconductor arrangement, and further wherein the difference in thermal expansion coefficients between said semiconductor assembly and said first mould glass layer is substantially not larger than $0.5 \times 10^{-6}/^{\circ}\text{C}$., and the difference in thermal expansion coefficients between said first and second mould glass layers is substantially in the range of $0.2 \times 10^{-6}/^{\circ}\text{C}$. to $0.5 \times 10^{-6}/^{\circ}\text{C}$.

4,430,665

AUTOMATIC VIDEO SIGNAL PEAKING AND COLOR CONTROL

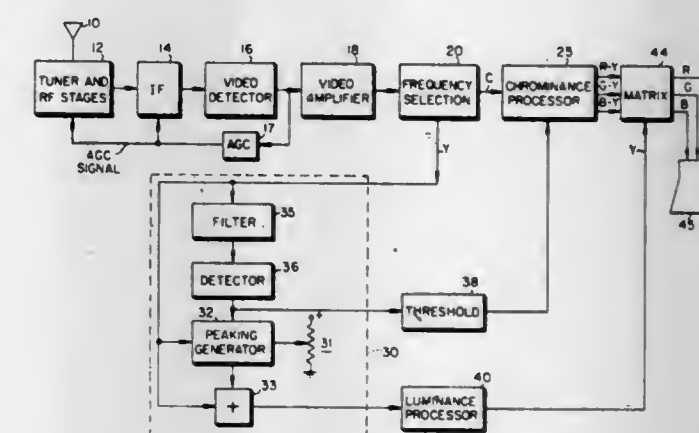
Larry A. Cochran, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,386

Int. Cl.³ H04N 9/535

U.S. Cl. 358—37

14 Claims



1. In a system for processing a color image representative video signal including luminance and chrominance signal components, apparatus comprising:

filter means for selectively passing high frequency components, including noise, of said video signal;

peaking control means responsive to the magnitude of said selectively passed high frequency components for producing a controllably peaked luminance signal in response to the magnitude of passed high frequency components exhibiting a first sense, and for producing a controllably depeaked luminance signal in response to the magnitude of passed high frequency components exhibiting a second sense, relative to a nominal peaking condition of said luminance signal; and

means for attenuating said chrominance signal in response to the magnitude of said passed high frequency components of said second sense corresponding to said produced depeaked condition of said luminance signal.

4,430,666

PHOTOELECTRIC CONVERTING DEVICE

Hisashi Nakatsui, Kawasaki, and Yoshioki Hajimoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

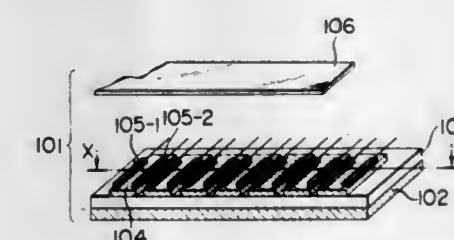
Filed Feb. 22, 1982, Ser. No. 350,727

Claims priority, application Japan, Feb. 27, 1981, 56-27752; Feb. 27, 1981, 56-27753; Feb. 27, 1981, 56-27754

Int. Cl.³ H04N 9/07

U.S. Cl. 358—44

46 Claims



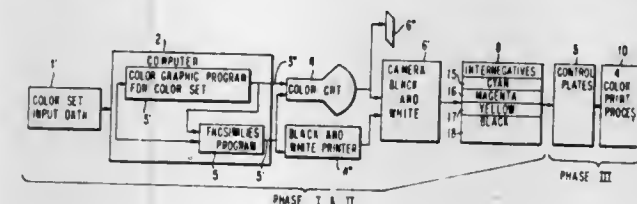
1. A photoelectric converting device comprising:

a substrate;
a photoconductive layer having a plurality of image elements and comprising an amorphous material having silicon atoms as a matrix;
a plurality of variously colored colorant layers provided

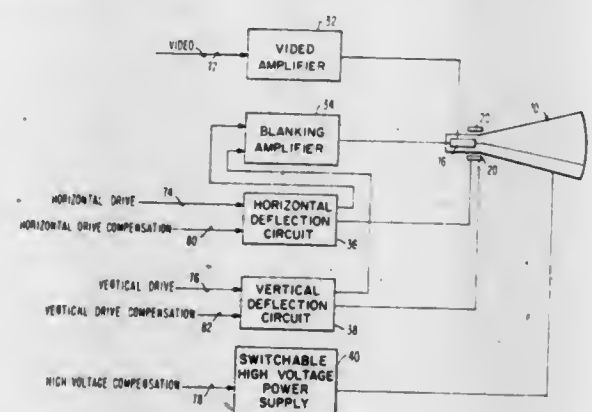
4,430,668
DIGITAL FACSIMILES (FAST ADDITIVE COLOR
SEPARATION INTERNEGATIVES MILES)
Ernest P. Miles, Jr., 2804 St. Leonard Dr., Tallahassee, Fla.
32312

Filed Aug. 10, 1981, Ser. No. 291,479
Int. Cl.³ H04N 1/46

32 Claims



U.S. Cl. 358—73

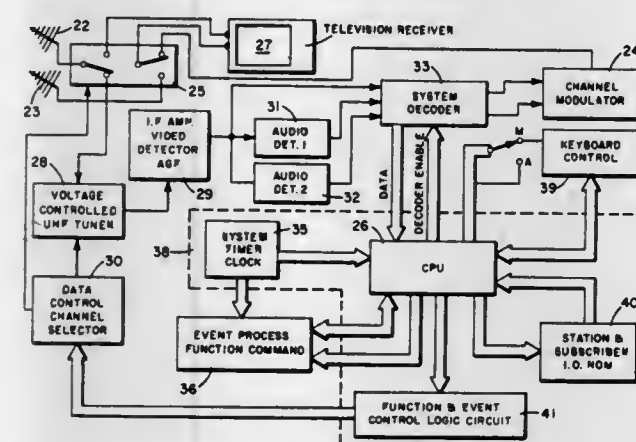


(e) control circuit means, connected to said horizontal scan circuit means, said vertical scan circuit means and said power supply circuit means, for supplying horizontal and vertical drive pulse signals for said horizontal and vertical scan circuit means and for determining when, in response to scan completions, said power supply circuit means is to be switched and to what accelerating voltage level and for then causing the same to occur.

b. generating therefrom second signals representing needed data for recreating by printing a color facsimile of that display using subtractive pigment combinations which match the color of that display position by position,

c. producing and displaying internegative images in black and white representing levels of each subtractive primary needed in printing the same on a three color press.

U.S. Cl. 358—122

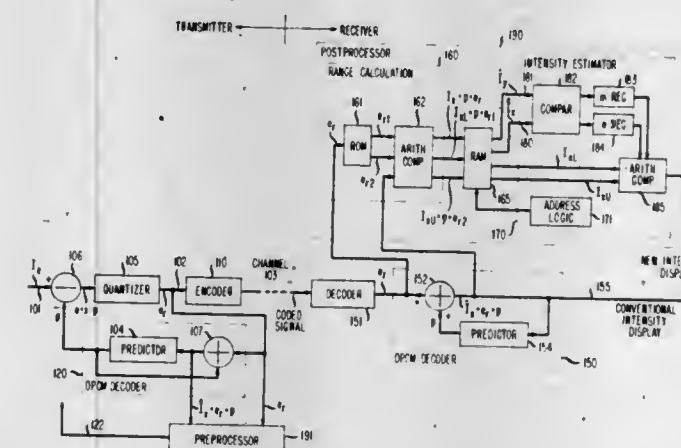


a control processor having I/O parts connected to said

409

means for tuning the television receiver tuner in response to said read out information whereby said television receives a station signal identified by said stored information at a frequency and time.

U.S. Cl. 358-135

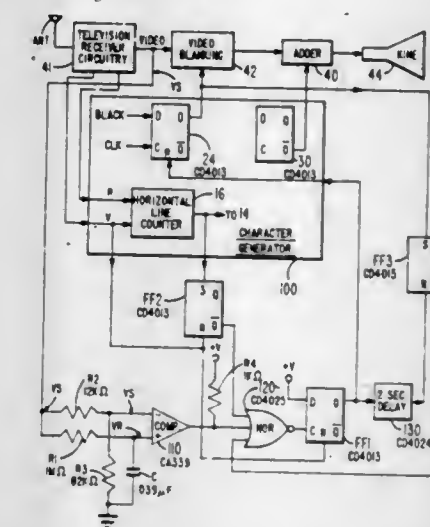


assigning said reconstructed value within said range as a function of reconstructed values of samples spatially or temporally correlated with said present sample.

U.S. Cl. 358—192.1

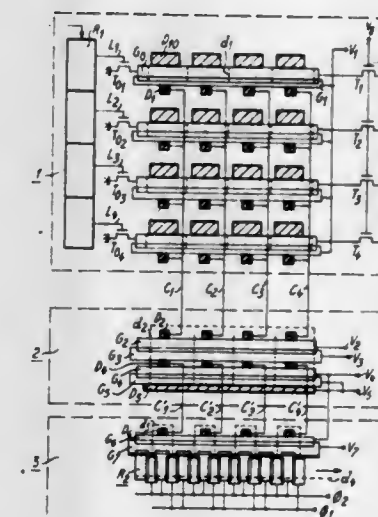
means for generating character signals to produce on said

command means responsive to said detector means detecting said predetermined amplitude condition for generating said character command signal.



3. The apparatus of claim 1 wherein said predetermined amplitude condition corresponds to said video signal developing a substantially blank image on said display device.

Claims priority, application France, Apr. 23, 1980, 80 09112
Int. Cl.³ H04N 3/14



m diodes D₂ integrated on to the same semiconductor sub-

the guide pin at the second position of the fitting member when the fitting member moves from its first position to its second position, thereby causing the cassette holder body to swing from its first position to its second position.

4,430,678

DRIVE APPARATUS FOR RECORDING DISKS IN WHICH THE DISK IS CLAMPED BETWEEN A DRIVEN RECESSED MEMBER AND A ROTATABLY MOUNTED CLAMPING MEMBER

Joachim Hack, Ludwigshafen; Roland Brotzler, Hochdorf-Assenheim; Klaus Schulze-Berge, Ludwigshafen, and Rudolf Angermann, Offenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

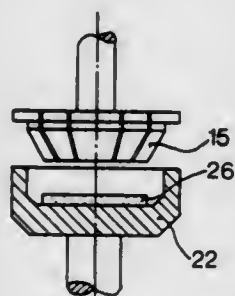
Filed May 1, 1981, Ser. No. 259,654

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020525

Int. Cl.³ G11B 25/04

U.S. Cl. 360—99

5 Claims



1. A driving apparatus for a recording disk having a central aperture, particularly a flexible magnetic disk in an envelope, comprising: a driven recessed member; a rotatably mounted clamping member of the type expanding radially in response to the exertion of an axial force thereon; each said member having a clamping surface; means for moving the clamping member toward the recessed member to clamp, at the end of the clamping stroke, the disk upon the introduction of its central aperture between said clamping surfaces; and spring means being interposed between the leading planar surface of said clamping member and the inner bottom of said recessed member such that, prior to the completion of the clamping stroke, by means of said spring means, said clamping member is axially compressed and thus radially expanded against said central aperture to displace said disk toward a centered position and is yieldably coupled to said recessed member to enable said clamping member to be rotatably taken along by said recessed member if said recessed member is rotated prior to the completion of said clamping stroke.

4,430,679

MAGNETICALLY SHIELDED CARRYING ARM ARRANGEMENT FOR A MAGNETIC DISC STORAGE

Oelke van de Bult, The Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,311

Claims priority, application Netherlands, May 22, 1981, 8102521

Int. Cl.³ G11B 5/55

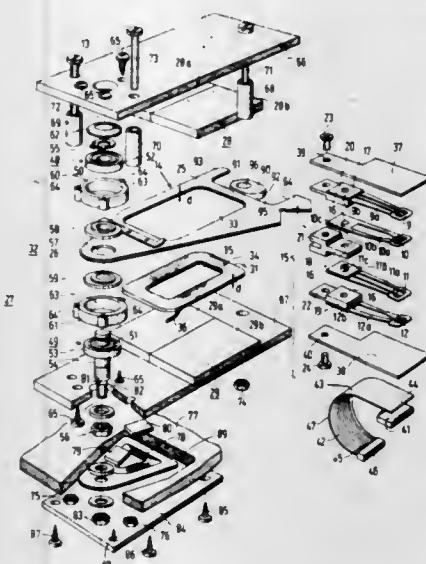
U.S. Cl. 360—106

8 Claims

1. A carrying arm arrangement for moving and positioning a magnetic head over a surface of a rotatable magnetic disc of a magnetic disc storage apparatus for digital data, the arrangement comprising:

a movable carrying arm, and a magnetic head connected to the carrying arm, the head having an outer side facing away from the disc surface during normal operation of the storage apparatus, characterized in that a mu-metal shield for shielding the head

from spurious magnetic fields is disposed at the head outer side and is connected to the carrying arm, the shield ex-



tending a distance beyond the magnetic head, whereby the shield is movable with the head.

4,430,680

RECIPROCATING MEMBER CONTROL MECHANISM IN TAPE PLAYER

Katsumi Yamaguchi, and Hitoshi Okada, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

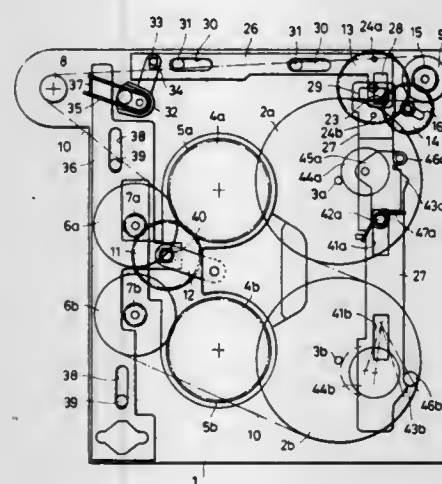
Filed Sep. 29, 1981, Ser. No. 306,684

Claims priority, application Japan, Sep. 30, 1980, 55-135157; Sep. 30, 1980, 55-138082[U]

Int. Cl.³ G11B 15/00

U.S. Cl. 360—137

2 Claims



1. A control mechanism for a magnetic tape playing device having a tape drive motor, forward and reverse drive reelbases, forward and reverse drive capstan shafts driven by said motor, forward and reverse drive pulleys driven by said motor, said control mechanism comprising: first drive changeover means supported to be reciprocated for selectively supplying drive power from said motor to said forward and reverse drive reelbases; second drive changeover means supported to be reciprocated for selectively engaging said forward and reverse drive capstan shafts to an inserted tape; a power takeoff pulley drive by said motor; an engagement means for selectively actuating engagement with said first and second drive changeover means; an electromagnetic plunger means; and a rotation transmitting means operable by said electromagnetic plunger means to impart the rotation from said power takeoff pulley to said engagement means, said first drive changeover means including a slider plate mounted for reciprocation, an idler plate mounted for reciprocation and coupled to be driven by said slider plate, an idler movably responsive to the position of

said idler plate to be selectively interposable to couple said forward drive pulley to said forward drive reelbase or said reverse drive pulley to said reverse drive reelbase, said second drive changeover means including a pair of displaceable pinch rollers for pressing said tape against said forward and reverse drive capstan shafts respectively, a change plate mounted for reciprocation and coupled to actuate said pinch rollers selectively against their associated capstan shafts, said engagement means including an arc-shaped cam rotatably provided on a cam gear, there being formed in said slider plate and change plate elongated holes in which said cam is engaged, the width of said elongated hole being nearly equal to the radius of said cam so that the arc-shaped circumferential surface of said cam is slidable along the edge portion of said elongated hole, said rotation transmitting means including a movable idler gear coupled with said plunger means and a driving gear provided on said power takeoff pulley, said idler gear being engageable with said driving gear and said cam gear when said plunger means is energized.

4,430,682

PROTECTION CIRCUIT FOR D.C. MOTORS

Alfred Babsch, Ulm-Söflingen, Fed. Rep. of Germany, assignor to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

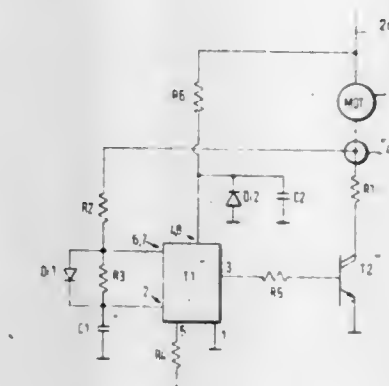
Filed Oct. 30, 1981, Ser. No. 316,894

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3042138

Int. Cl.³ H02H 7/085

U.S. Cl. 361—31

4 Claims



1. A protective circuit for a d.c. motor driving a load that may experience excessive increases, such as paper jamming in a paper feeder driven by the motor, comprising: first circuit means connected to the motor for monitoring current flow therethrough and providing a signal representative thereof; transistor-switching means connected in series with the motor for controlling the current flow through the motor; a second circuit means including a bistable multivibrator and RC circuit means connected to inputs of the bistable multivibrator to render the multivibrator monostable and astable, depending upon a signal level applied to the inputs, the multivibrator connected to the transistor-switching means for operating the same; and the first circuit means connected to inputs providing thereto said first signal operating said multivibrator as a monostable multivibrator in response to said first signal in a first range for causing the transistor-switching means to turn the motor on intermittently whenever the multivibrator is in the astable state pursuant to its operation as an astable device and operating the multivibrator as a monostable multivibrator in response to said first signal in a second range.

4,430,681

OVERLOAD PROTECTION ARRANGEMENT FOR AN ELECTRIC MOTOR, ESPECIALLY OF A HAND-HELD POWER TOOL

Rolf Benzing, Neuffen, Fed. Rep. of Germany, assignor to Metabowerke GmbH & Co., Nuertingen, Fed. Rep. of Germany

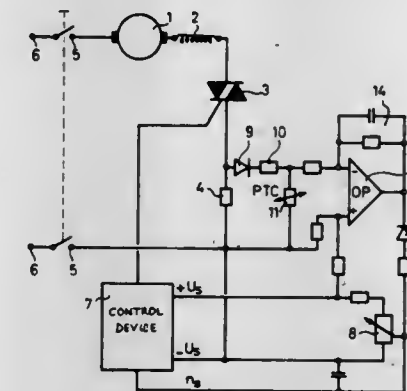
Filed May 22, 1981, Ser. No. 266,355

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021689

Int. Cl.³ H02H 7/085

U.S. Cl. 361—27

6 Claims



1. An overload protection arrangement for an electric motor equipped with an electronic speed of rotation control device, especially of a hand-held power tool, comprising means for detecting the temperature of a winding of the electric motor which is in danger of overload under certain operating conditions, including a positive temperature coefficient resistor; and means for reducing the magnitude of the maximum current that can be drawn by the electric motor in response to the detection of an excessive temperature by said detecting means, including a voltage divider incorporating said resistor as one of its constituent parts, and an operational amplifier having one input connected from said resistor and an output connected to the electronic speed of rotation control device and operative for controlling the latter so that the desired value of the speed of rotation which is supplied to the electronic speed of rotation control device is reduced when the acceptable temperature of the respective winding is exceeded.

4,430,683

GROUND FAULT DETECTING DEVICE FOR USE WITH A DC CIRCUIT

Tadao Kawai, and Tomoharu Nakamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,766

Claims priority, application Japan, Feb. 27, 1981, 56-27001

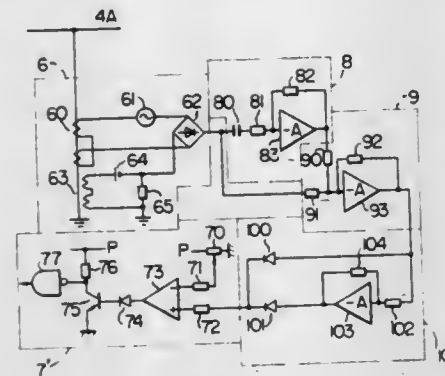
Int. Cl.³ H02H 3/16

U.S. Cl. 361—42

7 Claims

1. A ground detecting device for detecting a ground fault in a DC circuit through which a DC power is obtained by converting an AC power by an AC-DC converter, and which is connected at its earth point to the earth and provided with an earth current detector for detecting an earth current flowing through the earth point, said device comprising DC component detecting means for detecting a DC component contained in the earth current detected by said earth current detector, and judging means for judging a ground fault which has occurred in the DC circuit, said DC component detecting means

including a differential circuit for differentiating the earth current, and an adder for producing the DC component on the



basis of the output of said differential circuit and said earth current.

4,430,684

TRANSISTOR SWITCHING MEANS

Marcel Lefebvre, Angouleme, and Daniel Ruellan, L'Isle d'Espagnac, both of France, assignors to La Telemecanique Electrique, France

Continuation of Ser. No. 153,792, May 28, 1980, abandoned.

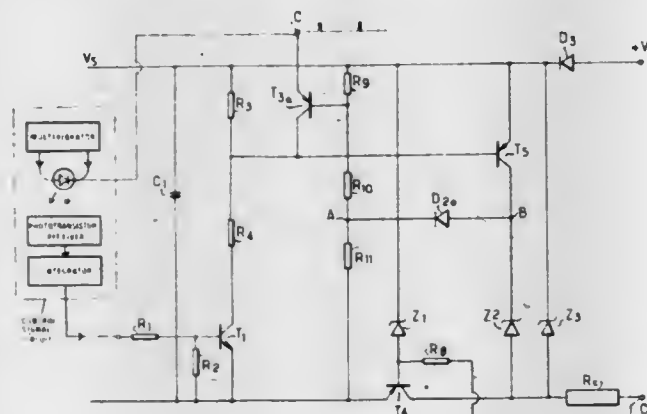
This application Jun. 9, 1982, Ser. No. 386,482

Claims priority, application France, May 30, 1979, 79 13763

Int. Cl.³ H02H 3/08, 7/20

U.S. Cl. 361-98

2 Claims



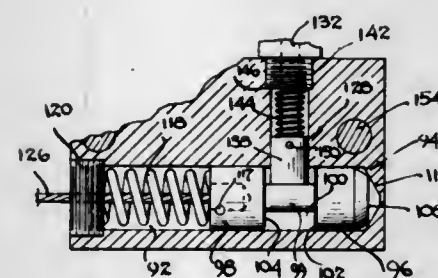
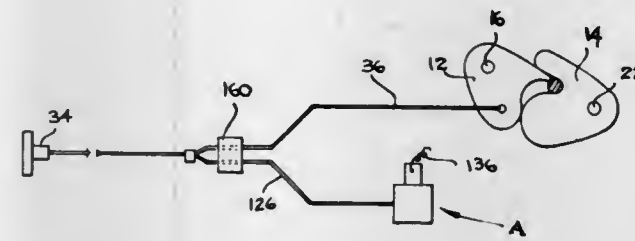
1. A switching circuit of the kind comprising a principal switching transistor feeding into a load and unblocked by injection of a substantially constant current into its base in response to application of a control signal to the circuit, the said circuit comprising means for comparing the collector-emitter voltage of the principal transistor with a reference voltage and for blocking the said transistor as soon as the said collector-emitter voltage exceeds the reference voltage, the said control signal being produced by a circuit which generates recurrent pulses and separately derives from said pulses the said control signal said means comprising an auxiliary transistor coupled to the principal transistor in such a manner that the said auxiliary transistor, when blocked, becomes unblocked when, as a result of overloading in the load, the voltage drop at the terminals of the principal transistor increases beyond the reference voltage and the unblocking of the auxiliary transistor then having the effect of blocking the principal transistor, means for applying the said recurrent pulses to the auxiliary transistor to block it periodically, thereby ensuring the automatic unblocking of the principal transistor as soon as the overload has disappeared, even though the substantially constant current is being injected into the base of the principal transistor in response to said control signal being applied to said switching circuit.

4,430,685 VEHICLE LOCK RELEASE MECHANISM OPERABLE WITH A SAFETY INTERLOCK SYSTEM Thomas R. Ellsberg, 6339 Coldwater Canyon, North Hollywood, Calif. 91606

Continuation-in-part of Ser. No. 709,314, Jul. 28, 1976,
abandoned. This application Jan. 3, 1978, Ser. No. 866,359
Int. Cl.³ E05B 65/19

U.S. Cl. 361-172

35 Claims



1. An electrically operable lock controlling mechanism and being operable to control a lock device which is capable of locking a closure member movable relative to an access opening when said closure member is in a closed position over said access opening, said lock controlling mechanism comprising:

- (a) an outer housing having a first bore and a second bore angularly located with said first bore,
- (b) a shiftable lock cooperating element located within said first bore, said lock cooperating element having a pair of spaced apart members defining a plunger receiving space capable of being located in alignment with said second bore,
- (c) a plunger located within said second bore and having a locking section capable of being shifted into a locking position in said plunger receiving space to prevent movement of said element, and capable of being retracted to a non-locking position
- (d) means biasing said plunger into said locking position,
- (e) electrically operable means for shifting said plunger to the non-locking position out of said plunger receiving space to permit movement of said lock cooperating element upon energization of said electrically operable means, and
- (f) sensing means operatively connected to said electrically operable means for holding said plunger in the non-locking position after de-energization of said electrically operable means if said closure member has been moved away from the closed position and until said closure member is returned to the closed position.

4,430,686

CHARGER FOR ELECTROGRAPHIC SURFACES

Alan J. Brock, 26 Strangways Ter., North Adelaide, South
Australia 5006; Alwin S. Clements, 35 Alexander St., Largs
Bay, South Australia 5016, and Brian J. Horrocks, 12 Martins
Rd., Paralowie, South Australia 5108, all of Australia
PCT No. PCT/AU81/00056, § 371 Date Jan. 12, 1982, § 102(e)
Date Jan. 12, 1982, PCT Pub. No. WO81/03387, PCT Pub.
Date Nov. 26, 1981

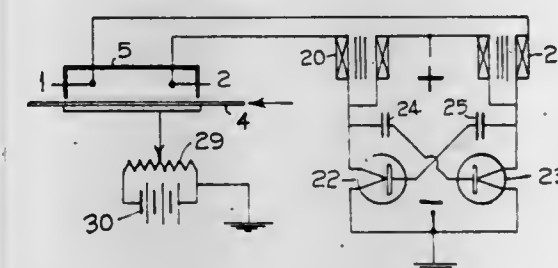
PCT Filed May 12, 1981, Ser. No. 341,996

Claims priority, application Australia, May 13, 1980, PE3511;
May 13, 1980, PE3512

Int. Cl.³ H01T 19/00

U.S. Cl. 361-229

3 Claims



1. For charging an electrophotographic surface by means of a corona directed to the surface, apparatus comprising a pair of spaced-apart corona wires, a planar control electrode extending generally parallel to a plane passing through the corona wires but spaced from the said plane, means for applying a high voltage between the said wires to cause a corona comprising an envelope with an ion core to be generated between the said corona wires, means to cause the said control electrode to have a potential of the same polarity but less than that applied to the said corona, means positioned to guide an electrophotographic membrane which is to be charged between the plane of the said corona wires and the said control electrode in a position to intersect the said envelope outside of the said core, and means to cause a relative movement between the said membrane and the said corona wires in a plane parallel to the said corona wires, said means for generating the corona comprising a first and second transformer connected together by means arranged to produce an electrical oscillation in the said transformers of opposite phase, the output of one said transformer being connected to one said corona wire and the output of the other said transformer being connected to the other said corona wire whereby to produce a corona between the said wires.

4,430,687

TRIM CONDENSER

Karl Steinfeldt, Ullrich Heisig, Siegfried Schiller, all of Dres-
den; Dietrich Mehr, Gera; Bernd Thuse, Gera, and Klaus
Hielscher, Gera, all of German Democratic Rep., assignors to
VEB Elektronik Gera, Gera, German Democratic Rep.

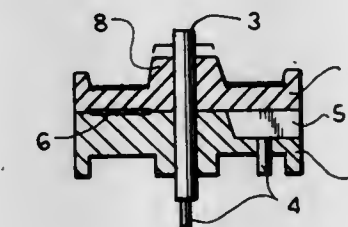
Filed Aug. 11, 1981, Ser. No. 291,897

Claims priority, application German Democratic Rep., Aug.
13, 1980, 223285

Int. Cl.³ H01G 5/06

U.S. Cl. 361-293

11 Claims



1. A trimmer capacitor, adapted to be connected with an armature, comprising

a stator with a surface having a roughness \leq about 0.7 μ m,
a rotor with a surface having a roughness value \leq about 0.7
 μ m,
a first adhesive layer applied to a portion of said stator
surface,
a second adhesive layer applied to a portion of said rotor
surface,
a first electrode applied to said first adhesive layer on said
stator surface, said electrode comprising a copper-nickel
alloy of from 1.5 μ m to 3 μ m thickness and 30% to 60%
nickel content,
a second electrode applied to said second adhesive layer on
said rotor surface, said electrode comprising a copper-
nickel alloy of from 1.5 μ m to 3 μ m thickness and 30% to
60% nickel content,
a rotor shaft extending substantially through the center of
the rotor and the stator,
a first soldering connection between said stator and arma-
ture, and
a second soldering connection between said rotor shaft and
armature.

4,430,688

SMALL HEAT RESISTANT FILM CONDENSER

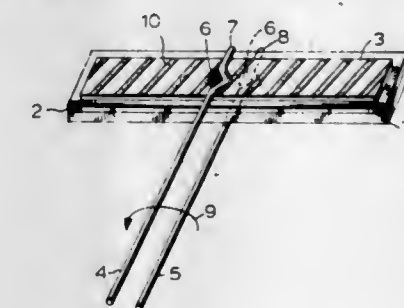
Tooru Tamura, Ikeda; Nobuyuki Ojima, Katano; Hideaki Mo-
chizuki, Higashiosaka; Ryuichi Souno, Moriguchi, and To-
shifumi Ikka, Osaka, all of Japan, assignors to Matsushita
Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 224,924, Jan. 14, 1981, abandoned. This
application Apr. 28, 1983, Ser. No. 487,415

Int. Cl.³ H01G 1/14, 4/08

U.S. Cl. 361-307

12 Claims



6. A film condenser comprising: a film product having a
solderable metal foil composed of one member selected from
the group consisting of copper, tin and aluminum, a heat resis-
tant plastic film on one surface of said solderable metal foil, and
a vapor-deposited metal film on the surface of said heat resis-
tant plastic film facing away from said metal foil; and
two lead wires respectively soldered to the other surface of
said solderable metal foil and to the surface of said vapor-
deposited metal film facing away from said plastic film;
wherein each of said lead wires has a bent portion at the part
soldered to said film product, said bent part being in the
shape of a V or a U with the open end facing laterally of
the length of the wire and having a size to prevent solder
in a molten state from flowing out of the bent part during
soldering due to the surface tension of the molten solder.

4,430,689

DIELECTRIC CERAMIC COMPOSITIONS, CAPACITORS IN WHICH COMPOSITIONS OF THIS TYPE ARE EMPLOYED, AND A METHOD OF PRODUCTION OF SAID COMPOSITIONS

Alain Lagrange, and Alain Beauger, both of Bagnolet, France, assignors to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Mar. 15, 1982, Ser. No. 357,896

Claims priority, application France, Mar. 18, 1981, 81 05403
Int. Cl.³ H01G 4/12

U.S. Cl. 361—321

6 Claims

1. A multilayer ceramic capacitor comprising a plurality of electrodes of an electrically conducting material including a major proportion of silver, said electrodes being separated by a plurality of ceramic dielectric layers, two successive electrodes being separated by at least one dielectric layer, the electrodes of even-numbered rows and odd-numbered rows being respectively connected together electrically, wherein the ceramic composition is a dielectric ceramic composition having a high dielectric constant, wherein said composition contains 90% to 98.5% by weight of barium titanate and 1.5% to 10% by weight of lithium fluoride, in which the barium titanate corresponds to the formula:

BaTiO_3 with a molar ratio $x = (\text{TiO}_2/\text{BaO})$, wherein x is higher than or equal to 0.97 and lower than or equal to 0.98.

4,430,690

LOW INDUCTANCE MLC CAPACITOR WITH METAL IMPREGNATION AND SOLDER BAR CONTACT

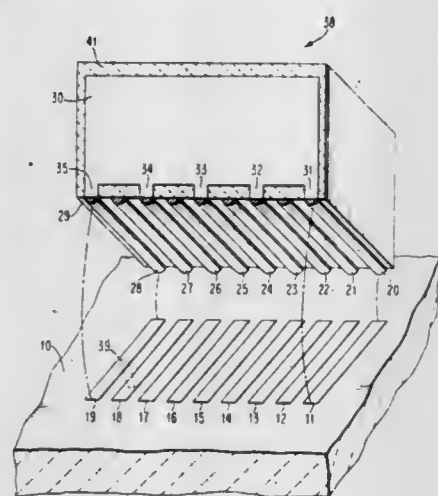
Dudley A. Chance, Danbury, Conn.; Chung W. Ho, Chappaqua, N.Y., and Timothy C. Relley, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1982, Ser. No. 433,329

Int. Cl.³ H01G 1/01, 3/06

U.S. Cl. 361—321

18 Claims



1. In a chip carrier for large scale integrated circuit chips, with a laminated capacitor joined to the surface of said carrier adjacent to positions where chips are located, said laminated capacitor including a plurality of capacitor plates, the improvement comprising bonding said capacitor to said chip carrier with an array of solder bars comprising an elongated strip of metallic material each of said bars connected to a set of said capacitor plates in said laminated capacitor by means of tab connections on said plates, whereby each of said plates is connected by a plurality of tabs to a plurality of said solder bars.

ELECTROMECHANICAL DISPLAY INSTRUMENT ASSEMBLY

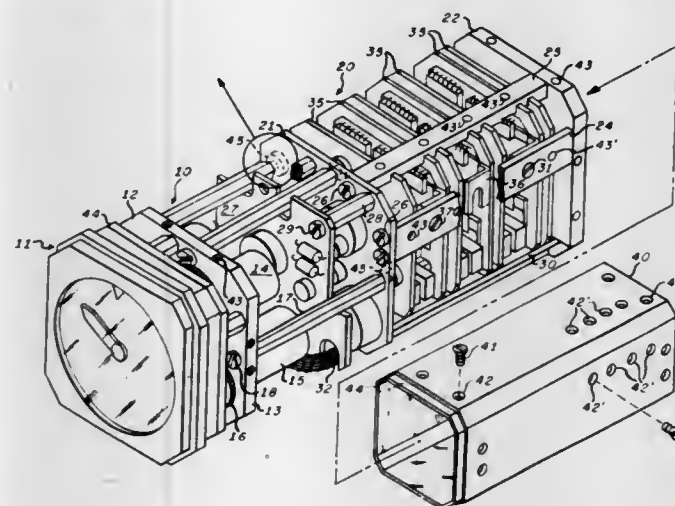
Clyde M. Rea, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,328

Int. Cl.³ H02B 1/00

U.S. Cl. 361—383

1 Claim



1. An instrument container comprising:
a front assembly having a mounting plate with tapped screw holes therein;
a longitudinally extending first frame rigidly, attached to said mounting plate,
a second frame, longitudinally disposed relative to said first frame, including heat conductors adapted to thermally couple to heat generating elements, said heat conductors having tapped screw holes therein located at predetermined positions thereon,
a cover having holes therein positioned over said first and second frames,
a connector between said first and second frames adapted to provide relative longitudinal position adjustment of said first and second frames after connection thereof to align said tapped screw holes of said first and second frames, including said tapped screw holes in said heat conductors with said holes in said cover, thereby compensating for tolerance build-up during assembly, and
screws passing through said holes in said cover and threaded into said tapped screw holes in said first and second frames to provide tight physical contact of said first and second frames, including said heat conductors with said cover to establish structural rigidity and integrity, and provide for heat conduction from said second frame to said cover for dissipation therefrom by convection.

4,430,692

AUTOMOTIVE VEHICLE WHEEL ILLUMINATION AND LIGHT REFLECTIVE SYSTEM

Alexandros M. Papadakis, 250 Beverly Blvd., Upper Darby, Pa. 19082

Filed Jul. 27, 1981, Ser. No. 287,236

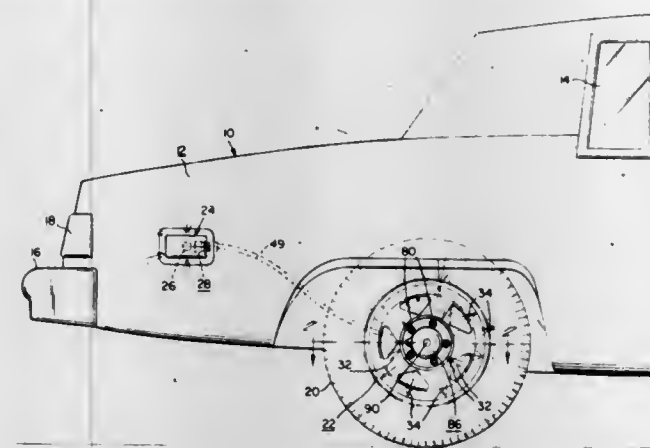
Int. Cl.³ F21V 7/04

U.S. Cl. 362—32

10 Claims

1. A vehicle having at least one rotatable wheel, said wheel having light reflective surface means thereon, a light source mounted on said vehicle, light directing means operatively associated with said wheel, a plurality of discrete fiber optic light transmission means operatively associated with said light source adapted to receive light therefrom and transmit the light to said light directing means for said wheel constituting light emitting and ray directing means operable to impinge light on wheel portions having said light reflective surface for illumination and reflection therefrom, the discrete light transmission means consisting of plural separate sets, one set being

fixed to said vehicle, another set being operatively attached to said wheel, said sets being disposed at proximate ends thereof



in spaced relationship from one another and adapted to transmit light therebetween as said wheel rotates with respect to said vehicle.

4,430,693

ILLUMINATING DEVICE FOR UNDERGROUND MINING

Martin Hamacher, Westerholter Strasse 791, 4352 Herten, Fed. Rep. of Germany

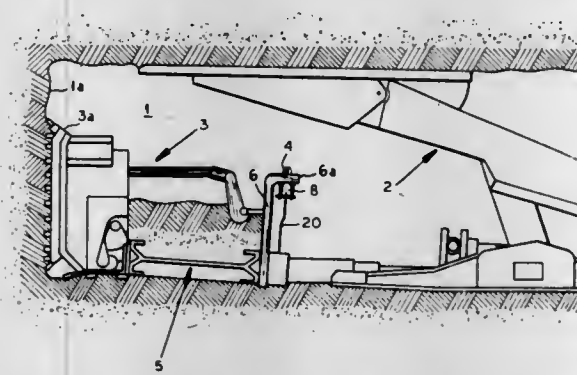
Filed Dec. 10, 1981, Ser. No. 329,511

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046834

Int. Cl.³ B60Q 1/00

U.S. Cl. 362—61

7 Claims



1. In an excavating machine for underground mining having tool means for breaking clumps of solid matter of a mine face, and a wall member forming a rear boundary of a trough for the transportation of said lumps, the combination therewith of a lamp carried on a rearwardly bent upper flange of said wall member, said lamp comprising a housing suspended from said flange behind said wall member, a light-transmissive vaulted cover rising from said housing and penetrating an aperture of said flange, and an electric light bulb inside said cover provided with a cable passing through said housing to an external power supply.

4,430,694

ARRANGEMENT FOR MOUNTING LIGHTING FIXTURES

Harri Koivumäki, and Jouko Sinkkonen, both of Iittala, Finland, assignors to A. Ahlstrom Osakeyhtiö, Noormarkku, Finland

Filed Dec. 2, 1981, Ser. No. 326,616

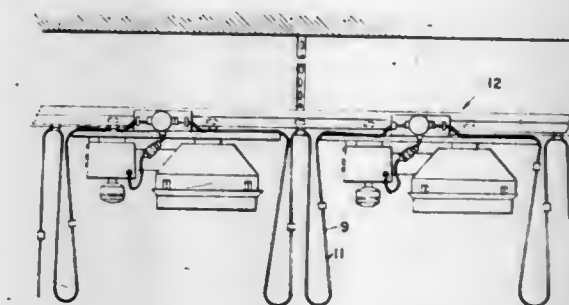
Int. Cl.³ F21V 21/14

U.S. Cl. 362—250

3 Claims

1. An arrangement for mounting a plurality of lighting fixtures in a row, comprising a horizontal rail; a plurality of carriages supported by said rail for movement therealong, said lighting fixtures each being connected to a corresponding

carriage for movement therewith along said rail; each of said carriages having a plurality of wheels that engage said horizontal rail to accommodate movement of the carriage therealong; a rope drive means connected with each of said carriages and operable to move same along said rail between respective operating positions in which the carriages are spaced apart by a given distance and servicing positions in which the carriages



are spaced apart by a lesser distance; said rope drive means including a first, endless rope, running between oppositely disposed drums, one of said drums having associated driving means, said first rope being connected to an endmost one of said carriages, and a second rope connected to each of said carriages and establishing the positions of said carriages along the rail when said endmost carriage is moved to its operating position.

4,430,695

VISUAL LANDING AIDS FOR AIRCRAFT

Robert M. Payne, and Christopher A. R. Haire, both of London, England, assignors to Research Engineers Limited, England

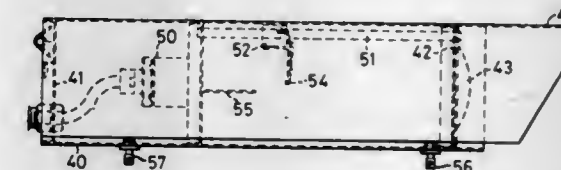
Filed Mar. 10, 1981, Ser. No. 242,319

Claims priority, application United Kingdom, Mar. 11, 1980, 8008191

Int. Cl.³ G01B 9/08

U.S. Cl. 362—277

14 Claims



1. Apparatus for aligning the projector of a visual landing aid for aircraft, wherein that projector includes a filter whose position can be adjusted with respect to the aligning apparatus, the apparatus for aligning comprising:

a base including means for supporting a projector thereon for the projector to shine light toward a focusing means; image receiving means for receiving an image projected by the projector and passing through said focusing means; the position of the image receiving means being adjustable with respect to the base for initially setting the apparatus; said focusing means being located between the projector and the image receiving means for focusing the image from the projector onto the image receiving means only when the filter of the projector and the image receiving means of the aligning apparatus are at points conjugate to one another; and means enabling observation of the image receiving means for ascertaining if the image of the filter is focused at the image receiving means.

4,430,696

LAMP MOUNTING MEANS

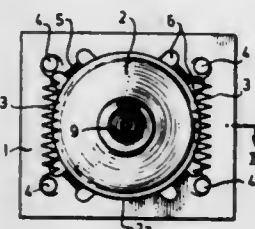
Ulrich Lemcke, Heidenheim, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,197

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 8203068[U]

Int. Cl.³ F21V 7/00

U.S. Cl. 362—306



1. Lamp supporting means comprising a lamp mount, a reflector rigidly connected to said lamp mount, an attachment part, and at least two coil springs which press said reflector against said attachment part, each of said coil springs having opposite ends held at fixed points on said attachment part to maintain each spring stretched in longitudinal tension with an intermediate portion of each spring pressing against said reflector in a direction to press said reflector against said attachment part.

4,430,697

METHOD AND APPARATUS FOR STARTING A PARALLEL-TUNED CURRENT FED INVERTER

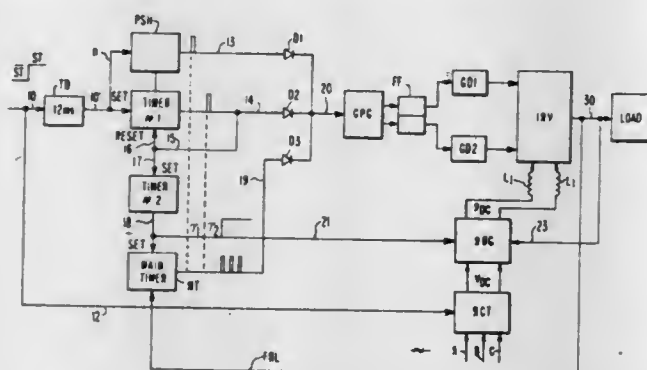
Harold A. Steinbruegge, and Chuck F. Der, both of Sykesville, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 18, 1982, Ser. No. 359,550

Int. Cl.³ H02M 5/458

U.S. Cl. 363—49

6 Claims



1. A method of starting a high frequency (HF) thyristor-controlled inverter having a capacitor in series with a parallel compensated load under a DC voltage applied through an inductor element, comprising the steps of:

applying said DC voltage to said inductor element and said series capacitor by firing complementary thyristors of one pole of said inverter to conduct during a first time interval sufficient to establish a first predetermined minimum voltage across said series-capacitor, said first minimum voltage being sufficient to commutate said complementary thyristors of one pole;

firing complementary thyristors of the other pole of said inverter at the end of said first time interval to conduct during a second predetermined time interval sufficient to establish a second predetermined minimum voltage across said series-capacitor, said second minimum voltage being sufficient to commutate said complementary thyristors of the other pole; and

firing said thyristors of said inverter from at least the end of

said second time interval in alternate succession at a predetermined free-running frequency of said HF inverter with increasing participation of said parallel compensated load.

4,430,698

THREE-MODE PROCESS CONTROL

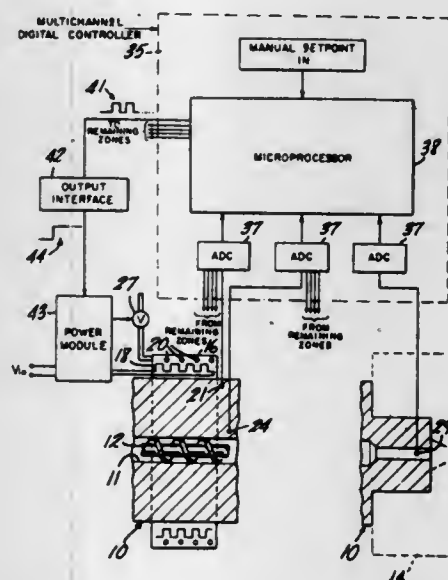
Holton E. Harris, Westport, Conn., assignor to Harrel, Incorporated, East Norwalk, Conn.

Filed Aug. 20, 1981, Ser. No. 294,726

Int. Cl.³ G05B 11/36, 11/42

U.S. Cl. 364—162

5 Claims



1. A method of controlling a process having a variable process parameter responsive to electrical control, including the steps of:

- measuring the variable process parameter and representing the process parameter as an electrical signal;
- electrically representing a predetermined set value of the parameters as a set point and comparing the measured parameter to the predetermined set value of the parameter;
- developing an error signal representative of the difference E between the measured parameter and the predetermined set value of the parameter by subtracting the measured parameter signal from the set point signal;
- multiplying the error signal by a constant K_1 to develop a signal representative of a proportional term $K_1 E$;
- developing an integration signal representative of the integration of E with respect to time;
- multiplying the integration signal by a second constant K_2 to develop a signal representative of an integral term $K_2 \int E dt$;
- developing a derivative signal representative of the derivative of E with respect to time;
- comparing the sign of the derivative signal with the sign of the error signal;
- multiplying the derivative signal by a third constant K_3 to develop a signal representative of a derivative term $K_3 (dE/dt)$, when the signs of the derivative and error signals are alike;
- adding the proportional, integral, and derivative term signals and applying the sum so produced as a process control signal, when the signs of the derivative and error signals are alike;
- replacing said derivative term signal with a reduced signal at least substantially less than $K_3 (dE/dt)$, when the signs of the error and derivative signals are unlike; and
- adding the proportional term, integral term, and reduced signals and applying the sum so produced as the process control signal, when the signs of the error and derivative signals are unlike.

4,430,699

DISTRIBUTED DATA PROCESSING SYSTEM

Gerard Segarra, Jossigny, and Francois J. Phulpin, Saint Mande, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

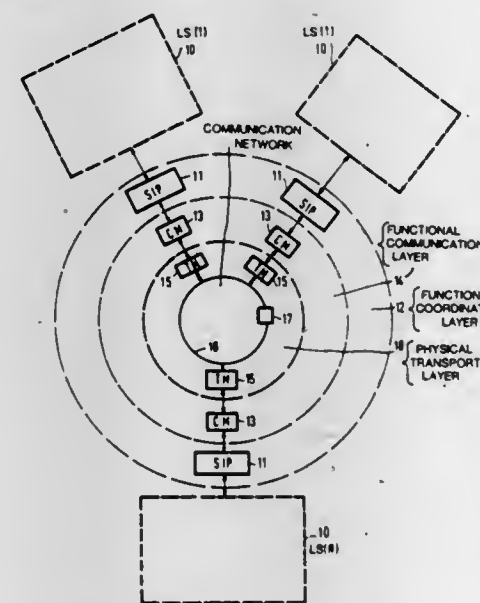
Filed Feb. 17, 1981, Ser. No. 235,291

Claims priority, application France, Feb. 15, 1980, 80 03464

Int. Cl.³ G06F 13/00, 9/06

U.S. Cl. 364—200

11 Claims



1. A distributed data processing system comprising a general communications network and a plurality of local systems, wherein the network is passive with respect to the self-contained operation of the respective local systems, and wherein each local system comprises at least one central processing unit, associated memory, at least one peripheral device and at least one residential process, local monitor means and a monitor extension module (42), wherein the control of the data processing in a local system is distributively effected by the local system itself, wherein each local system is interfaced to the network via its monitor extension module by means of a systems intercommunication processing means, the set of systems intercommunication processing means constituting a distributed coordination, communication, control, initialization and simulation means for the data processing system as a whole, each system intercommunication processing means being attached to the network via a communication module, the set of communication modules constituting a distributed control means for controlling communication protocols on the network for the data processing system as a whole, each communication module having sequencing means for controlling, in the communication protocols in a first sequence of steps, an addressed logical link from a source local system to a single destination local system and controlling in a second sequence of steps a broadcast logical link from a source local system to one or more destination local systems, said first and second sequences comprising conditionally executable logical link establishing steps, logical link maintaining steps and logical link terminating steps, said communication modules furthermore comprising information flow rate controlling means, presenting means for presenting the same general order of selected events at each local system, and error control means for detecting and thereupon recovering data communication errors, each communication module being plugged into the physical network by means of a transmission module, the set of transmission modules in combination with the physical network and a looping unit constituting a physical transport layer means, the physical network being a looped optical bus which is looped by said looping unit, wherein each transmission module comprises first control means for controlling parity errors, second control means for controlling synchronization between the transmission module itself and the transfer on the optical bus as presented, and bidirectional conversion means between electrical and optical signals, and wherein the looping unit has a first converting means for converting optical signals received

from the bus to electrical signals, processing means for processing said electrical signals, and second converting means for converting processed electrical signals to optical signals for insertion into said optical bus, said processing means having encoding/decoding means for each transmission line of said bus, initializing means for initializing the transmission synchronization on the optical bus, and frame control means for controlling transmission and reception of data in a frame of a cycle of frames, the frame in question being allocated to one local system.

4,430,700

SYSTEM AND METHOD FOR COMMUNICATION BETWEEN NODES OF A CLOSED LOOP LOCAL COMMUNICATION PATH

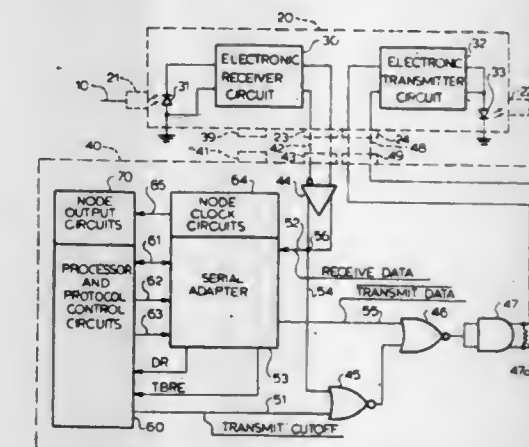
George E. Chadima, Jr., and Joseph J. Kubler, both of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Jul. 31, 1981, Ser. No. 289,098

Int. Cl.³ G06F 15/16; H04J 3/08

U.S. Cl. 364—200

9 Claims



1. The method of effecting communication between nodes of a closed loop communication path including the nodes, wherein each node includes a transmission link switch which when in a first mode completes a link of the closed loop communication path and when in a second mode prevents an undelayed complete loop transmission, said method comprising

- at a node desiring to initiate communication as a bidding node,
 - monitoring the closed loop communication path for a gap in communication along the closed loop communication path of a defined time span,
 - and upon detection of such a communication gap shifting the transmission link switch at the bidding node to its second mode, and
 - transmitting a bid message in a given direction about the closed loop communications path from the bidding node,
- at each of the nonbidding nodes upon receipt of the bid message from a bidding node, insuring that the transmission link switch of such nonbidding node is in its first mode,
- at the bidding node monitoring the closed loop communication path for the bid message as an indication of a successful bid,
- upon a successful bid at a bidding node, transmitting a data message intended for at least one recipient node from the bidding node via the closed loop communication path while the transmission link switch of the bidding node is in the second mode,
- at a recipient node upon receipt of the data message
 - placing its transmission link switch in the second mode, and
 - transmitting a response via the closed loop communication path, and

memory means for storing the introduced preset PLU code information;
addressing means for introducing the preset PLU code information into a predetermined memory section of the memory means;
a check request key; and
read-out means for reading out the PLU code information stored in said memory means in a progressive order in response to actuation of said check request key;
said synthetic speech generation system further including means for sequentially providing a synthetic speech sound in accordance with said PLU code information read out by said read-out means.

4,430,714

BRAKE CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

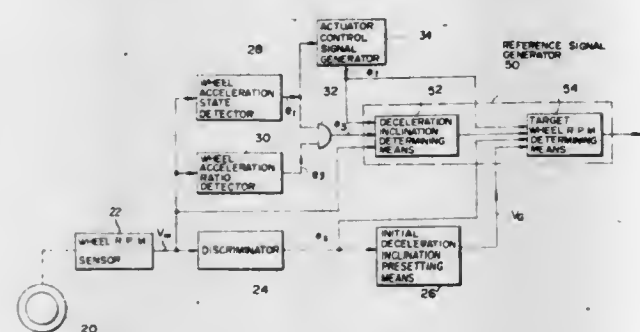
Toshiro Matsuda, and Minoru Honda, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 20, 1980, Ser. No. 208,683

Claims priority, application Japan, Nov. 20, 1979, 54-149451
Int. Cl.³ B60T 8/02

U.S. Cl. 364-426

22 Claims



1. An anti-skid control system for an automotive vehicle comprising:

- first means for detecting a wheel r.p.m. to produce a first signal having a value indicative of the wheel r.p.m.;
- second means for calculating an acceleration rate of wheel r.p.m. operative during acceleration of the wheel r.p.m. due to release of brake pressure in an automotive hydraulic brake system for calculating said acceleration rate based on variation of said first signal value and for comparing said acceleration rate with a given threshold to produce a second signal when said acceleration rate equals or exceeds said given threshold;
- third means, responsive to said second signal, for calculating a deceleration inclination in a next skid cycle based on a variation of said first signal value within an interval between occurrences of said second signal and on the length of said interval, and for calculating a deceleration r.p.m. based on said first signal value at an occurrence of said second signal and on said decelerating r.p.m., said third means producing a third signal representative of said target wheel r.p.m.; and
- fourth means for comparing sequentially varying first signal values with said third signal value to release said brake pressure when said first signal value becomes equal to or less than said third signal value.

4,430,715

SYSTEM FOR BRAKING AN AIRCRAFT TAXIING ON THE GROUND

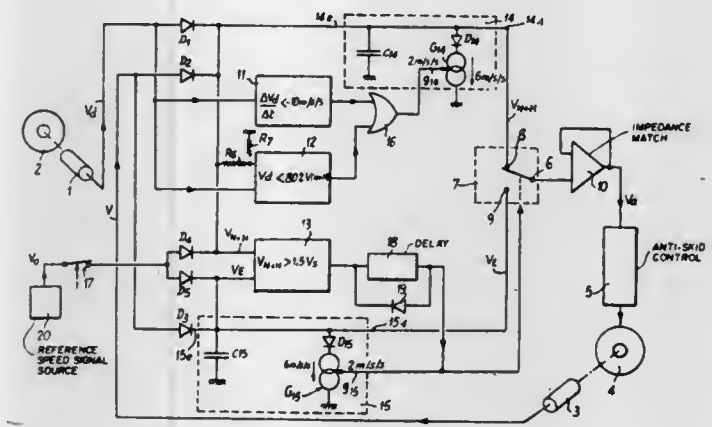
Pierre Gentet, Colomiers; Alain Y. Geoffroy, Tournefeuille, and Alain M. Caillebotte, Toulouse, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Sep. 3, 1981, Ser. No. 298,928

Claims priority, application France, Sep. 30, 1980, 80 20889
Int. Cl.³ B60T 8/02

U.S. Cl. 364-426

10 Claims



1. System for braking an aircraft comprising, on the one hand, a non-skid device which receives speed information from at least one first detector coupled to at least one non-braked wheel of said aircraft and furnishing an electrical magnitude representative of the speed thereof and which avoids locking of the braked wheels by servo-control of the slide and, on the other hand, a correction device disposed between said speed detector and said non-skid device and sensitive to at least one deceleration threshold representative of the hydro-planing of said non-braked wheel, wherein it further comprises at least one second speed detector coupled to at least one braked wheel and furnishing an electrical magnitude representative of the speed thereof, as well as a source furnishing an electrical reference magnitude corresponding to a reference speed of the aircraft just before landing and wherein said correction device comprises a selector of which the output is connected to said non-skid device and of which the two inputs are respectively connected to the outputs of a first or a second memory adapted to store an electrical magnitude and to reproduce it at two different rates of decrementation by action on a control member, the input of said first memory being connected to the first and to the second speed detector and to said source and its control member being connected to the output of two comparators which cause said first memory to pass from its fast rate to its slow rate if the electrical magnitude at the output of the first detector is less than a predetermined fraction of the value of the electrical magnitude at the output of said first memory or if the variation of the electrical magnitude of the first detector is less than said threshold representative of hydro-planing, whilst the input of said second memory is connected to the second speed detector as well as to said source and its control member is connected to the output of a third comparator, capable, when the ratio of the electrical magnitudes at the outputs of said first and second memories is higher than a threshold representative of a burst wheel, of simultaneously causing said second memory to pass from its fast rate to its slow rate and said selector to pass from its normal position, for which it connects the output of the first memory to the non-skid device, to its temporary position, for which it connects the output of the second memory to said non-skid device.

4,430,716

POSTAGE VALUE DETERMINING SCALE WITH EXPANDABLE MEMORY PORT

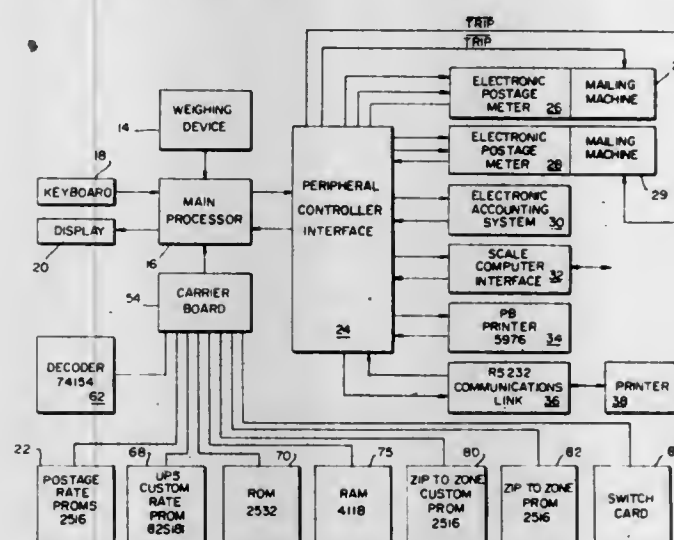
Daniel F. Dlugos, Huntington, and Flavio M. Manduley, Woodbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,779

Int. Cl.³ G01G 19/40

U.S. Cl. 364-466

14 Claims



1. In a postage value determining system comprising a processor, weighing means for introducing article weight information, means for introducing postage value related information, and rate memory means for storing postage rate information, the processor receiving the weight information and the postage value related information, the processor retrieving the postage rate information from the memory means and generating a postage value for an article, the improvement comprising memory port means, the rate memory means being selectively engageable directly with the port means, memory carrier means, the memory carrier means being selectively engageable with the port means, a plurality of postage memory means, the plurality including the rate memory means, the plurality of postage memory means being interconnected to the carrier means, the processor retrieving the postage rate information through the memory carrier means, the memory carrier means including means for selective accessing of any of the postage memory means, whereby the postage value determining system is augmented with additional memories for providing optional functional features.

4,430,717

MACHINE TOOL

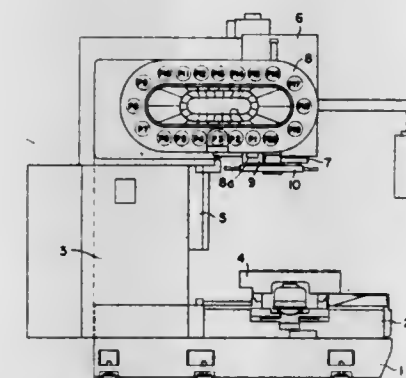
Masaki Senda, Komaki, and Takashi Mizoguchi, Kasugai, both of Japan, assignors to Okuma Howa Kikai Kabushiki Kaisha, Kounan, Japan

Filed Aug. 6, 1981, Ser. No. 290,771

Claims priority, application Japan, Aug. 15, 1980, 55-112847
Int. Cl.³ G06F 15/46

U.S. Cl. 364-474

1 Claim



1. A numerically-controlled tool machine including a tool

4,430,718

IMPLEMENTATION SYSTEM

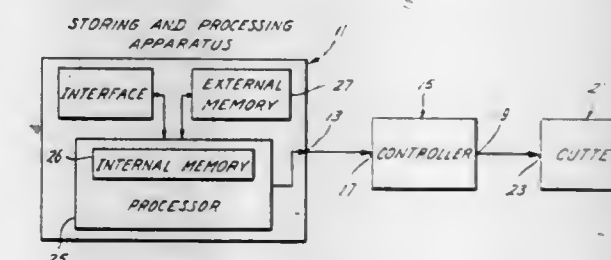
Philip A. Hendren, 2105 Scenic Dr., Austin, Tex. 78703

Filed Mar. 2, 1981, Ser. No. 239,463

Int. Cl.³ G06F 15/46; B26D 1/10

U.S. Cl. 364-475

13 Claims



1. A system for converting design information into models by sculpturing a workpiece having a low modulus of elasticity, comprising:

- a graphic digitizer in electrical communication and cooperating with a microprocessor, having a processor output, for substantially immediate digitizing of a two-dimensional design drawn on a surface of said digitizer, storing said digitized designs for later recall, and transmitting said digitized designs via said processor output upon command from an external source;
- controller means, having a controller input connected to said processor output, and a controller output for converting digital information received at said controller input into electrical signals, said electrical signals being provided at said controller output and having characteristics which are a function of the information received at said controller input; and
- cutter means, having a cutter input connected to said controller output, for sculpturing said workpiece into a three-dimensional form in accordance with the electrical signals provided at said cutter input, said cutter means including a hot-wire for cutting through said workpiece, whereby two-dimensional designs are immediately reproduced in model form for examination and further refinement and for mass reproduction of an acceptable design.

4,430,719

CALCINATION CONTROL SYSTEM

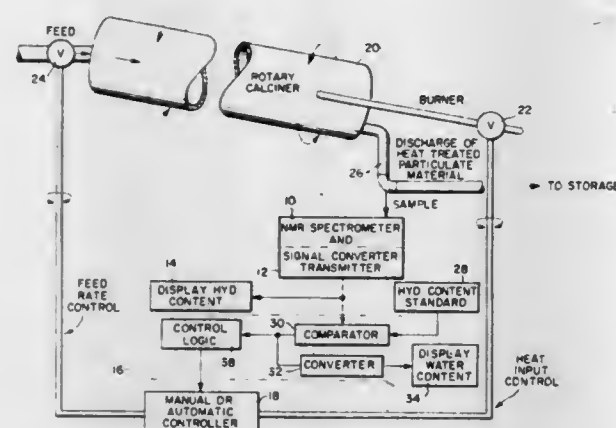
Robert M. Pearson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 3, 1981, Ser. No. 317,972

Int. Cl.³ G01N 24/08

U.S. Cl. 364—503

6 Claims



1. A system for the control of residual proton content of heat-treated, hydrogen-containing particulate materials by adjusting the heat-input to the heat-treatment process or by varying the feed rate of the particulate material to the heat-treatment process which comprises a nuclear magnetic resonance (nmr) spectrometer means capable of measuring the proton content of the heat-treated particulate material by producing a magnetic field and thus generating a signal proportional to the residual proton content of the heat-treated particulate material; means to convert the generated signal to readable measured units corresponding to the residual hydrogen content of the heat-treated particulate material; means for comparing the measured units to preset units of desired hydrogen content, and associated control means for issuing commands to the heat-treatment process for the adjustment of the heat-input or the particulate material feed rate.

4,430,720

CLEANING YARNS AND ASSESSING YARN DEFECTS

Peter F. Aemmer, Wettwil, Switzerland, assignor to Zellweger Uster AG, Uster, Switzerland

PCT No. PCT/CH79/00159, § 371 Date Nov. 10, 1980, § 102(e)

Date Nov. 10, 1980, PCT Pub. No. WO80/01955, PCT Pub.

Date Sep. 18, 1980

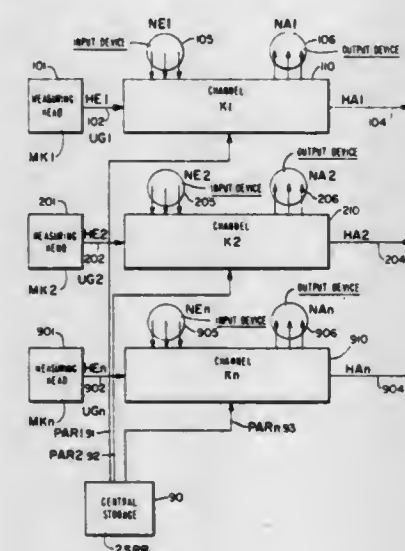
PCT Filed Dec. 12, 1979, Ser. No. 212,708

Claims priority, application Switzerland, Mar. 16, 1979, 2491/79

Int. Cl.³ G06F 15/46

U.S. Cl. 364—552

12 Claims



9. A method of assessing yarn defects using digital technol-

ogy comprising the steps of generating analog signals proportional to the running yarn cross section or diameter by means of one or more sensors; converting said analog signals to digital signals representing periodic samples of said yarn cross section or diameter on a linear scale; converting said digital signals from a linear scale to a logarithmic scale; storing the converted logarithmic digital signals; comparing said stored converted logarithmic digital signals to a plurality of selected defect tolerance limits which form successive tolerance zones outside of a given minimum tolerance zone and to the digital signal representing the previous stored sample; storing only those digital signals which fall outside said given minimum tolerance zone and represent an entry into or an exit from a given tolerance zone on the basis of the previous sample; and generating a trigger command for yarn cleaning in response to selected digital signals which are identified in said comparing step as relating to yarn defects.

4,430,721

ARITHMETIC CIRCUITS FOR DIGITAL FILTERS

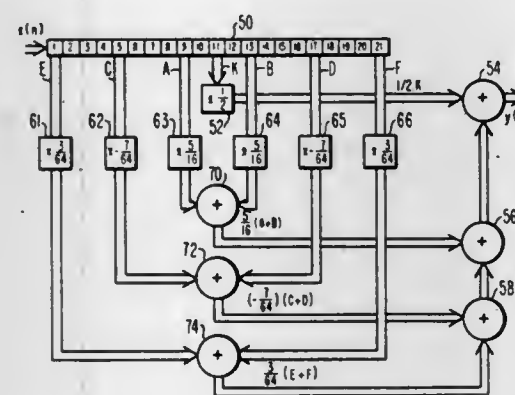
Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,500

Int. Cl.³ G06F 15/31

U.S. Cl. 364—724

11 Claims



1. A digital filter for processing a binary signal, said filter including delay stages

for producing delayed replicas of said binary signal at a plurality of output taps, said filter further comprising:

a plurality of weighting function circuits having inputs coupled to respective ones of said output taps for producing weighted binary signals;

a plurality of adders coupled in a ladder network to additively and subtractively combine said weighted signals to produce a filtered digital output signal, said additively combining adders each being responsive to two of said weighted signals in binary form for producing digital sum signals in binary form, and said subtractively combining adders each being responsive to two of said weighted signals, one of which is in two's complement form, for producing digital difference signals; and

means, coupled in series with the inputs of each of said subtractively combining adders, for converting the weighted signals applied thereto to offset two's complement form;

whereby digital additions are performed in binary form and digital subtractions are performed in offset two's complement form.

4,430,722

METHOD AND ARRANGEMENT FOR THE CORRELATION OF TWO SIGNALS

Robert Massen, Kämpfenstrasse 39, 7760 Radolfzell 18; Jürgen Merkel, Neue Strasse 29C, 7867 Maulburg, and Klaus-Peter Lindner, Gartenstrasse 6, 7881 Schwörstadt, all of Fed. Rep. of Germany

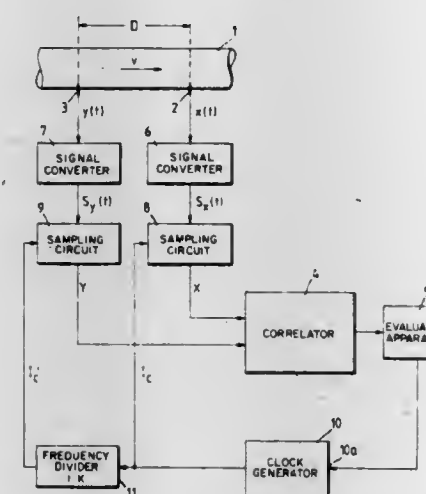
Filed Sep. 26, 1980, Ser. No. 191,351

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940158; Aug. 12, 1980, 3030438

Int. Cl.³ G06F 15/336

U.S. Cl. 364—728

32 Claims



1. Method for correlating first and second signals wherein mutually time-displaced sampling values of the two signals are multiplied together and to determine a discrete value of the correlation function the average value of the multiplication results corresponding to the same time displacement is formed, said method comprising: sampling said second signal at a pre-determined sampling frequency, sampling said first signal with a sampling frequency which is a multiple of the sampling frequency of said second signal, storing a number of the respective last sampling values of the more slowly sampled signal, multiplying each sampling value of the more rapidly sampled signal simultaneously by all the stored sampling values of the more slowly sampled signal; and separately summing respective multiplication results corresponding to the equal time displacement between the multiplied sampling values.

4,430,723

SEMICONDUCTOR MATRIX OPERATION DEVICE

Kunihiko Tanikawa, Akashi; Yuichiro Ito, Kobe, and Mitsuo Ishii, Yokohama, all of Japan

Continuation of Ser. No. 71,270, Aug. 30, 1979, abandoned,

which is a continuation of Ser. No. 879,879, Feb. 2, 1978,

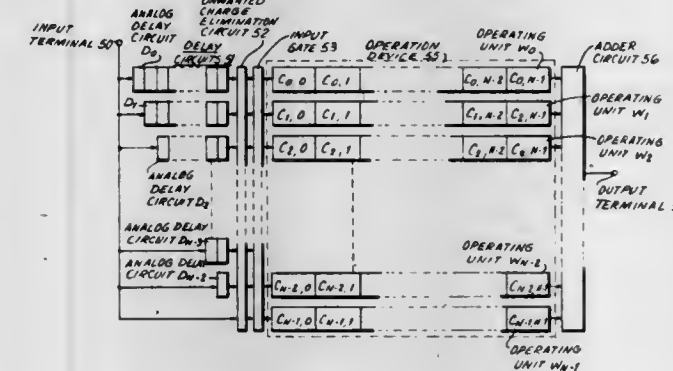
abandoned. This application Jun. 8, 1981, Ser. No. 271,587

Claims priority, application Japan, Feb. 24, 1977, 52-20106

Int. Cl.³ G06G 7/16

U.S. Cl. 364—862

5 Claims



1. A semiconductor signal transforming device for matrix operating a signal of analog type having a continuous ampli-

tude, said semiconductor signal transforming device including an operation device having an input and a plurality of multi-stage charge coupled devices arranged in parallel with the same transfer direction, each of said charge coupled devices having split electrodes for providing a weighting coefficient to respective stages so as to act as an operating unit, an input circuit connected to the input of the operation device, said input circuit having a plurality of analog delay circuits each having a final stage and connected to a corresponding charge coupled device of said operation device, said input circuit providing sampled data of an input signal to be transformed as a simultaneous input to all said delay circuits, the final stage of each of said delay circuits having a charge which is the sampled data of said input signal at respectively different instants, an output circuit connected to an output of said operation device for receiving an output signal operated in the respective charge coupled device for operation, wherein each of said analog delay circuits having another type of charge coupled device with a different number of transfer stages, and each of said charge coupled devices for delaying are respectively coupled at said final stages of said delay circuits to said charge coupled devices for operation with relation to the two transfer directions of the two types of charge coupled devices and become of the same direction.

4,430,724

MEMORY INTERFACE SYSTEM HAVING COMBINED COMMAND, ADDRESS AND DATA BUSS

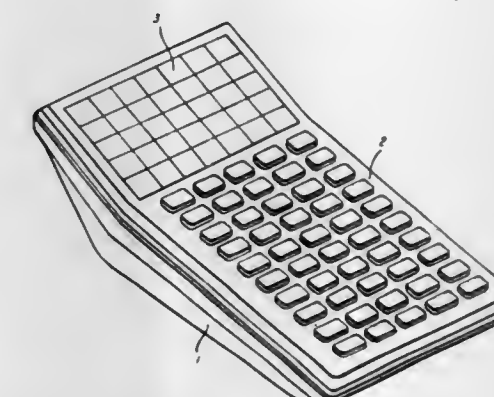
Stephen P. Hamilton, Midland; Arthur C. Hunter, and Kenneth A. Lies, both of Lubbock, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1980, Ser. No. 163,024

Int. Cl.³ G06F 13/06

U.S. Cl. 364—900

7 Claims



1. A memory interface system comprising:
a bus means for providing signal transfer paths with a minimum number of conductors;
a processor means coupled to said bus means for transmitting or receiving command signals, address signals and data signals on common conductors of said bus means, such signals being in a command sequence whereby each command sequence begins with a command signal on said common conductors followed sequentially by address or data signals also on said common conductors; and
at least one memory means coupled to said bus means, said memory means including a memory array having a plurality of multibit data words stored at memory locations corresponding to said address signals and a command decode means coupled to said common conductors of said bus means for distinguishing command signals from address signals and data signals, for decoding such distinguished command signals and for causing said memory array to transmit or receive data or address signals to or from said processor means via said common conductors of said bus means in accordance with said decoded command signal.

4,430,725

METHOD FOR DISPLAYING SOURCE AND DESTINATION FILE HEADERS FOR EASY COMPARISON OF PROPOSED HEADER CHANGES

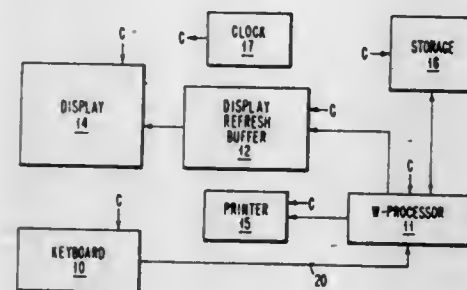
Jo A. Elliott, John W. McInroy, and Paul D. Waldo, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,270

Int. Cl.³ G06F 3/153

U.S. Cl. 364—900

7 Claims



1. In an interactive text processing system having a keyboard, a display device, a memory, and a processing unit for processing conventional text data and spatially related data that is stored in said memory in a vector format and in which one or more multi-field records of spatially related vector formatted data of a source file stored in said memory are transferred by said system to a destination file stored in said memory with a different field arrangement defined in accordance with text editing operations performed on the header record of said source file and the header record of said destination file by an operator interacting with said keyboard and said display unit, an improved method of displaying to said operator, after completion of said text editing operations and prior to transferring said one or more multi-field records from said source file to said destination file, the difference in said field arrangements of said header record of said source file and said header record of said destination file, said method comprising:

- displaying to said operator on said display device one display frame containing said header record of said source file as stored in said memory and said header record of said destination file as stored in said memory;
- determining which fields in said header record of said source file are common to the header record of said destination file;
- storing in said memory an indication for each said field that is common to both said headers to control the type of visual treatment afforded to said fields; and
- controlling said display device to cause said common fields to be displayed differently than said fields which are not common in accordance with said stored indication so that said common fields involved in the transfer from said source file to said destination file are readily distinguishable to said operator from any other said fields in said header records prior to said transfer.

4,430,726

DICTATION/TRANSCRIPTION METHOD AND ARRANGEMENT

Leonard R. Kasday, Plainsboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 18, 1981, Ser. No. 274,771

Int. Cl.³ G06F 3/153

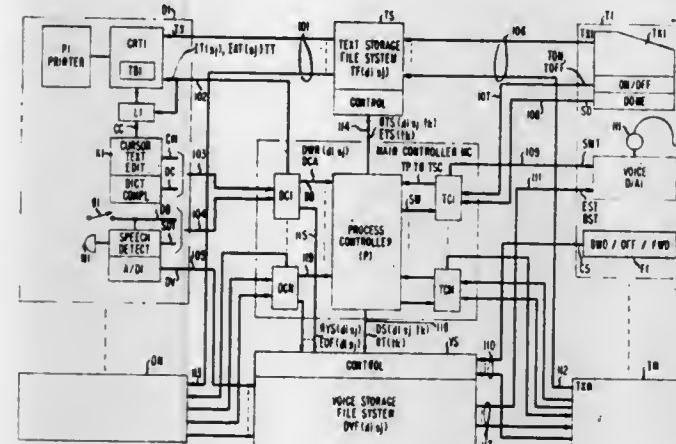
U.S. Cl. 364—900

15 Claims

- A method of operating a dictation transcribing system characterized by the steps of:
 - receiving voice dictation signals representing one or more spoken words from a dictation terminal;
 - segmenting said dictation signals into time sequential voice dictation segments each consisting of one or more words;
 - checking and storing in a done time table entries identifying

ing the time when each transcriber terminal was available to receive transcribing.

- assigning and transmitting each sequential voice dictation segment to one of a plurality of transcriber terminals by selecting a transcriber terminal having the earliest time entry in said done time table,



- transcribing voice dictation segments into transcription signals at the assigned transcriber terminal and
- assembling the transcription signals from the transcriber terminals according to the segment assignments.

4,430,727

STORAGE ELEMENT RECONFIGURATION

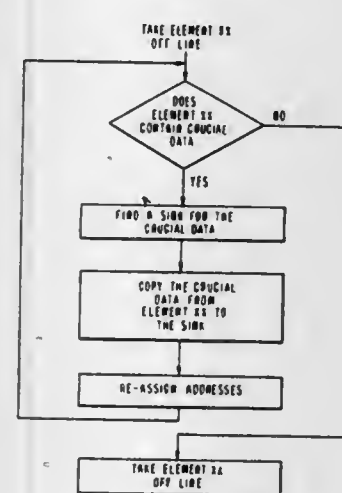
Brian B. Moore, Poughkeepsie; John T. Rodell, Wappingers Falls; Arthur J. Sutton, Cold Spring, and Jeff D. Vowell, Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 10, 1981, Ser. No. 319,869

Int. Cl.³ G06F 11/00

U.S. Cl. 364—900

9 Claims



- In a data processing system in which data are scattered among various physical storage elements, a method for taking a storage element off line comprising the following steps:
 - identifying the specific physical storage element that is to be taken off line;
 - identifying, within said specific storage element, portions thereof containing crucial material that is essential to the continued operation of the data processing system;
 - identifying, in storage elements other than said specific storage element, a new area that is large enough to hold said crucial material;
 - copying said crucial material to said new area; and
 - re-assigning addresses so that references to said crucial material will properly result in accesses of said crucial material from said new area.

4,430,728

COMPUTER TERMINAL SECURITY SYSTEM

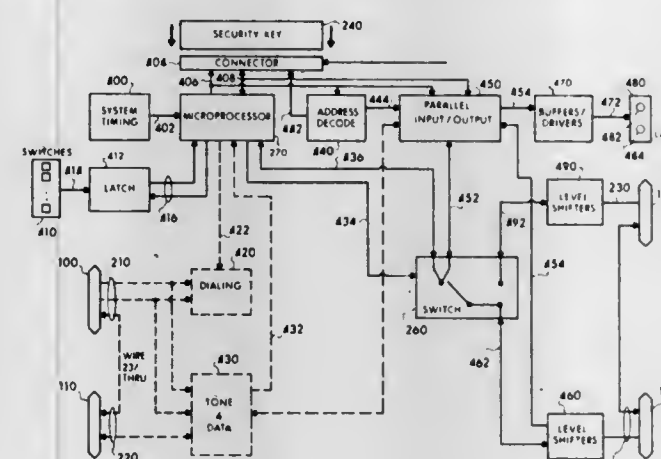
James E. Beltel, Englewood; Charles R. Bruce, Littleton; Gary R. Cook, Denver, all of Colo.; Charles F. Mosler, Jr., and Edward L. Sartore, both of Findlay, Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 29, 1981, Ser. No. 335,972

Int. Cl.³ G06F 15/16, 3/04; H04L 9/00; H04M 11/00

U.S. Cl. 364—900

3 Claims



- An improved computer terminal security system interconnected with at least one terminal computer having a calling telephone and a calling modem at a remote location and further interconnected with a host computer having a called telephone connectable to said calling telephone over phone lines and a called modem, a plurality of first removable memory modules, a first security circuit connected to said at least one terminal computer, a second security circuit connected to said host computer, and said first security circuit being powered and operative only when any one of said first removable memory modules are inserted, said improved computer terminal security system comprising:

said first removable memory module containing the secret telephone number of said called telephone, a secret user identification code, and remote sequencing program instructions, said first memory module being further capable of being selectively erased and reprogrammed to incorporate different telephone numbers, user identification codes and remote sequencing program instructions in the event of a loss of secrecy,

said first security circuit being further connected to said calling modem and to said calling telephone, said first security circuit comprising:

- first receiving means for selectively receiving said first memory module,
- a switch,
- first processing means connected to said first receiving means and to said switch and responsive to the activation of the switch for causing the first processing means to retrieve said remote sequencing program instructions, said secret user identification code, and said secret called telephone number from said first memory module, and for executing said sequencing program instructions for generating dialing means, delivering means, and first interconnecting means control signals,
- dialing means connected to said calling telephone and receptive of said dialing means control signals and secret called telephone number from said first processing means for automatically dialing said called telephone through said calling telephone and over said phone lines,
- delivering means connected to said calling telephone and receptive of said delivering means control signals and said secret user identification code from said first processing means for delivering said secret user identification code over said phone lines to said called telephone, and
- first interconnecting means connected to said first

processing means, to said calling modem, and to said terminal computer and receptive of said first interconnecting control signals for selectively interconnecting said terminal computer to said calling modem, said calling modem being connected to said calling telephone,

a second removable, erasable and programmable memory module for containing a plurality of secret user identification codes and host sequencing program instructions, said second memory module capable of being selectively erased to incorporate different user identification codes and host sequencing program instructions in the event of said loss of secrecy, and

said second security circuit further being connected to said called modem, and to said called telephone, said second security circuit comprising:

- second receiving means for selectively receiving said second memory module, said second security circuit being operable only when said second removable memory module is inserted,
- second processing means connected to said second receiving means and receptive of said host sequencing program instructions and of said plurality of secret user identification codes for executing said host sequencing program instructions,
- answering means connected to said called telephone and to said second processing means for automatically answering said calling telephone, said second processing means being further receptive of said delivered user identification code from said delivering means for comparing said delivered user identification code to the codes in said plurality of secret user identification codes and said second processing means being further capable of generating an acknowledgment signal when said delivered user identification code matches one of said plurality of user identification codes,
- sending means connected to said called telephone and receptive of said acknowledgment signal from said second processing means for sending said acknowledgment signal through said called telephone over said phone lines to said first interconnecting means, said first interconnecting means upon receipt of said acknowledgment signal becoming activated to selectively interconnect said terminal computer to said calling modem, and
- second interconnecting means connected to said second processing means, to said called modem, and to said host computer for becoming activated and interconnecting said host computer with said called modem only in response to said sending of said acknowledgment signal, said called modem being connected to said called telephone so that said host computer and said terminal computer can communicate over said phone lines, said host computer being accessible by said terminal only after said first and second interconnecting means become activated.

4,430,729

SERIES RESONANT DRIVE CIRCUIT FOR MAGNETIC BUBBLE MEMORY

Takashi Toyooka, Sayama; Hirokazu Aoki, Hachioji; Mamoru Sugie, Sayama, and Shigeru Yoshizawa, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,043

Claims priority, application Japan, Sep. 9, 1981, 56-140977

Int. Cl.³ G11C 19/08

U.S. Cl. 365—6

4 Claims

1. A series resonant drive circuit for a magnetic bubble memory, comprising:

- a magnetic bubble memory chip in which magnetic bubbles are driven in accordance with a rotating magnetic field;
- X- and Y-coils arranged orthogonally to each other to

information for the subscriber station, means (15, CLK of 16) using said output signals to read the digital signals intended for said station into a register means (16), and means (21, 24-27) for reading out the digital signals stored in said register means at a steady rate, said data signals being similarly read out at different but steady rates irrespective of the number of data bits and position of the same in a given channel.

4,430,735

APPARATUS AND TECHNIQUE FOR TESTING IC MEMORIES

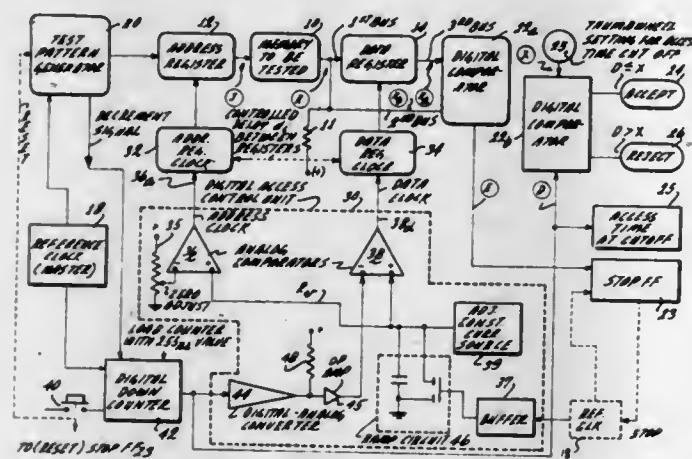
Robert D. Catiller, Garden Grove, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 26, 1981, Ser. No. 267,048

Int. Cl.³ G01R 31/28

U.S. Cl. 371-25

10 Claims



9. A method for testing semi-conductor memories comprising the steps of:
 - (a) generating a memory address into an address latch;
 - (b) clocking said address-latch address into said memory at a selected time-moment T_0 ;
 - (c) accessing output data from an addressed location in said memory into a data latch register;
 - (d) simultaneously and directly conveying said accessed output data from the same addressed location to a digital comparator means via a data clock at a time T_0 ;
 - (e) comparing at a subsequent time T_d the equality of data from said data latch register with data conveyed directly to said comparator means, said comparisons occurring by a test at each nanosecond test period starting from N nanoseconds and decremented down to 1 nanosecond;
 - (f) stopping the test when non-equality is detected;
 - (g) determining the nanosecond value of the test period which existed at the moment of detection of non-equality of compared data;
 - (h) wherein time T_d represents the start of a single time-test period when said address latch releases an address to said semiconductor memory whereby data accessed from said address is conveyed to said comparator means and also to said data latch register, and wherein time T_d represents the subsequent time that data is released from said data latch register for comparison with data directly conveyed to said comparator means.

4,430,736 CIRCUIT FOR CORRECTING DISTORTIONS IN A PCM TRANSMISSION DEVICE

Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

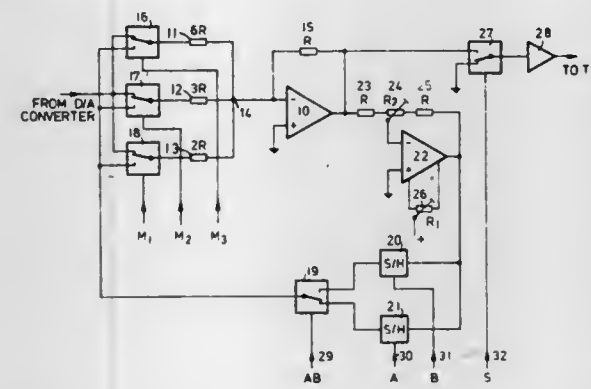
Filed Jul. 23, 1981, Ser. No. 286,167

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3028066

Int. Cl.³ G06F 15/353

U.S. Cl. 371-31

25 Claims



1. In a circuit arrangement having an input for receiving a succession of sample values supplied thereto in a PCM transmission system, for correcting falsified sample values, the improvement comprising:
 - correction control means connected for detecting each falsified sample value and determining if the number, N , of falsified sample values received between successive unfalsified sample values exceeds a given plurality, n , of successive falsified sample values; and
 - interpolation means having a signal output and connected to said correction control means and operatively connected to said circuit arrangement input for deriving, and supplying to said signal output, a corrected value in place of each falsified sample value, said interpolation means being controlled by said correction control means for replacing, at said signal output, each of the first $N-n$ falsified sample values of a succession of falsified sample values by the last occurring unfalsified sample value, constituting the corrected value, and for deriving, and applying to said signal output, a corrected value for each of the last n falsified values by effecting a weighted combination of the sample value appearing at said signal output and preceding the respective falsified value in time and the next unfalsified sample value in order to perform an at least approximately linear interpolation between the sample values which are thus combined.

4,430,737

EXCLUSIVE OR CIRCUIT AND PARITY CHECKING CIRCUIT INCORPORATING THE SAME

Herve Beranger, Fontainebleau, and Armand Brunin, LeMee, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,875

Claims priority, application European Pat. Off., Jun. 25, 1981, 81430020

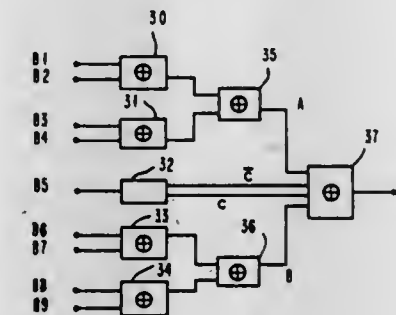
Int. Cl.³ G06F 11/10; H03K 19/21

U.S. Cl. 371-49

28 Claims

1. An Exclusive OR circuit comprising two input terminals (1 and 2) to which binary signals A and B are applied and an output terminal (3) at which the result of the function $A \oplus B$ is generated, characterized in that it includes:
 - a generator (4) providing a reference voltage as its output,
 - a first circuit having two input terminals which are the input terminals of the Exclusive OR circuit and an output terminal (C1) at which the result of the function AB is generated, including first and second diode (D1, D2) each of

which has one of its terminals connected to one of the input terminals, and first and second transistors (T1, T2) having their emitters connected to the output of the reference voltage generator and their collectors connected to the output (C1) of said first circuit, each of the bases being connected to the other terminal of each diode, respectively;



- a second circuit (T4, T5) provided with two inputs connected to the input terminals (1 and 2) of the Exclusive OR circuit, and an output (C2) at which the result of the logic function AB is generated,
- a NOR output circuit (T3, T6) having two inputs connected to the outputs of the first and second circuits and an output constituting the output terminal (3) of the Exclusive OR circuit.

4,430,738 ARRANGEMENT FOR THE CURRENT LIMITATION DURING THE CURRENT SUPPLY OF ELECTRICALLY EXCITED GAS LASERS

Werner Reif, Klosterneuburg, and Dieter Schuöcker, Vienna, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

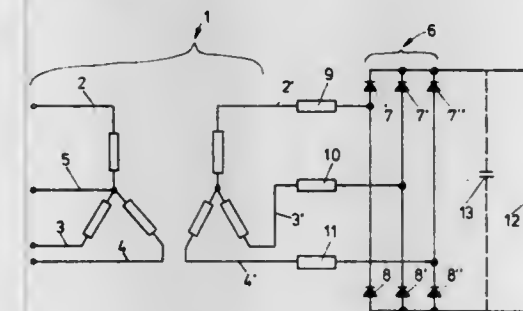
Filed Aug. 5, 1981, Ser. No. 290,303

Claims priority, application Austria, Aug. 14, 1980, 4166/80

Int. Cl.³ H01S 3/00

U.S. Cl. 372-38

4 Claims



1. An arrangement for limiting the supply of an electric current to an electrically excited gas laser, comprising
 - a rotary current transformer connected to receive power from an A.C. power supply and having a primary side and a secondary side, both said primary and secondary sides including phase conductors,
 - inductances connected in each of said phase conductors of said transformer secondary side to limit the current provided at said transformer secondary side, and
 - a current bridge rectifier connected to said inductances for producing at its output a substantially smooth D.C. output for said laser.

4,430,739

LASER SYSTEM WITH STANDBY MODE

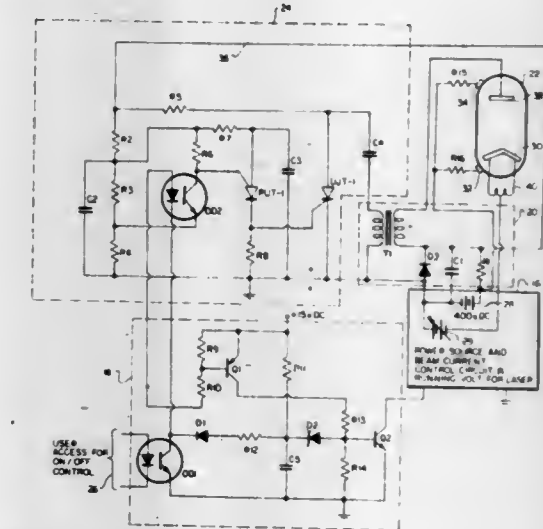
William H. McMahan, 1467 Penrose Dr., Salt Lake City, Utah 84103

Filed Sep. 21, 1981, Ser. No. 304,232

Int. Cl.³ H01S 3/00

U.S. Cl. 372-38

15 Claims



1. A laser system comprising:
 - a laser tube having an anode and a cathode, said laser tube comprising means requiring application of a high voltage to initiate production of a laser beam in the tube;
 - a power source connected to said laser tube, said source comprising means for providing both a high startup voltage and a continuous current for running said laser tube; and
 - electronic circuit means for placing the laser of said system in a standby mode such that said laser beam is extinguished but the laser cathode continues to remain energized by said power source, said electronic circuit means comprising means for storing sufficient electrical energy while said beam is extinguished that production of the laser beam can be substantially instantaneously re-initiated by releasing the stored electrical energy to said laser tube.

4,430,740

LONG-WAVELENGTH SEMICONDUCTOR LASER

Trong L. Nuyen, and Baudouin de Cremoux, both of Paris, France, assignors to Thomson-CSF, Paris, France

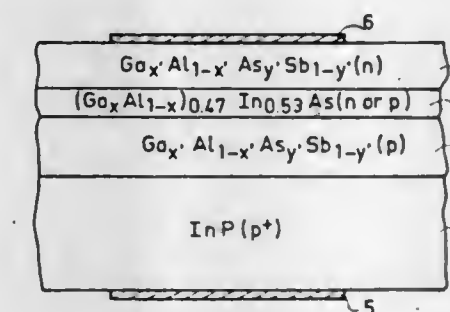
Filed Dec. 2, 1981, Ser. No. 326,555

Claims priority, application France, Dec. 5, 1980, 80 25911

Int. Cl.³ H01S 3/19

U.S. Cl. 372-45

4 Claims



1. In a semiconductor laser of the type comprises a monocrystalline substrate of InP of a predetermined conductivity type, and at least the following epitaxial layers: a first confinement layer of the same conductivity type of the substrate, an active layer and a second confinement layer of opposite conductivity type, the confinement layers being constituted by materials having an energy gap of greater width than that of the material constituting the active layer, the improvement

wherein the material constituting said active layer is an alloy which corresponds to the formula:



with: $0 < x < 0.27$ and wherein the confinement layers are made of an alloy corresponding to the formula $\text{Al}_{0.47}\text{In}_{0.53}\text{As}$.

4,430,741

SEMICONDUCTOR LASER DEVICE

Tadashi Fukuzawa, Tokyo; Michiharu Nakamura, and Susumu Takahashi, both of Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

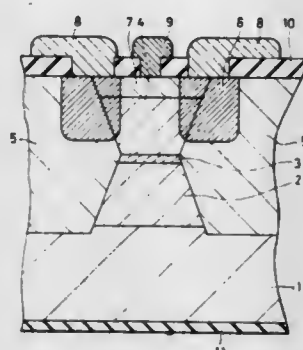
Filed Jan. 15, 1981, Ser. No. 225,399

Claims priority, application Japan, Jan. 23, 1980, 55-5755

Int. Cl.³ H01S 3/19

U.S. Cl. 372-46

5 Claims



1. A semiconductor laser device comprising: a semiconductor assembly for effecting laser oscillation in which at least first, second and third semiconductor layers are successively stacked on a predetermined semiconductor body, said first and third semiconductor layers being small in a refractive index and great in a forbidden band gap relative to said second semiconductor layer and having conductivity types opposite to each other, current injection means for the laser oscillation and including a first electrode disposed on a crystal surface of said semiconductor assembly remote from said semiconductor body, and a second electrode disposed on a surface of said semiconductor body, means including spaced impurity regions and electrodes connected thereto for controlling depletion regions within a path of current of said current injection means in a manner such as to intersect with the current path, and an optical resonator for the laser oscillation.

4,430,742

DATA MUTING METHOD AND APPARATUS FOR RADIO COMMUNICATIONS SYSTEMS

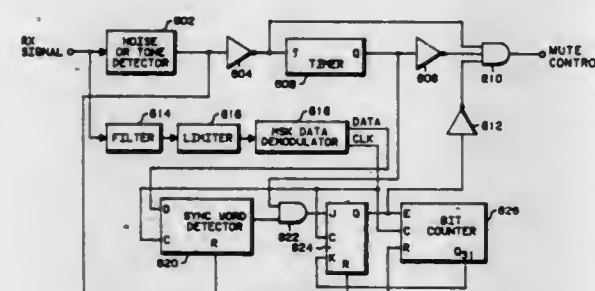
William W. Milleker, Chicago; Thomas A. Freeburg, Arlington Heights, and Michael A. Stepien, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1981, Ser. No. 323,644

Int. Cl.³ H04Q 7/00

U.S. Cl. 375-5

23 Claims



1. Apparatus for muting the output of a receiver that receives a carrier signal modulated with a variable length data

signal, the data signal including a synchronization word having a predetermined binary bit pattern followed by an information word having a variable number of binary bits, said muting apparatus comprising:

- means for detecting the presence of the carrier signal;
- means for muting the output of the receiver for a predetermined time interval when the carrier signal has been detected;
- means for detecting the predetermined binary bit pattern of the synchronization word during the predetermined time interval and muting the output of the receiver when the predetermined binary bit pattern of the synchronization word has been detected; and
- means for detecting the last bit of the information word and unmuteing the output of the receiver when the last bit of the information word has been detected.

4,430,743

FAST START-UP SYSTEM FOR TRANSVERSAL EQUALIZERS

Kojiro Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

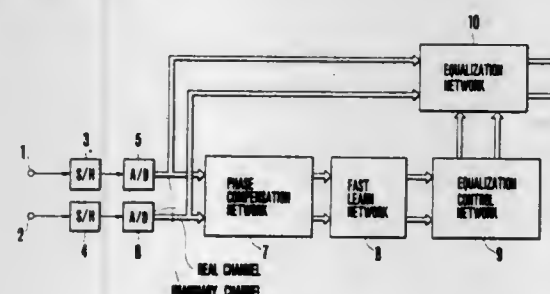
Filed Nov. 13, 1981, Ser. No. 321,101

Claims priority, application Japan, Nov. 17, 1980, 55-161534; Dec. 10, 1980, 55-174198

Int. Cl.³ H04B 3/18

U.S. Cl. 375-13

2 Claims



1. A fast start-up system for a transversal equalizer comprising: means provided in a transmitter for generating a periodic symbol sequence with a period L, the auto correlation function of said sequence being completely 0 except for its center; means for generating and transmitting a test signal based upon said generated symbol sequence; means provided in a receiver for generating the same periodic symbol sequence as that generated in the transmitter in a proper phase relation thereto according to a received signal; means for calculating the correlation between L sampled values obtained by sampling the received test signal at the symbol interval and a sequence obtained by recirculating said periodic symbol sequence for each of consecutive M shifted phases; means for calculating the correlation between L sampled values obtained by sampling the received test signal at the symbol interval with a phase differing from the phase of said first-mentioned sampled values by an amount corresponding to one half of the symbol interval and a sequence obtained by recirculating said periodic symbol sequence for each of M' consecutive shifted phases; means for multiplying said calculated M+M' correlation values by a constant; means for obtaining discrete Fourier transform of the M+M' multiplied correlation values at N points equal to or greater than M+M' in number; means for storing values of a predetermined frequency characteristic for frequency points obtained as the discrete Fourier transform;

means for dividing the stored values by said respective values obtained by the discrete Fourier transform; means for obtaining inverse discrete Fourier transform of the N divided values; and means for initializing, with the numerical values obtained as the inverse discrete Fourier transform, the tap gain of a transversal automatic equalizer with the basic delay interval equal to one half the symbol interval; thereby permitting a sufficiently equalized state to be realized fast with a short test sequence.

4,430,744

ADAPTIVE IF EQUALIZER FOR DIGITAL TRANSMISSION

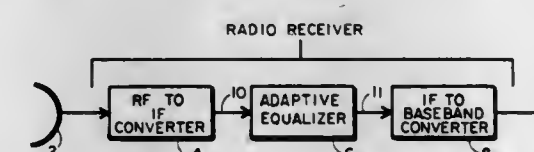
Edward R. Johnson, Sunnyvale, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 18, 1981, Ser. No. 331,957

Int. Cl.³ H04B 3/04

U.S. Cl. 375-14

8 Claims



1. In a receiving terminal of a radio system, an adaptive equalizer serially connected between the IF output of the radio receiver section and the IF base band converter for correcting amplitude and delay distortion introduced into the radio signal during propagation, comprising:

- a plurality of band-pass filters having center frequencies spaced at equal intervals across the passband of the IF band of the radio receiver, each filter having equal passbands that are adjacent but not overlapping, the band-pass filter inputs being connected together for receiving a corrected signal at the output of the adaptive equalizer; each band-pass filter providing that portion of the radio signal selected by the passband of the filter at a separate output port;
- a plurality of detectors, one for each of the plurality of band-pass filters, each detector having an input terminal adapted to receive the selected signal from the output port of an associated band-pass filter and each detector providing at an output port a detected or direct current voltage, the amplitude of which varies in accordance with the amplitude of the associated selected signal and which is proportional thereto;
- a control circuit means having a plurality of input ports each accepting the direct current voltage from an associated detector, and providing at an output a first control voltage having an amplitude that is proportional to the difference in amplitude of the detected voltages of the detectors associated with the end point band-pass filters which have passbands nearest the lower and upper frequency ends of the IF band, and providing separate control voltages at associated outputs, one for each detected voltage from each detector that is associated with the intermediate band-pass filters, the amplitude of each of said separate control voltages being derived from the difference between the detected output voltage of an associated detector and an average of the detected output voltages of the adjacent detectors;
- bump equalizer means having a number of tandem sections equal to the number of intermediate band-pass filters, each of said sections being responsive to an associated separate control voltage; each of said bump equalizer sections either attenuating or enhancing the IF frequencies which appear in the passband of an associated band-pass filter, the amount of attenuation or enhancement being proportional to the amplitude difference and sign between the associated separate control voltage and a reference volt-

4,430,745

DIGITAL DATA TRANSMISSION

Colin R. Betts, Ipswich, England, assignor to Post Office, London, England

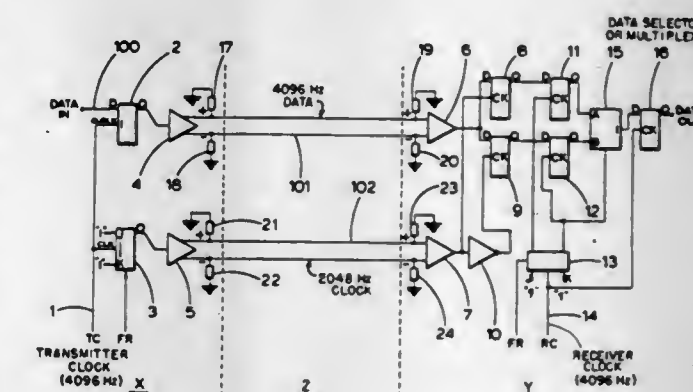
Continuation of Ser. No. 42,224, May 24, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 347,057

Claims priority, application United Kingdom, May 30, 1978, 24413/78

Int. Cl.³ H04L 25/02

U.S. Cl. 375-25

12 Claims



1. A data transmission system for transmitting digital data at a first predetermined rate along a transmission path with at least one data channel and at least one separate clock signal channel from a first location to a second location, said first rate being a rate greater than the maximum rate at which clock pulses may be transmitted along said data channel without significant timing error, said system comprising: a first clock signal generator and transmitter means at said first location for generating and transmitting on said clock signal channel clock signals have a second rate at which said clock signals may be transmitted along said clock channel without significant timing error, a data transmitter at said first location arranged to transmit said digital data on said data channel at said first rate, a plurality of data stores at said second location, switching means at said second location arranged to distribute the data received from said data channel of said second location into said data stores under control of said first clock signal received from said clock channel, means at said second location for recombining the data from said stores into a serial data stream under control of a second clock signal including a second clock signal generator at said second location for providing said second clock signal, the frequency of said second clock being a multiple of the frequency of said first clock signal and at substantially said first predetermined rate.

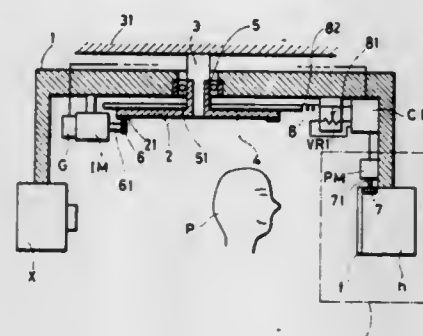
4,430,746

TOMOGRAPH FOR PHOTOGRAPHING ENTIRE JAWS
Masakazu Suzuki, Shin Nakamachi; Toshiaki Ikeda, Yahata,
and Shuhei Furuichi, Shiga, all of Japan, assignors to Kabu-
shiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jun. 23, 1981, Ser. No. 276,695

Claims priority, application Japan, Jun. 27, 1980, 55-88060
Int. Cl.³ G03B 41/16

U.S. Cl. 378—40



1. A tomograph for photographing the entire jaws which is designed to photograph a curved plane section of an object which includes a rotary arm rotated by a rotary arm driving motor, said rotary arm having provided thereon an X-ray generator and an X-ray film feed means in an opposed relation with each other with the object positioned between the X-ray generator and the film feed means, said tomograph being characterized in that it comprises:

an eccentric cam means predetermined in its configuration in accordance with said object to be photographed, said cam means being mounted at a suitable place of said rotary arm and adapted to be rotated in accordance with the rotation of said arm;

a potentiometer cooperating with said eccentric cam, said potentiometer changing resistance in response to the rotation of said rotating arm;

a tachogenerator directly connected to said rotary arm driving motor for generating an electromotive force;

a voltage shunting means for dividing said electromotive force outputted from said tachogenerator into three paths and for deriving a reference point input voltage from a first path of said paths, for deriving a signal input voltage by applying a second path of said paths to the potentiometer and for deriving a presettable reference point correction voltage from a third path of said paths;

a reference point correction circuit for subtracting said signal input voltage and reference point correction voltage;

a V/F converter circuit receiving an additional output obtained by adding an output of said reference point correction circuit to said reference point input voltage and for generating a voltage pulse proportional to said additional output;

a changeover resistance means for selectively changing said output of said reference correction circuit supplied to said V/F converter circuit;

a pulse motor for driving said film feed means; and

a pulse motor driving circuit receiving said voltage pulse outputted from said V/F converter circuit thereinto to thereby drive the film feed pulse motor for said film feed means.

4,430,747

RECEIVING APPARATUS FOR STEREOPHONIC BROADCAST HAVING AMPLITUDE AND ANGLE MODULATED SIGNAL COMPONENTS

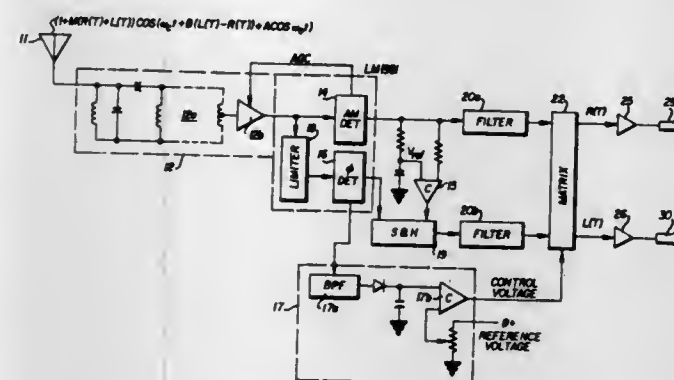
Robert D. Streeter, Fort Wayne, Ind., assignor to Magnavox Consumer Electronics Company, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,037

Int. Cl.³ H04H 5/00

1 Claim U.S. Cl. 381—15

9 Claims



1. A receiver for demodulating a radio frequency signal which is simultaneously modulated in amplitude by the summation of stereophonic related signals $R(t)$ and $L(t)$ and linearly modulated in phase by the difference of said related signals $L(t) - R(t)$, comprising:

a tunable radio frequency filter for selectively tuning said radio frequency signal;

an envelope detector connected to said filter for providing a signal proportional to said summation of stereophonically related signals;

a phase detector for receiving said radio frequency signal from said tunable radio frequency filter, and providing an output signal which is linearly proportional to a phase change in said radio frequency signal, said radio frequency signal providing increased sampling of said linear phase modulation at said radio frequency rate and a reduction in distortion products;

and

matrix means for combining said phase detector output signal with said envelope detector signal whereby stereophonic related signals $R(t)$, $L(t)$ are produced by combining a linearly phase detected signal with an amplitude detected signal.

4,430,748

IMAGE THRESHOLDING SYSTEM

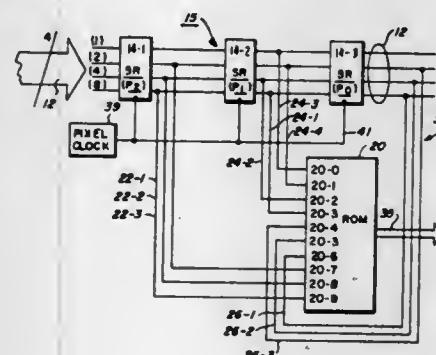
Richard H. Tuhro, Webster, and Douglas G. Wiggins, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1981, Ser. No. 304,429

Int. Cl.³ G09G 1/00

U.S. Cl. 382—50

1 Claim



1. In an image processing system for thresholding a stream of image pixels to provide refined image values, the combination of:

a first memory for storing a plurality of thresholded pixel image values at discrete memory locations, said first memory including plural input terminals through which said first memory locations are addressed;

a plurality of shift register stages in series with said image pixel stream, said image pixels passing through said shift register stages in succession;

plural address lines coupled to said first memory input terminals for addressing said first memory locations, said address lines being coupled to the outputs of said shift register stages in predetermined order whereby pixels in said pixel stream provide an address for addressing said first memory locations so that said first memory provides pixel image values corresponding thereto;

a second memory for storing a second plurality of thresholded pixel image values at discrete memory locations, said second memory including plural input terminals through which said second memory locations are addressed; and

plural address lines coupled to said second memory input terminals for addressing said second memory locations, at least one of said second memory address lines being coupled to the output of said first memory whereby the pixel image values output by said first memory address said second memory so that said image pixel values from said first memory are further processed by said second memory.

4,430,749

MEDICAL IMAGING APPARATUS AND METHOD FOR FURNISHING DIFFERENCE IMAGES

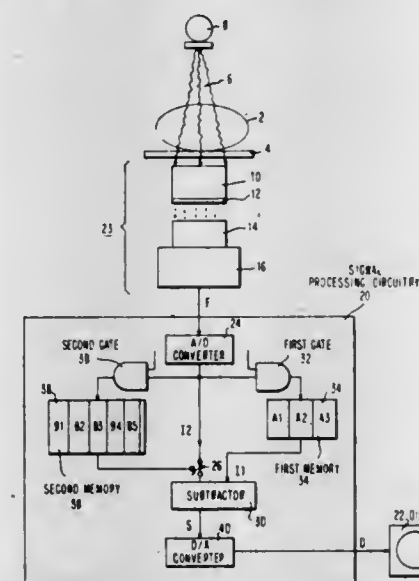
Mark A. Schardt, Schaumburg, Ill., assignor to Siemens Gamamasonics, Inc., Des Plaines, Ill.

Filed Jun. 30, 1981, Ser. No. 280,055

Int. Cl.³ H04N 5/32; G06F 15/42

U.S. Cl. 382—54

11 Claims



1. A method for furnishing difference images from a video signal containing a sequence of images obtained from a patient under examination, comprising the steps of

(a) recording a first of said images contained in said video signal in a first image storage means, thereby forming a primary mask;

(b) recording a subsequent second of said images contained in said video signal in a second image storage means;

(c) recording a subsequent third of said images contained in said video signal in a third image storage means;

(d) recording the images contained in said video signal following said third image, alternatingly in said second and said third image storage means;

(e) subtracting said primary mask from each of said second, third and further subsequent images contained in said video signal until provision of a signal for starting data acquisition;

(f) providing a signal for starting data acquisition;

(g) selecting from the second and third image storage means that stored image which has been most recently completed at the time of providing the data acquisition signal, as a secondary mask; and

(h) subtracting said secondary mask from images contained in said video signal which appear after said data acquisition signal has been provided, thereby forming said difference images.

4,430,750

METHOD AND APPARATUS FOR AUTOMATIC RECOGNITION OF AN IMAGE PATTERN, PARTICULARLY OF A LINE PATTERN

Paul Koellensperger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

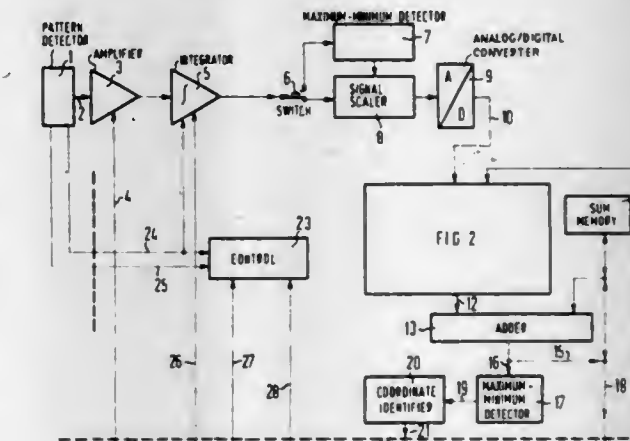
Filed Apr. 23, 1981, Ser. No. 256,792

Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018170

Int. Cl.³ G06K 9/32

U.S. Cl. 382—8

9 Claims



1. In a method of recognizing image patterns, particularly line patterns, in which a scanning device scans, in columns, an image field carrying an image pattern, a discovered object image with a sought image pattern is executed by converting image points into electrical signal sequences which are compared with signals of a stored pattern, the improvement comprising the steps of:

storing feature addresses including respective positive and negative operational signs;

repeatedly spatially shifting, with respect to the feature addresses, actual values obtained from scanning to determine line pattern properties and position in the image field and the degree of similarity to a sought pattern in real time;

weighting the column signal; and

selecting a positive or negative sum of the numerical values corresponding to the weighted column signals.

4,430,751

SELF-SEALING VALVED BAG

Norman K. Miller, Concordville, Pa. 19331

Continuation-in-part of Ser. No. 322,536, Nov. 18, 1981. This application Oct. 7, 1982, Ser. No. 433,246

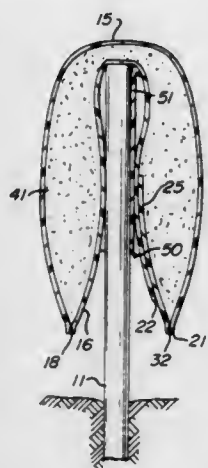
Int. Cl.³ F42B 3/00; B65D 30/24, 33/14

U.S. Cl. 383—6

7 Claims

1. A self-sealing valved bag for fluid contents comprising a pair of elongate flexible sheet outer walls in facing relation with each other, outer walls securing means securing together said outer walls about a line configuration closed except for an unsecured region at one end of said outer walls, a flexible sheet inner wall interposed between and in facing relation with said outer walls extending generally across said unsecured region, inner wall securing means securing together said inner wall

and one of said outer walls for location of said inner wall in face to face sealing engagement with said one outer wall, said inner wall securing means extending less than entirely across said unsecured region to define an access passageway communicating between the interior of said outer walls and the exterior thereof when said inner and one outer walls are displaced away from each other, additional securing means securing together said inner wall and the other of said outer walls entirely across said unsecured region, said passageway being



closed by the pressure of contents in said interior urging said inner wall in sealing engagement with said one outer wall, and a mounting flap exteriorly of an outer wall and secured thereto to define a pocket extending from an opening facing longitudinally outwardly of said outer walls inwardly to and terminating in a closure longitudinally medially of said outer walls for receiving in said pocket an upstanding mounting member with said outer walls bent over the mounting member and opposite end regions of the outer walls depending stably on opposite sides of the mounting member in an operative position.

4,430,752

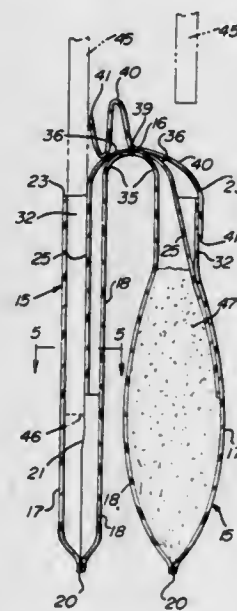
VALVED BAG WITH SEALING FLAP

Norman K. Miller, Concord Industrial Park, Concordville, Pa. 19331

Continuation-in-part of Ser. No. 322,536, Nov. 18, 1981, and Ser. No. 433,246, Oct. 7, 1982. This application Feb. 28, 1983, Ser. No. 470,520

Int. Cl.³ F42B 03/00; B65D 30/22, 30/24, 33/14
U.S. Cl. 383—6

7 Claims



1. A valved bag for fluid contents comprising a pair of flexible sheet outer walls in facing relation with each other, outer wall securing means securing together said outer walls about a line configuration closed except for an unsecured region, a flexible sheet inner wall interposed between and in facing relation with said outer walls extending generally across

said unsecured region, inner wall securing means securing together said inner wall and one of said outer walls for location of said inner wall in face to face sealing engagement with said one outer wall, said inner wall securing means extending less than entirely across said unsecured region to define an access passageway communicating between the interior of said outer walls and the exterior thereof when said inner and one outer walls are displaced away from each other, extensions on said inner and other outer walls extending beyond said one outer wall at said unsecured region, additional securing means securing together said inner and other outer wall extensions entirely across said unsecured region, said passageway being closed by pressure in said interior urging said inner wall in sealing engagement with said one outer wall, and a sealing flap exteriorly of said inner wall extension and the adjacent region of said one outer wall and secured by said additional and outer wall securing means, said flap being in sealing engagement with said one outer wall by the internal pressure of said bag.

4,430,753

RADIO RECEIVER

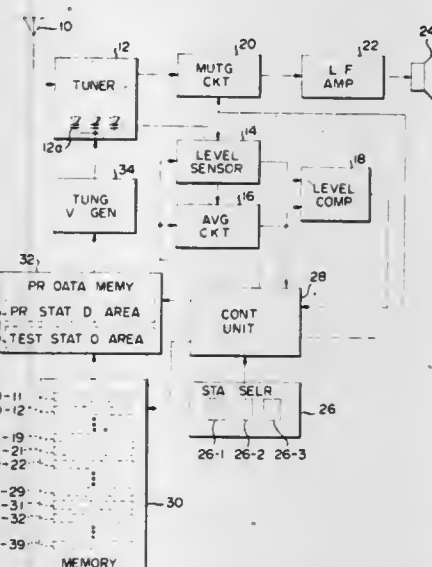
Yuji Shiratani, Otsu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1981, Ser. No. 285,440

Claims priority, application Japan, Jul. 24, 1980, 55-102005; Aug. 4, 1980, 55-108567; Oct. 20, 1980, 55-147167
Int. Cl.³ H04B 1/16, 17/00, 3/60

U.S. Cl. 455—52

14 Claims



1. A radio receiver arranged during the physical movement thereof to selectively receive a common broadcasting program from a plurality of scattered broadcast stations which are respectively broadcasting said common broadcasting program at different frequencies, said receiver comprising a means for temporarily exchanging a tuning of said receiver from a first one of said broadcast stations having said common broadcasting program and presently being received by said receiver to a second one of said broadcast stations having said common broadcasting program and not now presently being received by said receiver during the reception of said program from said first broadcast station, a means for comparing a reception level of said common broadcasting program of said first broadcast station with that of said second broadcast station, and a means for controlling said tuning of said receiver for receiving said common broadcasting program from the one of said first and second broadcast stations having a higher reception level; wherein said means for exchanging said tuning of said receiver from said first broadcast station to said second broadcast station temporarily exchanges said tuning either for long time periods when said reception level for said first broadcast station is high or for short time periods when said reception level for said first broadcast station is low.

4,430,754

NOISE REDUCING APPARATUS

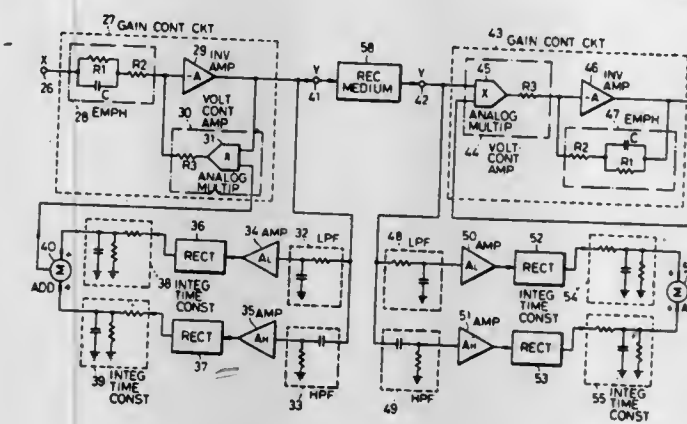
Yukinobu Ishigaki, Machida, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 28, 1981, Ser. No. 297,106

Claims priority, application Japan, Aug. 29, 1980, 55-119078
Int. Cl.³ H04B 1/64

U.S. Cl. 455—72

7 Claims



1. A noise reducing apparatus comprising:
a single first variable gain control circuit means for giving a level compression characteristic to an input signal in response to a single first composite control voltage, to produce an output signal to a transmission path;
first control voltage producing circuit means for dividing an output signal of said first variable gain control circuit means into a plurality of frequency bands, and for producing a plurality of control voltages respectively given with mutually different integration time constants for each of the divided frequency bands;
first adding circuit means for respectively additively composing said plurality of control voltages obtained from said first control voltage producing circuit means, to obtain said single first composite control voltage;
single second variable gain control circuit means responsive to a single second composite control voltage for giving a level expansion characteristic complementary to said level compression characteristic to a level compressed signal received through said transmission path to produce an output signal;
second control voltage producing circuit means for dividing an input signal of said second variable gain control circuit into a plurality of frequency bands, and for producing a plurality of control voltages respectively given with mutually different integration time constants for each of the divided frequency bands; and
second adding circuit means for respectively additively composing said plurality of control voltages obtained from said second control voltage producing circuit, to obtain said single second composite control voltage.

4,430,755

PORTABLE RADIO TELEPHONE

Mark Nadir, Fort Lauderdale; Gordon W. James, Plantation; William J. Kuznicki, Coral Springs, and Jerome A. Niede, Margate, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 14, 1981, Ser. No. 263,797

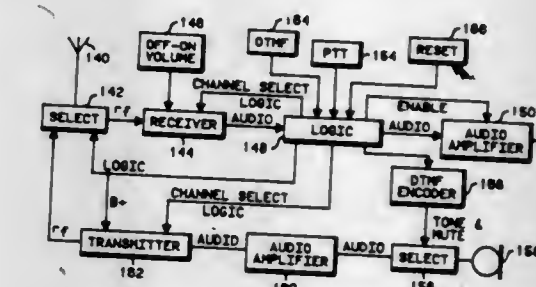
Int. Cl.³ H03J 7/18

U.S. Cl. 455—77

3 Claims

1. In a simplex portable transceiver tuned to a first channel of a plurality of channels that may contain a channel acquisition tone that is converted to an electrical signal with audio variations and applied to a limiter to produce limited audio, an automatic scanner controlling a change to a second of the plurality of channels, the scanner comprising:
an active filter (272) connected to the limiter, the filter (272) passing a narrow band of frequencies including the frequency of the channel acquisition tone; a peak detector (274) connected to the active filter (272) and responsive to

the limited filtered channel acquisition tone to produce negative-going pulses;
a NOR gate (276) connected to the peak detector (274) to produce an output;
a J-K flip-flop (278) connected to NOR gate (276) and set by the output from NOR gate (276) to produce an output in the absence of channel acquisition tone;
a programmable counter (282) set to the output of J-K flip-flop (278) to produce a system clock signal on a line (284) and an output square wave having a period of a shorter time when channel acquisition tone is received and a longer time when channel acquisition tone is not received;



a four-bit counter (280) connected to J-K flip-flop (278), programmable counter 282 and NOR gate (276), counter (280) being clocked by the output square wave of programmable counter (282) and reset continually by the output from NOR gate (276) that indicates that channel acquisition tone is present; and
a NOR gate (286) connected to programmable counter (282) to produce an output that prevents scan when the receiver is receiving channel acquisition tone or during a scan delay or use of the transceiver.

4,430,756

OSCILLATOR CONTROL CIRCUIT

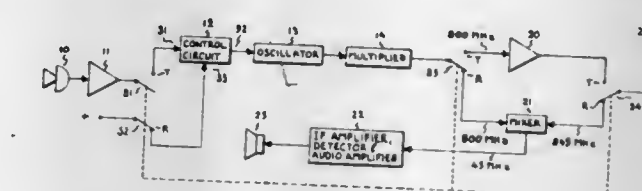
Rodney A. Dolman, Lynchburg, and Gregory N. Mears, Forest, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Feb. 22, 1982, Ser. No. 350,981

Int. Cl.³ H04B 1/44, 1/50

U.S. Cl. 455—78

2 Claims



1. An improved radio transceiver comprising:
a. a radio transmitter for transmitting on a frequency F1 to a remote station;
b. a radio receiver for receiving on a frequency F2 from said remote station, said radio receiver having a mixer circuit for producing an intermediate frequency substantially equal to the difference between said frequency F1 and said frequency F2;
an oscillator having a control input and an output for producing said frequency F1 in response to a transmitting control signal applied to said control input, and for producing a mixer frequency that differs from said frequency F2 by an amount substantially equal to said intermediate frequency but that differs from said frequency F1 by an amount sufficient to avoid capture of said remote station by radiation from said radio receiver in response to a receiving control signal applied to said control input;
d. means for selectively coupling said oscillator output to said radio transmitter or to said mixer circuit of said radio receiver;

e. control means having a control input and an output;
f. and means coupling said control means output to said oscillator control input for selectively applying either said transmitting control signal or said receiving control signal to said oscillator control input in response to transmit or receive command signals applied to said control input of said control means.

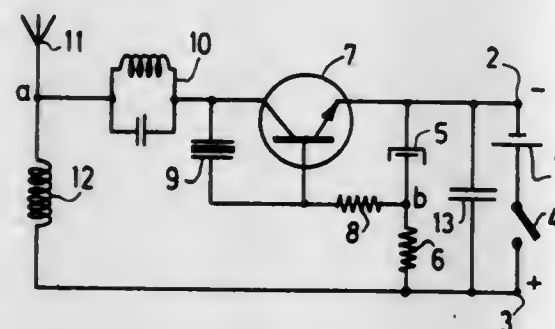
4,430,757
RADIOELECTRIC SIGNAL TRAINS GENERATOR AND PORTABLE TRANSMITTER COMPRISING SUCH A GENERATOR

Laszlo Szakvary, Paris, France, assignor to Elphora, Paris, France

Filed Feb. 3, 1982, Ser. No. 345,466
Claims priority, application France, Nov. 19, 1981, 81 21689
Int. Cl.³ H04B 1/034

U.S. Cl. 455—100

8 Claims



1. An electrical pulse train generator comprising:
supply means for providing direct-current electrical power;
a condenser and first resistance serially connected together at a first point and connected across said supply means;
a transistor having a base, emitter and collector;
a second resistance connecting the base of said transistor to said first point;
said emitter of said transistor being connected to said supply means;
a quartz crystal connected between said collector and base of said transistor, said crystal oscillating at a third harmonic frequency;
said generator including means turned to the third harmonic frequency of said quartz crystal for producing oscillations at relatively high frequencies in the megahertz range;
means for periodically driving said transistor from a

blocking state into saturation by charging and discharging said condenser to periodically pass said oscillations; and antenna means for emitting said oscillations.

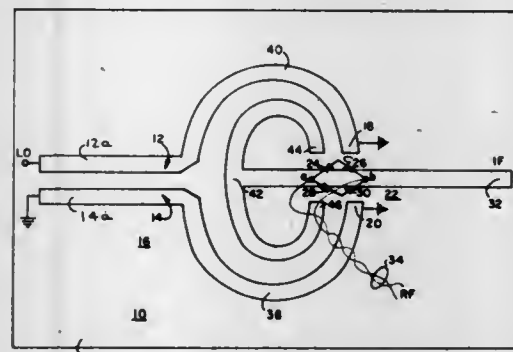
4,430,758
SUSPENDED-SUBSTRATE CO-PLANAR STRIPLINE MIXER

Richard V. Snyder, Ringwood, N.J., assignor to Scientific Component Corporation, Brooklyn, N.Y.

Filed Jun. 3, 1982, Ser. No. 384,556
Int. Cl.³ H04B 1/26

U.S. Cl. 455—227

8 Claims



1. A suspended-substrate coplanar mixer comprising:
a strip line compensated balun including a first strip line section having (1) a straight portion and (2) a curved portion forming an inner strip line segment and a second strip line section having (1) a straight portion equidistantly spaced apart from said straight portion of said first strip line section and (2) a curved portion forming an outer strip line segment, the curved portions oppositely curved facing away from each other and each having substantially the same radius of curvature, and
a strip line mixer including an integrated diode quad having input means, a strip line output terminal directly coupled to said diode quad, a curved interior strip line segment disposed within, equidistantly spaced from and having a smaller radius of curvature than both of said outer and said inner strip line segments for providing electrical isolation between said balun and said output terminal and capacitively coupling energy between equidistantly spaced strip lines.

DESIGNS

FEBRUARY 7, 1984

272,484

SKI BOOT

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

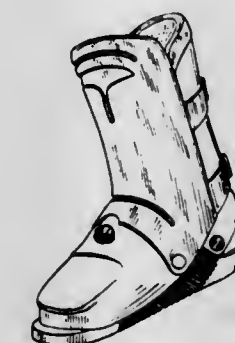
Filed Sep. 14, 1981, Ser. No. 301,682

Claims priority, application Italy, Mar. 19, 1981, 21157/81[U]

Term of patent 14 years

Int. Cl. D2—04

U.S. Cl. D2—276



272,486

DRINK CUP HOLDER FOR VEHICLES

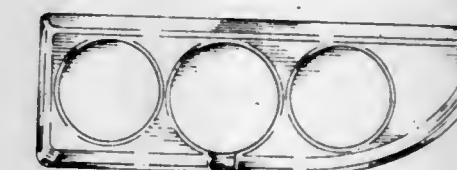
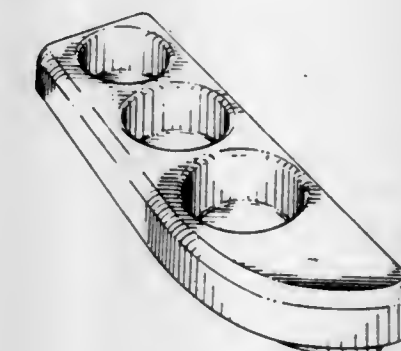
Andrew J. Benedetti, 111 'F' St. S.W., Auburn, Wash. 98002

Filed Jan. 9, 1981, Ser. No. 223,585

Term of patent 14 years

Int. Cl. D03—99; D07—99

U.S. Cl. D3—40



272,485

SPOOL

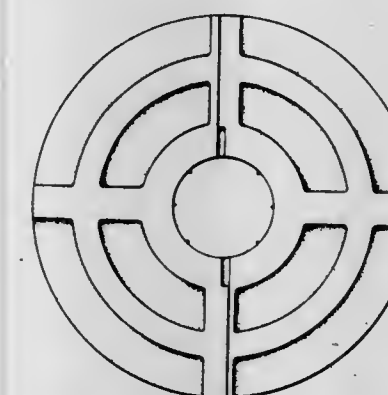
Michael R. Phillips, Pomona, N.Y., assignor to Jonathan Temple & Co., Inc., Hackensack, N.J.

Filed Aug. 27, 1981, Ser. No. 297,025

Term of patent 14 years

Int. Cl. D02—99; D15—06

U.S. Cl. D3—24



272,487

MOTORCYCLE SEAT

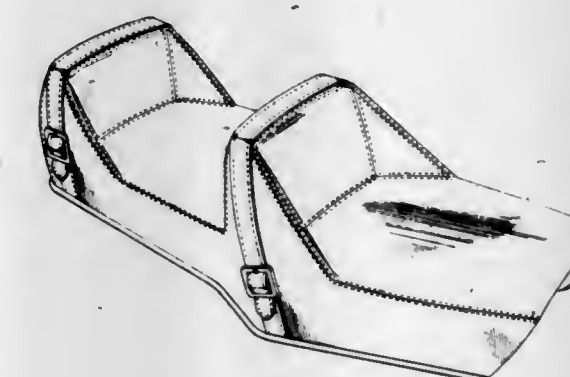
Ronald H. Powers, 840 Production Pl., Newport Beach, Calif. 92664

Filed Jun. 26, 1981, Ser. No. 277,595

Term of patent 14 years

Int. Cl. D12—11

U.S. Cl. D6—48.1



272,488
CHAIR

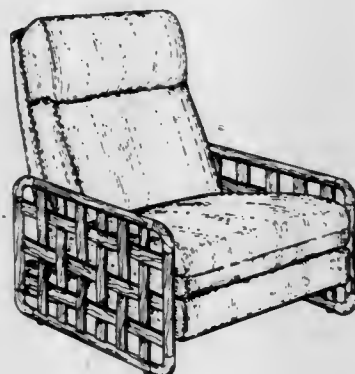
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.

Filed Jan. 7, 1982, Ser. No. 337,608

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-67

272,489
FOOTSTOOL

Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918

Filed Nov. 25, 1981, Ser. No. 324,799

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-74

272,490
CHAIR

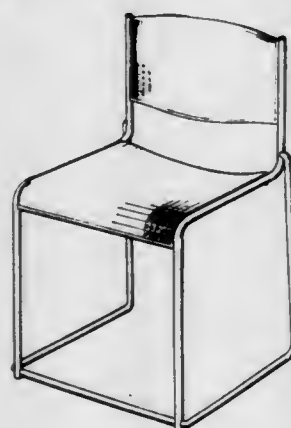
Richard K. Ogg, c/o Keneco, R.R. 3, Box 34, Littlestown, Pa. 17340

Filed Jan. 22, 1982, Ser. No. 341,625

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-75

272,491
RAZOR DISPENSER

Claude Aracil, 2128 E. Baltimore St., Baltimore, Md. 21231

Filed Apr. 16, 1981, Ser. No. 254,907

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-88

272,492
SOAP DISH

Andre Bennato, Paris, France, assignor to Sanistyl Creations S.A.R.L., Nogent Sur Marne, France

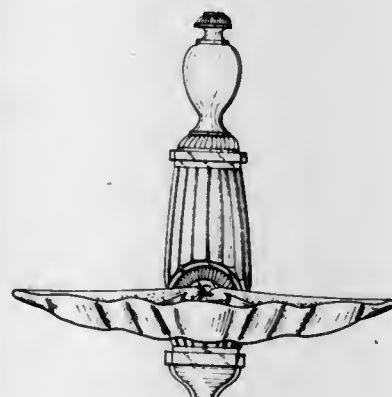
Filed Sep. 25, 1980, Ser. No. 190,827

Claims priority, application France, Mar. 26, 1980, 800981

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-90



272,493

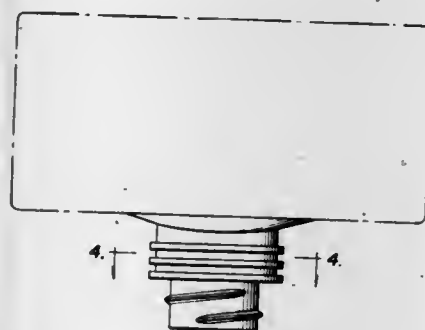
NECK AND FLANGE FOR SOAP CARTRIDGE
Robert L. Steiner, and Randel P. Smith, both of Chicago, Ill., assignors to Steiner Corporation, Salt Lake City, Utah

Filed Feb. 2, 1981, Ser. No. 230,818

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-95

272,494
BOOK HANGER

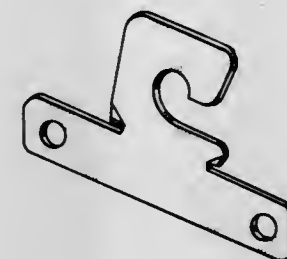
John E. Mahowald, 1401 Klepper Ave., Kingsburg, Calif. 93631

Filed Oct. 29, 1981, Ser. No. 316,119

Term of patent 14 years

Int. Cl. D6-08, 06

U.S. Cl. D6-113

272,495
DOUBLE DRESSER

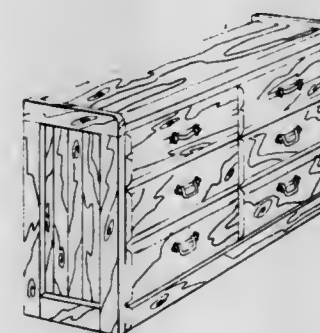
William P. Kemp, III, Goldsboro, and Clarence R. Duncan, Jr., Greensboro, both of N.C., assignors to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Filed Jan. 14, 1983, Ser. No. 457,895

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-160

272,496
STUDENT DESK

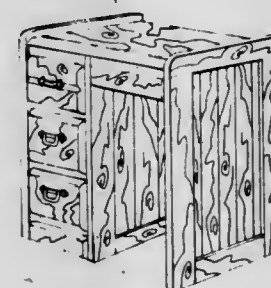
William P. Kemp, III, Goldsboro, and Clarence R. Duncan, Jr., Greensboro, both of N.C., assignors to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Filed Jan. 14, 1983, Ser. No. 457,893

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-162

272,497
CHEST OF DRAWERS

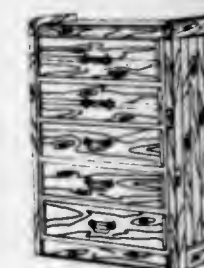
William P. Kemp, III, Goldsboro, and Clarence R. Duncan, Jr., Greensboro, both of N.C., assignors to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Filed Jan. 14, 1983, Ser. No. 457,892

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-165

272,498
COMBINED NIGHT STAND AND HUTCH

William P. Kemp, III, Goldsboro, and Clarence R. Duncan, Jr., Greensboro, both of N.C., assignors to Kemp Furniture Industries, Inc., Goldsboro, N.C.

Filed Jan. 14, 1983, Ser. No. 457,894

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-165



272,499

CARDED MERCHANDISE DISPLAY UNIT

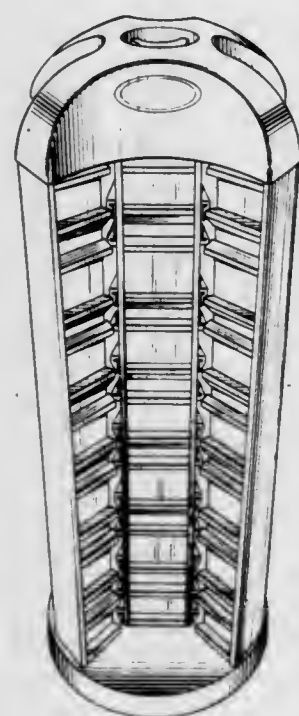
Raymond J. Cuminale, New York, N.Y., assignor to Trifari, Rudolf Rutishauser, 1588 S. 150 West, Orem, Utah 84057
 Krussman & Fishel, Inc., New York, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,581

Term of patent 14 years

Int. Cl. D06—04

U.S. Cl. D6—188



272,501

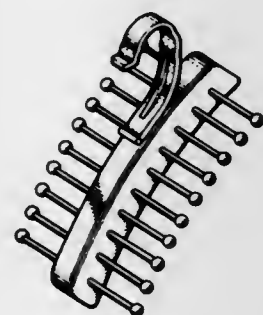
TIE RACK

Filed Mar. 2, 1982, Ser. No. 353,931

Term of patent 14 years

Int. Cl. D6—08

U.S. Cl. D6—251



272,502

GARMENT HANGER BODY

John H. Batts, East Grand Rapids, and Everett L. Duester, Zeeland, both of Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.

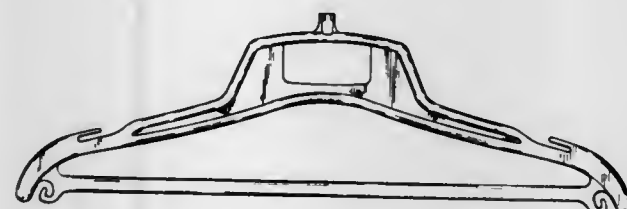
Filed Jun. 5, 1981, Ser. No. 271,108

The portion of the term of this patent subsequent to Feb. 15, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D6—08

U.S. Cl. D6—254



272,500

SHELVING SYSTEM FOR CANS OR THE LIKE

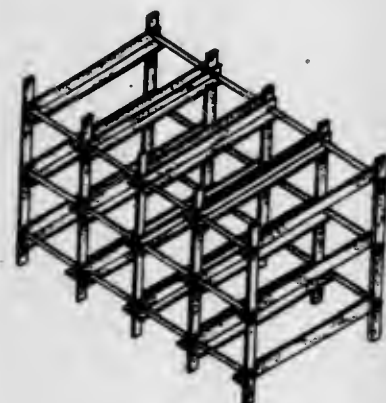
Leroy Ray, 5840 S. National, and Frank D. Dickey, 850 W. Highland, both of, Springfield, Mo. 65807

Filed Jun. 22, 1981, Ser. No. 275,842

Term of patent 14 years

Int. Cl. D06—04

U.S. Cl. D6—190



272,503

HANGER FOR A DIVER'S WET SUIT

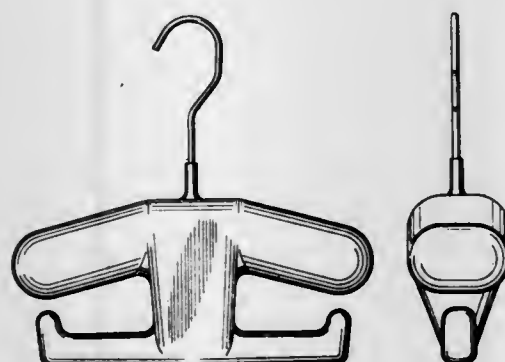
Christopher J. Delucchi, Solana Beach, Calif., assignor to Alan K. Uke, San Diego, Calif.

Filed Aug. 17, 1981, Ser. No. 293,370

Term of patent 14 years

Int. Cl. D6—08

U.S. Cl. D6—255



272,504

CASSEROLE

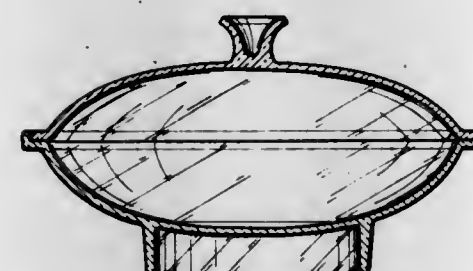
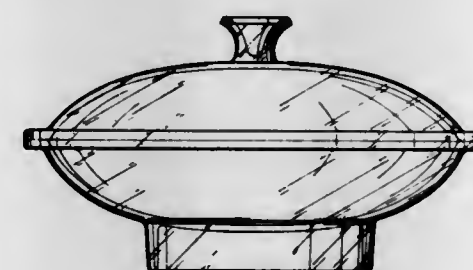
Nicholas P. Angelakos, Staten Island, N.Y., assignor to Lancaster Colony Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,681

Term of patent 14 years

Int. Cl. D07—01

U.S. Cl. D7—17



272,506

FLOATING HOLDER FOR A TUMBLER OR THE LIKE

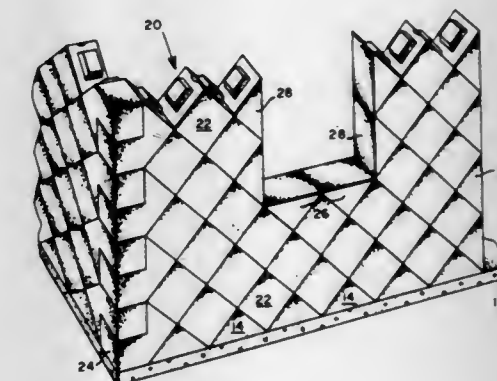
James H. Steiner, 2378 Woodland Ter., Fort Myers, Fla. 33907

Filed Oct. 23, 1981, Ser. No. 314,248

Term of patent 14 years

Int. Cl. D07—01

U.S. Cl. D7—70



272,507

CANISTER JAR AND CLOSURE

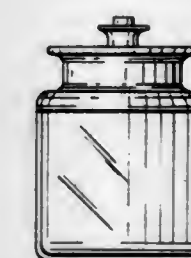
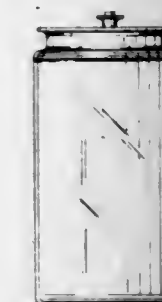
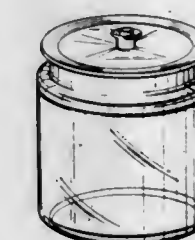
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 7, 1980, Ser. No. 176,157

Term of patent 14 years

Int. Cl. D07—01

U.S. Cl. D7—79



272,505

BREAD SERVING TRAY OR THE LIKE

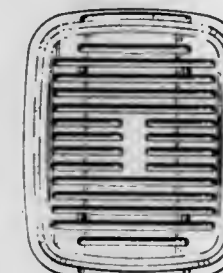
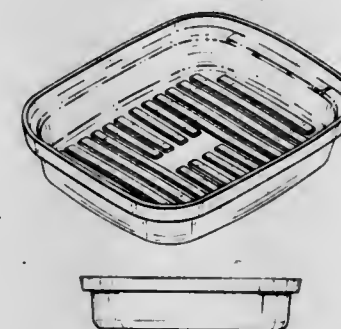
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Sep. 18, 1980, Ser. No. 188,408

Term of patent 14 years

Int. Cl. D07—99

U.S. Cl. D7—37



272,508

CANISTER JAR OR THE LIKE

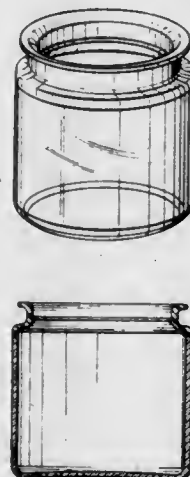
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 7, 1980, Ser. No. 176,158

Term of patent 14 years

Int. Cl. D07—07

U.S. Cl. D7—79



272,510

BENDER BOARD HOLDER OR SIMILAR ARTICLE

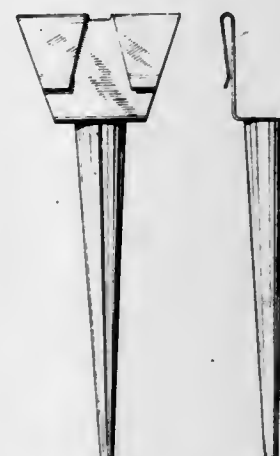
Elsie J. Drake, 6906 Eureka, Riverside, Calif. 92503

Filed Mar. 6, 1981, Ser. No. 241,422

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—1



272,511

ELECTRIC SANDER

Yoshiyuki Sato, Fuchu, and Yutaka Kanamaru, Kamakura, both of Japan, assignors to Ryobi Ltd., Fuchu, Japan

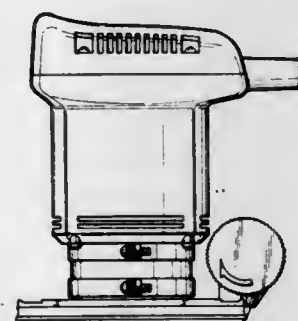
Filed Sep. 23, 1981, Ser. No. 304,768

Claims priority, application Japan, Mar. 26, 1981, 56-12731

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—62



272,512

ELECTRIC PRESSURE CONNECTING MACHINE

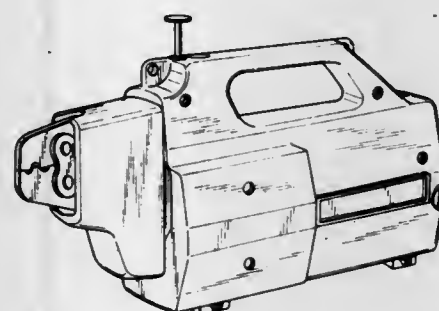
Yasuharu Sakai, Kyoto, and Kazuhiro Matsui, Aichi, both of Japan, assignors to Japan Storage Battery Company Limited, Kyoto and Proto Planning Co., Aichi, both of Japan

Filed Dec. 31, 1981, Ser. No. 336,213

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—61



272,509

ELECTRONIC COOKING APPARATUS

Yoshitsugu Hirose, and Masakazu Sugiyama, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

Filed Feb. 5, 1981, Ser. No. 231,760

Claims priority, application Japan, Aug. 14, 1980, 55-33568

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—365



272,513

POCKET KNIFE

Masaharu Kagebayashi, No. 2-3 Higashitenma 1-chome, Kita-ku, Osaka, Japan

Filed Jun. 1, 1981, Ser. No. 268,803

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—99



272,516

KEY BLANK

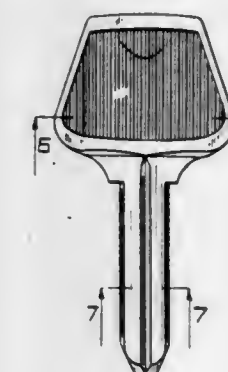
Richard J. Ohno, Branford, Conn., assignor to Walter Kidde & Company, Inc., New Haven, Conn.

Filed Jun. 3, 1981, Ser. No. 269,771

Term of patent 14 years

Int. Cl. D8—07

U.S. Cl. D8—347



272,514

LETTER OPENER

Michael Dolas, 1164 Crestline, Santa Barbara, Calif. 93105

Filed Mar. 17, 1982, Ser. No. 359,175

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—102



272,517

COMBINATION LIFT INSERT AND WELD PLATE FOR USE IN HOLLOW CORE CONCRETE PLANKS

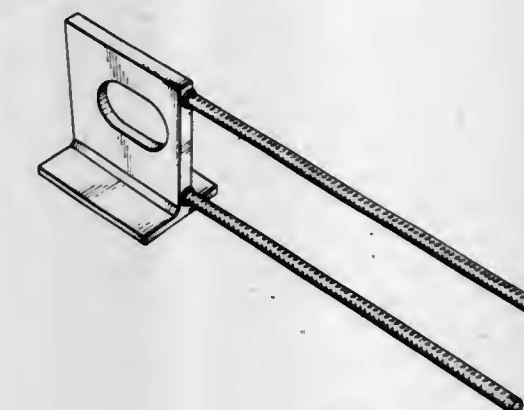
Richard R. Koehn, Prior Lake, Minn., assignor to Fabcon, Inc., Savage, Minn.

Filed Jun. 15, 1981, Ser. No. 273,476

Term of patent 14 years

Int. Cl. D8—08, 06; D25—99

U.S. Cl. D8—349



272,515

SPARE TIRE WHEEL LOCK

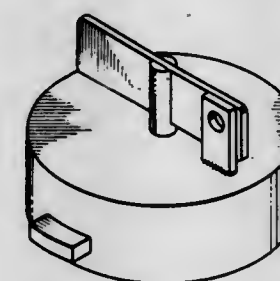
Charles E. Wilson, 1518 Anna Rd., Anderson, Calif. 96007

Filed Nov. 9, 1981, Ser. No. 319,855

Term of patent 14 years

Int. Cl. D8—07

U.S. Cl. D8—331



272,518

STRETCH CORD FASTENER

Eldon Smith, 526 Symmes Rd., Fairfield, Ohio 45014

Filed Jul. 7, 1981, Ser. No. 281,109

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-382



272,520

JAR

Anthony Fenimore, 172 W. Merrick Rd., Merrick, N.Y. 11566

Filed Aug. 10, 1981, Ser. No. 291,367

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-316



272,521

CONTAINER FOR LIQUIDS

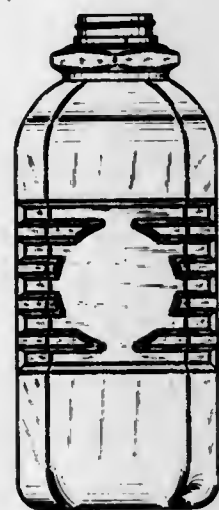
Randy S. Glenn, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Sep. 8, 1981, Ser. No. 300,088

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-370



272,519

JAR

Anthony Fenimore, 172 W. Merrick Rd., Merrick, N.Y. 11566

Filed Aug. 10, 1981, Ser. No. 291,366

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-316



272,522

CASE FOR THERMOSTATIC ELEMENT

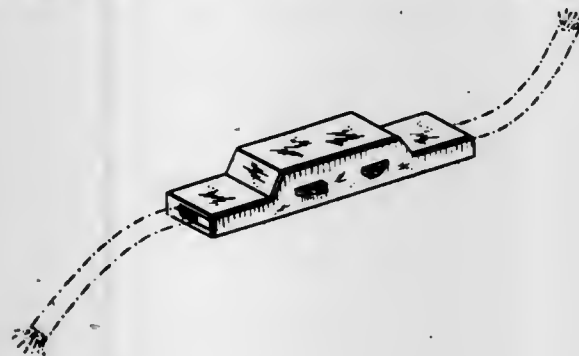
Omar Givler, North Canton, Ohio, assignor to Portage Electric Products, Inc., Canton, Ohio

Filed Feb. 18, 1982, Ser. No. 350,129

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-50



272,523

CHRISTMAS BELL

Cheng-Chieh P'eng, No. 17, Alley 50, La. 245, Chung Ching Rd.,

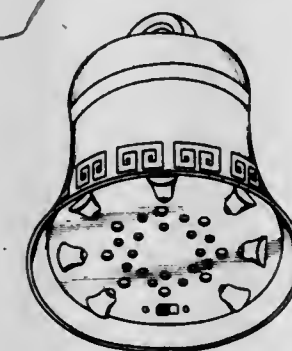
Pan Chiao, Taipei, Taiwan

Filed Feb. 23, 1981, Ser. No. 236,974

Term of patent 14 years

Int. Cl. D10-06

U.S. Cl. D10-116



272,526

TIRE

Miroslav M. Manestar, Norton, Ohio, assignor to The B. F.

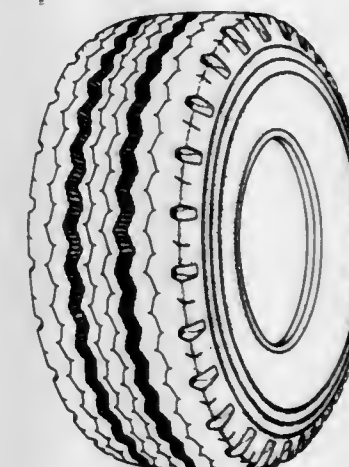
Goodrich Company, Akron, Ohio

Filed Jan. 27, 1982, Ser. No. 342,999

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-142



272,524

AIR TRANSPORTABLE BUS

Paul Leguen, Pornichet, France, assignor to Ateliers de Constructions Mecaniques de L'Atlantique Acmat, Saint Nazaire, France

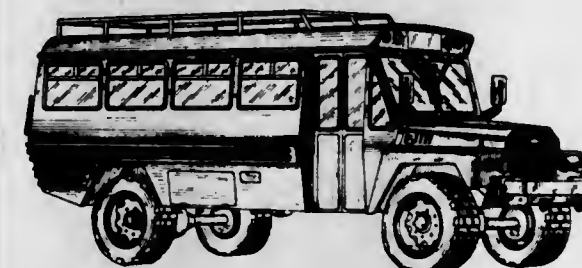
Filed Sep. 23, 1980, Ser. No. 189,912

Claims priority, application France, Mar. 25, 1980, 800967

Term of patent 14 years

Int. Cl. D12-08

U.S. Cl. D12-84



272,527

LEVER, PARTICULARLY FOR MOTORCYCLES

Michael H. Worzek, Rte. 5, Box 124, and Bruce Holmquist, Rte. 10, both of McMinnville, Tenn. 37110

Filed Apr. 8, 1981, Ser. No. 252,142

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-179



272,525

TRAILER BODY

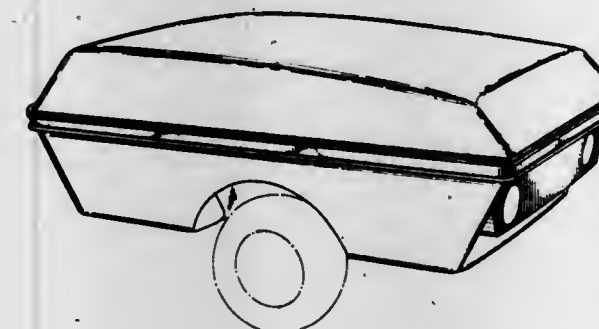
Michael G. Paulina, 6731 Guildford, Utica, Mich. 48078

Filed Dec. 5, 1980, Ser. No. 213,352

Term of patent 14 years

Int. Cl. D12-10

U.S. Cl. D12-102



272,528

WATERCRAFT WITH HULL, CENTER HYDROPLANE AND WING

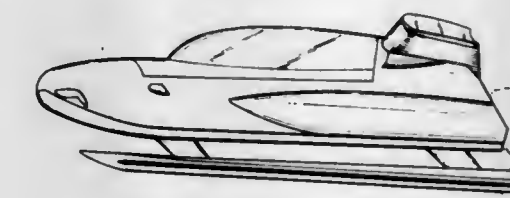
Gregory A. Ward, 602 Calle Ganadero, San Clemente, Calif. 92672

Filed Nov. 9, 1981, Ser. No. 319,134

Term of patent 14 years

Int. Cl. D12-06

U.S. Cl. D12-309



272,529

COMBINED PROTECTIVE SHIELD FOR AIRCRAFT INSTRUMENT PANEL AND LOCKING DEVICE FOR AIRCRAFT CONTROLS

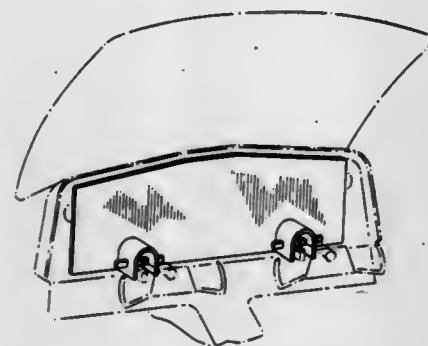
Michael Marneris, 2679 Brady Ct., Santa Clara, Calif. 95051

Filed Apr. 6, 1981, Ser. No. 251,482

Term of patent 14 years

Int. Cl. D12-07

U.S. Cl. D12-345



272,530

CONTROL PANEL

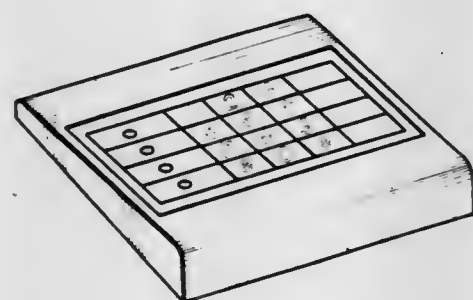
H. Patrick Thornton, Acton; Hugh D. Dyer, Norton, and Frank R. Keeler, Needham, all of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,121

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-35



272,531

CONTROL PANEL

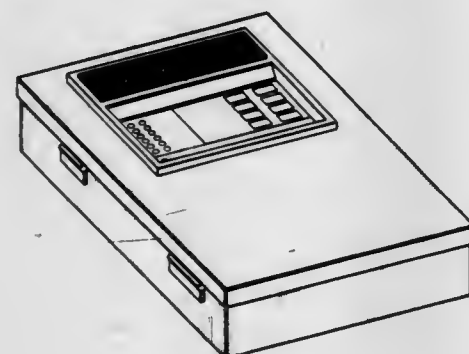
H. Patrick Thornton, Acton; Hugh D. Dyer, Norton, and Frank R. Keeler, Needham, all of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,123

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-35



272,532

MICROPHONE STAND DETACHABLE TRAY OR THE LIKE

Marcel Fitzner, 1672 Cerro Gordo, and V. Paige Pinnell, Jr., P.O. Box 2894, both of Santa Fe, N. Mex. 87501

Filed Jun. 15, 1981, Ser. No. 273,345

Term of patent 14 years

Int. Cl. D14-99

U.S. Cl. D14-13



272,533

COMBINED TELEPHONE HANDSET AND BASE STATION THEREFOR

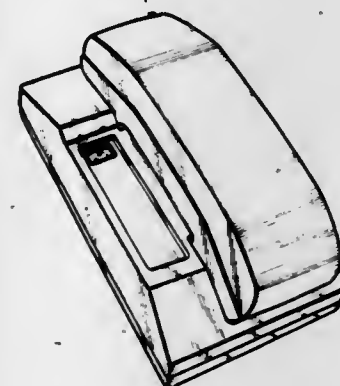
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed May 1, 1981, Ser. No. 259,605

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



272,534

FAMILY PAGER RECEIVER DEVICE OR SIMILAR ARTICLE

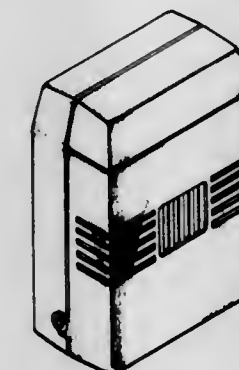
Ka W. Wong, Kgau Tau Kok, China, and Albert K. H. Au, Wanchai, Hong Kong, assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 30, 1981, Ser. No. 335,967

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-68



272,536

PORTABLE RADIO RECEIVER

Takuji Kaneko, Nara, Japan, assignor to U.S. Phillips Corporation, New York, N.Y.

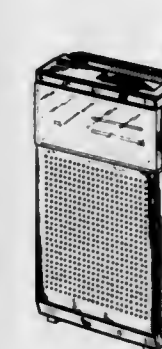
Filed Aug. 17, 1981, Ser. No. 293,757

Claims priority, application United Kingdom, Mar. 11, 1981, 999360

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-71



272,535

PORTABLE RADIO RECEIVER

Peter H. J. Van De Ven, Valkenswaard, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

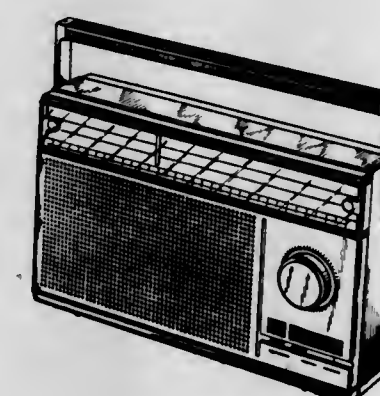
Filed Sep. 28, 1981, Ser. No. 306,063

Claims priority, application United Kingdom, Apr. 27, 1981, 1000153

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



272,537

ANTENNA MOUNT

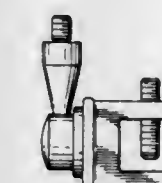
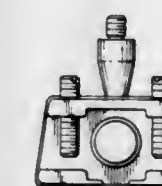
Helmut Spycher, Klosterstrasse 40, CH-5430 Wettingen, Switzerland

Filed Oct. 13, 1981, Ser. No. 310,892

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-91



272,538

FACSIMILE TRANSCIVER

Manzo Yoshihama, and Fumiyo Kojima, both of Kanagawa, Japan, assignors to Ricoh Company, Ltd., Japan

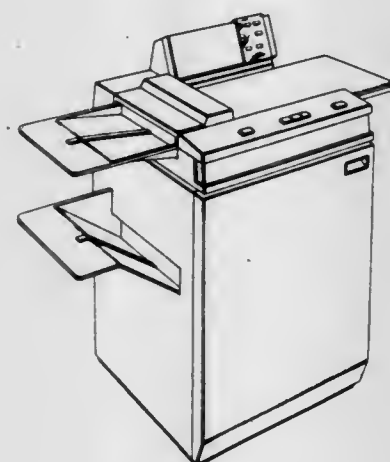
Filed Jul. 31, 1981, Ser. No. 288,677

Claims priority, application Japan, Feb. 2, 1981, 56-3618

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-94



272,540

MACHINE FOR STRETCH FILM WRAPPING OF PALLETIZED LOADS

Joseph Goldstein, 1325 Southwind Cir., Westlake Village, Calif.

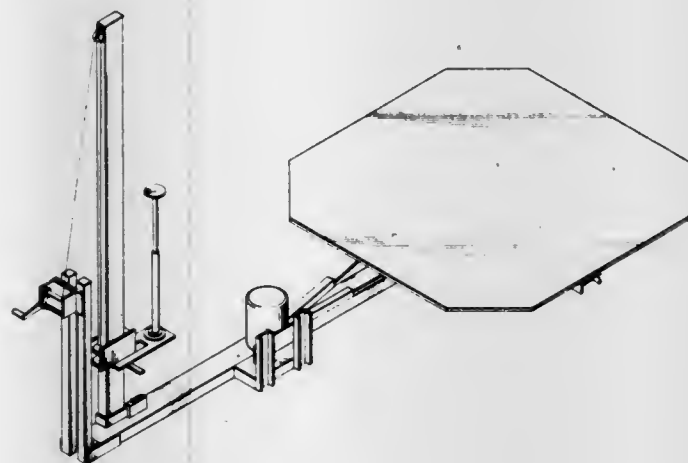
91361

Filed Aug. 27, 1981, Ser. No. 297,064

Term of patent 14 years

Int. Cl. D15-99

U.S. Cl. D15-145



272,539

CAN COMPACTOR

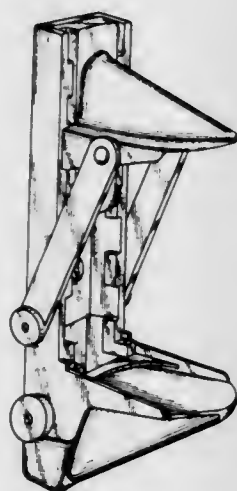
Robert G. Salatka, Phoenix, Ariz., assignor to Jawz, Inc., Fallbrook, Calif.

Filed Jan. 2, 1981, Ser. No. 222,023

Term of patent 14 years

Int. Cl. D15-99

U.S. Cl. D15-123



272,541

IDENTIFICATION CAMERA FOR EXPOSING X-RAY FILMS WITH DATA OF PATIENTS

Norbert Schlagheck, Fürstentfeldbruck, and Lutz Rabold, Söcking, both of Fed. Rep. of Germany, assignors to AGFA-GEVAERT AG, Leverkusen, Fed. Rep. of Germany

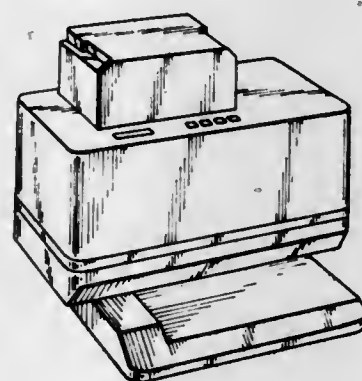
Filed Dec. 12, 1980, Ser. No. 216,603

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 5MR588-G176/80

Term of patent 14 years

Int. Cl. D16-03

U.S. Cl. D16-02



272,542

PHOTOGRAPHIC SHEET MATERIALS CASSETTE

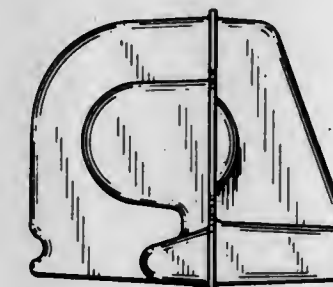
Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33021

Filed Nov. 30, 1981, Ser. No. 326,121

Term of patent 14 years

Int. Cl. D16-99

U.S. Cl. D16-32



272,544

RIBBON CARTRIDGE

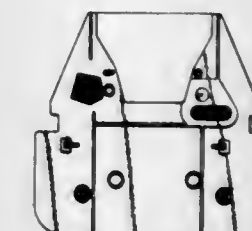
James R. Daughters, Danville, Calif., assignor to Wordex, Hayward, Calif.

Filed May 26, 1981, Ser. No. 267,107

Term of patent 14 years

Int. Cl. D18-99

U.S. Cl. D18-12



272,543

STRINGED MUSICAL INSTRUMENT

Richard Armin, 109 Vaughan Rd., Toronto, Ontario, Canada

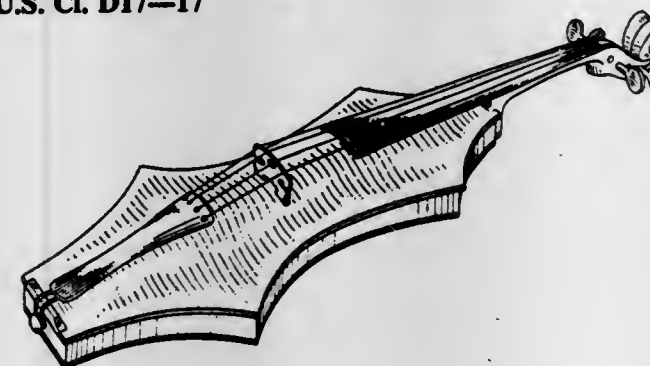
Filed Aug. 6, 1981, Ser. No. 290,678

Claims priority, application Canada, Feb. 13, 1981, 1302818

Term of patent 14 years

Int. Cl. D17-03

U.S. Cl. D17-17



272,545

WRIST SUPPORT FOR USE WITH A KEYBOARD, TYPEWRITER OR SIMILAR ARTICLE

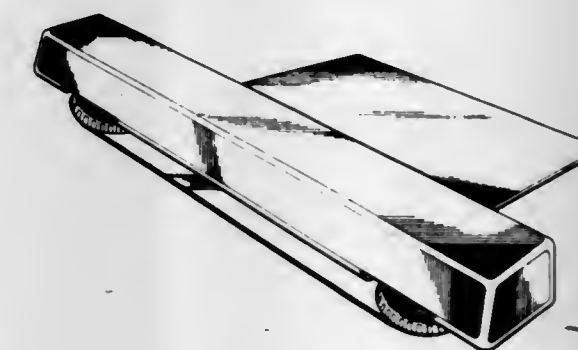
Richard M. Latino, Worcester, Mass., assignor to Wright Line Inc., Worcester, Mass.

Filed Aug. 31, 1981, Ser. No. 298,135

Term of patent 14 years

Int. Cl. D18-99

U.S. Cl. D18-12



272,546

STORAGE CONTAINER FOR PHOTOGRAPHIC PRINTS

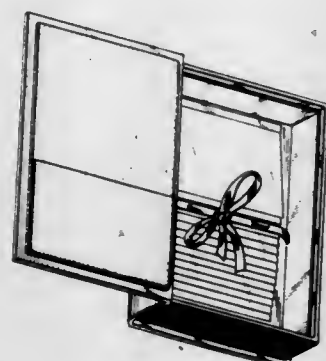
Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.

Filed Sep. 10, 1981, Ser. No. 300,806

Term of patent 14 years

Int. Cl. D19-04

U.S. Cl. D19-26



272,547

COPY HOLDER

Dave R. Gordon, c/o 305 - 456 W. Broadway, Vancouver, British Columbia, Canada (V5Y 1R3)

Filed Jan. 27, 1982, Ser. No. 343,387

Claims priority, application Canada, Oct. 7, 1981, 0710813

Term of patent 14 years

Int. Cl. D19-02

U.S. Cl. D19-91



272,548

GAME BOARD

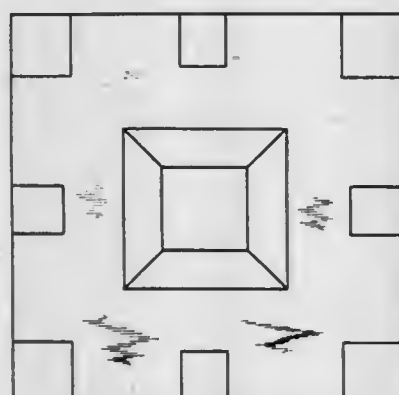
Eric Nathanson, 2618 Batchelder St., Brooklyn, N.Y. 11235

Filed Feb. 1, 1982, Ser. No. 344,362

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-34



272,549

GAME BOARD

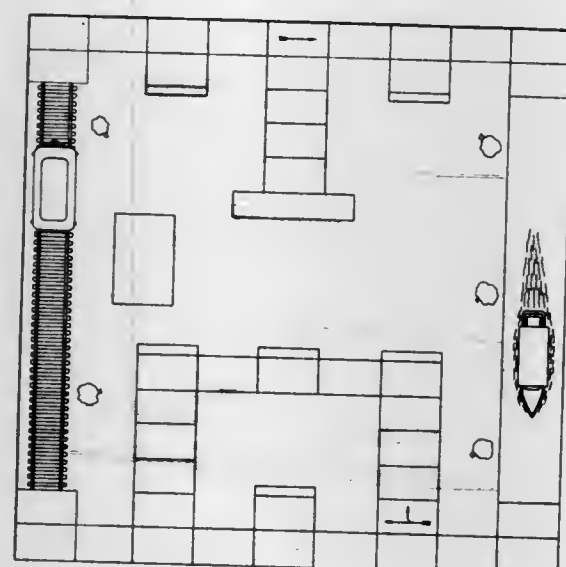
David M. Ouellette, 19 Mt. Hope St., Lowell, Mass. 01852

Filed Mar. 20, 1981, Ser. No. 245,737

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-36



272,550

RATTLE

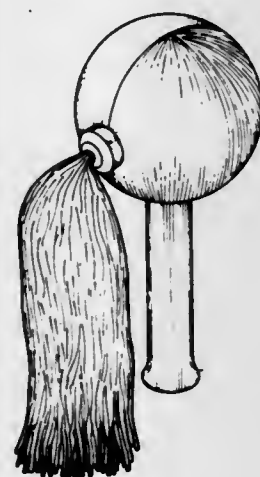
Umberto D. Esposti, 2nd & South Sts., Philadelphia, Pa. 19147

Filed May 1, 1981, Ser. No. 259,478

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-65



272,551

TOY VEHICLE

Shiaroku Nakao, Kanagawa; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

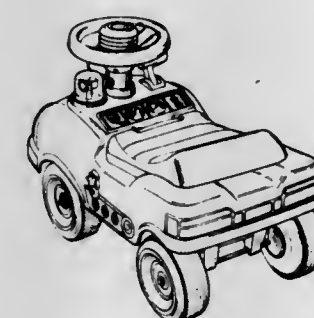
Filed Feb. 10, 1982, Ser. No. 347,593

Claims priority, application Japan, Aug. 10, 1981, 56-35199

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-70



272,553

SQUASH RACKET

Harleston J. Hall, Jr., Princeton; Drew J. Yuhas, Pennington; Frank J. Duggan, Trenton, and Thomas Johnson, Hopewell, all of N.J., assignors to AMF Incorporated, White Plains, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,714

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-212



272,554

GAME BALL RACKET THROATPIECE

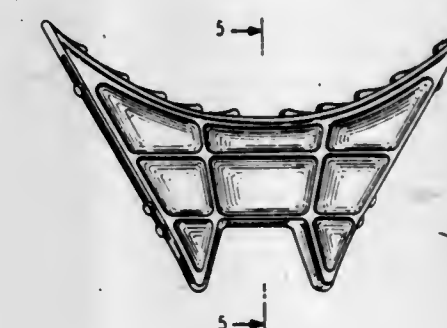
Thomas Johnson, Hopewell, N.J., and Paul A. Witte, New Hope, Pa., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jan. 6, 1982, Ser. No. 336,257

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-212



272,552

TOY SHOVEL

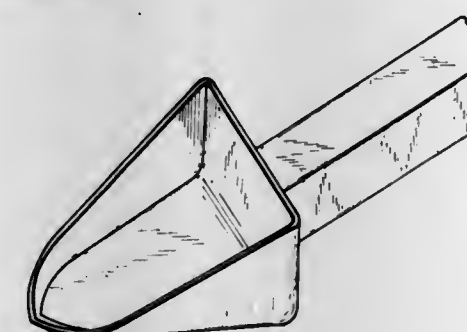
W. Porter Clanton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 21, 1981, Ser. No. 332,452

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-120



272,555

SKATE BLADE

Matti V. Näsineva, Kuismantie 8 b, 33800 Tampere 80, Finland
Continuation-in-part of Ser. No. 225,149, Jan. 15, 1981,
abandoned. This application May 21, 1981, Ser. No. 265,970
Claims priority, application Finland, Jul. 17, 1980, 526/80
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D21—225

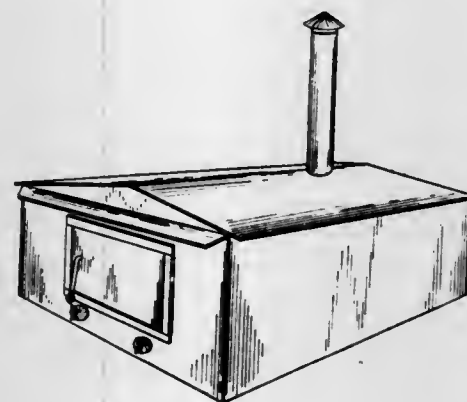


272,557

WOOD STOVE

Culbreath F. Williamson, Rte. 1, Box 166, Evergreen, N.C. 28438
Filed Feb. 22, 1982, Ser. No. 350,829
Term of patent 14 years
Int. Cl. D23—03

U.S. Cl. D23—97



272,558

ROOM AIR IONIZER

Juergen Greubel, Hedenrod, Fed. Rep. of Germany, assignor to
Igu Aktiengesellschaft, Switzerland
Filed Jul. 27, 1981, Ser. No. 286,776
Term of patent 14 years
Int. Cl. D23—04

U.S. Cl. D23—149

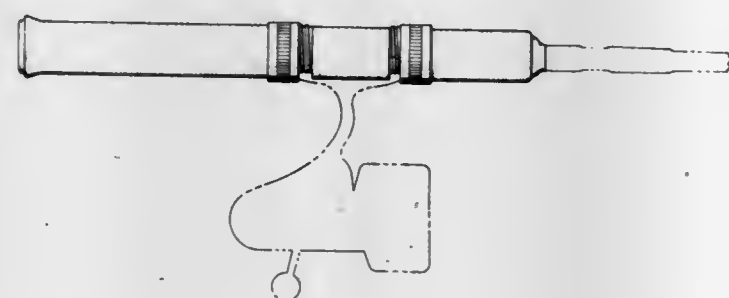


272,556

FISHING ROD HANDLE

Robert L. McMickle, and James T. Rumbaugh, both of Spirit
Lake, Iowa, assignors to Berkley and Company, Inc., Spirit
Lake, Iowa
Filed Apr. 27, 1981, Ser. No. 257,767
Term of patent 14 years
Int. Cl. D22—05

U.S. Cl. D22—23

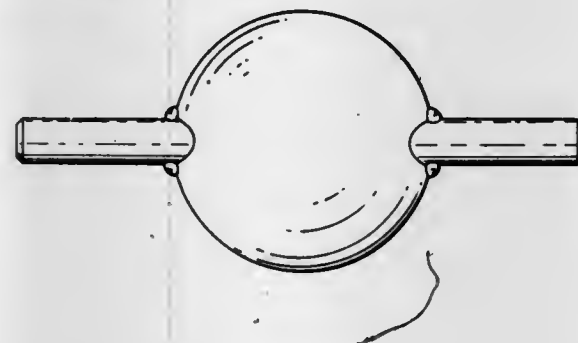


272,559

BREATH TEST MOUTH-PIECE

Richard U. Guth, 439 N. 46th St., Harrisburg, Pa. 17111
Filed Oct. 3, 1980, Ser. No. 193,642
Term of patent 14 years
Int. Cl. D24—02

U.S. Cl. D24—17



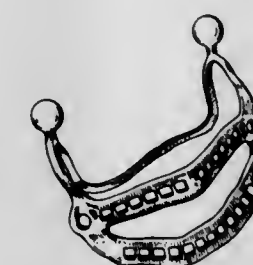
272,560

ANTERIOR SUBPERIOSTEAL IMPLANT

Albert V. Pinto, 19002 W. Dixie Hwy., North Miami Beach, Fla. 33180, and Robert B. Todd, Jr., 18 N. 4th St., Niles, Mich. 49120

Filed Oct. 19, 1981, Ser. No. 313,152
Term of patent 14 years
Int. Cl. D24—03, 99

U.S. Cl. D24—33



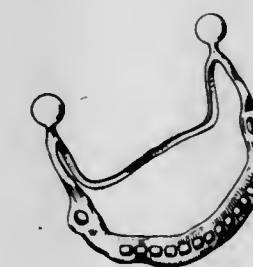
272,561

ANTERIOR SUBPERIOSTEAL IMPLANT

Albert V. Pinto, 19002 W. Dixie Hwy., North Miami Beach, Fla. 33180, and Robert B. Todd, Jr., 18 N. 4th St., Niles, Mich. 49120

Filed Oct. 22, 1981, Ser. No. 313,734
Term of patent 14 years
Int. Cl. D24—03, 99

U.S. Cl. D24—33

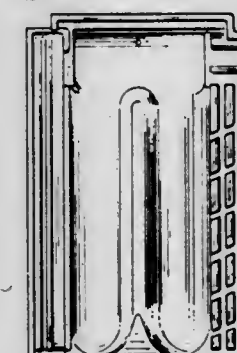


272,562

ROOF TILE

Edwardo Lopez, 841 W. 48th St., Hialeah, Fla. 33012
Filed Nov. 30, 1981, Ser. No. 325,698
Term of patent 14 years
Int. Cl. D25—01

U.S. Cl. D25—80



272,563

LANTERN

John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Mar. 6, 1980, Ser. No. 127,880
Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—87



272,564

GAS LIGHTER

Alfred Racek, Seitenberggasse 54, 1160 Vienna, Austria
Filed Oct. 1, 1980, Ser. No. 192,878
Term of patent 14 years
Int. Cl. D27—05

U.S. Cl. D27—42



272,565

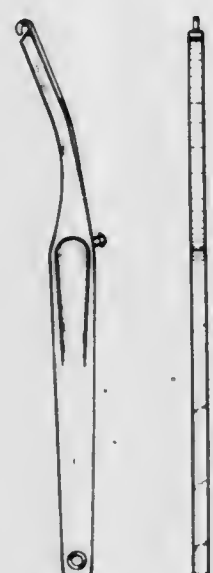
DENTAL FLOSSING INSTRUMENT

Steven K. Levine, 713 Washington St., New York, N.Y. 10014
Continuation-in-part of Ser. No. 189,867, Sep. 23, 1980, which is a continuation of Ser. No. 3,337, Jan. 15, 1979, and Ser. No. 3,338, Jan. 15, 1979, Pat. No. Des. 265,515. This application Mar. 6, 1981, Ser. No. 241,298

The portion of the term of this patent subsequent to Jul. 20, 1996, has been disclaimed.

Term of patent 14 years
Int. Cl. D24-99; D28-03

U.S. Cl. D28-64



272,567

HIVE FEEDER FOR HONEY BEES

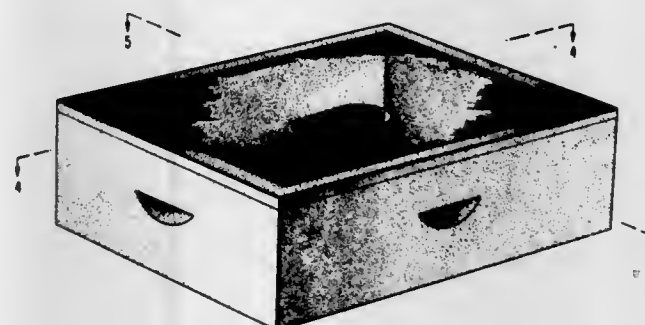
Richard C. Anderson, 48 Katydid Dr., Fox Hollow, Branchburg Township, County of Somerset, N.J. 08876

Filed May 14, 1981, Ser. No. 263,423

Term of patent 14 years

Int. Cl. D30-03

U.S. Cl. D30-13



272,568

VACUUM CLEANER FOR PETS

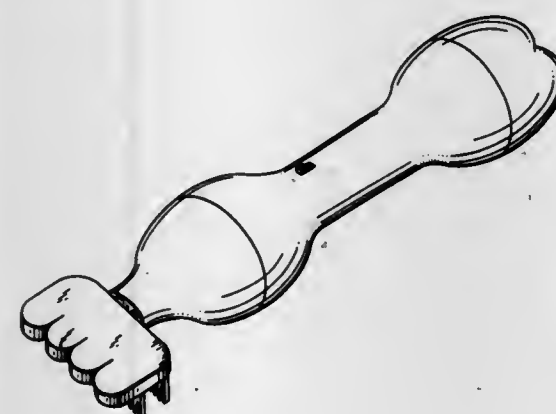
Lynn Kuhl, 1225 Fern Lake, Brea, Calif. 92621

Filed May 11, 1981, Ser. No. 262,347

Term of patent 14 years

Int. Cl. D30-99

U.S. Cl. D30-40



272,566

POULTRY COOP OR SIMILAR ARTICLE

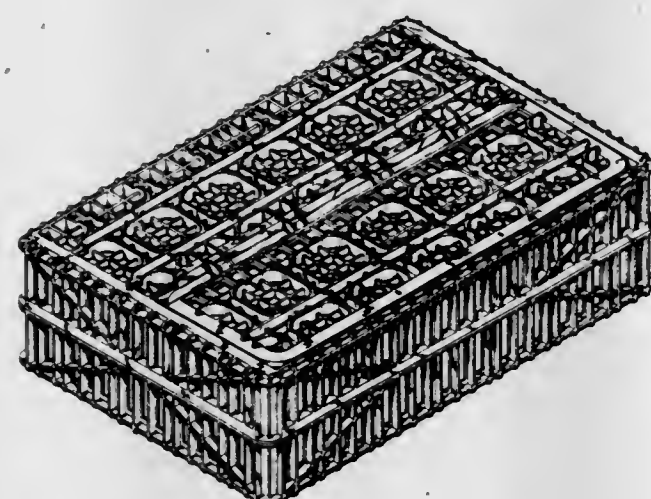
James C. Carroll, Bartlesville, Okla., and Lewis T. Johnson, deceased, late of Bartlesville, Okla., assignors to Duraco Products, Inc., Streamwood, Ill.

Filed Oct. 19, 1981, Ser. No. 313,038

Term of patent 14 years

Int. Cl. D30-02

U.S. Cl. D30-01



272,569

PET LITTER WINDOW BOX

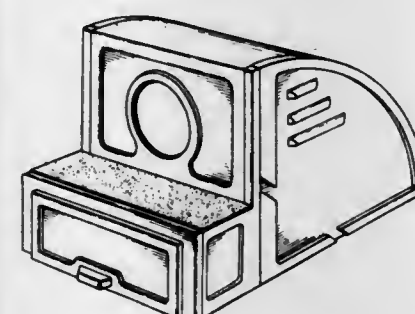
Michael T. Argentine, P.O. Box 4643, Santa Barbara, Calif. 93103, and Darryl L. Enstad, 550 E. Pleasant Valley Rd., Port Hueneme, Calif. 93041

Filed Nov. 2, 1981, Ser. No. 291,991

Term of patent 14 years

Int. Cl. D30-99

U.S. Cl. D30-99



272,570

VACUUM CLEANER WITH CORD WINDER ATTACHMENT

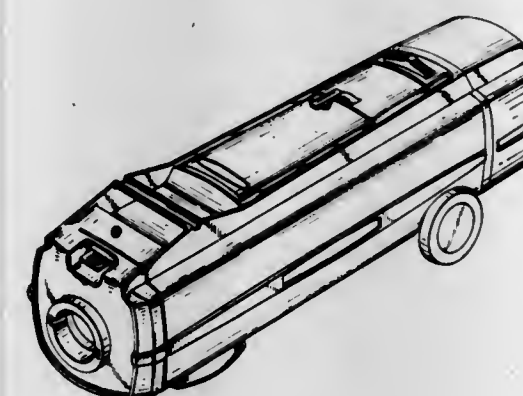
Alfred E. Van Dyken, Trumbull; Jonn S. Tarnowski, Wilton, and George Schick, Easton, all of Conn., assignors to Electrolux Corporation, Fairfield, Conn.

Filed Feb. 25, 1981, Ser. No. 238,196

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D32-21



272,572

CADDY FOR VACUUM CLEANER ATTACHMENT TOOLS

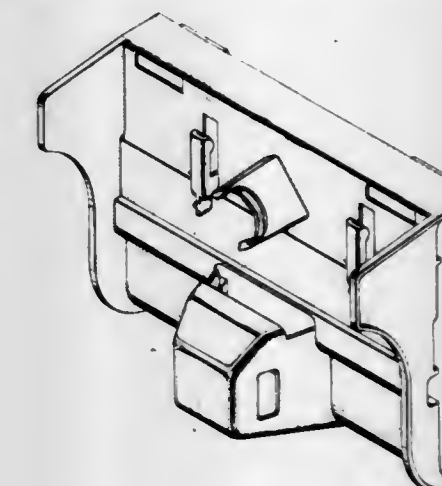
Carl Parise, Reno, Nev., assignor to Parise and Sons, Inc., Sparks, Nev.

Filed Jun. 9, 1981, Ser. No. 271,900

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D32-31



272,573

PALLET

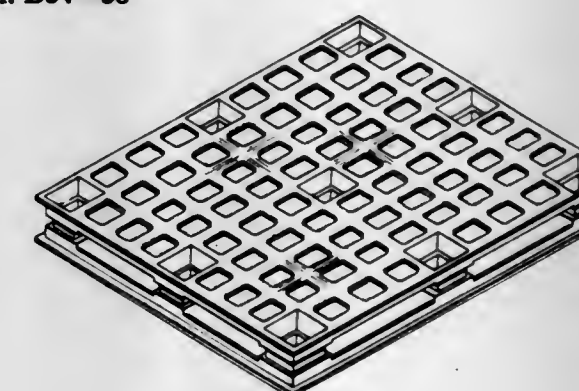
William A. DeGironemo, 7912 W. North Ave., Elmwood Park, Ill. 60635

Filed Oct. 7, 1980, Ser. No. 194,868

Term of patent 14 years

Int. Cl. D9-08

U.S. Cl. D34-38



272,571

VACUUM CLEANER

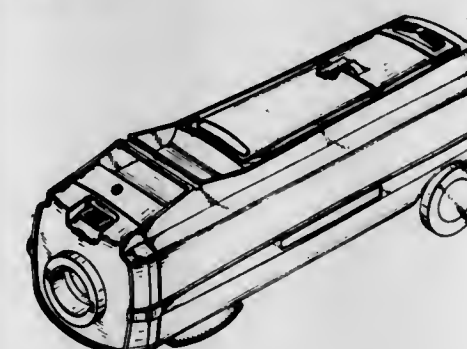
John S. Tarnowski, Wilton; Alfred E. Van Dyken, Trumbull, and George Schick, Easton, all of Conn., assignors to Electrolux Corporation, Fairfield, Conn.

Filed Feb. 25, 1981, Ser. No. 238,197

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D32-21



272,574

CONTAINER FOR LIQUID FUEL

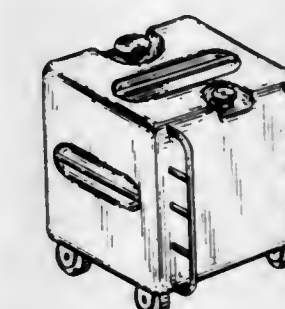
Daniel E. Sprinski, 1140 Hugo St., Maumee, Ohio 43537

Filed Oct. 22, 1981, Ser. No. 313,946

Term of patent 14 years

Int. Cl. D9-03; D12-02

U.S. Cl. D34-39



272,575

SUPPORTING LEG FOR A TRAY OR THE LIKE

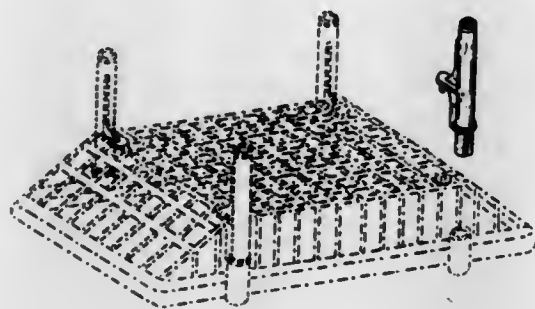
Giuseppe d'Imporzano, Milan, Italy, assignor to Beylerian Limited, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 239,112

Term of patent 14 years

Int. Cl. D9-99

U.S. Cl. D34-40



272,576

STACKING AND NESTING BIN

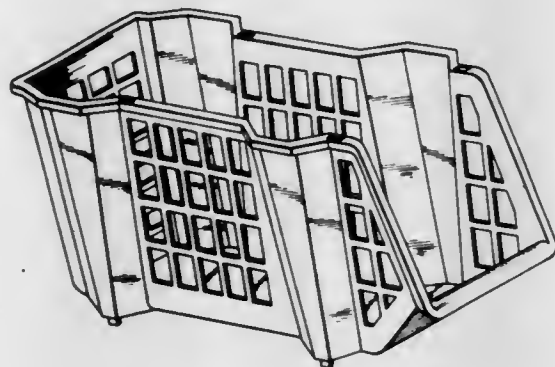
Max S. Klein, Hollywood, Fla., assignor to Klein Plastics Products, Inc., Baraboo, Wis.

Filed Jun. 10, 1980, Ser. No. 158,327

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D34-40



272,577

CREMAIN VAULT

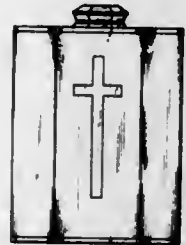
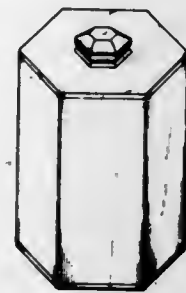
Gerald A. Dercks, and Michael J. Dercks, both of 4228 Park Ave. S., Minneapolis, Minn. 55407

Filed Dec. 12, 1980, Ser. No. 216,025

Term of patent 14 years

Int. Cl. D31-00

U.S. Cl. D99-5



272,578

PORTABLE SUPPORT FOR A MAIL BOX

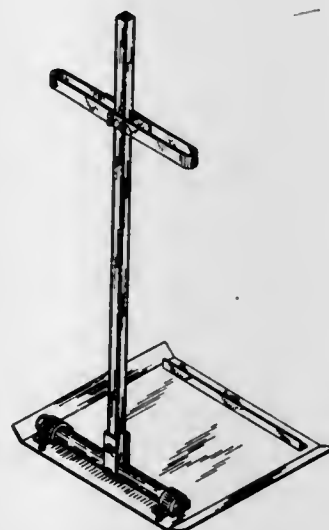
Jalmer Solyst, R.R. 1, Box 279, Forest City, Iowa 50436

Filed Aug. 31, 1981, Ser. No. 297,706

Term of patent 14 years

Int. Cl. D99-00

U.S. Cl. D99-43

**LIST OF PATENTEEES**

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF FEBRUARY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Koivumäki, Harri; and Sinkkonen, Jouko, 4,430,694, Cl. 362-250.000.
- A/S Flex Dental: See—
Henrichsen, Frank; Hansen, Flemming; and Sorensen, Kim, 4,430,062, Cl. 433-28.000.
- AB Thermo-Verken: See—
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Bruna, James A., 4,429,491, Cl. 49-340.000.
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- Aerodyne Research, Inc.: See—
Caulfield, H. John; and Cathey, W. Thomas, 4,429,954, Cl. 350-3.640.
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- Aiba, Masahiko, to Sharp Kabushiki Kaisha. Ripple regulator in a liquid supply system. 4,430,049, Cl. 417-540.000.
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Momose, Haruo; Ishida, Masaaki; and Terabe, Mahito, 4,430,430, Cl. 435-114.000.
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Guild, Charles L.; Werthessen, Nicholas H.; and Aldrich, Carlton W., Jr., 4,430,024, Cl. 405-232.000.
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Nelms, Robert L., 4,429,749, Cl. 168-45.000.
- Allied Corporation: See—
Chawla, Jai H.; and Colasanti, Arduino, 4,429,840, Cl. 242-107.000.
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Enemark, Robert B., 4,430,646, Cl. 340-630.000.
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Flechner, Paul F., 4,429,871, Cl. 272-130.000.
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Passariello, Attilio, 4,430,254, Cl. 502-243.000.
- AMP Incorporated: See—
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Tang, Philip H., 4,429,655, Cl. 114-230.000.
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Sulzer, Harry E., 4,429,563, Cl. 73-11.000.
- Anchor Hocking Corporation: See—
Marks, Walter J., 4,429,802, Cl. 215-344.000.
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Schomer, Marion L., 4,429,711, Cl. 137-385.000.
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- Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., to Signetics Corporation. Central processing unit, 4,430,711, Cl. 364-200.000.
- Anderson, Tom E.: See—
Fischley, John; and Anderson, Tom E., 4,429,860, Cl. 266-44.000.
- Anderson, Otto B.: See—
Pupp, Herwig; Anderson, Otto B.; and Nilsson, Jan-Erik, 4,430,140, Cl. 156-356.000.
- Ando, Motoyoshi: See—
Ikeda, Kyoichi; Ando, Motoyoshi; and Harada, Kinji, 4,429,564, Cl. 73-32.00A.
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- Andral Corporation: See—
Alimbau Marques, D. Salvador, 4,429,766, Cl. 182-195.000.
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Webb, David E.; and Andrews, Lawrence F., 4,430,061, Cl. 433-9.000.
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Tsukada, Tsutomu, 4,430,151, Cl. 156-626.000.
- Angelico, Henry R. Hand tool for applying electrical connectors, 4,429,451, Cl. 29-566.400.
- Angelino-Pievani, Giancarlo, to Cise Centro Informazioni Studi Esperienze SpA. Plate for broken bone fixation, 4,429,690, Cl. 128-92.00D.
- Angell, Bruce R. Mechanism electro-mechanical dynamic datum point locator tool, 4,429,463, Cl. 33-169.00C.
- Angelov, Angel S.; and Ivanov, Dimitar A., to Institute Po Technicheska Kibernetika. Apparatus for feeding wire over large distances, 4,429,820, Cl. 226-108.000.
- Angermann, Rudolf: See—
Hack, Joachim; Brotzler, Roland; Schulze-Berge, Klaus; and Angermann, Rudolf, 4,430,678, Cl. 360-99.000.
- Antes, Ronald E., to Marathon Oil Company. Tubular alignment assembly, 4,429,742, Cl. 166-127.000.
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- Aoki, Hirokazu: See—
Toyooka, Takashi; Aoki, Hirokazu; Sugie, Mamoru; and Yoshizawa, Shigeru, 4,430,729, Cl. 365-6.000.
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- Applied Power Inc.: See—
Clark, Ray, 4,429,759, Cl. 180-89.140.
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Hayakawa, Eiichi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.
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Patt, Tom E.; Argoudelis, Alexander D.; and Marshall, Vincent P., 4,430,495, Cl. 536-16.300.
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Walter, Friedrich C., 4,429,713, Cl. 137-614.030.
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Tsuchiya, Toshio; Moriizumi, Syuichi; Takeda, Hisashi; and Aria, Akinori, 4,430,136, Cl. 156-246.000.
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Cowan, William S., 4,429,902, Cl. 285-3.000.
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Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,377, Cl. 428-213.000.
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Goto, Hiraku; Usui, Tsuneaki; and Kinoshita, Nobuyasu, 4,430,416, Cl. 430-263.000.
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- Asao, Noriji. Foldable puzzle cards, 4,429,878, Cl. 273-155.000.
- ASEA Aktiebolag: See—
Berg, Samuel; and Solver, Carl E., 4,430,535, Cl. 200-82.00R.
- Brogardh, Torgny; and Sander, Lars, 4,430,565, Cl. 250-227.000.
- Ashland Oil, Inc.: See—
Culbertson, Billy M.; and Tufts, Timothy A., 4,430,491, Cl. 528-153.000.
- Asulab AG: See—
Hatschek, Rudolf A., 4,429,699, Cl. 128-681.000.
- Asulab S.A.: See—
Portmann, Hubert, 4,429,955, Cl. 350-332.000.
- Atelier de Construction Steiger S.A.: See—
Frund, Louis; and Bruggmann, Remy, 4,429,553, Cl. 66-78.000.
- Atlantic Richfield Company: See—
DiGiulio, Adolph V., 4,430,449, Cl. 521-56.000.
- Audeh, Costandi A.; and Reagan, William J., to Mobil Oil Corporation. Method of preparing crystalline zeolite, 4,430,314, Cl. 423-326.000.
- August Thiele: See—
Clement, Anton, 4,429,783, Cl. 198-731.000.
- Rehbein, Friedhelm, 4,429,526, Cl. 59-93.000.
- Ausnit, Steven, to Minigrip, Inc. Method of and apparatus for uninterruptedly assembling components for making bags, 4,430,070, Cl. 493-215.000.
- Austin, Arthur L.; Levis, William W., Jr.; Pizzini, Louis C.; and Hartman, Robert J., to BASF Wyandotte Corporation. Process for preparing an oxyalkylated product, 4,430,247, Cl. 252-182.000.
- Australian Road Research Board: See—
Oliver, John W. H., 4,430,464, Cl. 524-59.000.
- Automatic Switch Company: See—
Wiktor, Dominik M., 4,430,579, Cl. 307-134.000.
- Axiuk, Oleg: See—
Garner, John N.; Roberge, Jean M.; and Axiuk, Oleg, 4,429,519, Cl. 57-293.000.
- Azpiri, Rachel. Disposable diaper, 4,430,087, Cl. 604-385.000.
- Baba, Toshio: See—
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadaaki; and Chiba, Takehisa, 4,430,344, Cl. 424-270.000.
- Babcock & Wilcox Company, The: See—
Kaya, Azmi; and Keyes, Marion A., 4,430,573, Cl. 290-40.00R.
- Martin, Thomas E., 4,429,771, Cl. 188-170.000.
- Stevenson, Thomas E., 4,429,592, Cl. 74-625.000.
- Stockmaster, Edward F., 4,429,937, Cl. 339-65.000.
- Thompson, William L., 4,429,582, Cl. 73-861.220.
- Babsch, Alfred, to Mannesmann AG. Protection circuit for d.c. motors, 4,430,682, Cl. 361-31.000.
- Bach, Erik; and Gronbjerg, Jorgen P. J., to Interlego A.G. Electrical machines constructional set, 4,430,063, Cl. 434-380.000.

- Bader, Craig C., to Eldre Components, Inc. Laminated bus bar with capacitors and method of making same, 4,430,522, Cl. 174-72.00B.
- Bailey, Edward A.; and LeBlanc, Louis H., Jr., to Joy Manufacturing Company. Pneumatic motor for rock drills and the like, 4,429,752, Cl. 173-59.000.
- Bailey, Gene E.: See—
Tice, Bernard O.; and Bailey, Gene E., 4,429,477, Cl. 37-80.00R.
- Bailey, Ronald J.: See—
Patterson, William P.; and Bailey, Ronald J., 4,430,251, Cl. 252-359.00R.
- Baird Corporation: See—
Eldering, Herman G.; and Kliman, Arthur W., 4,430,000, Cl. 356-236.000.
- Bakeman, Delbert C. Liquid storage container assembly and decanter, 4,429,811, Cl. 222-159.000.
- Baker CAC, Inc.: See—
Furmaga, Robert E., 4,429,581, Cl. 73-861.040.
- Baker, Marvin E. Pipe coupling device for receiving removably insertable valve, 4,429,903, Cl. 285-24.000.
- Baker, Marvin E. Strainer mill for swimming pool pump intake, 4,430,214, Cl. 210-169.000.
- Bala, Frank J., Jr.: See—
Pierce, Robert C.; and Bala, Frank J., Jr., 4,430,237, Cl. 252-173.000.
- Bally Manufacturing Corporation: See—
Halliburton, Ronald D.; Pearson, James H.; and Sava, Robert J., 4,429,876, Cl. 273-121.00A.
- Balstad, Edward. Assembly and disassembly of roller skate components, 4,429,449, Cl. 29-446.000.
- Balz, Werner: See—
Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.
- Banno, Mitsuaki: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuaki, 4,429,565, Cl. 73-35.000.
- Barber, Jerry L., to Comstock, Wayne P., a part interest. Flotation amusement device, 4,429,867, Cl. 272-32.000.
- Barden Corporation, The: See—
Gereg, Charles V., 4,430,614, Cl. 324-238.000.
- Barmag Barmer Maschinenfabrik AG: See—
Lenk, Erich; and Busch, Hansjochen, 4,429,838, Cl. 242-46.400.
- Barrett, Kenneth A. Portable golf game, 4,429,881, Cl. 273-176.00F.
- Barrett, Kenneth L.: See—
Alsip, James D., Jr.; Barrett, Kenneth L.; and Jenkins, Arden F., 4,429,918, Cl. 297-353.000.
- Barrett, Robert E.: See—
Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.
- Barry, Leon F.: See—
Merck, James Q.; and Barry, Leon F., 4,430,209, Cl. 209-3.000.
- Barry, Robert C.; and Rachfalski, Gary. Mass measuring system, 4,429,574, Cl. 73-580.000.
- Barry Wright Corporation: See—
Peterson, Robert R., 4,430,065, Cl. 464-90.000.
- Barton, Brandon H.; and Sagel, John A. Energy transfer, 4,430,271, Cl. 260-458.00R.
- BASF Aktiengesellschaft: See—
Dehnert, Johannes, 4,430,267, Cl. 260-147.000.
- Hack, Joachim; Brotzler, Roland; Schulze-Berge, Klaus; and Angermann, Rudolf, 4,430,678, Cl. 360-99.000.
- Heinz, Gerhard; Richter, Peter; and Mueller, Wolfgang F., 4,430,417, Cl. 430-286.000.
- Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.
- Rentzea, Costin; Zeeh, Bernd; and Pommer, Ernst-Heinrich, 4,430,336, Cl. 424-272.000.
- BASF Farben & Fasern AG: See—
Meisner, Roland; and Buchholz, Hagen, 4,429,833, Cl. 239-224.000.
- BASF Farben & Fasern AG: See—
Meisner, Roland A., 4,430,359, Cl. 427-31.000.
- BASF Wyandotte Corporation: See—
Austin, Arthur L.; Levis, William W., Jr.; Pizzini, Louis C.; and Hartman, Robert J., 4,430,247, Cl. 252-182.000.
- Basic Line, Inc.: See—
Licari, Yaffa, 4,429,638, Cl. 108-25.000.
- Batscheider, Alfred; and Bernasek, G. Method of cleaning grain, 4,430,357, Cl. 426-626.000.
- Bauman, William C.: See—
Lee, John M.; and Bauman, William C., 4,430,311, Cl. 423-179.500.
- Baur, Bruce K.; and Ollis, John R., to Tektronix, Inc. Charge-pump glitch filter, 4,430,641, Cl. 340-347.00A.
- Baverstock, John R., to Lucas Industries Limited. Apparatus for manufacturing cable, 4,430,139, Cl. 156-353.000.
- Baxter Travenol Laboratories, Inc.: See—
Mittleman, Herbert; and Rush, William L., 4,430,077, Cl. 604-111.000.
- Bayer Aktiengesellschaft: See—
Alfies, Franz; Perrey, Hermann; Meyer, Karl-Heinrich; Heine, Dietz; and Kowitz, Friedrich, 4,430,483, Cl. 525-356.000.
- Bayer Aktiengesellschaft: See—
Buysch, Hans-Josef; Illger, Hans-Walter; and Dörner, Karl H., 4,430,452, Cl. 521-107.000.
- Casper, Clemens; Grenner, Dieter; Klette, Gerd-Rudiger; and Tholema, Edzard, 4,430,156, Cl. 159-47.100.
- Findeisen, Kurt, 4,430,503, Cl. 556-417.000.
- Heitkampfer, Peter; König, Klaus; Findeisen, Kurt; Fauss, Rudolf; and Sundermann, Rudolf, 4,430,505, Cl. 560-24.000.
- Ippen, Jakob; and Stuttgart, Friedel, 4,429,728, Cl. 152-209.00A.
- Krist, Otto; Drave, Heinz; and Luybaert, Jozef, 4,430,438, Cl. 501-17.000.
- Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.00A.
- Reuter, Knud; and Dhein, Rolf, 4,430,504, Cl. 556-482.000.
- Schreckenberger, Manfred; Burgdorfer, Hans-Herbert; Dhein, Rolf; and Schneider, Gottfried, 4,430,492, Cl. 528-176.000.
- Seifert, Peter; and Haas, Peter, 4,430,453, Cl. 521-107.000.
- Beale, William T., to Sunpower, Inc. Hermetically sealed transmission system for a free piston Stirling engine, 4,429,530, Cl. 60-520.000.
- Beattie, Ian A. M., to Internationale Octrooi Maatschappij "Octropa" B.V. Soap composition, 4,430,456, Cl. 521-128.000.
- Beattie, Norman W.; and Nyberg, Donald W., to Hawker Siddeley Canada, Inc. Apparatus for spraying liquids such as resins and waxes on surfaces of particles, 4,430,003, Cl. 366-173.000.
- Beaugar, Alain: See—
Lagrange, Alain; and Beaugar, Alain, 4,430,689, Cl. 361-321.000.
- Bechara, Ibrahim S.; and Mascioli, Rocco L., to Air Products and Chemicals, Inc. Polyurethane-forming process using amino and amido dialkyl tin carboxylates, 4,430,456, Cl. 521-128.000.
- Bechtold, Dieter, to Varta Batterie Aktiengesellschaft. Separator for storage battery, 4,430,394, Cl. 429-147.000.
- Beck, Harold K., to Halliburton Company. Low pressure responsive APR tester valve, 4,429,748, Cl. 166-324.000.
- Beck, Richard D.; and Steteket, Campbell H., Jr. Apparatus for seeking out and repairing leaks in pipes, 4,429,720, Cl. 138-97.000.
- Beckers, Hans; and Vollmer, Klaus, to Robert Bosch GmbH. Apparatus for enclosing objects, 4,429,513, Cl. 53-547.000.
- Becton, Dickinson and Company: See—
Pasquini, Richard J.; Brown, Harold; and Kostniuk, Alan, deceased, 4,430,080, Cl. 604-240.000.
- Bedenbender, John W.; Cook, Marvin C.; and Johnston, Otis A., to Mertz, Inc. Suspension assembly for seismic exploration vehicle, 4,429,898, Cl. 280-678.000.
- Beebe, George W.; Hine, Philip; O'Bryan, Nelson B.; and Shor, Steven M., to Minnesota Mining and Manufacturing Company. Stabilization of silver halide emulsions, 4,430,426, Cl. 430-604.000.
- Beedle, Richard: See—
Weber, Karl; Schlinger, Michael; and Beedle, Richard, 4,429,850, Cl. 248-250.000.
- Beitel, James E.; Bruce, Charles R.; Cook, Gary R.; Mosier, Charles F., Jr.; and Sartore, Edward L., to Marathon Oil Company. Computer terminal security system, 4,430,728, Cl. 364-900.000.
- Bell Helicopter Textron, Inc.: See—
Cresap, Wesley L., 4,430,045, Cl. 416-138.000.
- Bell & Howell Company: See—
Mischenko, Nicholas, 4,429,963, Cl. 353-88.000.
- Bell, Joseph P. Battery post clamp, 4,429,944, Cl. 339-228.000.
- Bell Telephone Laboratories, Incorporated: See—
Boyd, Gary D.; and Ngo, Peter D. T., 4,430,601, Cl. 315-169.400.
- Brown, Earl F.; and Larsen, Arthur B., 4,430,526, Cl. 178-18.000.
- D'Altroy, Frederick A.; and Lindner, Richard, 4,430,663, Cl. 357-53.000.
- Hubbard, William M., 4,430,734, Cl. 370-112.000.
- Kasday, Leonard R., 4,430,726, Cl. 364-900.000.
- Kirk, Edward W., Jr., 4,430,585, Cl. 307-473.000.
- Netravali, Arun N., 4,430,670, Cl. 358-135.000.
- Shoji, Masakazu, 4,430,583, Cl. 307-448.000.
- Yan, Man F., 4,430,255, Cl. 252-512.000.
- Bemis Manufacturing Company: See—
Bemis, Peter F.; and Swart, Gerald W., 4,430,073, Cl. 604-48.000.
- Bemis, Peter F.; and Swart, Gerald W., to Bemis Manufacturing Company. Surgical suction probe with reversible valve, 4,430,073, Cl. 604-48.000.
- Benassi, Mario, to RIV-SKF Officine Di Villar Perosa S.p.A. Resiliently supported connection unit for joining a transmission shaft to a transmission coupling element, 4,430,066, Cl. 464-178.000.
- Bendix Corporation, The: See—
Roberts, James K., 4,429,772, Cl. 188-328.000.
- Taig, Alistair G., 4,429,777, Cl. 192-111.00A.
- Benker, Klaus: See—
Schmitt, Burghard; Benker, Klaus; Priebe, Edmund; and Lindenschmidt, Gerhard, 4,430,478, Cl. 525-71.000.
- Bennett, Dale L., to Benvar Associates, c/o Dale Bennett. Visual message intercommunication unit and system, 4,430,639, Cl. 340-310.00A.
- Bennett, John E.; and Harney, David E., to Diamond Shamrock Corporation. Metal amalgams for sodium-sulfur battery systems, 4,430,393, Cl. 429-101.000.
- Bensley, Douglas W. Article of footwear, 4,429,475, Cl. 36-45.000.
- Bentall, Richard H. C. High frequency electromagnetic therapy apparatus, 4,429,698, Cl. 128-422.000.
- Benton, Stephen A., to Polaroid Corporation. Reflection mount for transmission holograms, 4,429,947, Cl. 350-3.850.
- Benvar Associates, c/o Dale Bennett: See—
Bennett, Dale L., 4,430,639, Cl. 340-310.00A.
- Benzing, Rolf, to Metabowerke GmbH & Co. Overload protection arrangement for an electric motor, especially of a hand-held power tool, 4,430,681, Cl. 361-27.000.

Beranger, Herve; and Brunin, Armand, to International Business Machines Corporation. Exclusive or circuit and parity checking circuit incorporating the same. 4,430,737, Cl. 371-49.000.

Berg, Samuel; and Solter, Carl E., to ASEA Aktiebolag. Damping device for electric circuit breakers. 4,430,535, Cl. 200-82.00R.

Berger, Jean Luc, to Thomson-CSF. Photosensitive device read by charge transfer. 4,430,672, Cl. 358-213.000.

Bergwerksverband GmbH: See—
Ackermann, Manfred; Kohling, Rolf; and Leininger, Dieter, 4,430,126, Cl. 106-97.000.

Berkman, Samuel, to RCA Corporation. Chemical vapor deposition of epitaxial silicon. 4,430,149, Cl. 156-613.000.

Berkowitz, Sidney: See—
Castrantas, Harry M.; and Berkowitz, Sidney, 4,430,454, Cl. 521-107.000.

Bernasek, G.: See—
Batscheider, Alfred; and Bernasek, G., 4,430,357, Cl. 426-626.000.

Berol Kemi AB: See—
Hellsten, Karl M. E.; and Klingberg, Anders W., 4,430,238, Cl. 252-61.000.

Bert, Alain; and Kaminsky, Didier, to Thomson-CSF. Monolithic amplifier comprising a power division and recombination system grouping a plurality of transistors. 4,430,623, Cl. 330-286.000.

Bertozzi, Eugene R.: See—
MacMillan John H.; Bertozzi, Eugene R.; and Streeter, Bruce E., 4,430,489, Cl. 528-45.000.

Berube, Richard G., to King Instrument Corporation. Splicer presser pad. 4,430,145, Cl. 156-497.000.

Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, to Degussa Aktiengesellschaft. Process for the separation of the racemate (R,S)-cysteine. 4,430,509, Cl. 562-401.000.

Bethlehem Steel Corporation: See—
Early, John D., 4,429,641, Cl. 110-181.000.

Schaeffer, Charles W., 4,429,560, Cl. 72-328.000.

Betts, Colin R., to Post Office. Digital data transmission. 4,430,745, Cl. 375-25.000.

Betz Laboratories, Inc.: See—
Niu, Joseph H. Y., 4,430,196, Cl. 208-47.000.

Betzl, Hermann; Magerl, Johann; and Volejnik, Wilhelm, to Siemens Aktiengesellschaft. Electrical filter circuit operated with a definite sampling and clock frequency f_T which consists of CTD elements. 4,430,629, Cl. 333-165.000.

Betzler, Otto, to Michael Weinig GmbH & Co. KG. Machine for carrying out milling, planing, and similar operations. 4,429,726, Cl. 144-134.00R.

Bey, Henry A., to Bey, Lena. Sleeve type door securing device. 4,429,913, Cl. 292-293.000.

Bey, Lena: See—
Bey, Henry A., 4,429,913, Cl. 292-293.000.

Beyer, William F.; Dankert, Harry S.; and English, James C., to Upjohn Company. The. Microprocessor controllable automatic sampler. 4,429,584, Cl. 73-864.210.

Bez, Ulrich; Schroder, Gerhard; and Rauser, Michael, to Dr. Ing.h.c.F. Porsche AG. Support system for the body of a motor vehicle, especially a passenger car. 4,429,914, Cl. 296-188.000.

Bhatti, Mohinder S.; and Marzocchi, Alfred, to Owens-Corning Fiberglass Corporation. Method and apparatus for forming glass fibers. 4,430,105, Cl. 65-1.000.

BHS-Bayerische Berg, Hutten-und Salzwerke Aktiengesellschaft: See—
Dopfer, Maximilian; and Heidrich, Gunther, 4,429,586, Cl. 74-410.000.

Bickel, Hans: See—
Heusler, Karl; Bickel, Hans; Fechtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, 4,430,498, Cl. 544-16.000.

Bielfeldt, Friedrich B., to Maschinenfabrik J. Dieffenbacher GmbH & Co. Injection press. 4,430,059, Cl. 425-190.000.

Biery, Galen A., Jr.: See—
Rothenbuhler, Dan E.; and Biery, Galen A., Jr., 4,430,652, Cl. 340-825.690.

Bill, Robert C.; and Wisander, Donald W., to United States of America, National Aeronautics and Space Administration. Method of fabricating an abrasible gas path seal. 4,430,360, Cl. 427-34.000.

Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noel, to Thomson-CSF. Display process using a thermo-optical effect with a memory in a thin disc-like liquid crystal layer and disc-like liquid crystals having such an effect. 4,430,650, Cl. 340-784.000.

Bimberg, Dieter H.; Bubenzer, Achim; Dransfeld, Klaus F. K.; and Hunklinger, Siegfried. Method for calorimetric absorption spectroscopy and device for working the method. 4,429,999, Cl. 356-432.000.

Bioforma: See—
Servier, Jacques P., 4,430,431, Cl. 435-171.000.

Bisiach, Luciano. Industrial robot with several axes of rotation. 4,430,037, Cl. 414-4.000.

Bjornstad, Arne, to Minilife A/S. Construction and method for models with interlocking tab/slot assembly. 4,429,486, Cl. 46-21.000.

Blair, Lyndia S., to Merck & Co., Inc. Synergistic treatment of adult canine heartworm with thiacetarsamide and ivermectin. 4,430,329, Cl. 424-181.000.

Blake, Joseph W., III, to Kinberg, Kenjamin. Sound motion picture apparatus with removable cartridge. 4,429,962, Cl. 352-32.000.

Blake, Larry W.; Harvel, Ervin R.; Mason, Duane R.; and Wright, George M. Surgical fluid evacuator. 4,429,693, Cl. 604-73.000.

Blanchard, Raymond A., Jr.; and Garey, Kenneth E., to SCM Corporation. Encoding apparatus having an acoustic member with mirror-image tabs. 4,430,644, Cl. 340-365.00R.

Blasko, Jan: See—
Ferkel, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.

Blasko, Michal: See—
Ferkel, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.

Blau, Monte; Kung, Hank F.; and Tramposch, Kenneth M., to State University of New York. Radioactive iodine labeled phenolic amines. 4,430,319, Cl. 424-1.100.

Blazewski, Theodore E., to Ingersoll-Rand Company. Rotary, positive-displacement machine. 4,430,050, Cl. 418-191.000.

Blickenstaff, Ronald L.: See—
Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., 4,430,712, Cl. 364-300.000.

Bliss, Douglas: See—
Jacobson, Walter E.; and Bliss, Douglas, 4,429,756, Cl. 177-211.000.

Bloess, J. J. Distillate oil moisture dehydrating process. 4,430,202, Cl. 208-187.000.

Blomgren, Roland A.: See—
Copeland, William M.; Blomgren, Roland A.; and Shallenberg, Robert L., 4,429,432, Cl. 15-320.000.

Blouin, Joseph L. D. C., to Nightingale Saro Inc. Interlock for drawers. 4,429,930, Cl. 312-216.000.

Blumenstein, Kenneth. Attractive ladies heeled shoe. 4,429,473, Cl. 36-11.500.

Bobsein, Rex L., to Phillips Petroleum Company. Catalyst compositions. 4,430,515, Cl. 585-530.000.

Boc-Nowco Limited: See—
Armell, Richard A.; and Misselbrook, John G., 4,429,566, Cl. 73-40.700.

Bockmann, Walter: See—
Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.0HA.

Bocor, Wassief M.: See—
Testa, Rene B.; and Bocor, Wassief M., 4,429,580, Cl. 73-768.000.

Boden, Richard M.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Branched chain ketones and uses thereof in augmenting or enhancing the aroma of perfumes, colognes and perfumed articles and the process for preparing same. 4,430,233, Cl. 252-8.600.

Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., to International Flavors & Fragrances Inc. Flavoring with heliotropyl methyl carbonate. 4,430,354, Cl. 426-536.000.

Bodine, Albert G. Well servicing system employing sonic energy transmitted down the pipe string. 4,429,743, Cl. 166-177.000.

Boehle, Horst R. E.: See—
Vollenberg, Werner P.; and Boehle, Horst R. E., 4,430,497, Cl. 542-429.000.

Boehringer, Wilfried E., to McDonnell Douglas Corporation. Hydraulic power transfer unit. 4,429,707, Cl. 137-625.210.

Boeing Company, The: See—
Brown, Stephen T.; and Statkus, Frank D., 4,429,844, Cl. 244-219.000.

Jones, Everett E., 4,429,658, Cl. 118-711.000.

Bogdanov, Todor D.: See—
Jelezov, Jivko Y.; and Bogdanov, Todor D., 4,429,821, Cl. 226-181.000.

Boidron, Michel. Open fire convactor. 4,429,680, Cl. 126-121.000.

Boland, Thomas J., to United States of America. Energy. Frequency spectrum analyzer with phase-lock. 4,430,611, Cl. 324-77.00C.

Bonis, Laszlo J., to Composite Container Corporation. Making coextruded sheets and containers. 4,430,288, Cl. 264-510.000.

Bonnet, Christian: See—
de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,430,550, Cl. 219-121.0ED.

Borg-Warner Corporation: See—
Lamarche, Paul E., 4,430,064, Cl. 464-64.000.

Bork, Klaus; Humbs, Rolf; and Trey, Karl, to Siemens Aktiengesellschaft. Device for contacting tubular piezo-electric transducers. 4,430,594, Cl. 310-328.000.

Borkoski, Paul J.: See—
Stover, John C.; and Borkoski, Paul J., 4,429,845, Cl. 246-428.000.

Borows, Allan A. Protected glass jar with closure. 4,429,798, Cl. 215-12.00R.

Bos, Alfred M.: See—
Frampton, William H.; and Bos, Alfred M., 4,429,892, Cl. 280-407.000.

Bosch-Siemens Hausgerate GmbH: See—
Waigand, Helmut, 4,430,578, Cl. 307-115.000.

Bose, Bidyut K.; and Jorgensen, John M., to National Semiconductor Corporation. Fast CMOS buffer for TTL input levels. 4,430,582, Cl. 307-297.000.

Bottoms, Norman, to International Computers Limited. Cable clamping arrangement for an electrical connector. 4,429,941, Cl. 339-103.00M.

Boucherie, Leonel P., to G.B. Boucherie, Firma. Fibre loading device for a brush manufacturing machine. 4,430,039, Cl. 414-417.000.

Boudot, Bernard; Nury, Georges; and Lambert, Andre, to Rhone-Poulenc Specialties Chimiques. Additive composition, bath and process for acid cooper electroplating. 4,430,173, Cl. 204-52.00R.

Bouquet, Gerard, to Commissariat a l'Energie Atomique. High voltage electromagnetic pulse generator. 4,430,577, Cl. 307-108.000.

Bousgarbies, Jacques, to Airwick Industries, Inc. Device for the metered release of an active ingredient. 4,429,809, Cl. 222-67.000.

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Bradbury, Ronald C.: See—
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Bragg, Charles D., to Procter & Gamble Company. The. Bleach catalyst compositions and use thereof in laundry bleaching and detergent compositions. 4,430,243, Cl. 252-91.000.

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Brandenstein, Manfred: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.

Bratten, Jack. Filtering apparatus and method. 4,430,231, Cl. 210-783.000.

Braun, Jimmy E.: See—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,430,711, Cl. 364-200.000.

Bregman, Marvin D.: See—
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Brennan, V. Jack. Desk top organizer. 4,429,932, Cl. 312-259.000.

Breza, Michael J.: See—
Lesniewski, Joseph M.; and Breza, Michael J., 4,430,467, Cl. 524-89.000.

Brink Locking Systems, Inc.: See—
Kambic, Raymond V., 4,429,556, Cl. 70-149.000.

Brinkmann, Carl R.: See—
Hayes, Donald A.; Finn, Lyle D.; and Brinkmann, Carl R., 4,430,023, Cl. 405-224.000.

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Spenceley, Gene D.; Davies, Mervyn W.; and Robson, Alan L., 4,430,117, Cl. 75-51.000.

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Brooks, Thomas W.: See—
Hill, James D., Jr.; Alexander, David L.; and Brooks, Thomas W., 4,429,465, Cl. 33-174.00E.

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Gamer, Gerold, 4,430,129, Cl. 134-22.190.

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Brown, Harold: See—
Pasquini, Richard J.; Brown, Harold; and Kostuk, Alan, deceased, 4,430,080, Cl. 604-240.000.

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Durante, Vincent A.; Olszanski, Dennis J.; Reagan, William J.; and Brown, Stanley M., 4,430,199, Cl. 208-114.000.

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Broze, Guy; and Laitem, Leopold, to Colgate-Palmolive Company. Silicate-free bleaching and laundering composition. 4,430,244, Cl. 252-94.000.

Bruandet, Justin: See—
Vachet, Joel; Bruandet, Justin; and Fremaux, Jacques, 4,429,509, Cl. 52-788.000.

Bruce, Barbara J.: See—
Fraser, Thomas H.; and Bruce, Barbara J., 4,430,428, Cl. 435-68.000.

Bruce, Charles R.: See—
Beitel, James E.; Bruce, Charles R.; Cook, Gary R.; Mosier, Charles F., Jr.; and Sartore, Edward L., 4,430,728, Cl. 364-900.000.

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Bruggmann, Remy: See—
Frund, Louis; and Bruggmann, Remy, 4,429,553, Cl. 66-78.000.

Bruhne, Friedrich: See—
Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.0HA.

Brune, Robert A., Jr.: See—
Grant, Gerald B.; and Brune, Robert A., Jr., 4,429,585, Cl. 74-191.000.

Brunin, Armand: See—
Beranger, Herve; and Brunin, Armand, 4,430,737, Cl. 371-49.000.

Bruns, James A., to Abe W. Mathews Engineering Co. Door operator apparatus. 4,429,491, Cl. 49-340.000.

Brunswick Corporation: See—
Staerzl, Richard E., 4,429,673, Cl. 123-491.000.

Bryant, David M.; Corbell, Ryn C.; Malcolm, Michael A.; Rogers, Lawrence D.; and Thompson, Donald R., to Burroughs Corporation. Expandable and contractible local area network system. 4,430,651, Cl. 340-825.520.

Bubenzer, Achim: See—
Bimberg, Dieter H.; Bubenzer, Achim; Dransfeld, Klaus F. K.; and Hunklinger, Siegfried, 4,429,999, Cl. 356-432.000.

Bubik, Alfred; and Reutter, Siegfried, to Escher Wyss Limited. Twin-wire papermaking machine. 4,430,159, Cl. 162-292.000.

Buchholz, Hagen: See—
Meisner, Roland; and Buchholz, Hagen, 4,429,833, Cl. 239-224.000.

Buchwald, Holger: See—
Knock, Jurgen; Buchwald, Holger; and Fehlhaber, Jurgen, 4,430,372, Cl. 428-90.000.

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Harvey, Susan L.; Cresswell, James L.; and Huff, B. Jerry L., 4,430,381, Cl. 428-284.000.

Buffone, Angelo J., to ACF Industries, Inc. Hand wheel for bottom operated tank car valve. 4,429,855, Cl. 251-144.000.

Buhler, Ulrich; Hahnle, Reinhard; Ribka, Joachim; and Richter, Helmut, to Cassella Aktiengesellschaft. Process for coloring organic solvents, mineral oil products, waxes, plastics and surface coatings with cyano-nitro-amino-azo dyes. 4,430,090, Cl. 8-508.000.

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Burchard, Joachim, to Nixdorf Computer AG. Money-dispensing device from a safe's space. 4,429,639, Cl. 109-19.000.

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Schreckenberger, Manfred; Burgdorfer, Hans-Heribert; Rhein, Rolf; and Schneider, Gottfried, 4,430,492, Cl. 528-176.000.

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Burnham, Francis L., to Orangeburg Technologies, Inc. Multiple-stage pump compressor. 4,429,540, Cl. 62-188.000.

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Bryant, David M.; Corbell, Ryn C.; Malcolm, Michael A.; Rogers, Lawrence D.; and Thompson, Donald R., 4,430,651, Cl. 340-825.520.

Catiller, Robert D.; Harris, Craig W.; and Mathews, Ronald D., 4,430,710, Cl. 364-200.000.

Catiller, Robert D., 4,430,735, Cl. 371-25.000.

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Patzke, James V.; and Rosenberg, Burton J., 4,430,435, Cl. 436-504.000.

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Burton, R. Edward. Burning system and method. 4,429,645, Cl. 110-346.000.

Busch, Hansjochen: See—
Lenk, Erich; and Busch, Hansjochen, 4,429,838, Cl. 242-46.400.

Butterfield Group: See—
Butterfield, Ida M., 4,429,803, Cl. 215-366.000.

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- Buttner, Robert C., to Concrete Pipe & Products Corp. Flexible pipe gasket. 4,429,886, Cl. 277-207.00A.
- Butz, Hans, to Fichtel & Sachs AG. Mounting device for a bicycle hub. 4,429,448, Cl. 29-281.500.
- Buysch, Hans-Josef; Illger, Hans-Walter; and Dörner, Karl H., to Bayer Aktiengesellschaft. Stabilizer-containing reactive components for PU-foams, new stabilizers and a process for producing these stabilizers. 4,430,452, Cl. 521-107.000.
- Buzzelli, Dennis K.: See—
- Irons, Gary C.; Buzzelli, Dennis K.; Klein, John F.; and Smyth, Richard T., 4,430,546, Cl. 219-121.0PY.
- Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit beschränkter Haftung: See—
- Eistetter, Klaus; and Rapp, Erich, 4,430,339, Cl. 424-278.000.
- Byrd, Carlisle O., Jr.: See—
- Hounsell, Mack A.; and Byrd, Carlisle O., Jr., 4,429,504, Cl. 52-506.000.
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- C. Otto & Comp. G.m.b.H.: See—
- Ernst, Friedrich, 4,429,908, Cl. 292-35.000.
- C. R. Bard, Inc.: See—
- McGreevy, Francis T., 4,429,694, Cl. 128-303.140.
- Cabot Corporation: See—
- Crook, Paul, 4,430,297, Cl. 420-442.000.
- Caillebotte, Alain M.: See—
- Gentet, Pierre; Geoffroy, Alain Y.; and Caillebotte, Alain M., 4,430,715, Cl. 364-426.000.
- Caldwell, Donald L., to Dow Chemical Company, The. Catalytic decomposition of hypochlorite using substituted cobalt oxide spinels. 4,430,315, Cl. 423-499.000.
- Calgon Corporation: See—
- Rey, Paul R., 4,430,248, Cl. 252-313.00R.
- California Strolee, Inc.: See—
- Hyde, Richard E.; Smith, Gary L.; Carmichael, Lee T.; and Meader, Albert E., 4,429,916, Cl. 297-250.000.
- Callaghan, Vincent M.; Flynn, Edward P.; and Pokora, Bohdan M., to Combustion Engineering, Inc. Containment hydrogen removal system for a nuclear power plant. 4,430,293, Cl. 376-314.000.
- Calvert, John H., to Hocking Electronics Limited. Reflection type probes for eddy current testing instruments. 4,430,615, Cl. 324-239.000.
- Cam Gears Limited: See—
- Adams, Frederick J., 4,429,621, Cl. 91-420.000.
- Campbell, David L.: See—
- Patterson, Thomas C.; and Campbell, David L., 4,429,818, Cl. 224-39.000.
- Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., to Pfizer Inc. Dihydropyridine anti-ischaemic and antihypertensive agents. 4,430,333, Cl. 424-266.000.
- Canada, Her Majesty the Queen in right of: See—
- Tremblay, Meude, 4,430,131, Cl. 149-19.400.
- Canfield, V. Robert: See—
- Jackey, Philip A.; and Canfield, V. Robert, 4,430,158, Cl. 162-156.000.
- Cannavino, James A.; Heller, Andrew R.; Taradalsky, Morris; and Worley, William S., Jr., to International Business Machines Corp. Authorization mechanism for establishing addressability to information in another address space. 4,430,705, Cl. 364-200.000.
- Cannondale Corporation: See—
- Patterson, Thomas C.; and Campbell, David L., 4,429,818, Cl. 224-39.000.
- Canon Kabushiki Kaisha: See—
- Hosoe, Kazuya; Kinoshita, Takao; and Yamamichi, Masayoshi, 4,429,966, Cl. 354-406.000.
- Matsumoto, Toru; and Takenouchi, Masanori, 4,430,409, Cl. 430-106.600.
- Nakatsui, Hisashi; and Hajimoto, Yoshioki, 4,430,666, Cl. 358-44.000.
- Ohmori, Kouichi, 4,430,602, Cl. 315-241.00P.
- Suzuki, Nobuyuki, 4,429,974, Cl. 354-484.000.
- Taka, Hideo; and Masunaga, Makoto, 4,429,968, Cl. 354-403.000.
- Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, 4,430,411, Cl. 430-122.000.
- Tokuda, Ryuji; Ogawa, Masahiko; Tsunekawa, Tokuchichi; and Tamura, Shuichi, 4,429,967, Cl. 354-403.000.
- Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, 4,429,972, Cl. 354-448.000.
- Yoshimura, Shigeru; Ichikawa, Kiyomichi; and Ueda, Noriyoshi, 4,429,989, Cl. 355-76.000.
- Cap, Antonin: See—
- Ferkl, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrték, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.
- Capachi, Nickolas E. Foul or base lines for athletic activities. 4,429,872, Cl. 273-25.000.
- Cardiovascular Diagnostic Services, Inc.: See—
- Dorros, Gerald; and Spring, Donald A., 4,429,724, Cl. 141-27.000.
- Cardo, Philip T. Side stream separation system for mechanical collectors and method of constructing same. 4,430,100, Cl. 55-344.000.
- Carl Freudenberg, Firma: See—
- Knoke, Jürgen; Buchwald, Holger; and Fehlhaber, Jürgen, 4,430,372, Cl. 428-90.000.
- Carl-Zeiss-Stiftung: See—
- Lemcke, Ulrich, 4,430,696, Cl. 362-306.000.
- Carlier, Patrick; Monteil, André J. C.; and Simond, Jacques A. L., to Centre Européen de Recherches Mauvernay. Ethers of 1-(2-propynyloxy)-2-amino-3-propanol. 4,430,332, Cl. 424-248.570.
- Carlingswitch, Inc.: See—
- Sorenson, Richard W., 4,430,534, Cl. 200-68.300.
- Carlisle, Richard S. Method and apparatus for sealing and cutting plastic films. 4,430,069, Cl. 493-203.000.
- Carlsen, Russell O.: See—
- Raden, Daniel S.; Carlsen, Russell O.; and Narducy, Kenneth W., 4,430,455, Cl. 521-118.000.
- Carlson, Richard K., to MPC Products Corporation. Coaxial coupling and locking mechanism. 4,430,632, Cl. 336-120.000.
- Carmichael, Lee T.: See—
- Hyde, Richard E.; Smith, Gary L.; Carmichael, Lee T.; and Meader, Albert E., 4,429,916, Cl. 297-250.000.
- Carrier Corporation: See—
- Lamb, John D.; and Chopko, Robert A., 4,429,935, Cl. 339-32.00M.
- McManus, John R.; and Jackson, Dale, 4,429,737, Cl. 165-125.000.
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- Carsac, Claude R.: See—
- de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,430,550, Cl. 219-121.0ED.
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- Carson, David E.; and Dalke, George W., 4,429,998, Cl. 356-428.000.
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- Dalter, Raymond S.; and Gilmore, Dennis W., 4,430,127, Cl. 106-273.00N.
- Carter, William A., to Inland Steel Company. Method and apparatus for electro-treating a metal strip. 4,430,166, Cl. 204-15.000.
- Cartier, Jacques, to Radiall. Connector for optical fibers wherein individual fiber is centered by a plurality of balls. 4,429,949, Cl. 350-96.210.
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- Lohrenz, Howard R.; and Case, Cecil L., 4,429,517, Cl. 56-181.000.
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- Casper, Clemens; Grenner, Dieter; Klette, Gerd-Rüdiger; and Tholema, Edzard, to Bayer Aktiengesellschaft. Process for drying pumpable suspensions. 4,430,156, Cl. 159-47.100.
- Casper, Clemens: See—
- Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.0HA.
- Cassella Aktiengesellschaft: See—
- Buhler, Ulrich; Hahnle, Reinhard; Ribka, Joachim; and Richter, Helmut, 4,430,090, Cl. 8-508.000.
- Honell, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, 4,430,380, Cl. 428-254.000.
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- Castrantas, Harry M.; and Berkowitz, Sidney, to FMC Corporation. Polymeric foam derived from polymaleic anhydride and its preparation. 4,430,454, Cl. 521-107.000.
- Castro-Hahn, Victor, to Xerox Corporation. Moving nip constant velocity document transport. 4,429,866, Cl. 271-266.000.
- Cathay Pen Corporation: See—
- Tsai, Kuo L., 4,430,014, Cl. 401-216.000.
- Cathey, W. Thomas: See—
- Caulfield, H. John; and Cathey, W. Thomas, 4,429,954, Cl. 350-3.640.
- Catiller, Robert D.; Harris, Craig W.; and Mathews, Ronald D., to Burroughs Corporation. Subsystem controller. 4,430,710, Cl. 364-200.000.
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- Celotex Corporation: See—
- Franz, Edward W., 4,430,286, Cl. 264-258.000.
- Merck, James Q.; and Barry, Leon F., 4,430,209, Cl. 209-3.000.
- CEM Compagnie Electro-Mecanique: See—
- Delassus, Jean, 4,429,731, Cl. 164-504.000.
- Central Glass Company, Limited: See—
- Tanaka, Kazuyuki, 4,430,112, Cl. 65-335.000.
- Centre Européen de Recherches Mauvernay: See—
- Carlier, Patrick; Monteil, André J. C.; and Simond, Jacques A. L., 4,430,332, Cl. 424-248.570.

- Cesati, Mario. Horn loudspeakers of the sectorial diffusion type, and method for making said loudspeakers. 4,429,762, Cl. 181-159.000.
- Chace, David M.: See—
- Oliver, Donald W.; and Chace, David M., 4,430,567, Cl. 250-270.000.
- Chadima, George E., Jr.; and Kubler, Joseph J., to Norand Corporation. System and method for communication between nodes of a closed loop local communication path. 4,430,700, Cl. 364-200.000.
- Chaffiotte, Pierre; and Guicherd, Christian, to Regie Nationale des Usines Renault. Disconnecting valve rocker mechanism. 4,429,853, Cl. 123-198.00F.
- Challenge-Cook Brothers, Inc.: See—
- Dongelmans, Anthony A., 4,430,002, Cl. 366-139.000.
- Challenge Machinery Company, The: See—
- Westra, Dan P., 4,429,889, Cl. 280-79.10A.
- Chalmers, Bruce: See—
- Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,430,305, Cl. 422-246.000.
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- Chapman, Eugene K., to Amca International Corporation. Thread forming fastener. 4,430,036, Cl. 411-416.000.
- Chapman, William A., Jr.; and Crowley, John J., to Westvaco Corporation. Rotary envelope cutting method. 4,429,603, Cl. 83-37.000.
- Chatelain, Jean-Claude: See—
- Weichlein, Bernard; Chatelain, Jean-Claude; and Gaihier, Denis, 4,429,706, Cl. 137-66.000.
- Chaudhuri, Ajit K.: See—
- Toothill, Richard B.; Megna, Ignazio S.; and Chaudhuri, Ajit K., 4,430,471, Cl. 524-356.000.
- Chawla, Jai H.; and Colasanti, Arduino, to Allied Corporation. Winding spring especially for seat belt retractor. 4,429,840, Cl. 242-107.000.
- Chemische Werke Huels AG: See—
- Schnurbusch, Horst; Gras, Rainer; and Wolf, Elmar, 4,430,474, Cl. 524-590.000.
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- Cash, Dennis R., 4,430,203, Cl. 208-210.000.
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- Chianelli, Russell R.: See—
- Seiver, Robert L.; and Chianelli, Russell R., 4,430,443, Cl. 502-220.000.
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- Chiba, Takehisa: See—
- Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,430,344, Cl. 424-270.000.
- Chicoye, Etzer: See—
- Duncombe, George R.; Line, William F.; and Chicoye, Etzer, 4,430,348, Cl. 426-13.000.
- Childers, Thomas W.: See—
- Burkhardt, Joseph A.; Childers, Thomas W.; Hanson, Harry R.; and Harkrider, Bobby M., 4,429,620, Cl. 91-395.000.
- Chisso Corporation: See—
- Kunimune, Kohichi, 4,430,477, Cl. 525-70.000.
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- Leppard, David G., 4,430,425, Cl. 430-551.000.
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- Cities Service Company: See—
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- Spadotto, Oliviano; Roman, Gianfranco; and Da Rold, Claudio, 4,429,906, Cl. 285-315.000.
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- Clarion Co., Ltd.: See—
- Yamaguchi, Katsumi; and Okada, Hitoshi, 4,430,680, Cl. 360-137.000.
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- Clark, James M.; and Secrist, Duane R., to Great Lakes Carbon Corporation. Method of manufacturing aluminum in a Hall-Heroult cell. 4,430,189, Cl. 204-290.00R.
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- Clements, Alwin S.: See—
- Brock, Alan J.; Clements, Alwin S.; and Horrocks, Brian J., 4,430,686, Cl. 361-229.000.
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- Clery, Howard K., Jr.; and Penniman, Scott R., to Rep Industries Inc. Posting board. 4,429,901, Cl. 282-29.00B.
- Clopay Corporation: See—
- Winslow, Randy, 4,429,729, Cl. 160-315.000.
- Coca-Cola Company, The: See—
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- Cohn, Johann G. E., to Engelhard Corporation. Electrodes for use in an electrolytic process. 4,430,188, Cl. 204-290.00F.
- Colasanti, Arduino: See—
- Chawla, Jai H.; and Colasanti, Arduino, 4,429,840, Cl. 242-107.000.
- Colgate-Palmolive Company: See—
- Broze, Guy; and Laitem, Leopold, 4,430,244, Cl. 252-94.000.
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- Collin, Gerd: See—
- Kreysa, Gerhard; and Collin, Gerd, 4,430,175, Cl. 204-72.000.
- Collins, Wesley A. Tie caddy. 4,429,797, Cl. 211-119.000.
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- Callaghan, Vincent M.; Flynn, Edward P.; and Pokora, Bohdan M., 4,430,293, Cl. 376-314.000.
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- Sullivan, Robert P., 4,429,640, Cl. 110-165.00R.
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- Anderson, Harold J. T.; Kerby, Robert C.; Krauss, Clifford J.; and Neame, Hubert W., 4,430,178, Cl. 204-114.000.

- Commers, Louis P., to Suburban Duplicator Repair, Inc. Auxiliary inking roller kit for duplicating press. 4,429,631, Cl. 101-349.000.
- Commissariat a l'Energie Atomique: See—
- Bouquet, Gerard, 4,430,577, Cl. 307-108.000.
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- de Sivry, Bruno J. M.; Carsac, Claude R.; and Bonnet, Christian, 4,430,550, Cl. 219-121.0ED.
- Composite Container Corporation: See—
- Bonis, Laszlo J., 4,430,288, Cl. 264-510.000.
- Comstock, Wayne P.: See—
- Barber, Jerry L., 4,429,867, Cl. 272-32.000.
- Concrete Pipe & Products Corp.: See—
- Buttner, Robert C., 4,429,886, Cl. 277-207.00A.
- Connaco, Inc.: See—
- Jackson, E. Don; and Myers, Ralph E., 4,429,751, Cl. 173-13.000.
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- Conrad, Richard A. Control valve. 4,429,716, Cl. 137-625.350.
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- Grabovac, Bosko; and Vuceta, Ivan N., 4,429,597, Cl. 81-57.390.
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- Kipp, Michael A., 4,429,825, Cl. 229-1.50B.
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- Schiebe, Lowell H.; Russo, Bruce E.; Urness, Edward V.; and Hohn, William C., 4,430,702, Cl. 364-200.000.
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- Timmermans, Hans A., 4,430,081, Cl. 604-256.000.
- Cook, Marvin C.: See—
- Bedenbender, John W.; Cook, Marvin C.; and Johnston, Otis A., 4,429,898, Cl. 280-678.000.
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- Copal Company Limited: See—
- Okabe, Katsuhiko, 4,429,988, Cl. 355-28.000.
- Copeland, William M.; Blomgren, Roland A.; and Shallenberg, Robert L., to ServiceMaster Industries, Inc. Sanitizer attachment for a mobile floor cleaner. 4,429,432, Cl. 15-320.000.
- Coppock, C. Wallace. Game of chance to be played in conjunction with a baseball game. 4,429,877, Cl. 273-139.000.
- Corbell, Ryn C.: See—
- Bryant, David M.; Corbell, Ryn C.; Malcolm, Michael A.; Rogers, Lawrence D.; and Thompson, Donald R., 4,430,651, Cl. 340-825.520.
- Cormier, Leo P. Method and apparatus for clearing earth drill cuttings from around drill holes. 4,429,754, Cl. 175-88.000.
- Cornils, Boy: See—
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- Corning Glass Works: See—
- Palmquist, Ronald W., 4,430,109, Cl. 65-32.000.
- Cortellino, Charles A.; Levine, Joseph E.; and Schick, Henry C., to International Business Machines Corporation. Developing apparatus for exposed photoresist coated wafers. 4,429,983, Cl. 354-320.000.
- Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., to Storage Technology Corporation. Adaptive domain partitioning of cache memory space. 4,430,712, Cl. 364-300.000.
- Coulter Electronics, Inc.: See—
- Horne, Thomas, 4,430,299, Cl. 422-64.000.
- Cowan, William S., to Armo Inc. Remotely releasable connector. 4,429,902, Cl. 285-3.000.
- Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., to Minnesota Mining and Manufacturing Company. Metal/metal oxide coating. 4,430,366, Cl. 427-162.000.
- Cresap, Wesley L., to Bell Helicopter Textron, Inc. Helicopter power train for distributing rotor blade flapping displacements through a plurality of drive train components. 4,430,045, Cl. 416-138.000.
- Cresswell, James L.: See—
- Harvey, Susan L.; Cresswell, James L.; and Huff, B. Jerry L., 4,430,381, Cl. 428-284.000.
- Cresusot-Loire-Vallourec: See—
- Mola, Michel, 4,430,388, Cl. 428-595.000.
- Cromeens, Jeff Y., to Industrial Woodworking Machine. Infeed assembly for random length and shaping machine. 4,429,784, Cl. 198-744.000.
- Crook, Paul, to Cabot Corporation. Hard nickel-base alloy resistant to wear and corrosion. 4,430,297, Cl. 420-442.000.
- Cross, Peter E.: See—
- Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,430,333, Cl. 424-266.000.
- Crowley, John J.: See—
- Chapman, William A., Jr.; and Crowley, John J., 4,429,603, Cl. 83-37.000.
- Csapo, Michael A.: See—
- Hoover, Donald P.; Csapo, Michael A.; and Siemssen, Ernst A., 4,430,057, Cl. 432-154.000.
- Csongrad Megyei Tanasci Epitoipari Vallalat: See—
- Czenzhe, Zoltan, 4,429,507, Cl. 52-650.000.
- Csorba, Istvan: See—
- Vajdovich, Gyorgy; and Csorba, Istvan, 4,430,512, Cl. 210-745.000.
- Csoszereipari Vallalat: See—
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- Cirrito, Anthony J., 4,430,046, Cl. 417-55.000.
- CTS Corporation: See—
- Hufford, James N.; and Zdanys, John, Jr., 4,430,634, Cl. 338-164.000.
- Cucuiat, Iuliu M.; Holdis, Gabriel; and Hanculescu, Valentin E., to Institutul de Cercetari si Proiectari Pentru Petrol si Gaze. Method and apparatus for the determination of the density of light hydrocarbons mixtures. 4,429,572, Cl. 73-433.000.
- Culbertson, Billy M.; and Tufts, Timothy A., to Ashland Oil, Inc. Poly(ether-amide) polymeric compositions. 4,430,491, Cl. 528-153.000.
- Cushman, Richard, to Noster Industries, Inc. Rotary pull down pull up drive for drill pipes. 4,429,753, Cl. 173-149.000.
- Czechowski, Joseph, III: See—
- Darrel, Bernard; and Czechowski, Joseph, III, 4,429,578, Cl. 73-659.000.
- Czenzhe, Zoltan, to Csongrad Megyei Tanasci Epitoipari Vallalat. Universal building frame. 4,429,507, Cl. 52-650.000.
- Dahowski, Donald E.: See—
- Weir, Donald H.; and Dahowski, Donald E., 4,429,425, Cl. 4-503.000.
- Daimler-Benz Aktiengesellschaft: See—
- Lubbing, Bernd-Eric, 4,429,674, Cl. 123-531.000.
- Dainippon Ink & Chemicals Inc.: See—
- Hayakawa, Eizi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.
- D'Alessio, Michael S., to Harsco Corporation. Connector assembly. 4,430,019, Cl. 403-409.000.
- Dalke, George W.: See—
- Carson, David E.; and Dalke, George W., 4,429,998, Cl. 356-428.000.
- Dalter, Raymond S.; and Gilmore, Dennis W., to Carstab Corporation. Epoxylated amine asphalt anti-stripping agent. 4,430,127, Cl. 106-273.00N.
- D'Altroy, Frederick A.; and Lindner, Richard, to Bell Telephone Laboratories, Incorporated. Prevention of surface channels in silicon semiconductor devices. 4,430,663, Cl. 357-53.000.
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- Martin, Otto H. J., 4,430,211, Cl. 209-314.000.
- Dango, Manfred. Curve-negotiating plate conveyor. 4,429,785, Cl. 198-852.000.
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- Dankert, Harry S.: See—
- Beyer, William F.; Dankert, Harry S.; and English, James C., 4,429,584, Cl. 73-864.210.
- Dapco Industries, Inc.: See—
- Norris, James R., 4,429,576, Cl. 73-636.000.
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- Da Rold, Claudio: See—
- Spadotto, Oliviano; Roman, Gianfranco; and Da Rold, Claudio, 4,429,906, Cl. 285-315.000.
- Darrel, Bernard; and Czechowski, Joseph, III, to General Electric Company. Acoustical defect detection system. 4,429,578, Cl. 73-659.000.
- Davidson, Greg J.: See—
- Davis, Stuart M.; and Davidson, Greg J., 4,430,395, Cl. 429-158.000.
- Davies, Guy E.: See—
- Matthews, Robert B.; and Davies, Guy E., 4,429,528, Cl. 60-39.281.
- Davies, Mervyn W.: See—
- Spenceley, Gene D.; Davies, Mervyn W.; and Robson, Alan L., 4,430,117, Cl. 75-51.000.
- Davis, Calvin B.: See—
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- Davis, Stuart M.; and Davidson, Greg J., to Rayovac Corporation. Cell with overflow spout. 4,430,395, Cl. 429-158.000.

- Davis, William L., to MSL Industries, Inc. Electric motor with unitary rotor housing. 4,430,590, Cl. 310-67.00R.
- Davidson, John B., to Occidental Chemical Corporation. Electrolytic process for producing hydrogen peroxide. 4,430,176, Cl. 204-84.000.
- Davy-Loewy Limited: See—
- Hemingway, Trevor; and Middleton, Anthony E., 4,430,041, Cl. 414-787.000.
- Davy McKee Aktiengesellschaft: See—
- Albers, Manfred; Keunecke, Gerhard; and Krimphove, Herbert, 4,430,163, Cl. 203-75.000.
- Day, William J., Jr., to Raytheon Company. Combination microwave gas convection oven. 4,430,541, Cl. 219-10.55R.
- Dayco Corporation: See—
- Hill, James D., Jr.; Alexander, David L.; and Brooks, Thomas W., 4,429,465, Cl. 33-174.00E.
- dbx, Inc.: See—
- Adams, Robert W., 4,430,626, Cl. 331-108.00B.
- Dear, Terrence A.: See—
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- Deaton, David W., to American Hospital Supply Corp. Method for pre-use storage of a medical receptacle. 4,430,084, Cl. 604-317.000.
- de Brabant, Jean Y. Atrium building structure. 4,429,501, Cl. 52-236.200.
- de Cremoux, Baudouin: See—
- Nuyen, Trong L.; and de Cremoux, Baudouin, 4,430,740, Cl. 372-45.000.
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- Michael, Richard A., 4,429,593, Cl. 74-687.000.
- Deering, Dana F.; and Stein, Edward I., to General Electric Company. Method of removing volatiles in the preparation of silicone compositions. 4,430,461, Cl. 523-340.000.
- De Freitas, Elias M., to Termolair S/A. Mechanical device to transfer liquids from containers. 4,429,813, Cl. 222-207.000.
- Degussa Aktiengesellschaft: See—
- Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jürgen; and Weigel, Horst, 4,430,509, Cl. 562-401.000.
- Kreher, Alfons; Kuhnner, Gerhard; Rothbuhl, Lothar; Turk, Gunter; and Wolff, Siegfried, 4,430,280, Cl. 264-117.000.
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- DeJager, Thomas M. Mobile home stabilizer. 4,429,851, Cl. 248-354.00S.
- Delassus, Jean, to CEM Compagnie Electro-Mecanique. Translating field inductor for producing a directionally oriented flux within the stirring roller of a continuous caster for slabs. 4,429,731, Cl. 164-504.000.
- de Macedo, Pedro B.: See—
- Hojaji, Hamid; de Macedo, Pedro B.; and Litovitz, Theodore A., 4,430,108, Cl. 65-22.000.
- de Macedo, Pedro Buarque: See—
- Hojaji, Hamid; de Macedo, Pedro B.; and Litovitz, Theodore A., 4,430,108, Cl. 65-22.000.
- de Miguel Lopez, Isidoro: See—
- Gazapo Santa-Ofalla, Jose L.; Gonzalez Feliu, Juan; and de Miguel Lopez, Isidoro, 4,430,168, Cl. 204-35.00N.
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- Nakajima, Takashi; and Matsui, Fujio, 4,430,518, Cl. 136-234.000.
- Dennert, Hans V.: See—
- Dennert, Heinz; Dennert, Hans V.; and Seidl, Alois, 4,430,107, Cl. 65-22.000.
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- Dennison Manufacturing Company: See—
- Paradis, Joseph R., 4,429,437, Cl. 24-150.0FF.
- dePuglia, Gaston D.; and Huber, Greg A. Strip processing apparatus. 4,429,559, Cl. 72-186.000.
- Der, Chuck F.: See—
- Steinbruegge, Harold A.; and Der, Chuck F., 4,430,697, Cl. 363-49.000.
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- Thomas, Lothar, 4,429,644, Cl. 110-245.000.
- Deve, Vagn, to Combustion Engineering, Inc. Thermal reclaiming apparatus for a thermal sand reclamation system. 4,429,642, Cl. 110-236.000.
- DeZubay, Egon A.: See—
- Spurrer, Francis R.; DeZubay, Egon A.; Murray, Alexander P.; and Vidt, Edward J., 4,430,304, Cl. 422-204.000.
- Dhein, Rolf: See—
- Reuter, Knud; and Dhein, Rolf, 4,430,504, Cl. 556-482.000.
- Schreckenberger, Manfred; Burgdorfer, Hans-Heribert; Dhein, Rolf; and Schneider, Gottfried, 4,430,492, Cl. 528-176.000.
- Diamond Shamrock Corporation: See—
- Bennett, John E.; and Harney, David E., 4,430,393, Cl. 429-101.000.
- Dibbernardi, Peter A. Pipe support system. 4,429,497, Cl. 52-27.000.
- Dickson, Dale A.: See—
- Sorenson, Paul D.; and Dickson, Dale A., 4,429,577, Cl. 73-644.000.
- Diehl, Robert E.: See—
- Lutz, Albert W.; and Diehl, Robert E., 4,430,114, Cl. 71-105.000.
- Diesel Kiki Co., Ltd.: See—
- Hara, Toshizo; Sutoh, Shinji; and Kojima, Toshio, 4,429,733, Cl. 165-16.000.
- Diffrient, Niels, to Hauserman Inc. Int. Furniture & Textile Division. Chair. 4,429,917, Cl. 297-300.000.
- DiGiulio, Adolph V., to Atlantic Richfield Company. Fast-cool vinyl aromatic expandable polymers. 4,430,449, Cl. 521-56.000.
- Dijkman, Eise C.: See—
- Van Kessel, Theodorus J.; Dijkman, Eise C.; and Van Uden, Albertus J. P. M., 4,430,609, Cl. 323-350.000.
- Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., to Western Electric Company, Inc. Compositely insulated conductor having a layer of irradiation cross-linked polymeric plastic material. 4,430,385, Cl. 428-380.000.
- Dines, David R.: See—
- Broyer, Alfred P.; and Dines, David R., 4,429,454, Cl. 29-747.000.
- Dinger, Hans, to MTU-Motoren- und Turbinen-Union Friedrichshafen GmbH. Supercharged internal combustion engine with two controllable exhaust gas turbochargers. 4,429,533, Cl. 60-606.000.
- Dirkes, James V., to Rapid Engineering, Inc. Modulair air heater. 4,429,679, Cl. 126-110.00A.
- Discovision Associates: See—
- Wilkinson, Richard L., 4,430,401, Cl. 430-8.000.
- Ditcher Saw Company: See—
- Tice, Bernard O.; and Bailey, Gene E., 4,429,477, Cl. 37-80.00R.
- Diversified Eastern, Inc.: See—
- Pegon, Alexander A., Jr., 4,429,512, Cl. 53-534.000.
- Dixon International Limited: See—
- Reeve, William E., 4,429,450, Cl. 29-451.000.
- Diogos, Daniel F.; and Manduley, Flavio M., to Pitney Bowes Inc. Postage value determining scale with expandable memory port. 4,430,716, Cl. 364-466.000.
- Doak, Ron K. Repairing a roller chain. 4,429,525, Cl. 59-7.000.
- Dobreski, David V., to Cities Service Company. Cling/stretch wrap compositions. 4,430,457, Cl. 523-100.000.
- Docherty, Andrew J. P.: See—
- Sanders, Johan P. M.; and Docherty, Andrew J. P., 4,430,434, Cl. 435-253.000.
- Dr. Ing.h.c.F. Porsche AG: See—
- Bez, Ulrich; Schroder, Gerhard; and Rauser, Michael, 4,429,914, Cl. 296-188.000.
- Dr. Karl Thome Gesellschaft mit beschränkter Haftung: See—
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- Dodd, P. David: See—
- Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., 4,430,712, Cl. 364-300.000.
- Dodelin, Richard W.; Hurst, Darrell W.; and Osos, George R., to Dodelin, Richard W. Solar dryer. 4,429,472, Cl. 34-48.000.
- Doerge, Herman P., to PPG Industries, Inc. Polyether polyols and their method of preparation. 4,430,490, Cl. 528-77.000.
- Dohi, Takashi; Shinozaki, Nozomu; and Neki, Shigeo, to Matsushita Electric Industrial Co., Ltd. Electromagnetic clutch and brake. 4,429,773, Cl. 192-18.00B.
- Doi, Keiichi: See—
- Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichi, 4,430,542, Cl. 219-10.770.
- Dolman, Rodney A.; and Mears, Gregory N., to General Electric Company. Oscillator control circuit. 4,430,756, Cl. 455-78.000.
- Dominguez, Richard L. Tracking reflector assembly for a skylight. 4,429,952, Cl. 350-258.000.
- Dongelmans, Anthony A., to Challenge-Cook Brothers, Inc. Door-operating mechanism. 4,430,002, Cl. 366-139.000.
- Dopfer, Maximilian; and Heidrich, Gunther, to BHS-Bayerische Berg, Hutten- und Salzwerke Aktiengesellschaft. Double-oblique-toothed two-stage spur wheel drive. 4,429,586, Cl. 74-410.000.
- Dorn, Wolfgang; Elsner, Fritz; Fischer, Klaus; and Kroschel, Heinz, to Dynamit Nobel Aktiengesellschaft. Mine, especially antitank mine. 4,429,635, Cl. 102-401.000.
- Dorner, Heinrich; and Rabe, Gunter, to Kraftwerk Union Aktiengesellschaft. Reactor pressure vessel for a boiling-water reactor. 4,429,663, Cl. 122-365.000.
- Dorner, Karl H.: See—
- Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,430,452, Cl. 521-107.000.
- Dorr-Oliver Incorporated: See—
- Willus, Charles A.; Lewis, Kenneth D.; and Langer, Julian, 4,430,071, Cl. 494-38.000.
- Dorros, Gerald; and Spring, Donald A., to Cardiovascular Diagnostic Services, Inc. Pressure generator for intravascular dilator. 4,429,724, Cl. 141-27.000.
- Doty, Myron L., to Moorfeed Corporation. Dual drive rotary feeder. 4,429,808, Cl. 221-167.000.
- Doucet, Charles. Disc filter for liquids. 4,430,232, Cl. 210-798.000.
- Douglass, Samuel Ernest: See—
- Mooring, William L., 4,430,074, Cl. 604-49.000.
- Dow Chemical Co., The: See—
- Burba, John L., III, 4,430,097, Cl. 55-67.000.
- Burnett, Edward L.; and Stack, Eugene V., 4,430,283, Cl. 264-127.000.
- Caldwell, Donald L., 4,430,315, Cl. 423-499.000.

- Frenier, Wayne W.; and Wilson, David A., 4,430,128, Cl. 134-3.000.
 Lee, John M.; and Bauman, William C., 4,430,311, Cl. 423-179.500.
 McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,430,177, Cl. 204-98.000.
 McKinney, Osborne K.; and Flores, David P., 4,430,289, Cl. 264-564.000.
 Stack, Eugene V., 4,430,282, Cl. 264-127.000.
 Downing, Edward J.: See—
 Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,430,366, Cl. 427-162.000.
 Dowty Mining Equipment Limited: See—
 Hill, Nigel; and Rutherford, Dennis F., 4,430,026, Cl. 405-291.000.
 Dracka, Oldrich: See—
 Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,430,215, Cl. 210-195.400.
 Dransfeld, Klaus F. K.: See—
 Bimberg, Dieter H.; Bubenzer, Achim; Dransfeld, Klaus F. K.; and Hunklinger, Siegfried, 4,429,999, Cl. 356-432.000.
 Drauz, Karlheinz: See—
 Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jürgen; and Weigel, Horst, 4,430,509, Cl. 562-401.000.
 Drave, Heinz: See—
 Krist, Otto; Drave, Heinz; and Luypaert, Jozef, 4,430,438, Cl. 501-17.000.
 Dresser Industries, Inc.: See—
 Klee, Thomas R., 4,430,439, Cl. 501-95.000.
 Oliver, Donald W.; and Chace, David M., 4,430,567, Cl. 250-270.000.
 Drexel Oil Field Service (HK) Limited: See—
 Armell, Richard A.; and Misselbrook, John G., 4,429,566, Cl. 73-40.700.
 Dril-Quip, Inc.: See—
 Reimert, Larry E., 4,429,904, Cl. 285-24.000.
 DSO "IZOT": See—
 Jelezov, Jivko Y.; and Bogdanov, Todor D., 4,429,821, Cl. 226-181.000.
 Du Pont Canada Inc.: See—
 Zboril, Václav G., 4,430,488, Cl. 526-84.000.
 Dubeck, Michael; and Knapp, Gordon G., to Ethyl Corporation. Sulfide-modified ruthenium catalyst, 4,430,253, Cl. 502-185.000.
 Dubois, Jean-Claude: See—
 Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noël, 4,430,650, Cl. 340-784.000.
 DuBow, Joel. Process for enhancing the thermal decomposition of solid matter, 4,430,160, Cl. 201-19.000.
 Dubray, Norman. Trap setting device, 4,429,485, Cl. 43-97.000.
 Duffy, Peter B. Medical appliance for percussive respiratory therapy, 4,429,688, Cl. 128-28.000.
 Dufilho, Harold L.: See—
 Guagliardo, John L.; and Dufilho, Harold L., 4,429,994, Cl. 356-28.500.
 Dunbar, David R., to Interpace Corporation. Electrical transmission system conductor installation technique, 4,429,858, Cl. 254-134.3PA.
 Duncombe, George R.; Line, William F.; and Chicoye, Etzer, to Miller Brewing Company. Immobilized glucoamylase reactor for preparing a low calorie beer, 4,430,348, Cl. 426-13.000.
 Du Pont de Nemours, E. I., and Company: See—
 Goff, David L., 4,430,418, Cl. 430-288.000.
 Hughes, Allan B.; and Dear, Terrence A., 4,429,714, Cl. 137-625.300.
 Schumacher, Frederick G., 4,430,468, Cl. 524-109.000.
 Schurr, George A., 4,430,001, Cl. 366-107.000.
 Yunan, Malak E., 4,429,632, Cl. 102-202.130.
 Duracell Inc.: See—
 Schoolcraft, Robert J., 4,430,399, Cl. 429-218.000.
 Durante, Vincent A.; Olszanski, Dennis J.; Reagan, William J.; and Brown, Stanley M., to Engelhard Corporation. Passivation of contaminant metals on cracking catalysts by phosphorus addition, 4,430,199, Cl. 208-114.000.
 Durr, Frederick E.: See—
 Murdock, Keith C.; and Durr, Frederick E., 4,430,501, Cl. 544-72.000.
 Dutton, Edmund L., to Mallinckrodt, Incorporated. Interactive dual probe temperature control system, 4,429,829, Cl. 236-78.00B.
 Dyck, Arthur, to Gunstream Industries, Inc. Clutch and multiple speed capstan tape drive mechanism and tape position indicator for tape transport, 4,429,822, Cl. 226-188.000.
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 Dorn, Wolfgang; Elsner, Fritz; Fischer, Klaus; and Kroschel, Heinz, 4,429,635, Cl. 102-401.000.
 Eagle Industry Co., Ltd.: See—
 Matsumoto, Sotosuke, 4,429,884, Cl. 277-93.0SD.
 Early, John D., to Bethlehem Steel Corporation. Ceramic furnace door and frame, 4,429,641, Cl. 110-181.000.
 Eastman Kodak Company: See—
 Adin, Anthony, 4,430,420, Cl. 430-351.000.
 Newkirk, James S.; and Wiederhold, Robert A., 4,430,406, Cl. 430-99.000.
 Tamary, Ernest J., 4,429,990, Cl. 355-14.0FU.
 Eaton Corporation: See—
 Forsell, Kenneth A.; Grass, William E.; Theisen, Peter J.; and Fajner, Michael J., 4,430,631, Cl. 335-16.000.
 Rusenko, James J.; and Rzepecki, Marian M., 4,429,936, Cl. 339-45.00R.
 Eberbach, Steven J. Loudspeaker crossover delay equalization, 4,430,527, Cl. 381-97.000.
 Ebey, Frank S.: See—
 Christensen, Dean L.; and Ebey, Frank S., 4,429,790, Cl. 206-444.000.
 Ebi, Masashi, to Pacific Engineering Co., Ltd. Time delay fuse, 4,430,633, Cl. 337-166.000.
 Echlin Inc.: See—
 Loganbill, Ernest L.; and Taylor, William E., 4,430,604, Cl. 318-379.000.
 Eck, Gary A.; and Fritz, Gary R., to Kimball International, Inc. Fill note generation system for microcomputer controlled organ, 4,429,604, Cl. 84-1.170.
 Eckstein, Arthur. Skier's exercise device, 4,429,869, Cl. 272-97.000.
 Ecological Professional Industries, Inc.: See—
 Wagner, Louis E.; Rakoczynski, Randolph W.; and Flannery, Harold F., 4,430,021, Cl. 405-129.000.
 Edamura, Takao: See—
 Nakagawa, Nobuo; Kato, Yoshiki; Abe, Katsuo; Edamura, Takao; and Nakamura, Takao, 4,430,387, Cl. 428-579.000.
 Edelson, Soren; and Peterson, Bo, to Aktiebolaget Bofors. Impact igniter, 4,429,633, Cl. 102-222.000.
 Edso, Lennart. Method and apparatus for monitoring a press, 4,429,627, Cl. 100-35.000.
 Eguchi, Yasukata; and Shomura, Eiichi, to Janome Sewing Machine Industry Co., Ltd. Assembly for lower thread tension adjustment of sewing machine, 4,429,649, Cl. 112-229.000.
 Ehmman Corporation: See—
 Ehmman, Emil G., 4,429,793, Cl. 206-570.000.
 Ehmman, Emil G., to Ehmman Corporation. Diabetic traveling case, 4,429,793, Cl. 206-570.000.
 Ehrh, Winfried; and Jung, Siegfried, to Hoechst Aktiengesellschaft. Fluorine-containing alkylsulfobetaines, a process for their preparation and their use, 4,430,272, Cl. 260-501.120.
 Eichelberger, Charles W.; and Wojnarowski, Robert J., to General Electric Company. Cooking apparatus having internal pressurizing source and integral heat source, 4,430,557, Cl. 219-401.000.
 Eickmeyer, Allen G. Removal of CO₂ from gas mixtures, 4,430,312, Cl. 423-223.000.
 Eidetic Images, Inc.: See—
 Haines, Kenneth A., 4,429,946, Cl. 350-3.760.
 Eilers, Carl-Ernst; and Pachonik, Horst, to Siemens Aktiengesellschaft. Device for cathode sputtering of at least two different materials, 4,430,190, Cl. 204-298.000.
 Eim Company, Inc.: See—
 Zuch, Howard W.; and Weber, Paul, 4,429,591, Cl. 74-625.000.
 Eistetter, Klaus; and Rapp, Erich, to Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit beschränkter Haftung. Substituted oxiranecarboxylic acids, their preparation and their use as medicaments, 4,430,339, Cl. 424-278.000.
 Eldering, Herman G.; and Kliman, Arthur W., to Baird Corporation. Radiation measuring system, 4,430,000, Cl. 356-236.000.
 Eldre Components, Inc.: See—
 Bader, Craig C., 4,430,522, Cl. 174-72.00B.
 Electric Power Research Institute, Inc.: See—
 Kinnan, Frank, 4,430,022, Cl. 405-183.000.
 Electro Audio Dynamics, Inc.: See—
 von Recklinghausen, Daniel R., 4,429,702, Cl. 128-746.000.
 Eli Lilly and Company: See—
 Cooper, Robin D. G., 4,430,268, Cl. 260-239.00A.
 Frank, Bruce H., 4,430,266, Cl. 260-112.700.
 Frederickson, Robert C. A., 4,430,327, Cl. 424-177.000.
 Miller, Jack R., 4,430,113, Cl. 71-92.000.
 Pearce, Homer L., 4,430,269, Cl. 260-244.400.
 Scheffinger, Curtis C., 4,430,328, Cl. 424-177.000.
 Wheeler, William J., 4,430,499, Cl. 544-25.000.
 Elliott, Jo A.; McInroy, John W.; and Waldo, Paul D., to International Business Machines Corporation. Method for displaying source and destination file headers for easy comparison of proposed header changes, 4,430,725, Cl. 364-900.000.
 Ellsberg, Thomas R. Vehicle lock release mechanism operable with a safety interlock system, 4,430,685, Cl. 361-172.000.
 Elmore, Ernest L.: See—
 Mills, Edwin R.; and Elmore, Ernest L., 4,430,560, Cl. 219-505.000.
 Elphora: See—
 Szakvary, Laszlo, 4,430,757, Cl. 455-100.000.
 Elsner, Fritz: See—
 Dorn, Wolfgang; Elsner, Fritz; Fischer, Klaus; and Kroschel, Heinz, 4,429,635, Cl. 102-401.000.
 Elston, Ronald W., to Transquip Limited. Cargo container cover, 4,429,730, Cl. 160-368.00R.
 Emerson Electric Co.: See—
 Butterfield, Roger P., 4,429,595, Cl. 74-804.000.
 Stover, John C.; and Borkoski, Paul J., 4,429,845, Cl. 246-428.000.
 Empex Mineral-Und Naturfaserprodukts AG: See—
 Hascic, Waldemar, 4,430,125, Cl. 106-81.000.
 Empresa Nacional del Aluminio, S.A.: See—
 Gazapo Santa-Olalla, Jose L.; Gonzalez Feliu, Juan; and de Miguel Lopez, Isidoro, 4,430,168, Cl. 204-35.00N.
 Emundts, Horst; Hoyer, Manfred; and Vogel, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Steering wheel for a motor vehicle, particularly for a tractor, 4,429,588, Cl. 74-484.00R.
 Enders, John A., to Choice-Vend Industries, Inc. Adjustable dispensing mechanism for vending machine, 4,429,807, Cl. 221-75.000.
 Enemark, Robert B., to American District Telegraph Company. Forward scatter smoke detector, 4,430,646, Cl. 340-630.000.

- Energy Conversion Devices, Inc.: See—
 Ovshinsky, Stanford R.; Sapru, Krishna; and Venkatesan, Srinivasan, 4,430,391, Cl. 429-40.000.
 Engel, Wolfhard: See—
 Trummlitz, Gunter; Seeger, Ernst; and Engel, Wolfhard, 4,430,355, Cl. 426-548.000.
 Engelhard Corporation: See—
 Cohn, Johann G. E., 4,430,188, Cl. 204-290.00F.
 Durante, Vincent A.; Olszanski, Dennis J.; Reagan, William J.; and Brown, Stanley M., 4,430,199, Cl. 208-114.000.
 Fekete, Imre, deceased, 4,430,390, Cl. 429-34.000.
 Engels, Rainer; and Meurs, Jan H. H., to Shell Oil Company. Preparation of isocyanates and/or derivatives thereof, 4,430,262, Cl. 260-453.00P.
 English Clays Lovering Pochin & Co., Ltd.: See—
 Gate, Leonard F., 4,430,249, Cl. 252-313.00R.
 English, James C.: See—
 Beyer, William F.; Dankert, Harry S.; and English, James C., 4,429,584, Cl. 73-864.210.
 Enomoto, Seiji: See—
 Mogi, Jun-ichi; Miyasaka, Kiyoshi; Enomoto, Seiji; and Nozaki, Shigeki, 4,430,581, Cl. 307-296.00R.
 Enomoto, Shigeo; and Shimoda, Mitsuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographic camera of automatic focussing type, 4,429,965, Cl. 354-402.000.
 Epsom, Robert L.; Gailus, Paul H.; and van den Heuvel, Anthony P., to Motorola, Inc. Adaptive radio frequency intermodulation minimizing apparatus, 4,430,619, Cl. 330-149.000.
 Erdelyi, Janos: See—
 Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; and Muller, Henrik, 4,430,164, Cl. 204-1.00T.
 Erickson, Leland E. Multi-row crop harvesting attachment, 4,429,516, Cl. 56-95.000.
 Erico Products, Inc.: See—
 Laughlin, Raymond S.; and Lynch, Edward J., Jr., 4,429,440, Cl. 24-486.000.
 Ernst, Friedrich, to C. Otto & Comp. G.m.b.H. Latching mechanism on coke oven doors, 4,429,908, Cl. 292-35.000.
 Ernst Leitz Wetzlar GmbH: See—
 Schaefer, K. Dieter, 4,429,964, Cl. 354-403.000.
 Schick, Dieter, 4,429,993, Cl. 356-152.000.
 Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Schmitt, Klaus, to Hoechst Aktiengesellschaft. Production of acetic anhydride, 4,430,273, Cl. 260-546.000.
 Escher Wyss Aktiengesellschaft: See—
 Lehmann, Rolf, 4,429,446, Cl. 29-116.0AD.
 Escher Wyss Limited: See—
 Bubik, Alfred; and Reutter, Siegfried, 4,430,159, Cl. 162-292.000.
 Spiewok, Leonhard, 4,430,221, Cl. 210-380.100.
 Eskandry, Ezra D.; and Weaver, Jon N., to Sensormatic Electronics Corporation. Surveillance system employing a dual function floor mat radiator, 4,430,645, Cl. 340-572.000.
 Essex Group, Inc.: See—
 Tinder, David V., 4,429,570, Cl. 73-119.00A.
 ETA S.A. Fabriques d'Ebauches: See—
 Muller, Jacques, 4,430,009, Cl. 368-203.000.
 Wiget, Fridolin; and Guerin, Yves, 4,430,007, Cl. 368-157.000.
 Ethyl Corporation: See—
 Dubeck, Michael; and Knapp, Gordon G., 4,430,253, Cl. 502-185.000.
 Eutectic Corporation: See—
 Puga, Uldis, 4,430,122, Cl. 75-123.00B.
 Eve, Michel; and Flosch, Bernard, to Lignes Telegraphiques Et Telephoniques. Device for separating two light signals emitted by sources having different wavelengths and transmitted in a single optical fiber, 4,430,572, Cl. 250-551.000.
 Evers, Heinz, to Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH. Apparatus for removing a sample of at least one phase from a moving mixed phase, 4,430,301, Cl. 422-119.000.
 Ewing, John J.: See—
 Claassen, George R.; and Ewing, John J., 4,430,111, Cl. 65-114.000.
 Frank, Robert G.; Claassen, George R.; Ewing, John J.; and Fecik, Michael T., 4,430,110, Cl. 65-104.000.
 Excell Specialty Company, The: See—
 Jones, Wallace R., 4,430,137, Cl. 156-247.000.
 Exxon Production Research Co.: See—
 Burkhardt, Joseph A.; Childers, Thomas W.; Hanson, Harry R.; and Harkrider, Bobby M., 4,429,620, Cl. 91-395.000.
 Hayes, Donald A.; Finn, Lyle D.; and Brinkmann, Carl R., 4,430,023, Cl. 405-224.000.
 Exxon Research and Engineering Company: See—
 Felsky, Gerald, 4,430,205, Cl. 208-246.000.
 Ryu, Ji-yong, 4,430,252, Cl. 502-162.000.
 Sawyer, Willard H.; and Mitchell, Howard L., III, 4,430,442, Cl. 502-220.000.
 Seiver, Robert L.; and Chianelli, Russell R., 4,430,443, Cl. 502-220.000.
 Ezaki, Sazo, to Toyota Gosei Co., Ltd. Channel-shaped trim, 4,430,374, Cl. 428-135.000.
 F. D. International, Ltd.: See—
 von Platen, Baltzar C., 4,430,051, Cl. 425-77.000.
 FAG Kugelfischer Georg Schaefer & Co.: See—
 Kress, Manfred, 4,429,524, Cl. 57-336.000.
 Spielmann, Norbert, 4,429,531, Cl. 60-588.000.
 Fajner, Michael J.: See—
 Forsell, Kenneth A.; Grass, William E.; Theisen, Peter J.; and Fajner, Michael J., 4,430,631, Cl. 335-16.000.
 Falco, Charles M.: See—
 Schuller, Ivan K.; and Falco, Charles M., 4,430,183, Cl. 204-192.00C.
 Farber, Jürgen, to PLK Papier- und Kunststoff Werke Linnich GmbH. Beverage package, 4,429,828, Cl. 229-75.000.
 Farmont, Johann H. Building logs with weathertight joints, 4,429,500, Cl. 52-233.000.
 Fauss, Rudolf: See—
 Heitkamper, Peter; König, Klaus; Findeisen, Kurt; Fauss, Rudolf; and Sundermann, Rudolf, 4,430,505, Cl. 560-24.000.
 Featherstone, John L., to Magma Power Company. Geothermal plant silica control system, 4,429,535, Cl. 60-641.500.
 Fechtig, Bruno: See—
 Heusler, Karl; Bickel, Hans; Fechtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, 4,430,498, Cl. 544-16.000.
 Fecik, Michael T.: See—
 Frank, Robert G.; Claassen, George R.; Ewing, John J.; and Fecik, Michael T., 4,430,110, Cl. 65-104.000.
 Fedeli, Luisa. Blade structure, particularly for rotating grass shaving machines, 4,429,518, Cl. 56-295.000.
 Feher, Joseph S. Automotive suspension system for maintaining the rear wheels substantially parallel to one another throughout use, 4,429,900, Cl. 280-689.000.
 Fehlbauer, Jürgen: See—
 Knoke, Jürgen; Buchwald, Holger; and Fehlbauer, Jürgen, 4,430,372, Cl. 428-90.000.
 Fekete, Anna M., administrator: See—
 Fekete, Imre, deceased, 4,430,390, Cl. 429-34.000.
 Fekete, Imre, deceased (by Fekete, Anna M., administrator), to Engelhard Corporation. Compact fuel cell stack, 4,430,390, Cl. 429-34.000.
 Feldhoff, Karl; and Peters, Paul, to L. & C. Steinmüller GmbH. Cooled shaking grate having no grate bar, 4,429,664, Cl. 122-376.000.
 Feldman, Marvin: See—
 Chen, Richard M.; and Feldman, Marvin, 4,429,880, Cl. 273-176.0FA.
 Felsky, Gerald, to Exxon Research and Engineering Company. Method for the improvement of the oxidation resistance of hydrocarbon oil, especially transformer oils by the selective removal of pro-oxidant nitrogen and sulfur compounds therefrom, 4,430,205, Cl. 208-246.000.
 Fender, Robert: See—
 Klute, Friedrich; and Fender, Robert, 4,429,618, Cl. 91-1.000.
 Ferguson, W. Gardner. Apparatus for integrally removing a track plate and spikes, 4,429,857, Cl. 254-18.000.
 Ferkl, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Václav; Blasko, Michal; Pavek, Karel; Chrték, Milan; and Blasko, Jan, to Vyzkumny ústav bavlnarský. Open-end spinning machine, 4,429,522, Cl. 57-301.000.
 Ferrero S.p.A.: See—
 Cillario, Lorenzo, 4,430,351, Cl. 426-103.000.
 Ferrofluidics Corporation: See—
 Wyman, John E., 4,430,239, Cl. 252-62.510.
 Feuvray, Alain. Fastening device for a trailer and trailer comprising such a device, 4,429,894, Cl. 280-458.000.
 Fichtel & Sachs AG: See—
 Butz, Hans, 4,429,448, Cl. 29-281.500.
 Fieldcrest Mills, Inc.: See—
 Mills, Edwin R.; and Elmore, Ernest L., 4,430,560, Cl. 219-505.000.
 Filz, Charles J.: See—
 Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,430,098, Cl. 55-191.000.
 Findeisen, Kurt, to Bayer Aktiengesellschaft. Preparation of α -dicyanotrimethylsilyloxy compounds, 4,430,503, Cl. 556-417.000.
 Findeisen, Kurt: See—
 Heitkamper, Peter; König, Klaus; Findeisen, Kurt; Fauss, Rudolf; and Sundermann, Rudolf, 4,430,505, Cl. 560-24.000.
 Finn, George A., III; Kuneman, James E.; and Lawrence, Keith E., to General Electric Company. Attitude insensitive lubrication systems, 4,429,587, Cl. 74-467.000.
 Finn, Lyle D.: See—
 Hayes, Donald A.; Finn, Lyle D.; and Brinkmann, Carl R., 4,430,023, Cl. 405-224.000.
 Fiorucci, Louis C., to Olin Corporation. Mixed nitrate salt heat transfer medium and process for providing the same, 4,430,241, Cl. 252-70.000.
 Fischer, Artur. Box-shaped container for use as a cold frame, 4,429,489, Cl. 47-18.000.
 Fischer, Artur. Fixing device for fastening objects on hollow boards, 4,429,505, Cl. 52-583.000.
 Fischer, Carlin P., to Techniraft, Inc. End fitting for oil well sucker rods, 4,430,018, Cl. 403-268.000.
 Fischer, Dieter, to Triumph-Adler A.G. für Buround Informationstechnik. Image conversion apparatus with gas discharge switching, 4,430,564, Cl. 250-211.00R.
 Fischer, Harry C. Ice maker, 4,429,543, Cl. 62-73.000.
 Fischer, Klaus: See—
 Dorn, Wolfgang; Elsner, Fritz; Fischer, Klaus; and Kroschel, Heinz, 4,429,635, Cl. 102-401.000.
 Fischley, John; and Anderson, Tom E., to Republic Steel Corporation. Runner system for transferring molten metal, 4,429,860, Cl. 266-44.000.
 Fisher, Charles B.; and Fisher, Sidney T. Heat transfer in gas compression, 4,429,546, Cl. 62-238.100.

- Fisher, Charles B.; and Fisher, Sidney T. Demodulator system for double sideband suppressed carrier amplitude modulation. 4,430,620, Cl. 329-166.000.
- Fisher, Sidney T.: See—
Fisher, Charles B.; and Fisher, Sidney T., 4,429,546, Cl. 62-238.100.
Fisher, Charles B.; and Fisher, Sidney T., 4,430,620, Cl. 329-166.000.
- Flager, Calvin D. Bicycle seat. 4,429,915, Cl. 297-199.000.
- Flanagan, Richard J.; and Wiebe, Leonard I., to Merck Frosst Canada Inc. 6-Bromocholesterol derivatives. 4,430,321, Cl. 424-1.100.
- Flannery, Harold F.: See—
Wagner, Louis E.; Rakoczynski, Randolph W.; and Flannery, Harold F., 4,430,021, Cl. 405-129.000.
- Flechner, Paul F., to AMF Incorporated. Hydraulic exerciser. 4,429,871, Cl. 272-130.000.
- Fleischmann, Karl-Heinz, to Forbach GmbH & Co. KG. Electrical safety device for heaters with a high current consumption. 4,430,554, Cl. 219-483.000.
- Fletcher, Argell, to Mobil Oil Corporation. Heated ion exchange process for the recovery of uranium. 4,430,308, Cl. 423-7.000.
- Flor, Joseph R., to Midland-Ross Corporation. Locking device for interfitting members. 4,429,938, Cl. 339-90.00R.
- Flores, David P.: See—
McKinney, Osborne K.; and Flores, David P., 4,430,289, Cl. 264-564.000.
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Eve, Michel; and Flosh, Bernard, 4,430,572, Cl. 250-551.000.
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Litzberger, Wolfgang, 4,430,220, Cl. 210-333.100.
- Flynn, Edward P.: See—
Callaghan, Vincent M.; Flynn, Edward P.; and Pokora, Bohdan M., 4,430,293, Cl. 376-314.000.
- FMC Corporation: See—
Castrant, Harry M.; and Berkowitz, Sidney, 4,430,454, Cl. 521-107.000.
- Forbach GmbH & Co. KG: See—
Fleischmann, Karl-Heinz, 4,430,554, Cl. 219-483.000.
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Ramnsten, Ivan O., 4,429,561, Cl. 72-478.000.
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Pytlewski, Louis J.; and Thorne, Edward J., 4,430,208, Cl. 208-262.000.
- Franks, T. Chandler, to Texize, Division of Morton Thiokol. Liquid detergent composition containing bleach. 4,430,236, Cl. 252-95.000.
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- Frazier, William J. Tank apparatus with floating agitator for processing photographic film. 4,429,981, Cl. 354-316.000.
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- Frederickson, Robert C. A., to Eli Lilly and Company. Method for treating pregnant females for pain and anxiety. 4,430,327, Cl. 424-177.000.
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- Fremaux, Jacques: See—
Vachet, Joel; Bruandet, Justin; and Fremaux, Jacques, 4,429,509, Cl. 52-788.000.
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Franz, Herbert; and Frister, Manfred, 4,429,924, Cl. 308-187.000.
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Eck, Gary A.; and Fritz, Gary R., 4,429,604, Cl. 84-1.170.
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- Frost, Jonathan R.: See—
Wick, Alexander E.; and Frost, Jonathan R., 4,430,334, Cl. 424-267.000.
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Mischke, Peter; Fuchs, Hermann; and Meininger, Fritz, 4,430,259, Cl. 260-186.000.
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- Fuji Photo Film Co., Ltd.: See—
Aoki, Kozo; and Ono, Michio, 4,430,423, Cl. 430-384.000.
Aono, Toshiaki; Hara, Hiroshi; Naito, Hideki; and Sato, Kozo, 4,430,415, Cl. 430-203.000.
Ono, Yoshihiro; and Sunagawa, Hiroshi, 4,430,405, Cl. 430-95.000.
Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,976, Cl. 354-203.000.
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Gotoh, Osamu; Otake, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,429,676, Cl. 123-571.000.
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Ito, Takashi, 4,430,364, Cl. 427-91.000.
Mogi, Jun-ichi; Miyasaka, Kiyoshi; Enomoto, Seiji; and Nozaki, Shigeki, 4,430,581, Cl. 307-296.00R.
Okano, Takashi, 4,430,152, Cl. 156-643.000.
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Kamachi, Shinichi; and Fujiwara, Toshihide, 4,429,996, Cl. 356-344.000.
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Onitsuka, Nobuyuki; Fukamachi, Masaaki; and Sueyoshi, Masahiko, 4,430,612, Cl. 324-166.000.
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- Fukuda, Mitsuo: See—
Nomaguchi, Tamotsu; Tano, Masahiro; Fukuda, Mitsuo; and Saitou, Tatsuo, 4,429,735, Cl. 165-60.000.

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Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.
- Fukuda, Yoshiaki: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Fukui Byora Co.: See—
Fujikawa, Tatsuhichi, 4,430,034, Cl. 411-179.000.
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Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,430,223, Cl. 210-493.500.
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Suzuki, Masakazu; Ikeda, Toshiaki; and Furuichi, Shuhei, 4,430,746, Cl. 378-40.000.
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Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shirokawa, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
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- Fushida, Akira: See—
Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshiaki; Fushida, Akira; Ikeda, Toshihiro; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.
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Boucherie, Leonel P., 4,430,039, Cl. 414-417.000.
- GAF Corporation: See—
Jackey, Philip A.; and Canfield, V. Robert, 4,430,158, Cl. 162-156.000.
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Steger, Jay D.; Neitzke, Thomas G.; and Gagnon, Stephen J., 4,429,794, Cl. 206-597.000.
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Weichlein, Bernard; Chatelain, Jean-Claude; and Gaihier, Denis, 4,429,706, Cl. 137-66.000.
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Epsom, Robert L.; Gailus, Paul H.; and van den Heuvel, Anthony P., 4,430,619, Cl. 330-149.000.
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Sandvig, Robert L.; Klemm, William A.; Gaines, Jack R.; and Looyenga, Robert W., 4,430,240, Cl. 252-70.000.
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Hegde, Ramesh S.; and Ganzi, Gary C., 4,430,226, Cl. 210-638.000.
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Surace, Filippo; and Garcea, Giampaolo, 4,429,666, Cl. 123-41.050.
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Strupczewski, Joseph T.; and Gardner, Beth A., 4,430,335, Cl. 424-267.000.
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Blanchard, Raymond A., Jr.; and Garey, Kenneth E., 4,430,644, Cl. 340-365.00R.
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Tighe, Brian J.; and Gee, Howard J., 4,430,458, Cl. 523-108.000.
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Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Schmitt, Klaus, 4,430,273, Cl. 260-546.000.
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Oldham, Delbert J.; and Karish, John A., 4,429,611, Cl. 89-1.816.
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Darrel, Bernard; and Czechowski, Joseph, III, 4,429,578, Cl. 73-659.000.
- Deering, Dana F.; and Stein, Edward I., 4,430,461, Cl. 523-340.000.
- Dolman, Rodney A.; and Mears, Gregory N., 4,430,756, Cl. 455-78.000.
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- General Foods Corporation: See—
Yadlowsky, Slawko, 4,430,353, Cl. 426-388.000.
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Burley, Harvey A., 4,429,669, Cl. 123-179.00H.
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- Gentry, Cecil C.; and Small, William M., to Phillips Petroleum Company. Heat exchanger. 4,429,739, Cl. 165-159.000.
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Gentet, Pierre; Geoffroy, Alain Y.; and Caillebotte, Alain M., 4,430,715, Cl. 364-426.000.
- George, Stephen, to Subtex, Inc. Flame resistant insulated electrical wire and cable construction. 4,430,384, Cl. 428-377.000.
- Georgia Tech Research Institute: See—
Tedder, Daniel W., 4,430,102, Cl. 62-24.000.
- Gereg, Charles V., to Barden Corporation, The. Eddy current bearing ball flaw detector. 4,430,614, Cl. 324-238.000.
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Boyes, David, 4,430,371, Cl. 428-61.000.
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Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,430,115, Cl. 75-0.50R.
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Dalter, Raymond S.; and Gilmore, Dennis W., 4,430,127, Cl. 106-273.00N.
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Sanders, Johan P. M.; and Docherty, Andrew J. P., 4,430,434, Cl. 435-253.000.
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Grieves, Robert G.; and Richter, Roscoe, 4,429,710, Cl. 137-375.000.
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Orain, Michel A., 4,429,925, Cl. 308-189.00R.
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- Gmohling, Werner: See—
Freissmuth, Alfred; Gmohling, Werner; and Meichsner, Walter, 4,430,118, Cl. 75-58.000.
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Reed, Robert L.; Petty, Luther E.; and Goddin, Clifton S., Jr., 4,430,317, Cl. 423-574.00R.
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Goldsmith, Derek J., 4,429,715, Cl. 137-625.170.
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Tidman, Derek A.; and Goldstein, Shyke A., 4,429,612, Cl. 89-8.000.

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Gazapo Santa-Ofelia, Jose L.; Gonzalez Feliu, Juan; and de Miguel Lopez, Isidoro, 4,430,168, Cl. 204-35.00N.
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- Goodstine, Stephen L.; and Jukkola, Glen D., to Conoco Inc. Fluidized bed air distributor. 4,429,471, Cl. 34-10.000.
- Goodyear Tire & Rubber Company, The: See—
Lin, Leroy C., 4,430,277, Cl. 264-22.000.
- Sandstrom, Paul H., 4,430,487, Cl. 526-83.000.
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- Gosteli, Jacques, to Schering Corporation. Process for the preparation of 2-(2,4-dichlorophenoxy)-phenylacetic acid. 4,430,510, Cl. 562-465.000.
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- Goulas, Apostolos, to National Research Development Corporation. Two dimensional flow analyzer. 4,429,995, Cl. 356-343.000.
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- Graczyk, Bronislaus S., to Trico Products Corporation. Windshield wiper arm to blade connector. 4,429,431, Cl. 15-250.320.
- Granryd, Eric, to AB Thermo-Verken. Arrangement in a heat pump plant. 4,429,547, Cl. 62-238.600.
- Grant, Gerald B.; and Brune, Robert A., Jr., to Victor Equipment Company. Traction drive for traveling torch or the like. 4,429,585, Cl. 74-191.000.
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Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,430,480, Cl. 525-160.000.
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- Gras, Rainer: See—
Schnurbusch, Horst; Gras, Rainer; and Wolf, Elmar, 4,430,474, Cl. 524-590.000.
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O'Neal, William C.; and Grasby, James L., 4,429,911, Cl. 292-259.00R.
- Grass, William E.: See—
Forsell, Kenneth A.; Grass, William E.; Theisen, Peter J.; and Fajner, Michael J., 4,430,631, Cl. 335-16.000.
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Van Pelt, Wilhelmus H. J. M.; and Roodenrijs, Jacobus P., 4,430,104, Cl. 62-123.000.
- Grau, Werner: See—
Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.
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Clark, James M.; and Secrist, Duane R., 4,430,189, Cl. 204-290.00R.
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- Greenbelt Farm Systems Inc.: See—
Rempel, William; and Rempel, Henry, 4,430,038, Cl. 414-346.000.
- Greenspan, Donald J. Child safe container-closure unit. 4,429,800, Cl. 215-216.000.
- Greiner, Leonard. Chemical heat pump. 4,429,684, Cl. 126-429.000.
- Grenner, Dieter: See—
Casper, Clemens; Grenner, Dieter; Klette, Gerd-Rudiger; and Tholema, Edzard, 4,430,156, Cl. 159-47.100.
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Bach, Erik; and Gronbjerg, Jorgen P. J., 4,430,063, Cl. 434-380.000.
- Grosser, Heinrich, to Thyssen Industrie AG Henschel. Apparatus for transporting ammunition to a top-mounted gun. 4,429,616, Cl. 89-36.00K.
- Grover, Bruce C., to Litton Systems, Inc. Nuclear magnetic resonance gyro scope. 4,430,616, Cl. 324-304.000.
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- Gruenenthal GmbH: See—
Vollenberg, Werner P.; and Boehlke, Horst R. E., 4,430,497, Cl. 542-429.000.
- Grummert, Ulrich: See—
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- GT - Devices: See—
Tidman, Derek A.; and Goldstein, Shyke A., 4,429,612, Cl. 89-8.000.
- GTE Automatic Electric Incorporated: See—
Johnson, Edward R., 4,430,744, Cl. 375-14.000.
- GTE Laboratories Incorporated: See—
Simoes, Richard M., 4,430,622, Cl. 330-9.000.
- GTE Products Corporation: See—
Kackemeister, Carl F., 4,430,599, Cl. 313-554.000.
- Guagliardo, John L.; and Dufilho, Harold L., to United States of America, Navy. System for remotely determining velocity of sound in water. 4,429,994, Cl. 356-28.500.
- Gudmundsson, Einar: See—
Snaeland, Sveinn; Halldorsson, Ragnar; Franke, Alwis; and Gudmundsson, Einar, 4,430,187, Cl. 204-243.00R.
- Guerin, Yves: See—
Wiget, Fridolin; and Guerin, Yves, 4,430,007, Cl. 368-157.000.
- Guicherd, Christian: See—
Chaffiotte, Pierre; and Guicherd, Christian, 4,429,853, Cl. 123-198.00F.
- Guild, Charles L.; Werthessen, Nicholas H.; and Aldrich, Carlton W., Jr., to American Pile Driving Corporation. Hydraulically operated mandrels. 4,430,024, Cl. 405-232.000.
- Gulf Oil Corporation: See—
Oltrogge, Robert D., 4,430,195, Cl. 208-8.00R.
- Gulistan, Bulent. Tamper-proof screw assembly. 4,429,600, Cl. 81-461.000.
- Gunsolus, Chee C. Surgical hanger. 4,429,848, Cl. 248-75.000.
- Gunstrem Industries, Inc.: See—
Dyck, Arthur, 4,429,822, Cl. 226-188.000.
- Gutierrez, Manuel; and Gutierrez, Michael A. Volumetric filter for liquid level measurement devices. 4,430,212, Cl. 210-104.000.
- Gutierrez, Michael A.: See—
Gutierrez, Manuel; and Gutierrez, Michael A., 4,430,212, Cl. 210-104.000.
- Gutner, Kenneth H. Bracket for securing a mattress supporting member to a bedpost. 4,429,426, Cl. 5-288.000.
- Guzy, Raymond L., to Hughes Tool Company. Elastomeric compositions with improved chemical, water and heat resistance. 4,430,472, Cl. 524-483.000.
- H. R. Electronics Company: See—
Levasseur, Joseph L., 4,429,778, Cl. 194-10.000.
- Haas, Peter: See—
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- Haber, William. Cigarette substitute. 4,429,703, Cl. 131-273.000.
- Hachiya, Tomoyoshi: See—
Saito, Hideomi; Yamamoto, Tomoya; Nomura, Masayuki; and Hachiya, Tomoyoshi, 4,430,500, Cl. 544-25.000.
- Hack, Joachim; Brotzler, Roland; Schulze-Berge, Klaus; and Angermann, Rudolf, to BASF Aktiengesellschaft. Drive apparatus for recording disks in which the disk is clamped between a driven recessed member and a rotatably mounted clamping member. 4,430,678, Cl. 360-99.000.
- Haddock, Louis A., Jr.; and Jones, Ronald L., to Clark Equipment Company. Seat and control lever interlock. 4,429,761, Cl. 180-271.000.
- Hagio, Takehiko; and Miyahara, Michito, to Nippon Tungsten Co., Ltd. Process for producing zirconia yttria grinding media used for grinding magnetic coating powder. 4,430,279, Cl. 264-65.000.
- Hahnle, Reinhard: See—
Buhler, Ulrich; Hahnle, Reinhard; Ribka, Joachim; and Richter, Helmut, 4,430,090, Cl. 8-508.000.
- Haines, Kenneth A., to Eidetic Images, Inc. Method and system for constructing a composite hologram. 4,429,946, Cl. 350-3.760.
- Haire, Christopher A. R.: See—
Payne, Robert M.; and Haire, Christopher A. R., 4,430,695, Cl. 362-277.000.
- Hajek, Josef, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Printing machine milling roller drive system. 4,429,630, Cl. 101-216.000.
- Hajimoto, Yoshioki: See—
Nakatsui, Hisashi; and Hajimoto, Yoshioki, 4,430,666, Cl. 358-44.000.
- Hale, Warren F.: See—
Brode, George L.; Chow, Sui-Wu; and Hale, Warren F., 4,430,473, Cl. 524-492.000.
- Hall, John B.: See—
Sprecker, Mark A.; and Hall, John B., 4,430,508, Cl. 560-256.000.
- Halldorsson, Ragnar: See—
Snaeland, Sveinn; Halldorsson, Ragnar; Franke, Alwis; and Gudmundsson, Einar, 4,430,187, Cl. 204-243.00R.
- Hallen Company: See—
Allen, Herbert, 4,429,444, Cl. 29-33.00F.
- Halliburton Company: See—
Beck, Harold K., 4,429,748, Cl. 166-324.000.
- Halliburton, Ronald D.; Pearson, James H.; and Sava, Robert J., to Bally Manufacturing Corporation. Pinball machine and play feature thereof. 4,429,876, Cl. 273-121.00A.

- Halmos, George G. Coil upender. 4,430,040, Cl. 414-783.000.
- Halvorson, Harlan L. Adjustable tree stand. 4,429,846, Cl. 248-524.000.
- Hamacher, Martin. Illuminating device for underground mining. 4,430,693, Cl. 362-61.000.
- Hamilton Glass Products Incorporated: See—
Ruppel, Anthony D.; Williams, Monte; and Willis, Larry, 4,429,791, Cl. 206-454.000.
- Hamilton, Stephen P.; Hunter, Arthur C.; and Lies, Kenneth A., to Texas Instruments Incorporated. Memory interface system having combined command, address and data buss. 4,430,724, Cl. 364-900.000.
- Hammarberg, Lars. Reinforced beam section and a method of producing it. 4,430,373, Cl. 428-113.000.
- Hammond, Peter M.; Price, Christopher P.; and Scawen, Michael D., to Public Health Laboratory Service Board. Production of arylacylamides. 4,430,433, Cl. 435-228.000.
- Hamper, Berge; Zweig, Martin; and Rabin, Harvey, to United States of America, Health and Human Services. Test methods employing monoclonal antibodies against *Herpes simplex* virus types 1 and 2 nucleocapsid proteins. 4,430,437, Cl. 436-548.000.
- Hampel, Gerald; and Mugnai, Giorgio, to W. R. Grace & Co., Cryovac Div. Plastic pouch, and storing and dispensing method using same. 4,429,810, Cl. 222-107.000.
- Hampton, William E.: See—
Harston, John C.; and Hampton, William E., 4,430,147, Cl. 156-578.000.
- Hanculescu, Valentin E.: See—
Cucuiat, Iuliu M.; Holdis, Gabriel; and Hanculescu, Valentin E., 4,429,572, Cl. 73-433.000.
- Handa, David H. Spin-casting rod with lure jerking assembly. 4,429,481, Cl. 43-19.200.
- Hanna, Khalil, to Seifra S.A. Surgical apparatus for precisely cutting out the cornea. 4,429,696, Cl. 128-310.000.
- Hanna, Marie R.: See—
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.
- Hanna Mining Company, The: See—
Rostvold, Virgil C., 4,430,056, Cl. 432-137.000.
- Hanrahan, James L.: See—
Westdale, Virgil W.; and Hanrahan, James L., 4,430,403, Cl. 430-49.000.
- Westdale, Virgil W.; and Hanrahan, James L., 4,430,413, Cl. 430-137.000.
- Hansen, Flemming: See—
Henrichsen, Frank; Hansen, Flemming; and Sorensen, Kim, 4,430,062, Cl. 433-28.000.
- Hanson, Donald N.; and Lynn, Scott, to University of California, The Regents of the. Method of concentrating aqueous solutions. 4,430,227, Cl. 210-642.000.
- Hanson, Harry R.: See—
Burkhardt, Joseph A.; Childers, Thomas W.; Hanson, Harry R.; and Harkrider, Bobby M., 4,429,620, Cl. 91-395.000.
- Hara, Hiroshi: See—
Aono, Toshiaki; Hara, Hiroshi; Naito, Hideki; and Sato, Kozo, 4,430,415, Cl. 430-203.000.
- Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,976, Cl. 354-203.000.
- Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,977, Cl. 354-203.000.
- Hara, Toshiro; Sutoh, Shinji; and Kojima, Toshio, to Diesel Kiki Co., Ltd. Apparatus for controlling blowing mode of a car air-conditioner. 4,429,733, Cl. 165-16.000.
- Harada, Hidekazu: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.
- Harada, Katsuhiko, to Nippon Telegraph & Telephone Public Corporation. Positive resist and method for manufacturing a pattern thereof. 4,430,419, Cl. 430-296.000.
- Harada, Kinji: See—
Ikeda, Kyoichi; Ando, Motoyoshi; and Harada, Kinji, 4,429,564, Cl. 73-32.00A.
- Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., to Post Office. Switching of digital signals. 4,430,733, Cl. 370-110.100.
- Hareng, Michel: See—
Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noel, 4,430,650, Cl. 340-784.000.
- Harkrider, Bobby M.: See—
Burkhardt, Joseph A.; Childers, Thomas W.; Hanson, Harry R.; and Harkrider, Bobby M., 4,429,620, Cl. 91-395.000.
- Harney, David E.: See—
Bennett, John E.; and Harney, David E., 4,430,393, Cl. 429-101.000.
- Harrel, Incorporated: See—
Harris, Holton E., 4,430,698, Cl. 364-162.000.
- Harrington, John A., to Minnesota Mining and Manufacturing Company. Data processing form. 4,430,563, Cl. 235-494.000.
- Harris, Craig W.: See—
Catiller, Robert D.; Harris, Craig W.; and Mathews, Ronald D., 4,430,710, Cl. 364-200.000.
- Harris, Dennis J. Container for oil can spout. 4,429,788, Cl. 206-349.000.
- Harris Graphics Corporation: See—
Hawkes, Richard B., 4,429,795, Cl. 209-651.000.
- Harris, Holton E., to Harrel, Incorporated. Three-mode process control. 4,430,698, Cl. 364-162.000.
- Harris, James H. Combined uterine injector and manipulative device. 4,430,076, Cl. 604-96.000.
- Harris, Rodney G.: See—
Kullmann, Donald J.; Karjalainen, William G.; and Harris, Rodney G., 4,429,571, Cl. 73-197.000.
- Harsco Corporation: See—
D'Alessio, Michael S., 4,430,019, Cl. 403-409.000.
- Harston, John C.; and Hampton, William E., to Klikiok Corporation. Hot melt adhesive applicators. 4,430,147, Cl. 156-578.000.
- Harte, Kenneth J.: See—
Smith, Donald O.; and Harte, Kenneth J., 4,430,571, Cl. 250-492.200.
- Hartman, Robert J.: See—
Austin, Arthur L.; Lewis, William W., Jr.; Pizzini, Louis C.; and Hartman, Robert J., 4,430,247, Cl. 252-182.000.
- Hartung, Michael H.: See—
Christian, John H.; Hartung, Michael H.; Nolte, Arthur H.; Reed, David G.; Rieck, Richard E.; Taylor, Gerald E.; and Williams, John S., 4,430,701, Cl. 364-200.000.
- Harumatsu, Masatoshi: See—
Tsushima, Noboru; Tomoyori, Makoto; and Harumatsu, Masatoshi, 4,429,469, Cl. 33-361.000.
- Harvel, Ervin R.: See—
Blake, Larry W.; Harvel, Ervin R.; Mason, Duane R.; and Wright, George M., 4,429,693, Cl. 604-73.000.
- Harvey, Susan L.; Cresswell, James L.; and Huff, B. Jerry L., to Buckeye Cellulose Corporation. The Monocarboxylic acid antimicrobials in fabrics. 4,430,381, Cl. 428-284.000.
- Hascic, Waldemar, to Empex Mineral-Und Naturfaserprodukts AG. Process of manufacture of a composite material and composite material manufactured by this process. 4,430,125, Cl. 106-81.000.
- Hasegawa, Kiketsu: See—
Noguchi, Yoshiyasu; Yokokoji, Shoji; Saito, Shozo; and Hasegawa, Kiketsu, 4,429,457, Cl. 29-840.000.
- Hasegawa, Masami; and Kato, Takashi, to Nissan Motor Co., Ltd. Machining fluid of water soluble type using organic surfactants. 4,430,234, Cl. 252-49.500.
- Hashimoto, Michiaki: See—
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- Hashizume, Kenichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for generating vapor. 4,429,662, Cl. 122-32.000.
- Hata, Hideo: See—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,377, Cl. 428-213.000.
- Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,378, Cl. 428-213.000.
- Hatschek, Rudolf A., to Asulab AG. Blood pressure measuring equipment. 4,429,699, Cl. 128-681.000.
- Hauck, James H.; Nilarp, Anders; and Roach, Thomas J., to International Rectifier Corporation. Process for anodizing surface of gate contact of controlled rectifier having interdigitated gate and emitter contacts. 4,429,453, Cl. 29-591.000.
- Hauni-Werke Korber & Co. KG: See—
Koch, Franz P.; Helms, Adolf; Siems, Wolfgang; and Brand, Peter, 4,429,567, Cl. 73-49.800.
- Hauserman Inc. Int. Furniture & Textile Division: See—
Diffrient, Niels, 4,429,917, Cl. 297-300.000.
- Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, to International Business Machines Corporation. Method and device for testing optical imaging systems. 4,429,992, Cl. 356-124.000.
- Havas, Jeno: See—
Daroczy, Janos; Erdelyi, Janos; Havas, Jeno; Kecskes, Lajos; and Muller, Henrik, 4,430,164, Cl. 204-1.00T.
- Hawker Siddeley Canada, Inc.: See—
Beattie, Norman W.; and Nyberg, Donald W., 4,430,003, Cl. 366-173.000.
- Hawkes, Richard B., to Harris Graphics Corporation. Book reject mechanism. 4,429,795, Cl. 209-651.000.
- Hayakawa, Eiichi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, to Dainippon Ink & Chemicals Inc.; and Kawamura Institute of Chemical Research. Master plate for dry lithographic printing. 4,430,379, Cl. 428-216.000.
- Hayes, Derek. Gripping jaw device for elongated members such as electrical conductors. 4,430,523, Cl. 174-135.000.
- Hayes, Donald A.; Finn, Lyle D.; and Brinkmann, Carl R., to Exxon Production Research Co. Rope guiding device. 4,430,023, Cl. 405-224.000.
- Hayes, William B., Jr. Battery terminal post seal. 4,430,396, Cl. 429-184.000.
- Hebenstreit, Ernst, to Siemens Aktiengesellschaft. Switch with an MIS-FET operated as a source follower. 4,430,586, Cl. 307-570.000.
- Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., to Mobil Oil Corporation. Hydrotreating hydrocarbon feedstocks. 4,430,198, Cl. 208-112.000.
- Hegde, Ramesh S.; and Ganzi, Gary C., to Millipore Corporation. Method and apparatus for producing ultrapure water. 4,430,226, Cl. 210-638.000.
- Heidrich, Gunther: See—
Dopfer, Maximilian; and Heidrich, Gunther, 4,429,586, Cl. 74-410.000.

Heine, Dietz: See—
Altes, Franz; Perrey, Hermann; Meyer, Karl-Heinrich; Heine, Dietz; and Kowitz, Friedrich, 4,430,483, Cl. 525-356.000.

Heinz, Gerhard; Richter, Peter; and Mueller, Wolfgang F., to BASF Aktiengesellschaft. Photopolymerizable mixtures containing elastomeric block polymers and photocurable elements produced therefrom. 4,430,417, Cl. 430-286.000.

Heisig, Ullrich: See—
Steinfelder, Karl; Heisig, Ullrich; Schiller, Siegfried; Mehr, Dietrich; Thuse, Bernd; and Hielscher, Klaus, 4,430,687, Cl. 361-293.000.

Heitkamp, Peter; Konig, Klaus; Findeisen, Kurt; Faus, Rudolf; and Sundermann, Rudolf, to Bayer Aktiengesellschaft. Process for the preparation of N,O-disubstituted urethanes useful for the preparation of isocyanates. 4,430,505, Cl. 560-24.000.

Heller, Andrew R.: See—
Cannavino, James A.; Heller, Andrew R.; Taradalsky, Morris; and Worley, William S., Jr., 4,430,705, Cl. 364-200.000.

Heller, Werner H., to UMC Industries, Inc. Planetary speed reducer. 4,429,594, Cl. 74-788.000.

Hellsten, Karl M. E.; and Klingberg, Anders W., to Berol Kemi AB. Esterified dicarboxylic acid and its use. 4,430,238, Cl. 252-61.000.

Hellstrom, Erik I., to Santrade Ltd. Cutting tool. 4,430,031, Cl. 407-104.000.

Helm Instrument Co., Inc.: See—
Wilhelm, Donald F., 4,429,579, Cl. 73-768.000.

Helms, Adolf: See—
Koch, Franz P.; Helms, Adolf; Siems, Wolfgang; and Brand, Peter, 4,429,567, Cl. 73-49.800.

Hemingway, Trevor; and Middleton, Anthony E., to Davy-Loewy Limited. Crane and manipulator integration. 4,430,041, Cl. 414-787.000.

Henderson, Eugene R. Interlocking building block. 4,429,506, Cl. 52-589.000.

Hendren, Philip A. Implementation system. 4,430,718, Cl. 364-475.000.

Henkel Kommanditgesellschaft auf Aktien: See—
Preuss, Wolfgang, 4,430,270, Cl. 260-397.100.

von Hofe, Dieter; and Meyer, Klaus, 4,430,068, Cl. 493-100.000.

Henrichsen, Frank; Hansen, Flemming; and Sorensen, Kim, to A/S Flex Dental. Dental apparatus with a number of dental instruments connected to a common control circuit and a common operator unit. 4,430,062, Cl. 433-28.000.

Herbert, M. Linton. Wet cornea telescope. 4,429,956, Cl. 350-410.000.

Herberts GmbH: See—
Jaeger, Kurt E.; Klein, Klausjorg; Patzschke, Hans-Peter; and Saatweber, Dietrich, 4,430,462, Cl. 523-402.000.

Hermann Berstorff Maschinenbau GmbH: See—
Koch, Klaus; and Syrbus, Gerhard, 4,429,628, Cl. 100-117.000.

Hermansdorfer, James E.; and Spurgin, William T., to Sperry Corporation. Step data to synchro converter. 4,430,640, Cl. 340-347.05Y.

Herzog, Earl E., to Quaker Fabric Corp. Method and apparatus for weaving fabrics of novel construction. 4,429,722, Cl. 139-48.000.

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Lohrenz, Howard R.; and Case, Cecil L., 4,429,517, Cl. 56-181.000.

Hetterich, Hermann: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.

Heusler, Karl; Bickel, Hans; Feghtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, to Ciba-Geigy Corporation. 8-Oxo-5-thia-1-azabicyclo(4,2,0)oct-2-ene compounds. 4,430,498, Cl. 544-16.000.

Hewlett-Packard Company: See—
Wright, Allen J., 4,430,531, Cl. 200-5.00A.

Heybourne, Robert H.: See—
Clements, Herbert A.; and Heybourne, Robert H., 4,429,774, Cl. 192-53.00H.

Hibbel, Josef: See—
Schnur, Friedrich; Cornils, Boy; Hibbel, Josef; and Lieder, Bernhard, 4,430,096, Cl. 48-206.000.

Hibino, Yozo: See—
Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, 4,429,541, Cl. 62-201.000.

Hidaka, Hiroyoshi: See—
Hidaka, Hiroyoshi; Matsumoto, Ikuo; Yoshizawa, Junji; and Kotani, Shigenori, 4,430,342, Cl. 424-250.000.

Hidaka, Hiroyoshi; Matsumoto, Ikuo; Yoshizawa, Junji; and Kotani, Shigenori, to Hidaka, Hiroyoshi. N-Acyl-3-[4-(benzoylalkyl)pyrrolidin-1-yl]-sydnimine compound, process for production thereof, and use thereof. 4,430,342, Cl. 424-250.000.

Hielscher, Klaus: See—
Steinfelder, Karl; Heisig, Ullrich; Schiller, Siegfried; Mehr, Dietrich; Thuse, Bernd; and Hielscher, Klaus, 4,430,687, Cl. 361-293.000.

Hightower, James O.: See—
Byrd, James D.; and Hightower, James O., 4,429,634, Cl. 102-290.000.

Higuchi, Hiroshi: See—
Takamatsu, Akira; and Higuchi, Hiroshi, 4,430,225, Cl. 210-608.000.

Higuchi, Terumasa; and Susumago, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for purification of crude acetonitrile. 4,430,162, Cl. 203-37.000.

Hill, James D., Jr.; Alexander, David L.; and Brooks, Thomas W., to Dayco Corporation. Apparatus for measuring a belt construction and method of making such apparatus. 4,429,465, Cl. 33-174.00E.

Hill, Lee; and Spector, George, to Hill, Lee. Adjustable wire cutting pliers. 4,429,460, Cl. 30-90.100.

Hill, Nigel; and Rutherford, Dennis F., to Dowty Mining Equipment Limited. Roof support suitable for use in mines. 4,430,026, Cl. 405-291.000.

Hinchcliffe, Dennis, to Molins Limited. Reservoir for rod-like articles. 4,429,779, Cl. 198-347.000.

Hine, Philip: See—
Beebe, George W.; Hine, Philip; O'Bryan, Nelson B.; and Shor, Steven M., 4,430,426, Cl. 430-604.000.

Hine, Shiro: See—
Yoneda, Masahiro; Hine, Shiro; and Koyama, Hiroshi, 4,430,547, Cl. 219-121.0PD.

Hirai, Hiromu: See—
Otsuki, Haruaki; Hirai, Hiromu; and Kawachi, Masataka, 4,430,606, Cl. 318-601.000.

Hiramoto, Junichi: See—
Yoshida, Kenichi; Hiramoto, Junichi; and Takenaka, Shinya, 4,430,610, Cl. 324-51.000.

Hirano, Kichinosuke. Spectacles for giving two-dimensional television or motion pictures three-dimensional appearance. 4,429,951, Cl. 350-144.000.

Hirao, Motoaki: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatsu; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.

Hiroyasu Iihoshi: See—
Shima, Shigeru, 4,430,121, Cl. 75-96.000.

Hisao, Nobuyoshi: See—
Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshikazu; Fushida, Akira; Ikeda, Toshimitsu; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.

Hishida, Tadanori; Kuwagaki, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, to Sharp Kabushiki Kaisha. Manufacture of display electrode layers in electrochromic display devices. 4,430,182, Cl. 204-192.00P.

Hitachi, Ltd.: See—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,430,741, Cl. 372-46.000.

Hosoya, Akira; Tamahashi, Kunihiko; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, 4,430,404, Cl. 430-58.000.

Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, 4,429,541, Cl. 62-201.000.

Kawai, Tadao; and Nakamura, Tomoharu, 4,430,683, Cl. 361-42.000.

Kurosawa, Yukio; Wada, Akira; Iwashita, Kiyoji; and Tsuda, Hideaki, 4,430,536, Cl. 200-144.00B.

Matsunaga, Akira; and Morita, Keiichi, 4,430,664, Cl. 357-73.000.

Murakami, Hiroya; Takasaki, Mitsuhiko; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, 4,429,558, Cl. 72-17.000.

Nakagawa, Nobuo; Kato, Yoshiaki; Abe, Katsuo; Edamura, Takao; and Nakamura, Takao, 4,430,387, Cl. 428-579.000.

Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.

Ogiwara, Kenzo, 4,430,574, Cl. 290-52.000.

Otsuki, Haruaki; Hirai, Hiromu; and Kawachi, Masataka, 4,430,606, Cl. 318-601.000.

Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.

Shimamoto, Yasuharu; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, 4,430,185, Cl. 204-192.00P.

Suzuki, Keizo; Okudaira, Sadayuki; Nishimatsu, Shigeru; and Kanomata, Ichiro, 4,430,138, Cl. 156-345.000.

Toyooka, Takashi; Aoki, Hirokazu; Sugie, Mamoru; and Yoshizawa, Shigeru, 4,430,729, Cl. 365-6.000.

Yamada, Takahiro; and Kuwabara, Tadashi, 4,430,656, Cl. 346-1.100.

Yanagisawa, Syozo; and Tobita, Yuichi, 4,430,099, Cl. 55-316.000.

Hizume, Akio, to Hoshizaki Electric Co., Ltd. Auger type icemaker. 4,429,551, Cl. 62-354.000.

Ho, Chung W.: See—
Chance, Dudley A.; Ho, Chung W.; and Reiley, Timothy C., 4,430,690, Cl. 361-321.000.

Hocking Electronics Limited: See—
Calvert, John H., 4,430,615, Cl. 324-239.000.

Hoechst Aktiengesellschaft: See—
Ehrl, Winfried; and Jung, Siegfried, 4,430,272, Cl. 260-501.120.

Erpenbach, Heinz; Gehrmann, Klaus; Kubbeler, Hans-Klaus; and Schmitt, Klaus, 4,430,273, Cl. 260-546.000.

Mischke, Peter; Fuchs, Hermann; and Meininger, Fritz, 4,430,259, Cl. 260-186.000.

Pospich, Gunther; and Zimmermann, Wolfgang, 4,430,447, Cl. 521-53.000.

Sorbe, Gunter; Wasel-Nielsen, Horst-Dieter; and Kandler, Joachim, 4,430,246, Cl. 252-140.000.

Hoechst-Roussel Pharmaceuticals Inc.: See—
Strupczewski, Joseph T.; and Gardner, Beth A., 4,430,335, Cl. 424-267.000.

Urban, Joseph J.; and Huckel, Herbert E., 4,430,075, Cl. 604-77.000.

Hoffert Manufacturing Co., Inc.: See—
Patterson, William P.; and Bailey, Ronald J., 4,430,251, Cl. 252-359.00R.

Hoffmann-La Roche Inc.: See—
Manchand, Percy, 4,430,507, Cl. 560-122.000.

Schwabacher, William, 4,430,082, Cl. 604-263.000.

Hohn, William C.: See—
Schiebe, Lowell H.; Russo, Bruce E.; Urness, Edward V.; and Hohn, William C., 4,430,702, Cl. 364-200.000.

Hojaji, Hamid; de Macedo, Pedro B.; and Litovitz, Theodore A., to de Macedo, Pedro Buarque; and Litovitz, Theodore Aaron. Method for making foam glass from diatomaceous earth and fly ash. 4,430,108, Cl. 65-22.000.

Holdis, Gabriel: See—
Cucuiat, Iuliu M.; Holdis, Gabriel; and Hanculescu, Valentin E., 4,429,572, Cl. 73-433.000.

Holland, Gerald F., to Pfizer Inc. Alicyclic substituted oxazolidine-2,4-diones having hypoglycemic activity. 4,430,337, Cl. 424-272.000.

Holliday, William H., to Reynolds Metals Company. Insulated panel. 4,429,503, Cl. 52-410.000.

Holyoak, Hugh K. Apparatus and method of confining fish. 4,429,659, Cl. 119-3.000.

Holzhauser, Dieter, to Kosan Crisplant A/S. Method and apparatus for supplying individual items to a conveyor. 4,429,781, Cl. 198-448.000.

Homeier, Edwin H., to UOP Inc. Alkylation of amine compounds. 4,430,513, Cl. 564-469.000.

Homma, Hiroyuki: See—
Mori, Naomichi; Homma, Hiroyuki; Wakabayashi, Masakuni; and Yamaguchi, Masanobu, 4,430,545, Cl. 219-73.000.

Hon Corporation: See—
Hon, David T., 4,429,890, Cl. 280-259.000.

Hon, David T., to Hon Corporation. Foldable and portable vehicle. 4,429,890, Cl. 280-259.000.

Hon, David T., to Hon Corporation. Foldable and portable vehicle. 4,429,891, Cl. 280-278.000.

Honda Giken Kogyo Kabushiki Kaisha: See—
Gotoh, Osamu; Ootobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,429,676, Cl. 123-571.000.

Koizumi, Shinichi; Kawaguchi, Takeshi; and Kawasaki, Katsuyoshi, 4,429,760, Cl. 180-215.000.

Honda, Minoru: See—
Matsuda, Toshiro; and Honda, Minoru, 4,430,714, Cl. 364-426.000.

Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, to Cassella Aktiengesellschaft. Bonded structures of textile materials. 4,430,380, Cl. 428-254.000.

Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; and Wolf, Alfons, to Cassella Aktiengesellschaft. Melamine resins, a process for their preparation and their use and molding compositions produced from the resins. 4,430,494, Cl. 528-254.000.

Honeywell B.V.: See—
Thees, Richard; and Wilden, Rolf, 4,429,700, Cl. 128-681.000.

Honeywell Inc.: See—
Kelley, John A.; and Michener, Curtis A., 4,430,392, Cl. 429-53.000.

Ritchart, Stuart T., 4,429,705, Cl. 137-65.000.

Honse, James A. Simulated fish skin and fishing lure. 4,429,482, Cl. 43-42.320.

Hoover, Donald P.; Csapo, Michael A.; and Siemssen, Ernst A., to Selas Corporation of America. Calciner screw construction. 4,430,057, Cl. 432-154.000.

Hopkins, Thomas R., to Phillips Petroleum Company. Red absorbing combination of alcohol oxidase and an azide compound. 4,430,427, Cl. 435-25.000.

Hori, Katsuyoshi: See—
Murakami, Hiroya; Takasaki, Mitsuhiko; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, 4,429,558, Cl. 72-17.000.

Hori, Osamu: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuyuki, 4,429,565, Cl. 73-35.000.

Horikoshi, Katsunori: See—
Yamawaki, Naokuni; and Horikoshi, Katsunori, 4,430,229, Cl. 210-692.000.

Horling, Peter: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.

Horne, Thomas, to Coulter Electronics, Inc. Apparatus for monitoring chemical reactions. 4,430,299, Cl. 422-64.000.

Horrocks, Brian J.: See—
Brock, Alan J.; Clements, Alwin S.; and Horrocks, Brian J., 4,430,686, Cl. 361-229.000.

Horton, Johnnie A., to Penrod, Leroy, part interest to each. Dual bowl metering block for alcohol and/or nitro-methane burning carburetor and method of conversion. 4,430,275, Cl. 261-18.00B.

Hoshino, Shoji: See—
Ihara, Keisuke; Toda, Kazuo; and Hoshino, Shoji, 4,429,626, Cl. 99-510.000.

Hoshizaki Electric Co., Ltd.: See—
Hizume, Akio, 4,429,551, Cl. 62-354.000.

Hosoda, Seiichi, to Olympus Optical Co., Ltd. Endoscope light supply device. 4,429,686, Cl. 128-6.000.

Hosoe, Kazuya; Kinoshita, Takao; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Camera with photoelectric focus detecting device. 4,429,966, Cl. 354-406.000.

Hosoya, Akira; Tamahashi, Kunihiko; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, to

Hitachi, Ltd. Electrophotographic photosensitive material having thin amorphous silicon protective layer. 4,430,404, Cl. 430-58.000.

Houck, Timothy B., to Technical and Safety Consultants, Inc. Bucket rotation system for aerial tower. 4,429,763, Cl. 182-2.000.

Hounsell, Mack A.; and Byrd, Carlisle O., Jr., to Manville Service Corporation. Fiber blanket insulation module. 4,429,504, Cl. 52-506.000.

House, Palmer A., to United States of America, Energy. Velocity pump reaction turbine. 4,430,042, Cl. 415-1.000.

Hovell, John: See—
Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.

Hoxan Corporation: See—
Sakao, Nobuo; and Kuraoka, Yasuo, 4,429,542, Cl. 62-62.000.

Hoyer, Manfred: See—
Emunds, Horst; Hoyer, Manfred; and Vogel, Walter, 4,429,588, Cl. 74-484.00R.

Hruby, Victor J.; and Bregman, Marvin D., to University Patents, Inc. Method of diminishing glucose levels resulting from endogenous glucagon. 4,430,326, Cl. 424-177.000.

Huang, Ming F. Automatic safety gas heating device. 4,429,682, Cl. 126-351.000.

Hubbard, William M., to Bell Telephone Laboratories, Incorporated. Demultiplexer circuit. 4,430,734, Cl. 370-112.000.

Huber, Greg A.: See—
dePuglia, Gaston D.; and Huber, Greg A., 4,429,559, Cl. 72-186.000.

Hucal, Stephen J. Integrated contact lens-maintenance kit carrying apparatus. 4,429,786, Cl. 206-5.100.

Huckel, Herbert E.: See—
Urban, Joseph J.; and Huckel, Herbert E., 4,430,075, Cl. 604-77.000.

Huff, B. Jerry L.: See—
Harvey, Susan L.; Cresswell, James L.; and Huff, B. Jerry L., 4,430,381, Cl. 428-284.000.

Huffman, George W.: See—
Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., 4,430,459, Cl. 523-144.000.

Hufford, James N.; and Zdany, John, Jr., to CTS Corporation. Rotary potentiometer with molded terminal package. 4,430,634, Cl. 338-164.000.

Hug, Mansur U.: See—
Boylan, David R.; and Hug, Mansur U., 4,430,281, Cl. 264-118.000.

Hughes Aircraft Company: See—
Nesler, John J., 4,430,608, Cl. 323-282.000.

Hughes, Allan B.; and Dear, Terrence A., to Du Pont de Nemours, E. I., and Company. Control valve. 4,429,714, Cl. 137-625.300.

Hughes, Charles C.: See—
Scarpa, Eric W.; Hughes, Charles C.; and Humbert, Stanley F., 4,429,864, Cl. 271-10.000.

Hughes, John; and Rasbach, Heinz, to American Colloid Company. Method of forming a foundation with liquid tight joints. 4,430,027, Cl. 405-303.000.

Hughes Tool Company: See—
Guzy, Raymond L., 4,430,472, Cl. 524-483.000.

Hull, John R., to United States of America, Energy. Gradient zone boundary control in salt gradient solar ponds. 4,429,683, Cl. 126-415.000.

Hultquist, John V. Auto body dent removing puller and anchor. 4,429,562, Cl. 72-479.000.

Humbert, Stanley F.: See—
Scarpa, Eric W.; Hughes, Charles C.; and Humbert, Stanley F., 4,429,864, Cl. 271-10.000.

Humbs, Rolf: See—
Bork, Klaus; Humbs, Rolf; and Trey, Karl, 4,430,594, Cl. 310-328.000.

Hung, Chi-Wen: See—
Imai, Tamotsu; and Hung, Chi-Wen, 4,430,517, Cl. 585-660.000.

Hunklinger, Siegfried: See—
Bimberg, Dieter H.; Bubenzer, Achim; Dransfeld, Klaus F. K.; and Hunklinger, Siegfried, 4,429,999, Cl. 356-432.000.

Hunter, Arthur C.: See—
Hamilton, Stephen P.; Hunter, Arthur C.; and Lies, Kenneth A., 4,430,724, Cl. 364-900.000.

Hunter, Ronald W. Adjustable trailer hitch assembly. 4,429,895, Cl. 280-490.00R.

Hunter, Walter D., to Texaco Development Corp. Secondary recovery method. 4,430,481, Cl. 525-328.400.

Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,430,482, Cl. 525-329.400.

Hurst, Darrell W.: See—
Dodelin, Richard W.; Hurst, Darrell W.; and Osos, George R., 4,429,472, Cl. 34-48.000.

Hyde, Richard E.; Smith, Gary L.; Carmichael, Lee T.; and Meader, Albert E., to California Strolee, Inc. Infant car seat. 4,429,916, Cl. 297-250.000.

Hyland, Craig R., to Christensen, Inc. Self powered downhole tool anchor. 4,429,741, Cl. 166-63.000.

Ichikama, Kiyomichi: See—
Yoshimura, Shigeru; Ichikama, Kiyomichi; and Ueda, Noriyoshi, 4,429,989, Cl. 355-76.000.

Ichiro, Azuma: See—
Yamamura, Yuichi; Ichiro, Azuma; and Kobayashi, Shigeru, 4,430,265, Cl. 260-112.50R.

Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, to Kanebo, Ltd. Benzimid-

azole derivatives, process for the preparation thereof and pharmaceutical composition containing the same. 4,430,343, Cl. 424-250.000.

Ihara, Keisuke; Toda, Kazuo; and Hoshino, Shoji, to Tokyo Electric Co., Ltd. Juice extractor device. 4,429,626, Cl. 99-510.000.

Iinuma, Hironobu: See—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,430,346, Cl. 424-311.000.

Iiyama, Hiroshi: See—
Watanabe, Noboru; and Iiyama, Hiroshi, 4,429,470, Cl. 33-395.000.

Ikari, Kazuo, to Olympus Optical Co., Ltd. Albada finder. 4,429,978, Cl. 354-224.000.

Ikeda, Daishiro: See—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,430,346, Cl. 424-311.000.

Ikeda, Kyoichi; Ando, Motoyoshi; and Harada, Kinji, to Yokogawa Hokushin Electric Corporation. Vibration type density meter. 4,429,564, Cl. 73-32.00A.

Ikeda, Toshiaki: See—
Suzuki, Masakazu; Ikeda, Toshiaki; and Furuichi, Shuhei, 4,430,746, Cl. 378-40.000.

Ikeda, Toshimitsu: See—
Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshikazu; Fushida, Akira; Ikeda, Toshimitsu; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.

Ikeda, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Treating agent shooting apparatus of laundry machine. 4,429,817, Cl. 222-652.000.

Ikeda, Yukio: See—
Chiba, Ko; Yamauchi, Hajime; Kawauchi, Yoneo; and Ikeda, Yukio, 4,429,885, Cl. 277-140.000.

Iketani, Tomofumi: See—
Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichi, 4,430,542, Cl. 219-10.770.

Ikka, Toshifumi: See—
Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuichi; and Ikka, Toshifumi, 4,430,688, Cl. 361-307.000.

Ilg, Rudolf, to Zahndradfabrik Friedrichshafen AG. Pump arrangement. 4,430,047, Cl. 417-273.000.

Illger, Hans-Walter: See—
Buysch, Hans-Josef; Illger, Hans-Walter; and Dörner, Karl H., 4,430,452, Cl. 521-107.000.

Illinois Tool Works Inc.: See—
Rodseth, William G., 4,430,035, Cl. 411-402.000.

Illy, Ernesto. Coffee-making machine. 4,429,623, Cl. 99-295.000.

Imai, Tamotsu; and Hung, Chi-Wen, to UOP Inc. Dehydrogenation process using a catalytic composition. 4,430,517, Cl. 585-660.000.

Imbach, Jean-Louis: See—
Oiry, Joel; and Imbach, Jean-Louis, 4,430,347, Cl. 424-322.000.

Imhoff, William B., to Leigh Products, Inc. Door coordinator. 4,429,492, Cl. 49-367.000.

Inaga, Hisashi: See—
Nakagawa, Kumaichi; and Inaga, Hisashi, 4,429,668, Cl. 123-56.00B.

Inami, Yasuhiko: See—
Hishida, Tadanori; Kuwagaki, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,430,182, Cl. 204-192.00P.

Inco Europe Limited: See—
Tracey, Victor A., 4,430,294, Cl. 419-2.000.

Industrial Woodworking Machine: See—
Cromeens, Jeff Y., 4,429,784, Cl. 198-744.000.

Ingersoll-Rand Company: See—
Blazewski, Theodore E., 4,430,050, Cl. 418-191.000.

Injection Mold Partners, Ltd.: See—
Taylor, Otilia Z.; and Lazar, Janos J., 4,429,487, Cl. 46-43.000.

Inland Steel Company: See—
Carter, William A., 4,430,166, Cl. 204-15.000.

Innes, Jim, to Santrade Ltd. Device for depositing goods onto conveyor belts or the like. 4,429,780, Cl. 198-424.000.

Inoue-Japax Research Incorporated: See—
Inoue, Kiyoshi, 4,430,165, Cl. 204-15.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electrodeposition of a metal on a substrate. 4,430,167, Cl. 204-25.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Machine tool with compounded electrode-reciprocation and servo-feed drivers. 4,430,544, Cl. 219-69.00V.

Inoue, Kiyoshi, 4,430,544, Cl. 219-69.00V.

Inoue, Kanji: See—
Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, 4,429,899, Cl. 280-689.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Laser-activated electrodeposition method and apparatus. 4,430,165, Cl. 204-15.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electrodeposition of a metal on a substrate. 4,430,167, Cl. 204-25.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Machine tool with compounded electrode-reciprocation and servo-feed drivers. 4,430,544, Cl. 219-69.00V.

Inoue, Nori, to Tokai Electric Wire Company Limited. Insulation box for wire harness connector device. 4,429,943, Cl. 339-198.00R.

Inskip, Michael; and Warren, Alan, to TI Russell Hobbs Limited. Electric liquid heating appliance. 4,430,556, Cl. 219-328.000.

Institute Po Technicheska Kibernetika: See—
Angelov, Angel S.; and Ivanov, Dimitar A., 4,429,820, Cl. 226-108.000.

Institutul de Cercetari si Proiectari Pentru Petrol si Gaze: See—
Cucuiat, Iuliu M.; Holdis, Gabriel; and Hanculescu, Valentin E., 4,429,572, Cl. 73-433.000.

Interatom, Internationale Atomreaktorbau GmbH: See—
Gohlert, Christian; Kanngiesser, Peter; Weiss, Hansjakob; and Wilke, Werner, 4,430,593, Cl. 310-327.000.

Interlego A.G.: See—
Bach, Erik; and Gronbjerg, Jorgen P. J., 4,430,063, Cl. 434-380.000.

International Business Machines Corporation: See—
Beranger, Herve; and Brunin, Armand, 4,430,737, Cl. 371-49.000.

Cannavino, James A.; Heller, Andrew R.; Taradalsky, Morris; and Worley, William S., Jr., 4,430,705, Cl. 364-200.000.

Chance, Dudley A.; Ho, Chung W.; and Reiley, Timothy C., 4,430,690, Cl. 361-321.000.

Chang, Jack P.; and Steinbrecher, Marc L., 4,429,987, Cl. 355-14.0FU.

Christian, John H.; Hartung, Michael H.; Nolte, Arthur H.; Reed, David G.; Rieck, Richard E.; Tayler, Gerald E.; and Williams, John S., 4,430,701, Cl. 364-200.000.

Cortellino, Charles A.; Levine, Joseph E.; and Schick, Henry C., 4,429,983, Cl. 354-320.000.

Elliott, Jo A.; McInroy, John W.; and Waldo, Paul D., 4,430,725, Cl. 364-900.000.

Garwin, Richard L., 4,429,948, Cl. 350-6.800.

Geason, Robert T.; and Linde, Harold G., 4,430,153, Cl. 156-643.000.

Gorga, Kevin J., 4,430,667, Cl. 358-73.000.

Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,429,992, Cl. 356-124.000.

Kellogg, Robert M.; Kruger, Victor R.; and Mulzet, Alfred P., 4,430,072, Cl. 494-45.000.

Moore, Brian B.; Rodell, John T.; Sutton, Arthur J.; and Vowell, Jeff D., 4,430,727, Cl. 364-900.000.

Schaible, Paul M.; and Suiveld, John, 4,430,365, Cl. 427-96.000.

Tien, Paul C., 4,430,730, Cl. 365-149.000.

International Computers Limited: See—
Bottoms, Norman, 4,429,941, Cl. 339-103.00M.

Sevilla, Ernesto G., 4,430,643, Cl. 340-347.00D.

International Flavors & Fragrances Inc.: See—
Boden, Richard M.; and Tyszkiewicz, Theodore J., 4,430,233, Cl. 252-8.600.

Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.

Sprecker, Mark A.; and Hall, John B., 4,430,508, Cl. 560-256.000.

International Paper Company: See—
Paoli, Bruno, 4,429,511, Cl. 53-379.000.

International Rectifier Corporation: See—
Hauck, James H.; Nilarp, Anders; and Roach, Thomas J., 4,429,453, Cl. 29-591.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: See—
Beattie, Ian A. M., 4,430,245, Cl. 252-117.000.

Interpace Corporation: See—
Dunbar, David R., 4,429,858, Cl. 254-134.3PA.

Invocas, Inc.: See—
Stol, Israel, 4,429,652, Cl. 114-20.00R.

Iowa Limestone Company: See—
Boylan, David R.; and Hug, Mansur U., 4,430,281, Cl. 264-118.000.

Ippen, Jakob; and Stuttgart, Friedel, to Bayer Aktiengesellschaft. Tire having an asymmetrical tread profile. 4,429,728, Cl. 152-209.00A.

Irons, Gary C.; Buzzelli, Dennis K.; Klein, John F.; and Smyth, Richard T., to Metco, Inc. Plasma spray gun nozzle. 4,430,546, Cl. 219-121.00PY.

Isaman, David L., to Burroughs Corporation. Digital computer for executing instructions in three time-multiplexed portions. 4,430,708, Cl. 364-200.000.

Ishibashi, Yohji: See—
Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichi, 4,429,538, Cl. 60-748.000.

Ishida, Masaaki: See—
Momose, Haruo; Ishida, Masaaki; and Terabe, Mahito, 4,430,430, Cl. 435-114.000.

Ishida, Masahide: See—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,430,713, Cl. 364-405.000.

Ishigaki, Yukinobu, to Victor Company of Japan, Ltd. Noise reducing apparatus. 4,430,754, Cl. 455-72.000.

Ishihara, Hideo: See—
Koizumi, Hideo; Ishihara, Hideo; Matsumoto, Tatsuhiko; and Kawakita, Katsuhiko, 4,430,296, Cl. 420-429.000.

Ishii, Mitsuo: See—
Tanikawa, Kunihiko; Ito, Yuichiro; and Ishii, Mitsuo, 4,430,723, Cl. 364-862.000.

Ishikawa, Chuji: See—
Fukazawa, Takao; and Ishikawa, Chuji, 4,430,658, Cl. 346-75.000.

Ishikawa, Hitoshi; Yamamoto, Kimihiko; and Sugiura, Yasuro, to Aisin Seiki Kabushiki Kaisha. Extruded sewing machine frame. 4,429,650, Cl. 112-258.000.

Ishikawa, Shin: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.

Ishikawa, Soji. Ultrafiltration unit. 4,430,213, Cl. 210-136.000.

Ishikawa Tekko Kabushiki Kaisha: See—
Matsuoka, Chikara; Sawada, Kouzi; and Sunayama, Takayoshi, 4,430,016, Cl. 403-40.000.

Iso, Tadashi: See—
Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,430,344, Cl. 424-270.000.

Isovolta Oesterreichische Isolierstoffwerke Aktiengesellschaft: See—
Rieder, Werner, 4,430,493, Cl. 528-179.000.

Issaq, Halem J., to Litton Bionetics, Inc. Anti-radial chromatography device. 4,430,217, Cl. 210-198.300.

Ito, Kazuo, to Toyo Seikan Kaisha, Ltd. Mouth closure assembly for mouth of foam liquid dispensing container. 4,429,834, Cl. 239-327.000.

Ito, Keizo: See—
Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.

Ito, Tadashi: See—
Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, 4,429,972, Cl. 354-448.000.

Ito, Takashi, to Fujitsu Limited. Method for forming an aluminum metallic thin film by vapor phase growth on a semiconductor substrate. 4,430,364, Cl. 427-91.000.

Ito, Teruyoshi: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuyuki, 4,429,565, Cl. 73-35.000.

Ito, Yoichiro, to United States of America, Health and Human Services. High speed preparative counter-current chromatography with a multiple layer coiled column. 4,430,216, Cl. 210-198.200.

Ito, Yuichiro: See—
Tanikawa, Kunihiko; Ito, Yuichiro; and Ishii, Mitsuo, 4,430,723, Cl. 364-862.000.

Itoh, Fukusaburo; Mizumoto, Kazushige; and Nishikawa, Yoshikazu, to Sharp Kabushiki Kaisha. Manual/automatic paper feed mechanism in a copying machine. 4,429,863, Cl. 271-9.000.

ITT Industries, Inc.: See—
Weisbrod, Helmut, 4,429,770, Cl. 188-73.320.

Iura, Yukio: See—
Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, 4,429,972, Cl. 354-448.000.

Ivanov, Dimitar A.: See—
Angelov, Angel S.; and Ivanov, Dimitar A., 4,429,820, Cl. 226-108.000.

Iwamoto, Masatami: See—
Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.

Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, to Santen Pharmaceutical Co., Ltd. Antihypertensive 4-thiazolidinecarboxylic acids. 4,430,344, Cl. 424-270.000.

Iwashita, Kiyoji: See—
Kurosawa, Yukio; Wada, Akira; Iwashita, Kiyoji; and Tsuda, Hideaki, 4,430,536, Cl. 200-144.00B.

Iwata, Toshiharu: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuyuki, 4,429,565, Cl. 73-35.000.

Izumi, Akiya: See—
Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.

J.F.S., Inc.: See—
Johnson, David A., 4,429,479, Cl. 42-6.000.

Jablonski, Henry; and Roughgarden, Jeffrey D., to United States of America, Energy. Spring bypass assembly. 4,429,847, Cl. 248-74.00R.

Jackey, Philip A.; and Canfield, V. Robert, to GAF Corporation. Method of improving the wet tensile strength of glass fiber mats. 4,430,158, Cl. 162-156.000.

Jackson, Dale: See—
McManus, John R.; and Jackson, Dale, 4,429,737, Cl. 165-125.000.

Jackson, E. Don; and Myers, Ralph E., to Conmaco, Inc. Control system for pile hammers. 4,429,751, Cl. 173-13.000.

Jackson, Isaac S., to Mallinckrodt, Inc. Inflation valve. 4,429,856, Cl. 251-149.100.

Jackson, Keith L.; Schmitt, Dallas L.; and Schauster, John L., to Lukens General Industries, Inc. Railway vehicle truck. 4,429,637, Cl. 105-168.000.

Jacobs Manufacturing Company, The: See—
Jakuba, Stanislav, 4,429,532, Cl. 60-600.000.

Jacobson, Walter E.; and Bliss, Douglas, to Revere Corporation of America. Weighing scale. 4,429,756, Cl. 177-211.000.

Jaeger, Kurt E.; Klein, Klausjorg; Patzschke, Hans-Peter; and Saetweber, Dietrich, to Herberts GmbH. Cathodically depositable aqueous, electro-dip lacquer coating composition. 4,430,462, Cl. 523-402.000.

Jagenberg Werke AG: See—
Zodrow, Rudolf, 4,430,141, Cl. 156-360.000.

Jakuba, Stanislav, to Jacobs Manufacturing Company, The. Apparatus and method for temporarily converting a turbocharged engine to a compressor. 4,429,532, Cl. 60-600.000.

James, Gordon W.: See—
Nadir, Mark; James, Gordon W.; Kuznicki, William J.; and Niede, Jerome A., 4,430,755, Cl. 455-77.000.

Jandaska, William F., Jr., to General Motors Corporation. Articles produced from iron powder compacts containing hypereutectic copper phosphide powder. 4,430,295, Cl. 419-46.000.

Janome Sewing Machine Industry Co., Ltd.: See—
Eguchi, Yasukata; and Shomura, Eiichi, 4,429,649, Cl. 112-229.000.

Jansen, Frans H. J.; and Maroko, Peter R., to Akzo N.V. Method of treatment patients at risk of sudden death. 4,430,338, Cl. 424-274.000.

Japan Spectroscopic Co., Ltd.: See—
Watanabe, Mitsuo; Kimura, Shigeyuki; Konishi, Hideki; Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,429,583, Cl. 73-864.120.

Japax Incorporated: See—
Shimizu, Akihiko, 4,430,180, Cl. 204-129.550.

Jarisch, Walter: See—
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,429,992, Cl. 356-124.000.

Jeco Co., Ltd.: See—
Watanabe, Noboru; and Iiyama, Hiroshi, 4,429,470, Cl. 33-395.000.

Jelevov, Jivko Y.; and Bogdanov, Todor D., to DSO "IZOT". Wire feeding mechanism. 4,429,821, Cl. 226-181.000.

Jenkins, Arden F.: See—
Alsop, James D., Jr.; Barrett, Kenneth L.; and Jenkins, Arden F., 4,429,918, Cl. 297-353.000.

Jenkins, Robert H., Jr.; and Sweeney, William M., to Texaco Inc. Diesel fuel additive. 4,430,093, Cl. 44-70.000.

Jenkins, Robert L. Pelletized brake lining disc brake. 4,429,767, Cl. 188-71.800.

Jensen, Finn U. H., to Kongskilde Koncernselskab A/S. Angular holder for clamping a harrow tine to a supporting rod. 4,429,436, Cl. 24-3.00D.

Jessamine, Donald W. Water ski tow rope reel apparatus. 4,429,839, Cl. 246-96.000.

Jetter, Milton W. Random multiple push button clock alarm deactivation system. 4,430,006, Cl. 368-73.000.

Jillie, Don W., Jr.; and Smith, Lawrence N., to Sperry Corporation. Superconductive tunnel junction integrated circuit. 4,430,662, Cl. 357-5.000.

Jimenez, Ivan; and Rubin, Irving N. See-through type telescope sight mount for firearms. 4,429,468, Cl. 33-245.000.

John, Gunter; Rainey, James H.; and Valembois, Pierre V., to RCA Corporation. Cutting stylus for mechanically cutting masters for keel-lapping. 4,429,678, Cl. 125-39.000.

Johnson, Arthur: See—
Clayton, Richard M.; and Johnson, Arthur, 4,430,028, Cl. 406-39.000.

Johnson, David A., to J.F.S., Inc. Magazine latch release mechanism. 4,429,479, Cl. 42-6.000.

Johnson, Edward R., to GTE Automatic Electric Incorporated. Adaptive IF equalizer for digital transmission. 4,430,744, Cl. 375-14.000.

Johnson, Eric R., to Scandura, Inc. Belt splicing apparatus and method and splice formed thereby. 4,430,146, Cl. 156-502.000.

Johnson, George E.; and Newman, Walter, to Leviton Manufacturing Co., Inc. Threaded lamp adapter. 4,429,942, Cl. 339-154.00L.

Johnson and Johnson: See—
Webb, David E.; and Andrews, Lawrence F., 4,430,061, Cl. 433-9.000.

Johnson & Johnson Baby Products Company: See—
Repke, Virginia L., 4,430,086, Cl. 604-385.000.

Johnson, Michael K. Control apparatus for selectively recording signals. 4,430,676, Cl. 360-13.000.

Johnston, Otis A.: See—
Bedenbender, John W.; Cook, Marvin C.; and Johnston, Otis A., 4,429,898, Cl. 280-678.000.

Jokisch, Friedrich: See—
Petrovic, Vladan; Schmid, Karl; Jokisch, Friedrich; and Rothaus, Heinz, 4,430,161, Cl. 202-228.000.

Jones, Everett E., to Boeing Company, The. Sealant applicator for rivets. 4,429,658, Cl. 118-711.000.

Jones, John L., Sr. Process for increasing the permeability of plastic membrane. 4,430,278, Cl. 264-22.000.

Jones, Mitchell R. Shock responsive rotary actuator. 4,429,704, Cl. 137-45.000.

Jones, Robert L.; and Wilson, Norman H., to National Research Development Corporation. Prostaglandins. 4,430,345, Cl. 424-305.000.

Jones, Ronald L.: See—
Haddock, Louis A., Jr.; and Jones, Ronald L., 4,429,761, Cl. 180-271.000.

Jones, Wallace R., to Excell Specialty Company, The. Paint mask and method. 4,430,137, Cl. 156-247.000.

Jorgensen, John M.: See—
Bose, Bidyut K.; and Jorgensen, John M., 4,430,582, Cl. 307-297.000.

Joy, John R., to Williams International Corporation. Methanol fueled spark ignition engine. 4,429,534, Cl. 60-618.000.

Joy Manufacturing Company: See—
Bailey, Edward A.; and LeBlanc, Louis H., Jr., 4,429,752, Cl. 173-59.000.

Jukkola, Glen D.: See—
Goodstine, Stephen L.; and Jukkola, Glen D., 4,429,471, Cl. 34-10.000.

Jung, Siegfried: See—
Ehrl, Winfried; and Jung, Siegfried, 4,430,272, Cl. 260-501.120.

Junginger, Erich: See—
Koch-Ducker, Heinz-Jurgen; Junginger, Erich; and Schnabel, Eberhard, 4,430,637, Cl. 340-52.00R.

Junovich, July M.: See—
Zhukovsky, Sergei S.; Junovich, July M.; Pertsovsky, Viktor N.; Kolesnikov, Vyacheslav S.; Renzhin, Igor P.; and Rivkin, Semen I., 4,430,441, Cl. 501-109.000.

Kabushiki Kaisha Honda Rukku: See—
Onitsuka, Nobuyuki; Fukamachi, Masaaki; and Sueyoshi, Masahiko, 4,430,612, Cl. 324-166.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: See—
Takuiji, Kiyomi, 4,429,605, Cl. 84-1.170.

Kabushiki Kaisha Kobe Seiko Sho: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.

Kabushiki Kaisha Mitsui Miike Seisakusho: See—
Takamatsu, Akira; and Higuchi, Hiroshi, 4,430,225, Cl. 210-608.000.

Kabushiki Kaisha Morita Seisakusho: See—
Suzuki, Masakazu; Ikeda, Toshiaki; and Furuichi, Shuhei, 4,430,746, Cl. 378-40.000.

Kabushiki Kaisha Riken: See—
Chiba, Ko; Yamauchi, Hajime; Kawauchi, Yoneo; and Ikeda, Yukio, 4,429,885, Cl. 277-140.000.

Kabushiki Kaisha Seitai Kagaku Kenkyusho: See—
Shigematsu, Akiyo; Tsuya, Akira; Aihara, Michiaki; Suzuki, Akiko; and Matsuda, Michiko, 4,430,320, Cl. 424-1.100.

Kackenmeister, Carl F., to GTE Products Corporation. Tungsten-halogen lamp with free floating getter. 4,430,599, Cl. 313-554.000.

Kaganowicz, Grzegorz: See—
Robinson, John W.; and Kaganowicz, Grzegorz, 4,430,361, Cl. 427-39.000.

Kageyama, Junichi: See—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,377, Cl. 428-213.000.

Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,378, Cl. 428-213.000.

Kaiser Aluminum & Chemical Corporation: See—
Malito, John T.; and Rogers, Gordon C., Jr., 4,430,310, Cl. 423-121.000.

Pearson, Robert M., 4,430,719, Cl. 364-503.000.

Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, to Toray Industries, Inc. Process for making fasciated spun yarn. 4,429,523, Cl. 57-328.000.

Kakuta, Atsushi: See—
Hosoya, Akira; Tamahashi, Kunihiro; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, 4,430,404, Cl. 430-58.000.

Kalberer, Peter: See—
Zrenner, Christian; and Kalberer, Peter, 4,430,010, Cl. 374-45.000.

Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, to Mobil Solar Energy Corporation. Displaced capillary dies. 4,430,305, Cl. 422-246.000.

Kamachi, Shinichi; and Fujiwara, Toshihide, to Olympus Optical Co. Ltd. Process of fractionating electrophoretogram signals. 4,429,996, Cl. 356-344.000.

Kamada, Atsuya: See—
Murakami, Hiroya; Takasuki, Mitsuhiro; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, 4,429,558, Cl. 72-17.000.

Kamada, Kunio: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.

Kaman, C. William, II: See—
Kaman, Charles H.; and Kaman, C. William, II, 4,429,608, Cl. 84-291.000.

Kaman, Charles H.; and Kaman, C. William, II. Stringed musical instrument top. 4,429,608, Cl. 84-291.000.

Kambic, Raymond V., to Brink Locking Systems, Inc. Lock mechanism. 4,429,556, Cl. 70-149.000.

Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, to Hitachi, Ltd. Apparatus for controlling operation of refrigerator. 4,429,541, Cl. 62-201.000.

Kameyama, Nobuyuki: See—
Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,976, Cl. 354-203.000.

Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,977, Cl. 354-203.000.

Kaminsky, Didier: See—
Bert, Alain; and Kaminsky, Didier, 4,430,623, Cl. 330-286.000.

Kamyr, Inc.: See—
Richter, Ole J.; and Richter, Johan C. F. C., 4,430,029, Cl. 406-63.000.

Kanada, Takao: See—
Nishiyama, Hissai; and Kanada, Takao, 4,429,441, Cl. 26-9.000.

Kandell, Ronald J.; Merriam, Donald R.; Root, Bernard H.; and Woodruff, William W., to Stromberg-Carlson Corporation. Telephony system with automatic test call generator for remote port groups. 4,430,530, Cl. 179-175.20D.

Kandler, Joachim: See—
Sorbe, Gunter; Wasel-Nielsen, Horst-Dieter; and Kandler, Joachim, 4,430,246, Cl. 252-140.000.

Kanebo, Ltd.: See—
Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—
Senda, Kenichi; and Nakagawa, Masao, 4,430,450, Cl. 521-60.000.

Kaneko, Fumihiko: See—
Ochi, Takashi; and Kaneko, Fumihiko, 4,430,142, Cl. 156-379.900.

Kaneko, Tadeo: See—
Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.

Kaneko, Takashi: See—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,377, Cl. 428-213.000.

Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,378, Cl. 428-213.000.

Kanngiesser, Peter: See—
Gohlert, Christian; Kanngiesser, Peter; Weiss, Hansjakob; and Wilke, Werner, 4,430,593, Cl. 310-327.000.

Kanomata, Ichiro: See—
Suzuki, Keizo; Okudaira, Sadayuki; Nishimatsu, Shigeru; and Kanomata, Ichiro, 4,430,138, Cl. 156-345.000.

Kaplan, Barbara W., to Union Carbide Corporation. Water soluble pesticidal quaternary ammonium salt compounds. 4,430,341, Cl. 424-250.000.

Kar, Nareshchandra J.; and Nimmagadda, Rao R., to Smith International, Inc. Dual squeeze seal gland. 4,429,854, Cl. 384-94.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Diaper with cushioned elastic leg hold edges. 4,430,088, Cl. 604-385.000.

Karish, John A.: See—
Oldham, Delbert J.; and Karish, John A., 4,429,611, Cl. 89-1.816.

Karjalainen, William G.: See—
Kullmann, Donald J.; Karjalainen, William G.; and Harris, Rodney G., 4,429,571, Cl. 73-197.000.

Karmazin Products Corporation: See—
Woodhull, Ivan D., Jr., 4,429,738, Cl. 165-151.000.

Kasday, Leonard R., to Bell Telephone Laboratories, Incorporated. Dictation/transcription method and arrangement. 4,430,726, Cl. 364-900.000.

Kasper, Walter F.: See—
Chang, Wen-Hsuan; Piccirilli, Robert; and Kasper, Walter F., 4,430,486, Cl. 525-44.000.

Kassai Kabushikikaisha: See—
Kassai, Kenzo, 4,429,841, Cl. 242-107.40B.

Kassai, Kenzo, to Kassai Kabushikikaisha. Emergency locking device for safety belt retractor. 4,429,841, Cl. 242-107.40B.

Kato, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Vacuum type breaker contact material of copper infiltrated tungsten. 4,430,124, Cl. 75-248.000.

Kato, So, to Kunishiro Co., Ltd. Reinforced brick assembly. 4,429,499, Cl. 52-228.000.

Kato, Takashi: See—
Hasegawa, Masami; and Kato, Takashi, 4,430,234, Cl. 252-49.500.

Kato, Yoshiki: See—
Nakagawa, Nobuo; Kato, Yoshiki; Abe, Katsuo; Edamura, Takao; and Nakamura, Takao, 4,430,387, Cl. 428-579.000.

Kaufman, Jack W. Disposable swab article. 4,430,013, Cl. 401-132.000.

Kawabata, Akira, to Akira Kawabata; and Sunny Co., Ltd., a part interest. Casing having a mounting portion at its inner wall surface for receiving a bearing member therein. 4,429,927, Cl. 308-236.000.

Kawaguchi, Takeshi: See—
Koizumi, Shinichi; Kawaguchi, Takeshi; and Kawasaki, Katsuyoshi, 4,429,760, Cl. 180-215.000.

Kawai, Syuji: See—
Ohyabu, Shuzo; Kawai, Syuji; and Matsumura, Keiji, 4,430,356, Cl. 426-574.000.

Kawai, Tadao, and Nakamura, Tomoharu, to Hitachi, Ltd. Ground fault detecting device for use with a DC circuit. 4,430,683, Cl. 361-42.000.

Kawakita, Katsuhiko: See—
Koizumi, Hideo; Ishihara, Hideo; Matsumoto, Tatsuhiko; and Kawakita, Katsuhiko, 4,430,296, Cl. 420-429.000.

Kawamoto, Hiroaki: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.

Kawamoto, Michio: See—
Gotoh, Osamu; Ootobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,429,676, Cl. 123-571.000.

Kawamura Institute of Chemical Research: See—
Hayakawa, Eiichi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.

Kawamura, Yoshihisa, to Nissan Motor Company, Limited. Fuel supply for a multi-cylinder internal combustion engine. 4,429,667, Cl. 123-52.00M.

Kawasaki Jukogyo Kabushiki Kaisha: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.

Kawasaki, Katsuyoshi: See—
Koizumi, Shinichi; Kawaguchi, Takeshi; and Kawasaki, Katsuyoshi, 4,429,760, Cl. 180-215.000.

Kawasaki, Masahiro; Urano, Fumio; and Tomori, Yasumasa, to Asahi Kogyo Kogyo Kabushiki Kaisha. Compensation for diaphragm control for SLR camera. 4,429,973, Cl. 354-455.000.

Kawasaki Steel Corporation: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.

Kawashima, Tsuneo: See—
Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.

Kawauchi, Masataka: See—
Otsuki, Haruaki; Hirai, Hiromu; and Kawauchi, Masataka, 4,430,606, Cl. 318-601.000.

Kawauchi, Yoneo: See—
Chiba, Ko; Yamauchi, Hajime; Kawauchi, Yoneo; and Ikeda, Yukio, 4,429,885, Cl. 277-140.000.

Kaya, Azmi; and Keyes, Marion A., to Babcock & Wilcox Company. The Load control for energy converters. 4,430,573, Cl. 290-40.00R.

Kazi, Kiyokane: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuaki, 4,429,565, Cl. 73-35.000.

Kecskes, Lajos: See—
Daroczy, Janos; Erdelyi, Janos; Havas, Jenő; Kecskes, Lajos; and Muller, Henrik, 4,430,164, Cl. 204-1.00T.

Keiper Recaro, Inc.: See—
Klueting, Bernd A.; and Zaveri, Vikram, 4,429,919, Cl. 297-379.000.

Keller, Wolfgang: See—
Kolblin, Rolf; Keller, Wolfgang; and Wittmann, Erich, 4,429,443, Cl. 29-26.00A.

Kelley, John A.; and Michener, Curtis A., to Honeywell Inc. Heat activated vent. 4,430,392, Cl. 429-53.000.

Kellogg, Robert M.; Kruger, Victor R.; and Mulzet, Alfred P., to International Business Machines Corporation. Centrifuge assembly. 4,430,072, Cl. 494-45.000.

Kelvin Lenses Limited: See—
Tighe, Brian J.; and Gee, Howard J., 4,430,458, Cl. 523-108.000.

Kerby, Robert C.: See—
Anderson, Harold J. T.; Kerby, Robert C.; Krauss, Clifford J.; and Neame, Hubert W., 4,430,178, Cl. 204-114.000.

Kernforschungsanlage Julich GmbH: See—
Forster, Siegfried; and Quell, Peter, 4,429,830, Cl. 237-19.000.

Langen, Hans; and Ringel, Helmut, 4,430,030, Cl. 406-146.000.

Keunecke, Gerhard: See—
Albers, Manfred; Keunecke, Gerhard; and Krimphove, Herbert, 4,430,163, Cl. 203-75.000.

Keyes, Marion A.: See—
Kaya, Azmi; and Keyes, Marion A., 4,430,573, Cl. 290-40.00R.

Kiba, Akira; and Sugimoto, Kazuo, to Minolta Camera Kabushiki Kaisha. Copying machine with traction feed. 4,429,984, Cl. 355-3.0SH.

Kikugawa, Shozo: See—
Koyama, Mikio; Kikugawa, Shozo; Okaniwa, Kenichiro; and Tamaki, Kiyoshi, 4,430,436, Cl. 436-531.000.

Kim, Dongsung R., to Burroughs Corporation. Microprogrammed digital data processing system employing multi-phase subroutine control for concurrently executing tasks. 4,430,707, Cl. 364-200.000.

Kimball International, Inc.: See—
Eck, Gary A.; and Fritz, Gary R., 4,429,604, Cl. 84-1.170.

Kimura, Kiyoshi: See—
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,430,412, Cl. 430-126.000.

Kimura, Shigeyuki: See—
Watanabe, Mitsuo; Kimura, Shigeyuki; Konishi, Hideki; Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,429,583, Cl. 73-864.120.

Kinard, Dean P.: See—
Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., 4,430,712, Cl. 364-300.000.

Kinberg, Kenjamine: See—
Blake, Joseph W., III, 4,429,962, Cl. 352-32.000.

King-Bell Optics, Inc.: See—
King, Don G., 4,429,957, Cl. 350-423.000.

King, Don G., to King-Bell Optics, Inc. Panoramic zoom lens assembly. 4,429,957, Cl. 350-423.000.

King Instrument Corporation: See—
Berube, Richard G., 4,430,145, Cl. 156-497.000.

Kinnan, Frank, to Electric Power Research Institute, Inc. Underground cable installing apparatus and method utilizing a multi-positionable plow blade. 4,430,022, Cl. 405-183.000.

Kinnebrew, Joseph E., IV. Transit shelter. 4,429,502, Cl. 52-263.000.

Kinoshita, Nobuyasu: See—
Goto, Hiraku; Usui, Tsuneaki; and Kinoshita, Nobuyasu, 4,430,416, Cl. 430-263.000.

Kinoshita, Takao: See—
Hosoe, Kazuya; Kinoshita, Takao; and Yamamichi, Masayoshi, 4,429,966, Cl. 354-406.000.

Kioritz Corporation: See—
Nakagawa, Kumaichi; and Inaga, Hisashi, 4,429,668, Cl. 123-56.00B.

Kipp, Michael A., to Container Corporation of America. Leak resistant closure. 4,429,825, Cl. 229-1.50B.

Kirk, Edward W., Jr., to Bell Telephone Laboratories, Incorporated. Tristate transistor logic circuit with reduced power dissipation. 4,430,585, Cl. 307-473.000.

Kirk, Norbert A. Telephone call counter. 4,430,528, Cl. 179-7.00R.

Kiryu, Yuichi. Plasma confining device. 4,430,290, Cl. 376-134.000.

Kishishita, Ryozo: See—
Murata, Yoichi; Kishishita, Ryozo; and Nakata, Tadao, 4,429,467, Cl. 33-203.000.

Kitahara, Thuyoshi: See—
Sone, Kohki; and Kitahara, Thuyoshi, 4,430,191, Cl. 204-401.000.

Kitahira, Takashi: See—
Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shirogama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.

Kiuchi, Masashi: See—
Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, 4,430,411, Cl. 430-122.000.

Kleeb, Thomas R., to Dresser Industries, Inc. Monolithic refractories. 4,430,439, Cl. 501-95.000.

Kleemann, Axel: See—
Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jürgen; and Weigel, Horst, 4,430,509, Cl. 562-401.000.

Klein, John F.: See—
Irons, Gary C.; Buzzelli, Dennis K.; Klein, John F.; and Smyth, Richard T., 4,430,546, Cl. 219-121.0PY.

Klein, Klausjorg: See—
Jaeger, Kurt E.; Klein, Klausjorg; Patzschke, Hans-Peter; and Saatweber, Dietrich, 4,430,462, Cl. 523-402.000.

Klemm, William A.: See—
Sandvig, Robert L.; Klemm, William A.; Gaines, Jack R.; and Looyenga, Robert W., 4,430,240, Cl. 252-70.000.

Klette, Gerd-Rudiger: See—
Casper, Clemens; Grenner, Dieter; Klette, Gerd-Rudiger; and Tholema, Edzard, 4,430,156, Cl. 159-47.100.

Kliklok Corporation: See—
Harston, John C.; and Hampton, William E., 4,430,147, Cl. 156-578.000.

Kliman, Arthur W.: See—
Eldering, Herman G.; and Kliman, Arthur W., 4,430,000, Cl. 356-236.000.

Klingberg, Anders W.: See—
Hellsten, Karl M. E.; and Klingberg, Anders W., 4,430,238, Cl. 252-61.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: See—
Emunds, Horst; Hoyer, Manfred; and Vogel, Walter, 4,429,588, Cl. 74-484.00R.

Klueting, Bernd A.; and Zaveri, Vikram, to Keiper Recaro, Inc. Composite inertia latch for vehicle seat back. 4,429,919, Cl. 297-379.000.

Klute, Friedrich; and Fender, Robert, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Hydraulic roll-adjustment apparatus. 4,429,618, Cl. 91-1.000.

Knapp, Gordon G.: See—
Dubeck, Michael; and Knapp, Gordon G., 4,430,253, Cl. 502-185.000.

Knecht, Fritz. Blade assembly for meat chopper. 4,429,837, Cl. 241-292.100.

Knight, Ronald W.; and Olive, Clive E., to Rolls-Royce Limited. Variable stator vane operating mechanism for turbomachines. 4,430,043, Cl. 415-159.000.

Knoke, Jürgen; Buchwald, Holger; and Fehlhauer, Jürgen, to Carl Freudenberg, Firma. Non-woven fabric with improved hot-press properties and method for manufacturing same. 4,430,372, Cl. 428-90.000.

Knoll, Jozsef; and Nagy, Janos, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of a selective anorexogenic substance regulating food intake. 4,430,264, Cl. 260-112.00R.

Knorr-Bremse GmbH: See—
Saumweber, Eckart; and Schirmer, Klaus, 4,430,703, Cl. 364-426.000.

Kobayashi, Shigeru: See—
Yamamura, Yuichi; Ichiro, Azuma; and Kobayashi, Shigeru, 4,430,265, Cl. 260-112.50R.

Kobayashi, Syozo: See—
Suzuki, Yukio; and Kobayashi, Syozo, 4,430,538, Cl. 219-10.55F.

Kobayashi, Tatsuhiko: See—
Okachi, Ken; and Kobayashi, Tatsuhiko, 4,430,424, Cl. 430-537.000.

Koch-Ducker, Heinz-Jürgen; Junginger, Erich; and Schnabel, Eberhard, to Robert Bosch GmbH. Automotive trailer connection recognition system. 4,430,637, Cl. 340-52.00R.

Koch, Franz P.; Helms, Adolf; Siems, Wolfgang; and Brand, Peter, to Hauni-Werke Korber & Co. KG. Apparatus for testing cigarettes or the like. 4,429,567, Cl. 73-49.800.

Koch, Karl-Heinz: See—
Omran, Jafar; and Koch, Karl-Heinz, 4,430,194, Cl. 208-8.0LE.

Koch, Klaus; and Syrbius, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Extraction device. 4,429,628, Cl. 100-117.000.

Koellensperger, Paul, to Siemens Aktiengesellschaft. Method and apparatus for automatic recognition of an image pattern, particularly of a line pattern. 4,430,750, Cl. 382-8.000.

Koester, Eberhard: See—
Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.

Kohling, Rolf: See—
Ackermann, Manfred; Kohling, Rolf; and Leininger, Dieter, 4,430,126, Cl. 106-97.000.

Koivumaki, Harri; and Sinkkonen, Jouko, to A. Ahlstrom Osakeyhtio. Arrangement for mounting lighting fixtures. 4,430,694, Cl. 362-250.000.

Koizumi, Hideo; Ishihara, Hideo; Matsumoto, Tatsuhiko; and Kawakita, Katsuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Molybdenum-based alloy. 4,430,296, Cl. 420-429.000.

Koizumi, Shinichi; Kawaguchi, Takeshi; and Kawasaki, Katsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Rear-wheel suspension device for a tricycle vehicle. 4,429,760, Cl. 180-215.000.

Kojima, Akio: See—
Hayakawa, Eizi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.

Kojima, Toshio: See—
Hara, Toshizo; Sutoh, Shinji; and Kojima, Toshio, 4,429,733, Cl. 165-16.000.

Kolblin, Rolf; Keller, Wolfgang; and Wittmann, Erich. Machine tool, 4,429,443, Cl. 29-26.00A.

Kolesnikov, Vyacheslav S.: See—
Zhukovsky, Sergei S.; Junovich, July M.; Pertovsky, Viktor N.; Kolesnikov, Vyacheslav S.; Renshin, Igor P.; and Rivkin, Semen I., 4,430,441, Cl. 501-109.000.

Kollmorgen Technologies Corporation: See—
Stahl, Fritz; and Steffen, Horst, 4,430,154, Cl. 156-651.000.

Komatsuzaki, Hiroshi: See—
Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,976, Cl. 354-203.000.

Sekine, Jiro; Komatsuzaki, Hiroshi; Hara, Hiroshi; and Kameyama, Nobuyuki, 4,429,977, Cl. 354-203.000.

Komiya, Yukiharu: See—
Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,430,412, Cl. 430-126.000.

Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keichiro, to Riccar Co., Ltd.; and Sharp Kabushiki Kaisha. Electromagnetic cooking apparatus, 4,430,542, Cl. 219-10.770.

Kondo, Shinichi: See—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,430,346, Cl. 424-311.000.

Kondo, Yoshikazu: See—
Watanabe, Tadao; Ohori, Mitsuo; Ohta, Akio; and Kondo, Yoshikazu, 4,430,386, Cl. 428-555.000.

Kondo, Yukihiko: See—
Sauer, Hans; Takada, Takashi; and Kondo, Yukihiko, 4,430,537, Cl. 200-302.100.

Kondziola, Joseph D., to General Motors Corporation. Load transfer system for seat mounted retractor, 4,429,920, Cl. 297-478.000.

Kongskilde Koncernselskab A/S: See—
Jensen, Finn U. H., 4,429,436, Cl. 24-3.00D.

Konig, Klaus: See—
Heitkampfer, Peter; Konig, Klaus; Findeisen, Kurt; Fauss, Rudolf; and Sundermann, Rudolf, 4,430,505, Cl. 560-24.000.

Konishi, Hideki: See—
Watanabe, Mitsuo; Kimura, Shigeyuki; Konishi, Hideki; Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,429,583, Cl. 73-864.120.

Konishiroku Photo Industry Co., Ltd.: See—
Abe, Shunichi; and Akiyama, Mitsuo, 4,429,986, Cl. 355-8.000.

Koyama, Mikio; Kikugawa, Shozo; Okaniwa, Kenichiro; and Tamaki, Kiyoshi, 4,430,436, Cl. 436-531.000.

Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, 4,430,412, Cl. 430-126.000.

Okouchi, Ken; and Kobayashi, Tatsuhiko, 4,430,424, Cl. 430-537.000.

Shiozawa, Kazuo; and Sakai, Hideaki, 4,429,975, Cl. 354-202.000.

Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,430,661, Cl. 346-153.100.

Kool-Fire Limited: See—
Vandervart, Gerry, 4,429,734, Cl. 165-29.000.

Kooy, Wayne J.; Krenz, Horst M.; and Unger, Lawrence C., to Zenith Radio Corporation. Paper guide for line printer, 4,430,012, Cl. 400-616.100.

Kopich, Leonard F., to General Motors Corporation. Parking brake actuator mechanism, 4,429,590, Cl. 74-535.000.

Kopke, Helmut: See—
Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.

Kopriva, Vaclav: See—
Ferkel, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.

Kornerup, Klaus; and Christensen, Per B., to V. Kann Rasmussen Holding A/S. Window, especially for installation in an inclined roof, 4,429,494, Cl. 49-386.000.

Kosan Crisplant A/S: See—
Holzhauer, Dieter, 4,429,781, Cl. 198-448.000.

Kostiuk, Alan, deceased: See—
Pasquini, Richard J.; Brown, Harold; and Kostiuk, Alan, deceased, 4,430,080, Cl. 604-240.000.

Kostiuk, Barbara, administratrix: See—
Pasquini, Richard J.; Brown, Harold; and Kostiuk, Alan, deceased, 4,430,080, Cl. 604-240.000.

Kotani, Shigenori: See—
Hidaka, Hiroyoshi; Matsumoto, Ikuo; Yoshizawa, Junji; and Kotani, Shigenori, 4,430,342, Cl. 424-250.000.

Kowitz, Friedrich: See—
Alfies, Franz; Perrey, Hermann; Meyer, Karl-Heinrich; Heine, Dietz; and Kowitz, Friedrich, 4,430,483, Cl. 525-356.000.

Koyama, Hiroshi: See—
Yoneda, Masahiro; Hine, Shiro; and Koyama, Hiroshi, 4,430,547, Cl. 219-121.00D.

Koyama, Mikio; Kikugawa, Shozo; Okaniwa, Kenichiro; and Tamaki, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Analytical element and method of use, 4,430,436, Cl. 436-531.000.

Koyanagi, Katubumi: See—
Hishida, Tadanori; Kuwagaki, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,430,182, Cl. 204-192.00P.

Kozishek, James F.; and Martin, M. Donner, Jr., to Armour Pharmaceutical Company. Production of macrospiral particles, 4,430,155, Cl. 159-4.00S.

Kraftwerk Union Aktiengesellschaft: See—
Dorner, Heinrich; and Rabe, Gunter, 4,429,663, Cl. 122-365.000.

Krause, Bogdan J., to UOP Inc. Fluidized catalyst regeneration apparatus, 4,430,302, Cl. 422-144.000.

Krauss, Clifford J.: See—
Anderson, Harold J. T.; Kerby, Robert C.; Krauss, Clifford J.; and Neame, Hubert W., 4,430,178, Cl. 204-114.000.

Kreher, Alfons; Kuhner, Gerhard; Rothbuhl, Lothar; Turk, Gunter; and Wolff, Siegfried, to Degussa Aktiengesellschaft. Process for the production of mixed granulate from carbon black and light filler, 4,430,280, Cl. 264-117.000.

Krenz, Horst M.: See—
Kooy, Wayne J.; Krenz, Horst M.; and Unger, Lawrence C., 4,430,012, Cl. 400-616.100.

Kress, Manfred, to FAG Kugelfischer Georg Schafer & Co. False-twist device, 4,429,524, Cl. 57-336.000.

Kreysa, Gerhard; and Collin, Gerd, to Rutgerswerke Aktiengesellschaft. Process for the electrochemical conversion of coal and use of the reaction products, 4,430,175, Cl. 204-72.000.

Krimphove, Herbert: See—
Albers, Manfred; Keunecke, Gerhard; and Krimphove, Herbert, 4,430,163, Cl. 203-75.000.

Krishnan, Sivaram, to Mobay Chemical Corporation. Alkylated aromatic polycarbonate compositions of improved impact strength, 4,430,475, Cl. 525-67.000.

Krist, Otto; Drave, Heinz; and Luypaert, Jozef, to Bayer Aktiengesellschaft. Enamel frit and a process for two-layer and multi-layer one-fire enamelling, 4,430,438, Cl. 501-17.000.

Kroschel, Heinz: See—
Dorn, Wolfgang; Elsner, Fritz; Fischer, Klaus; and Kroschel, Heinz, 4,429,635, Cl. 102-401.000.

Kruger, Victor R.: See—
Kellogg, Robert M.; Kruger, Victor R.; and Mulzet, Alfred P., 4,430,072, Cl. 494-45.000.

Krupp-Koppers GmbH: See—
Petrovic, Vladan; Schmid, Karl; Jokisch, Friedrich; and Rotthaus, Heinz, 4,430,161, Cl. 202-228.000.

Krzycki, Joseph A.: See—
Zeikus, Joseph G.; and Krzycki, Joseph A., 4,430,429, Cl. 435-86.000.

Kubbel, Hans-Klaus: See—
Erpenbach, Heinz; Gehrmann, Klaus; Kubbel, Hans-Klaus; and Schmitt, Klaus, 4,430,273, Cl. 260-546.000.

Kubler, Joseph J.: See—
Chadima, George E., Jr.; and Kubler, Joseph J., 4,430,700, Cl. 364-200.000.

Kudlacik, Louis: See—
White, Richard T.; and Kudlacik, Louis, 4,429,923, Cl. 308-184.00R.

Kuhlmann, Joachim, to TELEFUNKEN electronic GmbH. Clock generator, 4,430,617, Cl. 328-61.000.

Kuhner, Gerhard: See—
Kreher, Alfons; Kuhner, Gerhard; Rothbuhl, Lothar; Turk, Gunter; and Wolff, Siegfried, 4,430,280, Cl. 264-117.000.

Kujas, Erich F., to RCA Corporation. Separator material for alkaline storage cells, 4,430,398, Cl. 429-206.000.

Kukes, Simon G., to Phillips Petroleum Company. Demetallization of hydrocarbon containing feed streams, 4,430,207, Cl. 208-251.00H.

Kullmann, Donald J.; Karjalainen, William G.; and Harris, Rodney G., to Neptune Water Meter Company. Compound liquid flow meter, 4,429,571, Cl. 73-197.000.

Kun, Leslie C., to Union Carbide Corporation. Integral bearing system, 4,430,011, Cl. 384-99.000.

Kuneman, James E.: See—
Finn, George A., III; Kuneman, James E.; and Lawrence, Keith E., 4,429,587, Cl. 74-467.000.

Kung, Hank F.: See—
Blau, Monte; Kung, Hank F.; and Trampusch, Kenneth M., 4,430,319, Cl. 424-1.100.

Kunimune, Kohichi, to Chisso Corporation. Polypropylene composition, 4,430,477, Cl. 525-70.000.

Kunishiro Co., Ltd.: See—
Kato, So, 4,429,499, Cl. 52-228.000.

Kunkel, Heinrich: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.

Kunz, Peter, to Mettler Instrumente AG. Weighing apparatus including a sectional yoke member, 4,429,757, Cl. 177-212.000.

Kupfer, Hanspeter, to Siemens-Albis Aktiengesellschaft. Method and apparatus for suppressing clutter, 4,430,654, Cl. 343-5.00Q.

Kupper, Wilhelm, to W. Schlafhorst & Co. Central connectible yarn brake mechanism, 4,429,842, Cl. 242-149.000.

Kuraoka, Yasuo: See—
Sakao, Nobuo; and Kuraoka, Yasuo, 4,429,542, Cl. 62-62.000.

Kuraray Company, Ltd.: See—
Ohyabu, Shuzo; Kawai, Syuji; and Matsumura, Keiji, 4,430,356, Cl. 426-574.000.

Kurosawa, Yukio; Wada, Akira; Iwashita, Kiyoji; and Tsuda, Hideaki, to Hitachi, Ltd. Vacuum interrupter, 4,430,536, Cl. 200-144.00B.

Kuwabara, Tadashi: See—
Yamada, Takahiro; and Kuwabara, Tadashi, 4,430,656, Cl. 346-1.100.

Kuwagaki, Hiroshi: See—
Hishida, Tadanori; Kuwagaki, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,430,182, Cl. 204-192.00P.

Kuznicki, William J.: See—
Nadir, Mark; James, Gordon W.; Kuznicki, William J.; and Niede, Jerome A., 4,430,755, Cl. 455-77.000.

Kuzumoto, Hideshi; Tanaka, Tutomu; and Matsumoto, Hiroshi, to Tayo Boseki Kabushiki Kaisha. Hollow fiber package body and its production, 4,430,219, Cl. 210-321.300.

L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques: See—
Lagrange, Alain; and Beauger, Alain, 4,430,689, Cl. 361-321.000.

L. & C. Steinmuller GmbH: See—
Feldhoff, Karl; and Peters, Paul, 4,429,664, Cl. 122-376.000.

La Telemecanique Electrique: See—
Lefebvre, Marcel; and Ruellan, Daniel, 4,430,684, Cl. 361-98.000.

Lagrange, Alain; and Beauger, Alain, to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques. Dielectric ceramic compositions, capacitors in which compositions of this type are employed, and a method of production of said compositions, 4,430,689, Cl. 361-321.000.

Lahoda, Edward J.: See—
Pope, James M.; and Lahoda, Edward J., 4,430,257, Cl. 252-629.000.

Laitem, Leopold: See—
Broze, Guy; and Laitem, Leopold, 4,430,244, Cl. 252-94.000.

Lalancette, Jean M. Calcined serpentine as inorganic charge in sheet materials, 4,430,157, Cl. 162-145.000.

Lamarche, Paul E., to Borg-Warner Corporation. Series damper rotary and force vector lag control system, 4,430,064, Cl. 464-64.000.

Lamb, John D.; and Chopko, Robert A., to Carrier Corporation. Multiposition electrical connector, 4,429,935, Cl. 339-32.00M.

Lambert, Andre: See—
Boudot, Bernard; Nury, Georges; and Lambert, Andre, 4,430,173, Cl. 204-52.00R.

Lancaster, Patrick R., III: See—
Lancaster, William G.; and Lancaster, Patrick R., III, 4,429,514, Cl. 53-556.000.

Lancaster, William G.; and Lancaster, Patrick R., III, to Lantech, Inc. Rotatable stretching apparatus with prestretching mechanism, 4,429,514, Cl. 53-556.000.

Langbein-Pfahhauser Werke AG: See—
Brugger, Robert; and Schulze-Berge, Klaus, 4,430,172, Cl. 204-43.00N.

Langen, Hans; and Ringel, Helmut, to Kernforschungsanlage Julich GmbH. Operating process for the formation of a steady particle stream of particles conveyed within a flow conduit by a flow medium and arrangement for effectuation of the process, 4,430,030, Cl. 406-146.000.

Langer, Julian: See—
Willus, Charles A.; Lewis, Kenneth D.; and Langer, Julian, 4,430,071, Cl. 494-38.000.

Langone, John J., to United States of America, Health and Human Services. Immunoassay utilizing ¹²⁵I Protein A, 4,430,318, Cl. 424-1.100.

Lantech, Inc.: See—
Lancaster, William G.; and Lancaster, Patrick R., III, 4,429,514, Cl. 53-556.000.

La Pierre, Rene B.; and Wong, Stephen S., to Mobil Oil Corporation. Conversion of olefins to low pour point distillates and lubes, 4,430,516, Cl. 585-533.000.

Larsen, Arthur B.: See—
Brown, Earl F.; and Larsen, Arthur B., 4,430,526, Cl. 178-18.000.

La Sante, James A., Sr. One way screwdriver, 4,429,599, Cl. 81-436.000.

Laskey, Peter P.: See—
Ryan, John J.; and Laskey, Peter P., 4,430,058, Cl. 432-259.000.

Lat, Geronimo E., to United States Gypsum Company. Translucent stainable coating, 4,430,367, Cl. 427-388.400.

Latter, Bruce B., to General Electric Company. Sweep mechanism, 4,429,550, Cl. 62-353.000.

Laughlin, Raymond S.; and Lynch, Edward J., Jr., to Erico Products, Inc. Strut clip, 4,429,440, Cl. 24-486.000.

Launay, Noel, to Societe d'Assistance Technique pour Produits Nestle S.A. Apparatus for sealing tarts or pies, 4,430,053, Cl. 425-510.000.

Lauraghi S.A.: See—
Gras, Augustin H., 4,430,134, Cl. 156-224.000.

LaVanture, Mark D.; and Walker, George L., to Mobil Oil Corporation. Shipping black phosphoric acid, 4,430,313, Cl. 423-321.00R.

Lawrence, Keith E.: See—
Finn, George A., III; Kuneman, James E.; and Lawrence, Keith E., 4,429,587, Cl. 74-467.000.

Layne, Richard C. Cover for refrigerated display cases, 4,429,548, Cl. 62-255.000.

Lazar, Janos J.: See—
Taylor, Ottilia Z.; and Lazar, Janos J., 4,429,487, Cl. 46-43.000.

Leach Industries, Inc.: See—
Rodgers, Robert E., Jr., 4,429,874, Cl. 273-73.00C.

Leach, James W., to Vought Corporation. Heat exchangers for vulcanizing cycle heat pumps, 4,429,539, Cl. 62-6.000.

Le Berre, Serge: See—
Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noel, 4,430,650, Cl. 340-784.000.

LeBlanc, James S.; and Uke, Alan K., to Paraflexor. Calf stretching device, 4,429,868, Cl. 272-93.000.

LeBlanc, Louis H., Jr.: See—
Bailey, Edward A.; and LeBlanc, Louis H., Jr., 4,429,752, Cl. 173-59.000.

Lee, John M.; and Bauman, William C., to Dow Chemical Co., The. Alumina compounds in ion exchange resins, 4,430,311, Cl. 423-179.500.

Lee, Weng Y.; and Sehon, Alec. Penicillin-polyvinyl alcohol conjugate and process of preparation, 4,430,260, Cl. 260-239.100.

Lefebvre, Marcel; and Ruellan, Daniel, to La Telemecanique Electrique. Transistor switching means, 4,430,684, Cl. 361-98.000.

Lefevre, Joseph D.: See—
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,430,177, Cl. 204-98.000.

Lehmann, Rolf, to Escher Wyss Aktiengesellschaft. Roll for a rolling mill, 4,429,446, Cl. 29-116.0AD.

Leigh Products, Inc.: See—
Imhoff, William B., 4,429,492, Cl. 49-367.000.

Leininger, Dieter: See—
Ackermann, Manfred; Kohling, Rolf; and Leininger, Dieter, 4,430,126, Cl. 106-97.000.

Leininger, Steven, to Radio Shack. Video processing system, 4,430,649, Cl. 340-731.000.

Lemcke, Ulrich, to Carl-Zeiss-Stiftung. Lamp mounting means, 4,430,696, Cl. 362-306.000.

Lemke, Kenneth W.; and McNeil, Maynard W., to M&T Chemicals Inc. Electroplating baths for nickel, iron, cobalt and alloys thereof, 4,430,171, Cl. 204-43.00T.

Lempert, Joseph: See—
Way, Stewart; and Lempert, Joseph, 4,430,588, Cl. 310-11.000.

Lemstra, Pieter J.: See—
Smith, Paul; and Lemstra, Pieter J., 4,430,383, Cl. 428-364.000.

Lenk, Erich; and Busch, Hansjochen, to Barmag Barmer Maschinenfabrik AG. Clamping chuck in winding machines, 4,429,838, Cl. 242-46.400.

Leonard, Frank W. Press construction, 4,429,629, Cl. 100-226.000.

Leonard, Wilbur. Layout combination tool, 4,429,466, Cl. 33-180.00R.

Leppard, David G., to Ciba-Geigy AG. Color photographic materials containing stabilizers, 4,430,425, Cl. 430-551.000.

Lesieur-Cotelle & Associes: See—
Steiner, Jean-Pierre; Melin, Christiane; Platon, Jean-Francois; and Peton, Nicole, 4,429,859, Cl. 252-8.800.

Lesniewski, Joseph M.; and Breza, Michael J., to Saytech, Inc. Self-extinguishing propylene polymer, 4,430,467, Cl. 524-89.000.

Leticia Corporation: See—
Leticia, Ilija, 4,429,805, Cl. 220-306.000.

Leticia, Ilija, to Leticia Corporation. Container construction, 4,429,805, Cl. 220-306.000.

Leutner, Volkmar; and Pfuhl, Berthold. Control system for a hydraulic load, 4,429,619, Cl. 91-29.000.

Levasseur, Joseph L., to H. R. Electronics Company. Conditioning time control for vending by selection, 4,429,778, Cl. 194-10.000.

Lever Brothers Company: See—
Vicararo, John P., 4,430,324, Cl. 424-52.000.

Levine, Joseph E.: See—
Cortellino, Charles A.; Levine, Joseph E.; and Schick, Henry C., 4,429,983, Cl. 354-320.000.

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Levis, William W., Jr.: See—
Austin, Arthur L.; Levis, William W., Jr.; Pizzini, Louis C.; and Hartman, Robert J., 4,430,247, Cl. 252-182.000.

Leviton Manufacturing Co., Inc.: See—
Johnson, George E.; and Newman, Walter, 4,429,942, Cl. 339-154.00L.

Levy, Chauncey F. Method of implanting an intraocular lens, 4,429,421, Cl. 3-13.000.

Lewa Herbert Ott GmbH & Co.: See—
Fritsch, Horst, 4,430,048, Cl. 417-383.000.

Lewis, Kenneth D.: See—
Willus, Charles A.; Lewis, Kenneth D.; and Langer, Julian, 4,430,071, Cl. 494-38.000.

Libit, Sidney M. Rotating dispenser cap, 4,429,815, Cl. 222-452.000.

Licari, Yaffa, to Basic Line, Inc. Utility shelf, 4,429,638, Cl. 108-25.000.

Licciardello, Michael: See—
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.

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Scholz, Werner, 4,430,736, Cl. 371-31.000.

Lieber, Clement: See—
Ganz, William; Solar, Ronald J.; and Lieber, Clement, 4,430,083, Cl. 604-283.000.

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Schnur, Friedrich; Cornils, Boy; Hibbel, Josef; and Lieder, Bern-Hard, 4,430,096, Cl. 48-206.000.

Lies, Kenneth A.: See—
Hamilton, Stephen P.; Hunter, Arthur C.; and Lies, Kenneth A., 4,430,724, Cl. 364-900.000.

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Eve, Michel; and Flosch, Bernard, 4,430,572, Cl. 250-551.000.

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Lin, Leroy C., to Goodyear Tire & Rubber Company. The Method for producing large diameter spun filaments. 4,430,277, Cl. 264-22.000.

Linde Aktiengesellschaft: See—
Fuchs, Uwe, 4,430,224, Cl. 210-604.000.
Linde, Gerhard, 4,430,303, Cl. 422-170.000.
Ranke, Gerhard; and Weiss, Horst, 4,430,316, Cl. 423-573.00R.

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Lindenschmidt, Gerhard: See—
Schmitt, Burghard; Benker, Klaus; Priebe, Edmund; and Lindenschmidt, Gerhard, 4,430,478, Cl. 525-71.000.

Lindner, Klaus-Peter: See—
Massen, Robert; Merkel, Jurgen; and Lindner, Klaus-Peter, 4,430,722, Cl. 364-728.000.

Lindner, Richard: See—
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Lindquist, John L. Restraint assembly for door exit devices. 4,429,909, Cl. 292-92.000.

Line, William F.: See—
Duncombe, George R.; Line, William F.; and Chicoye, Etzer, 4,430,348, Cl. 426-13.000.

Linn, Maynard W. Stirring arrangement. 4,429,624, Cl. 99-348.000.

Lipper, Karl-August: See—
Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.0HA.

Litovitz, Theodore A.: See—
Hojaji, Hamid; de Macedo, Pedro B.; and Litovitz, Theodore A., 4,430,108, Cl. 65-22.000.

Litovitz, Theodore Aaron: See—
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Litton Bionetics, Inc.: See—
Issaq, Halem J., 4,430,217, Cl. 210-198.300.

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Grover, Bruce C., 4,430,616, Cl. 324-304.000.

Litvin, Noel; and Scherz, Abraham I. Bilateral key for cylinder lock. 4,429,554, Cl. 70-358.000.

Litzenburger, Wolfgang, to Flutec Fluidtechnische Geräte GmbH. Apparatus for controlling fluid medium flow. 4,430,220, Cl. 210-333.100.

Liu, Ping Y., to General Electric Company. Resinous composition comprising a polycarbonate resin, a linear low density polyolefin and an alkenyl aromatic copolymer. 4,430,476, Cl. 525-67.000.

Loctite Corporation: See—
Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,430,480, Cl. 525-160.000.

Loganbill, Ernest L.; and Taylor, William E., to Echlin Inc. Rectifier switch for electric lawn mowers. 4,430,604, Cl. 318-379.000.

Lohrenz, Howard R.; and Case, Cecil L., to Hesston Corporation. Harvesting header with adjustable draper for left, right or center delivery. 4,429,517, Cl. 56-181.000.

Lonsel Corporation: See—
Tsuchiya, Toshio; Morizumi, Syuichi; Takeda, Hisashi; and Aria, Akinori, 4,430,136, Cl. 156-246.000.

Looyenga, Robert W.: See—
Sandvig, Robert L.; Klemm, William A.; Gaines, Jack R.; and Looyenga, Robert W., 4,430,240, Cl. 252-70.000.

L'Oreal: See—
Sebag, Henri; and Vanlerberghe, Guy, 4,430,250, Cl. 252-351.000.

Love, Samuel D. Fireplace grate adapter. 4,429,681, Cl. 126-152.00B.

Lovelace, Ralph E., to Signetics Corporation. Bistable switching circuit. 4,430,580, Cl. 307-288.000.

Lowrie, Ian W.: See—
Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.

LST Corporation: See—
St. Aubin, William R., 4,429,493, Cl. 49-367.000.

Lubbing, Bernd-Eric, to Daimler-Benz Aktiengesellschaft. Multicylinder internal combustion engine. 4,429,674, Cl. 123-531.000.

Lucas Industries Limited: See—
Baverstock, John R., 4,430,139, Cl. 156-353.000.
Margetta, Hugh G.; and Pace, Charles H., 4,429,768, Cl. 188-71.900.
Thomas, Brian J., 4,429,442, Cl. 29-2.000.

Luk Lamellen und Kupplungsbau GmbH: See—
Maucher, Paul; and Weydmann, Patrick, 4,429,776, Cl. 192-99.00A.

Lukens General Industries, Inc.: See—
Jackson, Keith L.; Schmitt, Dallas L.; and Schauster, John L., 4,429,637, Cl. 105-168.000.

Lundblad, Leif. Banknote dispensing apparatus. 4,430,562, Cl. 235-379.000.

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Krist, Otto; Drave, Heinz; and Luybaert, Jozef, 4,430,438, Cl. 501-17.000.

Lyman, John B., to Whirlpool Corporation. Vacuum cleaner beater brush structure. 4,429,430, Cl. 15-182.000.

Lynch, Edward J., Jr.: See—
Laughlin, Raymond S.; and Lynch, Edward J., Jr., 4,429,440, Cl. 24-486.000.

Lynch, James E., to AMP Incorporated. Electrical terminal with cavity compensator. 4,429,459, Cl. 29-881.000.

Lynn, Kenneth C. Plastics foam production. 4,430,446, Cl. 521-50.000.

Lynn, Scott: See—
Hanson, Donald N.; and Lynn, Scott, 4,430,227, Cl. 210-642.000.

M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: See—
Hajek, Josef, 4,429,630, Cl. 101-216.000.

M&T Chemicals Inc.: See—
Lemke, Kenneth W.; and McNeil, Maynard W., 4,430,171, Cl. 204-43.00T.

MacDonald, Robert D., to Masco Corporation. Faucet. 4,429,712, Cl. 137-606.000.

Machbitz, Jacob M., to Medication Services, Inc. Medication-dispensing card. 4,429,792, Cl. 206-531.000.

Machida, Kenji. Amplitude controlled sine wave oscillator. 4,430,627, Cl. 331-109.000.

Machonis, John, Jr.: See—
Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,430,135, Cl. 156-244.110.

Macken, John A. Laser apparatus and process for cutting paper. 4,430,548, Cl. 219-121.0LG.

Macken, John A. Method and apparatus for producing deckle-edged paper. 4,430,549, Cl. 219-121.0LG.

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Mackrle, Vladimir: See—
Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,430,215, Cl. 210-195.400.

MacMillan John H.; Bertozzi, Eugene R.; and Streeter, Bruce E., to Thiokol Corporation. One-package, heat-curable sealant compositions comprising a blocked polyisocyanate and a blocked polyamine. 4,430,489, Cl. 528-45.000.

Maddox, Gerald H. Ground release irrigation system. 4,429,831, Cl. 239-177.000.

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Weichlein, Bernard; Chatelain, Jean-Claude; and Gaihier, Denis, 4,429,706, Cl. 137-66.000.

Maeda, Masato, to Yokogawa Hokushin Electric Corporation. Oxygen gas analyzer using solid electrolyte. 4,430,192, Cl. 204-410.000.

Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., to Minnesota Mining and Manufacturing Company. Protuberant optical recording medium. 4,430,659, Cl. 346-135.100.

Magerl, Johann: See—
Betzl, Hermann; Magerl, Johann; and Volejnik, Wilhelm, 4,430,629, Cl. 333-165.000.

Magic, Susan E.: See—
March, Steven C.; Safford, John W., Jr.; and Magic, Susan E., 4,430,263, Cl. 260-112.00R.

Magma Power Company: See—
Featherstone, John L., 4,429,535, Cl. 60-641.500.

Magnavox Consumer Electronics Company: See—
Streeter, Robert D., 4,430,747, Cl. 381-15.000.

Maier, Josef. Frame for setting up the lines preparatory to erection of buildings or the like. 4,429,849, Cl. 248-156.000.

Makosch, Gunter: See—
Hausler, Gerd; Jarisch, Walter; and Makosch, Gunter, 4,429,992, Cl. 356-124.000.

Malcolm, Michael A.: See—
Bryant, David M.; Corbell, Ryn C.; Malcolm, Michael A.; Rogers, Lawrence D.; and Thompson, Donald R., 4,430,651, Cl. 340-825.520.

Malinchak, Raymond M., to United States of America, Energy. Combination gas producing and waste-water disposal well. 4,429,740, Cl. 166-53.000.

Malito, John T.; and Rogers, Gordon C., Jr., to Kaiser Aluminum & Chemical Corporation. Purification of impure Bayer process liquors. 4,430,310, Cl. 423-121.000.

Mallinckrodt, Incorporated: See—
Dutton, Edmund L., 4,429,829, Cl. 236-78.00B.
Jackson, Isaac S., 4,429,856, Cl. 251-149.100.

Malone, Michael J.; and Miles, Evelyn A., to Coca-Cola Company. The Artificially sweetened gelled yogurt. 4,430,349, Cl. 426-34.000.

Manchand, Percy, to Hoffmann-La Roche Inc. 4-Methyl-2-oxocyclopentanecarboxylic acid prostaglandin intermediates. 4,430,507, Cl. 560-122.000.

Manduley, Flavio M.: See—
Dlugos, Daniel F.; and Manduley, Flavio M., 4,430,716, Cl. 364-466.000.

Manitoba Telephone System, The: See—
Gimble, Irving; and Rodman, William, 4,430,731, Cl. 370-30.000.

Manktelow, Peter, to Tape Research, Inc. Electromagnetic brake. 4,430,592, Cl. 310-93.000.

Mannesmann AG: See—
Babsch, Alfred, 4,430,682, Cl. 361-31.000.

Manning, Frank W., to United States of America, Energy. Pocket radiation dosimeter-dosimeter charger assembly. 4,430,569, Cl. 250-377.000.

Mantel, Robert W. Shell reloader. 4,429,610, Cl. 86-36.000.

Manville Service Corporation: See—
Hounsell, Mack A.; and Byrd, Carlisle O., Jr., 4,429,504, Cl. 52-506.000.

Marathon Oil Company: See—
Antes, Ronald E., 4,429,742, Cl. 166-127.000.

Beitel, James E.; Bruce, Charles R.; Cook, Gary R.; Mosier, Charles F., Jr.; and Sartore, Edward L., 4,430,728, Cl. 364-900.000.

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Mardan Corp.: See—
Stefanich, Kenneth G., 4,430,017, Cl. 403-104.000.

Margetta, Hugh G.; and Pace, Charles H., to Lucas Industries Limited. Brakes. 4,429,768, Cl. 188-71.900.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate compositions. 4,430,485, Cl. 525-439.000.

Marko Materials, Inc.: See—
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,430,115, Cl. 75-0.50R.

Marks, Walter J., to Anchor Hocking Corporation. Linerless closure cap. 4,429,802, Cl. 215-344.000.

Marlin, Lawrence: See—
Chu, Nan S.; and Marlin, Lawrence, 4,430,235, Cl. 252-49.600.

Marolino, Adriano, to Roj Electrotex S.p.A. Yarn braking means for yarn feeding devices. 4,429,723, Cl. 139-452.000.

Maroko, Peter R.: See—
Jansen, Frans H. J.; and Maroko, Peter R., 4,430,338, Cl. 424-274.000.

Marshall-Fowler Limited: See—
Stokes, Ian D., 4,430,555, Cl. 219-286.000.

Marshall, Vincent P.: See—
Patt, Tom E.; Argoudelis, Alexander D.; and Marshall, Vincent P., 4,430,495, Cl. 536-16.300.

Marsters, Robert G.: See—
Young, Ainslie T.; Marsters, Robert G.; and Moreno, Dawn K., 4,430,451, Cl. 521-64.000.

Martens, Jurgen: See—
Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,430,509, Cl. 562-401.000.

Martens, Luc K.: See—
Van de Sande, Christian C.; Vandewalle, Jan J.; Martens, Luc K.; and Van Poucke, Raphael K., 4,430,422, Cl. 430-377.000.

Martin, Carl J., to RCA Corporation. Process for preparing conductive PVC molding compositions. 4,430,460, Cl. 523-174.000.

Martin, Francis R.: See—
Melody, David P.; Grant, Seamus M.; and Martin, Francis R., 4,430,480, Cl. 525-160.000.

Martin, M. Donner, Jr.: See—
Kozishek, James F.; and Martin, M. Donner, Jr., 4,430,155, Cl. 159-4.00S.

Martin, Otto H. J., to Damar Manufacturing Company. Vibrating screen. 4,430,211, Cl. 209-314.000.

Martin, Thomas E., to Babcock & Wilcox Company. The Mechanical air failure brake. 4,429,771, Cl. 188-170.000.

Martino, Peter V.; and Meyers, Peter, to Pluribus Products, Inc. Apparatus and method for processing stabilization photographic paper. 4,429,982, Cl. 354-318.000.

Marzocchi, Alfred: See—
Bhatti, Mohinder S.; and Marzocchi, Alfred, 4,430,105, Cl. 65-1.000.

Maschinenfabrik J. Dieffenbacher GmbH & Co.: See—
Bielfeldt, Friedrich B., 4,430,059, Cl. 425-190.000.

Mascioli, Rocco L.: See—
Bechara, Ibrahim S.; and Mascioli, Rocco L., 4,430,456, Cl. 521-128.000.

Masco Corporation: See—
MacDonald, Robert D., 4,429,712, Cl. 137-606.000.

Mason, Duane R.: See—
Blake, Larry W.; Harvel, Ervin R.; Mason, Duane R.; and Wright, George M., 4,429,693, Cl. 604-73.000.

Masri, Sami F., to University of Southern California. Method and apparatus for active control of flexible structures. 4,429,496, Cl. 52-1.000.

Massachusetts Institute of Technology: See—
Growth, John H.; and Wurtman, Richard J., 4,430,330, Cl. 424-199.000.

Massen, Robert; Merkel, Jurgen; and Lindner, Klaus-Peter. Method and arrangement for the correlation of two signals. 4,430,722, Cl. 364-728.000.

Masuda, Yoshinori: See—
Takeshima, Kiyoshi; and Masuda, Yoshinori, 4,429,438, Cl. 24-401.000.

Masunaga, Makoto: See—
Taka, Hideo; and Masunaga, Makoto, 4,429,968, Cl. 354-403.000.

Mathews, Ronald D.: See—
Cattler, Robert D.; Harris, Craig W.; and Mathews, Ronald D., 4,430,710, Cl. 364-200.000.

Matsuda, Michiko: See—
Shigematsu, Akiyo; Tsuya, Akira; Aihara, Michiaki; Suzuki, Akiko; and Matsuda, Michiko, 4,430,320, Cl. 424-1.100.

Matsuda, Toshiro; and Honda, Minoru, to Nissan Motor Company, Limited. Brake control system for an automotive vehicle. 4,430,714, Cl. 364-426.000.

Matsui, Fujio: See—
Nakajima, Takashi; and Matsui, Fujio, 4,430,518, Cl. 136-234.000.

Matsui, Takashi: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto,

Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.

Matsui, Toshikazu: See—
Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshikazu; Fushida, Akira; Ikeda, Toshimitsu; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.

Matsumoto, Hiroshi: See—
Kuzumoto, Hideshi; Tanaka, Tutomu; and Matsumoto, Hiroshi, 4,430,219, Cl. 210-321.300.

Matsumoto, Ikuo: See—
Hidaka, Hiroyoshi; Matsumoto, Ikuo; Yoshizawa, Junji; and Kotani, Shigenori, 4,430,342, Cl. 424-250.000.

Matsumoto, Masataka, to Citizen Watch Co., Ltd. Electronic watch multi-circuit pushbutton switch. 4,430,532, Cl. 200-52.00R.

Matsumoto, Shoji: See—
Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshikazu; Fushida, Akira; Ikeda, Toshimitsu; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.

Matsumoto, Sotosuke, to Eagle Industry Co., Ltd. Stern tube face seal with funnel-shaped packing. 4,429,884, Cl. 277-93.0SD.

Matsumoto, Tatsuhiko: See—
Koizumi, Hideo; Ishihara, Hideo; Matsumoto, Tatsuhiko; and Kawakita, Katsuhiko, 4,430,296, Cl. 420-429.000.

Matsumoto, Toru; and Takenouchi, Masanori, to Canon Kabushiki Kaisha. Developer for electrophotography with wet process silicic acid. 4,430,409, Cl. 430-106.600.

Matsumura, Keiji: See—
Ohyabu, Shuzo; Kawai, Syuji; and Matsumura, Keiji, 4,430,356, Cl. 426-574.000.

Matsunaga, Akira; and Morita, Keiichi, to Hitachi, Ltd. Glass-moulded type semiconductor device. 4,430,664, Cl. 357-73.000.

Matsunawa, Masahiko: See—
Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,430,661, Cl. 346-153.100.

Matsuoka, Chikara; Sawada, Kouji; and Sunayama, Takayoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Ishikawa Tekko Kabushiki Kaisha. Ball joint. 4,430,016, Cl. 403-40.000.

Matsushita Electric Industrial Co., Ltd.: See—
Dohi, Takashi; Shinozaki, Nozomu; and Neki, Shigeo, 4,429,773, Cl. 192-18.00B.

Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuichi; and Ikka, Toshifumi, 4,430,688, Cl. 361-307.000.

Matthews, James B., to Raytheon Company. Phase-locked loop laser gyroscope system. 4,429,997, Cl. 356-350.000.

Matthews, Robert B.; and Davies, Guy E., to Plessey Overseas Limited. Emergency fuel system. 4,429,528, Cl. 60-39.281.

Maucher, Paul; and Weydmann, Patrick, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,429,776, Cl. 192-99.00A.

Mayer, Fritz: See—
Schafer, Paul; Abel, Heinz; and Mayer, Fritz, 4,430,261, Cl. 260-404.800.

McCarty, William J., to General Electric Company. Refrigerant storage system for a heat pump. 4,429,544, Cl. 62-84.000.

McClintock, William A.: See—
Gray, Michael L.; and McClintock, William A., 4,430,103, Cl. 62-28.000.

McClure, Michael C. Heat recovery apparatus and method. 4,429,661, Cl. 122-20.00B.

McDonnell Douglas Corporation: See—
Boehringer, Wilfred E., 4,429,707, Cl. 137-625.210.

McFarland, Patricia A.: See—
McFarland, Robert C.; and McFarland, Patricia A., 4,430,258, Cl. 252-644.000.

McFarland, Robert C.; and McFarland, Patricia A. Method of producing liquid equivalent solid gamma ray calibration standards. 4,430,258, Cl. 252-644.000.

McGreevy, Francis T., to C. R. Bard, Inc. Electrosurgical generator. 4,429,694, Cl. 128-303.140.

MCIBS, Inc.: See—
Vatterott, Oskar F., 4,430,533, Cl. 200-61.410.

McInroy, John W.: See—
Elliott, Jo A.; McInroy, John W.; and Waldo, Paul D., 4,430,725, Cl. 364-900.000.

McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., to Dow Chemical Company. The Electrolytic process using oxygen-depolarized cathodes. 4,430,177, Cl. 204-98.000.

McKee, William R.: See—
Levine, Jules D.; McKee, William R.; and Carson, Kent R., 4,430,150, Cl. 156-616.00A.

McKewah, Arthur J., to Microdot Inc. Sheet metal insert for foam plastic. 4,430,033, Cl. 411-61.000.

McKinney, Osborne K.; and Flores, David P., to Dow Chemical Company. The Process for reducing block and increasing slip of linear low density polyethylene copolymer extrusion-blown films. 4,430,289, Cl. 264-564.000.

McMahan, William H. Laser system with standby mode. 4,430,739, Cl. 372-38.000.

McManus, John R.; and Jackson, Dale, to Carrier Corporation. Wrapped fin heat exchanger. 4,429,737, Cl. 165-125.000.

McNab, Ian R.: See—
Deis, Daniel W.; McNab, Ian R.; and Smith, Joseph L., Jr., 4,429,613, Cl. 89-8.000.

McNeil, Maynard W.: See—
Lemke, Kenneth W.; and McNeil, Maynard W., 4,430,171, Cl. 204-43.00T.

McQuay-Perfex Inc.: See—
 Pierson, Gerald R., 4,429,782, Cl. 198-677.000.
 McWilliams, Joseph A., to Micropore International Ltd. Electric radiant heater unit for a glass ceramic top cooker. 4,430,558, Cl. 219-449.000.
 Mead Corporation: See—
 Nerlinger, John J., 4,430,015, Cl. 402-79.000.
 Meader, Albert E.: See—
 Hyde, Richard E.; Smith, Gary L.; Carmichael, Lee T.; and Meader, Albert E., 4,429,916, Cl. 297-250.000.
 Mears, Gregory N.: See—
 Dolman, Rodney A.; and Mears, Gregory N., 4,430,756, Cl. 455-78.000.
 Medication Services, Inc.: See—
 Machbitz, Jacob M., 4,429,792, Cl. 206-531.000.
 Medtronic, Inc.: See—
 Sorenson, Paul D.; and Dickson, Dale A., 4,429,577, Cl. 73-644.000.
 Untereker, Darrel F., 4,430,397, Cl. 429-191.000.
 Megna, Ignazio S.: See—
 Toothill, Richard B.; Megna, Ignazio S.; and Chaudhuri, Ajit K., 4,430,471, Cl. 524-356.000.
 Mehr, Dietrich: See—
 Steinfelder, Karl; Heigis, Ullrich; Schiller, Siegfried; Mehr, Dietrich; Thuse, Bernd; and Hielscher, Klaus, 4,430,687, Cl. 361-293.000.
 Meichsner, Walter: See—
 Freissmuth, Alfred; Gmohling, Werner; and Meichsner, Walter, 4,430,118, Cl. 75-58.000.
 Meignant, Didier, to U.S. Philips Corporation. Method of manufacturing field-effect transistors with self-aligned grid and transistors thus obtained. 4,429,452, Cl. 29-571.000.
 Meininger, Fritz: See—
 Mischke, Peter; Fuchs, Hermann; and Meininger, Fritz, 4,430,259, Cl. 260-186.000.
 Meisner, Roland; and Buchholz, Hagen, to BASF Farben & Fasern AG. Process and device for delivering a liquid onto a rotating and hollow body. 4,429,833, Cl. 239-224.000.
 Meisner, Roland A., to BASF Farben & Fasern AG. Process for coating objects electrostatically. 4,430,359, Cl. 427-31.000.
 Melin, Christiane: See—
 Steiner, Jean-Pierre; Melin, Christiane; Platon, Jean-Francois; and Peton, Nicole, 4,429,859, Cl. 252-8.800.
 Melody, David P.; Grant, Seamus M.; and Martin, Francis R., to Loc-tite Corporation. Two-part composition with activator enriched with dihydropyridine ingredients. 4,430,480, Cl. 525-160.000.
 Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, to BASF Aktiengesellschaft. Production of magnetic recording media. 4,430,362, Cl. 427-48.000.
 Memorex Corporation: See—
 Christensen, Dean L.; and Ebey, Frank S., 4,429,790, Cl. 206-444.000.
 Meno, Frank, to University of Pittsburgh. Light beam musical instrument. 4,429,607, Cl. 84-1.180.
 Mercier, Jacques H., to Normand Trust, The. Pressure resistant accumulator device. 4,429,718, Cl. 138-30.000.
 Merck & Co., Inc.: See—
 Blair, Lyndia S., 4,430,329, Cl. 424-181.000.
 Stoudt, Thomas H.; and Nollstadt, Karl H., 4,430,322, Cl. 424-49.000.
 Merck Frost Canada Inc.: See—
 Flanagan, Richard J.; and Wiebe, Leonard I., 4,430,321, Cl. 424-1.100.
 Merck, James Q.; and Barry, Leon F., to Celotex Corporation. The. Method and apparatus for elutriation of shot from mineral fiber. 4,430,209, Cl. 209-3.000.
 Meridian Industries, Inc.: See—
 Puckett, P. Brooks, Jr., 4,429,789, Cl. 206-370.000.
 Merkel, Jurgen: See—
 Massen, Robert; Merkel, Jurgen; and Lindner, Klaus-Peter, 4,430,722, Cl. 364-728.000.
 Merriam, Donald R.: See—
 Kandell, Ronald J.; Merriam, Donald R.; Root, Bernard H.; and Woodruff, William W., 4,430,530, Cl. 179-175.20D.
 Merton, W. Randolph; and Pletcher, Wayne A., to Minnesota Mining and Manufacturing Company. Heat activatable adhesive with improved temperature resistance. 4,430,479, Cl. 525-127.000.
 Mertz, Inc.: See—
 Bedenbender, John W.; Cook, Marvin C.; and Johnston, Otis A., 4,429,898, Cl. 280-678.000.
 Mesaros, John G.: See—
 Mocilac, Joseph P.; Terry, Clifford M.; and Mesaros, John G., 4,429,960, Cl. 351-212.000.
 Meshulam, Eli. Motorized cart. 4,429,758, Cl. 180-19.00R.
 Metabowerke GmbH & Co.: See—
 Benzing, Rolf, 4,430,681, Cl. 361-27.000.
 Metco, Inc.: See—
 Irons, Gary C.; Buzzelli, Dennis K.; Klein, John F.; and Smyth, Richard T., 4,430,546, Cl. 219-121.0PY.
 Metro, Robert D. Adjustable mechanically cushioned lateral border of the heel for a shoe. 4,429,474, Cl. 36-36.00A.
 Mettler Instrumente AG: See—
 Kunz, Peter, 4,429,757, Cl. 177-212.000.
 Metzeler Kautschuk GmbH: See—
 Frank, Erich; Scheuermann, Walter; and Volk, Georg, 4,429,569, Cl. 73-81.000.

Meurs, Jan H. H.: See—
 Engels, Rainer; and Meurs, Jan H. H., 4,430,262, Cl. 260-453.00P.
 Meyer, Karl-Heinrich: See—
 Alfes, Franz; Perrey, Hermann; Meyer, Karl-Heinrich; Heine, Dietz; and Kowitz, Friedrich, 4,430,483, Cl. 525-356.000.
 Meyer, Klaus: See—
 vom Hofe, Dieter; and Meyer, Klaus, 4,430,068, Cl. 493-100.000.
 Meyer, Theodor: See—
 Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,430,469, Cl. 524-247.000.
 Meyers, Peter: See—
 Martino, Peter V.; and Meyers, Peter, 4,429,982, Cl. 354-318.000.
 Michael, Richard A., to Deere & Company. Full range hydromechanical transmission. 4,429,593, Cl. 74-687.000.
 Michael Weinig GmbH & Co. KG: See—
 Betzler, Otto, 4,429,726, Cl. 144-134.00R.
 Michel, Walter: See—
 Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, 4,430,380, Cl. 428-254.000.
 Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; and Wolf, Alfons, 4,430,494, Cl. 528-254.000.
 Michener, Curtis A.: See—
 Kelley, John A.; and Michener, Curtis A., 4,430,392, Cl. 429-53.000.
 Michigan Hanger Company, Inc.: See—
 Mullenax, Perry D., 4,430,463, Cl. 524-5.000.
 Microdot Inc.: See—
 McKewan, Arthur J., 4,430,033, Cl. 411-61.000.
 Micropore International Ltd.: See—
 McWilliams, Joseph A., 4,430,558, Cl. 219-449.000.
 Middleton, Anthony E.: See—
 Hemingway, Trevor; and Middleton, Anthony E., 4,430,041, Cl. 414-787.000.
 Midland-Ross Corporation: See—
 Flor, Joseph R., 4,429,938, Cl. 339-90.00R.
 Miles, Ernest P., Jr. Digital FACSIMILES (Fast Additive Color Separation Inter negatives MILES). 4,430,668, Cl. 358-75.000.
 Miles, Evelyn A.: See—
 Malone, Michael J.; and Miles, Evelyn A., 4,430,349, Cl. 426-34.000.
 Milleker, William W.; Freeburg, Thomas A.; and Stepien, Michael A., to Motorola, Inc. Data muting method and apparatus for radio communications systems. 4,430,742, Cl. 375-5.000.
 Miller Brewing Company: See—
 Duncombe, George R.; Line, William F.; and Chicoye, Etzer, 4,430,348, Cl. 426-13.000.
 Miller, Clare K., to Pako Corporation. Magnetic drive mechanism for film disc processor. 4,429,980, Cl. 354-311.000.
 Miller, Jack R., to Eli Lilly and Company. Plant growth regulator compositions and method. 4,430,113, Cl. 71-92.000.
 Miller, Norman K. Self-sealing valved bag. 4,430,751, Cl. 383-6.000.
 Miller, Norman K. Valved bag with sealing flap. 4,430,752, Cl. 383-6.000.
 Millipore Corporation: See—
 Hegde, Ramesh S.; and Ganzi, Gary C., 4,430,226, Cl. 210-638.000.
 Mills, Edwin R.; and Elmore, Ernest L., to Fieldcrest Mills, Inc. Electrical heating apparatus overheat protection circuits. 4,430,560, Cl. 219-505.000.
 Minakawa, Yoshimitsu: See—
 Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.
 Minigrip, Inc.: See—
 Ausnit, Steven, 4,430,070, Cl. 493-215.000.
 Minilife A/S: See—
 Bjornstad, Arne, 4,429,486, Cl. 46-21.000.
 Minnesota Mining and Manufacturing Company: See—
 Beebe, George W.; Hine, Philip; O'Bryan, Nelson B.; and Shor, Steven M., 4,430,426, Cl. 430-604.000.
 Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,430,366, Cl. 427-162.000.
 Daniels, Michael P.; and Schoonover, Robert J., 4,430,363, Cl. 427-54.100.
 Freshwater, Lane A.; and Moynagh, Eugene E., 4,429,940, Cl. 339-99.00R.
 Harrington, John A., 4,430,563, Cl. 235-494.000.
 Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., 4,430,659, Cl. 346-135.100.
 Merton, W. Randolph; and Pletcher, Wayne A., 4,430,479, Cl. 525-127.000.
 Roeker, David C., 4,429,455, Cl. 29-749.000.
 Sitaramiah, George G., 4,430,408, Cl. 430-106.600.
 Swanson, Jerome E., 4,430,414, Cl. 430-176.000.
 Thill, Gary A.; and Strand, Jerome E., 4,430,079, Cl. 604-154.000.
 Minolta Camera Kabushiki Kaisha: See—
 Kiba, Akira; and Sugimoto, Kazuo, 4,429,984, Cl. 355-3.0SH.
 Okada, Osamu, 4,429,865, Cl. 271-170.000.
 Yamaguchi, Tamikazu, 4,429,958, Cl. 350-455.000.
 Mischenko, Nicholas, to Bell & Howell Company. Slide transfer and shutter control arrangement for slide projector. 4,429,963, Cl. 353-88.000.
 Mischke, Peter; Fuchs, Hermann; and Meininger, Fritz, to Hoechst Aktiengesellschaft. Water-soluble diazo compounds suitable as fiber-reactive dyestuffs. 4,430,259, Cl. 260-186.000.

Misselbrook, John G.: See—
 Armell, Richard A.; and Misselbrook, John G., 4,429,566, Cl. 73-40.700.
 Misumi, Kiyohito: See—
 Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shiroyama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
 Mita Industrial Co., Ltd.: See—
 Aizawa, Tatsuo; Matsumoto, Shoji; Sakata, Kaoru; Matsui, Toshiyuki; Fushida, Akira; Ikeda, Toshimitsu; and Hisao, Nobuyoshi, 4,430,410, Cl. 430-122.000.
 Mitchell, Howard L., III: See—
 Sawyer, Willard H.; and Mitchell, Howard L., III, 4,430,442, Cl. 502-220.000.
 Mitsubishi Denki Kabushiki Kaisha: See—
 Kato, Masaru, 4,430,124, Cl. 75-248.000.
 Namba, Keisuke; Tanaka, Masaaki; Ueno, Takanori; and Tabata, Norikazu, 4,430,306, Cl. 422-292.000.
 Nomaguchi, Tamotsu; Tano, Masahiro; Fukuda, Mitsuo; and Saitou, Tatsuo, 4,429,735, Cl. 165-60.000.
 Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.
 Shiratani, Yuji, 4,430,753, Cl. 455-52.000.
 Yoneda, Masahiro; Hine, Shiro; and Koyama, Hiroshi, 4,430,547, Cl. 219-121.0PD.
 Yoshida, Osami; Tsuji, Hidekazu; and Nomura, Yoshitada, 4,430,568, Cl. 250-358.100.
 Mitsubishi Mining and Cement Company, Ltd.: See—
 Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
 Mitsuieda, Hisami; Tamaki, Kazuyoshi; and Ariyoshi, Hiromi, to Nippondenso Co., Ltd. Input buffer circuit. 4,430,618, Cl. 328-149.000.
 Mitsuhashi, Yasuo: See—
 Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, 4,430,411, Cl. 430-122.000.
 Mitsui Aluminium Co., Ltd.: See—
 Tsumura, Yoshishige, 4,430,174, Cl. 204-67.000.
 Mitsui Metal Processing Co., Ltd.: See—
 Aoki, Kiyomi, 4,429,495, Cl. 49-501.000.
 Mittleman, Herbert; and Rush, William L., to Baxter Travenol Laboratories, Inc. Injection site with tamper indicator. 4,430,077, Cl. 604-111.000.
 Miwa, Tadashi; Kimura, Kiyoshi; Komiya, Yukiharu; and Tarumi, Noriyoshi, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for transferring and fixing toner image using controlled heat. 4,430,412, Cl. 430-126.000.
 Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, to Kabushiki Kaisha Kobe Seiko Sho. Copper alloys for electric and electronic devices and method for producing same. 4,430,298, Cl. 420-481.000.
 Miyahara, Michito: See—
 Hagio, Takehiko; and Miyahara, Michito, 4,430,279, Cl. 264-65.000.
 Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shiroyama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
 Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, to Nippondenso Co., Ltd. Filter element for filtering fluid and method of producing same. 4,430,223, Cl. 210-493.500.
 Miyake, Tetsuya; Takeda, Kunihiko; and Tada, Keishi, to Asahi Kasei Kogyo Kabushiki Kaisha. Novel basic imidazolymethylstyrene compound, its polymer, a process for the preparation thereof and a use as ion exchange resin. 4,430,445, Cl. 521-38.000.
 Miyasaka, Kiyoshi: See—
 Mogi, Jun-ichi; Miyasaka, Kiyoshi; Enomoto, Seiji; and Nozaki, Shigeki, 4,430,581, Cl. 307-296.00R.
 Mizoguchi, Takashi: See—
 Senda, Masaki; and Mizoguchi, Takashi, 4,430,717, Cl. 364-474.000.
 Mizokami, Kazunori, to Olympus Optical Company Ltd. Apparatus for testing automatic electronic flash. 4,429,971, Cl. 354-415.000.
 Mizukami, Osamu: See—
 Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,377, Cl. 428-213.000.
 Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,430,378, Cl. 428-213.000.
 Mizumoto, Kazushige: See—
 Itoh, Fukusaburo; Mizumoto, Kazushige; and Nishikawa, Yoshiyazu, 4,429,863, Cl. 271-9.000.
 Mobay Chemical Corporation: See—
 Krishnan, Sivaram, 4,430,475, Cl. 525-67.000.
 Mobil Oil Corporation: See—
 Audeh, Costandi A.; and Reagan, William J., 4,430,314, Cl. 423-326.000.
 Cook, Evin L., 4,429,744, Cl. 166-263.000.
 Cook, Evin L., 4,429,745, Cl. 166-263.000.
 Fletcher, Argell, 4,430,308, Cl. 423-7.000.
 Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., 4,430,198, Cl. 208-112.000.
 La Pierre, Rene B.; and Wong, Stephen S., 4,430,516, Cl. 585-533.000.
 LaVanture, Mark D.; and Walker, George L., 4,430,313, Cl. 423-321.00R.
 Rankel, Lillian A., 4,430,206, Cl. 208-251.00R.
 Shihabi, David S., 4,430,200, Cl. 208-120.000.
 Mobil Solar Energy Corporation: See—
 Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,430,305, Cl. 422-246.000.
 Mochizuki, Hideaki: See—
 Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuchi; and Ikka, Toshifumi, 4,430,688, Cl. 361-307.000.
 Mocilac, Joseph P.; Terry, Clifford M.; and Mesaros, John G. Keratometric device. 4,429,960, Cl. 351-212.000.
 Mogi, Jun-ichi; Miyasaka, Kiyoshi; Enomoto, Seiji; and Nozaki, Shigeki, to Fujitsu Limited. Semiconductor substrate bias circuit. 4,430,581, Cl. 307-296.00R.
 Mohr, Raphael: See—
 Goor, Daniel; and Mohr, Raphael, 4,429,701, Cl. 128-713.000.
 Mohr, Robert G.: See—
 VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,429,934, Cl. 339-22.00R.
 Mola, Michel, to Creusot-Loire-Vallourec. Method and apparatus for continuously casting a hollow metal blank, and the resulting blank. 4,430,388, Cl. 428-595.000.
 Molins Limited: See—
 Hinchcliffe, Dennis, 4,429,779, Cl. 198-347.000.
 Moller, Heinz, to Robert Bosch GmbH. Monitor for detecting malfunction of a rotation-angle transducer. 4,430,647, Cl. 340-679.000.
 Momose, Haruo; Ishida, Masaaki; and Terabe, Mahito, to Ajinomoto Co., Inc. Method for producing L-arginine by fermentation. 4,430,430, Cl. 435-114.000.
 Monarch Wine Co., Inc.: See—
 Zaltsman, Efim, 4,429,799, Cl. 215-31.000.
 Monner, Fred M.: See—
 Friedman, Donald M.; and Monner, Fred M., 4,429,897, Cl. 280-646.000.
 Montell, Andre J. G.: See—
 Carlier, Patrick; Montell, Andre J. C.; and Simond, Jacques A. L., 4,430,332, Cl. 424-248.570.
 Montgomery, Robert N. Valve for controlling the flow of semi-liquid compositions. 4,429,717, Cl. 137-625.470.
 Moore, Brian B.; Rodell, John T.; Sutton, Arthur J.; and Vowell, Jeff D., to International Business Machines Corp. Storage element reconfiguration. 4,430,727, Cl. 364-900.000.
 Moore, Ernest C. Disk launching system for games. 4,429,677, Cl. 124-62.000.
 Moorfeed Corporation: See—
 Doty, Myron L., 4,429,808, Cl. 221-167.000.
 Mooring, William L., to Douglass, Samuel Ernest. Method for the intravenous administration of plural solutions through a common flow monitoring station. 4,430,074, Cl. 604-49.000.
 Moreno, Dawn K.: See—
 Young, Ainslie T.; Marsters, Robert G.; and Moreno, Dawn K., 4,430,451, Cl. 521-64.000.
 Moreno, Robert J.: See—
 Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., 4,430,712, Cl. 364-300.000.
 Morgan, David P., to Portec, Inc. Pedestal container locking device. 4,430,032, Cl. 410-68.000.
 Morgan, George W.; and Wetzel, Vernon F., to Suncor, Inc. Means employing hydro-jets for facilitating the clearing of disaggregated ice chunks from the cutting region. 4,429,653, Cl. 114-42.000.
 Morgenstern, Karl: See—
 Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.00A.
 Mori, Naomichi; Homma, Hiroyuki; Wakabayashi, Masakuni; and Yamaguchi, Masanobu, to Nippon Steel Corporation. Method for submerged-arc welding a very low carbon steel. 4,430,545, Cl. 219-73.000.
 Mori, Yasuki: See—
 Hosoya, Akira; Tamahashi, Kunihiko; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, 4,430,404, Cl. 430-58.000.
 Morizumi, Syuichi: See—
 Tsuchiya, Toshio; Morizumi, Syuichi; Takeda, Hisashi; and Aria, Akinori, 4,430,136, Cl. 156-246.000.
 Morishita, Hirosada: See—
 Hosoya, Akira; Tamahashi, Kunihiko; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, 4,430,404, Cl. 430-58.000.
 Morita, Keiichi: See—
 Matsunaga, Akira; and Morita, Keiichi, 4,430,664, Cl. 357-73.000.
 Morris, Philip E., to United States of America, Army. Articulated feeder. 4,429,615, Cl. 89-33.00B.
 Morrone, Joseph A., III, to Adecon, Inc. Key holder. 4,429,557, Cl. 70-456.00R.
 Morse, H. Clifton. Coin card and integral information chart therefor. 4,429,787, Cl. 206-83.000.
 Moscovici, Anutza: See—
 Fruchter, Moshe; and Moscovici, Anutza, 4,430,120, Cl. 75-68.00B.
 Moscrip, William M. Regenerator structure for stirling-cycle, reciprocating thermal machines. 4,429,732, Cl. 165-10.000.
 Mosier, Charles F., Jr.: See—
 Beitel, James E.; Bruce, Charles R.; Cook, Gary R.; Mosier, Charles F., Jr.; and Sartore, Edward L., 4,430,728, Cl. 364-900.000.
 Mosing, Donald E. Pipe thread protector. 4,429,719, Cl. 138-96.00T.

- Mosolov, Sergei S.: See—
Nemeni, Tibor M.; Nikolsky, Alexandr I.; and Mosolov, Sergei S., 4,430,591, Cl. 310-71.000.
- Motorola, Inc.: See—
Epsom, Robert L.; Gailus, Paul H.; and van den Heuvel, Anthony P., 4,430,619, Cl. 330-149.000.
Milleker, William W.; Freeburg, Thomas A.; and Stepien, Michael A., 4,430,742, Cl. 375-5.000.
Nadir, Mark; James, Gordon W.; Kuznicki, William J.; and Niede, Jerome A., 4,430,755, Cl. 455-77.000.
Newton, Anthony D., 4,430,624, Cl. 330-288.000.
Shanley, Charles W., 4,430,596, Cl. 310-348.000.
- Motoyama, Katsumi: See—
Okada, Toshio; Motoyama, Katsumi; and Yoshii, Takashi, 4,430,598, Cl. 313-497.000.
- Moynagh, Eugene E.: See—
Freshwater, Lane A.; and Moynagh, Eugene E., 4,429,940, Cl. 339-99.00R.
- MPC Products Corporation: See—
Carlson, Richard K., 4,430,632, Cl. 336-120.000.
- MSL Industries, Inc.: See—
Davis, William L., 4,430,590, Cl. 310-67.00R.
- MTU-Motoren- und Turbinen-Union Friedrichshafen GmbH: See—
Dinger, Hans, 4,429,533, Cl. 60-606.000.
- Mueller, Wolfgang F.: See—
Heinz, Gerhard; Richter, Peter; and Mueller, Wolfgang F., 4,430,417, Cl. 430-286.000.
- Mueller, William C.: See—
Scott, Larkin; and Mueller, William C., 4,430,657, Cl. 346-32.000.
- Mugnai, Giorgio: See—
Hampel, Gerald; and Mugnai, Giorgio, 4,429,810, Cl. 222-107.000.
- Mularie, William M.: See—
Vac-Tec Systems, Inc. Evaporation arc stabilization, 4,430,184, Cl. 204-192.00R.
- Mulholland, John H.: See—
Ontario Limited. Apparatus and method for treating sewage sludge, 4,429,643, Cl. 110-238.000.
- Mullenax, Perry D.: See—
Michigan Hanger Company, Inc. Acrylic polymer Portland cement coating composition, 4,430,463, Cl. 524-5.000.
- Muller, Henrik: See—
Darczy, Janos; Erdelyi, Janos; Havas, Jenő; Kecskes, Lajos; and Muller, Henrik, 4,430,164, Cl. 204-1.00T.
- Muller, Jacques: See—
ETA S.A. Fabriques d'Ebauches. Arrangement for securing and electrically contacting a battery in a watch, 4,430,009, Cl. 368-203.000.
- Muller, Rolf: See—
Brushless direct current motor having a once-around pulse generating means, 4,430,603, Cl. 318-254.000.
- Multikey Ltd.: See—
Salisbury, Michael A., 4,429,555, Cl. 70-366.000.
- Mulzet, Alfred P.: See—
Kellogg, Robert M.; Kruger, Victor R.; and Mulzet, Alfred P., 4,430,072, Cl. 494-45.000.
- Murakado, Hiroshi: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.
- Murakami, Hideaki: See—
Automatic rat killing device, 4,429,483, Cl. 43-70.000.
- Murakami, Hiroya; Takasaki, Mitsuhiro; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, to Hitachi, Ltd. Method of and apparatus for fabrication of spiral fin, 4,429,558, Cl. 72-17.000.
- Murata Manufacturing Co., Ltd.: See—
Nakagawa, Nobuhiko; and Yoshii, Tsutomu, 4,430,529, Cl. 179-110.00A.
- Murata, Yoichi; Kishishita, Ryojo; and Nakata, Tadao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for measuring toe-in of a motor vehicle wheel, 4,429,467, Cl. 33-203.000.
- Murdoch, Keith C.; and Durr, Frederick E., to American Cyanamid Company. 1,4-Bis(substituted-amino)-5,8-dihydroxy-anthraquinones and leuco bases thereof, 4,430,501, Cl. 544-72.000.
- Murray, Alexander P.: See—
Spurrier, Francis R.; DeZubay, Egon A.; Murray, Alexander P.; and Vidt, Edward J., 4,430,304, Cl. 422-204.000.
- Murray, Myles N.: See—
Document mailer and postal system, 4,429,827, Cl. 229-68.00R.
- Muth, Wolfgang: See—
Circuit arrangement, 4,430,607, Cl. 323-217.000.
- Myers, Ralph E.: See—
Jackson, E. Don; and Myers, Ralph E., 4,429,751, Cl. 173-13.000.
- Nadir, Mark; James, Gordon W.; Kuznicki, William J.; and Niede, Jerome A., to Motorola, Inc. Portable radio telephone, 4,430,755, Cl. 455-77.000.
- Nagai, Jun: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.
- Nagao, Nobuya: See—
Taguchi, Shinichi; Nagao, Nobuya; and Ogihara, Yutaka, 4,430,674, Cl. 358-317.000.
- Nagy, Janos: See—
Knoll, Jozsef; and Nagy, Janos, 4,430,264, Cl. 260-112.00R.
- Naito, Hideki: See—
Aono, Toshiaki; Hara, Hiroshi; Naito, Hideki; and Sato, Kozo, 4,430,415, Cl. 430-203.000.
- Nakagawa, Kumiichi; and Inaga, Hisashi, to Kioritz Corporation. Internal combustion engine for portable machine, 4,429,668, Cl. 123-56.00B.
- Nakagawa, Masao: See—
Senda, Kenichi; and Nakagawa, Masao, 4,430,430, Cl. 521-60.000.
- Nakagawa, Nobuhiko; and Yoshii, Tsutomu, to Murata Manufacturing Co., Ltd. Piezoelectric loudspeaker, 4,430,529, Cl. 179-110.00A.
- Nakagawa, Nobuo; Kato, Yoshiki; Abe, Katsuo; Edamura, Takao; and Nakamura, Takao, to Hitachi, Ltd. Base plate for magnetic recording disc, 4,430,387, Cl. 428-579.000.
- Nakajima, Takashi; and Matsui, Fujio, to Denki Kagaku Kogyo Kabushiki Kaisha. Protecting tube for thermocouple, 4,430,518, Cl. 136-234.000.
- Nakamura, Michiharu: See—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,430,741, Cl. 372-46.000.
- Nakamura, Shiro: See—
Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.
- Nakamura, Takao: See—
Nakagawa, Nobuo; Kato, Yoshiki; Abe, Katsuo; Edamura, Takao; and Nakamura, Takao, 4,430,387, Cl. 428-579.000.
- Nakamura, Teruya: See—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,430,346, Cl. 424-311.000.
- Nakamura, Tomoharu: See—
Kawai, Tadao; and Nakamura, Tomoharu, 4,430,683, Cl. 361-42.000.
- Nakanishi, Keiichi, to Nissan Motor Co., Ltd. Labyrinth seal construction, 4,429,883, Cl. 277-53.000.
- Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, to Hitachi, Ltd. Method of producing color filters using dehydrating solution, 4,430,400, Cl. 430-7.000.
- Nakashima, Yasuhiro: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.
- Nakasono, Hiroyuki; and Sakamoto, Takayasu, to Toko Kabushiki Kaisha. Piezo-electric push button switch, 4,430,595, Cl. 310-339.000.
- Nakata, Tadao: See—
Murata, Yoichi; Kishishita, Ryojo; and Nakata, Tadao, 4,429,467, Cl. 33-203.000.
- Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. PLU-Code controlled electronic cash register, 4,430,713, Cl. 364-405.000.
- Nakatsui, Hisashi; and Hajimoto, Yoshiaki, to Canon Kabushiki Kaisha. Photoelectric converting device, 4,430,666, Cl. 358-44.000.
- Nakayama, Takashi: See—
Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, 4,429,523, Cl. 57-328.000.
- Nalco Chemical Company: See—
Payne, Charles C., 4,430,369, Cl. 427-397.700.
- Namba, Keisuke; Tanaka, Masaaki; Ueno, Takanori; and Tabata, Norikazu, to Mitsubishi Denki Kabushiki Kaisha. Oxygen recycle type ozonizing apparatus, 4,430,306, Cl. 422-292.000.
- Nappholz, Tibor A.; Bradbury, Ronald C.; and Satchwell, Bruce R., to Teletronics Pty. Ltd. Dual chamber heart pacer with improved ventricular rate control, 4,429,697, Cl. 128-419.0PG.
- Narducy, Kenneth W.: See—
Raden, Daniel S.; Carlsen, Russell O.; and Narducy, Kenneth W., 4,430,455, Cl. 521-118.000.
- National Research Development Corporation: See—
Goulas, Apostolos, 4,429,995, Cl. 356-343.000.
- Jones, Robert L.; and Wilson, Norman H., 4,430,345, Cl. 424-305.000.
- National Semiconductor Corporation: See—
Bose, Bidyut K.; and Jorgensen, John M., 4,430,582, Cl. 307-297.000.
- Wieser, James B.; and Patel, Suman H., 4,430,621, Cl. 330-9.000.
- Neame, Hubert W.: See—
Anderson, Harold J. T.; Kerby, Robert C.; Krauss, Clifford J.; and Neame, Hubert W., 4,430,178, Cl. 204-114.000.
- Neitzke, Thomas G.: See—
Steger, Jay D.; Neitzke, Thomas G.; and Gagnon, Stephen J., 4,429,794, Cl. 206-597.000.
- Neki, Shigeo: See—
Dohi, Takashi; Shinozaki, Nozomu; and Neki, Shigeo, 4,429,773, Cl. 192-18.00B.
- Nelms, Robert L., to Allfarr Enterprises, Inc. Farrier's equine hoof-sizer, 4,429,749, Cl. 168-45.000.
- Nelson, Norman A., to Upjohn Company. The Pyridinyl substituted benzimidazoles and quinoxalines, 4,430,502, Cl. 544-354.000.
- Nelson, Robert H., to R. H. Nelson Holdings Ltd. Cooking sheet and lifter for poultry, meat and the like, 4,429,625, Cl. 99-425.000.
- Nemeni, Tibor M.; Nikolsky, Alexandr I.; and Mosolov, Sergei S. Stator coil of a high-voltage generator, 4,430,591, Cl. 310-71.000.
- Neptune Water Meter Company: See—
Kullmann, Donald J.; Karjalainen, William G.; and Harris, Rodney G., 4,429,571, Cl. 73-197.000.
- Nerlinger, John J., to Mead Corporation. Fastening means for making inserts in wire bound notebooks and the like, 4,430,015, Cl. 402-79.000.
- Nesler, John J., to Hughes Aircraft Company. Base drive circuit, 4,430,608, Cl. 323-282.000.
- Nestor, Charles R., to General Motors Corporation. Terminal for baseless cartridge lamp sockets, 4,429,945, Cl. 339-252.00R.

- Netravali, Arun N., to Bell Telephone Laboratories, Incorporated. Reconstruction of quantized DPCM or PCM signals, 4,430,670, Cl. 358-135.000.
- Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, to Bayer Aktiengesellschaft. Process for the preparation of benzoyl chloride, 4,430,181, Cl. 204-158.0HA.
- Nevamar Corporation: See—
Scher, Herbert I.; and Ungar, Israel S., 4,430,375, Cl. 428-148.000.
- New England Instrument Company: See—
Sacchetti, Peter J., 4,430,635, Cl. 338-176.000.
- Newkirk, James S.; and Wiederhold, Robert A., to Eastman Kodak Company. Fuser member, 4,430,406, Cl. 430-99.000.
- Newman, Walter: See—
Johnson, George E.; and Newman, Walter, 4,429,942, Cl. 339-154.00L.
- Newton, Anthony D., to Motorola, Inc. Current mirror circuit arrangement, 4,430,624, Cl. 330-288.000.
- Ngo, Peter D. T.: See—
Boyd, Gary D.; and Ngo, Peter D. T., 4,430,601, Cl. 315-169.400.
- NHK Spring Co., Ltd.: See—
Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, 4,429,899, Cl. 280-689.000.
- Nibco Inc.: See—
Runyan, Gary L.; and Sloan, Paul H., Jr., 4,430,285, Cl. 264-242.000.
- Nichias Corporation: See—
Shima, Shigeru, 4,430,121, Cl. 75-96.000.
- Niedercker, Herbert. Apparatus for positioning a workpiece, 4,429,862, Cl. 269-47.000.
- Niede, Jerome A.: See—
Nadir, Mark; James, Gordon W.; Kuznicki, William J.; and Niede, Jerome A., 4,430,755, Cl. 455-77.000.
- Nightingale Saro Inc.: See—
Blouin, Joseph L. D. C., 4,429,930, Cl. 312-216.000.
- Nihon Eikan Shido Center Co., Ltd.: See—
Furuya, Mitsumasa, 4,430,054, Cl. 431-4.000.
- Nikolsky, Alexandr I.: See—
Nemeni, Tibor M.; Nikolsky, Alexandr I.; and Mosolov, Sergei S., 4,430,591, Cl. 310-71.000.
- Nilarp, Anders: See—
Hauck, James H.; Nilarp, Anders; and Roach, Thomas J., 4,429,453, Cl. 29-591.000.
- Nilssen, Ole K.: See—
High efficiency inverter and ballast circuits, 4,430,628, Cl. 331-113.00A.
- Nilsson, Jan-Erik: See—
Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, 4,430,140, Cl. 156-356.000.
- Nimmagadda, Rao R.: See—
Kar, Nareshchandra J.; and Nimmagadda, Rao R., 4,429,854, Cl. 384-94.000.
- Nippon Chemtec Consulting Inc.: See—
Satake, Takeo, 4,430,230, Cl. 210-691.000.
- Nippon Electric Co., Ltd.: See—
Okada, Toshio; Motoyama, Katsumi; and Yoshii, Takashi, 4,430,598, Cl. 313-497.000.
- Saga, Ryokichi; and Takimoto, Yukio, 4,430,732, Cl. 370-54.000.
- Watanabe, Kojiro, 4,430,743, Cl. 375-13.000.
- Nippon Gakki Seizo Kabushiki Kaisha: See—
Aoki, Eiichi, 4,429,606, Cl. 84-1.170.
- Yokoyama, Kenji, 4,430,625, Cl. 330-297.000.
- Nippon Kogaku K. K.: See—
Saegusa, Takashi, 4,429,969, Cl. 354-414.000.
- Nippon Steel Corporation: See—
Mori, Naomichi; Homma, Hiroyuki; Wakabayashi, Masakuni; and Yamaguchi, Masanobu, 4,430,545, Cl. 219-73.000.
- Nippon Telegraph & Telephone Public Corporation: See—
Harada, Katsuhiko, 4,430,419, Cl. 430-296.000.
- Nippon Tungsten Co., Ltd.: See—
Hagio, Takehiko; and Miyahara, Michito, 4,430,279, Cl. 264-65.000.
- Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shirogawa, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
- Nippon Unicar Company Ltd.: See—
Taniguchi, Seiho; Sakuma, Yuichiro; and Yoshii, Tadashi, 4,430,470, Cl. 524-269.000.
- Nippondenso Co., Ltd.: See—
Mitsueda, Hisami; Tamaki, Kazuyoshi; and Ariyoshi, Hiromi, 4,430,618, Cl. 328-149.000.
- Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,430,223, Cl. 210-493.500.
- Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuaki, 4,429,565, Cl. 73-35.000.
- Nishikawa, Yoshikazu: See—
Itoh, Fukusaburo; Mizumoto, Kazushige; and Nishikawa, Yoshikazu, 4,429,863, Cl. 271-9.000.
- Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Quartz oscillation-type electronic timepiece, 4,430,008, Cl. 368-202.000.
- Nishimatsu, Shigeru: See—
Suzuki, Keizo; Okudaira, Sadayuki; Nishimatsu, Shigeru; and Kanomata, Ichiro, 4,430,138, Cl. 156-345.000.
- Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Speech synthesizer timepiece with alarm function, 4,430,005, Cl. 368-67.000.
- Nishiyama, Hissai; and Kanada, Takao, to Yoshida Kogyo K. K. Method and apparatus for manufacturing a hooked fastener part for hook-and-loop fasteners, 4,429,441, Cl. 26-9.000.
- Niskanen, Erkki J.: See—
Cascade-based method and device for fluid handling and measurement, 4,429,709, Cl. 137-220.000.
- Nissan Motor Co., Ltd.: See—
Hasegawa, Masami; and Kato, Takashi, 4,430,234, Cl. 252-49.500.
- Kawamura, Yoshihisa, 4,429,667, Cl. 123-52.00M.
- Matsuda, Toshiro; and Honda, Minoru, 4,430,714, Cl. 364-426.000.
- Nakanishi, Keiichi, 4,429,883, Cl. 277-53.000.
- Sone, Kohki; and Kitahara, Thuyoshi, 4,430,191, Cl. 204-401.000.
- Suzuki, Mikio; and Yamazaki, Masafumi, 4,430,274, Cl. 261-18.00B.
- Nitschke, Noel N.: See—
Multi-faced clock, 4,430,004, Cl. 368-235.000.
- Niu, Joseph H. Y., to Betz Laboratories, Inc. Method and composition for neutralizing acidic components in petroleum refining units, 4,430,196, Cl. 208-47.000.
- Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, to Mitsubishi Mining and Cement Company, Ltd. Method for filling in defects or hollow portions of bones, 4,429,691, Cl. 128-92.00C.
- Nixdorf Computer AG: See—
Burchart, Joachim, 4,429,639, Cl. 109-19.000.
- Noguchi, Yoshiyasu; Yokokoji, Shoji; Saito, Shozo; and Hasegawa, Kiketsu, to Toppan Printing Co., Ltd. Process for manufacturing a printed circuit board, 4,429,457, Cl. 29-840.000.
- Nollstadt, Karl H.: See—
Stoudt, Thomas H.; and Nollstadt, Karl H., 4,430,322, Cl. 424-49.000.
- Noita, Arthur H.: See—
Christian, John H.; Hartung, Michael H.; Noita, Arthur H.; Reed, David G.; Rieck, Richard E.; Taylor, Gerald E.; and Williams, John S., 4,430,701, Cl. 364-200.000.
- Nomaguchi, Tamotsu; Tano, Masahiro; Fukuda, Mitsuo; and Saitou, Tatsuo, to Mitsubishi Denki Kabushiki Kaisha. Simplified air conditioner, 4,429,735, Cl. 165-60.000.
- Nomura, Masayuki: See—
Saito, Hideomi; Yamamoto, Tomoya; Nomura, Masayuki; and Hachiya, Tomoyoshi, 4,430,500, Cl. 544-25.000.
- Nomura, Tatsuei: See—
Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.
- Nomura, Yoshitada: See—
Yoshida, Osami; Tsuji, Hidekazu; and Nomura, Yoshitada, 4,430,568, Cl. 250-358.100.
- Norand Corporation: See—
Chadima, George E., Jr.; and Kubler, Joseph J., 4,430,700, Cl. 364-200.000.
- Normand Trust, The: See—
Mercier, Jacques H., 4,429,718, Cl. 138-30.000.
- Norris, James R., to Dapco Industries, Inc. Ultrasonic inspection apparatus, 4,429,576, Cl. 73-636.000.
- Northern Telecom Limited: See—
Garner, John N.; Roberge, Jean M.; and Axiuk, Oleg, 4,429,519, Cl. 57-293.000.
- Garner, John N.; and Roberge, Jean M., 4,429,520, Cl. 57-293.000.
- Nose, Takashi: See—
Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.
- Noster Industries, Inc.: See—
Cushman, Richard, 4,429,753, Cl. 173-149.000.
- Nozaki, Shigeki: See—
Mogi, Jun-ichi; Miyasaka, Kiyoshi; Enomoto, Seiji; and Nozaki, Shigeki, 4,430,581, Cl. 307-296.00R.
- Nozawa, Reikichi. Liquefied natural gas-refrigerant electricity generating system, 4,429,536, Cl. 60-655.000.
- Nury, Georges: See—
Boudot, Bernard; Nury, Georges; and Lambert, Andre, 4,430,173, Cl. 204-52.00R.
- Nussbaumer, Dietmar: See—
Perl, Horst; Nussbaumer, Dietmar; Schmidt, Hans-Weddo; Pradel, Gunter; and Grummert, Ulrich, 4,430,218, Cl. 210-321.300.
- Nuyen, Trong L.; and de Cremoux, Baudouin, to Thomson-CSF. Long-wavelength semiconductor laser, 4,430,740, Cl. 372-45.000.
- Nyberg, Donald W.: See—
Beattie, Norman W.; and Nyberg, Donald W., 4,430,003, Cl. 366-173.000.
- O'Bryan, Nelson B.: See—
Beebe, George W.; Hine, Philip; O'Bryan, Nelson B.; and Shor, Steven M., 4,430,426, Cl. 430-604.000.
- Occidental Chemical Corporation: See—
Davison, John B., 4,430,176, Cl. 204-84.000.
- Ocean & Atmospheric Science, Inc.: See—
Steinberg, Alfred, 4,429,545, Cl. 62-235.100.
- Ochi, Takashi; and Kaneko, Fumihiko, to Sumitomo Bakelite Company. Apparatus for attaching a bottom plate made of a plastic material to one end of an open ended, hollow cylinder made of a plastic material, 4,430,142, Cl. 156-379.900.
- Oestreich, Ulrich, to Siemens Aktiengesellschaft. Device for SZ-stranding by using a tube store, 4,429,521, Cl. 57-294.000.
- Ofield, L. Ronald; Puurita, Leonhard; and Patterson, Roy A., to Westcan Electrical Manufacturing Inc. Optional rear entry back connector for a baseboard heater, 4,430,521, Cl. 174-65.00R.
- Ogata, Masaru, to Shionogi & Co., Ltd. Antiarrhythmic benzylimidazole, 4,430,331, Cl. 424-273.00R.

- Ogawa, Masahiko: See—
Tokuda, Ryuji; Ogawa, Masahiko; Tsunekawa, Tokuchi; and Tamura, Shuichi, 4,429,967, Cl. 354-403.000.
- Ogihara, Yutaka: See—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,430,674, Cl. 358-317.000.
- Ogiwara, Kenzo, to Hitachi, Ltd. Method for switching operation of water wheel or pump water wheel. 4,430,574, Cl. 290-52.000.
- Ohhori, Mitsuo: See—
Watanabe, Tadao; Ohhori, Mitsuo; Ohta, Akio; and Kondo, Yoshikazu, 4,430,386, Cl. 428-555.000.
- Ohmori, Kouichi, to Canon Kabushiki Kaisha. Electronic flash device. 4,430,602, Cl. 315-241.00P.
- Ohmori, Takashi: See—
Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.
- Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, to NHK Spring Co., Ltd. Hollow stabilizer for vehicle. 4,429,899, Cl. 280-689.000.
- Ohshima, Ryoichiro: See—
Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.
- Ohta, Akio: See—
Watanabe, Tadao; Ohhori, Mitsuo; Ohta, Akio; and Kondo, Yoshikazu, 4,430,386, Cl. 428-555.000.
- Ohta, Jun: See—
Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuyuki, 4,429,565, Cl. 73-35.000.
- Ohyabu, Shuzo; Kawai, Syuji; and Matsumura, Keiji, to Kuraray Company, Ltd. Method for production of formed food product of micro-fibrillar milk protein. 4,430,356, Cl. 426-574.000.
- Oiry, Joel; and Imbach, Jean-Louis. Cystamine derivatives suitable for use as medicaments. 4,430,347, Cl. 424-322.000.
- Oishi, Norio: See—
Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.
- Ojima, Nobuyuki: See—
Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuichi; and Ikka, Toshifumi, 4,430,688, Cl. 361-307.000.
- Okabe, Katsuhiko, to Copal Company Limited. Printed paper feeding device for photograph processing apparatus. 4,429,988, Cl. 355-28.000.
- Okada, Hitoshi: See—
Yamaguchi, Katsumi; and Okada, Hitoshi, 4,430,680, Cl. 360-137.000.
- Okada, Osamu, to Minolta Camera Kabushiki Kaisha. Paper feed device. 4,429,865, Cl. 271-170.000.
- Okada, Toshio; Motoyama, Katsumi; and Yoshii, Takashi, to Nippon Electric Co., Ltd. Fluorescent display tube. 4,430,598, Cl. 313-497.000.
- Okamoto, Kouichi: See—
Sakuyama, Masaki; Oishi, Norio; Okamoto, Kouichi; Iwamoto, Masatami; Nomura, Tatsuei; and Nakamura, Shiro, 4,430,589, Cl. 310-52.000.
- Okaniwa, Kenichiro: See—
Koyama, Mikio; Kikugawa, Shozo; Okaniwa, Kenichiro; and Tamaki, Kiyoshi, 4,430,436, Cl. 436-531.000.
- Okano, Takashi, to Fujitsu Limited. Process for fabricating a semiconductor device. 4,430,152, Cl. 156-643.000.
- Okauchi, Ken; and Kobayashi, Tatsuhiko, to Konishiroku Photo Industry Co., Ltd. Color photographic light-sensitive material. 4,430,424, Cl. 430-537.000.
- Okudaira, Sadayuki: See—
Suzuki, Keizo; Okudaira, Sadayuki; Nishimatsu, Shigeru; and Kanomata, Ichiro, 4,430,138, Cl. 156-345.000.
- Okuma Howa Kikai Kabushiki Kaisha: See—
Senda, Masaki; and Mizoguchi, Takashi, 4,430,717, Cl. 364-474.000.
- Oldham, Delbert J.; and Karish, John A., to General Dynamics, Pomona Division. Airborne missile launcher. 4,429,611, Cl. 89-1.816.
- Olin Corporation: See—
Fiorucci, Louis C., 4,430,241, Cl. 252-70.000.
- Ford, James M.; and Wright, David B., 4,430,179, Cl. 204-128.000.
- Gray, Thomas J., 4,430,186, Cl. 204-242.000.
- Olive, Clive E.: See—
Knight, Ronald W.; and Olive, Clive E., 4,430,043, Cl. 415-159.000.
- Oliver, Donald W.; and Chace, David M., to Dresser Industries, Inc. Method and apparatus for neutron induced gamma ray logging for direct porosity identification. 4,430,567, Cl. 250-270.000.
- Oliver, John W. H., to Australian Road Research Board. Pavement binder composition. 4,430,464, Cl. 524-59.000.
- Ollis, John R.: See—
Baur, Bruce K.; and Ollis, John R., 4,430,641, Cl. 340-347.00A.
- Olofsson, Bo H. O., to Tetra Pak Development SA. Inductor for induction welding and a method for the manufacture of the same. 4,430,543, Cl. 219-179.000.
- Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Heterich, Hermann; Horling, Peter; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Thin-walled bearing bushings manufactured by a deep drawing process. 4,429,926, Cl. 308-216.000.
- Olson, Edward F.; and Olson, Robert F. Water powered fish feeder. 4,429,660, Cl. 119-51.00R.
- Olson, Robert F.: See—
Olson, Edward F.; and Olson, Robert F., 4,429,660, Cl. 119-51.00R.
- Olsson, Robert P., to Western Plastics Corporation. Belling mandrel assembly. 4,430,052, Cl. 425-392.000.
- Olszanski, Dennis J.: See—
Durante, Vincent A.; Olszanski, Dennis J.; Reagan, William J.; and Brown, Stanley M., 4,430,199, Cl. 208-114.000.
- Oltrogge, Robert D., to Standard Oil Company, (Indiana); and Gulf Oil Corporation. Fluid bed retorting process with lateral flow. 4,430,195, Cl. 208-8.00R.
- Olympus Optical Co., Ltd.: See—
Fujiwara, Hiroshi, 4,429,970, Cl. 354-413.000.
- Hosoda, Seiichi, 4,429,686, Cl. 128-6.000.
- Ikari, Kazuo, 4,429,978, Cl. 354-224.000.
- Kamachi, Shinichi; and Fujiwara, Toshihide, 4,429,996, Cl. 356-344.000.
- Mizokami, Kazunori, 4,429,971, Cl. 354-415.000.
- Osana, Akira, 4,430,677, Cl. 360-966.000.
- Terada, Katumi, 4,429,979, Cl. 354-289.100.
- Omran, Jafar; and Koch, Karl-Heinz, to Rutgerswerke Aktiengesellschaft. Method for the production of a highly aromatic pitch-like coal by-product. 4,430,194, Cl. 208-8.0LE.
- O'Neal, William C.; and Grady, James L. Security door bar system. 4,429,911, Cl. 292-259.00R.
- Onics, Inc.: See—
Talbert, William L., 4,429,675, Cl. 123-558.000.
- Onitsuka, Nobuyuki; Fukamachi, Masaaki; and Sueyoshi, Masahiko, to Kabushiki Kaisha Honda Rukku. Electric type speed meter. 4,430,612, Cl. 324-166.000.
- Ono, Michio: See—
Aoki, Kozo; and Ono, Michio, 4,430,423, Cl. 430-384.000.
- Ono, Mikiya: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Ono, Yoshihiro; and Sunagawa, Hiroshi, to Fuji Photo Film Co., Ltd. Xeroradiographic material and method of making same. 4,430,405, Cl. 430-95.000.
- Onuma, Shigeharu: See—
Hosoya, Akira; Tamahashi, Kunihiro; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirosada, 4,430,404, Cl. 430-58.000.
- Ooi, Hiroshi: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatsu; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.
- Oozumi, Junichi: See—
Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, 4,429,541, Cl. 62-201.000.
- Orain, Michel A., to Glaeser Spicer. Ball bearing method for assembling the bearing and an apparatus for grinding the bearing. 4,429,925, Cl. 308-189.00R.
- Orangeburg Technologies, Inc.: See—
Burnham, Francis L., 4,429,540, Cl. 62-188.000.
- Osana, Akira, to Olympus Optical Co., Ltd. Cassette tape recorder. 4,430,677, Cl. 360-966.000.
- Osborn, James G.: See—
Bowman, Donald B.; Filz, Charles J.; and Osborn, James G., 4,430,098, Cl. 55-191.000.
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- Osos, George R.: See—
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- Otis Engineering Corporation: See—
Williamson, Jimmie R., Jr., 4,429,747, Cl. 166-321.000.
- Otobe, Yutaka: See—
Gotoh, Osamu; Otobe, Yutaka; Kawamoto, Michio; and Fujimura, Akira, 4,429,676, Cl. 123-571.000.
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- Owatonna Tool Company: See—
Davis, Marvin A., 4,429,447, Cl. 29-275.000.
- Owens-Corning Fiberglass Corporation: See—
Bhatti, Mohinder S.; and Marzocchi, Alfred, 4,430,105, Cl. 65-1.000.
- Goodridge, Paul A., 4,430,106, Cl. 65-15.000.
- Oya, Masayuki: See—
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- Pace, Charles H.: See—
Margetta, Hugh G.; and Pace, Charles H., 4,429,768, Cl. 188-71.900.
- Pachonik, Horst: See—
Eilers, Carl-Ernst; and Pachonik, Horst, 4,430,190, Cl. 204-298.000.
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Ebi, Masashi, 4,430,633, Cl. 337-166.000.
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- Page, Robert E.; and Brackett, Raymond B., to United States of America, Navy. Programmable bootstrap loading system. 4,430,704, Cl. 364-200.000.

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- Palamara, Anthony. Boat trailer. 4,429,893, Cl. 280-414.100.
- Palmquist, Ronald W., to Corning Glass Works. Method of regulating fuel and air flow to a glass melting furnace. 4,430,109, Cl. 65-32.000.
- Palovaara, Jaakko, to Valmet Oy. Apparatus for leading the tail of web of paper. 4,429,819, Cl. 226-95.000.
- Paoli, Bruno, to International Paper Company. Finishing device for packaging containers. 4,429,511, Cl. 53-379.000.
- Papadakis, Alexandros M. Automotive vehicle wheel illumination and light reflective system. 4,430,692, Cl. 362-32.000.
- Paradis, Joseph R., to Dennison Manufacturing Company. Assemblages of fasteners. 4,429,437, Cl. 24-150.0FF.
- Paraflexor: See—
LeBlanc, James S.; and Uke, Alan K., 4,429,868, Cl. 272-93.000.
- Park, John W. Scaffold system for use in sandblasting. 4,429,764, Cl. 182-129.000.
- Parker, Norman A. Automobile safety light. 4,430,638, Cl. 340-139.000.
- Pasquini, Richard J.; Brown, Harold; and Kostuk, Alan, deceased (by Kostuk, Barbara, administratrix), to Becton, Dickinson and Company. Syringe assembly with snap-fit components. 4,430,080, Cl. 604-240.000.
- Passariello, Attilio, to Ammonia Casale S.A. Spherical cerium-activated catalyst for ammonia synthesis and process for its manufacture. 4,430,254, Cl. 502-243.000.
- Patel, Suman H.: See—
Wieser, James B.; and Patel, Suman H., 4,430,621, Cl. 330-9.000.
- Paterson, Laurene O. Process for removing dissolved iron from water. 4,430,228, Cl. 210-665.000.
- Patt, Tom E.; Argoudelis, Alexander D.; and Marshall, Vincent P., to Upjohn Company, The. Process for preparing lincomycin and clindamycin ribonucleotides. 4,430,495, Cl. 536-16.300.
- Patterson, Roy A.: See—
Ofield, L. Ronald; Puuris, Leonhard; and Patterson, Roy A., 4,430,521, Cl. 174-65.00R.
- Patterson, Thomas C.; and Campbell, David L., to Cannondale Corporation. Carrier racks for bicycles. 4,429,818, Cl. 224-39.000.
- Patterson, William P.; and Bailey, Ronald J., to Hoffert Manufacturing Co., Inc. High energy emulsifier. 4,430,251, Cl. 252-359.00R.
- Patzke, James V.; and Rosenberg, Burton J., to Burroughs Wellcome Co. Assay system. 4,430,435, Cl. 436-504.000.
- Patzschke, Hans-Peter: See—
Jaeger, Kurt E.; Klein, Klausjorg; Patzschke, Hans-Peter; and Saatweber, Dietrich, 4,430,462, Cl. 523-402.000.
- Pauga, Uldis, to Eutectic Corporation. Flux-cored arc welding tubular electrode. 4,430,122, Cl. 75-123.00B.
- Pavek, Karel: See—
Ferkel, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Václav; Blasko, Michal; Pavek, Karel; Chrték, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.
- Payne, Charles C., to Nalco Chemical Company. Silica sol penetration and saturation of thermal insulation fibers. 4,430,369, Cl. 427-397.700.
- Payne, Robert M.; and Haire, Christopher A. R., to Research Engineers Limited. Visual landing aids for aircraft. 4,430,695, Cl. 362-277.000.
- Payview Limited: See—
Cheung, William S. H., 4,430,669, Cl. 358-122.000.
- Pearce, Homer L., to Eli Lilly and Company. 12-Iodo derivatives of dimeric indole-dihydroindole alkaloids, and process for preparing them. 4,430,269, Cl. 260-244.400.
- Pearson, James H.: See—
Halliburton, Ronald D.; Pearson, James H.; and Sava, Robert J., 4,429,876, Cl. 273-121.00A.
- Pearson, Robert M., to Kaiser Aluminum & Chemical Corporation. Calcination control system. 4,430,719, Cl. 364-503.000.
- Pease, Gerald F. Re-sealer for tab-retaining pop-top cans. 4,429,804, Cl. 220-247.000.
- Pegon, Alexander A., Jr., to Diversified Eastern, Inc. Tray-loading machine. 4,429,512, Cl. 53-534.000.
- Peltier, Raymond. Method for separating the isotopes of an element in particular of a metal having a high atomic weight. 4,430,307, Cl. 423-3.000.
- Penniman, Scott R.: See—
Clery, Howard K., Jr.; and Penniman, Scott R., 4,429,901, Cl. 282-29.00B.
- Penrod, Leroy: See—
Horton, Johnnie A., 4,430,275, Cl. 261-18.00B.
- Perbet, Jean-Noel: See—
Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noel, 4,430,650, Cl. 340-784.000.
- Perkin-Elmer Corporation, The: See—
Scott, Larkin; and Mueller, William C., 4,430,657, Cl. 346-32.000.
- Williams, Charles J., 4,429,991, Cl. 356-73.000.
- Perkin-Elmer Limited: See—
Turner, Andrew J., 4,429,736, Cl. 165-61.000.
- Perl, Horst; Nussbaumer, Dietmar; Schmidt, Hans-Weddo; Pradel, Gunter; and Grummert, Ulrich, to Sartorius GmbH. Separating device for fluids, consisting of support plates and cut sections of a semi-permeable diaphragm. 4,430,218, Cl. 210-321.300.
- Perrey, Hermann: See—
Alfas, Franz; Perrey, Hermann; Meyer, Karl-Heinrich; Heine, Dietz; and Kowitz, Friedrich, 4,430,483, Cl. 525-356.000.
- Perron, Robert: See—
Gauthier-Lafaye, Jean; and Perron, Robert, 4,430,506, Cl. 560-105.000.
- Pertsovsky, Viktor N.: See—
Zhukovsky, Sergei S.; Junovich, July M.; Pertsovsky, Viktor N.; Kolesnikov, Vyacheslav S.; Renzhin, Igor P.; and Rivkin, Semen I., 4,430,441, Cl. 501-109.00C.
- Peter, Heinrich: See—
Heusler, Karl; Bickel, Hans; Fechtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, 4,430,498, Cl. 544-16.000.
- Peters, Paul: See—
Feldhoff, Karl; and Peters, Paul, 4,429,664, Cl. 122-376.000.
- Peterson, Bo: See—
Edelton, Soren; and Peterson, Bo, 4,429,633, Cl. 102-222.000.
- Peterson, David D. Thermal release device. 4,430,552, Cl. 219-200.000.
- Peterson, Robert R., to Barry Wright Corporation. Bartlett coupling. 4,430,065, Cl. 464-90.000.
- Peton, Nicole: See—
Steiner, Jean-Pierre; Melin, Christiane; Platon, Jean-Francois; and Peton, Nicole, 4,429,859, Cl. 252-8.800.
- Petrovic, Vladan; Schmid, Karl; Jokisch, Friedrich; and Rotthaus, Heinz, to Krupp-Koppers GmbH. Cascaded coal drier for a coking plant. 4,430,161, Cl. 202-228.000.
- Petty, Luther E.: See—
Reed, Robert L.; Petty, Luther E.; and Goddin, Clifton S., Jr., 4,430,317, Cl. 423-574.00R.
- Pfizer Inc.: See—
Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,430,333, Cl. 424-266.000.
- Holland, Gerald F., 4,430,337, Cl. 424-272.000.
- Pfluger, Walter, to Agathon A.G. Maschinenfabrik. Antifriction axial guide means. 4,429,922, Cl. 308-6.00R.
- Pfuhl, Berthold: See—
Leutner, Volkmar; and Pfuhl, Berthold, 4,429,619, Cl. 91-29.000.
- Phillips Petroleum Company: See—
Abbott, Clifford E., 4,430,465, Cl. 524-64.000.
- Bobsein, Rex L., 4,430,515, Cl. 585-530.000.
- Cooper, William T., 4,430,466, Cl. 524-83.000.
- Gentry, Cecil C.; and Small, William M., 4,429,739, Cl. 165-159.000.
- Gray, Michael L.; and McClintock, William A., 4,430,103, Cl. 62-28.000.
- Hopkins, Thomas R., 4,430,427, Cl. 435-25.000.
- Kukes, Simon G., 4,430,207, Cl. 208-251.00H.
- Wu, Yulin, 4,430,511, Cl. 562-481.000.
- Phillips, Robert F.: See—
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,430,177, Cl. 204-98.000.
- Phulpin, Francois J.: See—
Segarra, Gerard; and Phulpin, Francois J., 4,430,699, Cl. 364-200.000.
- Piasceki, Raymond F., to Thomas & Betts Corporation. Electrical cable assembly. 4,429,939, Cl. 339-97.00C.
- Piccirilli, Robert: See—
Chang, Wen-Hsuan; Piccirilli, Robert; and Kasper, Walter F., 4,430,486, Cl. 525-44.000.
- Picker, Carsten: See—
Schaefer, Philipp; Picker, Carsten; and Schaefer, Helmut, 4,430,448, Cl. 521-54.000.
- Pierce, Robert C.; and Bala, Frank J., Jr., to Colgate-Palmolive Co. Liquid detergent having high grease removal ability. 4,430,237, Cl. 252-173.000.
- Pierson, Gerald R., to McQuay-Perfex Inc. Screw conveyor with removable flighting. 4,429,782, Cl. 198-677.000.
- Piesch, Steffen: See—
Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, 4,430,380, Cl. 428-254.000.
- Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; and Wolf, Alfons, 4,430,494, Cl. 528-254.000.
- Pioneer Electronic Corporation: See—
Sakamoto, Masaharu, 4,430,630, Cl. 334-15.000.
- Pitney Bowes Inc.: See—
Dlugos, Daniel F.; and Manduley, Flavio M., 4,430,716, Cl. 364-466.000.
- Pitt, William V. Atmospheric resistant doors. 4,429,498, Cl. 52-204.000.
- Pizzini, Louis C.: See—
Austin, Arthur L.; Levis, William W., Jr.; Pizzini, Louis C.; and Hartman, Robert J., 4,430,247, Cl. 252-182.000.
- Plasticair Systems 442829 Ontario Inc.: See—
Sixsmith, Richard, 4,430,101, Cl. 55-440.000.
- Platon, Jean-Francois: See—
Steiner, Jean-Pierre; Melin, Christiane; Platon, Jean-Francois; and Peton, Nicole, 4,429,859, Cl. 252-8.800.
- Plessey Overseas Limited: See—
Matthews, Robert B.; and Davies, Guy E., 4,429,528, Cl. 60-39.281.
- Pletcher, Wayne A.: See—
Merton, W. Randolph; and Fletcher, Wayne A., 4,430,479, Cl. 525-127.000.
- Plibrico (Canada) Limited: See—
Davis, Raymond W., 4,429,721, Cl. 138-149.000.
- PLK Papier- und Kunststoff Werke Linnich GmbH: See—
Farber, Jurgen, 4,429,828, Cl. 229-75.000.
- Pluribus Products, Inc.: See—
Martino, Peter V.; and Meyers, Peter, 4,429,982, Cl. 354-318.000.

- Pokora, Bohdan M.: See—
Callaghan, Vincent M.; Flynn, Edward P.; and Pokora, Bohdan M., 4,430,293, Cl. 376-314.000.
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Benton, Stephen A., 4,429,947, Cl. 350-3.850.
- Poling, Dwayne E.: See—
Aiello, Robert P.; Stefanidakis, George; and Poling, Dwayne E., 4,430,204, Cl. 208-240.000.
- Polk, Donald E.: See—
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,430,115, Cl. 75-0.50R.
- Pommer, Ernst-Heinrich: See—
Rentzea, Costin; Zeeh, Bernd; and Pommer, Ernst-Heinrich, 4,430,336, Cl. 424-272.000.
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Fuminier, Claude B., 4,429,445, Cl. 29-33.00T.
- Pope, James M.; and Lahoda, Edward J., to United States of America, Energy. Alcohol-free alkoxide process for containing nuclear waste. 4,430,257, Cl. 252-629.000.
- Pope, James M.: See—
Radford, Kenneth C.; and Pope, James M., 4,430,276, Cl. 264-0.500.
- Pope, Jerry O. Ridge leveler. 4,429,750, Cl. 172-253.000.
- Portec, Inc.: See—
Morgan, David P., 4,430,032, Cl. 410-68.000.
- Portmann, Hubert, to Asulab S.A. Passive electro-optical display with screen and control electrodes. 4,429,955, Cl. 350-332.000.
- Pospich, Gunther; and Zimmermann, Wolfgang, to Hoechst Aktiengesellschaft. Open-pore molded article based on polyvinyl acetals, and a process for its preparation. 4,430,447, Cl. 521-53.000.
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Betts, Colin R., 4,430,745, Cl. 375-25.000.
- Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.
- Postner, Hermann, to Societe d'Assistance Technique pour Produits Nestle S.A. Preparation of fresh chopped onions which may be dispensed from tubes. 4,430,352, Cl. 426-115.000.
- Potter, Arthur R.: See—
Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.
- Powell, Patrick L., to Standard Car Truck Company. Hubodometer. 4,430,561, Cl. 235-95.00B.
- Poyner, Paul C.; and Romine, Hugh E., to Conoco Inc. Hydrogen donor cracking with donor soaking of pitch. 4,430,197, Cl. 208-56.000.
- PPG Industries, Inc.: See—
Chang, Wen-Hsuan; Piccirilli, Robert; and Kasper, Walter F., 4,430,486, Cl. 525-44.000.
- Claassen, George R.; and Ewing, John J., 4,430,111, Cl. 65-114.000.
- Doerge, Herman P., 4,430,490, Cl. 528-77.000.
- Frank, Robert G.; Claassen, George R.; Ewing, John J.; and Fecik, Michael T., 4,430,110, Cl. 65-104.000.
- Pradel, Gunter: See—
Perl, Horst; Nussbaumer, Dietmar; Schmidt, Hans-Weddo; Pradel, Gunter; and Grummert, Ulrich, 4,430,218, Cl. 210-321.300.
- Pratt, Roy E.: See—
Castagnos, Leonce F., Jr.; and Pratt, Roy E., 4,430,201, Cl. 208-164.000.
- Preuss, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of delta 4-C21-steroid compounds. 4,430,270, Cl. 260-397.100.
- Price, Christopher P.: See—
Hammond, Peter M.; Price, Christopher P.; and Scawen, Michael D., 4,430,433, Cl. 435-228.000.
- Priebe, Edmund: See—
Schmitt, Burghard; Benker, Klaus; Priebe, Edmund; and Lindenschmidt, Gerhard, 4,430,478, Cl. 525-71.000.
- Procter & Gamble Company, The: See—
Bragg, Charles D., 4,430,243, Cl. 252-91.000.
- Schaefer, Jean E., 4,430,148, Cl. 156-580.200.
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Hammond, Peter M.; Price, Christopher P.; and Scawen, Michael D., 4,430,433, Cl. 435-228.000.
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- Pupp, Herwig; Anderson, Otto B.; and Nilsson, Jan-Erik, to Tetra Pak International A.B. Method and an arrangement for the manufacture of casings. 4,430,140, Cl. 156-356.000.
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Ofield, L. Ronald; Puurits, Leonhard; and Patterson, Roy A., 4,430,521, Cl. 174-65.00R.
- Pytlewski, Louis J.; and Thorne, Edward J., to Franklin Institute, The. Method for the solvent extraction of polychlorinated biphenyls. 4,430,208, Cl. 208-262.000.
- Quaker Fabric Corp.: See—
Herzog, Earl E., 4,429,722, Cl. 139-48.000.
- Quaker Oats Company, The: See—
Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., 4,430,459, Cl. 523-144.000.
- Quell, Peter: See—
Forster, Siegfried; and Quell, Peter, 4,429,830, Cl. 237-19.000.
- Quesnel, Guy, to Societe anonyme dite: Stein Industrie. Method and apparatus for burning damp oil-shales of low heating power. 4,429,646, Cl. 110-347.000.
- Quigg, Allen B., to General Electric Company. Turbine turning gear with hydraulic overspeed drive. 4,430,575, Cl. 290-52.000.
- Quinn, Clayton B., to General Electric Company. Polyester-carbonate resin blends. 4,430,484, Cl. 525-425.000.
- R. A. Jones & Co. Inc.: See—
Scarpa, Eric W.; Hughes, Charles C.; and Humbert, Stanley F., 4,429,864, Cl. 271-10.000.
- R. H. Nelson Holdings Ltd.: See—
Nelson, Robert H., 4,429,625, Cl. 99-425.000.
- Rabay, Michel N. R. Electric grill. 4,430,559, Cl. 219-460.000.
- Rabe, Gunter: See—
Dorner, Heinrich; and Rabe, Gunter, 4,429,663, Cl. 122-365.000.
- Rabin, Harvey: See—
Hampar, Berge; Zweig, Martin; and Rabin, Harvey, 4,430,437, Cl. 436-548.000.
- Racek, Alfred. Gas lighter. 4,430,060, Cl. 431-276.000.
- Rachfalski, Gary: See—
Barry, Robert C.; and Rachfalski, Gary, 4,429,574, Cl. 73-580.000.
- Radelkis Elektrokemial Muszergyarto Szovetkezet: See—
Daroczy, Janos; Erdelyi, Janos; Havas, Jenos; Kecskes, Lajos; and Muller, Henrik, 4,430,164, Cl. 204-1.00T.
- Raden, Daniel S.; Carlsen, Russell O.; and Narducy, Kenneth W., to Abbott Laboratories. N'-(2-Hydroxyalkyl)-N, N, N'-trimethyl-propylene diamines as catalysts for polyurethane foams. 4,430,455, Cl. 521-118.000.
- Radford, Kenneth C.; and Pope, James M., to Westinghouse Electric Corp. Method of making stable UO₂ fuel pellets. 4,430,276, Cl. 264-0.500.
- Radiall: See—
Cartier, Jacques, 4,429,949, Cl. 350-96.210.
- Radio Shack: See—
Leininger, Steven, 4,430,649, Cl. 340-731.000.
- Rainey, James H.: See—
John, Gunter; Rainey, James H.; and Valembois, Pierre V., 4,429,678, Cl. 125-39.000.
- Rakoczynski, Randolph W.: See—
Wagner, Louis E.; Rakoczynski, Randolph W.; and Flannery, Harold F., 4,430,021, Cl. 405-129.000.
- Ramnesten, Ivan O., to Forenade Fabriksverken. Mandrel for cold forging internally profiled tubes or cylinders. 4,429,561, Cl. 72-478.000.
- Ramos, Homer: See—
Garcia, Gilbert C., 4,429,765, Cl. 182-153.000.
- Randolph, Peter P. M. Ice-cream freezer. 4,429,549, Cl. 62-342.000.
- Range, Alfred P. Tobacco leaf grading and stripping apparatus. 4,429,861, Cl. 269-40.000.
- Ranke, Gerhard; and Weiss, Horst, to Linde Aktiengesellschaft. Scrubbing system yielding high concentration of hydrogen sulfide. 4,430,316, Cl. 423-573.00R.
- Rankel, Lillian A., to Mobil Oil Corporation. Demetalation of hydrocarbonaceous feeds with H₂S. 4,430,206, Cl. 208-251.00R.
- Rapid Engineering, Inc.: See—
Dirkes, James V., 4,429,679, Cl. 126-110.00A.
- Rapp, Erich: See—
Eistetter, Klaus; and Rapp, Erich, 4,430,339, Cl. 424-278.000.
- Rasbach, Heinz: See—
Hughes, John; and Rasbach, Heinz, 4,430,027, Cl. 405-303.000.
- Rasmussen, Ole-Bendt. Method of coextruding mechanically interconnected multi-layer laminates with mechanical layer interconnection. 4,430,284, Cl. 264-171.000.
- Rauma-Repol Oy: See—
Tuuha, Rolf, 4,430,210, Cl. 209-23.400.
- Rausser, Richard: See—
Bez, Ulrich; Schroder, Gerhard; and Rausser, Richard, 4,429,914, Cl. 296-188.000.
- Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., to Marko Materials, Inc. Boron stainless steel powder and rapid solidification method. 4,430,115, Cl. 75-0.50R.
- Rayovac Corporation: See—
Davis, Stuart M.; and Davidson, Greg J., 4,430,395, Cl. 429-158.000.
- Raytheon Company: See—
Day, William J., Jr., 4,430,541, Cl. 219-10.55R.
- Matthews, James B., 4,429,997, Cl. 356-350.000.
- RCA Corporation: See—
Acampora, Alfonso, 4,430,721, Cl. 364-724.000.
- Berkman, Samuel, 4,430,149, Cl. 156-613.000.
- Cochran, Larry A., 4,430,665, Cl. 358-37.000.
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- Kujas, Erich F., 4,430,398, Cl. 429-206.000.
- Martin, Carl J., 4,430,460, Cl. 523-174.000.
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- Tamer, Gregory G., 4,430,671, Cl. 358-192.100.
- Rea, Clyde M., to Sperry Corporation. Electromechanical display instrument assembly. 4,430,691, Cl. 361-383.000.
- Reagan, William J.: See—
Audeh, Costandi A.; and Reagan, William J., 4,430,314, Cl. 423-326.000.
- Durante, Vincent A.; Olszanski, Dennis J.; Reagan, William J.; and Brown, Stanley M., 4,430,199, Cl. 208-114.000.
- Reed, David G.: See—
Christian, John H.; Hartung, Michael H.; Nolte, Arthur H.; Reed, David G.; Rieck, Richard E.; Taylor, Gerald E.; and Williams, John S., 4,430,701, Cl. 364-200.000.

- Reed, Robert L.; Petty, Luther E.; and Goddin, Clifton S., Jr., to Standard Oil Company (Indiana). Low temperature Claus process with water removal. 4,430,317, Cl. 423-574.00R.
- Reedy, Wayne R., to Carrier Corporation. Refrigerant expansion device. 4,429,552, Cl. 62-528.000.
- Reeve, William E., to Dixon International Limited. Method of making structural bearings. 4,429,450, Cl. 29-451.000.
- Regie Nationale des Usines Renault: See—
Chaffiotte, Pierre; and Guicherd, Christian, 4,429,853, Cl. 123-198.00F.
- Rehbein, Friedhelm, to August Thiele, Firma. Suspension chain head for mechanically assembled sling chain systems. 4,429,526, Cl. 59-93.000.
- Reichl, Eric H., to Conoco Inc. Method of making methanol using a slagging gasifier. 4,430,444, Cl. 518-703.000.
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Fischley, John; and Anderson, Tom E., 4,429,860, Cl. 266-44.000.
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Holliday, William H., 4,429,503, Cl. 52-410.000.
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Gauthier-Lafaye, Jean; and Perron, Robert, 4,430,506, Cl. 560-105.000.
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Boudot, Bernard; Nury, Georges; and Lambert, Andre, 4,430,173, Cl. 204-52.00R.
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Buhler, Ulrich; Hahnle, Reinhard; Ribka, Joachim; and Richter, Helmut, 4,430,090, Cl. 8-508.000.
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Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichiro, 4,430,542, Cl. 219-10.770.
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Knoll, Jozsef; and Nagy, Janos, 4,430,264, Cl. 260-112.00R.
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Heinz, Gerhard; Richter, Peter; and Mueller, Wolfgang F., 4,430,417, Cl. 430-286.000.
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Grieves, Robert G.; and Richter, Roscoe, 4,429,710, Cl. 137-375.000.
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Fukazawa, Takao; and Ishikawa, Chuji, 4,430,658, Cl. 346-75.000.
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Ando, Tadahiko; Shibata, Takehiko; and Watabe, Hiroomi, 4,430,432, Cl. 435-199.000.
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Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.
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Langen, Hans; and Ringel, Helmut, 4,430,030, Cl. 406-146.000.
- Ritchart, Stuart T., to Honeywell Inc. Manually actuated fuel valve control. 4,429,705, Cl. 137-65.000.
- Rittenbach, Otto E. Radar target angle measuring system. 4,430,655, Cl. 343-16.0LS.
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Benassi, Mario, 4,430,066, Cl. 464-178.000.
- Rivkin, Semen I.: See—
Zhukovsky, Sergei S.; Junovich, July M.; Pertovsky, Viktor N.; Kolesnikov, Vyacheslav S.; Renzhin, Igor P.; and Rivkin, Semen I., 4,430,441, Cl. 501-109.000.
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- Robbins, Jackie W. D. Drip irrigation hose. 4,430,020, Cl. 405-43.000.
- Robbins, William B.: See—
Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., 4,430,659, Cl. 346-135.100.
- Roberge, Jean M.: See—
Garner, John N.; Roberge, Jean M.; and Axiuk, Oleg, 4,429,519, Cl. 57-293.000.
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- Robert Bosch GmbH: See—
Beckers, Hans; and Vollmer, Klaus, 4,429,513, Cl. 53-547.000.
- Franz, Herbert; and Frister, Manfred, 4,429,924, Cl. 308-187.000.
- Koch-Ducker, Heinz-Jurgen; Junginger, Erich; and Schnabel, Eberhard, 4,430,637, Cl. 340-52.00R.
- Moller, Heinz, 4,430,647, Cl. 340-679.000.
- Schleupen, Richard, 4,430,709, Cl. 364-200.000.
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- Robson, Alan L.: See—
Spenceley, Gene D.; Davies, Mervyn W.; and Robson, Alan L., 4,430,117, Cl. 75-51.000.
- Roca-Nierga, Manuel, to Spica S.p.A. Device for controlling the rate of delivery of a fuel-injection for an internal-combustion engine. 4,429,672, Cl. 123-369.000.
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Tennysen, Mark R., 4,430,587, Cl. 307-590.000.
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Moore, Brian B.; Rodell, John T.; Sutton, Arthur J.; and Vowell, Jeff D., 4,430,727, Cl. 364-900.000.
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- Rodman, William: See—
Gimple, Irving; and Rodman, William, 4,430,731, Cl. 370-30.000.
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- Rogers, Gordon C., Jr.: See—
Malito, John T.; and Rogers, Gordon C., Jr., 4,430,310, Cl. 423-121.000.
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Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; Rogers, Lawrence D.; and Thompson, Donald R., 4,430,651, Cl. 340-825.20.
- Rohr Industries, Inc.: See—
Woodward, James R., 4,429,824, Cl. 228-157.000.
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Marino, Adriano, 4,429,723, Cl. 139-452.000.
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Knight, Ronald W.; and Olive, Clive E., 4,430,043, Cl. 415-159.000.
- Roman, Gianfranco: See—
Spadotto, Oliviano; Roman, Gianfranco; and Da Roid, Claudio, 4,429,906, Cl. 285-315.000.
- Romine, Hugh E.: See—
Poyner, Paul C.; and Romine, Hugh E., 4,430,197, Cl. 208-56.000.
- Roodenrijs, Jacobus P.: See—
Van Pelt, Wilhelmus H. J. M.; and Roodenrijs, Jacobus P., 4,430,104, Cl. 62-123.000.
- Root, Bernard H.: See—
Kandell, Ronald J.; Merriam, Donald R.; Root, Bernard H.; and Woodruff, William W., 4,430,530, Cl. 179-175.20D.
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Patzke, James V.; and Rosenberg, Burton J., 4,430,435, Cl. 436-504.000.

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Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., 4,430,198, Cl. 208-112.000.
- Rostvold, Virgil C., to Hanna Mining Company, The. Pressure actuated seal for travelling grate. 4,430,056, Cl. 432-137.000.
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Kreher, Alfons; Kuhner, Gerhard; Rothbuhl, Lothar; Turk, Gunter; and Wolff, Siegfried, 4,430,280, Cl. 264-117.000.
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Rothenbuhler, Dan E.; and Biery, Galen A., Jr., 4,430,652, Cl. 340-825.690.
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Petrovic, Vladan; Schmid, Karl; Jokisch, Friedrich; and Rothhaus, Heinz, 4,430,161, Cl. 202-228.000.
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Jablonski, Henry; and Rougharden, Jeffrey D., 4,429,847, Cl. 248-74.00R.
- Rubin, Irving N.: See—
Jimenez, Ivan; and Rubin, Irving N., 4,429,468, Cl. 33-245.000.
- Rude, Carl A.: See—
Akerberg, Denis W.; Huffman, George W.; and Rude, Carl A., 4,430,459, Cl. 523-144.000.
- Ruellan, Daniel: See—
Lefebvre, Marcel; and Ruellan, Daniel, 4,430,684, Cl. 361-98.000.
- Ruger, William B., to Sturm, Ruger & Company, Inc. Reciprocating slide dampening mechanism for firearms. 4,429,617, Cl. 89-198.000.
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Schnur, Friedrich; Cornils, Boy; Hibbel, Josef; and Lieder, Bern-Hard, 4,430,096, Cl. 48-206.000.
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- Rush, William L.: See—
Mittleman, Herbert; and Rush, William L., 4,430,077, Cl. 604-111.000.
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Schiebe, Lowell H.; Russo, Bruce E.; Urness, Edward V.; and Hohn, William C., 4,430,702, Cl. 364-200.000.
- Rustum, Roy. Reverse thermodynamic chemical barrier for nuclear waste over-pack or backfill. 4,430,256, Cl. 252-628.000.
- Rutgerswerke Aktiengesellschaft: See—
Kreysa, Gerhard; and Collin, Gerd, 4,430,175, Cl. 204-72.000.
- Omran, Jafar; and Koch, Karl-Heinz, 4,430,194, Cl. 208-8.0LE.
- Stadelhofer, Jürgen; and Franck, Heinz-Gerhard, 4,430,193, Cl. 208-8.0LE.
- Rutherford, Dennis F.: See—
Hill, Nigel; and Rutherford, Dennis F., 4,430,026, Cl. 405-291.000.
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- Ryu, Ji-yong, to Exxon Research & Engineering Co. Process for synthesizing a multicomponent acidic catalyst composition by an organic solution method. 4,430,252, Cl. 502-162.000.
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Rusenko, James J.; and Rzepecki, Marian M., 4,429,936, Cl. 339-45.00R.
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Clements, Herbert A.; and Heybourne, Robert H., 4,429,774, Cl. 192-53.00H.
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Jaeger, Kurt E.; Klein, Klausjorg; Patzschke, Hans-Peter; and Saatweber, Dietrich, 4,430,462, Cl. 523-402.000.
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March, Steven C.; Safford, John W., Jr.; and Magic, Susan E., 4,430,263, Cl. 260-112.00R.
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Barton, Brandon H.; and Sagel, John A., 4,430,271, Cl. 260-458.00R.
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Vachet, Joel; Brundet, Justin; and Fremaux, Jacques, 4,429,509, Cl. 52-788.000.
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Noguchi, Yoshiyasu; Yokokoji, Shoji; Saito, Shozo; and Hasegawa, Kiketsu, 4,429,457, Cl. 29-840.000.
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Nomaguchi, Tamotsu; Tano, Masahiro; Fukuda, Mitsuo; and Saitou, Tatsuo, 4,429,735, Cl. 165-60.000.
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Shiozawa, Kazuo; and Sakai, Hideaki, 4,429,975, Cl. 354-202.000.
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Nakasono, Hiroyuki; and Sakamoto, Takayasu, 4,430,595, Cl. 310-339.000.
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Hayakawa, Eizi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.
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Taniguchi, Seiho; Sakuma, Yuichiro; and Yoshii, Tadashi, 4,430,470, Cl. 524-269.000.
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- Sander, Lars: See—
Brogardh, Torgny; and Sander, Lars, 4,430,565, Cl. 250-227.000.
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Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., 4,430,385, Cl. 428-380.000.
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Iwao, Junichi; Oya, Masayuki; Baba, Toshio; Iso, Tadashi; and Chiba, Takehisa, 4,430,344, Cl. 424-270.000.
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Hellstrom, Erik I., 4,430,031, Cl. 407-104.000.
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Fujime, Toshiro, 4,430,675, Cl. 358-342.000.
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Ovshinsky, Stanford R.; Sapru, Krishna; and Venkatesan, Srinivasan, 4,430,391, Cl. 429-40.000.
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Beitel, James E.; Bruce, Charles R.; Cook, Gary R.; Mosier, Charles F., Jr.; and Sartore, Edward L., 4,430,728, Cl. 364-900.000.
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Perl, Horst; Nussbaumer, Dietmar; Schmidt, Hans-Weddo; Pradel, Gunter; and Grummert, Ulrich, 4,430,218, Cl. 210-321.300.
- Sasaki, Isao: See—
Takigawa, Tadahiyo; and Sasaki, Isao, 4,430,570, Cl. 250-423.00R.
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Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.
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- Satake, Takeo, to Nippon Chemtec Consulting Inc. Method for removal of impurities from liquid mixtures. 4,430,230, Cl. 210-691.000.
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Nappholz, Tibor A.; Bradbury, Ronald C.; and Satchwell, Bruce R., 4,429,697, Cl. 128-419.0PG.
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Aono, Toshiaki; Hara, Hiroshi; Naito, Hideki; and Sato, Kozo, 4,430,415, Cl. 430-203.000.

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Ohno, Akira; Sato, Toshiaki; and Inoue, Kanji, 4,429,899, Cl. 280-689.000.
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Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, 4,429,687, Cl. 128-24.200.
- Sauer, Hans; Takada, Takashi; and Kondo, Yukihiko, to Sauer, Hans. Getter and electrical switching system using such getter. 4,430,537, Cl. 200-302.100.
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Halliburton, Ronald D.; Pearson, James H.; and Sava, Robert J., 4,429,876, Cl. 273-121.00A.
- Savage Rite-Way Corporation: See—
Clayton, Richard M.; and Johnson, Arthur, 4,430,028, Cl. 406-39.000.
- Save-Way Industries, Inc.: See—
Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, 4,429,687, Cl. 128-24.200.
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Matsuoka, Chikara; Sawada, Kouzi; and Sunayama, Takayoshi, 4,430,016, Cl. 403-40.000.
- Sawai, Kazuhiko: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Sawyer, Joseph A.: See—
Tibbets, George C.; and Sawyer, Joseph A., 4,430,520, Cl. 174-35.00R.
- Sawyer, Willard H.; and Mitchell, Howard L., III, to Exxon Research and Engineering Co. Catalysts from molybdenum polysulfide precursors and their preparation. 4,430,442, Cl. 502-220.000.
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Lesniewski, Joseph M.; and Breza, Michael J., 4,430,467, Cl. 524-89.000.
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- Scandura, Inc.: See—
Johnson, Eric R., 4,430,146, Cl. 156-502.000.
- Scarpa, Eric W.; Hughes, Charles C.; and Humbert, Stanley F., to R. A. Jones & Co. Inc. High speed carton feeder. 4,429,864, Cl. 271-10.000.
- Scartazzini, Riccardo: See—
Heuser, Karl; Bickel, Hans; Fechtig, Bruno; Peter, Heinrich; and Scartazzini, Riccardo, 4,430,498, Cl. 544-16.000.
- Scaven, Michael D.: See—
Hammond, Peter M.; Price, Christopher P.; and Scaven, Michael D., 4,430,433, Cl. 435-228.000.
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Schaefer, Philipp; Picker, Carsten; and Schaefer, Helmut, 4,430,448, Cl. 521-54.000.
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Coon, Julian B.; and Schafers, Charles J., 4,430,653, Cl. 343-5.0NA.
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Jackson, Keith L.; Schmitt, Dallas L.; and Schauster, John L., 4,429,637, Cl. 105-168.000.
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Gosteli, Jacques, 4,430,510, Cl. 562-465.000.
- Scherz, Abraham I.: See—
Litvin, Noel; and Scherz, Abraham I., 4,429,554, Cl. 70-358.000.
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Frank, Erich; Scheuermann, Walter; and Volk, Georg, 4,429,569, Cl. 73-81.000.
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Saumweber, Eckart; and Schirmer, Klaus, 4,430,703, Cl. 364-426.000.
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Zunkel, Richard L., 4,429,490, Cl. 49-32.000.
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Crawford, George H.; Downing, Edward J.; and Schlemmer, Roy G., 4,430,366, Cl. 427-162.000.
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Weber, Karl; Schlinger, Michael; and Beedle, Richard, 4,429,850, Cl. 248-250.000.
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Petrovic, Vladan; Schmid, Karl; Jokisch, Friedrich; and Rothhaus, Heinz, 4,430,161, Cl. 202-228.000.
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Jackson, Keith L.; Schmitt, Dallas L.; and Schauster, John L., 4,429,637, Cl. 105-168.000.
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Erpenbach, Heinz; Gehrmann, Klaus; Kubbeier, Hans-Klaus; and Schmitt, Klaus, 4,430,273, Cl. 260-546.000.
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Koch-Ducker, Heinz-Jürgen; Junginger, Erich; and Schnaibel, Eberhard, 4,430,637, Cl. 340-52.00R.
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Schreckenberg, Manfred; Burgdorfer, Hans-Heribert; Rhein, Rolf; and Schneider, Gottfried, 4,430,492, Cl. 528-176.000.
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Melzer, Milena; Schneider, Norbert; Kopke, Helmut; Schoettle, Klaus; Koester, Eberhard; Balz, Werner; and Grau, Werner, 4,430,362, Cl. 427-48.000.
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Bez, Ulrich; Schroder, Gerhard; and Rauser, Michael, 4,429,914, Cl. 296-188.000.
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Davis, Robert D., Jr.; and Schucker, James S., 4,429,515, Cl. 56-6.000.
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Brugger, Robert; and Schulze-Berge, Klaus, 4,430,172, Cl. 204-43.00N.
Hack, Joachim; Brotzler, Roland; Schulze-Berge, Klaus; and Angermann, Rudolf, 4,430,678, Cl. 360-99.000.
Schumacher, Frederick G., to Du Pont de Nemours, E. I., and Company, Surfactant-containing filled and plasticized thermoplastic compositions based on ethylene interpolymers, 4,430,468, Cl. 524-109.000.
Schuocker, Dieter: See—
Reif, Werner; and Schuocker, Dieter, 4,430,738, Cl. 372-38.000.
Schurr, George A., to Du Pont de Nemours, E. I., and Company, Injector mixer apparatus, 4,430,001, Cl. 366-107.000.
Schwabacher, William, to Hoffmann-La Roche Inc. Hypodermic syringe assembly, 4,430,082, Cl. 604-263.000.
Schwarzli, Joseph W., to Twin-Cee Limited, Rotating drum dispensing machine, 4,429,806, Cl. 221-20.000.
Science Applications, Inc.: See—
Toy, Madeline S.; and Stringham, Roger S., 4,430,089, Cl. 8-115.500.
Scientific Component Corporation: See—
Snyder, Richard V., 4,430,758, Cl. 455-227.000.
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Blanchard, Raymond A., Jr.; and Garey, Kenneth E., 4,430,644, Cl. 340-365.00R.
Scott & Fetzer Company, The: See—
Burgoon, Jack L., 4,429,433, Cl. 15-320.000.
Scott, Larkin; and Mueller, William C., to Perkin-Elmer Corporation, The, Pen drive for recorder, 4,430,657, Cl. 346-32.000.
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Searle, Robert F., to Vibrac Corporation, Electro-optical angular displacement, 4,430,566, Cl. 250-231.05E.
Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal, Surface-active oligomers, 4,430,250, Cl. 252-351.000.
Secrist, Duane R.: See—
Clark, James M.; and Secrist, Duane R., 4,430,189, Cl. 204-290.00R.
Sedco, Inc.: See—
Taylor, Donald F., 4,429,622, Cl. 92-93.000.
Seeger, Ernst: See—
Trummlitz, Gunter; Seeger, Ernst; and Engel, Wolfhard, 4,430,355, Cl. 426-548.000.
Segarra, Gerard; and Phulpin, Francois J., to U.S. Philips Corporation, Distributed data processing system, 4,430,699, Cl. 364-200.000.
Sehon, Alec: See—
Lee, Weng Y.; and Sehon, Alec, 4,430,260, Cl. 260-239.100.
Seidel, Manfred: See—
Hone, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, 4,430,380, Cl. 428-254.000.
Seidl, Alois: See—
Dennert, Heinz; Dennert, Hans V.; and Seidl, Alois, 4,430,107, Cl. 65-22.000.
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Seiver, Robert L.; and Chianelli, Russell R., to Exxon Research and Engineering Co. Supported carbon-containing molybdenum and tungsten sulfide catalysts, their preparation and use, 4,430,443, Cl. 502-220.000.
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Selas Corporation of America: See—
Hoover, Donald P.; Csapo, Michael A.; and Siemssen, Ernst A., 4,430,057, Cl. 432-154.000.
Senda, Kenichi; and Nakagawa, Masao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Expandable thermoplastic polymer particles and process for producing the same, 4,430,450, Cl. 521-60.000.
Senda, Masaki; and Mizoguchi, Takashi, to Okuma Howa Kikai Kabushiki Kaisha, Machine tool, 4,430,717, Cl. 364-474.000.
Sensormatic Electronics Corporation: See—
Eskandry, Ezra D.; and Weaver, Jon N., 4,430,645, Cl. 340-572.000.
ServiceMaster Industries, Inc.: See—
Copeland, William M.; Blomgren, Roland A.; and Shallenberg, Robert L., 4,429,432, Cl. 15-320.000.
Servier, Jacques P., to Bioforma, Producing fusafungine, 4,430,431, Cl. 435-171.000.
Sevifra S.A.: See—
Hanna, Khalil, 4,429,696, Cl. 128-310.000.
Sevilla, Ernesto G., to International Computers Limited, Binary-coded-decimal to binary converter, 4,430,643, Cl. 340-347.00D.
Shallenberg, Robert L.: See—
Copeland, William M.; Blomgren, Roland A.; and Shallenberg, Robert L., 4,429,432, Cl. 15-320.000.
Shanley, Charles W., to Motorola, Inc. Temperature insensitive piezo-electric crystal mounting arrangement, 4,430,596, Cl. 310-348.000.
Sharp Kabushiki Kaisha: See—
Aiba, Masahiko, 4,430,049, Cl. 417-540.000.
Hishida, Tadanori; Kuwagaki, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,430,182, Cl. 204-192.00P.
Itoh, Fukusaburo; Mizumoto, Kazushige; and Nishikawa, Yoshikazu, 4,429,863, Cl. 271-9.000.

Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichiro, 4,430,542, Cl. 219-10.770.
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,430,713, Cl. 364-405.000.
Nishimura, Kosuke, 4,430,005, Cl. 368-67.000.
Shedd, David E., to Taylor Box Co. Slip case for filing box, 4,429,826, Cl. 229-23.0BT.
Sheets, Kerney T. Projectable lawn sprinkler, 4,429,832, Cl. 239-204.000.
Sheffield, George V.; and Furth, Harold P., to United States of America, Energy, Modular low aspect ratio-high beta torsatron, 4,430,600, Cl. 315-111.710.
Sheingorn, Larry A. Visual field testing device, 4,429,961, Cl. 351-226.000.
Shell Oil Company: See—
Aiello, Robert P.; Stefanidakis, George; and Poling, Dwayne E., 4,430,204, Cl. 208-240.000.
Engels, Rainer; and Meurs, Jan H. H., 4,430,262, Cl. 260-453.00P.
Shibata, Akira, to Chugai Denki, Method for making composite electrical contact welded in situ to supporting metal, and apparatus therefor, 4,429,458, Cl. 29-879.000.
Shibata, Takehiko: See—
Ando, Tadahiko; Shibata, Takehiko; and Watabe, Hiroomi, 4,430,432, Cl. 435-199.000.
Shida, Mitsuzo: See—
Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,430,135, Cl. 156-244.110.
Shigematsu, Akiyo; Tsuya, Akira; Aihara, Michiaki; Suzuki, Akiko; and Matsuda, Michiko, to Kabushiki Kaisha Seitai Kagaku Kenkyusho, Radioactive diagnostic agent, 4,430,320, Cl. 424-1.100.
Shih, Stuart S.: See—
Heck, Roland H.; Rosinski, Edward J.; and Shih, Stuart S., 4,430,198, Cl. 208-112.000.
Shihabi, David S., to Mobil Oil Corporation, Hydrocarbon conversion process, 4,430,200, Cl. 208-120.000.
Shima, Shigeru, to Nichias Corporation; and Hiroyasu Iihoshi, Method for covering the surface of molten metal, and a covering material therefor, 4,430,121, Cl. 75-96.000.
Shimada, Hirofumi; and Totsuka, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha, Radioactive gaseous waste disposing system, 4,430,292, Cl. 376-301.000.
Shimizu, Akihiko, to Japax Incorporated, Apparatus for and method of electroerosively drilling a thin hole in a workpiece, 4,430,180, Cl. 204-129.550.
Shimoda, Mitsuhiro: See—
Enomoto, Shigeo; and Shimoda, Mitsuhiro, 4,429,965, Cl. 354-402.000.
Shimomoto, Yasuharu; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, to Hitachi, Ltd., Method of producing photoelectric transducers, 4,430,185, Cl. 204-192.00P.
Shinozaki, Nozomu: See—
Dohi, Takashi; Shinozaki, Nozomu; and Neki, Shigeo, 4,429,773, Cl. 192-18.00B.
Shinozaki, Yoshinobu: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.
Shionogi & Co., Ltd.: See—
Ogata, Masaru, 4,430,331, Cl. 424-273.00R.
Shiozawa, Kazuo; and Sakai, Hideaki, to Konishiroku Photo Industry Co., Ltd. Control circuit for cameras having internal and external power supplies, 4,429,975, Cl. 354-202.000.
Shiratori, Yuji, to Mitsubishi Denki Kabushiki Kaisha, Radio receiver, 4,430,753, Cl. 455-52.000.
Shiroyama, Masaharu: See—
Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shiroyama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
Shoji, Masakazu, to Bell Telephone Laboratories, Incorporated, Apparatus for increasing the speed of a circuit having a string of IGFETs, 4,430,583, Cl. 307-448.000.
Shomura, Eiichi: See—
Eguchi, Yasukata; and Shomura, Eiichi, 4,429,649, Cl. 112-229.000.
Shor, Steven M.: See—
Beebe, George W.; Hine, Philip; O'Bryan, Nelson B.; and Shor, Steven M., 4,430,426, Cl. 430-604.000.
SI Handling Systems, Inc.: See—
Ziegenfuss, Barry L., 4,429,636, Cl. 104-36.000.
Siemens Aktiengesellschaft: See—
Betzl, Hermann; Magerl, Johann; and Volejnik, Wilhelm, 4,430,629, Cl. 333-165.000.
Bork, Klaus; Humbs, Rolf; and Trey, Karl, 4,430,594, Cl. 310-328.000.
Eilers, Carl-Ernst; and Pachonik, Horst, 4,430,190, Cl. 204-298.000.
Franz, Dietmar; and Torggler, Norbert, 4,430,525, Cl. 178-3.000.
Hebenstreit, Ernst, 4,430,586, Cl. 307-570.000.
Koellensperger, Paul, 4,430,750, Cl. 382-8.000.
Oestreich, Ulrich, 4,429,521, Cl. 57-294.000.
Siemens-Albis Aktiengesellschaft: See—
Kupfer, Hanspeter, 4,430,634, Cl. 343-5.0NQ.
Siemens Gammasonics, Inc.: See—
Schardt, Mark A., 4,430,749, Cl. 382-54.000.
Siems, Wolfgang: See—
Koch, Franz P.; Helms, Adolf; Siems, Wolfgang; and Brand, Peter, 4,429,567, Cl. 73-49.800.

Siemssen, Ernst A.: See—
Hoover, Donald P.; Csapo, Michael A.; and Siemssen, Ernst A., 4,430,057, Cl. 432-154.000.
Signetics Corporation: See—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,430,711, Cl. 364-200.000.
Lovelace, Ralph E., 4,430,580, Cl. 307-288.000.
Sika AG, vorm. Kaspar Winkler & Co.: See—
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,430,469, Cl. 524-247.000.
Silver, Jules, Method for controlling oral mal odors and dental plaque, 4,430,323, Cl. 424-52.000.
Simmons, William, to Fosco International Limited, Production of vermicular graphite cast iron, 4,430,123, Cl. 75-130.00R.
Simoes, Richard M., to GTE Laboratories Incorporated, Offset correction circuit, 4,430,622, Cl. 330-9.000.
Simond, Jacques A. L.: See—
Carlier, Patrick; Monteil, Andre J. C.; and Simond, Jacques A. L., 4,430,332, Cl. 424-248.570.
Singer Company, The: See—
Arnold, Bruce E., 4,430,605, Cl. 318-386.000.
Sinkkonen, Jouko: See—
Koivumaki, Harri; and Sinkkonen, Jouko, 4,430,694, Cl. 362-250.000.
Sitaramiah, George G., to Minnesota Mining and Manufacturing Company, Developing powder composition containing a fluorine-modified alkyl siloxane, 4,430,408, Cl. 430-106.600.
Sixsmith, Richard, to Plasticair Systems 442829 Ontario Inc. Separator blades for mist eliminators, 4,430,101, Cl. 55-440.000.
Sizemore, Charlie B. Anchoring device for metal roof, 4,429,508, Cl. 52-713.000.
Skala, Josef: See—
Ferkel, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Václav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.
SKF Kugellagerfabriken GmbH: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.
Sklar, Joseph, to Sklar-Peppel Inc. Seating cushion, 4,429,427, Cl. 5-474.000.
Sklar-Peppel Inc.: See—
Sklar, Joseph, 4,429,427, Cl. 5-474.000.
SKW Trostberg Aktiengesellschaft: See—
Freissmuth, Alfred; Gmohling, Werner; and Meichsner, Walter, 4,430,118, Cl. 75-58.000.
Slattery, Ian, to Spencer Wright Industries, Inc. Staggered needle bar for tufting machines, 4,429,648, Cl. 112-79.00R.
Sloan, Paul H., Jr.: See—
Runyan, Gary L.; and Sloan, Paul H., Jr., 4,430,285, Cl. 264-242.000.
Small, William M.: See—
Gentry, Cecil C.; and Small, William M., 4,429,739, Cl. 165-159.000.
Smilowitz, Kalman: See—
Salomon, Phil M.; and Smilowitz, Kalman, 4,430,673, Cl. 358-213.000.
Smith, Bernard, 4-Jaw work holding lathe chuck, 4,429,887, Cl. 279-112.000.
Smith, Donald O.; and Harte, Kenneth J., to Control Data Corporation, Method and apparatus for exposing multi-level registered patterns interchangeably between stations of a multi-station electron-beam array lithography (EBAL) system, 4,430,571, Cl. 250-492.200.
Smith, Donald W.: See—
Hardy, John H. M.; Barrett, Robert E.; Allwood, Anthony R.; Riley, Garth I.; Hovell, John; Smith, Donald W.; Potter, Arthur R.; and Lowrie, Ian W., 4,430,733, Cl. 370-110.100.
Smith, Gary L.: See—
Hyde, Richard E.; Smith, Gary L.; Carmichael, Lee T.; and Meader, Albert E., 4,429,916, Cl. 297-250.000.
Smith International, Inc.: See—
Kar, Nareshchandra J.; and Nimmagadda, Rao R., 4,429,854, Cl. 384-94.000.
Smith, Joseph L., Jr.: See—
Deis, Daniel W.; McNab, Ian R.; and Smith, Joseph L., Jr., 4,429,613, Cl. 89-8.000.
Smith, Lawrence N.: See—
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,430,662, Cl. 357-5.000.
Smith, Paul; and Lemstra, Pieter J., to Stamicarbon B.V. Filaments of high tensile strength and modulus, 4,430,383, Cl. 428-364.000.
Smith, Randel P.: See—
Steiner, Robert L.; and Smith, Randel P., 4,429,812, Cl. 222-181.000.
Smith, Richard H., Sr. Helical seam structural vessel, method and apparatus of forming same, 4,429,654, Cl. 114-65.00R.
Smith, Robert P., Jr., to Woodlock, Michael Clate, Foldable security bar, 4,429,912, Cl. 292-263.000.
Smyth, Richard T.: See—
Irons, Gary C.; Buzzelli, Dennis K.; Klein, John F.; and Smyth, Richard T., 4,430,546, Cl. 219-121.0PY.
Snaeland, Sveinn; Halldorson, Ragnar; Franke, Alwis; and Gudmundsson, Einar, to Swiss Aluminium Ltd. Reduction cell pot, 4,430,187, Cl. 204-243.00R.
Snaauwaert En Depla N.V.: See—
Van Raemdonck, Joris, 4,429,873, Cl. 273-73.00F.

Snyder, Richard V., to Scientific Component Corporation, Suspended-substrate co-planar stripline mixer, 4,430,758, Cl. 455-227.000.
Snyder, Robert Z. Safety garment, 4,429,419, Cl. 2-102.000.
Societe anonyme dite: Stein Industrie: See—
Queasnel, Guy, 4,429,646, Cl. 110-347.000.
S.A. Thimon: See—
Thimon, Jacques, 4,429,510, Cl. 53-167.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: See—
Launay, Noel, 4,430,053, Cl. 425-510.000.
Postner, Hermann, 4,430,352, Cl. 426-115.000.
Societe Nationale Industrielle Aerospatiale: See—
Gentet, Pierre; Geoffroy, Alain Y.; and Caillebotte, Alain M., 4,430,715, Cl. 364-426.000.
Soddy, Thomas C.: See—
Fritz, William E.; and Soddy, Thomas C., 4,429,921, Cl. 308-3.500.
Soeda, Masumitsu: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakami, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.
Sokolowski, Eugene K. Closing mechanism for a cabinet cover, 4,429,933, Cl. 312-319.000.
Solar, Ronald J.: See—
Ganz, William; Solar, Ronald J.; and Lieber, Clement, 4,430,083, Cl. 604-283.000.
Solver, Carl E.: See—
Berg, Samuel; and Solver, Carl E., 4,430,535, Cl. 200-82.00R.
Someshwar, Ashok H.; Lies, Kenneth A.; and Teza, Jeffrey R., to Texas Instruments Incorporated, Modular input/output system, 4,430,584, Cl. 307-465.000.
Sone, Kohki; and Kitahara, Thuyoshi, to Nissan Motor Co., Ltd. System for feedback control of air/fuel ratio in IC engine with means to control current supply to oxygen sensor, 4,430,191, Cl. 204-401.000.
Sonneborn, Lambertus J., to Applied Power Inc. Hydraulic control system having reciprocating pump and handle operated rotating valve, 4,429,529, Cl. 60-433.000.
Sorbe, Gunter; Wasel-Nielsen, Horst-Dieter; and Kandler, Joachim, to Hoechst Aktiengesellschaft, Granulate consisting of hydrated sodium tripolyphosphate and water-insoluble alumino silicate ion exchanger material, 4,430,246, Cl. 252-140.000.
Sorensen, Kim: See—
Henrichsen, Frank; Hansen, Flemming; and Sorensen, Kim, 4,430,062, Cl. 433-28.000.
Sorensen, Roald H. Basketball goal, 4,430,130, Cl. 148-12.00B.
Sorenson, Paul D.; and Dickson, Dale A., to Medtronic, Inc. Ultrasonic transducer system with fluid applicator, 4,429,577, Cl. 73-644.000.
Sorenson, Richard W., to Carlingswitch, Inc. Switch construction, 4,430,534, Cl. 200-68.300.
Souno, Ryuichi: See—
Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuichi; and Ikka, Toshifumi, 4,430,688, Cl. 361-307.000.
Southard, Albert A. Rotary steel filing apparatus for sharpening saw chains, 4,429,596, Cl. 76-36.000.
Spademan, Richard G. Step-in ski binding, 4,429,896, Cl. 280-624.000.
Spadotto, Oliviano; Roman, Gianfranco; and Da Rold, Claudio, to Claber S.p.A. Female element for quick-coupling connection for flexible pipes, 4,429,906, Cl. 285-315.000.
Spector, George: See—
Hill, Lee; and Spector, George, 4,429,460, Cl. 30-90.100.
Speet, Larry A.: See—
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,429,934, Cl. 339-22.00R.
Spenceley, Gene D.; Davies, Mervyn W.; and Robson, Alan L., to British Steel Corporation, Production of steel, 4,430,117, Cl. 75-51.000.
Spencer Wright Industries, Inc.: See—
Slattery, Ian, 4,429,648, Cl. 112-79.00R.
Sperry Corporation: See—
Hermansdorfer, James E.; and Spurgin, William T., 4,430,640, Cl. 340-347.05Y.
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,430,662, Cl. 357-5.000.
Rea, Clyde M., 4,430,691, Cl. 361-383.000.
Spica S.p.A.: See—
Roca-Nierga, Manuel, 4,429,672, Cl. 123-369.000.
Spieler, Wolfgang: See—
Hone, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; Seidel, Manfred; and Spieler, Wolfgang, 4,430,380, Cl. 428-254.000.
Spielmann, Norbert, to FAG Kugelfischer Georg Schafer & Co. Master cylinder for brake or clutch, 4,429,531, Cl. 60-588.000.
Spiewok, Leonhard, to Escher Wyss Limited, Centrifuge sieve, 4,430,221, Cl. 210-380.100.
Sprague, Leland L. Blood infusion pump, 4,430,078, Cl. 604-141.000.
Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof, 4,430,508, Cl. 560-256.000.
Spring, Donald A.: See—
Dorros, Gerald; and Spring, Donald A., 4,429,724, Cl. 141-27.000.
Spurgin, William T.: See—
Hermansdorfer, James E.; and Spurgin, William T., 4,430,640, Cl. 340-347.05Y.
Spurrier, Francis R.; DeZubay, Egon A.; Murray, Alexander P.; and Vidt, Edward J., to United States of America, Energy, Slab reformer, 4,430,304, Cl. 422-204.000.

- Stack, Eugene V., to Dow Chemical Company, The. Method for the extrusion of tetrafluoroethylene polymer tubes. 4,430,282, Cl. 264-127.000.
- Stack, Eugene V.: See—
Burnett, Edward L.; and Stack, Eugene V., 4,430,283, Cl. 264-127.000.
- Stadelhofer, Jürgen; and Franck, Heinz-Gerhard, to Rutgerswerke Aktiengesellschaft. Process for dissolving coal in hydrocarbon mixtures. 4,430,193, Cl. 208-8.01E.
- Staerzl, Richard E., to Brunswick Corporation. Programmed cold start enrichment circuit for a fuel injected internal combustion engine. 4,429,673, Cl. 123-491.000.
- Stahl, Fritz; and Steffen, Horst, to Kollmorgen Technologies Corporation. Method of producing printed circuit boards. 4,430,154, Cl. 156-651.000.
- Stamicarbon B.V.: See—
Smith, Paul; and Lemstra, Pieter J., 4,430,383, Cl. 428-364.000.
- Standard Car Truck Company: See—
Powell, Patrick L., 4,430,561, Cl. 235-95.00B.
- Standard Oil Company, (Indiana): See—
Oltrogge, Robert D., 4,430,195, Cl. 208-8.00R.
- Reed, Robert L.; Petty, Luther E.; and Goddin, Clifton S., Jr., 4,430,317, Cl. 423-574.00R.
- Walker, Donald C.; and Wagner, Theodore O., 4,429,725, Cl. 141-59.000.
- Stanley Aviation Corporation: See—
Valentine, Gordon A., 4,429,905, Cl. 285-93.000.
- Stanley Works, The: See—
Rutty, Edward C.; and Stoutenberg, Carl C., 4,429,462, Cl. 33-138.000.
- Stanton, Robert. Golf club. 4,429,875, Cl. 273-81.200.
- Stanton, Robert. Golf putting target. 4,429,882, Cl. 273-177.00R.
- State of South Dakota as represented by the Department of Transportation: See—
Sandvig, Robert L.; Klemm, William A.; Gaines, Jack R.; and Looyenga, Robert W., 4,430,240, Cl. 252-70.000.
- State University of New York: See—
Blau, Monte; Kung, Hank F.; and Trampusch, Kenneth M., 4,430,319, Cl. 424-1.100.
- Statkus, Frank D.: See—
Brown, Stephen T.; and Statkus, Frank D., 4,429,844, Cl. 244-219.000.
- Steelcase Inc.: See—
VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., 4,429,934, Cl. 339-22.00R.
- Stefanich, Kenneth G., to Mardian Corp. Musical instrument support. 4,430,017, Cl. 403-104.000.
- Stefanidakis, George: See—
Aiello, Robert P.; Stefanidakis, George; and Poling, Dwayne E., 4,430,204, Cl. 208-240.000.
- Steffen, Horst: See—
Stahl, Fritz; and Steffen, Horst, 4,430,154, Cl. 156-651.000.
- Steger, Jay D.; Neitzke, Thomas G.; and Gagnon, Stephen J. Unitized packaging arrangement. 4,429,794, Cl. 206-597.000.
- Steil, Emeram: See—
Brugger, Inge; and Steil, Emeram, 4,429,835, Cl. 239-338.000.
- Stein, Edward I.: See—
Deering, Dana F.; and Stein, Edward I., 4,430,461, Cl. 523-340.000.
- Steinberg, Alfred, to Ocean & Atmospheric Science, Inc. Solar heating system. 4,429,545, Cl. 62-235.100.
- Steinbrecher, Marc L.: See—
Chang, Jack P.; and Steinbrecher, Marc L., 4,429,987, Cl. 355-14.0FU.
- Steinbruegge, Harold A.; and Der, Chuck F., to Westinghouse Electric Corp. Method and apparatus for starting a parallel-tuned current fed inverter. 4,430,697, Cl. 363-49.000.
- Steiner Corporation: See—
Steiner, Robert L.; and Smith, Randel P., 4,429,812, Cl. 222-181.000.
- Steiner, Jean-Pierre; Melin, Christiane; Platon, Jean-Francois; and Peton, Nicole, to Lesieur-Cotelle & Associates. Concentrated softening composition for textile fibers. 4,429,859, Cl. 252-8.800.
- Steiner, Robert L.; and Smith, Randel P., to Steiner Corporation. Soap dispensing system. 4,429,812, Cl. 222-181.000.
- Steinfelder, Karl; Heisig, Ulrich; Schiller, Siegfried; Mehr, Dietrich; Thusse, Bernd; and Hielscher, Klaus, to VEB Elektronik Gera. Trim condenser. 4,430,687, Cl. 361-293.000.
- Stekette, Campbell H., Jr.: See—
Beck, Richard D.; and Stekette, Campbell H., Jr., 4,429,720, Cl. 138-97.000.
- Stepien, Michael A.: See—
Milleker, William W.; Freeburg, Thomas A.; and Stepien, Michael A., 4,430,742, Cl. 375-5.000.
- Stepp, J. Fred. Portable tube holder. 4,429,929, Cl. 312-107.000.
- Stern, Kurt H., to United States of America, Navy. Electrodeposition of refractory metal carbides. 4,430,170, Cl. 204-39.000.
- Stevenson, Thomas E., to Babcock & Wilcox Company, The. Valve operator. 4,429,592, Cl. 74-625.000.
- Stocker, Raymond, to Ford Motor Company. Dual ratio accelerator pedal assembly. 4,429,589, Cl. 74-513.000.
- Stockmaster, Edward F., to Babcock & Wilcox Company, The. Circuit board module mounting unit. 4,429,937, Cl. 339-65.000.
- Stokes, Ian D., to Marshall-Fowler Limited. Electrode steam boiler and method of operation thereof. 4,430,555, Cl. 219-286.000.
- Stol, Israel, to Invocas, Inc. Ultrasonic excitation of underwater torpedoes for enhancing maneuverability, speed and targeting accuracy. 4,429,652, Cl. 114-20.00R.
- Storage Technology Corporation: See—
Coulson, Richard L.; Blickenstaff, Ronald L.; Dodd, P. David; Moreno, Robert J.; and Kinard, Dean P., 4,430,712, Cl. 364-300.000.
- Stoudt, Thomas H.; and Nollstadt, Karl H., to Merck & Co., Inc. Modified glucans as anti-carries agent and method of use. 4,430,322, Cl. 424-49.000.
- Stoutenberg, Carl C.: See—
Rutty, Edward C.; and Stoutenberg, Carl C., 4,429,462, Cl. 33-138.000.
- Stover, John C.; and Borkoski, Paul J., to Emerson Electric Co. Rail track heaters. 4,429,845, Cl. 246-428.000.
- Strand, Jerome E.: See—
Thill, Gary A.; and Strand, Jerome E., 4,430,079, Cl. 604-154.000.
- Streck, Clemens. Oxidation base dye composition and method of dyeing therewith. 4,430,091, Cl. 8-523.000.
- Streeter, Bruce E.: See—
MacMillan John H.; Bertozzi, Eugene R.; and Streeter, Bruce E., 4,430,489, Cl. 528-45.000.
- Streeter, Robert D., to Magnavox Consumer Electronics Company. Receiving apparatus for stereophonic broadcast having amplitude and angle modulated signal components. 4,430,747, Cl. 381-15.000.
- Stringham, Roger S.: See—
Toy, Madeline S.; and Stringham, Roger S., 4,430,089, Cl. 8-115.500.
- Stromberg-Carlson Corporation: See—
Kandell, Ronald J.; Merriam, Donald R.; Root, Bernard H.; and Woodruff, William W., 4,430,530, Cl. 179-175.20D.
- Struch, Timothy C., to TRW Inc. Fluid flow control. 4,429,708, Cl. 137-117.000.
- Strupczewski, Joseph T.; and Gardner, Beth A., to Hoechst-Roussel Pharmaceuticals Inc. Substituted 1-azaspiro[4,5]decanes and their analgesic compositions. 4,430,335, Cl. 424-267.000.
- Stubbs, John K.: See—
Campbell, Simon F.; Cross, Peter E.; and Stubbs, John K., 4,430,333, Cl. 424-266.000.
- Stude, Rodney C. Diving spear. 4,429,480, Cl. 43-6.000.
- Sturm, Ruger & Company, Inc.: See—
Ruger, William B., 4,429,617, Cl. 89-198.000.
- Stuttgen, Friedel: See—
Ippen, Jakob; and Stuttgen, Friedel, 4,429,728, Cl. 152-209.00A.
- Subtex, Inc.: See—
George, Stephen, 4,430,384, Cl. 428-377.000.
- Suburban Duplicator Repair, Inc.: See—
Commers, Louis P., 4,429,631, Cl. 101-349.000.
- Sueyoshi, Masahiko: See—
Onitsuka, Nobuyuki; Fukamachi, Masaaki; and Sueyoshi, Masahiko, 4,430,612, Cl. 324-166.000.
- Sugie, Mamoru: See—
Toyooka, Takashi; Aoki, Hirokazu; Sugie, Mamoru; and Yoshizawa, Shigeru, 4,430,729, Cl. 365-6.000.
- Sugimoto, Kazuo: See—
Kiba, Akira; and Sugimoto, Kazuo, 4,429,984, Cl. 355-3.0SH.
- Sugiura, Yasuro: See—
Ishikawa, Hitoshi; Yamamoto, Kimihiko; and Sugiura, Yasuro, 4,429,650, Cl. 112-258.000.
- Sugiyama, Michio. Semi-continuous vacuum heat-treating furnace, and its operation process. 4,430,055, Cl. 432-11.000.
- Suiverveld, John: See—
Schaible, Paul M.; and Suiverveld, John, 4,430,365, Cl. 427-96.000.
- Sullivan, Richard N. Closure plug assembly for pressure testing liquid drain and vent plumbing pipe systems. 4,429,568, Cl. 73-49.800.
- Sullivan, Robert P., to Combustion Engineering, Inc. Submerged scraper conveyor furnace transition piece. 4,429,640, Cl. 110-165.00R.
- Sullivan, Ronald E. Clothes drying structure. 4,429,928, Cl. 312-31.000.
- Sulser, Ulrich: See—
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,430,469, Cl. 524-247.000.
- Sulzer, Harry E., to Anchor/Darling Industries, Inc. Mechanical snubber apparatus. 4,429,563, Cl. 73-11.000.
- Sumitomo Bakelite Company: See—
Ochi, Takashi; and Kaneko, Fumihiko, 4,430,142, Cl. 156-379.900.
- Sumitomo Electric Industries, Ltd.: See—
Yoshida, Kenichi; Hiramoto, Junichi; and Takenaka, Shinya, 4,430,610, Cl. 324-51.000.
- Sumitomo Special Metal Ltd.: See—
Wada, Toshiaki; Furukawa, Mitsuhiko; Miyahara, Michito; Shiroyama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, 4,430,440, Cl. 501-105.000.
- Sunagawa, Hiroshi: See—
Ono, Yoshihiro; and Sunagawa, Hiroshi, 4,430,405, Cl. 430-95.000.
- Sunayama, Takayoshi: See—
Matsuoka, Chikara; Sawada, Kouzi; and Sunayama, Takayoshi, 4,430,016, Cl. 403-40.000.
- Suncor, Inc.: See—
Morgan, George W.; and Wetzell, Vernon F., 4,429,653, Cl. 114-42.000.
- Sundermann, Rudolf: See—
Heitkampfer, Peter; Konig, Klaus; Findeisen, Kurt; Faus, Rudolf; and Sundermann, Rudolf, 4,430,505, Cl. 560-24.000.
- Sung-shan, Peng. Toothbrush. 4,429,434, Cl. 15-341.000.

- Sunny Co., Ltd.: See—
Kawabata, Akira, 4,429,927, Cl. 308-236.000.
- Sunpower, Inc.: See—
Beale, William T., 4,429,530, Cl. 60-520.000.
- Surace, Filippo; and Garcea, Giampaolo, to Alfa Romeo Auto S.p.A. Motor vehicle having an internal-combustion engine fitted with means for controlling the air stream flowing through the engine compartment. 4,429,666, Cl. 123-41.050.
- Surace, Filippo, to Alfa Romeo S.p.A. Device for automatically adjusting the rotational speed of an internal combustion engine when operating under idling conditions. 4,429,671, Cl. 123-339.000.
- Surek, Thomas: See—
Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,430,305, Cl. 422-246.000.
- Sussman, Howard. Interconnected one-piece desk unit. 4,429,796, Cl. 211-11.000.
- Susumago, Hiroshi: See—
Higuchi, Terumasa; and Susumago, Hiroshi, 4,430,162, Cl. 203-37.000.
- Sutoh, Shinji: See—
Hara, Toshio; Sutoh, Shinji; and Kojima, Toshio, 4,429,733, Cl. 165-16.000.
- Sutton, Arthur J.: See—
Moore, Brian B.; Rodell, John T.; Sutton, Arthur J.; and Vowell, Jeff D., 4,430,727, Cl. 364-900.000.
- Suzuki, Akiko: See—
Shigematsu, Akiko; Tsuya, Akira; Aihara, Michiaki; Suzuki, Akiko; and Matsuda, Michiko, 4,430,320, Cl. 424-1.100.
- Suzuki, Katsuhito: See—
Hosoya, Akira; Tamahashi, Kunihiro; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirotsada, 4,430,404, Cl. 430-58.000.
- Suzuki, Keizo; Okudaira, Sadayuki; Nishimatsu, Shigeru; and Kanomata, Ichiro, to Hitachi, Ltd. Microwave plasma etching apparatus having fan-shaped discharge. 4,430,138, Cl. 156-345.000.
- Suzuki, Masakazu; Ikeda, Toshiaki; and Furuichi, Shuhei, to Kabushiki Kaisha Morita Seisakusho. Tomograph for photographing entire jaws. 4,430,746, Cl. 378-40.000.
- Suzuki, Mikio; and Yamazaki, Masafumi, to Nissan Motor Company, Limited. Carburetor and method for an internal combustion engine. 4,430,274, Cl. 261-18.00B.
- Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Power supply device for camera. 4,429,974, Cl. 354-484.000.
- Suzuki, Yukio; and Kobayashi, Syozo, to Tokyo Shibaura Denki Kabushiki Kaisha. High-frequency heating device. 4,430,538, Cl. 219-10.55F.
- Suzuki, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. High-frequency heating device. 4,430,539, Cl. 219-10.55F.
- Swanson, Jerome E., to Minnesota Mining & Manufacturing Company. Image stabilizers for vesicular film. 4,430,414, Cl. 430-176.000.
- Swart, Gerald W.: See—
Bemis, Peter F.; and Swart, Gerald W., 4,430,073, Cl. 604-48.000.
- Swartz, Raymond K.: See—
Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., 4,430,385, Cl. 428-380.000.
- Sweeney, William M.: See—
Jenkins, Robert H., Jr.; and Sweeney, William M., 4,430,093, Cl. 44-70.000.
- Swiss Aluminium Ltd.: See—
Snaeland, Svein; Halldorsson, Ragnar; Franke, Alwis; and Gudmundsson, Einar, 4,430,187, Cl. 204-243.00R.
- Syntex (U.S.A.) Inc.: See—
Alsup, James D., Jr.; Barrett, Kenneth L.; and Jenkins, Arden F., 4,429,918, Cl. 297-353.000.
- Synthelabo: See—
Wick, Alexander E.; and Frost, Jonathan R., 4,430,334, Cl. 424-267.000.
- Syrbius, Gerhard: See—
Koch, Klaus; and Syrbius, Gerhard, 4,429,628, Cl. 100-117.000.
- Syrenne, Marius H. Combination water saver and disinfectant dispenser. 4,429,423, Cl. 4-225.000.
- Szakvary, Laszlo, to Elphora. Radioelectric signal trains generator and portable transmitter comprising such a generator. 4,430,757, Cl. 455-100.000.
- Tabata, Norikazu: See—
Namba, Keisuke; Tanaka, Masaaki; Ueno, Takanori; and Tabata, Norikazu, 4,430,306, Cl. 422-292.000.
- Tabuchi, Takeo: See—
Miyafuji, Motohisa; Matsui, Takashi; Harada, Hidekazu; Soeda, Masumitsu; Ishikawa, Shin; Murakado, Hiroshi; Kawamoto, Hiroaki; Tabuchi, Takeo; Kamada, Kunio; and Nakashima, Yasuhiro, 4,430,298, Cl. 420-481.000.
- Tada, Keishi: See—
Miyake, Tetsuya; Takeda, Kunihiro; and Tada, Keishi, 4,430,445, Cl. 521-38.000.
- Tagai, Hideo: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Color video signal processing circuit. 4,430,674, Cl. 358-317.000.
- Taguchi, Tetsuya: See—
Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, 4,429,972, Cl. 354-448.000.
- Taig, Alistair G., to Bendix Corporation, The. Automatic locking and adjustment assembly. 4,429,777, Cl. 192-111.00A.
- Tajima, Ikuo, to Tokai Kogyo Mishin Kabushiki Kaisha. Device for detecting absence of a thread in a sewing machine. 4,429,651, Cl. 112-273.000.
- Taka, Hideo; and Masunaga, Makoto, to Canon Kabushiki Kaisha. Automatic focus control device. 4,429,968, Cl. 354-403.000.
- Takada, Takashi: See—
Sauer, Hans; Takada, Takashi; and Kondo, Yukihiro, 4,430,537, Cl. 200-302.100.
- Takahashi, Shinobu: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Takahashi, Susumu: See—
Fukuzawa, Tadashi; Nakamura, Michiharu; and Takahashi, Susumu, 4,430,741, Cl. 372-46.000.
- Takahashi, Tohru: See—
Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, 4,430,411, Cl. 430-122.000.
- Takamatsu, Akira; and Higuchi, Hiroshi, to Kabushiki Kaisha Mitsui Miike Seisakusho. Aeration tank for activated-sludge process sewage treatment. 4,430,225, Cl. 210-608.000.
- Takasaki, Mitsuhiro: See—
Murakami, Hiroya; Takasaki, Mitsuhiro; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, 4,429,558, Cl. 72-17.000.
- Takasaki, Yukio: See—
Shimamoto, Yasuhiro; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, 4,430,185, Cl. 204-192.00P.
- Takauji, Kiyomi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,429,605, Cl. 84-1.170.
- Takeda Chemical Industries, Ltd.: See—
Yamamura, Yuichi; Ichiro, Azuma; and Kobayashi, Shigeru, 4,430,265, Cl. 260-112.50R.
- Takeda, Hisashi: See—
Tsuchiya, Toshio; Morizumi, Syuichi; Takeda, Hisashi; and Aria, Akinori, 4,430,136, Cl. 156-246.000.
- Takeda, Kunihiro: See—
Miyake, Tetsuya; Takeda, Kunihiro; and Tada, Keishi, 4,430,445, Cl. 521-38.000.
- Takenaka, Shinya: See—
Yoshida, Kenichi; Hiramoto, Junichi; and Takenaka, Shinya, 4,430,610, Cl. 324-51.000.
- Takenouchi, Masanori: See—
Matsumoto, Toru; and Takenouchi, Masanori, 4,430,409, Cl. 430-106.600.
- Takeshima, Kiyoshi; and Masuda, Yoshinori, to Yoshida Kogyo K. K. Slide fastener stringer. 4,429,438, Cl. 24-401.000.
- Takeuchi, Hiroyasu: See—
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Tagai, Hideo; Ono, Mikiya; Fukuda, Yoshiaki; and Takeuchi, Hiroyasu, 4,429,691, Cl. 128-92.00C.
- Takeuchi, Tomio: See—
Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,430,346, Cl. 424-311.000.
- Taki, Yoshihiro: See—
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,430,223, Cl. 210-493.500.
- Takigawa, Tadashi; and Sasaki, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam exposing apparatus. 4,430,570, Cl. 250-423.00R.
- Takimoto, Yukio: See—
Saga, Ryokichi; and Takimoto, Yukio, 4,430,732, Cl. 370-54.000.
- Talbert, William L., to Onics, Inc. Fuel system for internal combustion engines. 4,429,675, Cl. 123-558.000.
- Tamahashi, Kunihiro: See—
Hosoya, Akira; Tamahashi, Kunihiro; Onuma, Shigeharu; Kakuta, Atsushi; Mori, Yasuki; Suzuki, Katsuhito; and Morishita, Hirotsada, 4,430,404, Cl. 430-58.000.
- Tamaki, Kazuyoshi: See—
Mitsueda, Hisami; Tamaki, Kazuyoshi; and Ariyoshi, Hiromi, 4,430,618, Cl. 328-149.000.
- Tamaki, Kiyoshi: See—
Koyama, Mikio; Kikugawa, Shozo; Okaniwa, Kenichiro; and Tamaki, Kiyoshi, 4,430,436, Cl. 436-531.000.
- Tamary, Ernest J., to Eastman Kodak Company. Apparatus for controlling the application of fuser release material in roller fusers. 4,429,990, Cl. 355-14.0FU.
- Tamer, Gregory G., to RCA Corporation. Television channel indicator with automatic on-screen display. 4,430,671, Cl. 358-192.100.
- Tamura, Morio: See—
Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, 4,429,541, Cl. 62-201.000.
- Tamura, Shuichi: See—
Tokuda, Ryuji; Ogawa, Masahiko; Tsunekawa, Tokuchi; and Tamura, Shuichi, 4,429,967, Cl. 354-403.000.
- Tamura, Tooru; Ojima, Nobuyuki; Mochizuki, Hideaki; Souno, Ryuchi; and Ikka, Toshifumi, to Matsushita Electric Industrial Co., Ltd. Small heat resistant film condenser. 4,430,688, Cl. 361-307.000.
- Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, to Canon Kabushiki Kaisha. Developing method for electrostatic image. 4,430,411, Cl. 430-122.000.

- Tamura, Zensuke: See—
Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.
- Tanaka, Hideki: See—
Kamejima, Kohji; Hibino, Yozo; Oozumi, Junichi; Tanaka, Hideki; and Tamura, Morio, 4,429,541, Cl. 62-201.000.
- Tanaka, Kazuyuki, to Central Glass Company, Limited. Sheet glass producing apparatus, 4,430,112, Cl. 65-335.000.
- Tanaka, Masaaki: See—
Namba, Keisuke; Tanaka, Masaaki; Ueno, Takanori; and Tabata, Norikazu, 4,430,306, Cl. 422-292.000.
- Tanaka, Seiji: See—
Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichi, 4,430,542, Cl. 219-10.770.
- Tanaka, Tutomu: See—
Kuzumoto, Hideshi; Tanaka, Tutomu; and Matsumoto, Hiroshi, 4,430,219, Cl. 210-321.300.
- Tanaka, Yasuo: See—
Shimomoto, Yasuhiro; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, 4,430,185, Cl. 204-192.00P.
- Tang, Phillip H., to Amtel, Inc. Single leg terminal, 4,429,655, Cl. 114-230.000.
- Taniguchi, Seiho; Sakuma, Yuichiro; and Yoshii, Tadashi, to Nippon Unicar Company Ltd. Flame retardant additives based on alumina trihydrate and ethylene polymer compositions, containing same, having improved flame retardant properties, 4,430,470, Cl. 524-269.000.
- Taniguchi, Yoshio: See—
Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.
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- Tape Research, Inc.: See—
Manktelow, Peter, 4,430,592, Cl. 310-93.000.
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- Taragna, Luigi, to American Flange & Manufacturing Co. Inc. Tear-off cap for closing bottles, 4,429,801, Cl. 215-254.000.
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- Taylor, Gerald E.: See—
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- Taylor Box Co.: See—
Shedd, David E., 4,429,826, Cl. 229-23.0BT.
- Taylor, Donald F., to Sedco, Inc. Pressure responsive actuator for use with an automatic dump valve, 4,429,622, Cl. 92-93.000.
- Taylor, Elizabeth C. Method of mitering mold and the like, 4,429,601, Cl. 83-13.000.
- Taylor, Ottilia Z.; and Lazar, Janos J., to Injection Mold Partners, Ltd. Ball whirling toy and method of exercise using said toy, 4,429,487, Cl. 46-43.000.
- Taylor, William E.: See—
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- Tayo Boseki Kabushiki Kaisha: See—
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- Technical and Safety Consultants, Inc.: See—
Houck, Timothy B., 4,429,763, Cl. 182-2.000.
- Technicraft, Inc.: See—
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- Tedder, Daniel W., to Georgia Tech Research Institute. Fractional distillation of C₂/C₃ hydrocarbons at optimum pressures, 4,430,102, Cl. 62-24.000.
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- Tektronix, Inc.: See—
Baur, Bruce K.; and Ollis, John R., 4,430,641, Cl. 340-347.0DA.
- Teletronics Pty. Ltd.: See—
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Kuhlmann, Joachim, 4,430,617, Cl. 328-61.000.
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- Terada, Katumi, to Olympus Optical Company Ltd. Photographing data indicator for a single lens reflex camera, 4,429,979, Cl. 354-289.100.
- Teramoto, Hirokazu, to Uryu Seisaku, Ltd. Clutch type torque control device for air driver, 4,429,775, Cl. 192-0.096.
- Termolar S/A: See—
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- Terry, Clifford M.: See—
Mocilac, Joseph P.; Terry, Clifford M.; and Mesaros, John G., 4,429,960, Cl. 351-212.000.
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- Tetra Pak Developpement SA: See—
Olofsson, Bo H. O., 4,430,543, Cl. 219-10.790.
- Tetra Pak International AB: See—
Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, 4,430,140, Cl. 156-356.000.
- Texaco Development Corp.: See—
Hunter, Walter D., 4,430,481, Cl. 525-328.400.
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Castagnos, Leonce F., Jr.; and Pratt, Roy E., 4,430,201, Cl. 208-164.000.
- Jenkins, Robert H., Jr.; and Sweeney, William M., 4,430,093, Cl. 44-70.000.
- Texas Instruments Incorporated: See—
Hamilton, Stephen P.; Hunter, Arthur C.; and Lies, Kenneth A., 4,430,724, Cl. 364-900.000.
- Levine, Jules D.; McKee, William R.; and Carson, Kent R., 4,430,150, Cl. 156-616.00A.
- Scalf, Gerald W., 4,430,540, Cl. 219-10.55B.
- Someshwar, Ashok H.; Lies, Kenneth A.; and Teza, Jeffrey R., 4,430,584, Cl. 307-465.000.
- Texize, Division of MortonThiokol: See—
Franks, T. Chandler, 4,430,236, Cl. 252-95.000.
- Teza, Jeffrey R.: See—
Someshwar, Ashok H.; Lies, Kenneth A.; and Teza, Jeffrey R., 4,430,584, Cl. 307-465.000.
- Thaler, Arnold: See—
Friedson, Belvin F.; Thaler, Arnold; and Saud, Ivan, 4,429,687, Cl. 128-24.200.
- Thees, Richard; and Wilden, Rolf, to Honeywell B.V. Blood pressure measuring device, 4,429,700, Cl. 128-681.000.
- Theisen, Peter J.: See—
Forsell, Kenneth A.; Grass, William E.; Theisen, Peter J.; and Fajner, Michael J., 4,430,631, Cl. 335-16.000.
- Thill, Gary A.; and Strand, Jerome E., to Minnesota Mining and Manufacturing Company. Fluid dispensing device, 4,430,079, Cl. 604-154.000.
- Thimon, Jacques, to S.A. Thimon. Device for shaping a film of heat-retractable plastics material, 4,429,510, Cl. 53-167.000.
- Thiokol Corporation: See—
Byrd, James D.; and Hightower, James O., 4,429,634, Cl. 102-290.000.
- MacMillan John H.; Bertozzi, Eugene R.; and Streeter, Bruce E., 4,430,489, Cl. 528-45.000.
- Tholema, Edzard: See—
Casper, Clemens; Grenner, Dieter; Klette, Gerd-Rudiger; and Tholema, Edzard, 4,430,156, Cl. 159-47.100.
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Piasecki, Raymond F., 4,429,939, Cl. 339-97.00C.
- Thomas, Brian J., to Lucas Industries Limited. Method of producing a lead-acid battery utilizing vibrational energy, 4,429,442, Cl. 29-2.000.
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Tresser, David, 4,430,350, Cl. 426-101.000.
- Thomas, Lothar, to Deutsche Babcock Anlagen Aktiengesellschaft. Fluidized bed firing system, 4,429,644, Cl. 110-245.000.
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- Thompson, Roger A. Counter-rotating vortices generator for an aircraft wing, 4,429,843, Cl. 244-199.000.
- Thompson, William E. Ambient pressure lamp, 4,430,597, Cl. 313-113.000.
- Thompson, William L., to Babcock & Wilcox Company, The. Vortex shedding flowmeter circuit with analog and pulse output signal, 4,429,582, Cl. 73-861.220.
- Thomson CSF: See—
Berger, Jean Luc, 4,430,672, Cl. 358-213.000.
- Bert, Alain; and Kaminsky, Didier, 4,430,623, Cl. 330-286.000.
- Billard, Jean; Dubois, Jean-Claude; Hareng, Michel; Le Berre, Serge; and Perbet, Jean-Noel, 4,430,650, Cl. 340-784.000.
- Nuyen, Trong L.; and de Cremoux, Baudouin, 4,430,740, Cl. 372-45.000.
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Pylowski, Louis J.; and Thorne, Edward J., 4,430,208, Cl. 208-262.000.
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- Thuse, Bernd: See—
Steinfelder, Karl; Heisig, Ullrich; Schiller, Siegfried; Mehr, Dietrich; Thuse, Bernd; and Hielscher, Klaus, 4,430,687, Cl. 361-293.000.
- Thyssen Industrie AG Henschel: See—
Grosser, Heinrich, 4,429,616, Cl. 89-36.00K.

- TI Russell Hobbs Limited: See—
Inskip, Michael; and Warren, Alan, 4,430,556, Cl. 219-328.000.
- Tibbetts, George C.; and Sawyer, Joseph A., to Tibbetts Industries, Inc. Transducer shielding enclosure, 4,430,520, Cl. 174-35.00R.
- Tibbetts Industries, Inc.: See—
Tibbetts, George C.; and Sawyer, Joseph A., 4,430,520, Cl. 174-35.00R.
- Tice, Bernard O.; and Bailey, Gene E., to Ditcher Saw Company. Portable ditcher and excavating elements therefor, 4,429,477, Cl. 37-80.00R.
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- Tien, Paul C., to International Business Machines Corporation. FET Memory with refresh, 4,430,730, Cl. 365-149.000.
- Tighe, Brian J.; and Gee, Howard J., to Kelvin Lenses Limited. Hydrogel-forming polymeric materials, 4,430,458, Cl. 523-108.000.
- Tilgner, Peter J., to Upjohn Company, The. Reaction injection molding of nylon, 4,430,287, Cl. 264-40.600.
- Timmermans, Hans A., to Cook, Inc. Hemostasis sheath, 4,430,081, Cl. 604-256.000.
- Timmons, Fred A. Pipe coupler, 4,429,907, Cl. 285-373.000.
- Tinder, David V., to Essex Group, Inc. Injection timing transducer, 4,429,570, Cl. 73-119.00A.
- Tobita, Yuichi: See—
Yanagisawa, Syozo; and Tobita, Yuichi, 4,430,099, Cl. 55-316.000.
- Tocco, Charles T. Slip on compensator for revolvers, 4,429,614, Cl. 89-14.00C.
- Toda, Kazuo: See—
Ihara, Keisuke; Toda, Kazuo; and Hoshino, Shoji, 4,429,626, Cl. 99-510.000.
- Togashi, Seigo; and Tsuzuki, Akira, to Citizen Watch Company Limited. Combination matrix array display and memory system, 4,430,648, Cl. 340-718.000.
- Tokai Electric Wire Company Limited: See—
Inoue, Nori, 4,429,943, Cl. 339-198.00R.
- Tokai Kogyo Mishin Kabushiki Kaisha: See—
Tajima, Ikuo, 4,429,651, Cl. 112-273.000.
- Tokico Ltd.: See—
Oshima, Harumi; and Uno, Tukas, 4,429,769, Cl. 188-73.310.
- Toko Kabushiki Kaisha: See—
Nakasone, Hiroyuki; and Sakamoto, Takayasu, 4,430,595, Cl. 310-339.000.
- Tokuda, Ryuji; Ogawa, Masahiko; Tsunekawa, Tokuchi; and Tamura, Shuichi, to Canon Kabushiki Kaisha. Distance measuring system, 4,429,967, Cl. 354-403.000.
- Tokunaga, Hiroshi: See—
Tarumi, Noriyoshi; Matsunawa, Masahiko; and Tokunaga, Hiroshi, 4,430,661, Cl. 346-153.100.
- Tokyo Electric Co., Ltd.: See—
Ihara, Keisuke; Toda, Kazuo; and Hoshino, Shoji, 4,429,626, Cl. 99-510.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Shizume, Kenichi, 4,429,662, Cl. 122-32.000.
- Iked, Yoshio, 4,429,817, Cl. 222-652.000.
- Koizumi, Hideo; Ishihara, Hideo; Matsumoto, Tatsuhiko; and Kawakita, Katsuhiko, 4,430,296, Cl. 420-429.000.
- Shimada, Hirofumi; and Totsuka, Hisao, 4,430,292, Cl. 376-301.000.
- Suzuki, Yukio; and Kobayashi, Syozo, 4,430,538, Cl. 219-10.55F.
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- Taguchi, Shinichi; Nagao, Nobuya; and Ogihara, Yutaka, 4,430,674, Cl. 358-317.000.
- Takigawa, Tadahi; and Sasaki, Isao, 4,430,570, Cl. 250-423.00R.
- Tomari, Seiji: See—
Tamura, Yasuyuki; Kiuchi, Masashi; Takahashi, Tohru; Mitsuhashi, Yasuo; and Tomari, Seiji, 4,430,411, Cl. 430-122.000.
- Tomori, Yasumasa: See—
Kawasaki, Masahiro; Urano, Fumio; and Tomori, Yasumasa, 4,429,973, Cl. 354-455.000.
- Tomoyori, Makoto: See—
Tsushima, Noboru; Tomoyori, Makoto; and Harumatsu, Masatoshi, 4,429,469, Cl. 33-361.000.
- Toothill, Richard B.; Megna, Ignazio S.; and Chaudhuri, Ajit K., to American Cyanamid Company. Elastomers derived from thiodiethanol having reduced odor, 4,430,471, Cl. 524-356.000.
- Toppan Printing Co., Ltd.: See—
Noguchi, Yoshiyasu; Yokokoji, Shoji; Saito, Shozo; and Hasegawa, Kiketsu, 4,429,457, Cl. 29-840.000.
- Toray Industries, Inc.: See—
Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, 4,429,523, Cl. 57-328.000.
- Torggler, Norbert: See—
Franz, Dietmar; and Torggler, Norbert, 4,430,525, Cl. 178-3.000.
- Toth, Tibor E., to Union Carbide Corporation. Semi-automatic control and method for MIG welding, 4,430,551, Cl. 219-132.000.
- Totsuka, Hisao: See—
Shimada, Hirofumi; and Totsuka, Hisao, 4,430,292, Cl. 376-301.000.
- Toy, Madeline S.; and Stringham, Roger S., to Science Applications, Inc. Process for imparting flame retardancy to fabrics, 4,430,089, Cl. 8-115.500.
- Toyoko Kohan Co., Ltd.: See—
Watanabe, Tadao; Ohori, Mitsuo; Ohta, Akio; and Kondo, Yoshikazu, 4,430,386, Cl. 428-555.000.
- Toy Seikan Kaisha, Ltd.: See—
Ito, Kazuo, 4,429,834, Cl. 239-327.000.
- Toyoda Gosei Co., Ltd.: See—
Ezaki, Sazo, 4,430,374, Cl. 428-135.000.
- Toyooka, Takashi; Aoki, Hirokazu; Sugie, Mamoru; and Yoshizawa, Shigeru, to Hitachi, Ltd. Series resonant drive circuit for magnetic bubble memory, 4,430,729, Cl. 365-6.000.
- Toyoshima, Yukichi: See—
Hayakawa, Eizi; Kojima, Akio; Arai, Yoshi; Sakuma, Masatoshi; and Toyoshima, Yukichi, 4,430,379, Cl. 428-216.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Matsuoka, Chikara; Sawada, Kouzi; and Sunayama, Takayoshi, 4,430,016, Cl. 403-40.000.
- Murata, Yoichi; Kishishita, Ryozi; and Nakata, Tadao, 4,429,467, Cl. 33-203.000.
- Utsumi, Hiroo; Sakakibara, Yukio; Ito, Teruyoshi; Iwata, Toshiharu; Ohta, Jun; Kazi, Kiyokane; Hori, Osamu; and Banno, Mitsuyuki, 4,429,565, Cl. 73-35.000.
- Tracey, Victor A., to Inco Europe Limited. Process for producing porous nickel bodies, 4,430,294, Cl. 419-2.000.
- Tramposch, Kenneth M.: See—
Blau, Monte; Kung, Hank F.; and Tramposch, Kenneth M., 4,430,319, Cl. 424-1.100.
- Transequip Limited: See—
Elston, Ronald W., 4,429,730, Cl. 160-368.00R.
- Tremblay, Meude, to Canada, Her Majesty the Queen in right of. Polyurethane binders, 4,430,131, Cl. 149-19.400.
- Tresser, David, to Thomas J. Lipton, Inc. Composite ice confections and processes for preparing them, 4,430,350, Cl. 426-101.000.
- Trey, Karl: See—
Bork, Klaus; Humbs, Rolf; and Trey, Karl, 4,430,594, Cl. 310-328.000.
- Trico Products Corporation: See—
Graczyk, Bronislaw S., 4,429,431, Cl. 15-250.320.
- Triumph-Adler A.G. fur Burund Informationstechnik: See—
Fischer, Dieter, 4,430,564, Cl. 250-211.00R.
- Troutman, Mark D.: See—
Garland, Barbara R.; and Troutman, Mark D., 4,430,368, Cl. 427-385.500.
- Trummlitz, Gunter; Seeger, Ernst; and Engel, Wolfhard, to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung. Condensed isothiazolo-3 (2H)-one-1,1-dioxides, 4,430,355, Cl. 426-548.000.
- Truth Incorporated: See—
Anderson, Donald L., 4,429,910, Cl. 292-199.000.
- TRW Inc.: See—
Struch, Timothy C., 4,429,708, Cl. 137-117.000.
- Tsai, Kuo L., to Cathay Pen Corporation, a part interest. Ball point pen writing instrument, 4,430,014, Cl. 401-216.000.
- Tsuchiya, Toshio; Morizumi, Syuichi; Takeda, Hisashi; and Arai, Akinori, to Lonseal Corporation. Process for preparing open-cell structure of vinyl chloride resin, 4,430,136, Cl. 156-246.000.
- Tsuda, Hideaki: See—
Kurosawa, Yukio; Wada, Akira; Iwashita, Kiyoji; and Tsuda, Hideaki, 4,430,536, Cl. 200-144.00B.
- Tsuji, Hidekazu: See—
Yoshida, Osami; Tsuji, Hidekazu; and Nomura, Yoshitada, 4,430,568, Cl. 250-358.100.
- Tsuji, Yasuhiro: See—
Watanabe, Mitsuo; Kimura, Shigeyuki; Konishi, Hideki; Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,429,583, Cl. 73-864.120.
- Tsukada, Toshihisa: See—
Shimomoto, Yasuhiro; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, 4,430,185, Cl. 204-192.00P.
- Tsukada, Tsutomu, to Anelva Corporation. Method of monitoring status of a silicon layer by detecting, emission spectra variable during etching, 4,430,151, Cl. 156-626.000.
- Tsukamoto, Goro: See—
Iemura, Ryuichi; Kawashima, Tsuneo; Fukuda, Toshikazu; Ito, Keizo; Nose, Takashi; and Tsukamoto, Goro, 4,430,343, Cl. 424-250.000.
- Tsumura, Yoshishige, to Mitsui Aluminium Co., Ltd.; and Tsumura, Yoshishige. Method for refinement of impure aluminum, 4,430,174, Cl. 204-67.000.
- Tsunekawa, Tokuchi: See—
Tokuda, Ryuji; Ogawa, Masahiko; Tsunekawa, Tokuchi; and Tamura, Shuichi, 4,429,967, Cl. 354-403.000.
- Tsushima, Noboru; Tomoyori, Makoto; and Harumatsu, Masatoshi, to Alps Electric Co., Ltd. Direction detection apparatus, 4,429,469, Cl. 33-361.000.
- Tsushima, Shuichi, to Ricoh Co., Ltd. Dichromatic electrophotography using two developer compositions applied sequentially, 4,430,402, Cl. 430-45.000.
- Tsutsui, Ken: See—
Nakano, Toshio; Taniguchi, Yoshio; Tsutsui, Ken; Sasano, Akira; Kaneko, Tadeo; Izumi, Akiya; and Hashimoto, Michiaki, 4,430,400, Cl. 430-7.000.
- Tsuya, Akira: See—
Shigematsu, Akiyo; Tsuya, Akira; Aihara, Michiaki; Suzuki, Akiko; and Matsuda, Michiko, 4,430,320, Cl. 424-1.100.
- Tsuzuki, Akira: See—
Togashi, Seigo; and Tsuzuki, Akira, 4,430,648, Cl. 340-718.000.
- Tucker, Howard F. Reversible wrench, 4,429,598, Cl. 81-59.100.
- Tufts, Timothy A.: See—
Culbertson, Billy M.; and Tufts, Timothy A., 4,430,491, Cl. 528-153.000.
- Tuhro, Richard H.; and Wiggins, Douglas G., to Xerox Corporation. Image thresholding system, 4,430,748, Cl. 382-50.000.

- Turk, Gunter: See—
Kreber, Alfons; Kuhner, Gerhard; Rothbuhr, Lothar; Turk, Gunter; and Wolff, Siegfried, 4,430,280, Cl. 264-117.000.
- Turner, Andrew J., to Perkin-Elmer Limited. Concentration in time of a gas component entrained in a carrier gas. 4,429,736, Cl. 165-61.000.
- Tuuhia, Rolf, to Rauma-Repol Oy. Screen. 4,430,210, Cl. 209-23.400.
- Twin-Cee Limited: See—
Schwarzli, Joseph W., 4,429,806, Cl. 221-20.000.
- Tyszkiewicz, Theodore J.: See—
Boden, Richard M.; and Tyszkiewicz, Theodore J., 4,430,233, Cl. 252-8.600.
- Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.
- Uchidoi, Tadanori: See—
Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, 4,429,972, Cl. 354-448.000.
- Uchiyama, Yoshihiro: See—
Sato, Isao; Ishibashi, Yohji; Minakawa, Yoshimitsu; Ohmori, Takashi; Tamura, Zensuke; Uchiyama, Yoshihiro; and Ohshima, Ryoichiro, 4,429,538, Cl. 60-748.000.
- Ueda, Noriyoshi: See—
Yoshimura, Shigeru; Ichikawa, Kiyomichi; and Ueda, Noriyoshi, 4,429,989, Cl. 355-76.000.
- Ueno, Takanori: See—
Namba, Keisuke; Tanaka, Masaaki; Ueno, Takanori; and Tabata, Norikazu, 4,430,306, Cl. 422-292.000.
- Uke, Alan K.: See—
LeBlanc, James S.; and Uke, Alan K., 4,429,868, Cl. 272-93.000.
- Ulanet, George D. Engine protection systems. 4,429,670, Cl. 123-198.000.
- UMC Industries, Inc.: See—
Heller, Werner H., 4,429,594, Cl. 74-788.000.
- Umehara, Yozaburo. Tape guide means for recording and/or reproducing apparatus and method of manufacturing the same. 4,429,823, Cl. 226-196.000.
- Umezawa, Hamao; Takeuchi, Tomio; Kondo, Shinichi; Iinuma, Hironobu; Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, to Bristol-Myers Company. Novel carcinostatic substance and process for synthesis thereof. 4,430,346, Cl. 424-311.000.
- Ungar, Israel S.: See—
Scher, Herbert I.; and Ungar, Israel S., 4,430,375, Cl. 428-148.000.
- Unger, Lawrence C.: See—
Kooy, Wayne J.; Krenz, Horst M.; and Unger, Lawrence C., 4,430,012, Cl. 400-616.100.
- Union Carbide Corporation: See—
Brode, George L.; Chow, Sui-Wu; and Hale, Warren F., 4,430,473, Cl. 524-492.000.
- Chu, Nan S.; and Marlin, Lawrence, 4,430,235, Cl. 252-49.600.
- Kaplan, Barbara W., 4,430,341, Cl. 424-250.000.
- Kun, Leslie C., 4,430,011, Cl. 384-99.000.
- Toth, Tibor E., 4,430,551, Cl. 219-132.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the See—
Painter, Alfred E., 4,430,132, Cl. 149-109.600.
- United States Gypsum Company: See—
Lat, Geronimo E., 4,430,367, Cl. 427-388.400.
- United States of America
Army: See—
Morris, Philip E., 4,429,615, Cl. 89-33.0BB.
- Energy: See—
Boland, Thomas J., 4,430,611, Cl. 324-77.00C.
- Chi, John W. H., 4,430,291, Cl. 376-146.000.
- House, Palmer A., 4,430,042, Cl. 415-1.000.
- Hull, John R., 4,429,683, Cl. 126-415.000.
- Jablonski, Henry; and Roughgarden, Jeffrey D., 4,429,847, Cl. 248-74.00R.
- Malinchak, Raymond M., 4,429,740, Cl. 166-53.000.
- Manning, Frank W., 4,430,569, Cl. 250-377.000.
- Pope, James M.; and Lahoda, Edward J., 4,430,257, Cl. 252-629.000.
- Schuller, Ivan K.; and Falco, Charles M., 4,430,183, Cl. 204-192.00C.
- Sheffield, George V.; and Furth, Harold P., 4,430,600, Cl. 315-111.710.
- Spurrier, Francis R.; DeZubay, Egon A.; Murray, Alexander P.; and Vidt, Edward J., 4,430,304, Cl. 422-204.000.
- Way, Stewart; and Lempert, Joseph, 4,430,588, Cl. 310-11.000.
- Young, Ainslie T.; Marsters, Robert G.; and Moreno, Dawn K., 4,430,451, Cl. 521-64.000.
- Health and Human Services: See—
Hamper, Berge; Zweig, Martin; and Rabin, Harvey, 4,430,437, Cl. 436-548.000.
- Ito, Yoichiro, 4,430,216, Cl. 210-198.200.
- Langone, John J., 4,430,318, Cl. 424-1.100.
- National Aeronautics and Space Administration: See—
Bill, Robert C.; and Wisander, Donald W., 4,430,360, Cl. 427-34.000.
- Salomon, Phil M.; and Smilowitz, Kalman, 4,430,673, Cl. 358-213.000.
- Schultz, Donald F., 4,429,537, Cl. 60-730.000.
- Navy: See—
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- Page, Robert E.; and Brackett, Raymond B., 4,430,704, Cl. 364-200.000.
- Schack, Carl J., 4,430,514, Cl. 564-496.000.
- Stern, Kurt H., 4,430,170, Cl. 204-39.000.
- U.S. Philips Corporation: See—
Meignant, Didier, 4,429,452, Cl. 29-571.000.
- Segarra, Gerard; and Phulpin, Francois J., 4,430,699, Cl. 364-200.000.
- van de Bult, Oelke, 4,430,679, Cl. 360-106.000.
- Van Kessel, Theodorus J.; Dijkmans, Eise C.; and Van Uden, Albertus J. P. M., 4,430,609, Cl. 323-350.000.
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Green, David T., 4,429,695, Cl. 128-305.000.
- United Technologies Corporation: See—
White, Richard T.; and Kudlacik, Louis, 4,429,923, Cl. 308-184.00R.
- University of California, The Regents of the: See—
Hanson, Donald N.; and Lynn, Scott, 4,430,227, Cl. 210-642.000.
- University of Pittsburgh: See—
Meno, Frank, 4,429,607, Cl. 84-1.180.
- University of Southern California: See—
Masri, Sami F., 4,429,496, Cl. 52-1.000.
- University Patents, Inc.: See—
Hruby, Victor J.; and Bregman, Marvin D., 4,430,326, Cl. 424-177.000.
- Uniweb, Inc.: See—
Weber, Karl; Schlinger, Michael; and Beedle, Richard, 4,429,850, Cl. 248-250.000.
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Oshima, Harumi; and Uno, Tukasa, 4,429,769, Cl. 188-73.310.
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Homeier, Edwin H., 4,430,513, Cl. 564-469.000.
- Imai, Tamotsu; and Hung, Chi-Wen, 4,430,517, Cl. 585-660.000.
- Krause, Bogdan J., 4,430,302, Cl. 422-144.000.
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- Upjohn Company, The: See—
Beyer, William F.; Dankert, Harry S.; and English, James C., 4,429,584, Cl. 73-864.210.
- Cho, Moo J., 4,430,340, Cl. 424-285.000.
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Kawasaki, Masahiro; Urano, Fumio; and Tomori, Yasumasa, 4,429,973, Cl. 354-455.000.
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- Urness, Edward V.: See—
Schiebe, Lowell H.; Russo, Bruce E.; Urness, Edward V.; and Hohn, William C., 4,430,702, Cl. 364-200.000.
- Uryu Seisaku, Ltd.: See—
Teramoto, Hirokazu, 4,429,775, Cl. 192-0.096.
- USS Engineers and Consultants, Inc.: See—
Thrower, Anthony, 4,429,816, Cl. 222-603.000.
- Usui, Tsuneaki: See—
Goto, Hiraku; Usui, Tsuneaki; and Kinoshita, Nobuyasu, 4,430,416, Cl. 430-263.000.
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Kornerup, Klaus; and Christensen, Per B., 4,429,494, Cl. 49-386.000.
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Mularie, William M., 4,430,184, Cl. 204-192.00R.
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John, Gunter; Rainey, James H.; and Valembos, Pierre V., 4,429,678, Cl. 125-39.000.
- Valentine, Gordon A., to Stanley Aviation Corporation. Dual opposed seal ring coupling. 4,429,905, Cl. 285-93.000.
- Valmet Oy: See—
Palovaara, Jaakko, 4,429,819, Cl. 226-95.000.
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- VandenHoek, Harold L.; Speet, Larry A.; and Mohr, Robert G., to Steelcase Inc. Panel wiring system. 4,429,934, Cl. 339-22.00R.
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Tersteegen, Bernd; and Van Endert, Gunter, 4,429,852, Cl. 251-9.000.
- Van Gelder, Robert V.: See—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,430,711, Cl. 364-200.000.
- Van Kessel, Theodorus J.; Dijkmans, Eise C.; and Van Uden, Albertus J. P. M., to U.S. Philips Corporation. Signal transfer device having a transfer characteristic which is adjustable in steps. 4,430,609, Cl. 323-350.000.
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Sebag, Henri; and Vanlerberghe, Guy, 4,430,250, Cl. 252-351.000.
- Van Pelt, Wilhelmus H. J. M.; and Roodenrys, Jacobus P., to Grasso's Koninklijke Machine Fabrieken, N.V. Multi-stage counter-current concentrating system and method and separator. 4,430,104, Cl. 62-123.000.
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- Varian Associates, Inc.: See—
Abbott, Seth R., 4,430,496, Cl. 536-27.000.
- Varta Batterie Aktiengesellschaft: See—
Bechtold, Dieter, 4,430,394, Cl. 429-147.000.
- Vatterott, Oskar F., to MCIBS, Inc. Actuator switch assembly. 4,430,533, Cl. 200-61.410.
- VEB Elektronik Gera: See—
Steinfelder, Karl; Heisig, Ullrich; Schiller, Siegfried; Mehr, Dietrich; Thuse, Bernd; and Hielscher, Klaus, 4,430,687, Cl. 361-293.000.
- Vecera, Milos: See—
Ferkil, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.
- Venkatesan, Srinivasan: See—
Ovshinsky, Stanford R.; Sapru, Krishna; and Venkatesan, Srinivasan, 4,430,391, Cl. 429-40.000.
- Vibrac Corporation: See—
Searle, Robert F., 4,430,566, Cl. 250-231.0SE.
- Viccaro, John P., to Lever Brothers Company. Ammonium fluorometallate containing compositions. 4,430,324, Cl. 424-52.000.
- Vickers, Anthony G., to UOP Inc. Fluid catalyst regeneration apparatus. 4,430,300, Cl. 422-109.000.
- Victor Company of Japan, Ltd.: See—
Ishigaki, Yukinobu, 4,430,754, Cl. 455-72.000.
- Victor Equipment Company: See—
Grant, Gerald B.; and Brune, Robert A., Jr., 4,429,585, Cl. 74-191.000.
- Vidt, Edward J.: See—
Spurrier, Francis R.; DeZubay, Egon A.; Murray, Alexander P.; and Vidt, Edward J., 4,430,304, Cl. 422-204.000.
- Vinals, Joaquin F.: See—
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.
- Visidyne, Inc.: See—
Zehnpfennig, Theodore F.; and Reidy, William P., 4,429,953, Cl. 350-293.000.
- Vits, Hilmar, to Vits-Maschinenbau GmbH. Method of crosscutting a web and stacking the cut sheets, and impact-type crosscutter for webs with sheet stacker. 4,429,602, Cl. 83-24.000.
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- Voest-Alpine Aktiengesellschaft: See—
Reif, Werner; and Schuocker, Dieter, 4,430,738, Cl. 372-38.000.
- Vogel, Walter: See—
Emundts, Horst; Hoyer, Manfred; and Vogel, Walter, 4,429,588, Cl. 74-484.00R.
- Volejnik, Wilhelm: See—
Betzl, Hermann; Magerl, Johann; and Volejnik, Wilhelm, 4,430,629, Cl. 333-165.000.
- Volk, Georg: See—
Frank, Erich; Scheuermann, Walter; and Volk, Georg, 4,429,569, Cl. 73-81.000.
- Vollenberg, Werner P.; and Boehlke, Horst R. E., to Gruenthal GmbH. Process for the preparation of 2-oxa-bicyclo [3.3.0] octane derivatives and products produced thereby. 4,430,497, Cl. 542-429.000.
- Vollmer, Klaus: See—
Beckers, Hans; and Vollmer, Klaus, 4,429,513, Cl. 53-547.000.
- vom Hofe, Dieter; and Meyer, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Process for the manufacture of a packaging container and assembly items. 4,430,068, Cl. 493-100.000.
- von Platen, Baltzar C., to F. D. International, Ltd. Reaction vessel. 4,430,051, Cl. 425-77.000.
- von Recklinghausen, Daniel R., to Electro Audio Dynamics, Inc. Apparatus for measurement of acoustic volume. 4,429,702, Cl. 128-746.000.
- Vought Corporation: See—
Leach, James W., 4,429,539, Cl. 62-6.000.
- Vowell, Jeff D.: See—
Moore, Brian B.; Rodell, John T.; Sutton, Arthur J.; and Vowell, Jeff D., 4,430,727, Cl. 364-900.000.
- Vuceta, Ivan N.: See—
Grabovac, Bosko; and Vuceta, Ivan N., 4,429,597, Cl. 81-57.390.
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Ferkil, Frantisek; Cap, Antonin; Vecera, Milos; Skala, Josef; Kopriva, Vaclav; Blasko, Michal; Pavek, Karel; Chrtek, Milan; and Blasko, Jan, 4,429,522, Cl. 57-301.000.
- W. R. Grace & Co., Cryovac Div.: See—
Hampel, Gerald; and Mugnal, Giorgio, 4,429,810, Cl. 222-107.000.
- W. Schlafhorst & Co.: See—
Kupper, Wilhelm, 4,429,842, Cl. 242-149.000.
- Wada, Akira: See—
Kurosawa, Yukio; Wada, Akira; Iwashita, Kiyoji; and Tsuda, Hideaki, 4,430,536, Cl. 200-144.00B.
- Wada, Shoji. Method of manufacturing a cut tube to be used for syringe needles. 4,430,358, Cl. 427-2.000.
- Wada, Toshiaki; Furukawa, Mitsuhiro; Miyahara, Michito; Shiroyama, Masaharu; Misumi, Kiyohito; and Kitahira, Takashi, to Sumitomo Special Metal Ltd.; and Nippon Tungsten Co., Ltd. Magnetic head slider material. 4,430,440, Cl. 501-105.000.
- Wagner, Louis E.; Rakoczynski, Randolph W.; and Flannery, Harold F., to Ecological Professional Industries, Inc. Secure chemical waste landfill. 4,430,021, Cl. 405-129.000.
- Wagner, Theodore O.: See—
Walker, Donald C.; and Wagner, Theodore O., 4,429,725, Cl. 141-59.000.
- Waigand, Helmut, to Bosch-Siemens Hausgerate GmbH. Device for the input of adjustment values in electronic switching systems. 4,430,578, Cl. 307-115.000.
- Wakabayashi, Kiyoshige: See—
Watanabe, Mitsuo; Kimura, Shigeyuki; Konishi, Hideki; Tsuji, Yasuhiro; and Wakabayashi, Kiyoshige, 4,429,583, Cl. 73-864.120.
- Wakabayashi, Masakuni: See—
Mori, Naomichi; Homma, Hiroyuki; Wakabayashi, Masakuni; and Yamaguchi, Masanobu, 4,430,545, Cl. 219-73.000.
- Wakefield, Anthony W. Self-immersing jet pump. 4,429,476, Cl. 37-62.000.
- Waldner, Nelson D. Ostomy collector-organizer device. 4,429,424, Cl. 4-79.000.
- Waldo, Paul D.: See—
Elliott, Jo A.; McInroy, John W.; and Waldo, Paul D., 4,430,725, Cl. 364-900.000.
- Walker, Clifford G. Common resonator passive laser accelerometer and gyro. 4,429,573, Cl. 73-510.000.
- Walker, Donald C.; and Wagner, Theodore O., to Standard Oil Company (Indiana). Dispensing nozzle for vacuum assist vapor recovery system. 4,429,725, Cl. 141-59.000.
- Walker, George L.: See—
LaVanture, Mark D.; and Walker, George L., 4,430,313, Cl. 423-321.00R.
- Walker, Richard E. Water shedding device. 4,430,222, Cl. 210-477.000.
- Walls, James F. Heat strip holder for skewer sticks. 4,429,435, Cl. 17-1.00S.
- Walter, Friedrich C., to Argus Verwaltungsgesellschaft mbH. Snap closure coupling for flowing-media ducts. 4,429,713, Cl. 137-614.030.
- Walter, Lothar: See—
Olschewski, Armin; Brandenstein, Manfred; Kunkel, Heinrich; Hetterich, Hermann; Horling, Peter; and Walter, Lothar, 4,429,926, Cl. 308-216.000.
- Walters, Samuel. Spectacle mounted hinged monocular or binocular vision aid. 4,429,959, Cl. 351-158.000.
- Wareham, Oliver N. Flow control device. 4,429,422, Cl. 4-192.000.
- Warren, Alan: See—
Inskip, Michael; and Warren, Alan, 4,430,556, Cl. 219-328.000.
- Warrender, David J. Pitch analyzer. 4,429,609, Cl. 84-454.000.
- Wassel-Nielsen, Horst-Dieter: See—
Sorbe, Gunter; Wassel-Nielsen, Horst-Dieter; and Kandler, Joachim, 4,430,246, Cl. 252-140.000.
- Watabe, Hiroomi: See—
Ando, Tadahiko; Shibata, Takehiko; and Watabe, Hiroomi, 4,430,432, Cl. 435-199.000.
- Watanabe, Kojiro, to Nippon Electric Co., Ltd. Fast start-up system for transversal equalizers. 4,430,743, Cl. 375-13.000.

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- Watanabe, Tadao; Ohori, Mitsuo; Ohta, Akio; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Composite metal sintered article and method of making same. 4,430,386, Cl. 428-555.000.
- Waugh, Edward F. Garment expander. 4,429,439, Cl. 24-573.000.
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- Weaver, Jon N.: See—
Eskandry, Ezra D.; and Weaver, Jon N., 4,430,645, Cl. 340-572.000.
- Webb, David E.; and Andrews, Lawrence F., to Johnson and Johnson. Orthodontic bracket assembly. 4,430,061, Cl. 433-9.000.
- Weber, Karl; Schlenger, Michael; and Beedle, Richard, to Uniweb, Inc. Display panel shelf bracket. 4,429,850, Cl. 248-250.000.
- Weber, Paul: See—
Zuch, Howard W.; and Weber, Paul, 4,429,591, Cl. 74-625.000.
- Weichlein, Bernard; Chatelain, Jean-Claude; and Gaiher, Denis, to Madec Mater. Safety device for gas-fired heating apparatus. 4,429,706, Cl. 137-66.000.
- Weigand, Benjamin F.; and Frech, John W., to Westinghouse Electric Corp. Digital-to-analog converter. 4,430,642, Cl. 340-347.0DA.
- Weigel, Horst: See—
Bethge, Horst; Drauz, Karlheinz; Kleemann, Axel; Martens, Jürgen; and Weigel, Horst, 4,430,509, Cl. 562-401.000.
- Weir, Donald H.; and Dahowski, Donald E., to Fox Pool Corporation. Swimming pool cover or dome bead construction. 4,429,425, Cl. 4-503.000.
- Weisbrod, Helmut, to ITT Industries, Inc. Friction lining carrier member having replaceable friction linings. 4,429,770, Cl. 188-73.320.
- Weisenberger, Richard J. Toroidal shaped closed chamber whistle. 4,429,656, Cl. 116-137.00R.
- Weiss, Hansjakob: See—
Gohlert, Christian; Kanngiesser, Peter; Weiss, Hansjakob; and Wilke, Werner, 4,430,593, Cl. 310-327.000.
- Weiss, Horst: See—
Ranke, Gerhard; and Weiss, Horst, 4,430,316, Cl. 423-573.00R.
- Werthessen, Nicholas H.: See—
Guild, Charles L.; Werthessen, Nicholas H.; and Aldrich, Carlton W., Jr., 4,430,024, Cl. 405-232.000.
- Wessels, John A. Electric vehicle with magnetic attraction to trackway. 4,429,488, Cl. 46-257.000.
- Westcan Electrical Manufacturing Inc.: See—
Ofield, L. Ronald; Purrits, Leonhard; and Patterson, Roy A., 4,430,521, Cl. 174-65.00R.
- Westdale, Virgil W.; and Hanrahan, James L., to AM International, Inc. Method of preparing a lithographic printing master. 4,430,403, Cl. 430-49.000.
- Westdale, Virgil W., to AM International, Inc. Heat fusible single component toner having a polyamide binder. 4,430,407, Cl. 430-106.600.
- Westdale, Virgil W.; and Hanrahan, James L., to AM International, Inc. Method of making a single component toner. 4,430,413, Cl. 430-137.000.
- Western Electric Company, Inc.: See—
Broyer, Alfred P.; and Dines, David R., 4,429,454, Cl. 29-747.000.
- Dillow, Harry M.; Sansone, Anthony E.; and Swartz, Raymond K., 4,430,385, Cl. 428-380.000.
- Western Plastics Corporation: See—
Olsson, Robert P., 4,430,052, Cl. 425-392.000.
- Westinghouse Electric Corp.: See—
Deis, Daniel W.; McNab, Ian R.; and Smith, Joseph L., Jr., 4,429,613, Cl. 89-8.000.
- Garland, Barbara R.; and Troutman, Mark D., 4,430,368, Cl. 427-385.500.
- Radford, Kenneth C.; and Pope, James M., 4,430,276, Cl. 264-0.500.
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- Weigand, Benjamin F.; and Frech, John W., 4,430,642, Cl. 340-347.0DA.
- Westra, Dan P., to Challenge Machinery Company, The. Stacking cart. 4,429,889, Cl. 280-79.10A.
- Westvaco Corporation: See—
Chapman, William A., Jr.; and Crowley, John J., 4,429,603, Cl. 83-37.000.
- Wetzel, Vernon F.: See—
Organ, George W.; and Wetzel, Vernon F., 4,429,653, Cl. 114-42.000.
- Wexco Corporation: See—
Otani, Tony U., 4,430,389, Cl. 428-627.000.
- Weydmann, Patrick: See—
Maucher, Paul; and Weydmann, Patrick, 4,429,776, Cl. 192-99.00A.
- Whalen, Patrick: See—
Boden, Richard M.; Tyszkiewicz, Theodore J.; Licciardello, Michael; Vock, Manfred H.; Vinals, Joaquin F.; Whalen, Patrick; and Hanna, Marie R., 4,430,354, Cl. 426-536.000.
- Wheeler, William J., to Eli Lilly and Company. 7-[2-(2-Aminooxazol-4-yl)-2-(oximino)acetamido]cephalosporin antibiotics. 4,430,499, Cl. 544-25.000.
- Whirlpool Corporation: See—
Lyman, John B., 4,429,430, Cl. 15-182.000.
- Whitaker, Randal O. Variable speed drive with no slippage between belt and sheaves. 4,430,067, Cl. 474-244.000.
- White, Richard T.; and Kudlacik, Louis, to United Technologies Corporation. Bearing support structure. 4,429,923, Cl. 308-184.00R.
- Wick, Alexander E.; and Frost, Jonathan R., to Synthelabo. Phenethanolamine derivatives for use against cerebrovascular disease. 4,430,334, Cl. 424-267.000.
- Widmer, Jurg: See—
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,430,469, Cl. 524-247.000.
- Wiebe, Leonard I.: See—
Flanagan, Richard J.; and Wiebe, Leonard I., 4,430,321, Cl. 424-1.100.
- Wiederaufbereitungsanlage Karlsruhe Betriebsgesellschaft mbH: See—
Evers, Heinz, 4,430,301, Cl. 422-119.000.
- Wiederhold, Robert A.: See—
Newkirk, James S.; and Wiederhold, Robert A., 4,430,406, Cl. 430-99.000.
- Wieser, James B.; and Patel, Suman H., to National Semiconductor Corporation. CMOS Polarity switch. 4,430,621, Cl. 330-9.000.
- Wiget, Fridolin; and Guerin, Yves, to ETA S.A. Fabriques d'Ebauches. Method of reducing the power consumption of the stepping motor of an electronic timepiece and an electronic timepiece employing the method. 4,430,007, Cl. 368-157.000.
- Wiggins, Douglas G.: See—
Tuhro, Richard H.; and Wiggins, Douglas G., 4,430,748, Cl. 382-50.000.
- Wiktor, Dominik M., to Automatic Switch Company. Electrically operated, mechanically held electrical switching device. 4,430,579, Cl. 307-134.000.
- Wilden, Rolf: See—
Thees, Richard; and Wilden, Rolf, 4,429,700, Cl. 128-681.000.
- Wilhelm, Donald F., to Helm Instrument Co., Inc. Tie rod tension sensor. 4,429,579, Cl. 73-768.000.
- Wilke, Werner: See—
Gohlert, Christian; Kanngiesser, Peter; Weiss, Hansjakob; and Wilke, Werner, 4,430,593, Cl. 310-327.000.
- Wilkinson, Richard L., to Discovision Associates. Method for producing a recording disc stamper. 4,430,401, Cl. 430-8.000.
- Williams, Charles J., to Perkin-Elmer Corporation. The Method for detecting physical anomalies of U.S. currency. 4,429,991, Cl. 356-73.000.
- Williams International Corporation: See—
Joy, John R., 4,429,534, Cl. 60-618.000.
- Williams, John S.: See—
Christian, John H.; Hartung, Michael H.; Nolte, Arthur H.; Reed, David G.; Rieck, Richard E.; Tayler, Gerald E.; and Williams, John S., 4,430,701, Cl. 364-200.000.
- Williams, Monte: See—
Ruppel, Anthony D.; Williams, Monte; and Willis, Larry, 4,429,791, Cl. 206-454.000.
- Williamson, Jimmie R., Jr., to Otis Engineering Corporation. Well tool. 4,429,747, Cl. 166-321.000.
- Williamson, Kirk E. Drill with polycrystalline diamond drill blanks for soft, medium-hard and hard formations. 4,429,755, Cl. 175-329.000.
- Willis, Larry: See—
Ruppel, Anthony D.; Williams, Monte; and Willis, Larry, 4,429,791, Cl. 206-454.000.
- Willson, Richard F.: See—
Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., 4,430,659, Cl. 346-135.100.
- Willus, Charles A.; Lewis, Kenneth D.; and Langer, Julian, to Dorr-Oliver Incorporated. Feed seal for bottom feed centrifuge. 4,430,071, Cl. 494-38.000.
- Wilson, David A.: See—
Frenier, Wayne W.; and Wilson, David A., 4,430,128, Cl. 134-3.000.
- Wilson, Norman H.: See—
Jones, Robert L.; and Wilson, Norman H., 4,430,345, Cl. 424-305.000.
- Wilson, Robert C. Log splitter. 4,429,727, Cl. 144-193.00C.
- Winslow, Randy, to Clopay Corporation. Window shade clutch assembly. 4,429,729, Cl. 160-315.000.
- Wisander, Donald W.: See—
Bill, Robert C.; and Wisander, Donald W., 4,430,360, Cl. 427-34.000.
- Wisconsin Alumni Research Foundation: See—
Zeikus, Joseph G.; and Krzycki, Joseph A., 4,430,429, Cl. 435-86.000.
- Wittmann, Erich: See—
Kolbin, Rolf; Keller, Wolfgang; and Wittmann, Erich, 4,429,443, Cl. 29-26.00A.
- Wojnarowski, Robert J.: See—
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,430,557, Cl. 219-401.000.
- Wolf, Alfons: See—
Honel, Hans; Michel, Walter; Piesch, Steffen; Schluter, Karin; and Wolf, Alfons, 4,430,494, Cl. 528-254.000.
- Wolf, Elmar: See—
Schnurbusch, Horst; Gras, Rainer; and Wolf, Elmar, 4,430,474, Cl. 524-590.000.
- Wolff, Natalie A., to Container Corporation of America. Cowboy hat. 4,429,420, Cl. 2-175.000.
- Wolff, Siegfried: See—
Kreher, Alfons; Kuhner, Gerhard; Rothbuhr, Lothar; Turk, Gunter; and Wolff, Siegfried, 4,430,280, Cl. 264-117.000.

- Wong, Stephen S.: See—
La Pierre, Rene B.; and Wong, Stephen S., 4,430,516, Cl. 585-533.000.
- Woodhull, Ivan D., Jr., to Karmazin Products Corporation. Heat exchanger construction. 4,429,738, Cl. 165-151.000.
- Woodlock, Michael Clate: See—
Smith, Robert P., Jr., 4,429,912, Cl. 292-263.000.
- Woodruff, William W.: See—
Kandell, Ronald J.; Merriam, Donald R.; Root, Bernard H.; and Woodruff, William W., 4,430,530, Cl. 179-175.20D.
- Woods, Jack L. Method of producing green coatings on aluminum and aluminum alloys. 4,430,169, Cl. 204-35.00N.
- Woodward, James R., to Rohr Industries, Inc. Delta-alpha bond/superplastic forming method of fabricating titanium structures and the structures resulting therefrom. 4,429,824, Cl. 228-157.000.
- Worley, William S., Jr.: See—
Cannavino, James A.; Heller, Andrew R.; Taradasky, Morris; and Worley, William S., Jr., 4,430,705, Cl. 364-200.000.
- Wright, Allen J., to Hewlett-Packard Company. Snap disc keyboard. 4,430,531, Cl. 200-5.00A.
- Wright, David B.: See—
Ford, James M.; and Wright, David B., 4,430,179, Cl. 204-128.000.
- Wright, George M.: See—
Blake, Larry W.; Harvel, Ervin R.; Mason, Duane R.; and Wright, George M., 4,429,693, Cl. 604-73.000.
- Wu, Shane-Mau. Toy dump truck. 4,429,888, Cl. 280-1.11R.
- Wu, Yulin, to Phillips Petroleum Company. Method for producing terephthalic acid. 4,430,511, Cl. 562-481.000.
- Wurtman, Richard J.: See—
Growdon, John H.; and Wurtman, Richard J., 4,430,330, Cl. 424-199.000.
- Wyman, John E., to Ferrofluidics Corporation. Ferrofluid composition and method of making and using same. 4,430,239, Cl. 252-62.510.
- Wyoming Mineral Corporation: See—
York, William R., 4,430,309, Cl. 423-10.000.
- Xerox Corporation: See—
Castro-Hahn, Victor, 4,429,866, Cl. 271-266.000.
- Tuhro, Richard H.; and Wiggins, Douglas G., 4,430,748, Cl. 382-50.000.
- Yadlowsky, Slawko, to General Foods Corporation. Low-grade coffee. 4,430,353, Cl. 426-388.000.
- Yamada, Osamu: See—
Murakami, Hiroya; Takasaki, Mitsuhiro; Yamada, Osamu; Kamada, Atsuya; and Hori, Katsuyoshi, 4,429,558, Cl. 72-17.000.
- Yamada, Takahiro; and Kuwabara, Tadashi, to Hitachi, Ltd. Method for reducing print distortion of ink drop writing apparatus. 4,430,656, Cl. 346-1.100.
- Yamagata, Seiichi: See—
Kajita, Koji; Nakayama, Takashi; and Yamagata, Seiichi, 4,429,523, Cl. 57-328.000.
- Yamagishi, Tatuo: See—
Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, 4,430,116, Cl. 75-34.000.
- Yamaguchi, Katsumi; and Okada, Hitoshi, to Clarion Co., Ltd. Reciprocating member control mechanism in tape player. 4,430,680, Cl. 360-137.000.
- Yamaguchi, Masanobu: See—
Mori, Naomichi; Homma, Hiroyuki; Wakabayashi, Masakuni; and Yamaguchi, Masanobu, 4,430,545, Cl. 219-73.000.
- Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. Relatively wide angle telephoto type lens system. 4,429,958, Cl. 350-455.000.
- Yamamichi, Masayoshi; Iura, Yukio; Aizawa, Hiroshi; Ito, Tadashi; Taguchi, Tetsuya; and Uchidoi, Tadanori, to Canon Kabushiki Kaisha. Single lens reflex camera having an electro-magnetic device. 4,429,972, Cl. 354-448.000.
- Yamamichi, Masayoshi: See—
Hosoe, Kazuya; Kinoshita, Takao; and Yamamichi, Masayoshi, 4,429,966, Cl. 354-406.000.
- Yamamoto, Hachizou: See—
Nakatani, Hiroshi; Ishida, Masahide; and Yamamoto, Hachizou, 4,430,713, Cl. 364-405.000.
- Yamamoto, Hideaki: See—
Shimomoto, Yasuharu; Tsukada, Toshihisa; Sasano, Akira; Tanaka, Yasuo; Yamamoto, Hideaki; and Takasaki, Yukio, 4,430,185, Cl. 204-192.00P.
- Yamamoto, Kimihiko: See—
Ishikawa, Hitoshi; Yamamoto, Kimihiko; and Sugiura, Yasuro, 4,429,650, Cl. 112-258.000.
- Yamamoto, Tomoya: See—
Saito, Hideomi; Yamamoto, Tomoya; Nomura, Masayuki; and Hachiya, Tomoyoshi, 4,430,500, Cl. 544-25.000.
- Yamamura, Yuichi; Ichiro, Azuma; and Kobayashi, Shigeru, to Takeda Chemical Industries, Ltd. Glucosamine derivatives. 4,430,265, Cl. 260-112.50R.
- Yamauchi, Hajime: See—
Chiba, Ko; Yamauchi, Hajime; Kawauchi, Yoneo; and Ikeda, Yukio, 4,429,885, Cl. 277-140.000.
- Yamawaki, Naokuni; and Horikoshi, Katsunori, to Asahi Kasei Kogyo Kabushiki Kaisha. Immune adsorbent and adsorbing device. 4,430,229, Cl. 210-692.000.
- Yamazaki, Masafumi: See—
Suzuki, Mikio; and Yamazaki, Masafumi, 4,430,274, Cl. 261-18.00B.
- Yamazaki, Shigeru; Hirao, Motoaki; Yamagishi, Tatuo; Nagai, Jun; Ooi, Hiroshi; and Shinozaki, Yoshinobu, to Kawasaki Jukogyo Kabushiki Kaisha; and Kawasaki Steel Corporation. Method and apparatus for heating or heating and reduction raw materials for a metallurgical furnace utilizing waste gases from the same furnace. 4,430,116, Cl. 75-34.000.
- Yamazaki, Yoshio: See—
Kondo, Shigeki; Yamazaki, Yoshio; Iketani, Tomofumi; Tanaka, Seiji; and Doi, Keiichi, 4,430,542, Cl. 219-10.770.
- Yan, Man F., to Bell Telephone Laboratories, Incorporated. Non-ohmic device using TiO₂. 4,430,255, Cl. 252-512.000.
- Yanagisawa, Syozo; and Tobita, Yuichi, to Hitachi, Ltd. Vaporized fuel adsorbing canister. 4,430,099, Cl. 55-316.000.
- Yanong, Procopio U. Sex aid device for males. 4,429,689, Cl. 128-79.000.
- Yazolino, Lauren F.: See—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,430,711, Cl. 364-200.000.
- Yokogawa Hokushin Electric Corporation: See—
Ikeda, Kyoichi; Ando, Motoyoshi; and Harada, Kinji, 4,429,564, Cl. 73-32.00A.
- Maeda, Masato, 4,430,192, Cl. 204-410.000.
- Yokohama Rubber Co., Ltd., The: See—
Aihara, Tohru, 4,430,143, Cl. 156-403.000.
- Yokokoji, Shoji: See—
Noguchi, Yoshiyasu; Yokokoji, Shoji; Saito, Shozo; and Hasegawa, Kiketsu, 4,429,457, Cl. 29-840.000.
- Yokota, Takashi, to Ricoh Company, Ltd. Recording system provided with a device for correcting deviation of recording member in endless belt form. 4,429,985, Cl. 355-3.0BE.
- Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Power amplifier. 4,430,625, Cl. 330-297.000.
- Yoneda, Masahiro; Hine, Shiro; and Koyama, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Cleaning device for a plasma etching system. 4,430,547, Cl. 219-121.0PD.
- York, William R., to Wyoming Mineral Corporation. Acid wash of second cycle solvent in the recovery of uranium from phosphate rock. 4,430,309, Cl. 423-10.000.
- Yoshida, Kenichi; Hiramoto, Junichi; and Takenaka, Shinya, to Sumitomo Electric Industries, Ltd. Non-grounding checking system. 4,430,610, Cl. 324-51.000.
- Yoshida Kogyo K. K.: See—
Nishiyama, Hissai; and Kanada, Takao, 4,429,441, Cl. 26-9.000.
- Takeshima, Kiyoshi; and Masuda, Yoshinori, 4,429,438, Cl. 24-401.000.
- Yoshida, Osami; Tsuji, Hidekazu; and Nomura, Yoshitada, to Mitsubishi Denki Kabushiki Kaisha. Container inspection system. 4,430,568, Cl. 250-358.100.
- Yoshii, Tadashi: See—
Taniguchi, Seiho; Sakuma, Yuichiro; and Yoshii, Tadashi, 4,430,470, Cl. 524-269.000.
- Yoshii, Takashi: See—
Okada, Toshio; Motoyama, Katsumi; and Yoshii, Takashi, 4,430,598, Cl. 313-497.000.
- Yoshii, Tsutomu: See—
Nakagawa, Nobuhiko; and Yoshii, Tsutomu, 4,430,529, Cl. 179-110.00A.
- Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,430,377, Cl. 428-213.000.
- Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,430,378, Cl. 428-213.000.
- Yoshimura, Shigeru; Ichikawa, Kiyomichi; and Ueda, Noriyoshi, to Canon Kabushiki Kaisha. Apparatus for pressing original. 4,429,989, Cl. 355-76.000.
- Yoshizawa, Junji: See—
Hidaka, Hiroyoshi; Matsumoto, Ikuo; Yoshizawa, Junji; and Kotani, Shigenori, 4,430,342, Cl. 424-250.000.
- Yoshizawa, Shigeru: See—
Toyooka, Takashi; Aoki, Hirokazu; Sugie, Mamoru; and Yoshizawa, Shigeru, 4,430,729, Cl. 365-6.000.
- Young, Ainslie T.; Masters, Robert G.; and Moreno, Dawn K., to United States of America, Energy. Low density, microcellular foams, preparation, and articles. 4,430,451, Cl. 521-64.000.
- Young, Walter M., to AMP Incorporated. Electron beam welded photovoltaic cell interconnections. 4,430,519, Cl. 136-244.000.
- Youngstown Steel Door Company, The: See—
Fritz, William E.; and Soddy, Thomas C., 4,429,921, Cl. 308-3.500.
- Yunan, Malak E., to Du Pont de Nemours, E. I., and Company. Delay detonator. 4,429,632, Cl. 102-202.130.
- Zahn, Irwin. Apparatus for inserting elements into a workpiece. 4,429,456, Cl. 29-798.000.
- Zahndradfabrik Friedrichshafen AG: See—
Ilg, Rudolf, 4,430,047, Cl. 417-273.000.
- Zaltsman, Efim, to Monarch Wine Co., Inc. Bottle with a one-piece corking means. 4,429,799, Cl. 215-31.000.
- Zaveri, Vikram: See—
Klueting, Bernd A.; and Zaveri, Vikram, 4,429,919, Cl. 297-379.000.
- Zboril, Vaclav G., to Du Pont Canada Inc. Deactivation of catalyst in solution process for polymerization of α -olefins. 4,430,488, Cl. 526-84.000.
- Zdanys, John, Jr.: See—
Hufford, James N.; and Zdanys, John, Jr., 4,430,634, Cl. 338-164.000.

- Zeeh, Bernd: See—
Rentzea, Costin; Zeeh, Bernd; and Pommer, Ernst-Heinrich, 4,430,336, Cl. 424-272.000.
- Zehnpfennig, Theodore F.; and Reidy, William P., to Visidyne, Inc. Curved glass reflector and method of making same. 4,429,953, Cl. 350-293.000.
- Zeikus, Joseph G.; and Krzycki, Joseph A., to Wisconsin Alumni Research Foundation. Production of vitamin B₁₂-activity substances. 4,430,429, Cl. 435-86.000.
- Zell, Timothy G. Surgical procedure. 4,429,685, Cl. 128-1.00R.
- Zellweger Uster AG: See—
Aemmer, Peter F., 4,430,720, Cl. 364-552.000.
- Zenith Radio Corporation: See—
Kooy, Wayne J.; Krenz, Horst M.; and Unger, Lawrence C., 4,430,012, Cl. 400-616.100.
- Zhukovsky, Sergei S.; Junovich, July M.; Pertovsky, Viktor N.; Kolesnikov, Vyacheslav S.; Renzhin, Igor P.; and Rivkin, Semen I. Cold setting sand for foundry moulds and cores. 4,430,441, Cl. 501-109.000.
- Ziegenfuss, Barry L., to SI Handling Systems, Inc. Vehicle turntable. 4,429,636, Cl. 104-36.000.
- Zimmermann, Wolfgang: See—
Pospich, Gunther; and Zimmermann, Wolfgang, 4,430,447, Cl. 521-53.000.
- Zinck, Eugen. Method of and device for loosening agriculturally used soil. 4,429,647, Cl. 111-6.000.
- Zingel, Siegfried: See—
Neumann, Rainer; Morgenstern, Karl; Lipper, Karl-August; Bruhne, Friedrich; Bockmann, Walter; Casper, Clemens; and Zingel, Siegfried, 4,430,181, Cl. 204-158.0HA.
- Zodrow, Rudolf, to Jagenberg Werke AG. Machine for labeling objects, especially bottles. 4,430,141, Cl. 156-360.000.
- Zrenner, Christian; and Kalberer, Peter, to Robert Bosch GmbH. Thermal method of testing liquids from a nozzle. 4,430,010, Cl. 374-45.000.
- Zuber, Chester L., to Aluminum Company of America. Selective removal of magnesium in the consumption of aluminum used beverage container scrap. 4,430,119, Cl. 75-63.000.
- Zuch, Howard W.; and Weber, Paul, to Eim Company, Inc. Drive shifting apparatus for valve control and the like. 4,429,591, Cl. 74-625.000.
- Zunkel, Richard L., to Schlage Lock Company. Door control switching device. 4,429,490, Cl. 49-32.000.
- Zwahlen, Helmut T. Bicycle pedal reflector. 4,429,950, Cl. 350-99.000.
- Zweig, Martin: See—
Hampar, Berge; Zweig, Martin; and Rabin, Harvey, 4,430,437, Cl. 436-548.000.
- 456577 Ontario Limited: See—
Mulholland, John H., 4,429,643, Cl. 110-238.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF FEBRUARY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Fernandez de Castro, Aurora L. Method for quantitative determination of renin activity in blood employing phenyl methyl sulfonyl fluoride and polyethylene glycol. Re. 31,517, Cl. 436-539.000.
- Fischer, William K., to Uniroyal, Inc. Dynamically partially cured thermoplastic blend of monoolefin copolymer rubber and polyolefin plastic. Re. 31,518, Cl. 525-194.000.
- General Electric Company: See—
Sobieski, John C., Re. 31,519, Cl. 313-332.000.
- Heldt, Earl R., to Hewlett-Packard Company. Fiber optic connector. Re. 31,515, Cl. 350-96.210.
- Hewlett-Packard Company: See—
Heldt, Earl R., Re. 31,515, Cl. 350-96.210.
- Minolta Camera Kabushiki Kaisha: See—
Tanaka, Harumi, Re. 31,516, Cl. 354-206.000.
- Sobieski, John C., to General Electric Company. Lead-in seal and lamp utilizing same. Re. 31,519, Cl. 313-332.000.
- Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Filmstrip metering device for a camera. Re. 31,516, Cl. 354-206.000.
- Uniroyal, Inc.: See—
Fischer, William K., Re. 31,518, Cl. 525-194.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Bennich, Hans H.; Johannson, Stig G. O.; and Wide, Leif E., to Pharmica, Inc. Method for determining the presence of reagin-immunoglobulins (reagin-Ig) directed against certain allergens, in aqueous samples. B1 3,720,760, 2-7-84, Cl. 436-513.000.
- Cryogenic Technology, Inc.: See—
Latham, Allen, Jr., B1 3,634,228, Cl. 210-636.000.
- Dahlstrom, Baesley I.: See—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,034,210, Cl. 235-487.000.
- Damon Corporation: See—
Sodickson, Lester A.; and Lim, Franklin, B1 4,059,405, Cl. 436-44.000.
- Dynetics Engineering Corporation: See—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,034,210, Cl. 235-487.000.
- Fisher, Robert D.: See—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,034,210, Cl. 235-487.000.
- Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., to Dynetics Engineering Corporation. Credit card carriers and methods of manufacture. B1 4,034,210, 2-7-84, Cl. 235-487.000.
- Johannson, Stig G. O.: See—
Bennich, Hans H.; Johannson, Stig G. O.; and Wide, Leif E., B1 3,720,760, Cl. 436-513.000.
- Latham, Allen, Jr., to Cryogenic Technology, Inc. Sterile washing method and apparatus. B1 3,634,228, 2-7-84, Cl. 210-636.000.
- Lim, Franklin: See—
Sodickson, Lester A.; and Lim, Franklin, B1 4,059,405, Cl. 436-44.000.
- Pharmica, Inc.: See—
Bennich, Hans H.; Johannson, Stig G. O.; and Wide, Leif E., B1 3,720,760, Cl. 436-513.000.
- Sodickson, Lester A.; and Lim, Franklin, to Damon Corporation. Method and apparatus for analysis of constituent carried in fibrous medium. B1 4,059,405, 2-7-84, Cl. 436-44.000.
- Wide, Leif E.: See—
Bennich, Hans H.; Johannson, Stig G. O.; and Wide, Leif E., B1 3,720,760, Cl. 436-513.000.

LIST OF DESIGN PATENTEEES

- AGFA-GEVAERT AG: See—
Schlagheck, Norbert; and Rabold, Lutz, 272,541, Cl. D16-02.000.
- American District Telegraph Company: See—
Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,530, Cl. D13-35.000.
- Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,531, Cl. D13-35.000.
- AMF Incorporated: See—
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; and Johnson, Thomas, 272,553, Cl. D21-212.000.
- Johnson, Thomas; and Witte, Paul A., 272,554, Cl. D21-212.000.
- Anderson, Richard C. Hive feeder for honey bees. 272,567, 2-7-84, Cl. D30-13.000.
- Augelakos, Nicholas P., to Lancaster Colony Corporation. Casserole. 272,504, 2-7-84, Cl. D7-17.000.
- Aracil, Claude. Razor dispenser. 272,491, 2-7-84, Cl. D6-88.000.
- Argentine, Michael T.; and Enstad, Darryl L. Pet litter window box. 272,569, 2-7-84, Cl. D30-99.000.
- Armin, Richard. Stringed musical instrument. 272,543, 2-7-84, Cl. D17-17.000.
- Ateliers de Constructions Mecanizues de L'Atlantique Acmat: See—
Legueu, Paul, 272,524, Cl. D12-84.000.
- Au, Albert K. H.: See—
Wong, Ka W.; and Au, Albert K. H., 272,534, Cl. D14-68.000.
- B. F. Goodrich Company, The: See—
Manestar, Miroslav M., 272,526, Cl. D12-142.000.
- Batts, John H.; and Duester, Everett L., to John Thomas Batts, Inc. Garment hanger body. 272,502, 2-7-84, Cl. D6-254.000.
- Beirise, Jean M.: See—
Coons, John C.; and Beirise, Jean M., 272,533, Cl. D14-53.000.
- Benedetti, Andrew J. Drink cup holder for vehicles. 272,486, 2-7-84, Cl. D3-40.000.
- Bennato, Andre, to Sanistyl Creations S.A.R.L. Soap dish. 272,492, 2-7-84, Cl. D6-90.000.
- Berkley and Company, Inc.: See—
McMickle, Robert L.; and Rumbaugh, James T., 272,556, Cl. D22-23.000.
- Berkline Corporation, The: See—
Long, Stapleton, 272,488, Cl. D6-67.000.
- Beylerian Limited: See—
d'Imporzano, Giuseppe, 272,575, Cl. D34-40.000.
- Caldwell, John W. Lantern. 272,563, 2-7-84, Cl. D26-87.000.
- Carroll, James C.; and Johnson, James C., deceased, to Duraco Products, Inc. Poultry coop or similar article. 272,566, 2-7-84, Cl. D30-01.000.
- Clanton, W. Porter, to Quaker Oats Company, The. Toy shovel. 272,552, 2-7-84, Cl. D21-120.000.
- Combi Co., Ltd.: See—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 272,551, Cl. D21-70.000.
- Conti, Rino, to Dart Industries Inc. Canister jar and closure. 272,507, 2-7-84, Cl. D7-79.000.

Conti, Rino, to Dart Industries Inc. Canister jar or the like. 272,508, 2-7-84, Cl. D7-79.000.

Coons, John C.; and Beirise, Jean M., to Masco Corporation of Indiana. Combined telephone handset and base station therefor. 272,533, 2-7-84, Cl. D14-53.000.

Cuminal, Raymond J., to Trifari, Krussman & Fishel, Inc. Carded merchandise display unit. 272,499, 2-7-84, Cl. D6-188.000.

Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Bread serving tray or the like. 272,505, 2-7-84, Cl. D7-37.000.

Dart Industries Inc.: See—
Conti, Rino, 272,507, Cl. D7-79.000.
Conti, Rino, 272,508, Cl. D7-79.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 272,505, Cl. D7-37.000.

Daughters, James R., to Wordex. Ribbon cartridge. 272,544, 2-7-84, Cl. D18-12.000.

De Coster, Pieter K. J.: See—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 272,505, Cl. D7-37.000.

DeGironemo, William A. Pallet. 272,573, 2-7-84, Cl. D34-38.000.

Delucchi, Christopher J., to Uke, Alan K. Hanger for a diver's wet suit. 272,503, 2-7-84, Cl. D6-255.000.

Dercks, Gerald A.; and Dercks, Michael J. Cremain vault. 272,577, 2-7-84, Cl. D99-5.000.

Dercks, Michael J.: See—
Dercks, Gerald A.; and Dercks, Michael J., 272,577, Cl. D99-5.000.

Dickey, Frank D.: See—
Ray, Leroy; and Dickey, Frank D., 272,500, Cl. D6-190.000.

d'Imporzano, Giuseppe, to Beylerian Limited. Supporting leg for a tray or the like. 272,575, 2-7-84, Cl. D34-40.000.

Dolas, Michael. Letter opener. 272,514, 2-7-84, Cl. D8-102.000.

Drake, Elsie J. Bender board holder or similar article. 272,510, 2-7-84, Cl. D8-1.000.

Duester, Everett L.: See—
Batts, John H.; and Duester, Everett L., 272,502, Cl. D6-254.000.

Duggan, Frank J.: See—
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; and Johnson, Thomas, 272,553, Cl. D21-212.000.

Duncan, Clarence R., Jr.: See—
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,495, Cl. D6-160.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,496, Cl. D6-162.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,497, Cl. D6-165.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,498, Cl. D6-165.000.

Duraco Products, Inc.: See—
Carroll, James C.; and Johnson, James C., deceased, 272,566, Cl. D30-01.000.

Dyer, Hugh D.: See—
Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,530, Cl. D13-35.000.
Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,531, Cl. D13-35.000.

Electrolux Corporation: See—
Tarnowski, John S.; Van Dyken, Alfred E.; and Schick, George, 272,571, Cl. D32-21.000.
Van Dyken, Alfred E.; Tarnowski, John S.; and Schick, George, 272,570, Cl. D32-21.000.

Enstad, Darryl L.: See—
Argentine, Michael T.; and Enstad, Darryl L., 272,569, Cl. D30-99.000.

Esposti, Umberto D. Rattle. 272,550, 2-7-84, Cl. D21-65.000.

Fabcon, Inc.: See—
Koehn, Richard R., 272,517, Cl. D8-349.000.

Fenimore, Anthony. Jar. 272,519, 2-7-84, Cl. D9-316.000.

Fenimore, Anthony. Jar. 272,520, 2-7-84, Cl. D9-316.000.

Fitzner, Marcel; and Pinnell, V. Paige, Jr. Microphone stand detachable tray or the like. 272,532, 2-7-84, Cl. D14-13.000.

Givler, Omar, to Portage Electric Products, Inc. Case for thermostatic element. 272,522, 2-7-84, Cl. D10-50.000.

Glenn, Randy S., to Hoover Universal, Inc. Container for liquids. 272,521, 2-7-84, Cl. D9-370.000.

Goldstein, Joseph. Machine for stretch film wrapping of palletized loads. 272,540, 2-7-84, Cl. D15-145.000.

Gordon, Dave R. Copy holder. 272,547, 2-7-84, Cl. D19-91.000.

Greubel, Juergen, to Igu Aktiengesellschaft. Room air ionizer. 272,558, 2-7-84, Cl. D23-149.000.

Guth, Richard U. Breath test mouth-piece. 272,559, 2-7-84, Cl. D24-17.000.

Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; and Johnson, Thomas, to AMF Incorporated. Squash racket. 272,553, 2-7-84, Cl. D21-212.000.

Hirose, Yoshitsugu; and Sugiyama, Masakazu, to Sharp Corporation. Electronic cooking apparatus. 272,509, 2-7-84, Cl. D7-365.000.

Holmquist, Bruce: See—
Worzek, Michael H.; and Holmquist, Bruce, 272,527, Cl. D12-179.000.

Holson Company, The: See—
Holson, Sheldon, 272,546, Cl. D19-26.000.

Holson, Sheldon, to Holson Company, The. Storage container for photographic prints. 272,546, 2-7-84, Cl. D19-26.000.

Hoover Universal, Inc.: See—
Glenn, Randy S., 272,521, Cl. D9-370.000.

Hoshino, Kiyoshi: See—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 272,551, Cl. D21-70.000.

Igu Aktiengesellschaft: See—
Greubel, Juergen, 272,558, Cl. D23-149.000.

Ishii, Yoshiyasu: See—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 272,551, Cl. D21-70.000.

Japan Storage Battery Company Limited: See—
Sakai, Yasuharu; and Matsui, Kazuhiro, 272,512, Cl. D8-61.000.

Jawz, Inc.: See—
Salatka, Robert G., 272,539, Cl. D15-123.000.

John Thomas Batts, Inc.: See—
Batts, John H.; and Duester, Everett L., 272,502, Cl. D6-254.000.

Johnson, James C., deceased: See—
Carroll, James C.; and Johnson, James C., deceased, 272,566, Cl. D30-01.000.

Johnson, Thomas; and Witte, Paul A., to AMF Incorporated. Game ball racket throatpiece. 272,554, 2-7-84, Cl. D21-212.000.

Johnson, Thomas: See—
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; and Johnson, Thomas, 272,553, Cl. D21-212.000.

Jonathan Temple & Co., Inc.: See—
Philips, Michael R., 272,485, Cl. D3-24.000.

Kagebayashi, Masaharu. Pocket knife. 272,513, 2-7-84, Cl. D8-99.000.

Kanamaru, Yutaka: See—
Sato, Yoshiyuki; and Kanamaru, Yutaka, 272,511, Cl. D8-62.000.

Kaneko, Takuji, to U.S. Philips Corporation. Portable radio receiver. 272,536, 2-7-84, Cl. D14-71.000.

Keeler, Frank R.: See—
Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,530, Cl. D13-35.000.
Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., 272,531, Cl. D13-35.000.

Kemp Furniture Industries, Inc.: See—
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,495, Cl. D6-160.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,496, Cl. D6-162.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,497, Cl. D6-165.000.
Kemp, William P., III; and Duncan, Clarence R., Jr., 272,498, Cl. D6-165.000.

Kemp, William P., III; and Duncan, Clarence R., Jr., to Kemp Furniture Industries, Inc. Double dresser. 272,495, 2-7-84, Cl. D6-160.000.

Kemp, William P., III; and Duncan, Clarence R., Jr., to Kemp Furniture Industries, Inc. Student desk. 272,496, 2-7-84, Cl. D6-162.000.

Kemp, William P., III; and Duncan, Clarence R., Jr., to Kemp Furniture Industries, Inc. Chest of drawers. 272,497, 2-7-84, Cl. D6-165.000.

Kemp, William P., III; and Duncan, Clarence R., Jr., to Kemp Furniture Industries, Inc. Combined night stand and hutch. 272,498, 2-7-84, Cl. D6-165.000.

Klein, Max S., to Klein Plastics Products, Inc. Stacking and nesting bin. 272,576, 2-7-84, Cl. D34-40.000.

Klein Plastics Products, Inc.: See—
Klein, Max S., 272,576, Cl. D34-40.000.

Koehn, Richard R., to Fabcon, Inc. Combination lift insert and weld plate for use in hollow core concrete planks. 272,517, 2-7-84, Cl. D8-349.000.

Kojima, Fumiyo: See—
Yoshihama, Manzo; and Kojima, Fumiyo, 272,538, Cl. D14-94.000.

Kuhl, Lynn. Vacuum cleaner for pets. 272,568, 2-7-84, Cl. D30-40.000.

Lancaster Colony Corporation: See—
Angelakos, Nicholas P., 272,504, Cl. D7-17.000.

Latino, Richard M., to Wright Line Inc. Wrist support for use with a keyboard, typewriter or similar article. 272,545, 2-7-84, Cl. D18-12.000.

Leguen, Paul, to Ateliers de Constructions Mecaniques de L'Atlantique. Acmat. Air transportable bus. 272,524, 2-7-84, Cl. D12-84.000.

Levine, Steven K. Dental flossing instrument. 272,565, 2-7-84, Cl. D28-64.000.

Long, Stapleton, to Berkline Corporation, The. Chair. 272,488, 2-7-84, Cl. D6-67.000.

Lopez, Eduardo. Roof tile. 272,562, 2-7-84, Cl. D25-80.000.

Mahowald, John E. Book hanger. 272,494, 2-7-84, Cl. D6-113.000.

Manestar, Miroslav M., to B. F. Goodrich Company, The. Tire. 272,526, 2-7-84, Cl. D12-142.000.

Marneris, Michael. Combined protective shield for aircraft instrument panel and locking device for aircraft controls. 272,529, 2-7-84, Cl. D12-345.000.

Masco Corporation of Indiana: See—
Coons, John C.; and Beirise, Jean M., 272,533, Cl. D14-53.000.

Matsui, Kazuhiro: See—
Sakai, Yasuharu; and Matsui, Kazuhiro, 272,512, Cl. D8-61.000.

Matsumoto, Susumu: See—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 272,551, Cl. D21-70.000.

Mattel, Inc.: See—
Wong, Ka W.; and Au, Albert K. H., 272,534, Cl. D14-68.000.

McMickle, Robert L.; and Rumbaugh, James T., to Berkley and Company, Inc. Fishing rod handle. 272,556, 2-7-84, Cl. D22-23.000.

Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, to Combi Co., Ltd. Toy vehicle. 272,551, 2-7-84, Cl. D21-70.000.

Nasineva, Matti V. Skate blade. 272,555, 2-7-84, Cl. D21-225.000.

Nathanson, Eric. Game board. 272,548, 2-7-84, Cl. D21-34.000.

Nordica S.p.A.: See—
Sartor, Mariano, 272,484, Cl. D2-276.000.

Ogg, Richard K. Chair. 272,490, 2-7-84, Cl. D6-75.000.

Ohno, Richard J., to Walter Kidde & Company, Inc. Key blank. 272,516, 2-7-84, Cl. D8-347.000.

Ouellette, David M. Game board. 272,549, 2-7-84, Cl. D21-36.000.

Parise, Carl, to Parise and Sons, Inc. Caddy for vacuum cleaner attachment tools. 272,572, 2-7-84, Cl. D32-31.000.

Parise and Sons, Inc.: See—
Parise, Carl, 272,572, Cl. D32-31.000.

Paulina, Michael G. Trailer body. 272,525, 2-7-84, Cl. D12-102.000.

P'eng, Cheng-Chieh. Christmas bell. 272,523, 2-7-84, Cl. D10-116.000.

Philips, Michael R., to Jonathan Temple & Co., Inc. Spool. 272,485, 2-7-84, Cl. D3-24.000.

Pinnell, V. Paige, Jr.: See—
Fitzner, Marcel; and Pinnell, V. Paige, Jr., 272,532, Cl. D14-13.000.

Pinto, Albert V.; and Todd, Robert B., Jr. Anterior subperiosteal implant. 272,560, 2-7-84, Cl. D24-33.000.

Pinto, Albert V.; and Todd, Robert B., Jr. Anterior subperiosteal implant. 272,561, 2-7-84, Cl. D24-33.000.

Portage Electric Products, Inc.: See—
Givler, Omar, 272,522, Cl. D10-50.000.

Powers, Ronald H. Motorcycle seat. 272,487, 2-7-84, Cl. D6-48.100.

Proto Planning Co.: See—
Sakai, Yasuharu; and Matsui, Kazuhiro, 272,512, Cl. D8-61.000.

Quaker Oats Company, The: See—
Clanton, W. Porter, 272,552, Cl. D21-120.000.

Rabold, Lutz: See—
Schlagheck, Norbert; and Rabold, Lutz, 272,541, Cl. D16-02.000.

Racek, Alfred. Gas lighter. 272,564, 2-7-84, Cl. D27-42.000.

Ray, Leroy; and Dickey, Frank D. Shelving system for cans or the like. 272,500, 2-7-84, Cl. D6-190.000.

Raymond, Gary E. Photographic sheet materials cassette. 272,542, 2-7-84, Cl. D16-32.000.

Ricoh Company, Ltd.: See—
Yoshihama, Manzo; and Kojima, Fumiyo, 272,538, Cl. D14-94.000.

Rumbaugh, James T.: See—
McMickle, Robert L.; and Rumbaugh, James T., 272,556, Cl. D22-23.000.

Rutishauser, Rudolf. Tie rack. 272,501, 2-7-84, Cl. D6-251.000.

Ryobi Ltd.: See—
Sato, Yoshiyuki; and Kanamaru, Yutaka, 272,511, Cl. D8-62.000.

Sakai, Yasuharu; and Matsui, Kazuhiro, to Japan Storage Battery Company Limited; and Proto Planning Co. Electric pressure connecting machine. 272,512, 2-7-84, Cl. D8-61.000.

Salatka, Robert G., to Jawz, Inc. Can compactor. 272,539, 2-7-84, Cl. D15-123.000.

Sanistyl Creations S.A.R.L.: See—
Bennato, Andre, 272,492, Cl. D6-90.000.

Sartor, Mariano, to Nordica S.p.A. Ski boot. 272,484, 2-7-84, Cl. D2-276.000.

Sato, Yoshiyuki; and Kanamaru, Yutaka, to Ryobi Ltd. Electric sander. 272,511, 2-7-84, Cl. D8-62.000.

Satterfield, Roy E. Footstool. 272,489, 2-7-84, Cl. D6-74.000.

Schick, George: See—
Tarnowski, John S.; Van Dyken, Alfred E.; and Schick, George, 272,571, Cl. D32-21.000.
Van Dyken, Alfred E.; Tarnowski, John S.; and Schick, George, 272,570, Cl. D32-21.000.

Schlagheck, Norbert; and Rabold, Lutz, to AGFA-GEVAERT AG. Identification camera for exposing X-ray films with data of patients. 272,541, 2-7-84, Cl. D16-02.000.

Sharp Corporation: See—
Hirose, Yoshitsugu; and Sugiyama, Masakazu, 272,509, Cl. D7-365.000.

Smith, Eldon. Stretch cord fastener. 272,518, 2-7-84, Cl. D8-382.000.

Smith, Randel P.: See—
Steiner, Robert L.; and Smith, Randel P., 272,493, Cl. D6-95.000.

Solyst, Jalmer. Portable support for a mail box. 272,578, 2-7-84, Cl. D99-43.000.

Sprinski, Daniel E. Container for liquid fuel. 272,574, 2-7-84, Cl. D34-39.000.

Spycher, Helmut. Antenna mount. 272,537, 2-7-84, Cl. D14-91.000.

Steiner Corporation: See—
Steiner, Robert L.; and Smith, Randel P., 272,493, Cl. D6-95.000.

Steiner, James H. Floating holder for a tumbler or the like. 272,506, 2-7-84, Cl. D7-70.000.

Steiner, Robert L.; and Smith, Randel P., to Steiner Corporation. Neck and flange for soap cartridge. 272,493, 2-7-84, Cl. D6-95.000.

Sugiyama, Masakazu: See—
Hirose, Yoshitsugu; and Sugiyama, Masakazu, 272,509, Cl. D7-365.000.

Tarnowski, John S.; Van Dyken, Alfred E.; and Schick, George, to Electrolux Corporation. Vacuum cleaner. 272,571, 2-7-84, Cl. D32-21.000.

Tarnowski, John S.: See—
Van Dyken, Alfred E.; Tarnowski, John S.; and Schick, George, 272,570, Cl. D32-21.000.

Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., to American District Telegraph Company. Control panel. 272,530, 2-7-84, Cl. D13-35.000.

Thornton, H. Patrick; Dyer, Hugh D.; and Keeler, Frank R., to American District Telegraph Company. Control panel. 272,531, 2-7-84, Cl. D13-35.000.

Todd, Robert B., Jr.: See—
Pinto, Albert V.; and Todd, Robert B., Jr., 272,560, Cl. D24-33.000.
Pinto, Albert V.; and Todd, Robert B., Jr., 272,561, Cl. D24-33.000.

Trifari, Krussman & Fishel, Inc.: See—
Cuminal, Raymond J., 272,499, Cl. D6-188.000.

Uke, Alan K.: See—
Delucchi, Christopher J., 272,503, Cl. D6-255.000.

U.S. Philips Corporation: See—
Kaneko, Takuji, 272,536, Cl. D14-71.000.

Van De Ven, Peter H. J., 272,535, Cl. D14-70.000.

Van De Ven, Peter H. J., to U.S. Philips Corporation. Portable radio receiver. 272,535, 2-7-84, Cl. D14-70.000.

Van Dyken, Alfred E.; Tarnowski, John S.; and Schick, George, to Electrolux Corporation. Vacuum cleaner with cord winder attachment. 272,570, 2-7-84, Cl. D32-21.000.

Van Dyken, Alfred E.: See—
Tarnowski, John S.; Van Dyken, Alfred E.; and Schick, George, 272,571, Cl. D32-21.000.

Walter Kidde & Company, Inc.: See—
Ohno, Richard J., 272,516, Cl. D8-347.000.

Ward, Gregory A. Watercraft with hull, center hydroplane and wing. 272,528, 2-7-84, Cl. D12-309.000.

Williamson, Culbreath F. Wood stove. 272,557, 2-7-84, Cl. D23-97.000.

Wilson, Charles E. Spare tire wheel lock. 272,515, 2-7-84, Cl. D8-331.000.

Witte, Paul A.: See—
Johnson, Thomas; and Witte, Paul A., 272,554, Cl. D21-212.000.

Wong, Ka W.; and Au, Albert K. H., to Mattel, Inc. Family pager receiver device or similar article. 272,534, 2-7-84, Cl. D14-68.000.

Wordex: See—
Daughters, James R., 272,544, Cl. D18-12.000.

Worzek, Michael H.; and Holmquist, Bruce. Lever, particularly for motorcycles. 272,527, 2-7-84, Cl. D12-179.000.

Wright Line Inc.: See—
Latino, Richard M., 272,545, Cl. D18-12.000.

Yoshihama, Manzo; and Kojima, Fumiyo, to Ricoh Company, Ltd. Facsimile transceiver. 272,538, 2-7-84, Cl. D14-94.000.

Yuhas, Drew J.: See—
Hall, Harleston J., Jr.; Yuhas, Drew J.; Duggan, Frank J.; and Johnson, Thomas, 272,553, Cl. D21-212.000.

LIST OF PLANT PATENTEEES

Coody, Robert J. Plant of the Araceae family. 5,188, 2-7-84, Cl. 88.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF
FEBRUARY, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Campbell, Conrad J.; and Willis, William D. Flooring felt compositions and method for preparing the same. T103,903, 2-7-84, Cl. 523-206.000.
 Dart, Norman K.; and Eastman, James E. Drilling fluid utilizing granular starch for fluid loss control. T103,902, 2-7-84, Cl. 252-8.50C.
 Eastman, James E.: See—
 Dart, Norman K.; and Eastman, James E., T103,902, Cl. 252-8.50C.
 Lupke, Gerd P. H.: See—
 Lupke, Manfred A. A.; and Lupke, Gerd P. H., T103,901, Cl. 138-122.000.
 Lupke, Manfred A. A.; and Lupke, Gerd P. H. Wave walled pipe. T103,901, 2-7-84, Cl. 138-122.000.
 Willis, William D.: See—
 Campbell, Conrad J.; and Willis, William D., T103,903, Cl. 523-206.000.

PI 50

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 7, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

102	CLASS 2	4,429,419	6	CLASS 42	4,429,479	655	4,429,536	63	4,430,119	347	4,429,646	66	4,429,706
175		4,429,420				730	4,429,537	68 B	4,430,120		CLASS 111	117	4,429,708
	CLASS 3			CLASS 43		748	4,429,538	126 B	4,430,121	6	4,429,647	220	4,429,709
13		4,429,421	19.2		4,429,480		4,429,539	130 R	4,430,122		CLASS 112	375	4,429,710
	CLASS 4		42.32		4,429,481	6	4,430,102	248	4,430,123	79 R	4,429,648	385	4,429,711
192		4,429,422	70		4,429,482	24	4,430,103		4,430,124	229	4,429,649	406	4,429,712
225		4,429,423	87		4,429,483	28	4,429,542	36	CLASS 76	258	4,429,650	614.03	4,429,713
479		4,429,424	97		4,429,484	62	4,429,543		4,429,596	273	4,429,651	625.17	4,429,715
503		4,429,425		CLASS 44		73	4,429,544	57.39	CLASS 81			625.21	4,429,707
	CLASS 5		69		4,430,092	84	4,429,545	39.1		20 R	4,429,652	625.3	4,429,714
288		4,429,426	70		4,430,093	123	4,430,104	436	4,429,599	65 R	4,429,653	625.35	4,429,716
474		4,429,427		CLASS 46		188	4,429,546	461	4,429,600	230	4,429,655	625.47	4,429,717
	CLASS 8		21		4,429,486	201	4,429,547		CLASS 83				CLASS 138
115.5		4,430,089	43		4,429,487	235.1	4,429,548	13				30	4,429,718
508		4,430,090	257		4,429,488	238.1	4,429,549	24	4,429,601	137 R	4,429,656	96 T	4,429,719
523		4,430,091		CLASS 47		238.6	4,429,550	37	4,429,602			97	4,429,720
	CLASS 15		18		4,429,489		4,429,551		4,429,603		CLASS 118	149	4,429,721
3.52		4,429,428		CLASS 48			4,429,552	1.17		114	4,429,657		CLASS 139
30 R		4,429,429	76		4,430,094	1	4,430,105		4,429,604	711	4,429,658	48	4,429,722
182		4,429,430	180 C		4,430,095	15	4,430,106	1.18	4,429,605			452	4,429,723
250.32		4,429,431	206		4,430,096	22	4,430,107	291	4,429,606	3	4,429,659	27	4,429,724
320		4,429,432		CLASS 49			4,430,108	454	4,429,607	51 R	4,429,660	59	4,429,725
341		4,429,433	32		4,429,490	32	4,430,109		4,429,608		CLASS 122		CLASS 144
	CLASS 17		340		4,429,491	104	4,430,110		4,429,609	20 B	4,429,661		4,429,726
1 S		4,429,435	367		4,429,492	114	4,430,111	36	4,429,610	32	4,429,662	134 R	4,429,727
	CLASS 24		386		4,429,493	335	4,430,112		CLASS 86	365	4,429,663	193 C	4,429,727
		4,429,436	501		4,429,494		4,429,553		CLASS 89	376	4,429,664		CLASS 148
150 FP		4,429,437		CLASS 52		78	4,429,554	1.816				12 B	4,430,130
401		4,429,438	1		4,429,496	149	4,429,555	8	4,429,611	3	4,429,665		CLASS 149
486		4,429,440	27		4,429,497	358	4,429,556		4,429,612	41.05	4,429,666	19.4	4,430,131
573		4,429,439	204		4,429,498	366	4,429,557	14 C	4,429,613	52 M	4,429,667	109.6	4,430,132
	CLASS 26		228		4,429,499	456 R	4,429,557	33 BB	4,429,615	56 B	4,429,668		CLASS 152
9		4,429,441	233		4,429,500			36 K	4,429,616	179 H	4,429,669	209 A	4,429,728
	CLASS 29		263		4,429,501		CLASS 71		4,429,617	198 D	4,429,670		CLASS 154
2		4,429,442	410		4,429,502	92	4,430,113		CLASS 91	198 F	4,429,671		4,430,133
26 A		4,429,443	506		4,429,503	105	4,430,114	1	4,429,618	339	4,429,672	94	4,430,134
33 F		4,429,444	583		4,429,504	17	4,429,558	29	4,429,619	369	4,429,673	224	4,430,135
33 T		4,429,445	589		4,429,505	186	4,429,559	395	4,429,620	409	4,429,674	244.11	4,430,136
116 AD		4,429,446	650		4,429,506	328	4,429,560	420	4,429,621	531	4,429,675	246	4,430,137
275		4,429,447	713		4,429,507	478	4,429,561	93	4,429,622	558	4,429,676	247	4,430,138
281.5		4,429,448	788		4,429,509	479	4,429,562		CLASS 92	571	4,429,677	345	4,430,139
446		4,429,449		CLASS 53			CLASS 73		4,429,623			353	4,430,140
451		4,429,450	167		4,429,510	11	4,429,563	295	4,429,624	62	4,429,677	356	4,430,141
566.4		4,429,451	379		4,429,511	32 A	4,429,564	348	4,429,625	39	4,429,678	360	4,430,142
571		4,429,452	534		4,429,512	35	4,429,565	425	4,429,626	110 A	4,429,679	379.9	4,430,143
591		4,429,453	547		4,429,513	40.7	4,429,566	510	4,429,627	121	4,429,680	403	4,430,144
747		4,429,454	556		4,429,514	49.8	4,429,567		CLASS 100	152 B	4,429,681	497	4,430,145
798		4,429,455		CLASS 55			4,429,568	35	4,429,627	151	4,429,682	502	4,430,146
840		4,429,456	67		4,430,097	81 A	4,429,569	117	4,429,628	352 B	4,429,683	578	4,430,147
879		4,429,457	191		4,430,098		4,429,570	226	4,429,629	419	4,429,684	580.2	4,430,148
881		4,429,458	316		4,430,099	119	4,429,571		CLASS 101	425	4,429,685	613 A	4,430,149
	CLASS 30		344		4,430,100	181	4,429,572	216	4,429,630		CLASS 128	616 A	4,430,150
90.1		4,429,460	440		4,430,101	510	4,429,573	349	4,429,631	1 R	4,429,686	626	4,430,151
289		4,429,461		CLASS 36		580	4,429,574		CLASS 102	6	4,429,687	643	4,430,152
	CLASS 33		6		4,429,515	598	4,429,575	202.13	4,429,632	24.2	4,429,688	651	4,430,153
138		4,429,462	95		4,429,516	636	4,429,576	222	4,429,633	28	4,429,689		CLASS 159
169 C		4,429,463	181		4,429,517	644	4,429,577	290	4,429,634	75	4,429,692	4 S	4,430,155
174 E		4,429,464	295		4,429,518	659	4,429,578	401	4,429,635	79	4,429,693	47.1	4,430,156
174 Q		4,429,465		CLASS 57		768	4,429,579		CLASS 104	92 C	4,429,694		CLASS 160
180 R		4,429,466	293		4,429,519		4,429,580			92 D	4,429,695	315	4,429,729
203		4,429,467			4,429,520	861.04	4,429,581	36	4,429,636	303.14	4,429,696	368 R	4,429,730
245		4,429,468	294		4,429,521	861.22	4,429,582		CLASS 105	310	4,429,697		CLASS 162
361		4,429,469	301		4,429,522	864.21	4,429,583	168	4,429,637	419 PG	4,429,698	145	4,430,157
395		4,429,470	328		4,429,523		4,429,584		CLASS 106	681	4,429,699	156	4,430,158
	CLASS 34		336		4,429,524					746	4,429,702	292	4,430,159
10		4,429,471		CLASS 59		191	4,429,585	81	4,430,125				CLASS 164
48		4,429,472	7		4,429,525	410	4,429,586	97	4,430,126	713	4,429,701	504	4,429,731
	CLASS 36		93		4,429,526	467	4,429,587	273 N	4,430,127		CLASS 131		CLASS 165
11.5		4,429,473		CLASS 60		484 R	4,429,588		CLASS 108	273	4,429,703	10	4,429,732
36 A		4,429,474	39.06		4,429,527		4,429,589	25	4,429,638		CLASS 134	16	4,429,733
45		4,429,475	39.281		4,429,528		4,429,590	19	4,429,639	3	4,430,128	29	4,429,734
	CLASS 37		433		4,429,529		4,429,591		CLASS 110	22.19	4,430,129	60	4,429,735
62		4,429,476	520		4,429,530		4,429,592				CLASS 136	61	4,429,736
80 R		4,429,477	588		4,429,531		4,429,593	165 R	4,429,640	234	4,430,518	125	4,429,737
	CLASS 40		600		4,429,532		4,429,594	181	4,429,641	244	4,430,519	151	4,429,738
447		4,429,478	606		4,429,533		4,429,595	236	4,429,642			159	4,429,739
			618		4,429,534			238	4,429,643	45	4,429,704	53	4,429,740
			641.5		4,429,535			245	4,429,644	65	4,429,705	63	4,429,741
								246	4,429,645				

PI 51

CLASSIFICATION OF PATENTS

127	4,429,742	121 LG	4,430,548	551	4,430,572	93 SD	4,429,884	241 P	4,430,602
177	4,429,743	121 PD	4,430,549	CLASS 251		140	4,429,885	CLASS 318	
263	4,429,744	43 N	4,430,547	9	4,429,852	207 A	4,429,886	254	4,430,603
	4,429,745	43 T	4,430,546	144	4,429,855	CLASS 279		379	4,430,604
291	4,429,746	52 R	4,430,551	149.1	4,429,856	112	4,429,887	386	4,430,605
321	4,429,747	67	4,430,552	CLASS 252		CLASS 280		601	4,430,606
324	4,429,748	72	4,430,553	8.6	4,430,233	1.11 R	4,429,888	CLASS 323	
CLASS 168		84	4,430,555	8.8	4,429,859	79.1 A	4,429,889	217	4,430,607
45	4,429,749	98	4,430,556	49.5	4,430,234	259	4,429,890	282	4,430,608
CLASS 172		114	4,430,557	49.6	4,430,235	278	4,429,891	350	4,430,609
253	4,429,750	128	4,430,558	61	4,430,236	407	4,429,892	CLASS 324	
CLASS 173		129.55	4,430,559	62.51	4,430,237	414.1	4,429,893	51	4,430,610
13	4,429,751	158 HA	4,430,560	70	4,430,240	458	4,429,894	77 C	4,430,611
59	4,429,752	192 P	4,430,561	91	4,430,241	490 R	4,429,895	166	4,430,612
149	4,429,753	192 R	4,430,562	94	4,430,242	624	4,429,896	200	4,430,613
CLASS 174		242	4,430,563	95	4,430,243	646	4,429,897	238	4,430,614
35 R	4,430,520	243 R	4,430,564	117	4,430,244	678	4,429,898	239	4,430,615
65 R	4,430,521	290 F	4,430,565	140	4,430,245	689	4,429,899	304	4,430,616
72 B	4,430,522	290 R	4,430,566	173	4,430,246	CLASS 282		CLASS 328	
135	4,430,523	291	4,430,567	182	4,430,247	29 B	4,429,901	61	4,430,617
138 F	4,430,524	410	4,430,568	313 R	4,430,248	CLASS 285		149	4,430,618
CLASS 175		CLASS 206		351	4,429,809	3	4,429,902	166	4,430,620
88	4,429,754	5.1	4,429,786	359 R	4,429,810	24	4,429,903	CLASS 330	
329	4,429,755	83	4,429,787	512	4,429,811	93	4,429,904	9	4,430,621
CLASS 177		349	4,429,788	628	4,429,812	315	4,429,905	206	4,430,622
211	4,429,756	370	4,429,789	629	4,429,813	373	4,429,907	224	4,430,623
212	4,429,757	444	4,429,790	644	4,429,814	CLASS 290		289.1	4,430,624
CLASS 178		454	4,429,791	CLASS 254		40 R	4,430,573	311	4,430,625
3	4,430,525	531	4,429,792	18	4,429,815	52	4,430,574	316	4,430,626
18	4,430,526	570	4,429,793	134.3 PA	4,429,816	CLASS 292		318	4,430,627
CLASS 179		597	4,429,794	CLASS 260		35	4,429,908	320	4,430,628
7 R	4,430,528	CLASS 208		112 R	4,430,263	92	4,429,909	402	4,430,629
110 A	4,430,529	8 LE	4,430,193	112.5 R	4,430,264	199	4,429,910	403	4,430,630
175.2 D	4,430,530	8 R	4,430,194	112.7	4,430,265	259 R	4,429,911	414	4,430,631
CLASS 180		47	4,430,195	112.8	4,430,266	293	4,429,912	415	4,430,632
19 R	4,429,758	56	4,430,196	147	4,430,267	188	4,429,914	448	4,430,633
89.14	4,429,759	112	4,430,197	186	4,430,268	199	4,429,915	455	4,430,634
215	4,429,760	114	4,430,198	188	4,430,269	250	4,429,916	484	4,430,635
271	4,429,761	120	4,430,199	239 A	4,430,270	300	4,429,917	CLASS 355	
CLASS 181		164	4,430,200	239.1	4,430,271	353	4,429,918	3 BE	4,429,985
159	4,429,762	187	4,430,201	397.1	4,430,272	379	4,429,919	3 SH	4,429,986
CLASS 182		210	4,430,202	404.8	4,430,273	478	4,429,920	8	4,429,987
2	4,429,763	240	4,430,203	453 P	4,430,274	CLASS 307		14 FU	4,429,988
129	4,429,764	246	4,430,204	458 R	4,430,275	38	4,430,576	28	4,429,989
153	4,429,765	251 H	4,430,205	459.12	4,430,276	108	4,430,577	76	4,429,990
195	4,429,766	262	4,430,206	501.12	4,430,277	115	4,430,578	CLASS 356	
CLASS 188		CLASS 209		546	4,430,278	128	4,430,579	28.5	4,429,994
71.8	4,429,767	3	4,430,209	CLASS 261		134	4,430,580	73	4,429,991
71.9	4,429,768	23.4	4,430,210	18 B	4,430,279	134	4,430,581	124	4,429,992
73.31	4,429,769	314	4,430,211	CLASS 264		134	4,430,582	152	4,429,993
73.32	4,429,770	651	4,429,795	0.5	4,430,276	134	4,430,583	236	4,429,994
170	4,429,771	CLASS 210		40.6	4,430,277	134	4,430,584	343	4,429,995
328	4,429,772	104	4,430,212	65	4,430,278	134	4,430,585	344	4,429,996
CLASS 192		136	4,430,213	117	4,430,279	134	4,430,586	428	4,429,997
0.096	4,429,775	169	4,430,214	118	4,430,280	134	4,430,587	432	4,429,999
18 B	4,429,773	195.4	4,430,215	127	4,430,281	134	4,430,588	CLASS 357	
53 H	4,429,774	198.2	4,430,216	127	4,430,282	134	4,430,589	5	4,430,662
99 A	4,429,776	198.3	4,430,217	127	4,430,283	134	4,430,590	53	4,430,663
111 A	4,429,777	321.3	4,430,218	127	4,430,284	134	4,430,591	73	4,430,664
CLASS 194		333.1	4,430,219	127	4,430,285	134	4,430,592	CLASS 358	
10	4,429,778	377	4,430,220	127	4,430,286	134	4,430,593	37	4,430,665
CLASS 198		493.5	4,430,221	127	4,430,287	134	4,430,594	44	4,430,666
347	4,429,779	604	4,430,222	127	4,430,288	134	4,430,595	73	4,430,667
424	4,429,780	608	4,430,223	127	4,430,289	134	4,430,596	122	4,430,668
448	4,429,781	638	4,430,224	127	4,430,290	134	4,430,597	135	4,430,669
677	4,429,782	642	4,430,225	127	4,430,291	134	4,430,598	192.1	4,430,670
731	4,429,783	665	4,430,226	127	4,430,292	134	4,430,599	213	4,430,671
744	4,429,784	691	4,430,227	127	4,430,293	134	4,430,600	317	4,430,672
852	4,429,785	692	4,430,228	127	4,430,294	134	4,430,601	342	4,430,673
CLASS 200		745	4,430,229	127	4,430,295	134	4,430,602	CLASS 360	
5 A	4,430,531	783	4,430,230	127	4,430,296	134	4,430,603	13	4,430,676
52 R	4,430,532	798	4,430,231	127	4,430,297	134	4,430,604	99	4,430,677
61.41	4,430,533	CLASS 211		127	4,430,298	134	4,430,605	106	4,430,678
68.3	4,430,534	11	4,429,796	127	4,430,299	134	4,430,606	137	4,430,679
82 R	4,430,535	119	4,429,797	127	4,430,300	134	4,430,607	966	4,430,680
144 B	4,430,536	CLASS 215		127	4,430,301	134	4,430,608	CLASS 361	
302.1	4,430,537	12 R	4,429,798	127	4,430,302	134	4,430,609	27	4,430,681
CLASS 201		31	4,429,799	127	4,430,303	134	4,430,610	31	4,430,682
19	4,430,160	216	4,429,800	127	4,430,304	134	4,430,611	42	4,430,683
CLASS 202		254	4,429,801	127	4,430,305	134	4,430,612	98	4,430,684
228	4,430,161	344	4,429,802	127	4,430,306	134	4,430,613	172	4,430,685
CLASS 203		366	4,429,803	127	4,430,307	134	4,430,614	229	4,430,686
37	4,430,162	CLASS 219		127	4,430,308	134	4,430,615	293	4,430,687
75	4,430,163	10.55 B	4,430,540	127	4,430,309	134	4,430,616	307	4,430,688
CLASS 204		10.55 F	4,430,538	127	4,430,310	134	4,430,617	321	4,430,689
1 T	4,430,164	10.55 R	4,430,541	127	4,430,311	134	4,430,618	CLASS 362	
15	4,430,165	10.77	4,430,542	127	4,430,312	134	4,430,619	3.64	4,429,954
25	4,430,166	10.79	4,430,543	127	4,430,313	134	4,430,620	3.76	4,429,946
35 N	4,430,168	69 V	4,430,544	127	4,430,314	134	4,430,621	3.85	4,429,947
		73	4,430,545	127	4,430,315	134	4,430,622	6.8	4,429,948
		121 ED	4,430,550	127	4,430,316	134	4,430,623	96.21	4,429,949

CLASSIFICATION OF PATENTS

CLASS 350		383	4,430,690	CLASS 383		CLASS 424		99	4,430,406	118	4,430,455
3.64	4,429,954		4,430,691	6	4,430,751	1.1	4,430,318	106.6	4,430,407	128	4,430,456
3.76	4,429,946	CLASS 362			4,430,752		4,430,319		4,430,408	CLASS 523	
3.85	4,429,947	32	4,430,692	CLASS 384			4,430,320	122	4,430,409	100	4,430,457
6.8	4,429,948	61	4,430,693		94	4,429,854	49	126	4,430,410	108	4,430,458
96.21	Re.31,515	230	4,430,694		99	4,430,011	52	137	4,430,411	144	4,430,459
99	4,429,949	277	4,430,695	CLASS 400			4,430,322	176	4,430,412	174	4,430,460
144	4,429,950	306	4,430,696	CLASS 401			4,430,323	203	4,430,413	340	4,430,461
258	4,429,952	CLASS 363		616.1	4,430,012		4,430,324	263	4,430,414	402	4,430,462
293	4,429,953	49	4,430,697	CLASS 402			4,430,325	286	4,430,415	CLASS 524	
332	4,429,955	CLASS 364		132	4,430,013		4,430,326	288	4,430,416	5	4,430,463
410	4,429,956	162	4,430,698	216	4,430,014	181	4,430,327	296	4,430,417	39	4,430,464
423	4,429,957	200	4,430,699	CLASS 403			4,430,328	351	4,430,418	64	4,430,465
455	4,429,958		4,430,700	CLASS 404		248.57	4,430,329	377	4,430,419	89	4,430,466
CLASS 351			4,430,701	79	4,430,015		4,430,330		4,430,420	109	4,430,467
158	4,429,959		4,430,702	CLASS 405			4,430,331		4,430,421	247	4,430,468
212	4,429,960		4,430,703	40	4,430,016	266	4,430,332	384	4,430,422	269	4,430,469
226	4,429,961		4,430,704	104	4,430,017	267	4,430,333	537	4,430,423	356	4,430,470
CLASS 352			4,430,705	268	4,430,018		4,430,334	551	4,430,424	483	4,430,471
32	4,429,962		4,430,706	409	4,430,019	270	4,430,335	604	4,430,425	492	4,430,472
CLASS 353			4,430,707	CLASS 406			4,430,336	CLASS 431		590	4,430,473
88	4,429,963		4,430,708	CLASS 407			4,430,337	276	4,430,054		4,430,474
CLASS 354		300	4,430,709	43	4,430,020	273 R	4,430,338		4,430,060	CLASS 525	
202	4,429,975	405	4,430,710	129	4,430,021	274	4,430,339	CLASS 432		44	4,430,486
203	4,429,976	426	4,430,711	183	4,430,022	278	4,430,340	11	4,430,055	67	4,430,475
	4,429,977		4,430,712	224	4,430,023	285	4,430,341	137	4,430,056		4,430,476
206	Re.31,516		4,430,713	232	4,430,024	303	4,430,342	154	4,430,057	70	4,430,477
224	4,429,978	466	4,430,714	261	4,430,025	311	4,430,343	259	4,430,058	71	4,430,478
289.1	4,429,979	474	4,430,715	291	4,430,026	322	4,430,344	CLASS 433		127	4,430,479
311	4,429,980	475	4,430,716	303	4,430,027		4,430,345	9	4,430,061	160	4,430,480
316	4,429,981	503	4,430,717	CLASS 408		77	4,430,051	28	4,430,062	194	Re.31,518
318	4,429,982	552	4,430,718	39	4,430,028	190	4,430,052			328.4	4,430,481
320	4,429,983	724	4,430,719	63	4,430,029	392	4,430,053	CLASS 434		329.4	4,430,482
402	4,429,965	728	4,430,720	146	4,430,030	510	4,430,054	380	4,430,063	356	4,430,483
403	4,429,964	862	4,430,721	CLASS 409		CLASS 426		CLASS 435		425	4,430,484
	4,429,967	900	4,430,722	CLASS 410		25	4,430,348		4,430,427	439	4,430,485
406	4,429,966		4,430,723	104	4,430,031	34	4,430,349		4,430,428	83	4,430,487
413	4,429,967		4,430,724	CLASS 411		68	4,430,350		4,430,429	84	4,430,488
414	4,429,968		4,430,725	68	4,430,032	101	4,430,351		4,430,430	CLASS 528	
415	4,429,971		4,430,726	CLASS 412		103	4,430,352		4,430,431	45	4,430,489
448	4,429,972	CLASS 365		61	4,430,033	115	4,430,353		4,430,432	77	4,430,490
455	4,429,973	6	4,430,727	179	4,430,034	388	4,430,354		4,430,433	153	4,430,491
484	4,429,974	149	4,430,728	402	4,430,035	536	4,430,355		4,430,434	176	4,430,492
CLASS 355			4,430,729	416	4,430,036	548	4,430,356		4,430,435	179	4,430,493
3 BE	4,429,985	107	4,430,001	CLASS 413		574	4,430,357		4,430,436	254	4,430,494
3 SH	4,429,984	139	4,430,002	4	4,430,037	CLASS 427		513	Re.31,517	CLASS 536	
8	4,429,986	173	4,430,003	346	4,430,038	2	4,430,358	531	4,430,437	16.3	4,430,495
14 FU	4,429,987	CLASS 366		417	4,430,039	31	4,430,359	548		27	4,430,496
	4,429,990		4,430,004	783	4,430,040	34	4,430,360	CLASS 435		CLASS 542	
28	4,429,988	67	4,430,005	787	4,430,041	39	4,430,361	52	4,430,753	429	4,430,497
76	4,429,989	73	4,430,006	CLASS 415		48	4,430,362	72	4,430,754	CLASS 544	
CLASS 356		157	4,430,007	1	4,430,042	54.1	4,430,363	77	4,430,755	16	4,430,498
28.5	4,429,994	202	4,430,008	159	4,430,043	96	4,430,364	78	4,430,756	25	4,430,499
73	4,429,991	203	4,430,009	CLASS 416		162	4,430,365	100	4,430,757	16	4,430,500
124	4,429,992	235	4,430,004	119	4,430,044	385.5	4,430,366	227	4,430,758	72	4,430,501
152	4,429,993			138	4,430,045	388.4	4,430,367		4,430,759	354	4,430,502
236	4,430,000	30	4,430,731	CLASS 417		397.7	4,430,368		4,430,760	CLASS 556	
343	4,429,995	54	4,430,732	35	4,430,046	CLASS 428		64	4,430,064	417	4,430,503
344	4,429,996	110.1	4,430,733	61	4,430,047	35	4,430,370	90	4,430,065	482	4,430,504
350	4,429,997	112	4,430,734	55	4,430,048	91	4,430,371	178	4,430,066	CLASS 560	
428	4,429,998	CLASS 371		273	4,430,049	60	4,430,372	244	4,430,067	24	4,430,505
432	4,429,999	25	4,430,735	383	4,430,048	113	4,430,373		4,430,068	105.	4,430,506
CLASS 357		31	4,430,736	540	4,430,049	135	4,430,374	CLASS 493		122	4,430,507
5	4,430,662	49	4,430,737	191	4,430,050	148	4,430,375	100	4,430,069	256	4,430,508
53	4,430,663	CLASS 372		CLASS 418		174	4,430,376	203	4,430,070	CLASS 562	
73	4,430,664		4,430,738	CLASS 419		213	4,430,377	215		401	4,430,509
CLASS 358		38	4,430,739	2	4,430,294	216	4,430,378		4,430,071	465	4,430,511
37	4,430,665	45	4,430,740	46	4,430,295	254	4,430,379	38	4,430,072	481	
44	4,430,666	46	4,430,741	CLASS 420		284	4,430,380	45		CLASS 564	
73	4,430,667			429	4,430,296	323	4,430,381			24	4,430,505
75	4,430,668			364	4,430,297	367	4,430,382	CLASS 501		105.	4,430,506
122	4,430,669	45	4,430,010	442	4,430,298	377	4,430,383	17	4,430,438	122	4,430,507
135	4,430,670	CLASS 373		481	4,430,298	380	4,430,384	95	4,430,439	256	4,430,508
192.1	4,430,671		4,430,742	CLASS 421		355	4,430,385	105	4,430,440	CLASS 562	
213	4,430,672	5	4,430,743	64	4,430,299	579	4,430,386	109	4,430,441	401	4,430,509
	4,430,673	13	4,430,744	109	4,430,300	595	4,430,387			465	4,430,511
317	4,430,674	14	4,430,745	119	4,430,301	627	4,430,388			481	
342	4,430,675	25	4,430,746	140	4,430,302	CLASS 429		162	4,430,252	CLASS 564	
CLASS 360			4,430,747	174	4,430,303	34	4,430,390	185	4,430,253	530	4,430,515
13	4,430,676	134	4,430,290	204	4,430,304	40	4,430,391	220	4,430,254	533	4,430,516
99	4,430,678	146	4,430,291	246	4,430,305	53	4,430,392		4,430,255	660	4,430,517
106	4,430,679	301	4,430,292	292	4,430,306	53	4,430,393		4,430,256	CLASS 604	
137	4,430,680	314	4,430,293	CLASS 423		91	4,430,394	243	4,430,257	48	4,430,073
966	4,430,677			3	4,430,307	147	4,430,395		4,430,258	49	4,430,074
CLASS 361			4,430,746	7	4,430,308	184	4,430,396	CLASS 518		73	4,429,693
27	4,430,681	40	4,430,747	10	4,430,309	191	4,430,397	703	4,430,444	77	4,430,075
31	4,430,682		4,430,748	121	4,430,310	206	4,430,398		4,430,445	96	4,430,076
42	4,430,683	15	4,430,749	179.5	4,430,311	218	4,430,399	38	4,430,446	111	4,430,077
98	4,430,684	97	4,430,527	223	4,430,312		4,430,399	50	4,430,447	141	4,430,078
172	4,430,685	CLASS 382		321 R	4,430,313	CLASS 430		53	4,430,448	154	4,430,079
229	4,430,686		4,430,750	326	4,430,314	8	4,430,400	54	4,430,449	240	4,430,080
293	4,430,687	8	4,430,751	499	4,430,315	7	4,430,401	56	4,430,450	256	4,430,081
307	4,430,688	50	4,430,752	573 R	4,430,316	45	4,430,402	64	4,430,451	263	4,430,082
321	4,430,689	54	4,430,753	574 R	4,430,317	58	4,430,403	107	4,430,452	283	4,430,083
						95	4,430,404		4,430,453	317	4,430,084
						58	4,430,405		4,430,454	321	4,430,085
									4,430,455	385	4,430,086
									4,430,456		4,430,087
									4,430,457		4,430,088

CLASSIFICATION OF DESIGNS

D2— 276 272,484	190 272,500	347 272,516	D14— 13 272,532	D21— 34 272,548	D27— 42 272,564
D3— 24 272,485	251 272,501	349 272,517	53 272,533	36 272,549	D28— 64 272,565
40 272,486	254 272,502	382 272,518	68 272,534	65 272,550	D30— 01 272,566
D6— 48.1 272,487	255 272,503	D9— 316 272,519	70 272,535	70 272,551	13 272,567
67 272,488	D7— 17 272,504	370 272,520	71 272,536	120 272,552	40 272,568
74 272,489	37 272,505	D10— 50 272,522	91 272,537	212 272,553	99 272,569
75 272,490	70 272,506	116 272,523	94 272,538	225 272,554	D32— 21 272,570
88 272,491	79 272,507	D12— 84 272,524	D15— 123 272,539	225 272,555	31 272,572
90 272,492	365 272,508	102 272,525	145 272,540	D22— 23 272,556	38 272,573
95 272,493	D8— 1 272,510	142 272,526	D16— 02 272,541	D23— 97 272,557	39 272,574
113 272,494	61 272,512	179 272,527	32 272,542	D24— 17 272,558	40 272,575
160 272,495	62 272,511	309 272,528	D17— 17 272,543	33 272,560	272,576
162 272,496	99 272,513	D13— 35 272,530	D18— 12 272,544	D25— 80 272,562	43 272,577
165 272,497	102 272,514	272,531	D19— 26 272,545	D26— 87 272,563	
188 272,499	331 272,515		91 272,547		

CLASSIFICATION OF PLANTS

P.— 88 5,188					
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

138— 122 T103,901	252— 8.5 C T103,902	523— 206 T103,903			
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GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,430,202	4,430,673	4,429,811	4,429,876	4,430,382	20 : 4,429,517
4 : 4,429,952	4,430,676	4,429,847	4,429,956	4,430,403	4,429,596
6 : 4,430,326	4,430,707	4,429,850	4,429,981	4,430,407	4,429,658
4,429,424	4,430,719	4,429,854	4,430,087	4,430,413	4,429,998
4,429,453	4,430,735	4,429,879	4,430,209	4,430,455	4,430,312
4,429,500	4,429,480	4,429,892	4,430,251	4,430,459	4,430,604
4,429,535	4,429,694	4,429,893	4,430,309	4,430,476	4,429,514
4,429,600	4,429,987	4,429,900	4,430,319	4,430,513	4,429,544
4,429,609	4,430,212	4,429,932	4,430,330	4,430,517	4,429,530
4,429,611	4,430,728	4,429,960	4,430,396	4,430,524	4,429,656
4,429,615	4,429,492	4,430,002	4,430,645	4,430,528	4,430,285
4,429,645	4,429,576	4,430,042	4,430,668	4,430,561	4,429,581
4,429,653	4,429,756	4,430,401	4,430,755	4,430,590	4,429,620
4,429,660	4,429,807	4,430,548	4,430,601	4,430,592	4,429,719
4,429,688	4,429,818	4,430,549	4,429,659	4,430,619	4,429,832
4,429,703	4,429,917	4,430,608	4,430,102	4,430,628	4,430,020
4,429,707	4,429,923	4,430,621	4,430,258	4,430,632	4,430,310
4,429,743	4,429,962	4,430,636	4,430,385	4,430,742	4,430,442
4,429,758	4,430,071	4,430,639	4,429,428	4,430,749	4,430,443
4,429,764	4,430,186	4,430,651	4,429,629	4,034,210	23 : 4,430,520
4,429,790	4,430,241	4,430,685	4,430,611	Re.31.517	24 : 4,429,439
4,429,792	4,430,323	4,430,704	4,429,426	4,429,474	4,429,506
4,429,797	4,430,337	4,430,706	4,429,432	4,429,604	4,429,612
4,429,824	4,430,534	4,430,708	4,429,481	4,429,678	4,429,681
4,429,851	4,430,614	4,430,710	4,429,490	4,429,708	4,430,108
4,429,868	4,430,690	4,430,711	4,429,556	4,429,725	4,430,170
4,429,871	4,430,716	4,430,730	4,429,631	4,429,772	4,430,216
4,429,872	4,429,571	4,430,744	4,429,637	4,429,777	4,430,217
4,429,877	4,429,573	4,429,895	4,429,683	4,429,791	4,430,318
4,429,890	4,429,634	4,429,905	4,429,689	4,429,808	4,430,375
4,429,891	4,429,918	4,430,712	4,429,786	4,429,067	4,430,437
4,429,907	4,429,712	4,429,451	4,429,787	4,430,081	4,430,588
4,429,909	4,430,691	4,429,462	4,429,794	4,430,113	4,430,642
4,429,916	4,430,701	4,429,471	4,429,812	4,430,119	4,430,697
4,429,929	4,429,911	4,429,532	4,429,815	4,430,166	25 : 4,429,429
4,429,946	Re.31.515	4,429,608	4,429,921	4,430,266	4,429,437
4,429,959	4,429,472	4,429,617	4,429,933	4,430,268	4,429,587
4,430,044	4,429,487	4,429,695	4,429,944	4,430,269	4,429,603
4,430,061	4,429,488	4,430,293	4,429,963	4,430,327	4,429,657
4,430,078	4,429,496	4,430,444	4,430,017	4,430,328	4,429,702
4,430,083	4,429,562	4,430,698	4,430,027	4,430,460	4,429,881
4,430,089	4,429,597	4,429,714	4,430,032	4,430,484	4,429,931
4,430,176	4,429,614	4,430,001	4,430,035	4,430,485	4,429,947
4,430,203	4,429,624	4,430,468	4,430,077	4,430,499	4,429,953
4,430,227	4,429,655	4,429,961	4,430,086	4,430,597	4,429,954
4,430,278	4,429,677	4,430,006	4,430,135	4,430,634	4,429,994
4,430,389	4,429,684	4,429,466	4,430,183	4,430,665	4,429,997
4,430,496	4,429,685	4,429,527	4,430,195	4,430,671	4,430,000
4,430,514	4,429,693	4,429,543	4,430,263	4,430,747	4,430,036
4,430,580	4,429,704	4,429,687	4,430,300	4,429,593	4,430,046
4,430,582	4,429,716	4,429,710	4,430,302	4,429,788	4,430,065
4,430,587	4,429,803	4,429,796	4,430,367	4,430,281	4,430,115
4,430,616	4,429,804	4,429,848	4,430,369	4,430,700	4,430,145

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,430,226	28 :	4,429,717	4,430,734	37 :	4,429,482	4,429,560	4,429,622
4,430,239	29 :	4,429,465	4,430,758		4,429,539	4,429,563	4,429,665
4,430,288		4,429,751	4,429,451	35 :	4,429,763	4,429,607	4,429,711
4,430,305		4,429,778	4,429,421	36 :	4,429,858	4,429,613	4,429,744
4,430,330		4,429,855	4,429,431		4,430,074	4,429,636	4,429,745
4,430,370		4,430,085	4,429,456		4,430,130	4,429,642	4,429,746
4,430,571		4,430,533	4,429,473		4,430,146	4,429,652	4,429,747
4,430,622	31 :	4,429,831	4,429,497		4,430,435	4,429,675	4,429,755
4,430,626		4,430,018	4,429,552		4,430,560	4,429,740	4,429,765
4,430,646	32 :	4,429,460	4,429,578	38 :	4,429,516	4,429,825	4,429,784
4,430,662		4,429,749	4,429,594	39 :	Re.31,519	4,429,845	4,429,843
3,634,228		4,429,896	4,429,595		4,429,433	4,429,857	4,429,874
4,059,405	33 :	4,429,752	4,429,598		4,429,440	4,429,901	4,429,898
4,429,468		4,430,566	4,429,599		4,429,461	4,430,057	4,429,902
4,429,502		4,430,635	4,429,641		4,429,493	4,430,058	4,429,904
4,429,515	34 :	4,429,454	4,429,654		4,429,530	4,430,075	4,429,912
4,429,534		4,429,545	4,429,718		4,429,537	4,430,110	4,430,923
4,429,570		4,429,574	4,429,737		4,429,548	4,430,111	4,430,025
4,429,584		4,429,580	4,429,795		4,429,579	4,430,208	4,430,045
4,429,589		4,429,632	4,429,798		4,429,582	4,430,248	4,430,084
4,429,590		4,429,638	4,429,799		4,429,592	4,430,256	4,430,097
4,429,661		4,429,670	4,429,856		4,429,771	4,430,257	4,430,130
4,429,669		4,429,793	4,429,866		4,429,827	4,430,276	4,430,196
4,429,679		4,429,800	4,429,869		4,429,829	4,430,291	4,430,201
4,429,727		4,429,814	4,429,875		4,429,860	4,430,304	4,430,204
4,429,738		4,429,839	4,429,880		4,429,864	4,430,361	4,430,289
4,429,753		4,429,938	4,429,882		4,429,937	4,430,368	4,430,306
4,429,761		4,429,939	4,429,886		4,429,945	4,430,418	4,430,311
4,429,767		4,430,025	4,429,897		4,429,950	4,430,439	4,430,315
4,429,805		4,430,080	4,429,935		4,430,015	4,430,449	4,430,349
4,429,889		4,430,082	4,429,942		4,430,100	4,430,454	4,430,481
4,429,920		4,430,094	4,429,948		4,430,105	4,430,456	4,430,482
4,429,934		4,430,114	4,429,982		4,430,106	4,430,486	4,430,567
4,430,012		4,430,133	4,429,983		4,430,127	4,430,489	4,430,576
4,430,033		4,430,149	4,429,990		4,430,137	4,430,490	4,430,584
4,430,064		4,430,155	4,429,991		4,430,148	4,430,541	4,430,649
4,430,177		4,430,158	4,430,011		4,430,222	4,430,585	4,430,657
4,430,228		4,430,171	4,430,013		4,430,271	4,430,599	4,430,718
4,430,231		4,430,188	4,430,019		4,430,287	4,430,638	4,430,724
4,430,247		4,430,198	4,430,021		4,430,360	4,430,663	4,430,725
4,430,253		4,430,199	4,430,050		4,430,393	4,430,692	4,430,741
4,430,282		4,430,200	4,430,069		4,430,463	4,430,751	4,430,028
4,430,283		4,430,206	4,430,070		4,430,465	4,430,752	4,430,169
4,430,295		4,430,233	4,430,072		4,430,487	4,429,557	4,430,739
4,430,340		4,430,237	4,430,091	44 :	4,430,491	4,429,722	4,430,153
4,430,391		4,430,252	4,430,092		4,430,573	4,429,826	4,429,503
4,430,428		4,430,255	4,430,093	40 :	4,429,739	4,430,024	4,429,732
4,430,495		4,430,286	4,430,095		4,429,748	4,429,540	4,430,277
4,430,502		4,430,314	4,430,109		4,429,750	4,429,867	4,430,313
4,430,527		4,430,322	4,430,122		4,430,103	4,430,236	4,430,552
4,429,430		4,430,325	4,430,160		4,430,128	4,430,551	4,430,640
4,429,447		4,430,329	4,430,235		4,430,197	4,430,240	4,430,756
4,429,484		4,430,335	4,430,242		4,430,207	4,429,435	4,429,463
4,429,491		4,430,353	4,430,319		4,430,275	4,429,464	4,429,844
4,429,577		4,430,354	4,430,324		4,430,317	4,429,508	4,429,915
4,429,705		4,430,376	4,430,365		4,430,427	4,429,640	4,429,928
4,429,782		4,430,390	4,430,384		4,430,466	4,429,648	4,430,052
4,429,846		4,430,392	4,430,396		4,430,472	4,429,729	4,430,652
4,429,910		4,430,396	4,430,406		4,430,511	4,429,840	4,429,477
4,429,913		4,430,398	4,430,420		4,430,515	4,429,861	4,430,341
4,429,940		4,430,457	4,430,461		4,430,653	4,429,903	4,429,449
4,429,980		4,430,467	4,430,471	41 :	4,429,479	4,430,179	4,429,455
4,430,056		4,430,473	4,430,507		4,429,559	4,430,189	4,429,610
4,430,079		4,430,508	4,430,522		4,429,568	4,430,214	4,429,673
4,430,184		4,430,516	4,430,546		4,429,720	4,430,381	4,429,724
4,430,363		4,430,526	4,430,557		4,430,022	4,430,540	4,429,759
4,430,397		4,430,579	4,430,575		4,430,076	4,430,569	4,429,789
4,430,408		4,430,583	4,430,643		4,430,098	4,429,420	4,429,936
4,430,414		4,430,600	4,430,644		4,430,531	4,429,444	4,430,073
4,430,426		4,430,601	4,430,667		4,430,641	4,429,498	4,430,348
4,430,479		4,430,605	4,430,705		4,429,419	4,429,504	4,430,395
4,430,563		4,430,655	4,430,721	42 :	4,429,425	4,429,525	4,430,429
4,430,659		4,430,670	4,430,727		4,429,459	4,429,585	4,430,631
4,430,702		4,430,726	4,430,748		4,429,512	4,429,591	4,429,754

DESIGN PATENTS

04 :	272,539	09 :	272,569	19 :	272,573	27 :	272,525		272,519		272,526
06 :	272,487		272,516		272,556		272,517		272,520		272,533
	272,494		272,546		272,578		272,577		272,548		272,574
	272,503		272,570	24 :	272,491	29 :	272,500		272,552	40 :	272,566
	272,510		272,571	25 :	272,507	32 :	272,572		272,565	42 :	272,490
	272,514	12 :	272,506		272,508	34 :	272,553		272,495		272,550
	272,515		272,542		272,530		272,554	37 :	272,496		272,559
	272,528		272,560		272,531		272,567		272,497	47 :	272,488
	272,529		272,561		272,545	35 :	272,532		272,498		272,489
	272,540		272,562		272,549	36 :	272,485		272,557		272,527
	272,544		272,576	26 :	272,502		272,499	39 :	272,518	49 :	272,501
	272,563	17 :	272,493		272,521		272,504		272,522	53 :	272,486
	272,568										

PLANT PATENTS

45 :	5,188				
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 :	T103,903	17 :	T103,902		
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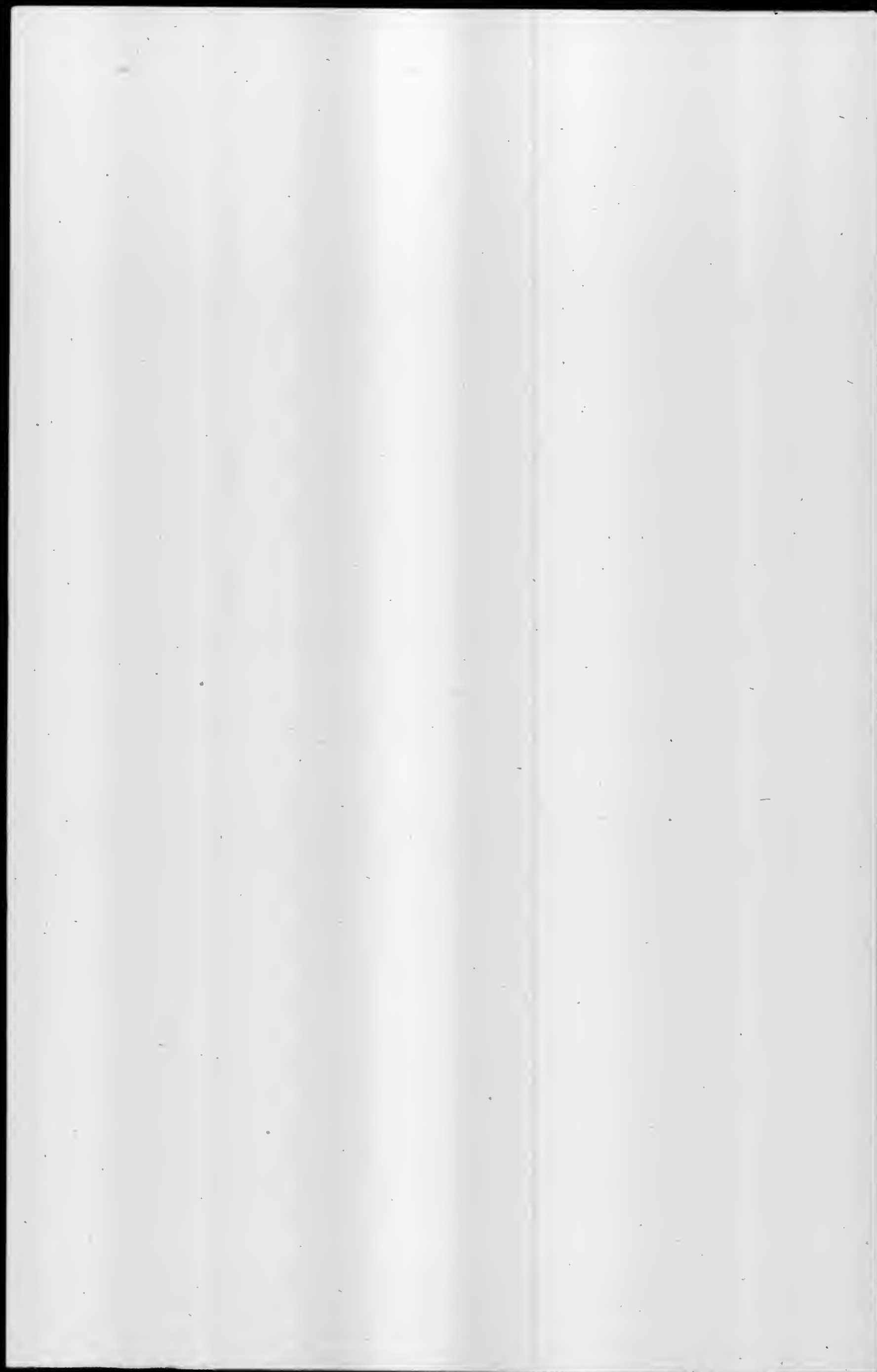
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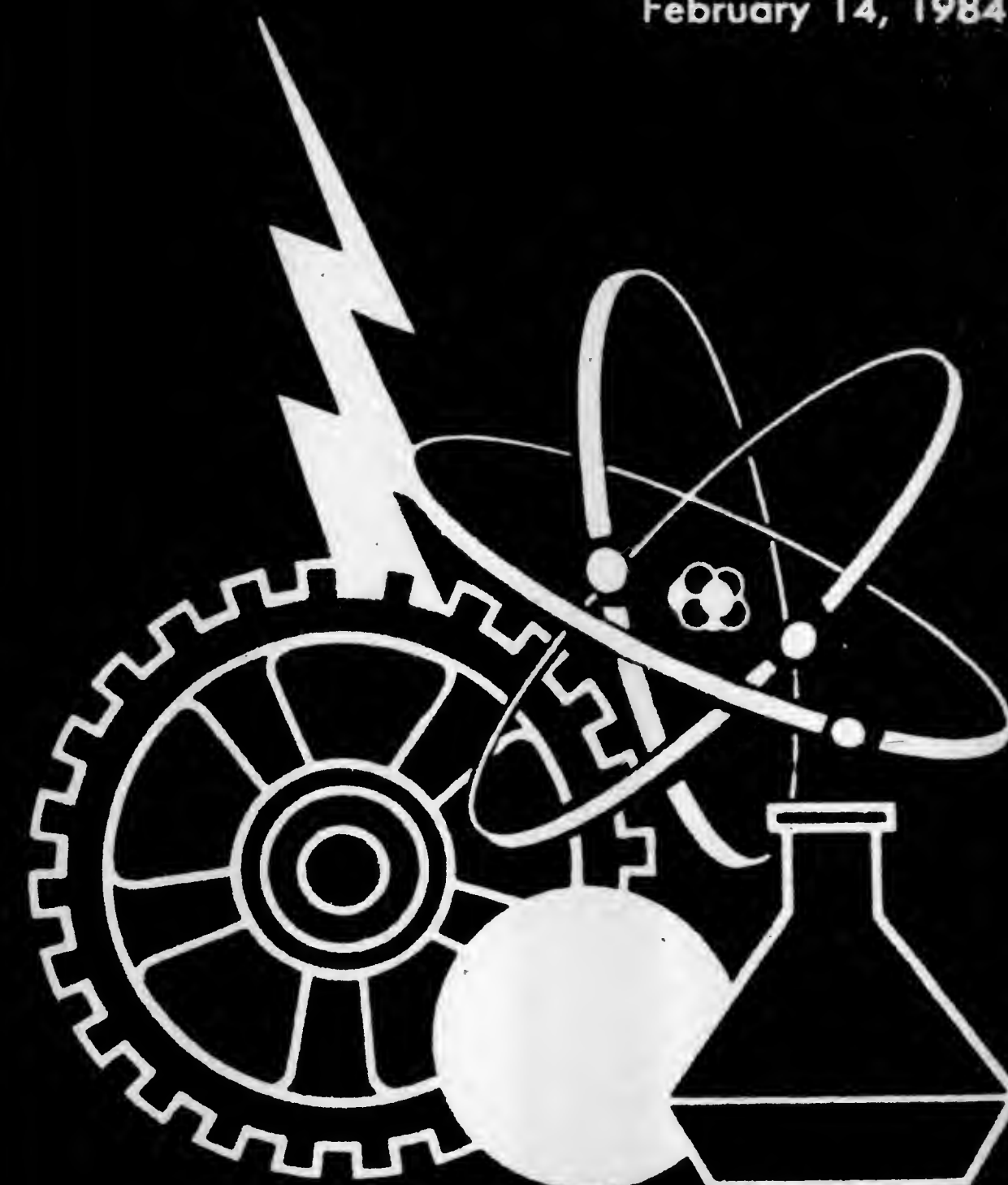
Vol. 1039 Number 7

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 14, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS



Route to

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U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, Commissioner

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1039 OG 8
Reissue Applications Filed	1039 OG 8
Request for Reexamination Filed	1039 OG 8
Trademark Exposition	1039 OG 8
Current Membership of Performance Review Board	1039 OG 9
Patents Available for License or Sale	1039 OG 9
Notice of Proposed Rulemaking	1039 OG 11
Patent Certificates of Correction	1039 OG 137
Disclaimers	1039 OG 137
Reference Collections of U.S. Patents Available for Public Use in	
Patent Depository Libraries	1039 OG 138
Condition of Patent Applications	1039 OG 139
New Patent Grant Cover	1039 OG 140
Reexaminations	463
Reissue Patents Granted (31,520)	465
Plant Patents Granted (5,189)	467
Patents Granted	
General and Mechanical (4,430,759)	469
Chemical (4,431,429)	703
Electrical (4,431,858)	817
Design Patents Granted (272,579)	903
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 48
Classification of	
Patents (Including Reissues and Reexaminations)	PI 51
Designs and Plants	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 56
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

- THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
- THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
- GENERAL INFORMATION concerning PATENTS.
- GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at \$1.00 each; PLANT PATENTS in color, \$8.00 each; copies of TRADEMARKS at \$1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. The search fee for the European Patent Office was changed as of Jan. 22, 1983 and was announced at 1025 O.G. 27 on Dec. 28, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The current schedule of PCT fees is as follows:

Transmittal fee	\$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00*
International Fees	
Basic Fees (first 30 pages)	295.00
Basic Supplemental Fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

Nov. 14, 1983.

*Effective Feb. 14, 1984.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,307,343, Re. S.N. 555,307, Filed Nov. 25, 1983, Cl. 324/307, MOVING GRADIENT ZEUGMATOGRAPHY, Richard S. Likes, Owner of Record: *General Electric Co., Schenectady, N.Y.*, Attorney or Agent: Alexander M. Gerasimow, et al., Ex. Gp.: 252

4,310,056, Re. S.N. 475,485, Filed Mar. 15, 1983, Cl. 173/169, PNEUMATIC-HYDRAULIC TOOL, PREFERABLY FOR BLIND RIVETING, Lars E. G. Olsson, Owner of Record: *Inventor*, Attorney or Agent: Robert B. Murray, et al., Ex. Gp.: 323

4,357,089, Re. S.N. 557,540, Filed Dec. 2, 1983, Cl. 354/286, ELECTRICAL CONTACT ARRANGEMENT FOR PHOTOGRAPHIC CAMERA WITH INTERCHANGEABLE LENS, Zenechi Okura, et al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki, Tokyo, Japan*, Attorney or Agent: C. Russell Hale, Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for re-

examination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 28,474, Reexam. No. 90/000,482, Requested: Dec. 15, 1983, Cl. 523/336, PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS, Donald R. Anderson, et al., Owner of Record: *Nalco Chemical Co., Oak Brook, Ill.*, Attorney or Agent: Henry L. Brinks, Ex. Gp.: 140, Requester: Nalco Chemical Co., Oak Brook, Ill.

3,602,706, Reexam. No. 90/000,481, Requested: Dec. 14, 1983, Cl. 354/551, DATA-PROCESSING METHOD AND MEANS FOR CLASSIFYING SIGNALS IN A FIRST OR SECOND STATE, Joseph R. Levitt, Owner of Record: *OCG Technology, Inc., New York, N.Y.*, Attorney or Agent: Jacobs & Jacobs, Ex. Gp.: 230, Requester: Joseph R. Lundy, New York, N.Y.

3,706,344, Reexam. No. 90/000,471, Requested: Nov. 25, 1983, Cl. 166/297, TUBING CONVEYED PERMANENT COMPLETION METHOD AND DEVICE, Roy R. Vann, Owner of Record: *Roy R. Vann, Gilllawn, Ark.*, Attorney or Agent: None, Ex. Gp.: 350, Requester: Baker Oil Tools, Inc., Houston, Tex.

3,769,254, Reexam. No. 90/000,483, Requested: Dec. 15, 1983, Cl. 260/33.4, HIGH STRENGTH PRESSURE-SENSITIVE ADHESIVES, Carl C. Anderson, et al., Owner of Record: *National Starch and Chemical Corp., Bridgewater, N.J.*, Attorney or Agent: James & Franklin, Ex. Gp.: 140, Requester: Owner

4,128,602, Reexam. No. 90/000,484, Requested: Dec. 15, 1983, Cl. 525/68, POLYPHENYLENE ETHER COMPOSITIONS CONTAINING RUBBER MODIFIED POLYSTYRENE, Arthur Katchman, et al., Owner of Record: *General Electric Co., Pittsfield, Mass.*, Attorney or Agent: Fish & Neave, Ex. Gp.: 140, Requester: Asahi Kasei Kogyo Kabushiki Kaisha Hibiya-Mitsui, Tokyo, Japan

4,157,276, Reexam. No. 90/000,486, Requested: Jan. 16, 1984, Cl. 162/348, PAPER MACHINE FABRIC IN AN ATLAS BINDING, Hermann Wandel, et al., Owner of Record: *Hermann Wagner, Reutlingen, Fed. Rep. of Germany*, Attorney or Agent: Scully, Scott, et al., Ex. Gp.: 173, Requester: Wisconsin Wires, Inc., Appleton, Wis.

4,255,421, Reexam. No. 90/000,487, Requested: Jan. 18, 1984, Cl. 424/180, FORTIMICIN AMINOGLYCOSIDES, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF, Isamu Watanabe, et al., Owner of Record: *Requester*, Attorney or Agent: John T. Miller, Ex. Gp.: 123, Requester: Kowa Co., Ltd., Washington, D.C.

Trademark Exposition

The Patent and Trademark Office is holding its Second Annual National Trademark Exposition in the Tourist Information Center (formerly the "Great Hall" and the Patent Office Search Room) in the Herbert C. Hoover Bldg. (Main Commerce), 14th St. and Constitution Ave., N.W., Washington, D.C., on Saturday and Sunday, July 7th and 8th, 1984.

FEBRUARY 14, 1984

U.S. PATENT AND TRADEMARK OFFICE

1039 OG 9

There will be a \$100.00 fee for exhibitors. Parties wishing to exhibit should contact Peter Harab, at (703) 557-5237.

Dec. 16, 1983.

MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Current Membership of Performance Review Board

This notice announces the appointment of the following permanent member of the Performance Review Board for the Patent and Trademark Office:

Theresa A. Brelsford, Assistant
Commissioner for Administration,
U.S. Patent and Trademark Office,
Washington, D.C. 20231

The current membership of the Board is as follows:

Donald J. Quigg, Chairman, Deputy
Commissioner of Patents and Trademarks,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-permanent.

Rene D. Tegtmeyer, Member, Assistant
Commissioner for Patents,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-permanent.

Margaret M. Laurence, Member,
Assistant Commissioner for Trademarks,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-permanent.

Bradford R. Huther, Member, Assistant
Commissioner for Finance and Planning,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-permanent.

Theresa A. Brelsford, Member,
Assistant Commissioner for Administration,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-permanent.

Samuel S. Matthews, Member,
Director, Examining Group 250,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-expires Jan. 31, 1986.

Richard J. Wieland, (Outside) Member,
Assistant General Counsel for Litigation,
HQ National Aeronautics and Space
Administration,
Washington, D.C. 20646.

Term-expires July 12, 1984.

Samih N. Zaharna, Member, Director,
Patent Examining Group 160,
U.S. Patent and Trademark Office,
Washington, D.C. 20231.

Term-expires Jan. 31, 1986.

Persons desiring any further information about the membership of the PRB may contact Mr. Aaron W. Deitch, Personnel Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-2662.

Jan. 18, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

Patents Available for License or Sale

3,335,515. ANTI-RECOIL DEVICE FOR GUNS. *Martha J. Bennett*, 28 Pendlewood Dr., Cheektowaga, N.Y. 14225.

3,798,374. SOUND REPRODUCING SYSTEM UTILIZING MOTIONAL FEEDBACK. *Stanley Thayer Meyers*, 122 North Riverside Ave., Red Bank, N.J. 07701.

3,935,604. SUPPORT DEVICE FOR LIFTING AND SUPPORTING PATIENTS. *Robert A. Collins, M.D.*, 2215 Mayall St., Chatsworth, Calif. 91311.

4,004,501. TACO HOLDING TRAY. *Lois L. Guerrero*, 84 Pukihae St., #1303, Hilo, Hi. 96720.

4,136,764. MOTHER ALICE BREAD VENDING MACHINE. *Alice Johnson*, 8650 Belford Ave. #1, Los Angeles, Calif.

4,239,030. FIELD BURNER APPARATUS. *Everett H. Benson*, 20568 S. E. Norse Rd., Eagle Creek, Ore. 97022.

4,302,883. EXACTO-MAC. *Exacto-Mac Ltd. Partnership* c/o Thompson, Weir and Barclay, P.O. Box 2044, New Haven, Conn. 06521.

4,377,928. REINFORCEMENT BASKET FOR REINFORCED-CONCRETE. *Wilhelm Hasak*, Assignee, Landschuter Baueisenbiegerei GmbH. Correspondence to: Karl F. Ross, 5676 Riverdale Ave., New York, N.Y. 10471.

4,404,689. FLEXIBLE CONTAINER. *Kija, Inc.* c/o Thomas E. DeWan, 722 Main St., Dunedin, Fla. 33528.

General Electric Co. is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers. Applications for license may be addressed to Patent Counsel, Large Stream Turbine-Generator Division, General Electric Co., 1 River Rd., Schenectady, N.Y. 12345.

4,279,944. EPOXY IMPREGNATED VENTILATED WINDING.

4,281,264. MOUNTING OF ARMATURE CONDUCTORS IN AIR-GAP ARMATURES.

4,345,175. MEANS FOR REDUCING SHEAR STRESSES ON WINDING CONDUCTOR INSULATION FOR AIR-GAP DYNAMOELECTRIC MACHINES.

4,352,034. STATOR CORE WITH AXIAL AND RADIAL COOLING FOR DYNAMOELECTRIC MACHINES WITH AIR-GAP STATOR WINDINGS.

4,363,982. DUAL CURVED INLET GAP PICKUP WEDGE.

4,365,178. LAMINATION ROTOR FOR A DYNAMOELECTRIC MACHINE WITH COOLANT PASSAGEWAYS THEREIN.

4,366,703. METHOD AND APPARATUS FOR DETERMINING PERMEABILITY AND THICKNESS OF REFRACTORY COATINGS ON FOUNDRY MOLDS AND CORES.

4,381,128. VIBRATION DAMPING TILTING PAD JOURNAL BEARING.

4,398,393. STEAM TURBINE CONTROL APPARATUS.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, Bldg., 21 BW, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,380,760. SMOKE DETECTOR WITH DELAYED ALARM AFTER CHANGE TO STAND-BY POWER.

Applications for license may be addressed to: Patent Counsel, Aircraft Engine Business Group, General Electric Co., 1000 Western Ave., Lynn, Mass. 01910.

4,313,167. THRUST CONTROL SYSTEM FOR A GAS TURBINE ENGINE.

4,317,685. METHOD FOR REMOVING A SCALE FROM A SUPERALLOY SURFACE.

4,332,843.	METALLIC INTERNAL COATING METHOD.	3,736,071.
4,377,736.	METHOD AND APPARATUS FOR REMOVING MATERIAL FROM A SURFACE.	3,804,551.
4,388,831.	ULTRASONIC PROBE FOR NONDESTRUCTIVE INSPECTION.	3,816,022.
4,396,577.	COBALT-PALLADIUM-SILICON-BORON BRAZING ALLOY.	3,856,433.
		3,904,101.
		4,406,117.
		4,017,210.
		4,023,249.
		4,023,251.
		4,130,373.
		4,144,380.
		4,183,456.
		4,326,373.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

Docket No. 40104-03

Patent Interference Proceedings

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of proposed rulemaking

SUMMARY: This Administration on July 18, 1983, forwarded to the Congress a legislative proposal to combine the Board of Appeals and the Board of Patent Interferences into a single Board of Appeals and Interferences. This legislation is now being considered in the House (H.R. 4462) and Senate (S. 1538, as amended and reported by the Subcommittee on Patents, Copyrights and Trademarks of the Senate Committee on the Judiciary). In order to afford the public the maximum time for studying and comment, this proposed notice of rulemaking sets forth changes that the Patent and Trademark Office (PTO) is proposing to the rules governing interferences should the legislation be enacted. The proposing of rule changes on the assumption that the legislation will be passed is not in any way intended to usurp the prerogatives of the Congress to act as it wishes in regard to the proposed legislation. Should the Congress amend the proposed legislation, this notice of proposed rulemaking will be revised to satisfy Congressional intent. Should Congress fail to enact the proposed legislation, this notice will likewise be revised to streamline interference proceedings without the merger of the two Boards. Interested persons are invited to comment on the proposed rules.

DATES: Comments must be submitted on or before May 7, 1984; a public hearing will be held on May 15, 1984, at 9:30 A.M.; requests to present oral testimony should be received on or before May 7, 1984.

ADDRESS: Address written comments and requests to present oral testimony to Box 8, Commissioner of Patents and Trademarks, Washington, D. C. 20231, Attention: Fred E. McKelvey. The hearing will be held in the Commissioner's Conference Room, 11th Floor, Crystal Plaza Building 3, Room 11-C-10, 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 12B10, Crystal Gateway II, 1225 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Fred E. McKelvey by telephone at (703) 557-4026 (if no answer, message may be left at 703-557-4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office (PTO) conducts interference proceedings to determine who as between two or more applicants for patent or one or more applicants and a patentee is the first inventor of a patentable invention. Currently, the determination is made by a Board of Patent Interferences. Proposed legislation to combine the Board of Appeals and the Board of Patent Interferences into a single Board of Appeals and Interferences (Board) and to give the Board authority to consider patentability in an interference is pending before the Congress. See H.R. 4462 and S. 1538, as amended and reported out by the Subcommittee on Patents, Copyrights and Trademarks of the Senate Committee on the Judiciary (reprinted in BNA's Patent, Trademark & Copyright Journal, Vol.27, No. 656, pp. 94 to 97 (November 24, 1983)). Should the proposed legislation not be enacted, it will be necessary to revise this notice of proposed rulemaking and to hold further hearings. The proposed rules presuppose that the proposed legislation will be enacted.

Through the proposed rules the PTO seeks to improve interference procedure so that the rights of parties in interferences may be settled at an early date and the overall process of examining patent applications which become involved in interferences may be simplified.

In order to obtain maximum input from the public prior to formally proposing these regulations, on August 1, 1983, the PTO published in the Federal Register an advanced notice

of proposed rulemaking for interference rules. 48 F.R. 34836-34855. The advanced notice was not published in the Official Gazette. Twenty-one written comments were received. All comments were thoroughly analyzed and are available for public inspection in Room 12B10, Crystal Gateway II, 1225 Jefferson Davis Highway, Arlington, Virginia.

The proposed rules for interferences are set forth herein in §§1.601 through 1.688. The proposed rules would replace entirely the present interference rules (37 CFR §§1.201 through 1.288). A "six hundred" number series is used for the proposed rules. If adopted, the use of a six hundred number series for the rules would permit interested individuals to research published decisions (e.g., F.2d, USPQ) or computerized legal research services (e.g., LEXIS) citing the rules.

An index of the headings of proposed §§1.601-1.688 and a table correlating the present rules (37 CFR §§1.201 through 1.288) to the proposed rules (37 CFR §§1.601 through 1.688) appear below.

Under the proposed rules, interferences would be decided by the Board. The Board would have jurisdiction to determine (1) priority of invention, (2) patentability of any claim corresponding to a count both as to applicants and patentees, (3) any issue of interference-in-fact as to any count, and (4) any other issue necessary to resolve the interference. The proposed rules would permit an interference to be declared on the basis of a single count defining one patentable invention in interferences involving patents as well as applications. The Board would also have jurisdiction to determine whether counts are patentably distinct.

When an interference is declared, an examiner-in-chief would be assigned to handle the interlocutory stages of the interference. An examiner having full signatory authority would determine when one or more applications or one or more applications and a patent claim the same patentable invention. When the examiner makes such determination, the examiner would forward any involved applications or patents to the Board. The examiner would designate, at the time the involved applications or patents are sent to the Board, the claims of any application and patent which correspond to each count. The examiner-in-chief could subsequently

designate additional claims to correspond to a count. The examiner-in-chief assigned to handle the interference would issue a notice to the parties declaring the interference.

The object of the interference would be to resolve all controversies as to all interfering subject matter defined by one or more counts. A final decision in the interference would determine who, if anyone, is entitled to claims which correspond to a count. Any decision adverse to an applicant by the Board would be a final refusal by the PTO to that applicant of the claims involved. Any decision adverse to a patentee would constitute cancellation from the patent of the claims involved.

Any decision by the Board on any issue would be binding on the examiner and would govern further proceedings in the PTO.

The appointment of a single examiner-in-chief to handle the interlocutory phases of an interference would permit better management of, and control over, interference proceedings. The proposed rules would provide that times be set and the examiner-in-chief exercise control over proceedings in the interference such that pendency of the interference before the Board from declaration to final decision does not normally exceed 24 months. The examiner-in-chief would be familiar with the history of the interference and would be accessible to counsel for the parties. For example, an examiner-in-chief, where appropriate, would be able to conduct telephone conference calls to obtain agreement of the parties on the setting of schedules. The proposed rules would also permit the examiner-in-chief to hold hearings in the PTO or by conference telephone call in order to expedite or settle interlocutory issues in interference. Any hearing could be transcribed by a court reporter under such conditions as an examiner-in-chief or the Board deems appropriate. The examiner-in-chief, where appropriate, would be available by phone to rule on the admissibility of evidence in the event parties encounter unusual problems during the taking of depositions. The examiner-in-chief would also be available to rule on requests for production of documents which take place during cross-examination. Oral orders given by phone would be followed by written orders.

At the time an interference is declared, the examiner-in-chief would set a time for filing preliminary motions. The preliminary motions would include:

(1) A motion for judgment on the ground that a claim corresponding to the count is not patentable to an opponent under 35 U.S.C. §§102, 103, 112, or any other provision of law.

(2) A motion for judgment on the ground that there is no interference-in-fact between the claims of the opponents in the interference.

(3) A motion to add or to substitute new counts, amend a claim corresponding to a count, designate an application or patent claim to correspond to a count, or designate an application or patent claim as not corresponding to a count.

(4) A motion to substitute another application for the application involved in the interference or to add an application for reissue to the interference.

(5) A motion to declare another interference.

(6) A motion to be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opponent.

Other motions would be permitted as necessary, such as a motion to amend the count and/or a claim corresponding to the count in response to a motion for judgment.

Oppositions to motions would be permitted if filed within a time set by the examiner-in-chief. Replies would be permitted for some motions. Papers which are not authorized by the rules or requested by the examiner-in-chief could be returned unfiled.

A preliminary statement would be filed prior to or concurrently with the preliminary motions outlined above.

Motions would be decided by an examiner-in-chief, who could consult with an examiner on questions of patentability which had not previously been decided by the examiner. The examiner-in-chief would be authorized to grant a motion,

deny a motion, defer consideration on the merits of a motion to final hearing, or take such other action with respect to a motion as may be appropriate, e.g., dismiss an entirely inappropriate motion.

At the time preliminary motions are decided, the examiner-in-chief would open any preliminary statement. If a decision on a motion or inspection of the preliminary statement results in entry of an order to show cause why a judgment should not be entered, the party against whom judgment might be entered could request a hearing before the examiner-in-chief and two additional examiners-in-chief. The decision would govern further proceedings. If adverse, the decision would constitute a final agency action. If favorable, the interference would again proceed before the examiner-in-chief.

After preliminary motions are decided and assuming judgment does not result, a period would be set for the parties to file motions for discovery. The scope of the discovery would be the same as under current practice.

When a time period is set for filing discovery motions, or after discovery has closed, the examiner-in-chief would set a period for taking testimony. Any party wishing to take the testimony of a witness could elect to have the testimony of the witness taken by deposition or presented by affidavit. A transcript of an ex parte deposition could be used as an affidavit. If an affidavit is presented, the opposing party could then cross-examine on oral deposition. Any redirect would take place at the deposition. The party calling the witness would be responsible for securing a court reporter and filing the transcript and record associated with cross-examination of its witness.

In the event a party would need testimony from a third-party who would not appear unless a subpoena is issued, including a hostile witness, direct and cross-examination testimony would be taken on oral deposition. The proposed rules provide that prior authorization of an examiner-in-chief would be required before a party could seek testimony by issuance of a subpoena under 35 U.S.C. §24. The proposed rule being considered thus adopts the policy of Sheehan v. Doyle, 513 F.2d 895, 898, 185 USPQ 489, 492 (1st Cir.), cert. denied, 423 U.S. 874 (1975), and Sheehan v. Doyle, 529 F.2d 38, 40,

188 USPQ 545, 546 (1st Cir.), cert. denied, 429 U.S. 870 (1976), rehearing denied, 429 U.S. 987 (1976), while rejecting the policy announced in Brown v. Braddick, 595 F.2d 961, 967, 203 USPQ 95, 101-102 (5th Cir. 1979). Testimony obtained in other proceedings, e.g., another interference or an infringement action, would continue to be used if otherwise admissible.

Under the proposed rules, the Federal Rules of Evidence would be applicable to interferences, except for those portions which relate to criminal actions, juries, and other matters not relevant to interferences. Those portions include:

- (1) Rule 103(c).
- (2) Rule 104(c), (d), and (e).
- (3) The language in Rule 105 which reads "and instruct the jury accordingly."
- (4) Rule 201(g).
- (5) The language in Rule 403 which reads "or misleading the jury."
- (6) Rule 404(a)(1) and (2).
- (7) The word "charge" in Rule 405(b).
- (8) The language "or criminal" and proviso (ii) in Rule 410.
- (9) Rule 412.
- (10) Rule 606.
- (11) The language "whether by an accused" and "other" in the last sentence of Rule 607.
- (12) The provisions of the first sentence of Rule 611(c) relating to leading questions on direct examination shall not apply to statements made in an affidavit authorized to be filed under this subpart.

(13) The language "Except as otherwise provided in criminal proceedings by section 3500 of title 18, United States Code" and "except that in criminal cases when the prosecution elects not to comply, the order shall be one striking the testimony or, if the court in its discretion determines that the interests of justice so require, declaring a mistrial" in Rule 612.

(14) Rule 614.

(15) Rule 706.

(16) The language "excluding, however, in criminal cases matters observed by police officers and other law enforcement personnel" and "and against the Government in criminal cases" in Rule 803(8).

(17) The language "but not including, when offered by the Government in a criminal prosecution for purposes other than impeachment, judgments against persons other than the second" in Rule 803(22).

(18) The language "prosecution for homicide or in a" in Rule 804(b)(2).

(19) The language "A statement tending to expose the declarant to criminal liability and offered to exculpate the accused is not admissible unless corroborating circumstance clearly indicate the trustworthiness of the statement" in Rule 804(b)(3).

(20) Rule 1101(a), (b), (d)(2), (d)(3), and (e).

The examiner-in-chief would set a period for filing the record and briefs. Oral hearing normally would be held before a panel consisting of the examiner-in-chief assigned to the interference and two other examiners-in-chief. The panel would render a final decision in the interference. Requests for reconsideration would continue to be permitted.

A final decision of the Board would be reviewable in the U.S. Court of Appeals for the Federal Circuit or an appropriate U.S. district court. Any reviewing court could review all aspects of the decision including patentability, priority, and all relevant interlocutory orders, such as denials of discovery.

The proposed rules, if adopted, would be applicable to interferences declared thereafter. Interferences declared prior thereto would continue to be governed by the present rules and would be handled by personnel of the Board of Appeals and Interferences. Actions presently taken by a patent interference examiner would be taken by an examiner-in-chief.

A proposed time schedule for a two-party interference follows.

The procedures discussed above and being proposed in §§1.601 through 1.688 would introduce new concepts in interference practice. Some of the more significant aspects of the proposed rules, as well as some of the new concepts, include the following.

Section 1.1, as proposed to be amended, codifies a practice announced in a Commissioner's Notice of November 28, 1983, "Mailing of Papers to the PTO in Patent Interference Proceedings," 1037 Official Gazette 25 (December 27, 1983) and authorizes a party in an interference to direct mail to the PTO intended for an interference to a special box in the Mail Room for interference papers. Amendments copying claims which are filed prior to the time an interference is declared would continue to be addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Section 1.5, as proposed to be amended, provides that when a paper filed in the PTO concerns an interference which has been declared, it should state the names of the parties (e.g., Smith v. Jones) and the number of the interference. The name of the examiner-in-chief assigned to the interference under proposed §1.610 and the name of the party filing the paper should also appear conspicuously on the first page of the paper. Identification of the examiner-in-chief assigned to the interference and the name of the party filing the paper would greatly assist the Board in its administration of interference cases.

Section 1.8, as proposed to be amended, excludes from the certificate of mailing practice any paper in an interference which an examiner-in-chief orders filed by hand or "Express Mail." Papers filed by "Express Mail" in an interference case would be addressed as set forth in §1.1(d) as proposed to be amended.

Section 1.11, as proposed to be amended, sets forth when decisions of the Board would become available to the public without a petition for access.

Section 1.48, as proposed to be amended, provides that when a request is filed to correct inventorship of an application involved in an interference, the request shall comply with the requirements of §1.48 and shall be accompanied by a motion under proposed §1.634. The request would be placed in the file of the application and the motion would be placed in the file of the interference. The request would be decided as part of the interference.

Section 1.138, as proposed to be amended, would permit an attorney or agent to sign and file a paper abandoning an application involved in an interference.

Section 1.196, as proposed to be amended, more clearly sets forth the options open to an applicant when the Board makes a new ground of rejection under §1.196(b). The last sentence of paragraph (b)(1), as proposed to be amended, is intended to clarify practice in certain situations. One situation involves a case where (1) the Board affirms an examiner's rejection of a "first" claim and makes a new ground of rejection under §1.196(b) of a "second" claim, (2) the applicant elects to have further proceedings before the examiner on the new ground of rejection on the second claim, and (3) those proceedings do not result in a further appeal (i.e., the second claim is allowed or is cancelled). The last sentence of proposed §1.196(b) would permit the Board to make its decision final on the first claim. By making its decision final on the first claim, the time period under §1.304 for seeking judicial review would start. Another situation involves a case where (1) the Board affirms an examiner's rejection of a claim over reference A, (2) the Board also enters a new ground of rejection of the claim over reference B, (3) the applicant elects to have further proceedings before the examiner on the new ground of rejection, and (4) those proceedings result in applicant overcoming the new ground of rejection based on reference B.

The last sentence of proposed §1.196(b) would permit the Board to make its decision final as to its affirmance of the rejection over reference A. Entry of an order making its decision final would start the period under §1.304 for seeking judicial review. Thus, an applicant would not forego possible judicial review by electing further prosecution before the examiner when a new ground of rejection is made by the Board. Under paragraph (d), as proposed to be amended, a recommendation by the Board that an allowed claim be rejected is binding on the examiner (rather than being a mere recommendation as is now the case) in the absence of (1) an amendment, (2) showing of facts by affidavit or other appropriate evidence, or (3) both. The last sentence of paragraph (d), as proposed to be amended, is intended to clarify that the Board may enter a final decision in certain circumstances. When the Board affirms an examiner's rejection of a "first" claim and makes a recommendation under paragraph (d) as to a "second" claim, the application is remanded to the examiner and the Board's decision affirming the rejection of the first claim is not a final decision. If proceedings before the examiner on remand do not result in a further appeal (i.e., the second claim is allowed or is cancelled), the Board may make its decision final as to the first claim. By making its decision final as to the first claim, the time period under §1.304 for seeking judicial review would start. Thus, an applicant would not forego judicial review on the first claim merely because of the remand proceedings with respect to the second claim.

While it is proposed to remove most of the current interference rules (§§1.201 through 1.247 and 1.251 through 1.288), it is proposed to retain §1.248 as the rule governing service of papers in all patent cases except interference proceedings. Section 1.646, as proposed, would govern service of papers in interference proceedings.

Under §1.292, as proposed to be amended, it is intended to modify public use proceedings only to the extent that public use and on sale issues which arise during an interference shall be raised by a preliminary motion under proposed §1.633(a). There would be no fee for filing the motion in the interference, but a fee would continue to be necessary when a petition is filed for institution of a public use proceeding apart from an interference. When a public use proceeding is instituted apart from an

interference, the Commissioner would designate an appropriate official to conduct the proceeding including the setting of times for taking testimony under proposed §§1.671 through 1.685.

Section 1.304, as proposed to be amended, would make it clear that the provisions of §1.136 do not apply when judicial review is sought of a decision of the Board of Appeals and Interferences in (1) a reexamination proceeding or (2) an interference. An extension of time to seek judicial review of a decision of the Board in a reexamination proceeding may be obtained under §1.550(c). An extension of time to seek judicial review of a decision of the Board in an interference proceeding may be obtained under §1.645. Section 1.304, as proposed to be amended, would also establish a procedure and an "excusable neglect" standard for seeking judicial review when a notice of appeal is untimely filed or a civil action is not timely commenced. The excusable neglect standard is intended to be the same as the standard under Rule 4(a)(5) of the Federal Rules of Appellate Procedure.

Section 1.322, as proposed to be amended, provides that when a request for a certificate of correction under 35 U.S.C. §254 (PTO mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.322 and shall be accompanied by a motion under proposed §1.635. The request would be placed in the file of the patent and the motion would be placed in the file of the interference. The request would be decided as part of the interference.

Section 1.323, as proposed to be amended, provides that when a request for a certificate of correction under 35 U.S.C. §255 (patentee's mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.323 and shall be accompanied by a motion under proposed §1.635. The request would be placed in the file of the patent and the motion would be placed in the file of the interference. The request would be decided as part of the interference.

Section 1.324, as proposed to be amended, provides that when a request is filed to correct inventorship of a patent involved in an interference, the request shall comply with the requirements of §1.324 and shall be accompanied by a

motion under proposed §1.634. The request would be placed in the file of the patent and the motion would be placed in the file of the interference. The request would be decided as part of the interference.

Section 1.565, as proposed to be amended, would provide that when a patent is involved in an interference proceeding and a reexamination proceeding, both the interference proceeding and the reexamination proceeding would continue unless one of the proceedings is stayed. A stay of a reexamination proceeding would be made by the Commissioner. A stay of an interference proceeding would be made by an examiner-in-chief, subject to review by the Commissioner. Section 1.565, as proposed to be amended, would continue the present practice of the Commissioner determining in every instance whether to stay a reexamination proceeding when the patent involved in the reexamination proceeding is sought to be reissued or becomes involved in litigation.

Under section §1.601, as proposed, the rules shall be construed to secure the just, speedy, and inexpensive determination of interferences. Section 1.601 defines various terms used in proposed Subpart E including "additional discovery," "affidavit," "case-in-chief," "case-in-rebuttal," "count," "effective filing date," "filing date," "interference," "interference-in-fact," "junior party," "lead" attorney, "party," "phantom count," "same patentable invention," "separate patentable invention," "senior party," "sworn," and "United States." "Affidavits" include declarations under 35 U.S.C. §25 and 37 CFR §1.68 as well as statutory declarations under 28 U.S.C. §1746. The definition of "United States" is the same as the definition of United States in 35 U.S.C. §100(c).

The definition of "interference" permits an interference between one or more applications and one or more patents. In view of the statutory requirement for the presence of at least one application in an interference, if an applicant were to concede priority or otherwise be terminated from an interference involving only one application and more than one patent, the interference would have to be dissolved for lack of subject matter jurisdiction unless one or more of the patentees filed an application for reissue which could be added to the interference under proposed §1.633(h). A "count" defines interfering subject matter. An interference would have two counts only if the

second count defines a "separate patentable invention" from the first count. The reason the second count must define a separate patentable invention is to permit the PTO to lawfully issue separate patents to different parties in an interference when a single party does not prevail as to all counts. A "separate patentable invention" is defined in §1.601(n): "Invention (A) is a 'separate patentable invention' with respect to invention (B) when invention (A) is new (35 U.S.C. §102) and non-obvious (35 U.S.C. §103) in view of invention (B) assuming invention (B) is prior art with respect to invention (A)."

Section 1.602(a), as proposed, would continue the present PTO practice (37 CFR §1.201(c)) of not declaring or continuing an interference between (1) two or more applications owned by the same party or (2) an application and a patent owned by a single party unless good cause is shown. A corporation and its wholly-owned subsidiary are considered a "single party" within the meaning of proposed §1.602(a). Paragraphs (b) and (c) of §1.602 would continue the present PTO practice (37 CFR §1.201(c)) of requiring a party to notify the PTO of any real party in interest not apparent on the face of the notice declaring the interference (see §1.611) or of any change in the real party in interest after the interference is declared. The PTO needs to know the identity of any real party in interest to properly enforce §1.602(a) and to enable an examiner-in-chief to determine whether recusal is necessary or appropriate. A new requirement in paragraphs (b) and (c), not present in 37 CFR §1.201(c), is a 20-day time period for advising the PTO of the identity of, or any change in, the real party in interest.

Under §§1.601(f), 1.603, and 1.606, as proposed, the interfering subject matter would be defined by one or more counts. All the claims in an application or a patent which define the same patentable invention as a count would be designated to correspond to the count. An interference would have two counts only if one count defines a separate patentable invention from another count. Under §1.606, at the time an interference is declared between a patent and an application, a count would not be narrower in scope than any patent claim which corresponds to the count. Thus, a patent claim would be presumed, subject to a motion under §1.633(c), to define a single patentable invention. Some examples illustrate how the PTO would formulate counts and designate patent and application claims to correspond to counts.

Example 1: Application A contains patentable claim 1 (engine). Application B contains patentable claim 8 (engine). If an interference is declared, there would be one count (engine). Claim 1 of application A and claim 8 of application B would correspond to the count.

Example 2: Application C contains patentable claims 1 (engine) and 2 (6-cylinder engine). Application D contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application C and claim 8 of application D would be designated to correspond to the count.

Example 3: Application E contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application F contains patentable claims 11 (engine) and 12 (8-cylinder engine). Claims 1 and 2 of application E and claims 11 and 12 of application F define the same patentable invention. Claim 3 of application E defines a separate patentable invention from claims 1 and 2 of application E and claims 11 and 12 of application F. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application E and claims 11 and 12 of application F would be designated to correspond to the count. Claim 3 of application E would not be designated to correspond to the count.

Example 4: Application G contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application H contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H define the same patentable invention. Claim 3 of application G and claim 15 of application H define a separate patentable invention from claims 1 and 2 of application G and claim 11 of application H. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H would be designated to correspond to Count 1. Claim 3 of application G and claim 15 of application H would be designated to correspond to Count 2.

Example 5: Application J contains patentable claims 1 (engine), 2 (combination of an engine and a carburetor) and 3 (combination of an engine, a carburetor, and a catalytic converter). Application K contains patentable claims 31 (engine), 32 (combination of an engine and a carburetor), and 33 (combination of an engine, a carburetor, and an air filter). The engine, combination of an engine and carburetor, and combination of an engine, carburetor, and air filter define the same patentable invention. The combination of an engine, carburetor, and catalytic converter define a separate patentable invention from engine. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application J and claims 31, 32, and 33 of application K would be designated to correspond to the count. Claim 3 of application J would not be designated as corresponding to the count.

Example 6: Under the proposed rules, the PTO would continue to follow Waldeck v. Lewis, 120 USPQ 88 (Comm'r. Pat. 1955). Application L contains patentable claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application M contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of application L and claim 11 of application M would be designated to correspond to the count.

Example 7: Application N contains patentable claim 1 (benzene). Application P contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of application N and claim 11 of application P would be designated to correspond to the count.

Example 8: Application Q contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application R contains patentable claim 33 (benzene). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application Q and claim 33 of application R would be designated to correspond to the count. If chloroform defines a separate patentable invention from benzene and an interference is declared,

there would be one count (benzene). Claims 1 and 2 of application Q and claim 33 of application R would be designated to correspond to the count. Claim 3 of application Q would not be designated to correspond to the count.

Example 9: Application S contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application T contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application S and claims 11, 12, and 13 of application T would be designated to correspond to the count. Under the proposed rules, the PTO would adhere to Becker v. Patrick, 47 USPQ 314 (Comm'r. Pat. 1939). An interference would have two counts only if one count defines a separate patentable invention from another count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be two counts: Count 1 (benzene) and Count 2 (chloroform). Claims 1 and 2 of application S and claims 11 and 12 of application T would be designated to correspond to Count 1. Claims 1 and 3 of application S and claims 11 and 13 of application T would be designated to correspond to Count 2.

Example 10: Patent A contains claim 1 (engine). Application U contains patentable claim 11 (engine). If an interference is declared, there would be one count (engine). Claim 1 of patent A and claim 11 of application U would be designated to correspond to the count.

Example 11: Patent B contains claims 1 (engine) and 2 (6-cylinder engine). Application V contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent B and claim 8 of application V would be designated to correspond to the count.

Example 12: Patent C contains claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application W contains patentable claims 11 (engine) and 12 (8 cylinder engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W define the same patentable

invention. Claim 3 of patent C defines a separate patentable invention from claims 1 and 2 of patent C and claims 11 and 12 of application W. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W would be designated to correspond to the count. Claim 3 of patent C would not be designated to correspond to the count.

Example 13: Patent D contains claim 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application X contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X define the same patentable invention. Claim 3 of patent D and claim 15 of application X define a separate patentable invention from claims 1 and 2 of patent D and claim 11 of application X. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X would be designated to correspond to Count 1. Claim 3 of patent D and claim 15 of application X would be designated to correspond to Count 2.

Example 14: Patent E contains claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application Y contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of patent E and claim 11 of application Y would be designated to correspond to the count.

Example 15: In this example, the claims of patent E and application Y in Example 14 are reversed. Patent E contains claim 1 (benzene). Application Y contains patentable claims 11 (Markush group of benzene or toluene), 12 (benzene), and 13 (toluene). If an interference is declared, the count would be the same as the count in Example 14--(Markush group of benzene or toluene). Claim 1 of patent E and claims 11, 12, and 13 of application Y would be designated to correspond to the count.

Example 16: Under the proposed rules, the PTO would continue to follow cases such as *Aelony v. Arni*, 547 F.2d 566, 192 USPQ 486 (CCPA 1977), and declare interferences where interfering patent and application claims are mutually exclusive provided the claims define the same patentable

invention. Patent F contains claim 1 (benzene). Application Z contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of patent F and claim 11 of application Z would be designated to correspond to the count.

Example 17: It would be the practice of the PTO under proposed §1.606 to initially declare interferences with counts which are identical to or broader than patent claims which correspond to the counts. A single patent claim would be presumed, subject to a motion under proposed §1.633(c), to define one patentable invention. Patent G contains claim 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application AA contains patentable claim 33 (benzene). If an interference is declared, initially it would be presumed by the PTO, subject to a later motion under proposed §1.633(c), that benzene and chloroform define the same patentable invention. There would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent G and claim 33 of application AA would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, that party could file a motion under proposed §1.633(c) to redefine the count and the claims corresponding to the counts.

Example 18: Patent H contains claims 1 (Markush group of benzene or chloroform), 2, (benzene), and 3 (chloroform). Application AB contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). Benzene and chloroform initially would be presumed, subject to a motion under §1.633(c), to define the same patentable invention, because they are recited as a Markush group in a single patent claim. If an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent H and claims 11, 12, and 13 of application AB would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, the party could move under proposed §1.633(c) to substitute a count (benzene) for (Markush group of benzene or chloroform) and to add a second count (chloroform).

Example 19: Under proposed §1.606, the PTO would continue to follow the practice announced in Ex parte Card and Card, 1904 C.D. 383 (Comm'r.Pat. 1904). Patent J contains claim 1 (method of mixing, grinding, and heating). Application AC contains patentable claim 8 (method of mixing and heating) and does not disclose or claim a grinding step. In the context of the inventions disclosed in patent J and application AC, a method of mixing, grinding, and heating is the same patentable invention as a method of mixing and heating. Under current practice, it would be said that "grinding" is an "immaterial" limitation in claim 1 of patent J. Under proposed §1.606, the fact application AC does not disclose grinding would not preclude an interference. If an interference is declared, there would be one count (method of mixing and heating). Claim 1 of patent J and claim 8 of application AC would be designated to correspond to the count.

Under §1.605, as proposed, timely filing of an amendment presenting a claim suggested by the examiner for purposes of an interference would stay ex parte proceedings in the application in which the claim is presented pending a determination by the examiner of whether an interference will be declared.

Under §1.607(b), as proposed, when an applicant seeks an interference with a patent, e.g., by copying claims from the patent, examination of the application including any appeal would be handled with special dispatch within the PTO. "Special dispatch" would be construed to be the same as special dispatch in a reexamination proceeding.

Under §1.608, as proposed, the PTO would continue current practice (37 CFR §1.204(c)) of requiring an applicant seeking to provoke an interference with a patent to submit evidence which demonstrates that the applicant is prima facie entitled to a judgment relative to the patentee. Evidence would be submitted only when the earlier of the filing date or effective filing date of the application is more than three months after the earlier of the filing date or effective filing date under 35 U.S.C. §120 of the patent. The evidence may relate to patentability and need not be restricted to priority. When the evidence (1) consists of prior printed publications and patents and (2) shows that the claims of the application are not patentable, the claims in the application would be rejected and the applicant could file a request for reexamination of the patent.

Section 1.609, as proposed, sets forth what an examiner shall forward to the Board when an interference is declared. For the most part, proposed §1.609 continues current practice. However, under proposed §1.609(b)(3), the examiner would identify all claims in an application which the examiner believes are patentable over the proposed counts. Thus, a claim in an application would either correspond to a count or would be indicated as being patentable over the count. For instance, in Example 3, supra, the examiner would indicate that (1) claims 1 and 2 of application E and claims 11 and 12 of application F correspond to the count and (2) claim 3 of application E defines a separate patentable invention from the count.

Under §1.610, as proposed, each interference would be declared by an examiner-in-chief. The examiner-in-chief would enter all interlocutory orders in the interference. As necessary, another examiner-in-chief could act in place of the examiner-in-chief assigned to the interference. At the discretion of the examiner-in-chief assigned to the interference, a panel of two or more examiners-in-chief could enter an interlocutory order. The examiner-in-chief would set times and control proceedings such that pendency of the interference would not normally exceed 24 months. Under §1.610(d), as proposed, the examiner-in-chief is authorized to hold conferences. Any conference could be by a telephone conference call. Under proposed §1.610(e), an examiner-in-chief is authorized to determine a proper course of conduct for any situation not specifically covered by the rules.

Under §1.611(a), as proposed, the PTO would normally notify each party at its correspondence address (37 CFR §1.33(a)) that an interference is declared. This proposed practice would save the PTO the administrative burden of sending multiple notices as is required by the present rules. Under §1.611(a), as proposed, the PTO could, in an appropriate circumstance, also send a notice to a patentee or an assignee. An appropriate circumstance for sending an additional notice would be a situation where a patent was issued on the basis of an application filed under 37 CFR §1.47. The matters to be specified in a notice declaring an interference are set out in proposed §1.611(c). One item to be set out is the "order of the parties," meaning the order in which the parties have the burden of proof. If Jones is the junior party and Smith is the senior party, the order of

the parties is: Jones v. Smith. The order of the parties may change as a result of the granting of a motion under proposed §1.633(d), (f), or (g). Under §1.611(d), as proposed, the notice declaring the interference may also set dates for filing preliminary statements, notices that preliminary statements have been filed, motions under proposed §1.633, oppositions to those motions, and replies to the oppositions. Alternatively, an examiner-in-chief may set those times in a separate order before or after consultation with counsel for the parties. Under §1.611(e), as proposed, the PTO would place a notice in the Official Gazette each time an interference is declared involving a patent. The notice would make it easier for patent practitioners throughout the country to determine whether a given patent is or has been involved in an interference.

Section 1.612, as proposed, differs considerably from §1.612 as set out in the advanced notice. Under §1.612(a), as proposed, parties would not be required to serve copies of their files. Except for affidavits under §1.131 and any evidence and explanation under §1.608(b) filed separate from an amendment, each party shall have access to the file of every other party after an interference is declared. The files of applications and patents involved in an interference would be maintained in the Service Branch of the Board of Appeals and Interferences for inspection and copying. Any explanation which is filed as part of an amendment or an amendment which discusses details contained in an affidavit under §1.131 would not be sealed under §1.612(a). Thus, §1.612(a) proposes to continue the practice discussed in Moorman v. Martin, 103 USPQ 273 (Comm'r.Pat. 1950) and Calvert, An Overview of Interference Practice, 62 J. Pat. Off. Soc'y. 290, 293 (1980). Under §1.612(b), as proposed, each party would have access to an opponent's affidavit under §1.131 or an opponent's evidence and explanation under §1.608(b) when a decision is rendered on motions under §1.633. Under §1.612(c), as proposed, a party would be required to serve any evidence and explanation under §1.608(b) if an order to show cause is issued under §1.617(a) and the party responds to the order under §1.617(b). Under §1.612(d), the parties may agree to exchange copies of their respective files.

Under §1.613(a), as proposed, when a party has appointed more than one attorney or agent of record, the party may be required to designate a "lead" attorney or agent. A lead attorney or agent would be a registered

attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the individual whom an examiner-in-chief would contact to set times and take other action in the interference. Section 1.613(b), as proposed, would continue the practice of not permitting the same attorney or agent to represent two or more parties in an interference except as permitted by §1.344. Under §1.613(c), as proposed, an examiner-in-chief could make an appropriate inquiry to determine whether an attorney or agent should be disqualified from representing a party. A final decision to disqualify an attorney or agent would be made by the Commissioner under 35 U.S.C. §32.

Section 1.614, as proposed, specifies when the Board gains jurisdiction over an interference. The section also indicates when an interference becomes a contested case within the meaning of 35 U.S.C. §24. A remand to the examiner is authorized and may be useful in certain situations, such as, when a party moves under proposed §1.633(c) to add a proposed count which is broader than any count in an interference. Alternatively, an examiner-in-chief would be able to obtain informal opinions from examiners during the course of an interference. Nothing in this proposed section is intended to authorize informal conferences between an examiner-in-chief and an examiner with respect to the merits of an application before the Board in an ex parte appeal from an adverse decision of the examiner.

Section 1.616, as proposed, would permit an examiner-in-chief or the Board to impose appropriate sanctions against a party who fails to comply with the rules or with an order entered in the interference. Paragraphs (a) through (e) set forth some of the possible sanctions which might be entered. The particular sanction to be entered would depend on the facts of a given case and ordinarily would not be entered prior to giving the effected party an opportunity to present its views. An individual examiner-in-chief could not impose a sanction granting judgment inasmuch as entry of a judgment requires action by the Board. See proposed §1.610(a). A party desiring sanctions imposed against an opponent could move under proposed §1.635 for entry of an order imposing sanctions.

Section 1.617, as proposed, retains summary judgment proceedings in those cases where a junior party applicant would be required to file evidence and an explanation under proposed §1.608(b). To avoid summary judgment, the junior party applicant must establish that it is prima facie entitled to judgment relative to the senior party patentee. For the most part, practice under proposed §1.617 would be the same as the current practice under §1.228. The major changes would be the following. (1) A prima facie case could be based on patentability as well as priority. (2) A stricter standard would be imposed for presenting additional evidence after entry of an order to show cause. Under current practice (37 CFR §1.228), additional evidence may be submitted with a response to an order to show cause "when a showing in excuse of their [its] omission from the original" showing is made. The "good cause" showing proposed in §1.617(b) would impose a stricter standard. The stricter standard is believed to be necessary to encourage applicants copying claims from a patent to better prepare their initial showings under proposed §1.608(b). Under current practice, the Board of Patent Interferences has found that substantial time is lost in issuing orders to show cause based on an inadequate initial showing only to have an adequate showing made with the response to the order to show cause. Under the proposed "good cause" standard, ignorance by a party or counsel of the provisions of the rules or the substantive requirements of the law would not constitute good cause. (3) When an interference involves more than two parties, all parties would be permitted to participate in summary judgment proceedings. (4) An applicant must file two copies of its initial showing under 37 CFR §1.204(c). Under proposed §1.608(b), a party would have to file in the PTO only one copy of the showing. However, any party responding to an order to show cause would be required to serve a copy of its initial showing under §1.608(b) with any response to the order to show cause.

Consideration was given to proposing expanding "summary judgment" proceedings to cases where a patentee is a junior party by more than three months. It has been decided not to propose expansion of summary judgment proceedings because (1) a patentee would be required to make its showing after an interference is declared, (2) considerable delay would occur while a patentee gathered and presented its evidence, and (3) currently very few summary judgments are entered against applicants who are junior party to a patentee by more than three months.

Under §1.618, as proposed, the PTO would have authority to return to a party any paper presented in an interference which is not authorized by, or is not in compliance with the requirements of, proposed Subpart E. When an improper paper is filed, a party may be given an opportunity to file a proper paper under such conditions as an examiner-in-chief may deem appropriate. Two examples of improper papers are: (1) replies to oppositions which are not authorized by the rules and (2) papers presented which have attached thereto a paper previously filed in the interference.

Proposed §§1.621 through 1.629 govern preliminary statements which would continue to be required in interference cases.

Under §1.621, as proposed, a preliminary statement could be signed by any individual having knowledge of the facts (e.g., the inventor) or by an attorney or agent of record. Permitting an attorney or agent of record to sign a preliminary statement should eliminate unnecessary mailing of papers between parties and their attorney or agent.

Under §1.622, as proposed, the preliminary statement would identify the inventor who made the invention defined by each count. If the inventor named in the application or patent involved in the interference and the inventor identified in the preliminary statement are not the same, a motion under proposed §1.634 would have to be promptly filed to correct inventorship.

Sections 1.623, 1.624, and 1.625, as proposed, respectively set out the allegations which should be made in, and the attachments which should accompany, a preliminary statement when (1) the invention was made in the United States, (2) the invention was made abroad and was introduced into the United States, and (3) derivation by an opponent from a party is to be an issue.

Section 1.626, as proposed, would permit a party to file a preliminary statement which states that the party only intends to rely on the filing date of an earlier United States or foreign application. Ordinarily, a junior party who fails to file a preliminary statement would not be entitled to access to any other preliminary statement filed (see proposed §1.631(b)). Proposed §1.626 would permit a junior party who only intends to rely on an earlier application to have access to any opponent's preliminary statement.

Section 1.628, as proposed, sets out how an error in a preliminary statement may be corrected.

Section 1.629, as proposed, sets out the effect of a preliminary statement. A party who fails to file a preliminary statement would not be permitted to prove that the party made the invention defined by a count prior to the party's filing date or that an opponent derived the invention from the party.

Under §1.631, as proposed, preliminary statements normally would be opened for inspection when an examiner-in-chief decides preliminary motions filed under proposed §1.633. A junior party who does not file a preliminary statement would not be entitled to access to a preliminary statement of any other party. When an interference is terminated before preliminary statements are opened, any preliminary statement which has been filed would be returned unopened to the party who submitted the statement.

Under §1.633, as proposed, a party could file preliminary motions for judgment, to redefine the interference, to substitute a different application in the interference, to declare an additional interference, to be accorded the benefit of an earlier application, to attack benefit previously accorded an opponent, or to add a reissue application to the interference. The motions are proposed to be called "preliminary motions" in order to distinguish the motions from other motions which might be filed during the course of an interference. The preliminary motions would replace motions currently authorized by 37 CFR §1.231.

Under §1.633(a), as proposed, a motion to dissolve would be replaced with a motion for judgment. A party could file a motion for judgment on the ground that an opponent's claim corresponding to a count is unpatentable to the opponent. With two exceptions, unpatentability could be based on prior art (35 U.S.C. §§102, 103), insufficiency of disclosure (35 U.S.C. §112, first paragraph), indefiniteness of claims (35 U.S.C. §112, second paragraph), double patenting, estoppel, or any other ground which would support a holding that claims corresponding to a count are not patentable. The two exceptions would be (1) priority of invention of the subject matter of a count by the moving party as against any opponent and (2) derivation of the subject matter of a count by the opponent from the moving

party. The two exceptions are directed to issues which are traditional "priority" issues, e.g., which inventor made the invention defined by a count first or, when derivation is an issue, who made the invention. Resolution of those "priority" issues almost always requires the taking of testimony. A motion for judgment, however, would be proper when a party believed an individual not involved in the interference made the invention defined by the count prior to an opponent in the interference, but subsequent to the moving party. Thus, a patentability issue, such as that raised under 35 U.S.C. §102(g) in Sutter Products Co. v. Pettibone Mulliken Corp., 428 F.2d 639, 166 USPQ 100 (7th Cir. 1970), properly could be raised with a motion for judgment under proposed §1.633(a). Derivation by an opponent from an individual not involved in the interference could also be raised under proposed §1.633(a).

Under §1.633(b), as proposed, a party could move for a judgment when the party believed there is no interference-in-fact. A motion for judgment on the ground of no interference-in-fact is only proper under one of three conditions: (1) when an interference involves designs, (2) when the interference involves plant applications or a plant application and plant patent, or (3) when no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. An example illustrates when a motion under proposed §1.636(b) is proper.

Example 20. Application AD contains patentable claim 1 (6-cylinder engine). Application AE contains patentable claim 3 (8-cylinder engine). An interference is declared with a single count (6 or 8-cylinder engine). Claim 1 of application AD and claim 3 of application AE are designated to correspond to the count. Applicant AD believes that a 6-cylinder engine is a "separate patentable invention" (see proposed §1.601(n)) from an 8-cylinder engine. Applicant AD would file a motion under proposed §1.633(b) for a judgment on the ground of no interference-in-fact stating why a 6-cylinder engine is patentably distinct from an 8-cylinder engine. If the Board ultimately agrees with applicant AD, a patent could issue to AD containing claim 1 of application AD and a second patent could issue to AE containing claim 3 of application AE.

Under §1.633(c), as proposed, a party may move to redefine interfering subject matter. One way to redefine interfering subject matter would be to add a count. When a party seeks to add a count under the proposed rules, the party would be required to demonstrate that the proposed count to be added is directed to a "separate patentable invention" from every other count in the interference. Another way to redefine interfering subject matter would be to designate a claim as corresponding or not corresponding to a count. Examples 21 and 22 illustrate this latter point.

Example 21. Application AF contains patentable claim 1 (engine). Patent K contains claims 3 (engine) and 5 (6-cylinder engine). Claim 1 of application AF and claim 3 of patent K are designated to correspond to the count. Applicant AF believes a 6-cylinder engine is the "same patentable invention" (see proposed §1.601(n)) as engine. Applicant AF would file a motion under proposed §1.633(c)(3) to designate claim 5 of patent K as corresponding to the count. If the motion is granted and applicant AF prevails in the interference on the count, judgment would be entered against patentee K on the count and both claims 3 and 5 of patent K would be cancelled under 35 U.S.C. §135(a).

Example 22. Application AG contains patentable claim 1 (engine). Patent L contains claims 3 (engine) and 5 (8-cylinder engine). An interference is declared with one count (engine). Claim 1 of application AG and claims 3 and 5 of patent L are designated to correspond to the count. Patentee L believes that an 8-cylinder engine defines a "separate patentable invention" (see proposed §1.601(n)) from engine. Patentee L should file a motion under proposed §1.633(c)(4) to designate claim 5 of patent L as "not corresponding" to the count. If the motion is granted and an adverse judgment is entered against patentee L on the count, only claim 3 would be cancelled from the patent pursuant to 35 U.S.C. §135(a).

Section 1.633(i), as proposed, would continue present practice (37 CFR §1.231) of allowing a party to move to redefine the subject matter of the interference or substitute a different application when an opponent moves for judgment (see proposed §1.633(a) and (b)) or to attack benefit (see proposed §1.633(g)).

Section 1.634, as proposed, authorizes a motion to correct inventorship in an application (see §1.48) or a patent (see §1.324) involved in an interference.

Section 1.635, as proposed, authorizes the filing of motions other than those specified in proposed §§1.634 or 1.635. Motions filed under proposed §1.635 would be referred to as "miscellaneous motions" to distinguish from "preliminary motions" under proposed §1.633. Instances where a miscellaneous motion would be filed include motions to correct an error in a preliminary statement, to extend time for taking action or to seek judicial review, to obtain permission to proceed under 35 U.S.C. §24, or to obtain additional discovery.

Section 1.636, as proposed, sets out the times within which a motion would be filed.

Section 1.637, as proposed, sets out the content of motions. In prior interference practice, parties and their attorneys or agents have had difficulty meeting all the "unwritten" requirements for motions under 37 CFR §1.231. Proposed §1.637 is quite specific in setting out the requirements for each type of motion, particularly the preliminary motions. By setting out with specificity the requirements for each type of motion, it is intended to minimize disposition of motions on technicalities. A vast majority of the comments in response to the advanced notice commenting on proposed §1.637 were in favor of the requirements for motions being specifically set out in the regulations.

Section 1.638, as proposed, would authorize oppositions to motions and replies to oppositions in some instances. Any opposition would have to identify any material fact in dispute. A reply to an opposition would be authorized for motions filed under proposed §§1.633 and 1.634. If an unauthorized reply is submitted, it would be returned unfiled under proposed §1.618.

Section 1.639, as proposed, sets forth the evidence which may accompany a motion, opposition, or reply (assuming a reply is authorized). Every material fact alleged in a motion, opposition, or an authorized reply would have to be supported by proof. Proposed §1.639(b) authorizes affidavits to be used as proof for any motion. The

affidavit may later be used by a party during the testimony period (see proposed §§1.671(e) and 1.672(b)). When a party believes that testimony is necessary to decide a preliminary motion under proposed §1.633, the party would have to describe the nature of the testimony needed. If an examiner-in-chief agrees that testimony is needed, appropriate interlocutory relief would be granted and testimony would be ordered.

Example 23. An interference is declared with one count between application AH and application AJ. Applicant AH files a preliminary motion under proposed §1.633(c)(1) to redefine the interference by adding a second count. In order to succeed, applicant AH must show that the proposed count to be added is directed to a "separate patentable invention" (see proposed §1.601(n)) from the count already in the interference. In the motion, applicant AH sets forth in detail the testimony which would be required to prove that the subject matter of the proposed count is to a separate patentable invention from the subject matter of the count in the interference. Applicant AJ opposes the motion on the ground that the proposed and present counts define the "same patentable invention" (see proposed §1.601(n)). An examiner-in-chief determines that a material fact is in dispute and that applicant AH has established testimony is needed to properly rule on the motion. Under the circumstances, the motion would be granted without prejudice to applicant AJ renewing its opposition at final hearing and a testimony period would be ordered. The questions of (1) whether the proposed and present counts define the same patentable invention and (2) priority would be decided at final hearing.

Under §1.640, as proposed, an examiner-in-chief would decide all motions. A hearing could be held on a motion in the discretion of an examiner-in-chief. Where appropriate, an examiner-in-chief could consult with an examiner on a question of patentability which arises in the first instance in the interference. Consultation would not be necessary where the examiner had already ruled on the patentability question which comes before the examiner-in-chief or the Board. Moreover, nothing in proposed §1.640 authorizes conferences between examiners-in-chief and examiners in ex parte appeals under 35 U.S.C. §134 from an adverse decision of an examiner. A party is entitled to request reconsideration of a decision on a motion by a single

examiner-in-chief. An opposition to a request for reconsideration could not be filed unless ordered by an examiner-in-chief or the Board, but a request for reconsideration would not normally be granted unless an opposition has been requested. The request for reconsideration would be decided by a panel of the Board consisting of at least three examiners-in-chief, one of which would normally be the examiner-in-chief who decided the motion. Several comments were received questioning why the examiner-in-chief who decided in the motion would form part of the panel deciding the request for reconsideration. The decision to propose a regulation which would permit the examiner-in-chief who decided the motion to participate in the decision on reconsideration was made after careful balancing of all the factors involved. It could have been proposed to permit the examiner-in-chief to individually decide the request for reconsideration. However, it is believed that parties in interference cases would feel that their requests for reconsideration are being more fully considered if more than one person considers their request. The two additional examiners-in-chief would be able to consult with the examiner-in-chief most familiar with the case, but would be able to control the decision on reconsideration by a majority vote. Use of the examiner-in-chief who decided the motion and two additional examiners-in-chief would (1) minimize delay which would occur if three new examiners-in-chief were used who were unfamiliar with the record and (2) minimize the possibility that reversible error occurred if only the examiner-in-chief who decided the motion also individually decided the request for reconsideration.

Under §1.644, as proposed, petitions to the Commissioner would be authorized in interference cases under certain restricted conditions. Petitions in interferences have been the source of substantial delay. Proposed §1.644 attempts to minimize those delays. Proposed §1.644 authorizes a petition to the Commissioner from a decision of an examiner-in-chief or a panel when the examiner-in-chief or the panel shall be of the opinion (1) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (2) that an immediate decision on petition would materially advance the ultimate termination of the interference. The standard is intended to be analogous to that of a district court certifying a

question to a court of appeals under 28 U.S.C. §1292(b). A petition could be filed seeking to invoke the supervisory authority of the Commissioner. However, the petition could not be filed prior to entry of judgment and could not relate to the merits of priority or patentability or the admissibility of evidence under the Federal Rules of Evidence. A petition could also be filed seeking waiver of a rule. A fee of \$120 would be charged for each petition and for each request for reconsideration of a decision on petition. Any petition would be decided on the record made before the examiner-in-chief or the Board and additional evidence could not be submitted with the petition. An opposition could not be filed unless ordered by the Commissioner. Where reasonably possible, service of a petition would have to be such that delivery is accomplished within one day. Service by hand or "Express Mail" would comply with this requirement.

Section 1.645, as proposed, would permit a party to file a motion to seek an extension of time to take action in an interference or to seek judicial review. The motion would have to be filed within sufficient time to actually reach an examiner-in-chief prior to expiration of the time for taking action. Under §1.645, as proposed, a moving party would not be able to assume that a motion for an extension of time would be granted. Under proposed §1.610(d)(6), a request for an extension of time could be made orally and an appropriate order would then be entered thus eliminating considerable paper work. The order would be the written record of the request and decision. See §1.2. Extensions of time have caused numerous delays in interference cases. Under present interference practice, some delays are caused because attorneys and agents on many occasions unexpectedly receive orders setting times. Under the practice as proposed, attorneys and agents can expect times to be set for filing preliminary statements, preliminary motions, motions for additional discovery, testimony, and briefs after a conference call. It would be expected that use of conference calls would permit an examiner-in-chief and attorneys or agents for parties to set a time schedule which is mutually satisfactory. A motion to extend time would not be granted unless a party shows good cause. The use of conference calls would allow schedules to be set before orders setting time are entered and therefore the press of other business which arises after the examiner-in-chief and attorneys and agents agree to times would not normally be considered good cause.

Under §1.647, as proposed, when a party relies on a document in a foreign language, an English language translation of the document and an affidavit attesting to the accuracy of the translation would be required. The rule, as proposed, would apply to any document, including evidence submitted with motions, foreign applications for which a party seeks benefit, testimony, and exhibits introduced in evidence during testimony.

Under §1.651, as proposed, after a decision is entered on preliminary motions, an examiner-in-chief would set times for filing motions for additional discovery and for taking testimony. Any motion for additional discovery would be to obtain documents and things necessary for a party to prepare its case-in-chief.

Section 1.653, as proposed, sets out what shall be in the record to be considered by the Board at final hearing. The record would continue to be printed or typed on paper 8-1/2" by 11" in size. Accordingly, when a party files an affidavit, the party may wish to use 8-1/2" by 11" paper for the affidavit.

Section 1.654, as proposed, continues the practice of holding a final hearing where oral argument may be presented by all parties. No fee would be charged for appearing at oral argument at final hearing in an interference.

Section 1.655, as proposed, specifies the matters which would be considered in rendering a final decision. Patentability would be an issue which could be raised. The Board could also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion, although any interlocutory order would be presumed to be correct and burden of showing error shall be on the party attacking the order. This last procedural provision would permit the Board to correct any manifest error before a party seeks judicial review of an interlocutory order along with judicial review of the Board's final decision.

Section 1.656, as proposed, sets forth the requirements for briefs for final hearing. In large measure, proposed §1.656 follows the requirements of Rule 28 of the Federal Rules of Appellate Procedure. An original and three copies of a brief would be required. Under §1.656(h), as proposed, if a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party

would file with its opening brief an original and three copies of a motion to suppress the evidence. Any previous objection to the admissibility of evidence would be waived unless the motion to suppress is filed. This procedural provision would make it clear that an objection to the admissibility of evidence must be renewed for final hearing and would be considered by the Board in rendering its final decision. When a junior party fails to file a brief, an order could be issued requiring the junior party to show cause why failure to file the brief should not be taken as a concession of priority.

Under §1.658, as proposed, the Board would enter a final decision. The decision could (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing claims which correspond to the count. When judgment is entered as to all counts, the decision of the Board would be considered final for the purpose of judicial review. Under §1.658(c), as proposed, the PTO would expand the doctrine of estoppel as applied to interference proceedings. The purpose for expanding the applicability of estoppel is to encourage parties in interference cases to settle all issues in one proceeding. Proposed §1.658(c) creates an estoppel both as to senior and junior parties unlike the present practice (37 CFR §1.257) which limits estoppel in some instances to junior parties. An estoppel would not apply against a party awarded a favorable judgment as to all counts. A few examples illustrate how estoppel would be applied.

Example 24. Junior party applicant AL and senior party applicant AK both disclose separate patentable inventions "A" and "B" and claim invention A in their respective applications. An interference is declared with a single count to invention A. Neither party files a preliminary motion (see proposed §1.633(c)(1)) to add a count to invention B. Judgment as to the sole count is awarded to junior party applicant AL. Senior party applicant AK would be estopped to thereafter obtain a patent containing claims to invention B, because applicant AK failed to move to add a count to invention B in the interference. Junior party applicant AL would not be estopped to obtain a patent containing claims to invention B.

Example 25. In this example, the facts are the same as in Example 24 except that judgment is awarded to senior party applicant AK. Junior party applicant AL would be estopped to obtain a patent containing claims to invention B in the interference. Senior party applicant AK would not be estopped to obtain a patent containing claims to invention B.

Example 26. Junior party applicant AM and senior party applicant AP both disclose separate patentable inventions "C", "D", and "E" and claim inventions C and D in their respective applications. An interference is declared with two counts. Count 1 is to invention C and Count 2 is to invention D. Neither party files a preliminary motion to add a proposed Count 3 to invention E. Judgment as to Counts 1 and 2 is awarded to junior party applicant AM. Senior party applicant AP would be estopped to thereafter obtain a patent containing claims to invention E, because applicant AP failed to move to add a count to invention E in the interference. Junior party applicant AM would not be estopped to obtain a patent containing claim to invention E.

Example 27. In this example, the facts are the same as in Example 26 except that judgment is awarded on Counts 1 and 2 to senior party applicant AP. Junior party applicant AM would be estopped to obtain a patent containing claims to invention E, because applicant AM failed to move to add a count to invention E in the interference. Senior party applicant AP would not be estopped to obtain a patent containing claims to invention E.

Example 28. In this example, the facts are the same as in Example 26 except that judgment is awarded on Count 1 to junior party applicant AM and judgment is awarded on Count 2 to senior party applicant AP. Both parties would be estopped to obtain a patent containing claims to invention E, because neither moved to add a count to invention E during the interference.

Example 29. Applicant AQ discloses and claims invention "F." Applicant AR discloses and claims separate patentable inventions "F" and "G." The assignee of applicant AQ also owns an application AS which discloses and claims invention "G." An interference is declared between applicant AQ and applicant AR. The sole count is directed to invention F. No motion is filed by applicant AQ or its

assignee to declare an additional interference between applicant AR and applicant AS with a count to invention G. A judgment as to the sole count is awarded to applicant AR. Applicant AS and the assignee would be estopped to obtain a patent containing claims to invention G, because applicant AR and the assignee failed to move to declare an additional interference with a count to invention G.

Example 30. The facts in this example are the same as the facts in Example 29 except that judgment as to the sole count is awarded to applicant AQ. Applicant AS and the assignee would not be estopped, because applicant AQ was awarded a judgment as to all counts.

Example 31. Applicant AT discloses a generic invention to "solvent" and a species to "benzene." Application AT contains a patentable claim 1 (solvent) and no other claims. Applicant AU discloses the generic invention to "solvent" and species to "benzene" and "toluene." Application AU contains patentable claim 3 (solvent) and no other claims. An interference is declared with a single count (solvent). Claims 1 of application AT and claim 3 of application AU are designated to correspond to the count. No preliminary motions are filed. A judgment is entered in favor of applicant AT on the sole count. Applicant AU would be estopped to obtain a patent containing a claim to benzene, because applicant AU failed to file a preliminary motion seeking to add a count to benzene. Applicant AU would not be estopped to obtain a patent containing claims to toluene, because applicant AU could not have properly moved to add a count to toluene (toluene was not disclosed by applicant AT). However, to obtain a patent containing claims to toluene, applicant AU would have to establish that toluene is a separate patentable invention from solvent. See Smith v. Watson, 95 U.S.App.D.C. 52, 218 F.2d 863, 104 USPQ 160 (1955).

Under §1.659, as proposed, the Board would be able to make recommendations to examiners and the Commissioner, including recommendations that application claims not involved in the interference be rejected and that a patent be reexamined as to patent claims not involved in the interference.

Under §1.660, as proposed, a party would be required to notify the Board when the party's patent or application becomes involved in other PTO proceedings (reexamination, reissue, or protest) or litigation.

Section 1.661, as proposed, sets forth when an interference is considered terminated after a judgment is entered in the interference.

Section 1.662, as proposed, provides that a party may request that an adverse judgment be entered. The section, as proposed, also provides that when a written disclaimer (not a statutory disclaimer), concession of priority or unpatentability, abandonment of the invention, abandonment of an application, or abandonment of the contest is filed, the disclaimer, concession, or abandonment would be construed as a request for entry of an adverse judgment. Section 1.662(b), as proposed, provides that when a patentee files a reissue and omits all claims of a patent corresponding to the counts of an interference for the purpose of avoiding the interference, judgment would be entered against the patentee. Under §1.662(c), as proposed, the filing of a statutory disclaimer would not be construed as a request for entry of an adverse judgment. However, the filing of a statutory disclaimer would, in subsequent proceedings, have the same effect with respect to the patentee filing the statutory disclaimer as an adverse judgment. Under §1.662(d), as proposed, if after entry of a judgment or after filing of a statutory disclaimer no interference exists, the interference would be dissolved as to any party against whom judgment has not been entered and any further prosecution of any application involved in the interference would be ex parte before the examiner.

Section 1.666, as proposed, sets out the procedure for filing settlement agreements in interference cases.

Section 1.671, as proposed, sets out what would be considered evidence. The Federal Rules of Evidence, with certain exceptions, would be applicable to interference cases. Under §1.671(e), as proposed, a party could not rely on a previously filed affidavit unless the affidavit is served and notice is given that the party intends to rely on the affidavit. The purpose for the notice is to permit an opponent to determine whether a deposition for cross-examination is necessary (see proposed §§1.672(b) and 1.673(e)). Under §1.671(f), as proposed, the significance of documentary and other exhibits would have to be discussed with particularity by a witness during oral deposition or in an affidavit. Proposed §1.671(f) would set out in the regulations an evidentiary requirement imposed by precedent. See Popoff v. Orchin, 144 USPQ 762 (Bd.Pat.Int. 1963).

(unexplained experimental data should not be considered); Chandler v. Mock, 150 F.2d 563, 66 USPQ 209 (CCPA 1945) (records standing alone were held to be meaningless), and Smith v. Bousquet, 111 F.2d 157, 45 USPQ 347 (CCPA 1940) (unexplained tests in stipulated testimony are entitled to little weight). See also In re Borkowski, 505 F.2d 713, 184 USPQ 29 (CCPA 1974) and Triplett v. Steinmayer, 129 F.2d 869, 54 USPQ 409 (CCPA 1942). Under §1.671(g), as proposed, a party would be required to obtain permission from an examiner-in-chief prior to proceeding under 35 U.S.C. §24. This requirement would insure that a subpoena is necessary (e.g., a subpoena ordinarily should not be necessary where testimony of an opponent is sought) and that testimony sought through a §24 subpoena is relevant before a subpoena is issued. The motion seeking permission to proceed under §24, any opposition thereto, and the order of an examiner-in-chief authorizing the moving party to proceed under §24 would be of assistance to a federal court in the event a party is required to resort to a court to enforce the subpoena or to compel answers to questions propounded at any deposition where a witness is appearing pursuant to a subpoena. See Sheehan v. Doyle, 529 F.2d 38, 188 USPQ 545 (1st Cir.), cert. denied, 429 U.S. 870 (1976), rehearing denied, 429 U.S. 987 (1976). Under §1.671(h), as proposed, any evidence which is not taken or sought and filed in accordance with the regulations would not be admissible.

Section 1.672, as proposed, sets forth the manner in which testimony shall be taken. Testimony would be taken by deposition or affidavit at the election of the party presenting the testimony. If the party presents testimony by affidavit and an opponent elects to cross-examine the affiant, the party would be required to notice a deposition for the purpose of cross-examination. Re-direct and re-cross would take place at the deposition. Where the parties agree, testimony would be presented by affidavit without opportunity for cross-examination (see proposed §1.672(e)) or by an agreed statement of facts (see proposed §1.672(f)).

Section 1.673, as proposed, sets out how a deposition would be noticed. A deposition could be noticed for any reasonable place in the United States. The extent to which parties, witnesses, and attorneys or agents would have to

travel would be considered in determining whether a place is reasonable. Prior to serving a notice for a deposition, a party would be required to take two procedural steps. Under proposed §1.673(b), a party would be required to serve a copy of the documents and a list of the things in its possession, custody, and control upon which it intended to rely. Under proposed §1.673(g), at least three days after service of documents and lists (an examiner-in-chief could require service by "Express Mail"--see proposed §1.646(d)), the party would be required to have an oral conference (in person or by telephone) with all opponents to attempt to agree on a mutually acceptable time and place for taking the deposition. An examiner-in-chief would set the time and place if agreement is not reached. A single notice listing all the witnesses and the general nature of their expected testimony would then be served. Under proposed §1.673(c) and except as provided, a party would not be able to rely on any witness not mentioned in the notice, any document not served, or any thing not listed. Under proposed §1.673(h), a copy of any notice would be attached to the certified transcript of each deposition filed.

Section 1.674, as proposed, sets out the persons before whom depositions would be taken.

Section 1.675, as proposed, sets out how a deposition would be taken.

Section 1.676, as proposed, sets out how a court reporter would prepare and file a certified transcript of a deposition. Section 1.676(d), as proposed, sets out how exhibits may be marked for identification, used at depositions, and filed. Provisions similar to those of Rule 30(f)(1)(A) and (B) of the Federal Rules of Civil Procedure would be applicable to interferences.

Section 1.677, as proposed, sets out the form of a transcript of a deposition.

Under §1.678, as proposed, a transcript of a deposition would have to be filed in the PTO within 45 days of the date of the deposition.

Section 1.682, as proposed, sets out how a party may introduce in evidence, if otherwise admissible, official records or printed publications. When a notice is served, a party would also be required to serve (but not file) copies

of the official records and printed publications. Any objection to the notice or to the admissibility of any official record or publication would have to be filed within 15 days of the date of service of the notice.

Section 1.683, as proposed, sets out how a party may use testimony from another interference or proceeding.

Section 1.684, as proposed, sets out how a party may take testimony in a foreign country.

Section 1.685, as proposed, sets out how objections during the taking of depositions would be raised. Under §1.685(a), as proposed, an error in a notice of deposition would be waived unless a motion to quash the notice is filed as soon as the error is, or could have been, discovered. Under §1.685(b), as proposed, any objection to the qualifications of an officer would be waived unless (1) the objection is noted on the record of the deposition before a witness begins to testify or (2) if discovered after the deposition, a motion to suppress is filed as soon as the objection is, or could have been, discovered. Under §1.685(c), as proposed, any error in the manner in which testimony is transcribed, the transcript is signed by a witness, or the transcript is prepared or otherwise handled by the court reporter is waived unless a motion to suppress is filed as soon as the error is, or could have been, discovered. Under §1.685(d), as proposed, any objection on the merits to the admissibility of evidence (e.g., under the Federal Rules of Evidence) is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Often objections are cured by subsequent testimony. Accordingly, any objection which a party wants the Board to consider at final hearing must also be made the subject of a motion under proposed §1.656(h).

Section 1.687, as proposed, sets out how a party could seek and obtain additional discovery. "Additional discovery" is defined in proposed §1.601(a). As proposed, section 1.687 would not change the standard ("interest of justice") for obtaining discovery. Accordingly, precedent interpreting the present additional discovery rule (37 CFR §1.287(c)) would still be viable.

Section 1.688, as proposed, sets out how a party could introduce into evidence admissions and answers to interrogatories obtained as a result of additional discovery.

The following is a proposed time schedule for a two-party interference:

Event in Interference	Time from last event in the interference	Total time in interference
Interference declared (1.611)		
Filing of preliminary statements (1.621) and preliminary motions (1.633)	3 months	3 months
Filing oppositions to preliminary motions (1.638(a))	2/3 month	3-2/3 months
Filing replies to oppositions (1.638(b))	2/3 month	4-1/3 months
Decision on preliminary motions (1.640(b)(1)), open preliminary statements (1.631), set times for filing motions for discovery (1.687(c) and testimony (1.651(a))	1 month	5-1/3 months
Filing of motions for discovery (1.635, 1.651(a), 1.687(c))	1 month	6-1/3 months
Filing of opposition to motion for discovery (1.638(a))	2/3 month	7 months
Decision on motion for discovery	2/3 month	7-2/3 months
Time for compliance with any discovery ordered	2/3 month	8-1/3 months
Junior party testimony (case-in-chief; 1.672(b)):		
Testimony	2 months	10-1/3 months
Senior party cross-examination of affiants if needed	1 month	11-1/3 months

Event in Interference	Time from last event in the interference	Total time interference
Senior party testimony (case-in-chief and case-in-rebuttal, 1.672(b)):		
Testimony	2 months	13 months
Junior party cross-examination of affiants if needed	1 month	14 months
Junior party testimony (case-in-rebuttal):		
Testimony	2/3 month	15 1/3 months
Senior party cross-examination of affiants if needed	2/3 month	16 months
Filing of record (1.653(c))	1-1/3 months	17-1/3 months
Brief for junior party (1.656)	1 month	18-1/3 months
Brief for senior party (1.656)	1 month	19-1/3 months
Reply brief for junior party (1.656)	2/3 month	20 months
Final hearing (1.654)	1 month	21 months
Decision (1.658)	2 months	23 months

The following is an index for proposed §§1.601 through 1.688:

Rule Index

- \$1.601 Scope of rules, definitions
- \$1.602 Interest in applications and patents involved in interference
- \$1.603 Interference between applications; subject matter of the interference
- \$1.604 Request for interference between applications by an applicant
- \$1.605 Suggestion of claim to applicant by examiner
- \$1.606 Interference between an application and a patent; subject matter of the interference
- \$1.607 Request by applicant for interference with patent
- \$1.608 Interference between an application and a patent; prima facie showing by applicant
- \$1.609 Preparation of interference papers by examiner
- \$1.610 Assignment of interference to examiner-in-chief time period for completing interference
- \$1.611 Declaration of interference
- \$1.612 Access to applications
- \$1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent
- \$1.614 Jurisdiction over interference
- \$1.615 Suspension of ex parte prosecution
- \$1.616 Sanctions for failure to comply with rules or order
- \$1.617 Summary judgment against applicant
- \$1.618 Return of unauthorized papers

- \$1.621 Preliminary statement, time for filing, notice of filing
- \$1.622 Preliminary statement, who made invention, where invention made
- \$1.623 Preliminary statement; invention made in United States
- \$1.624 Preliminary statement; invention made abroad
- \$1.625 Preliminary statement; derivation by an opponent
- \$1.626 Preliminary statement; earlier application
- \$1.627 Preliminary statement, sealing before filing, opening of statement
- \$1.628 Preliminary statement, correction of error
- \$1.629 Effect of preliminary statement
- \$1.630 Reliance on earlier application
- \$1.631 Access to preliminary statement, service of preliminary statement
- \$1.633 Preliminary motions
- \$1.634 Motion to correct inventorship
- \$1.635 Miscellaneous motions
- \$1.636 Motions, time for filing
- \$1.637 Content of motions
- \$1.638 Opposition and reply, time for filing opposition and reply
- \$1.639 Evidence in support of motion, opposition, or reply
- \$1.640 Motions, hearing and decision, redeclaration of interference, order to show cause
- \$1.641 Unpatentability discovered by examiner-in-chief

- \$1.642 Addition of new application to interference
- \$1.643 Prosecution of interference by assignee
- \$1.644 Petitions in interference
- \$1.645 Extension of time, late papers, stay of proceedings
- \$1.646 Service of papers, proof of service
- \$1.647 Translation of documents in foreign language
- \$1.651 Setting times for discovery and taking testimony, parties entitled to take testimony
- \$1.652 Judgment for failure to take testimony or file record
- \$1.653 Record
- \$1.654 Final hearing
- \$1.655 Matters considered in rendering a final decision
- \$1.656 Briefs for final hearing
- \$1.657 Burden of proof as to date of invention
- \$1.658 Final Decision
- \$1.659 Recommendation
- \$1.660 Notice of reexamination, reissue, protest, or litigation
- \$1.661 Termination of interference after judgment
- \$1.662 Request for entry of adverse judgment; reissue filed by patentee
- \$1.663 Status of claim of defeated applicant after interference
- \$1.664 Action after interference

- \$1.665 Second interference
- \$1.666 Filing of interference settlement agreements
- \$1.671 Evidence must comply with rules
- \$1.672 Manner of taking testimony
- \$1.673 Notice of examination of witness
- \$1.674 Persons before whom depositions may be taken
- \$1.675 Examination of witness, reading and signing transcript of deposition
- \$1.676 Certification and filing by officer, marking exhibits
- \$1.677 Form of a transcript of deposition
- \$1.678 Transcript of deposition must be filed
- \$1.679 Inspection of transcripts
- \$1.682 Official records and printed publications
- \$1.683 Testimony in another interference, proceeding, or action
- \$1.684 Testimony in a foreign country
- \$1.685 Errors and irregularities in depositions
- \$1.687 Additional Discovery
- \$1.688 Use of discovery

The following is a table correlating the present rules (37 CFR \$1.201 through 1.288) to the proposed rules (proposed 37 CFR §§1.601 through 1.688).

Rule Correlation Table

Old	to	New
1.201(a)		1.601(a)
1.201(b)		1.601(b), (c)
1.201(c)		1.602
1.202		none
1.203(a)		1.603(a), (b)
1.203(b)		1.605(a)
1.203(c)		1.605(b)
none		1.604(a)
1.203(d)		1.604(b)
1.204(a)		none
1.204(b)		1.608(b)
1.204(c)		1.608(c)
1.205(a)		1.606(a), (b)
1.205(b)		1.607(a), (c)
1.205(c)		1.607(d)
none		1.608(a)
1.206(a)		1.607(b)
1.207(a)		1.609
none		1.610
1.207(b)		1.611
1.208		1.613
1.211		1.614
1.212		1.615
none		1.616
1.228		1.617
none		1.618
1.215(a)		1.621(a)
1.215(b)		1.621(b)
1.215(c)		1.629(c)

1.216 (a)	1.622 (a) , (b)
1.216 (a) (1) - (6)	1.623 (a)
1.216 (b)	1.623 (b) , 1.624 (b) ,
	1.625 (b)
1.216 (c)	1.666
1.217 (a)	1.624 (a) , 1.625 (a)
1.217 (b)	1.623 (a)
1.218	1.621 (a)
1.219	1.627
1.222	1.628
1.223	1.629
1.224	1.630
1.225	1.640 (d) , (e) , and
	1.651 (c) (4)
1.226	1.612
1.227	1.631
1.231	1.633 , 1.634
1.237	1.641
1.238	1.642
1.242	1.643
1.243	1.635 , 1.636 ,
	1.637 (b) 1.638
	through 1.640
1.244	1.644
1.245	1.645
1.246	1.645
1.247	1.646
1.248	1.646
none	1.647
1.251	1.651
1.252	1.652
1.253	1.653
1.254	1.656
1.255	1.656 (c)
1.256	1.654
1.257 (a)	1.657
1.257 (b)	1.658 (c) , (d)

1.258	1.655
1.259	1.659
New	1.660
1.262	1.662 (a)
1.263	1.662 (a) and (d)
1.264	1.662 (b) and (c)
New	1.662 (e)
1.265	1.663
1.266	1.664
1.267	1.665
1.268	1.666
1.271	1.671
New	1.671 (g)
1.272 (a)	1.672 (a) , (b)
1.272 (b)	1.672 (c)
1.272 (c)	1.672 (d) , (e)
1.273 (a)	1.673 (a) , (c) , (d) ,
new	1.673 (e)
1.273 (b)	1.673 (f)
1.274	1.674
1.275	1.675
1.276	1.676
1.277	1.677
1.278	1.678
1.279	1.679
1.281	1.645
1.282	1.682
1.283	1.683
1.285	1.685
1.286	eliminated
1.287 (a) (1) (i) , (ii)	1.673 (b)
1.287 (a) (1) (iii)	1.673 (a)
1.287 (a) (2) , (3)	eliminated
1.287 (b)	eliminated
1.287 (c)	1.687
1.287 (d) (1)	1.673 (c)
1.287 (d) (2)	1.616
1.287 (e)	1.687 (d)
1.288	1.688

OTHER CONSIDERATIONS: The proposed rule change would not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy would be less than \$100 million. There would be no major increase in costs or prices for consumers, individual industries, federal state, or local government agencies, or geographic regions. There would be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This proposed rule change would not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public. It is anticipated that less paperwork would be involved under the proposed rule change. Likewise, it is anticipated that the cost of an interference should be less under the proposed rule change.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 23, 41, and 135, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below:

PART 1 -- RULES OF PRACTICE IN PATENT CASES

It is proposed to amend 37 CFR, Chapter I, as follows with deletions indicated by brackets and additions by arrows:

1. Section 1.1 is proposed to be amended by adding a new paragraph (d) to read as follows:
 §1.1 All communications to be addressed to Commissioner of Patents and Trademarks

* * * * *

(d) Communications relating to interferences and applications or patents involved in an interference should be additionally marked "BOX INTERFERENCE."

2. Section 1.4 is proposed to be amended by revising paragraph (a)(2) and reprinting the introductory text of paragraph (a) to read as follows:

§1.4 Nature of correspondence

(a) Correspondence with the Patent and Trademark Office comprises:

* * * * *

(2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§ 1.31 to 1.352; of international applications in Subpart C, §§ 1.401 to 1.482; of reexamination of patents in Subpart D, §§ 1.501 to 1570; of interferences in Subpart E, §§1.601 to 1.688; and of trademark applications §§2.11 to 2.189.

* * * * *

3. Section 1.5 is proposed to be amended by adding a new paragraph (e) to read as follows:

§1.5 Identification of application, patent or registration

* * * * *

(e) When a paper concerns an interference, it should state the names of the parties and the number of the interference. The name of the examiner-in-chief assigned to the interference (§1.610) and the name of the party filing the paper should appear conspicuously on the first page of the paper.

4. Section 1.8 is proposed to be amended by adding to paragraph (a) a new subparagraph (xii) to read as follows:

§1.8 Certificate of mailing

* * *

(xii) The filing of a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail."

* * * * *

5. Section 1.9 is proposed to be amended by adding a new paragraph (g) to read as follows:

§1.9 Definitions

* * * * *

(g) For definitions in interferences see §1.601.

6. Section 1.11 is proposed to be amended by revising paragraph (a) as follows:

§1.11 Files open to the public.

(a) After a patent has been issued, the specification, drawings and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. After [an award of priority by the Board of Patent Interferences as to all parties, or after termination if no such award is made] entry of a judgment in an interference by the Board of Appeals and Interferences as to all parties or after termination of an interference without an award of judgment the file of any interference which

involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See §2.27 for trademark files.

* * * * *

7. Section 1.14 is proposed to be amended by removing from paragraph (d) the words "Board of Appeals or the Board of Patent Interferences" and inserting, in their place, the words "Board of Appeals and Interferences."

8. Section 1.17 is proposed to be amended by revising paragraphs (e), (g), (h) and (i) as follows:

§1.17 Patent application processing fees.

* * * * *

(e) For filing a notice of appeal from the examiner to the Board of Appeals and Interferences:

By a small entity (§1.9(f))	\$ 57.50
By other than a small entity	115.00

* * * * *

(g) For filing a request for an oral hearing before the Board of Appeals and Interferences in appeal under 35 U.S.C. §134:

By a small entity (§1.9(f))	\$ 50.00
By other than a small entity	100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph.....\$120.00

- §1.47 - for filing by other than all the inventors or a person not the inventor

- §1.48 - for correction of inventorship

- §1.182- for decision on questions not specifically provided for

- §1.183 - to suspend the rules

▶ - §1.644(e) - for petition or request for reconsideration of a decision on petition in an interference ◀

- [1.268] ▶ §1.666(c) ◀ - for late filing of interference settlement agreement.

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph\$ 60.00

- §1.12 - for access to an assignment record

- §1.14 - for access to an application

- §1.55 - for entry of late priority papers

- §1.102 - to make application special

- §1.103 - to suspend action in application

- §1.177 - for divisional reissues to issue separately

[- §1.268 - for access to interference settlement agreement]

- §1.312 - for amendment after payment of issue fee

- §1.313 - to withdraw an application from issue

- §1.314 - to defer issuance of a patent

- §1.334 - for patent to issue to assignee, assignment recorded late

▶ - §1.666(b) - for access to interference settlement agreement ◀

* * * * *

9. Section 1.36 is proposed to be revised as follows:

§1.36 Revocation of power of attorney or authorization; withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of [his or her] ▶ the ◀ power of

attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of [his or her] the assignee's own selection. See §1.613(d) for withdrawal of an attorney or agent of record in an interference.

10. Section 1.48 is proposed to be revised as follows:

§1.48 Correction of inventorship

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (a) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (b) an oath or declaration by each actual inventor or inventors as required by §1.63; (c) the fee set forth in §1.17(h); and (d) the written consent of any assignee.

When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under §1.634.

11. Section 1.55 is proposed to be amended by removing from paragraph (a) "1.224" and inserting, in its place, "1.630".

12. Section 1.59 is proposed to be revised as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(1)) has been paid. See §1.618 for return of unauthorized and improper papers in interferences.

13. Section 1.68 is proposed to be revised as follows:

§1.68 Declaration in lieu of oath.

Any document to be filed in the Patent and Trademark Office and which is required by any law, rule, or other regulation to be under oath may be subscribed to by a written declaration [with the exception of testimony relating to interferences and other contested cases covered by §§1.271 to 1.286]. Such declaration may be used in lieu of the oath otherwise required, if, and only if, the declarant is on the same document, warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of [his] the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

14. Section 1.103 is proposed to be amended by revising paragraph (d) as follows:

§1.103 Suspension of action

* * * * *

(d) Action on applications in which the Office has accepted a request filed under §1.139 will be suspended for the entire pendency of these applications except for purposes relating to [proceedings under §1.201(b)] interference proceedings under §§1.601 through 1.688.

15. Section 1.122 is proposed to be amended by revising paragraph (b) as follows:

§1.122 Entry and consideration of amendments

* * * * *

(b) Ordinarily all amendments presented in a paper filed while the application is open to amendment are entered and considered, subsequent cancellation or correction being required of improper amendments. Untimely amendatory papers may be refused entry and consideration in whole or in part. For amendments presented during an interference see §1.664.

16. Section 1.136 is proposed to be amended by removing "\$1.207" and inserting, in its place, "\$1.610(a)" and by removing "\$1.245" and inserting, in its place, "\$1.645".

17. Section 1.138 is proposed to be revised as follows:

\$1.138 Express Abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant [himself] and the assignee of record, if any, and identifying the application. [except as provided in \$1.262 and an] ▶ An ◀ application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

18. Section 1.181 is proposed to be amended by revising paragraph (a) as follows:

\$1.181 Petition to the Commissioner

(a) Petition may be taken to the Commissioner: (1) from any action or requirement of any examiner in the ex parte prosecution of an application which is not subject to appeal to the Board of Appeals ▶ and Interferences ◀ or to the court; (2) in cases in which a statute or the rules specify that the matter is to be determined directly by or reviewed by the Commissioner; and (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances. ▶ For petitions in interferences, see \$1.644. ◀

* * * * *

19. It is proposed to revise the center heading preceding \$1.191 to read "APPEAL TO THE BOARD OF APPEALS AND INTERFERENCES".

20. Section 1.191 is proposed to be amended by revising paragraphs (a) and (c) as follows:

\$1.191 Appeal to Board of Appeals ▶ and Interferences ◀.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected or who has been given a final rejection (\$1.113), may, upon the payment of the fee set forth in \$1.17(e), appeal from the decision of the examiner to the Board of Appeals ▶ and Interferences ◀ within the time allowed for response.

* * * * *

(c) [Except as otherwise provided by \$1.206,] ▶ An ◀ appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

* * * * *

21. Section 1.194 is proposed to be amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Appeals and Interferences."

22. Section 1.196 is proposed to be revised as follows:

\$1.196 Decision by the Board of Appeals ▶ and Interferences ◀.

(a) The Board of Appeals ▶ and Interferences ◀, in its decision, may affirm or reverse the decision of the [primary] examiner in whole or in part on the grounds and on the claims specified by the examiner. The affirmance of the rejection of a claim on any of the grounds specified constitutes a general affirmance of the decision of the [primary] examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Appeals ▶ and Interferences ◀ have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a ▶ new ◀ rejection of the claims. ▶ When the Board of Appeals and Interferences makes a new rejection of an appealed claim, the appellant may exercise any one of the following three options:

(1) ◀ The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the [primary] examiner ▶ in which event the application will be remanded to the examiner and the decision of the Board of Appeals and Interferences shall not be considered final for the purpose of judicial review ◀. The statement shall be binding upon the [primary] examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the [primary] examiner, [avoids] ▶ overcomes ◀ the [additional] ▶ new ◀ ground for rejection stated in the decision. ▶ When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Appeals and Interferences may enter an order otherwise making its decision final. ◀

▶ (2) ◀ The appellant may [waive such reconsideration before the primary examiner and] have the case reconsidered ▶ under §1.197(b) ◀ by the Board of Appeals ▶ and Interferences ◀ upon the same record [before them]. Where request for such reconsideration is made the Board of Appeals ▶ and Interferences ◀ shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused.

▶ (3) ◀ The appellant may [waive reconsideration by the Board of Appeals and] treat the decision, including the [added] ▶ new ◀ grounds for rejection given by the Board of Appeals ▶ and Interferences ◀, as a final decision in the case.

(c) Should the decision of the Board of Appeals ▶ and Interferences ◀ include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement which shall be binding on the [primary] examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Appeals ▶ and Interferences ◀ normally will confine its decision to a review of rejections made by the [primary] examiner, should it have knowledge of any grounds for rejecting any allowed claim [that it believes should be considered] it may include in its decision a [statement to that effect] ▶ recommended rejection of the claim ◀ and remand the case to the [primary] examiner [for consideration thereof]. In such event, the Board shall set a period, not less than [one month] ▶ thirty

days ◀, within which the appellant may submit to the [primary] examiner an appropriate amendment, [or] a showing of facts or reasons, or both, in order to avoid the grounds set forth in the [statement] ▶ recommendation ◀ of the Board of Appeals ▶ and Interferences ◀. [If the primary examiner rejects the previously allowed claim or claims on the basis of such statement, the appellant may appeal to the Board of Appeals from the rejection.] ▶ The examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the applicant may again appeal to the Board of Appeals and Interferences. ◀ Whenever a decision of the Board of Appeals ▶ and Interferences ◀ includes a remand, that decision shall not be considered a final decision [in the case, but the Board of Appeals shall, upon conclusion of the proceedings before the examiner on remand, either adopt its decision as final or render a new decision on all of the claims on appeal, as it may deem appropriate]. ▶ When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Appeals and Interferences may enter an order otherwise making its decision final. ◀

23. Section 1.197 is proposed to be amended by revising paragraphs (a) and (b) as follows:

§1.197 Action following decision

(a) After decision by the Board of Appeals ▶ and Interferences ◀, the case shall be returned to the [primary] examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the [primary] examiner, as the condition of the case may require, to carry into effect the decision.

(b) A single request for [rehearing or] reconsideration[,] or modification of the decision[,] may be made if filed within thirty days from the date of the original decision unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals ▶ and Interferences ◀ so states.

* * * * *

24. Section 1.198 is proposed to be amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Appeals and Interference."

25. It is proposed to remove the center heading preceding §1.201.
26. It is proposed to remove §§1.201 through 1.212.
27. It is proposed to remove the center heading preceding §1.215.
28. It is proposed to remove §§1.215 through 1.228.
29. It is proposed to remove the center heading preceding §1.231.
30. It is proposed to remove §§1.231 through 1.238.
31. It is proposed to remove the center heading preceding §1.242.
32. It is proposed to remove §§1.242 through 1.247.
33. It is proposed to add a center heading preceding §1.248 to read "MISCELLANEOUS PROVISIONS".
34. Section 1.248 is proposed to be amended by revising the section heading and adding paragraph (c) as follows:

§1.248 Service of Papers; manner of service; proof of service ► in cases other than interferences ◀

* * * * *

► (c) See §1.646 for service of papers in interferences. ◀
35. It is proposed to remove the center heading preceding §1.251.
36. It is proposed to remove §§1.251 through 1.259.
37. It is proposed to remove the center heading preceding §1.261.
38. It is proposed to remove §§1.261 through 1.268.
39. It is proposed to remove the center heading preceding §1.271.
40. It is proposed to remove §§1.271 through 1.288.

41. Section 1.292 is proposed to be amended by revising paragraph (a) and adding paragraph (c) as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the [primary] examiner, to make a prima facie showing that the invention [involved in an interference or] claimed in an application believed to be on file had been in public use or on sale ► more than ◀ one year before the filing of the application, [or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party,] a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, [times may be set] ► the Commissioner may designate an appropriate official to conduct the public use proceeding, including the setting of times ◀ for taking testimony, which shall be taken as provided by [§§1.271 to 1.286] ► §§ 1.671 through 1.685. ◀ The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

► (c) A petition for institution of public use proceedings shall not be filed by a party to an interference as to an application involved in the interference. Public use and on sale issues in an interference shall be raised by a preliminary motion under §1.633(a). ◀

42. Section 1.301 is proposed to be amended by removing the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Appeals and Interferences."

43. Section 1.302 is proposed to be amended by removing from paragraph (b) "1.248" and inserting, in its place, "1.646" and by removing "and other contested cases".

44. Section 1.303 is proposed to be amended by removing from paragraph (a) the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Appeals and Interferences" and by removing from paragraph (c) "1.248" and inserting, in its place, "1.646".

45. Section 1.304 is proposed to be amended by revising paragraph (a) as follows:

\$1.304 Time for appeal or civil action

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (\$1.302) or for commencing a civil action (\$1.303) is sixty days from the date of the decision of the [Board of Appeals or the Board of Patent Interferences] ▶ Board of Appeals and Interferences ◀. If a request for [rehearing or] reconsideration [,] or modification of the decision [,] is filed within the time provided [pursuant to] ▶ under ◀ \$1.197(b) or [\$1.256(b)] ▶ \$1.658(b) ◀, the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. ▶ Except for an appeal from or commencing a civil action after a decision of the Board of Appeals and Interferences in a reexamination proceeding or an interference proceeding, the ◀ [The] time periods set forth herein are subject to the provisions of \$1.136. ▶ See \$1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See \$1.645(a) for extensions of time to appeal or commence a civil action in an interference. The Commissioner, upon a showing of excusable neglect, may extend the time for seeking judicial review when a request is untimely filed after expiration of the time prescribed by this section. ◀

* * * * *

46. Section 1.322 is proposed to be revised as follows:

\$1.322 Certificate of correction of Office mistake

(a) A certificate of correction under 35 U.S.C. 254 may be issued at the request of the patentee or [his] ▶ the patentee's ◀ assignee. Such certificate will not be issued at the request or suggestion of anyone not owning an interest in the patent, nor on motion of the Office, without first notifying the patentee (including any assignee of record) and affording [him] ▶ the patentee ◀ an opportunity to be heard. ▶ When the request relates to a patent involved in an interference, the request shall comply with the requirements of this section and shall be accompanied by a motion under \$1.635. ◀

* * * * *

47. Section 1.323 is proposed to be revised as follows:

\$1.323 Certificate of correction of applicant's mistake

Whenever a mistake of a clerical or typographical nature or of minor character which was not the fault of the Office, appears in a patent and a showing is made that such mistake occurred in good faith, the Commissioner may, upon payment of the [required] fee ▶ set forth in \$1.20(a) ◀, issue a certificate, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination. ▶ A request for a certificate of correction of a patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under \$1.635. ◀

48. Section 1.324 is proposed to be revised as follows:

\$1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in \$1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors. ▶ A request to correct inventorship of a patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under \$1.634. ◀

49. Section 1.550 is proposed to be amended by removing from paragraph (a) "Board of Appeals" and inserting, in its place, "Board of Appeals and Interferences."

50. Section 1.565 is proposed to be amended by revising paragraph (b) and adding paragraph (e) as follows:

\$1.565 Concurrent office proceeding

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in [interference proceedings or] litigation [,] or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination [,] or reissue [or interference] proceeding.

* * * *

(e) If a patent in the process of reexamination is or becomes involved in an interference, the Commissioner may stay reexamination or the interference. The Commissioner will not consider a request to stay an interference unless a motion (§1.635) to stay the interference has been presented to, and denied by, an examiner-in-chief and the request is filed within ten (10) days of a decision by an examiner-in-chief denying the motion for a stay or such other time as the examiner-in-chief may set.

51. It is proposed to add a new subpart entitled "Subpart E--Interferences" which reads as follows:

SUBPART E - INTERFERENCES

Sec.

- 1.601 Scope of rules, definitions
- 1.602 Interest in applications and patents involved in interference
- 1.603 Interference between applications; subject matter of the interference.
- 1.604 Request for interference between applications by an applicant
- 1.605 Suggestion of claim to applicant by examiner
- 1.606 Interference between an application and a patent; subject matter of the interference

- 1.607 Request by applicant for interference with patent
- 1.608 Interference between an application and a patent; prima facie showing by applicant
- 1.609 Preparation of interference papers by examiner
- 1.610 Assignment of interference to examiner-in-chief time period for completing interference
- 1.611 Declaration of interference
- 1.612 Access to applications
- 1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent
- 1.614 Jurisdiction over interference
- 1.615 Suspension of ex parte prosecution
- 1.616 Sanctions for failure to comply with rules or order
- 1.617 Summary judgment against applicant
- 1.618 Return of unauthorized papers
- 1.621 Preliminary statement, time for filing, notice of filing
- 1.622 Preliminary statement, who made invention, where invention made
- 1.623 Preliminary statement; invention made in United States
- 1.624 Preliminary statement; invention made abroad
- 1.625 Preliminary statement; derivation by an opponent
- 1.626 Preliminary statement; earlier application
- 1.627 Preliminary statement, sealing before filing, opening of statement
- 1.628 Preliminary statement, correction of error
- 1.629 Effect of preliminary statement

- 1.630 Reliance on earlier application
- 1.631 Access to preliminary statement, service of preliminary statement
- 1.633 Preliminary motions
- 1.634 Motion to correct inventorship
- 1.635 Miscellaneous motions
- 1.636 Motions, time for filing
- 1.637 Content of motions
- 1.638 Opposition and reply, time for filing opposition and reply
- 1.639 Evidence in support of motion, opposition, or reply
- 1.640 Motions, hearing and decision, redeclaration of interference, order to show cause
- 1.641 Unpatentability discovered by examiner-in-chief
- 1.642 Addition of new application to interference
- 1.643 Prosecution of interference by assignee
- 1.644 Petitions in interference
- 1.645 Extension of time, late papers, stay of proceedings
- 1.646 Service of papers, proof of service
- 1.647 Translation of documents in foreign language
- 1.651 Setting times for discovery and taking testimony, parties entitled to take testimony
- 1.652 Judgment for failure to take testimony or file record
- 1.653 Record
- 1.654 Final hearing
- 1.655 Matters considered in rendering a final decision

- 1.656 Briefs for final hearing
- 1.657 Burden of proof as to date of invention
- 1.658 Final Decision
- 1.659 Recommendation
- 1.660 Notice of reexamination, reissue, protest, or litigation
- 1.661 Termination of interference after judgment
- 1.662 Request for entry of adverse judgment; reissue filed by patentee
- 1.663 Status of claim of defeated applicant after interference
- 1.664 Action after interference
- 1.665 Second interference
- 1.666 Filing of interference settlement agreements
- 1.671 Evidence must comply with rules
- 1.672 Manner of taking testimony
- 1.673 Notice of examination of witness
- 1.674 Persons before whom depositions may be taken
- 1.675 Examination of witness, reading and signing transcript of deposition
- 1.676 Certification and filing by officer, marking exhibits
- 1.677 Form of a transcript of deposition
- 1.678 Transcript of deposition must be filed
- 1.679 Inspection of transcripts
- 1.682 Official records and printed publications
- 1.683 Testimony in another interference, proceeding, or action

- 1.684 Testimony in a foreign country
- 1.685 Errors and irregularities in depositions
- 1.687 Additional Discovery
- 1.688 Use of discovery

Authority: 35 USC 6, 23, 41, and 135

SUBPART E -- Interferences

§1.601 Scope of rules, definitions

This subpart governs the procedure in patent interferences in the Patent and Trademark Office. This subpart shall be construed to secure the just, speedy, and inexpensive determination of every interference. For the meaning of terms in the Federal Rules of Evidence as applied to interferences, see §1.671(c). Unless otherwise clear from the context, the following definitions apply to this subpart:

(a) "Additional discovery" is discovery to which a party may be entitled under §1.687 in addition to discovery to which the party is entitled as a matter of right under §1.673(a) and (b).

(b) "Affidavit" means affidavit, declaration under §1.68, or statutory declaration under 28 U.S.C. §1746. A transcript of an ex parte deposition may be used as an affidavit.

(c) "Board" means the Board of Appeals and Interferences.

(d) "Case-in-chief" means that portion of a party's case where the party has the burden of going forward with evidence.

(e) "Case-in-rebuttal" means that portion of a party's case where the party presents evidence in rebuttal to the case-in-chief of another party.

(f) A "count" defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent which corresponds to a count is a claim involved in the interference within the meaning of 35 U.S.C. §135(a). A claim of a patent or application which is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application which is not identical to a count, but which defines the same patentable invention as the count, is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is not patentable to any party.

(g) The "effective filing date" of an application or a patent is the filing date of an earlier application accorded to the application or patent under 35 U.S.C. §§119, 120, or 365.

(h) In the case of an application, "filing date" means the filing date assigned to the application. In the case of a patent, "filing date" means the filing date assigned to the application which issued as the patent.

(i) An "interference" is a proceeding instituted in the Patent and Trademark Office before the Board of Appeals and Interferences to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patents contain claims for the same patentable invention.

(j) An "interference-in-fact" exists when all the claims of a party which correspond to a count and all the claims of an opponent which correspond to the count define the same patentable invention.

(k) A "lead" attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the attorney or agent whom an examiner-in-chief may contact to set times and take other action in the interference.

(l) A "party" is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

(m) A "senior party" is the party with earliest effective filing date as to all counts or, if there is no party with the earliest effective filing date as to all counts, the party with the earliest filing date. A "junior party" is any other party.

(n) Invention "A" is the "same patentable invention" as a invention "B" when invention "A" is the same as (35 U.S.C. §102) or is obvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A". Invention "A" is a "separate patentable invention" with respect to invention "B" when invention "A" is new (35 U.S.C. §102) and non-obvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

(o) "Sworn" means sworn or affirmed.

(p) "United States" means the United States of America, its territories and possessions.

\$1.602 Interest in applications and patents involved in an interference.

(a) Unless good cause is shown, an interference shall not be declared or continued between (1) applications owned by a single party or (2) applications and an unexpired patent owned by a single party.

(b) The parties, within 20 days after an interference is declared, shall notify the Board of any and all right, title, and interest in any application or patent

involved or relied upon in the interference unless the right, title, and interest is set forth in the notice declaring the interference.

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days of the change.

\$1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. Each count shall define a separate patentable invention. Each application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the applications which define the same patentable invention as a count shall be designated to correspond to the count.

\$1.604 Request for interference between applications by an applicant.

(a) An applicant may seek to have an interference declared with an application of another by (1) suggesting a proposed count and presenting a claim corresponding to the proposed count, (2) identifying the other application and, if known, a claim in the other application which corresponds to the proposed count, and (3) explaining why an interference should be declared.

(b) When an applicant presents a claim known to the applicant to define the same patentable invention claimed in a pending application of another, the applicant shall identify that pending application, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where it appears an applicant may have failed to comply with the provisions of this paragraph.

\$1.605 Suggestion of claim to applicant by examiner.

(a) The examiner may suggest that an applicant present a claim in an application for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than 30 days. Failure or refusal of an applicant to timely present a claim which is the same or substantially the same as the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim.

(b) The suggestion of a claim by the examiner for the purpose of an interference will not stay the period for response to any outstanding Office action. When a suggested claim is timely presented, ex parte proceedings in the application will be stayed pending a determination of whether an interference will be declared.

\$1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. Each count shall define a separate patentable invention. Any application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (\$1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under \$1.633(c), to define one patentable invention.

\$1.607 Request by applicant for interference with patent.

(a) An applicant may seek to have an interference declared between an application and an unexpired patent by (1) presenting a proposed count and a claim corresponding to the proposed count and, if any claim of the patent or application does not correspond exactly to the proposed count, explaining why an interference should be declared,

(2) identifying the patent and indicating which claim in the application and which claim or claims of the patent correspond to the proposed count, (3) applying the terms of the application claim corresponding to the count to the disclosure of the application.

(b) When an applicant seeks an interference with a patent, examination of the application, including any appeal to the Board, shall be conducted with special dispatch within the Patent and Trademark Office. The examiner shall determine whether there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in an interference. If the examiner determines that there is any interfering subject matter, an interference will be declared. If the examiner determines that there is no interfering subject matter, the examiner shall state the reasons why an interference is not being declared and otherwise act on the application.

(c) When an applicant presents a claim which corresponds exactly or substantially to a claim of a patent, the applicant must identify the patent and the number of the patent claim, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where an applicant fails to identify the patent.

(d) A notice that an applicant is seeking to provoke an interference with a patent will be placed in the file of the patent and a copy of the notice will be sent to the patentee. The identity of the applicant will not be disclosed unless an interference is declared. If a final decision is made not to declare an interference, a notice to that effect will be placed in the patent file and will be sent to the patentee.

\$1.608 Interference between an application and a patent; prima facie showing by applicant.

(a) When the earlier of the filing date or effective filing date of an application is three months or less after the earlier of the filing date or effective filing date of a patent, the applicant, before an interference will be declared, shall file an affidavit alleging that there is a basis upon which applicant is entitled to a judgment relative to the patentee.

(b) When the earlier of the filing date or the effective filing date of an application is more than three months after the earlier of the filing date or the effective filing date under 35 U.S.C. §120 of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is prima facie entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is prima facie entitled to the judgment. The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or §1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of sufficient cause, an affidavit may be based on information and belief. If a examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the applicant would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

§1.609 Preparation of interference papers by examiner.

When the examiner determines that an interference should be declared, the examiner shall forward to the Board:

- (a) All relevant application and patent files and
- (b) A statement identifying:

- (1) The count or counts;
- (2) The claims of any application or patent which correspond to the count, stating whether the claims correspond exactly or substantially to the count;
- (3) The claims in any application which are deemed by the examiner to be patentable over any count; and
- (4) Whether an applicant or patentee is entitled to the benefit of the filing date of an earlier application and, if so, sufficient information to identify the earlier application.

§1.610 Assignment of interference to examiner-in-chief, time period for completing interference.

(a) Each interference will be declared by an examiner-in-chief who may enter all interlocutory orders in the interference, except that only a panel consisting of at least three members of the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§1.617, 1.640(c) or (e), 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another examiner-in-chief may act in place of the one who declared the interference. Unless otherwise provided in this section, at the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the examiner-in-chief assigned to the interference. Times for taking action shall be set and the examiner-in-chief shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An examiner-in-chief may hold a conference with the parties to consider: (1) simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and

genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the examiner-in-chief may enter any order which may be appropriate.

(e) The examiner-in-chief may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

\$1.611 Declaration of interference

(a) Notice of declaration of an interference will be sent to each party.

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an examiner-in-chief may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the Official Gazette.

(c) The notice of declaration shall specify:

(1) the name and residence of each party involved in the interference;

(2) the name and address of record of any attorney or agent of record in any application or patent involved in the interference;

(3) the name of any assignee of record in the Patent and Trademark Office;

(4) the identity of any application or patent involved in the interference;

(5) where a party is accorded the benefit of the filing date of an earlier application, the identity of the earlier application;

(6) the count or counts;

(7) the claim or claims of any application or any patent which correspond to each count; and

(8) the order of the parties.

(d) The notice of declaration may also specify the time for: (1) filing a preliminary statement as provided in \$1.621(a); (2) serving notice that a preliminary statement has been filed as provided \$1.621(b); and (3) filing preliminary motions authorized by \$1.633, oppositions to the motions, and replies to the oppositions.

(e) Notice may be given in the Official Gazette that an interference has been declared involving a patent.

\$1.612 Access to applications

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under \$1.131 and any evidence and explanation under \$1.608(b) filed separate from an amendment.

(b) After preliminary motions under \$1.633 are decided (\$1.640(b)), each party shall have access to and may obtain copies of any affidavit filed under \$1.131 and any evidence and explanation filed under \$1.608(b) in any application set out in the notice declaring the interference.

(c) Any evidence and explanation filed under \$1.608(b) in the file of any application identified in the notice declaring the interference shall be served when required by \$1.617(b).

(d) The parties at any time may agree to exchange copies of papers in the files of any application identified in the notice declaring the interference.

\$1.613 Lead attorney, same attorney representing different parties in an interference withdrawal of attorney or agent

(a) Each party may be required to designate one attorney or agent of record as the lead attorney or agent.

(b) The same attorney or agent may not represent two or more parties in an interference except as may be permitted under \$1.344.

(c) An examiner-in-chief may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an examiner-in-chief is of the opinion that an attorney

or agent should be disqualified, the examiner-in-chief shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an examiner-in-chief and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§1.635).

§1.614 Jurisdiction over interference

(a) The Board shall assume jurisdiction over an interference when the interference is declared under §1.611.

(b) When the interference is declared the interference is a contested case within the meaning of 35 U.S.C. §24.

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An examiner-in-chief, where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

§1.615 Suspension of ex parte prosecution

(a) When an interference is declared, ex parte prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application which are received during pendency of the interference will not be entered or considered without the consent of an examiner-in-chief.

(b) Ex parte prosecution as to specified matters may be continued concurrently with the interference with the consent of the examiner-in-chief.

§1.616 Sanctions for failure to comply with rules or order.

An examiner-in-chief or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an examiner-in-chief or the Board. An appropriate sanction may include among others entry of an order:

(a) holding certain facts to have been established in the interference;

(b) precluding a party from filing a motion or a preliminary statement;

(c) precluding a party from presenting or contesting a particular issue;

(d) precluding a party from requesting, obtaining, or opposing discovery; or

(e) granting judgment in the interference.

§1.617 Summary judgment against applicant

(a) An examiner-in-chief shall review any evidence filed by an applicant under §1.608(b) to determine if the applicant is prima facie entitled to a judgment relative to the patentee. If the examiner-in-chief determines that the evidence shows the applicant is prima facie entitled to a judgment relative to the patentee, the interference shall proceed before the examiner-in-chief. If in the opinion of the examiner-in-chief the evidence fails to show that the applicant is prima facie entitled to a judgment relative to the patentee, the examiner-in-chief shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant may file a response to the order and state any reasons why summary judgment should not be entered. A response may include a request by the applicant for a hearing before the Board. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under §1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under §1.608(b) and this paragraph.

(c) If a response is not timely filed by the applicant, the Board shall enter a final decision granting summary judgment against the applicant.

(d) If a response is timely filed by the applicant, all opponents may file a statement within a time set by the examiner-in-chief. The statement shall set forth any views as to why summary judgment should be granted against the applicant. Evidence shall not be filed by any opponent. An opponent may not request an oral hearing.

(e) Unless authorized by the examiner-in-chief, no reply shall be filed by the applicant to the statement by the patentee.

(f) When more than two parties are involved in an interference, all parties may participate in summary judgment proceedings under this section.

(g) If a response by the applicant is timely filed and the time for all opponents to file a statement has expired, the Board shall decide whether the evidence submitted under §1.608(b) and any additional evidence properly submitted under paragraph (b) of this section shows that the applicant is prima facie entitled to a judgment relative to the patentee. If the Board decides that the applicant is not prima facie entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. If the Board decides otherwise, an interlocutory order shall be entered authorizing the interference to proceed before the examiner-in-chief.

(h) Only an applicant who filed evidence under §1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The examiner-in-chief shall set a date and time for the hearing. Unless otherwise ordered by the examiner-in-chief or the Board, the applicant and patentee will each be entitled to no more than 30 minutes of oral argument at the hearing.

§1.618 Return of unauthorized papers

(a) The Patent and Trademark Office shall return to a party any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered by the Patent and Trademark Office in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an examiner-in-chief.

(b) When presenting a paper in an interference, a party shall not submit with the paper a copy of a paper previously filed in the interference.

§1.621 Preliminary statement, time for filing, notice of filing

(a) Within the time set for filing preliminary motions under §1.633, each party may file a preliminary statement. The preliminary statement may be signed by any individual having knowledge of the facts recited therein or an attorney or agent of record.

(b) When a party files a preliminary statement the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by an examiner-in-chief.

§1.622 Preliminary statement, who made invention, where invention made

(a) A party's preliminary statement must identify the name of the inventor who made the invention defined by each count and must state on behalf of the inventor the facts required by paragraph (a) of §§1.623, 1.624, and 1.625 as may be appropriate. When the inventor identified in the preliminary statement is not identical to the inventor named in the party's application or patent, the party shall file a motion under §1.634 to correct inventorship.

(b) The preliminary statement shall state whether the invention was made in the United States or abroad. If made abroad, the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. §104.

§1.623 Preliminary statement; invention made in United States

(a) When the invention was made in the United States or a party is entitled to the benefit of the second sentence of 35 U.S.C. §104, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which the first drawing of the invention was made.

(2) The date on which the first written description of the invention was made.

(3) The date on which the invention was first disclosed by the inventor to another person.

(4) The date on which the invention was first conceived by the inventor.

(5) The date on which the invention was first actually reduced to practiced. If the invention was not actually reduced to practice by or on behalf of the inventor prior to the party's filing date, the preliminary statement shall so state.

(6) The date after the inventor's conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was made, a copy of the drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was made, a copy of the written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a drawing or written description cannot be filed with the preliminary statement.

§1.624 Preliminary statement; invention made abroad

(a) When the invention was made abroad and a party intends to rely on introduction of the invention into the United States, the preliminary statement must state the following facts as to the invention defined by each count;

(1) The date on which a drawing of the invention was first introduced into the United States.

(2) The date on which a written description of the invention was first introduced into the United States.

(3) The date on which the invention was first disclosed to another person in the United States.

(4) The date on which the inventor's conception of the invention was first introduced into the United States.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States.

(6) The date after introduction of the inventor's conception into the United States when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was made a copy of the drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was made, a copy of the written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a drawing or written description cannot be filed with the preliminary statement.

§1.625 Preliminary statement; derivation by an opponent

(a) When the invention was made in the United States or abroad and a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

(1) The name of the opponent.

(2) The date on which the first drawing of the invention was made.

(3) The date on which the first written description of the invention was made.

(4) The date on which the invention was first disclosed by the inventor to another person.

(5) The date on which the invention was first conceived by the inventor.

(6) The date on which the invention was first communicated to the opponent.

(b) If a party intends to prove priority, the preliminary statement must also comply with §1.623 or §1.624.

(c) When a party alleges under paragraph (a)(2) of this section that a drawing was made, a copy of the drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(3) of this section that a written description of the invention was made, a copy of the written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a drawing or written description cannot be filed with the preliminary statement.

§1.626 Preliminary statement; earlier application

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier application filed in the United States or abroad to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier application with particularity.

§1.627 Preliminary statement, sealing before filing, opening of statement

(a) The preliminary statement and copies of any drawing or written description shall be filed in a sealed envelope bearing only the name of the party filing the statement and the style (e.g., Jones v. Smith) and number of the interference. The sealed envelope should contain only the preliminary statement and copies of any drawing or written description. If the preliminary statement is filed through the mail, the sealed envelope should be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks in accordance with §1.1(d).

(b) A preliminary statement may be opened only at the direction of an examiner-in-chief.

§1.628 Preliminary statement, correction of error

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit and shall show that the correction is essential to the ends of justice and shall be accompanied by the corrected statement. The motion shall be filed as soon as practical after discovery of the error.

(b) When a party cannot attach a copy of a drawing or a written description to the party's preliminary statement as required by §§1.623(c), 1.624(c), or 1.625(c) because the drawing or written description is not in the party's possession, custody, or control, the party may file a motion (§1.635) to amend its preliminary statement promptly after it secures possession, custody, or control of a copy of the drawing or written description. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§1.635) for additional discovery under §1.687 or during a testimony period.

§1.629 Effect of preliminary statement

(a) A preliminary statement should be carefully prepared. A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to the earlier of its filing date or effective filing date or to the latest date of a period alleged in the preliminary statement as may be appropriate. A party may not correct a preliminary statement except as provided by §1.628.

(b) Evidence which shows that an act alleged in the preliminary statement occurred prior to the date alleged in the statement shall establish only that the act occurred no earlier than the date alleged in the statement.

(c) If a party does not file a preliminary statement, the party:

(1) shall be restricted to the earlier of the party's filing date or effective filing date and

(2) will not be permitted to prove that:

(i) the party made the invention prior to the party's filing date or

(ii) any opponent derived the invention from the party.

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by §1.623(c), §1.624(c), or §1.625(c), the party will be restricted to the earlier of the party's filing date or effective filing date as to that allegation. The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

(e) A preliminary statement shall not be used as evidence on behalf of the party filing the statement.

§1.630 Reliance on earlier application

A party shall not be entitled to rely on the filing date of an earlier application filed in the United States or abroad unless (a) the earlier application is identified (§1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under §1.633 seeking the benefit of the filing date of the earlier application.

§1.631 Access to preliminary statement, service of preliminary statement

(a) Unless otherwise ordered by an examiner-in-chief, concurrently with entry of a decision by the examiner-in-chief on preliminary motions filed under §1.633, any preliminary statement filed under §1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the examiner-in-chief, a party shall serve copies of its preliminary statement on every opponent who served a notice under §1.621(b).

(b) A junior party who does not file a preliminary statement shall not have access to the preliminary statement of any other party.

(c) If an interference is terminated before the preliminary statements have been opened, the preliminary statements will remain sealed and will be returned to the respective parties who submitted the statements.

§1.633 Preliminary Motions

A party may file the following preliminary motions:

(a) A motion for judgment on the ground that an opponent's claim corresponding to a count is not patentable to the opponent. In determining a motion filed under this paragraph, a claim may be construed by reference to the prior art of record. A motion under this paragraph shall not be based on: (1) priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. See §1.637(a).

(b) A motion for judgment on the ground that there is no interference-in-fact. A motion under this paragraph is proper only if: (1) the interference involves a design application or patent or a plant application or patent or (2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See §1.637(a).

(c) A motion to redefine the interfering subject matter by (1) adding or substituting a count, (2) amending an application claim corresponding to a count, (3) designating an application or patent claim to correspond to a count, or (4) designating an application or patent claim as not corresponding to a count. See §1.637(a) and (c).

(d) A motion to substitute a different application owned by a party for an application involved in the interference. See §1.637(a) and (d).

(e) A motion to declare an additional interference (1) between an additional application not involved in the interference and owned by a party and an opponent's application or patent involved in the interference or (2) when an interference involves three or more parties, between less than all applications and any patent involved in the interference. See §1.637(a) and (e).

(f) A motion to be accorded the benefit of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (f).

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (g).

(h) When a patent is involved in an interference and the patentee has on file or files an application for reissue under \$1.171, a motion to add the application for reissue to the interference. See \$1.637(a) and (h).

(i) When a motion is filed under paragraph (a), (b), or (g) of this section an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section or a motion to substitute a different application under paragraph (d) of this section.

\$1.634 Motion to correct inventorship

A party may file a motion to (a) amend its application involved in an interference to correct inventorship as provided by \$1.48 or (b) correct inventorship of its patent involved in an interference as provided in \$1.324. See \$1.637(a).

\$1.635 Miscellaneous motions

A party seeking entry of an order relating to any matter other than a matter which may be raised under §§1.633 or 1.634 may file a motion requesting entry of the order. See \$1.637(a) and (b).

\$1.636 Motions, time for filing

(a) A preliminary motion under \$1.633(a) through (h) shall be filed within a time period set by an examiner-in-chief.

(b) A preliminary motion under \$1.633(i) shall be filed within 20 days of the service of the preliminary motion under \$1.633(a), (b), or (g) unless otherwise ordered by an examiner-in-chief.

(c) A motion under \$1.634 shall be filed as soon as practical after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an examiner-in-chief.

(d) A motion under \$1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an examiner-in-chief.

\$1.637 Content of motions

(a) Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

(b) A motion under \$1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all opposing parties in an effort in good faith to resolve by agreement the issues raised by the motion. A moving party shall indicate in the motion whether any other party plans to oppose the motion. The provisions of this paragraph do not apply to a motion to suppress evidence (\$1.656(h)).

(c) A preliminary motion under \$1.633(c) shall explain why the interfering subject matter should be redefined.

(1) A preliminary motion seeking to add or substitute a count shall:

(i) Propose each count to be added or substituted.

(ii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iii) Identify all claims in an opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(iv) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(v) Show that each proposed count defines a separate patentable invention from every other count in the interference.

(vi) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(2) A preliminary motion seeking to amend an application claim corresponding to a count shall:

(i) Propose an amended claim.

(ii) Apply the terms of each proposed claim to the disclosure of the application.

(iii) Show the patentability to the applicant of each proposed amended claim and apply the terms of the proposed amended claim to the disclosure of the application; when necessary a moving party applicant shall file with the motion an amendment adding the proposed claim to the application.

(iv) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(3) A preliminary motion seeking to designate an application or patent claim to correspond to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim defines the same patentable invention as the count.

(iii) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(4) A preliminary motion seeking to designate an application or patent claim as not corresponding to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim does not define the same patentable invention as any other claim designated in the notice declaring the interferences as corresponding to the count.

(d) A preliminary motion under §1.633(d) to substitute a different application shall:

(1) Identify the different application.

(2) Certify that a complete copy of the file of the different application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents.

(3) Show the patentability to the applicant of all claims in, or proposed to be added to, the different application which correspond to each count and apply the terms of the claims to the disclosure of the different application; when necessary the applicant shall file with the motion an amendment adding a claim to the different application.

(4) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(e) A preliminary motion to declare an additional interference under §1.633(e) shall explain why an additional interference is necessary.

(1) When the preliminary motion seeks an additional interference under §1.633(e) (1), the motion shall:

(i) Identify the additional application.

(ii) Certify that a complete copy of the file of the additional application, except for documents filed under §§1.131 or 1.608(b), has been served on all opponents.

(iii) Propose a count for the additional interference.

(iv) Show the patentability to the applicant of all claims in, or proposed to be added to, the additional application which correspond to each proposed count for the additional interference and apply the terms of the claims to the disclosure of the additional application; when necessary the applicant shall file with the motion an amendment adding a claim to the additional application.

(v) When the opponent is an applicant, show the patentability to the opponent of any claims in, or proposed to be added to, the opponent's application which correspond to the proposed count and apply the terms of the claims to the disclosure of the opponent's application.

(vi) When the opponent is a patentee, designate the claims of the patent which define the same patentable invention defined by the proposed count.

(vii) Show that each proposed count for the additional interference defines a separate patentable invention from all counts of the interference in which the motion is filed.

(viii) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(2) When the preliminary motion seeks an additional interference under §1.633(e)(2), the motion shall:

(i) Identify any application or patent to be involved in the additional interference.

(ii) Propose a count for the additional interference.

(iii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iv) Identify all claims in any opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(v) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(vi) Show that each proposed count for the additional interference defines a separate patentable invention from all counts in the interference in which the motion is filed.

(vii) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(f) A preliminary motion for benefit under §1.633(f) shall:

(1) Identify the earlier application.

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents. When the earlier application is an application filed abroad, certify that a copy of the application filed abroad has been served on all opponents.

(3) Show that the earlier application discloses an embodiment within the scope of each count.

(g) A preliminary motion to attack benefit under §1.633(g) shall explain, as to each count, why an opponent should not be accorded the benefit of the filing date of the earlier application.

(h) A preliminary motion to add an application for reissue under §1.633(h) shall:

(1) Identify the application for reissue.

(2) Certify that a complete copy of the file of the application for reissue has been served on all opponents.

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding a claim to the application for reissue.

(4) Where appropriate, be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

§1.638 Opposition and reply, time for filing opposition and reply

(a) Unless otherwise ordered by an examiner-in-chief, any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) A reply to an opposition shall not be filed unless authorized by this subpart or an examiner-in-chief or the motion was filed under §§1.633 or 1.634. Unless otherwise ordered by an examiner-in-chief, any authorized reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

§1.639 Evidence in support of motion, opposition, or reply.

(a) Proof of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, opposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in the United States of which a party has been accorded or seeks to be accorded benefit.

(b) Proof may be in the form of patents, printed publications, and affidavits.

(c) When a party believes that testimony is necessary to support or oppose a preliminary motion under §1.633, the party shall describe the nature of the testimony needed. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

§1.640 Motions, hearing and decision, redeclaration of interference, order to show cause

(a) A hearing on a motion may be held in the discretion of the examiner-in-chief. The examiner-in-chief shall set the date and time for any hearing. The length of

oral argument at a hearing on a motion is a matter within the discretion of the examiner-in-chief. An examiner-in-chief may direct that a hearing take place by telephone.

(b) Motions will be decided by an examiner-in-chief. An examiner-in-chief may consult with an examiner in deciding motions involving a question of patentability. An examiner-in-chief may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference.

(1) When preliminary motions under §1.633 are decided, the examiner-in-chief will, when necessary, set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts involved in the interference. A supplemental preliminary statement shall meet the requirements specified in §§1.623, 1.624, 1.625, or 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under §1.621(a). After the time expires for filing any amendment and supplemental preliminary statement, the examiner-in-chief will, if necessary, redeclare the interference.

(2) After a decision is entered on preliminary motions filed under §1.633, a further motion under §1.633 will not be considered except as provided by §1.655(b).

(c) When a decision on any motion under §§1.633, 1.634, or 1.635 is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. No opposition to a request for reconsideration shall be filed unless requested by an examiner-in-chief or the Board. A request for reconsideration will ordinarily not be granted unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be decided by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion.

(d) An examiner-in-chief may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion is entered which is dispositive of the interference against the party as to all counts.

(2) The party is a junior party who fails to file a preliminary statement.

(3) The party is a junior party whose preliminary statement fails to overcome the earlier of the filing date or effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter a judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 20 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§1.635) requesting the testimony period. See §1.651(c)(4).

§1.641 Unpatentability discovered by examiner-in-chief

During the pendency of an interference, if the examiner-in-chief becomes aware of a reason why a claim corresponding to a count may not be patentable, the examiner-in-chief may notify the parties of the reason and set a time within which each party may present its views. After considering any timely filed views, the examiner-in-chief shall decide how the interference shall proceed.

§1.642 Addition of new application to interference

During the pendency of an interference, if the examiner-in-chief becomes aware of an application not involved in the interference which claims the same patentable invention as a count in the interference, the examiner-in-chief may add the application to the interference on such terms as may be fair to all parties.

§1.643 Prosecution of interference by assignee

(a) An assignee of record in the Patent and Trademark Office of the entire interest in an application or patent involved in an interference is entitled to conduct prosecution of the interference to the exclusion of the inventor.

(b) An assignee of a part interest in an application or patent involved in an interference may file a motion (§1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why the ends of justice require that the assignee of a part interest be permitted to prosecute the interference. The examiner-in-chief may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

§1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an examiner-in-chief or a panel consisting of more than one examiner-in-chief. The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an examiner-in-chief or a panel and the examiner-in-chief or the panel shall be of the opinion (A) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (B) that an immediate decision on petition by the Commissioner may materially advance the ultimate termination of the interference;

(2) The petition seeks to invoke the supervisory authority of the Commissioner; or

(3) The petition seeks relief under §1.183.

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the examiner-in-chief or the panel may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to decision by the Board awarding judgment and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under the Federal Rules of Evidence. Any petition under paragraph (a)(3) of this section shall be timely if it

is made as part of, or simultaneously with, a proper motion under §§1.633, 1.634, or 1.635. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the examiner-in-chief, the panel, or the Commissioner.

(d) Any petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the examiner-in-chief or the panel and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

(e) Any petition under paragraph (a) of this section shall be accompanied by the petition fee set forth in §1.17(h).

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within 15 days of the decision of the Commissioner and must be accompanied by the fee set forth in §1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. A request for reconsideration will ordinarily not be granted unless an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or "Express Mail" complies with this paragraph.

(h) An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(i) The Commissioner may delegate to appropriate Patent and Trademark Office employees the determination of petitions under this section.

§1.645 Extension of time, late papers, stay of proceedings

(a) A party may file a motion (§1.635) seeking an extension of time to take action in an interference, file a notice of appeal (§§1.302, 1.304), or commence a civil

action (§1.303, 1.304). The motion shall be filed within sufficient time to actually reach the examiner-in-chief before expiration of the time for taking action, filing the notice, or commencing the civil action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an examiner-in-chief sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed will not be considered except upon motion (§1.635), accompanied by an affidavit, which shows sufficient cause why the paper was not timely filed.

(c) The provisions of §1.136 do not apply to time periods in interferences.

(d) In an appropriate circumstance, an examiner-in-chief may stay proceedings in an interference.

§1.646 Service of papers, proof of service

(a) A copy of every paper filed in the Patent and Trademark Office in an interference or an application or patent involved in the interference shall be served upon all other parties except:

(1) Preliminary statements when filed under §1.621; preliminary statements shall be served when service is ordered by an examiner-in-chief.

(2) Certified transcripts and exhibits which accompany the transcripts filed under §§1.676 or 1.684; copies of transcripts shall be served as part of a party's record under §1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An examiner-in-chief may order additional or waive service where appropriate.

(c) Unless otherwise ordered by an examiner-in-chief, service of a paper may be made as follows:

(1) By handing a copy of the paper to the person served.

(2) By leaving a copy of the paper with someone employed by the person at the person's usual place of business.

(3) When the person served has no usual place of business, by leaving a copy of the paper at the person's residence with someone of suitable age and discretion then residing therein.

(4) By mailing a copy of the paper by first class mail; when service is by mail the date of mailing is regarded as the date of service.

(5) When it is shown to the satisfaction of an examiner-in-chief that none of the above methods of obtaining or serving the copy of the paper was successful, the examiner-in-chief may order service by publication of an appropriate notice in the Official Gazette.

(d) An examiner-in-chief may order that a paper be served by hand or "Express Mail".

(e) Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the time and manner of service will be accepted as prima facie proof of service.

\$1.647 Translation of document in foreign language

When a party relies on a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

\$1.651 Setting times for discovery and taking testimony, parties entitled to take testimony

(a) At an appropriate stage in an interference, an examiner-in-chief shall set (1) a time for filing motions (\$1.635) for additional discovery under \$1.687(c) and (2) testimony periods for taking any necessary testimony.

(b) Where appropriate, testimony periods will be set to permit a party to:

(1) present its case-in-chief and/or case-in-rebuttal and/or

(2) cross-examine an opponent's case-in-chief and/or a case-in-rebuttal.

(c) A party is not entitled to take testimony to present a case-in-chief unless:

(1) the examiner-in-chief orders the taking of testimony under \$1.639(c);

(2) the party alleges in its preliminary statement a date of invention prior to the earlier of the filing date or effective filing date of the senior party;

(3) a testimony period has been set to permit an opponent to prove a date of invention prior to the earlier of the filing date or effective date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

(4) a motion (\$1.635) is filed showing good cause why a testimony period should be set.

(d) Testimony shall be taken during the testimony periods set under paragraph (a) of this section.

\$1.652 Judgment for failure to take testimony or file record

If a junior party fails to timely take testimony authorized under \$1.651, or file a record under \$1.653(c), an examiner-in-chief, with or without a motion (\$1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days

after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

§1.653 Record and exhibits

(a) Testimony shall consist of affidavits under §1.672(b) and (e), transcripts of depositions under §§1.672(b) and (c), agreed statements of fact under §1.672(f), and transcripts of interrogatories, cross-interrogatories, and recorded answers under §1.684(c).

(b) An affidavit shall be filed as set forth in §1.672(b) or (e). A certified transcript of a deposition including a deposition cross-examining an affiant, shall be filed as set forth in §1.676. An original agreed statement shall be filed as set forth in §1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under §1.684(c).

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an examiner-in-chief each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of each witness giving the pages of the record where the direct testimony and cross-examination of each witness begins.

(2) An index of exhibits briefly describing the nature of each exhibit and giving the page of the record where each exhibit is first identified and offered into evidence.

(3) The count or counts.

(4) Each (i) affidavit, (ii) transcript, including transcripts of cross-examination of any affiant, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories, and recorded answers filed under paragraph (b) of this section.

(5) Each notice, official record, and publication relied upon by the party and filed under §1.682(a).

(6) Any evidence from another interference, proceeding, or action relied upon by the party under §1.683.

(7) Each request for an admission and the admission and each written interrogatory and the answer upon which a party intends to rely under §1.688.

(d) The pages of the record shall be consecutively numbered.

(e) The name of each witness shall appear at the top of each page of each affidavit or transcript.

(f) The record may be typewritten or printed.

(g) When the record is printed, it may be produced by standard typographical printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be 8½ by 11 inches (21.8 by 27.9 cm.) with type matter 6½ by 9½ inches (16.5 by 24.1 cm.). The record shall be bound to lie flat when open.

(h) When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multigraphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under §1.676(d), shall be filed with the record. Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., Jones v. Smith), and the interference number. Where possible, the label should appear at the bottom right-hand corner of each

documentary exhibit. Upon termination of an interference, an examiner-in-chief may return an exhibit to the party filing the exhibit. When any exhibit is returned, the examiner-in-chief shall enter an appropriate order indicating that the exhibit has been returned.

(j) Any testimony, record, or exhibit which does not comply with this section may be returned under §1.618(a).

§1.654 Final hearing

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An examiner-in-chief shall set a date and time for final hearing. Unless otherwise ordered by an examiner-in-chief or the Board, each party will be entitled to no more than 60 minutes of oral argument at final hearing.

(b) The opening argument of a junior party shall include a fair statement of the junior party's case and the junior party's position with respect to the case presented on behalf of any other party. A junior party may reserve a portion of its time for rebuttal.

(c) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under §1.658(b) or as authorized by an examiner-in-chief or the Board. No additional oral argument shall be had unless ordered by the Board.

§1.655 Matters considered in rendering a final decision

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under §1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing manifest error or an abuse of discretion shall be on the party attacking the order.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§1.633 or 1.634 unless

(1) the motion was properly filed, (2) the matter was properly raised by a party in an opposition to a motion under §§1.633 or 1.634 and the motion was granted over the opposition, or (3) the party shows good cause why the issue was not timely raised by motion or opposition.

(c) To prevent manifest injustice, the Board may consider an issue even though it would not otherwise be entitled to consideration under this section.

§1.656 Briefs for final hearing

(a) Each party shall be entitled to file briefs for final hearing. The examiner-in-chief shall determine the briefs needed and shall set the time and order for filing briefs.

(b) The opening brief of a junior party shall contain under appropriate headings and in the order indicated:

(1) A table of contents, with page references, and a table of cases (alphabetically arranged), statutes, and other authorities cited, with references to the pages of the brief where they are cited.

(2) A statement of the issues presented for decision in the interference.

(3) A statement of the facts relevant to the issues presented for decision with appropriate references to the record.

(4) An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues to be decided, and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

(5) A short conclusion stating the precise relief requested.

(6) An appendix containing a copy of the counts.

(c) The opening brief of the senior party shall conform to the requirements of paragraph (b) of this section except:

(1) a statement of the issues and of the facts need not be made unless the party is dissatisfied with the statement in the opening brief of the junior party and

(2) an appendix containing a copy of the counts need not be made if the copy of the counts in the opening brief of the junior party is correct.

(d) Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-space typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of §1.653(g). Any typewritten brief shall comply with the requirements of §1.653(h), except legal-size paper may be used and the binding and covers specified are not required.

(e) An original and three copies of each brief must be filed.

(f) Any brief which does not comply with the requirements of this section may be returned under §1.618(a).

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and three copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be supported by specific references to the record. Any proposed conclusions of law shall be supported by citation of cases, statutes, or other authority. Any opposing party, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and three copies of a motion (§1.635) to suppress the evidence. The provisions of §1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of an opponent's evidence is waived unless the motion required by this paragraph is filed. An original and three copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to respond within a time period set in the order, judgment may be entered against the junior party.

§1.657 Burden of proof as to date of invention

A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their filing dates or effective filing dates. The burden of proof shall be upon a party who contends otherwise.

§1.658 Final Decision

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within 14 days after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any reply to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. Where reasonably possible, service of the request for reconsideration shall be such that delivery is accomplished by hand or "Express Mail." The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of the section, the Board may designate the decision on the request for reconsideration as a new decision.

(c) A judgment in an interference settles all issues which (1) were raised and decided in the interference, (2) could have been properly raised and decided in the

interference by a motion under §1.633 (a) through (d) and (f) through (i) or §1.634 and (3) could have been properly raised and decided in an additional interference with a motion under §1.633(e). A party, other than a party awarded a favorable judgment as to all counts, who could have properly moved, but failed to move, under §§1.633 or 1.634, shall be estopped to take ex parte or inter partes action in the Patent and Trademark Office after the interference which is inconsistent with the party's failure to properly move.

§1.659 Recommendation

(a) Should the Board have knowledge of any ground for rejecting any application claim not involved in the judgment of the interference, it may include in its decision a recommended rejection of the claim. Upon resumption of ex parte prosecution of the application, the examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection.

(b) Should the Board have knowledge of any ground for reexamination of a patent involved in the interference as to a patent claim not involved in the judgment of the interference, it may include in its decision a recommendation to the Commissioner that the patent be reexamined. The Commissioner will determine whether reexamination will be ordered.

(c) The Board may make any other recommendation to the examiner or the Commissioner as may be appropriate.

§1.660 Notice of reexamination, reissue, protest, or litigation

(a) When a request for reexamination of a patent involved in an interference is filed, the patent owner shall notify the Board within 10 days of receiving notice that the request was filed.

(b) When an application for reissue is filed by a patentee involved in an interference, the patentee shall notify the Board within 10 days of the day the application for reissue is filed.

(c) When a protest under §1.291 is filed against an application involved in an interference, the applicant shall notify the Board within 10 days of receiving notice that the protest was filed.

(d) A party in an interference shall notify the Board promptly of any litigation related to any patent or application involved in an interference, including any civil action commenced under 35 U.S.C. §146

§1.661 Termination of interference after judgment

After a final decision is entered by the Board awarding judgment as to all counts, an interference is considered terminated when no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had.

§1.662 Request for entry of adverse judgment; reissue filed by patentee

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by an applicant or patentee of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be construed as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application by an applicant, other than an applicant for reissue having a claim of the patent sought to be reissued involved in the interference, will be construed as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference, judgment may be entered against the patentee. A patentee who files an application for reissue other than for the purpose of avoiding the interference shall timely file a preliminary motion under §1.633(h) or show good cause why the motion could not have been timely filed.

(c) The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will not be construed as a request for entry of an adverse judgment against the patentee, but will delete any statutorily disclaimed claims from being involved in the interference. A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment.

(d) After judgment is entered under this section or after the filing of a statutory disclaimer, if an interference no longer exists, the interference may be dissolved as to any party against whom judgment has not been entered and any further prosecution of any application involved in the interference shall be ex parte before a examiner.

\$1.663 Status of claim of defeated applicant after interference

Whenever an adverse judgment is entered as to a count against an applicant from which no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had, the claims of the application corresponding to the count stand finally disposed of without further action by the examiner. Such claims are not open to further ex parte prosecution.

\$1.664 Action after interference

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an examiner-in-chief, amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this part provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

\$1.665 Second interference

A second interference between the same parties will not be declared upon an application not involved in an earlier interference for an invention defined by a count of the earlier interference. See §1.658(c).

\$1.666 Filing of interference settlement agreements

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof must be filed before the termination of the interference (§1.661) as between the parties to the agreement or understanding.

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding under paragraph (a) of this section will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

\$1.671 Evidence must comply with rules

(a) Evidence consists of testimony and exhibits, official records and publications filed under §1.682, evidence from another interference, proceeding, or action filed under §1.683, and discovery relied upon under §1.688, and the specification (including claims) and drawings of any application or patent:

(1) Involved in the interference.

(2) To which a party has been accorded benefit in the notice declaring the interference or by a preliminary motion granted under §1.633.

(3) For which a party has sought, but has been denied, benefit by a preliminary motion under §1.633.

(4) For which benefit was rescinded by a preliminary motion granted under §1.633.

(b) Except as otherwise provided in this part, the Federal Rules of Evidence shall apply to interference proceedings. Those portions of the Federal Rules of Evidence relating to criminal actions, juries, and other matters not relevant to interferences shall not apply.

(c) Unless the context is otherwise clear, the following terms of the Federal Rules of Evidence shall be construed as follows:

(1) "Courts of the United States," "U.S. Magistrate," "court," "trial court," or "trier of fact" means examiner-in-chief or Board as may be appropriate.

(2) "Judge" means examiner-in-chief.

(3) "Judicial notice" means official notice.

(4) "Civil action," "civil proceeding," "action," or "trial," mean interference.

(5) "Appellate court" means United States Court of Appeals for the Federal Circuit or a United States district court when judicial review is under 35 U.S.C. §146.

(6) "Before the hearing" in Rule 703 means before giving testimony by oral deposition or affidavit.

(7) "The trial or hearing" in Rules 803(24) and 804(5) means the taking of testimony by oral deposition.

(d) Certification is not necessary as a condition to admissibility when the record is a record of the Patent and Trademark Office to which all parties have access.

(e) A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under §1.608(b), or an affidavit under §1.639(b) unless (1) a copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under §1.672(b). A copy of the affidavit shall be included in the record (§1.653).

(f) The significance of documentary and other exhibits shall be discussed with particularity by a witness during oral deposition or in an affidavit.

(g) A party must file a motion (§1.635) seeking permission from an examiner-in-chief prior to taking testimony or seeking documents or things under 35 U.S.C. §24. The motion shall describe the general nature and show the admissibility in the interference of the testimony, document, or thing.

(h) Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

§1.672 Manner of taking testimony

(a) Testimony of a witness may be taken by oral deposition or affidavit in accordance with this subpart.

(b) A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. §24, may elect to present the testimony of the witness by affidavit or deposition. A party electing to present testimony of a witness by affidavit shall file an affidavit of the witness or, where appropriate, a notice under §1.671(e). To facilitate preparation of the record (§1.653(g) and (h)), a party should file an affidavit on paper which is 8½ by 11 inches (21.8 by 27.9 cm). After the affidavit is filed and within a time set by an examiner-in-chief, any opponent may file a request to cross-examine the witness on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition under §1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness whose testimony is presented by affidavit, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under §1.673(a). The party who gives notice of a deposition shall be responsible for obtaining a court reporter and for filing a certified transcript of the deposition as required by §1.676.

(c) A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. §24 must first obtain permission from an examiner-in-chief under §1.671(g). If permission is granted, the party shall notice a deposition of the witness under §1.673 and may proceed under 35 U.S.C. §24. The testimony of the witness shall be taken on oral deposition.

(d) Notwithstanding the provisions of this subpart, if the parties agree in writing, a deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

(e) If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

(f) If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth (1) how a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See §1.653(a).

§1.673 Notice of examination of witness

(a) A party electing to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions may be noticed for a reasonable time and place in the United States. Unless the parties agree in writing, a deposition may not be noticed for any other place without approval of an examiner-in-chief (see §1.684). The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular class or group to which the witness belongs may be given instead.

(b) Unless the parties agree otherwise, at least three days prior to the conference required by paragraph (g) of this section, a party shall serve, but not file, the following:

(1) A copy of each document in the party's possession, custody, or control and upon which the party intends to rely at any deposition and

(2) A list of and a proffer of reasonable access to things in the party's possession, custody, or control and upon which the party intends to rely at any deposition.

(c) A party shall not be permitted to rely at any deposition on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section, (1) unless all opponents agree in writing or on the record to permit the party to rely on the witness, document, or thing or (2) except upon a motion (§1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows sufficient cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each opposing party shall have a full opportunity to attend a deposition and cross-examine. If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.

(e) A party electing to present testimony by affidavit and who is required to notice depositions for the purpose of cross-examination under §1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

(f) The parties shall not take depositions in more than one place at the same time or so nearly at the same time that reasonable opportunity to travel from one place of deposition to another cannot be had.

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an examiner-in-chief who shall then designate the time and place for conducting the deposition.

(h) A copy of the notice of deposition shall be attached to the certified transcript of the deposition filed under §1.676(a).

§1.674 Persons before whom depositions may be taken

(a) Within the United States or a territory or insular possession of the United States a deposition shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

(b) Unless the parties agree in writing, the following persons shall not be competent to serve as an officer: (1) a relative or employee of a party, (2) a relative or employee of an attorney or agent of a party, or (3) a person interested, directly or indirectly, in the interference either as counsel, attorney, agent, or otherwise.

§1.675 Examination of witness, reading and signing transcript of deposition

(a) Each witness before giving an oral deposition shall be duly sworn according to law by the officer before whom the deposition is to be taken.

(b) The testimony shall be taken in answer to interrogatories with any questions and answers recorded in their regular order by the officer or by some other person, who shall be subject to the provisions of §1.674(b), in the presence of the officer unless the presence of the officer is waived on the record by agreement of all parties.

(c) All objections made at the time of the deposition to the qualifications of the officer taking the deposition, the manner of taking it, the evidence presented, the conduct of any party, or any other objection to the proceeding shall be noted on the record by the officer. Evidence objected to shall be taken subject to any objection.

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall be read by the witness and then signed by the witness in the presence of any notary.

§1.676 Certification and filing by officer, marking exhibits

(a) The officer shall prepare a certified transcript of the deposition by attaching to a transcript of the deposition a copy of the notice of deposition, any exhibits to be annexed to the certified transcript, and a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before commencement of testimony by the witness.

(2) The transcript is a true record of the testimony given by the witness.

(3) The name of the person by whom the testimony was recorded and, if not recorded by the officer, whether the testimony was recorded in the presence of the officer.

(4) The presence or absence of any opposing party.

(5) The place where the deposition was taken and the day and hour when the deposition began and ended.

(6) The officer is not disqualified under §1.674.

(b) If the parties waived any of the requirements of paragraph (a) of this section, the certificate shall so state.

(c) The officer shall note on the certificate the circumstances under which a witness refuses to sign a transcript.

(d) Unless the parties agree otherwise in writing or on the record at the deposition, the officer shall securely seal the certified transcript in an envelope endorsed with the style of the interference (e.g., Smith v. Jones), the interference number, the name of the witness, and the date of sealing and shall promptly forward the envelope to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Documents and things produced for inspection during the examination of a witness, shall, upon request of a party, be marked for identification and annexed to the certified transcript, and may be inspected and copied by any party, except that if the person producing the documents and things desires to retain them, the person may (1) offer copies to be marked for identification and annexed to the certified transcript and to serve thereafter as originals if the person affords to all parties fair opportunity to verify the copies by comparison with the originals or (2) offer the originals to be marked for identification, after giving to each party an opportunity to inspect and copy them, in which event the documents and things may be used in the same manner as if annexed to the certified transcript. The exhibits shall then be filed as specified in §1.653(i). If the weight or bulk of a document or thing shall reasonably prevent the document or thing from being annexed to the certified transcript, it shall, unless waived on the record at the deposition by all parties, be authenticated by the officer and forwarded to the Commissioner in a separate package marked and addressed as provided in this paragraph.

§1.677 Form of a transcript of deposition

(a) A transcript of a deposition must be typewritten on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§1.653(d)) and the name of the witness must be typed at the top of each page (§1.653(e)). The questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

(b) Exhibits must be numbered consecutively and each must be marked as required by §1.653(i).

§1.678 Transcript of deposition must be filed

Unless otherwise ordered by an examiner-in-chief, a certified transcript of a deposition must be filed in the Patent and Trademark Office within 45 days from the date of the deposition. If a party refuses to file a certified transcript, the examiner-in-chief or the Board may take appropriate action under §1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

§1.679 Inspection of transcript

A certified transcript filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office for printing (§1.653(g)) unless authorized by an examiner-in-chief upon such terms as may be appropriate.

§1.682 Official records and printed publications

(a) A party may introduce into evidence, if otherwise admissible, any official record or printed publication not identified on the record during the taking of testimony of a witness, by filing a notice offering the official record or publication into evidence. If the evidence relates to the party's case-in-chief, the notice shall be filed prior to close of testimony of the party's case-in-chief. If the evidence relates to rebuttal, the notice shall be filed prior to the close of testimony of the party's case-in-rebuttal. The notice shall (1) identify the official record or printed publication, (2) identify the portion thereof to be introduced in evidence, (3) indicate generally the relevance of the portion sought to be introduced in evidence, and (4) be accompanied by a certified copy of the official record or a copy of the printed publication.

(b) A copy of the notice, official record, and publication shall be served.

(c) Unless otherwise ordered by an examiner-in-chief, any written objection to the notice or to the admissibility of the official record or printed publication shall be filed within 15 days of service of the notice. See also §1.656(h).

\$1.683 Testimony in another interference, proceeding or action

(a) Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§1.635) for leave to use in an interference testimony of a witness from another interference, proceeding, or action involving the same parties, subject to such conditions as may be deemed appropriate by an examiner-in-chief. The motion shall specify with particularity the exact testimony to be used and shall demonstrate its relevance.

(b) Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also §1.656(h).

\$1.684 Testimony in a foreign country

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, prior to the close of the party's appropriate testimony period or within such time as may be set by an examiner-in-chief, file a motion (§1.635):

(1) Naming the witness.

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will so testify.

(4) Demonstrating that the expected testimony is admissible.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under §1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under §1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, the moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under §1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.

\$1.685 Errors and irregularities in depositions

(a) An error in a notice for taking a deposition is waived unless a motion (\$1.635) to quash the notice is filed as soon as the error is, or could have been, discovered.

(b) An objection to a qualification of an officer taking a deposition is waived unless:

(1) The objection is made on the record of the deposition before a witness begins to testify.

(2) If discovered after the deposition, a motion (\$1.635) to suppress the deposition is filed as soon as the objection is, or could have been, discovered.

(c) An error or irregularity in the manner in which testimony is transcribed, a certified transcript is signed by a witness, or a certified transcript is prepared, signed, certified, sealed, indorsed, forwarded, filed, or otherwise handled by the officer is waived unless a motion (\$1.635) to suppress the deposition is filed as soon as the error or irregularity is, or could have been, discovered.

(d) An objection to the competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under \$1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an examiner-in-chief or the Board.

\$1.687 Additional Discovery

(a) A party is not entitled to discovery except as authorized in this subpart.

(b) Where appropriate, a party may obtain production of documents and things during cross-examination of an opponent's witness or during the testimony period of the party's case-in-rebuttal. If the witness refuses to produce a requested document or thing, the party may file a motion (\$1.635) for additional discovery under paragraph (c) of this section.

(c) Upon a motion (\$1.635) brought by a party within the time set by an examiner-in-chief under \$1.651 or thereafter as authorized by \$1.645 and upon a showing that the interest of justice so requires, an examiner-in-chief may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery.

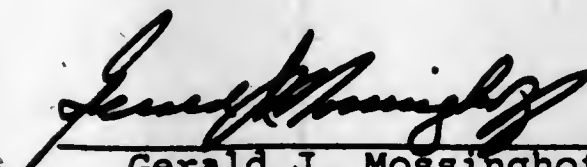
(d) The parties may agree to discovery among themselves at any time. In the absence of an agreement, a motion for additional discovery shall not be filed except as authorized by this subpart.

\$1.688 Use of discovery

(a) A party may introduce into evidence, if otherwise admissible, an admission to a written request for an admission or an answer to a written interrogatory obtained by discovery under \$1.687 by filing a copy of the request for admission and admission or a copy of the written interrogatory and answer. If the admission or answer relates to a party's case-in-chief, the admission or answer shall be filed prior to the close of testimony of the party's case-in-chief. If the admission or answer relates to the party's rebuttal, the admission or answer shall be filed prior to the close of testimony of the party's case-in-rebuttal. Unless otherwise ordered by an examiner-in-chief, any written objection to the admissibility of an admission or answer shall be filed within 15 days of service of the admission or answer.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

Date DAN 4 1984



Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Feb. 14, 1984

D. 261,695	4,387,072	4,404,651	4,415,581
D. 271,015	4,390,056	4,405,360	4,415,710
Re. 30,977	4,390,505	4,407,674	4,416,089
4,002,717	4,392,737	4,407,765	4,416,103
4,212,944	4,394,134	4,408,575	4,416,340
4,261,633	4,394,258	4,409,155	4,416,370
4,295,173	4,396,523	4,409,682	4,416,413
4,311,697	4,396,538	4,409,685	4,416,756
4,312,394	4,397,312	4,410,088	4,416,979
4,326,282	4,397,659	4,410,694	4,417,154
4,341,746	4,397,750	4,410,816	4,417,160
4,343,807	4,397,965	4,411,016	4,417,330
4,344,288	4,399,206	4,411,203	4,417,420
4,348,291	4,400,516	4,411,223	4,417,992
4,351,851	4,400,782	4,411,347	4,418,181
4,352,745	4,400,965	4,411,671	4,418,266
4,366,261	4,401,088	4,411,967	4,418,493
4,366,367	4,401,385	4,412,843	4,418,781
4,367,753	4,402,391	4,413,707	4,418,902
4,371,394	4,402,485	4,413,820	4,418,981
4,375,993	4,402,595	4,414,329	4,419,700
4,379,064	4,402,757	4,414,583	4,419,741
4,381,871	4,403,282	4,414,859	4,419,927
4,382,962	4,403,744	4,415,254	4,420,292
4,383,673	4,404,370	4,415,469	4,421,128
4,384,138	4,404,595	4,415,551	

Disclaimers

4,357,747.—*Osamu Kurakami, Shigeru Koshimaru and Takashi Yamanaka*, Tokyo, Japan. METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING AN INSULATED GATE TYPE FIELD EFFECT TRANSISTOR. Patent dated Nov. 9, 1982. Disclaimer filed Sept. 29, 1983, by the assignee, *NEC Corp.*

Hereby enters this disclaimer to claims 1 and 5 of said patent.

4,415,352.—*Ferenc M. Pallos*, Walnut Creek, *Mervin E. Brokke*, Moraga and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated Nov. 15, 1983. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,419,305.—*William B. Matles*, Philadelphia, Pa. METHOD AND APPARATUS FOR WINDSHIELD REPAIR. Patent dated Dec. 6, 1983. Disclaimer filed Dec. 2, 1983, by the assignee, *Glass Medic, Inc.*

Hereby enters this disclaimer to the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 704-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of Cleveland Public Library	(513) 369-6936
	Columbus: Ohio State University Libraries	(216) 623-2870
	Toledo/Lucas County Public Library	(614) 422-6286
Oklahoma	Stillwater: Oklahoma State University Library	(405) 255-7055 Ext. 212
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS RENE D. TEGTMEYER, Assistant Commissioner WILLIAM FELDMAN, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director	1-16-81
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director	11-20-81
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director	3-1-82
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director	3-09-82
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director	1-12-82
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	5-22-81
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director	3-30-81
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director	1-05-81
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	5-12-81
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	8-25-80
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director	1-30-81
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	5-18-81
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director	7-27-81
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-27-82
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director	11-17-80
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director	9-17-80
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents Numbers 2,616 to 2,627 inclusive

NEW PATENT GRANT COVER

The Patent and Trademark Office is pleased to announce the winner of the contest recently conducted for a new design of the patent grant document.

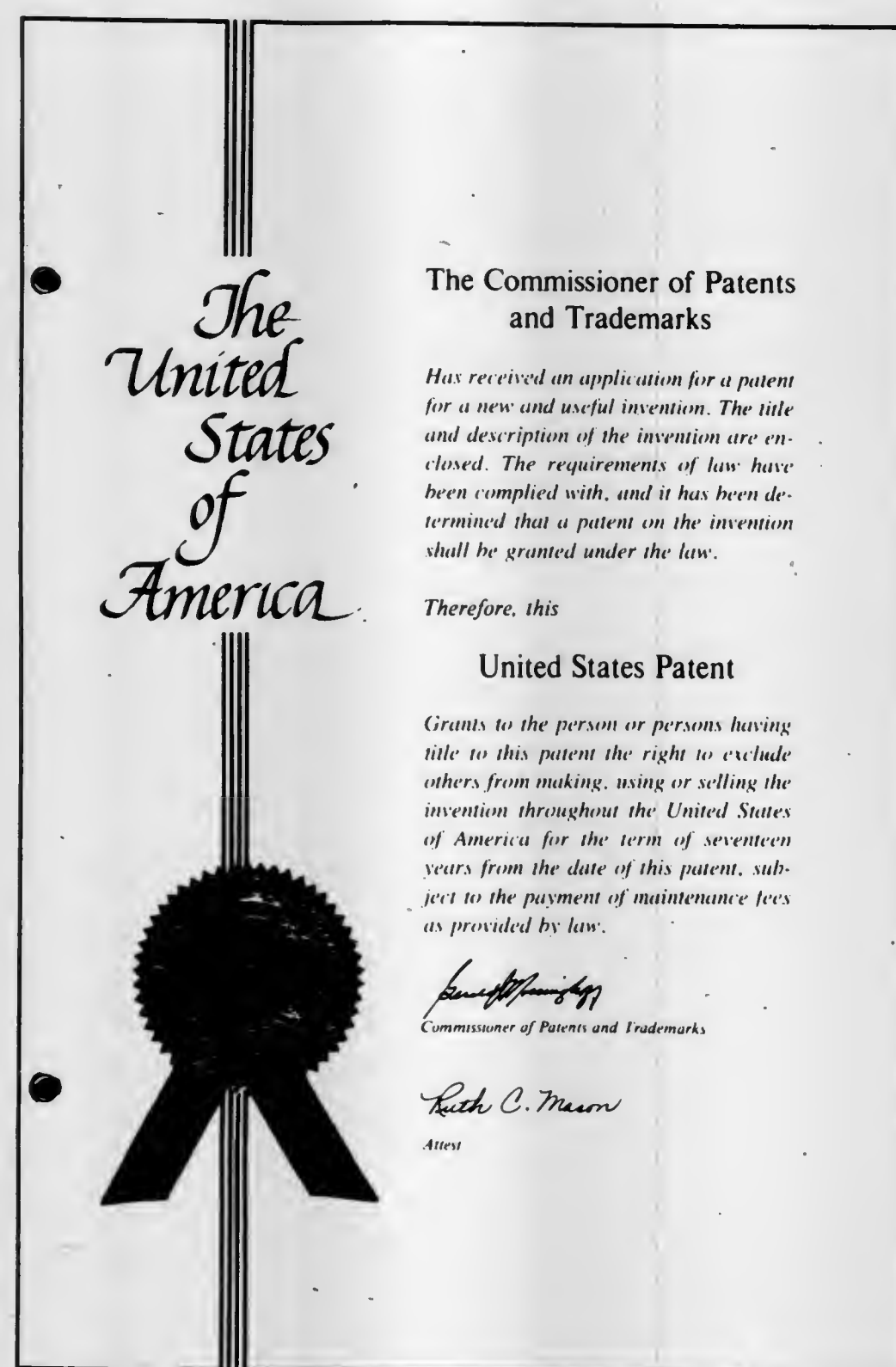
A distinguished panel of impartial judges selected the entry submitted by Mrs. Marina Kazragis of Chevy Chase, Maryland. Mrs. Kazragis received \$500 for the winning entry and an invitation to appear at the National Inventors Day ceremonies for the unveiling of the new design.

The new covers will be printed on off-white paper. The border and distinctive vertical rules will be printed in blue, and the text will be printed in black. The grant will be bound with brass fasteners, and the red ribbon will be sealed with a gold seal. The new covers will be used on patents issued on or after July 3, 1984.

A reduced size of the new patent cover is illustrated below.

February 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and
Trademarks.



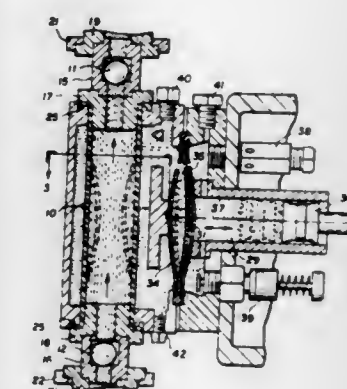
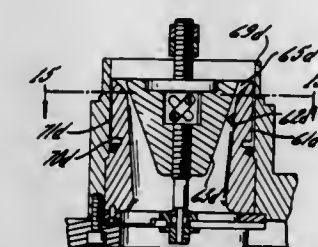
REEXAMINATIONS

FEBRUARY 14, 1984

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,551,076 (162nd)
TUBULAR DIAPHRAGM PUMP
Lawrence F. Wilson, Caledonia, N.Y., assignor to Lapp Insulator Co., Inc., Leroy, N.Y.
Reexamination Request No. 90/000,255, Sep. 9, 1982.
Reexamination Certificate for Patent No. 3,551,076, issued Dec. 29, 1970, Ser. No. 715,242, Mar. 22, 1968.
Int. Cl.³ F04B 35/02
U.S. Cl. 417—385

B1 3,952,776 (163rd)
FLUID FLOW DEVICE
James F. Eversole, Mamaroneck, N.Y., and Lester P. Berriman, Irvine, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.
Reexamination Request Nos. 90/000,005, Jul. 1, 1981 and 90/000,131, Dec. 23, 1981.
Reexamination Certificate for Patent No. 3,952,776, issued Apr. 27, 1976, Ser. No. 388,761, Aug. 16, 1973.
Continuation-in-part of Ser. No. 151,373, Jun. 9, 1971, Pat. No. 3,778,038, which is a continuation-in-part of Ser. No. 17,086, Mar. 6, 1981, abandoned.
Int. Cl.³ F15D 1/04, 1/02, 1/10, 1/00
U.S. Cl. 138—39



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-4, having been finally determined to be unpatentable, are cancelled.

- [1. A pump comprising:
(a) a reciprocating piston;
(b) a diaphragm;
(c) aperture plates arranged on each side diaphragm to limit its excursions;
(d) means enclosing a volume of driving liquid between said piston and said diaphragm;
(e) said enclosing means having an inlet and an outlet;
(f) a valve arranged in said inlet to regulate the inflow of said driving liquid;
(g) a valve arranged in said outlet to regulate the outflow of said driving liquid;
(h) a flexible tube configured as a cylinder of uniform diameter and arranged to form a passageway through said tube for material to be pumped;
(i) valve means for limiting the flow of said material through said tube to a pre-determined direction;
(j) means for forming a sealed and liquid-tight chamber around said tube;
(k) a portion of the boundary wall of said chamber being formed of said diaphragm; and
(l) said chamber being substantially completely filled with a pre-determined volume of liquid so that said tube normally assumes said cylindrical configuration when said excursion of said diaphragm gives said chamber maximum volume.]

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2, having been finally determined to be unpatentable, are cancelled.

New claim 3 is added and determined to be patentable.

3. A device for delivering a gaseous medium to utilization equipment having variable pressure conditions at its intake comprising, in combination, means defining a gaseous medium intake zone connecting with means defining a variable area throat zone for constricting the flow of the gaseous medium to increase the velocity thereof to sonic, means for adjustably varying the area of the throat zone in correlation with operating demands imposed upon the utilization equipment, and wall means downstream from the throat zone arranged to provide a gradually increasing cross-sectional area, said wall means being formed by the cooperating internal surface of an outer duct and the cooperating external surface of a modulator element moveable axially in said duct, the cooperating surface of said outer duct being shaped with an apex angle outside the downstream divergence range of 6° to 18° and the cooperating surface of the modulator element being shaped to form, together with the cooperating internal surface of the outer duct, an efficient diffuser which corresponds to a conical diffuser having an apex angle in the range of about 6° to 18° for efficiently recovering a substantial portion of the kinetic energy of the high velocity gaseous medium as static pressure whereby the velocity of the gaseous medium through the throat zone is sonic when the pressure at the intake of the utilization equipment is at or below a predetermined value less than the gaseous medium pressure at the entry to the intake zone and substantially more than 60% thereof.

B1 4,231,383 (164th)

METHOD FOR CONTROLLING MASS FLOW RATE

James F. Eversole, Mamaroneck, N.Y., and Lester P. Berriman, Irvine, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Reexamination Request Nos. 90/000,006, Jul. 1, 1981 and 90/000,132, Dec. 23, 1981.

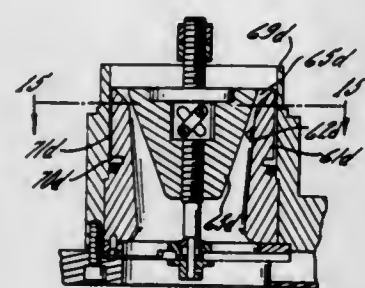
Reexamination Certificate for Patent No. 4,231,383, issued Nov. 4, 1980, Ser. No. 7,946, Jan. 31, 1979.

Continuation of Ser. No. 622,521, Oct. 15, 1975, Pat. No. 4,023,125, which is a division of Ser. No. 388,761, Aug. 16, 1973, Pat. No. 3,952,776, which is a continuation-in-part of Ser. No. 151,373, Jun. 9, 1971, Pat. No. 3,778,038, which is a continuation-in-part of Ser. No. 17,086, Mar. 6, 1970, abandoned.

The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl.³ F02M 9/00

U.S. Cl. 137—1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2, having been finally determined to be unpatentable, are cancelled.

New claim 3 is added and determined to be patentable.

3. A method for delivering a gaseous medium at a controlled mass flow rate to a downstream location subject to a range of variable pressure conditions comprising the steps of flowing a gaseous medium from an upstream entry point toward the downstream location, passing the gaseous medium through a variable area constricted zone to increase the velocity thereof to sonic, passing the gaseous medium immediately downstream from the variable area constricted zone through a zone of gradually increasing cross-sectional area, said zone of gradually increasing cross-sectional area being formed by the cooperating internal surface of an outer duct and the cooperating external surface of a modulator element moveable axially in said duct, the cooperating surface of said outer duct being shaped with an apex angle outside the downstream divergence range of 6° to 18° and the cooperating surface of the modulator element being shaped to form, together with the cooperating internal surface of the outer duct, an efficient diffuser which corresponds to a conical diffuser having an apex angle in the range of about 6° to 18° in order to gradually reduce the velocity of the gaseous medium and efficiently recover kinetic energy as static pressure, and adjustably varying the cross-sectional areas of the constricted zone and the zone of gradually increasing cross-sectional area in accordance with mass flow rate requirements of associated equipment in communication with the downstream location and to which the gaseous medium is to be delivered whereby the kinetic energy of the gaseous medium recovered as static pressure within the zone of gradually increasing cross-sectional area maintains the velocity of the gaseous medium through the constricted zone sonic when the pressure at the downstream location is at or below a predetermined value less than the gaseous medium pressure at the entry point but substantially more than 60% thereof so that the mass flow rate of the gaseous medium, at a given entry temperature and pressure, is directly proportional to, and is determined by the cross-sectional area of the constricted zone.

REISSUES

FEBRUARY 14, 1984

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,520

COMBINATION LAWN MOWER TOOL

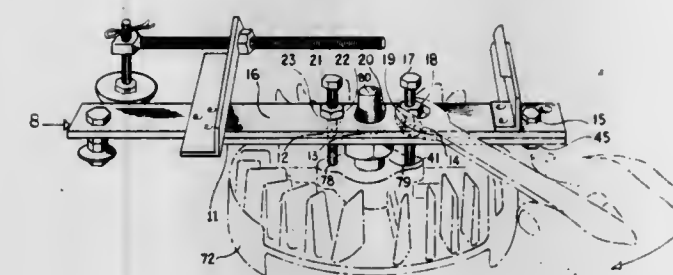
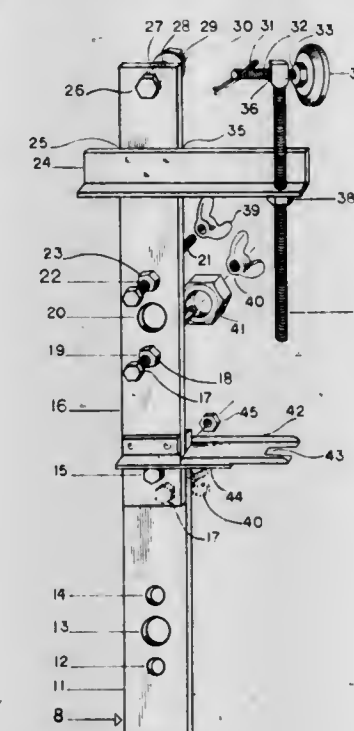
Theodore P. Lightner, Box 712, Smithville, Tex. 78957

Original No. 4,315,339, dated Feb. 16, 1982, Ser. No. 82,046, Jan. 14, 1980. Application for reissue Oct. 21, 1982, Ser. No. 435,562

Int. Cl.³ B25F 3/00; B23P 19/04; B25B 13/48

U.S. Cl. 7—138

8 Claims



7. A combination tool comprising:

an elongated first bar;

a post-like projection projecting from one side thereof;

a short member rigidly coupled to said bar at right angles thereto and at a predetermined position from said post,

said post, in cooperation with said short member, providing a wrench-like coupling with a starter clutch housing on a small gasoline combustion engine when placed on top thereof for removing or tightening the same;

three holes in said first bar;

a pair of threaded bolts, each carrying a force applying threaded nut and means for temporarily securing each bolt respectively in two outside holes; and

a large nut, temporarily carried by one of said bolts, which nut may be removed and screwed onto the top of the crankshaft of a small gasoline combustion engine to provide a base at the middle hole of said bar for said bar to rest on when using the tool to remove a flywheel,

said middle hole when in position on top of said large nut allowing the outside holes to line up with factory provided threaded holes in the flywheel whereby said threaded bolts may be threaded into said factory holes and said force applying nuts may be threaded clockwise against said bar to elevate the flywheel for removal.

Re. 31,521

SLITTER-SCORER APPARATUS

Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

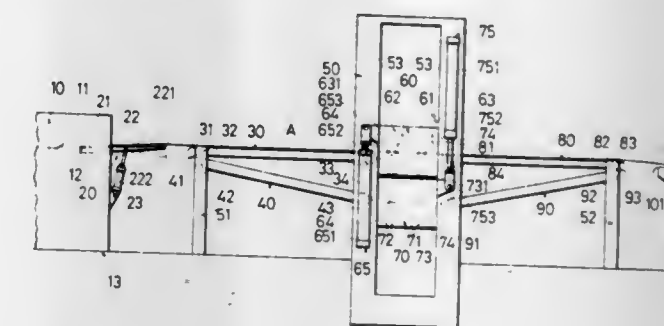
Original No. 4,328,727, dated May 11, 1982, Ser. No. 144,309, Apr. 28, 1980. Application for reissue Jul. 30, 1982, Ser. No. 403,291

Claims priority, application Japan, May 9, 1979, 54-57378; Mar. 19, 1980, 55-34954

Int. Cl.³ B26D 3/08, 11/00

U.S. Cl. 83—106

14 Claims



1. A slitter-scorer apparatus which can immediately change longitudinal slitting and scoring operations along the flowing direction of continuously fed long and flat materials thereby to perform the slitting and scoring operations without reducing the flowing speed thereof and deliver the materials to a following process, characterized in that said slitter-scorer apparatus comprises a cutting machine for instantly cutting off the materials transversely; a movable deflector disposed at the exit of said cutting machine to guide said materials to an upward position or a downward position; a machine frame disposed behind said deflector; an upper slitter-scorer unit and a lower slitter-scorer unit disposed in one above the other relationship on said machine frame, said slitter-scorer units being so mounted on said frame as to be capable of ascending and descending respectively between an operating position and a stand-by position on said machine frame, the operating position of said upper slitter-scorer unit occupying approximately the same location as the operating position of said lower slitter-scorer unit; an upper front guide plate adapted to guide said materials from the upward position of said deflector to the entrance of said upper slitter-scorer unit; an upper rear guide plate adapted to guide said materials from the exit of said upper slitter-scorer unit to the entrance of the following process; a lower front guide plate adapted to guide said materials from the downward position of said deflector to the entrance of said lower slitter-scorer unit; a lower rear guide plate adapted to guide said materials from the exit of said lower slitter-scorer unit to the entrance of the following process; said upper guide plates being mounted for movement to align with said upper slitter-scorer unit when it is in its operative position and said lower guide plates being mounted for movement to align with said lower slitter-scorer unit when it is in its operative position; whereby said upper and lower slitter-scorer units may be caused to ascend or descend during the performance of order changes; and said longitudinal slitting and scoring operations may be performed on the materials which are delivered along an approximately straight line from said cutting machine to the following process through one or the other of said upper and lower slitter-scorer units.

Re. 31,522

SALT OF A POLYAMIDE AND FUNCTIONAL FLUID CONTAINING SAME

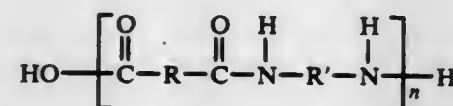
Walter E. Rieder, Arcadia, Calif., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Original No. 4,374,741, dated Feb. 22, 1983, Ser. No. 285,575, Jul. 21, 1981. Application for reissue Apr. 1, 1983, Ser. No. 481,494

Int. Cl.³ C10M 1/06, 1/20, 1/36; C08F 36/00

U.S. Cl. 252-34

32 Claims

1. A salt of a polyamide derivative of a polyoxalkylene diamine wherein said polyamide has (a) a single terminal carboxylic acid group and a single terminal amine group in the same molecule, and (b) a degree of polymerization of from 2 to 10 [or the] salt of the polyamide [which] is the salt of (c) the terminal carboxylic acid group, (d) the terminal amine group, or (e) both the terminal carboxylic acid and terminal amine groups, wherein the polyamide has the following formula



where

R is a divalent aliphatic, aromatic, arylaliphatic, alkylaromatic, cycloaliphatic, heteroaliphatic having oxygen or sulfur heteroatom, heterocyclic having one to two oxygen, sulfur or nitrogen hetero ring atoms and from 5 to 6 ring atoms or bicyclic radical or the halogenated derivatives of said divalent radical,

R' is a divalent polyoxalkylene homopolymer or copolymer radical and

n is 2 to 10,

said [polyamide and its salts] salt having an average molecular weight not greater than about 50,000.

Re. 31,523

CRYSTALLESS SCANNING RADIO RECEIVER AND TRANSMITTER

William Baker, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.

Original No. 4,156,193, dated May 22, 1979, Ser. No. 802,889, Jun. 2, 1977. Continuation-in-part of Ser. No. 689,364, May 24, 1976, Pat. No. 4,092,594, which is a continuation-in-part of Ser. No. 582,338, May 30, 1975, Pat. No. 3,962,644. Application for reissue May 20, 1981, Ser. No. 265,432

Int. Cl.³ H04B 1/38

U.S. Cl. 455-76

24 Claims

13. Apparatus for transmitting and for receiving a selected one of a plurality of predetermined radio frequency channels located in an RF band, said apparatus comprising:

a frequency synthesizer means for generating a selected one of a plurality of local oscillator signals;

an antenna means;

an RF receiving section for the RF band including an RF mixer, means connecting said antenna means to said mixer to thereby apply received RF signals to said mixer, means for applying to said mixer said selected local oscillator signal to thereby provide at the output of the mixer an IF signal modulated with any audio signal being received on the selected channel, an IF amplifier connected to said mixer for amplifying said IF signal, detector means con-

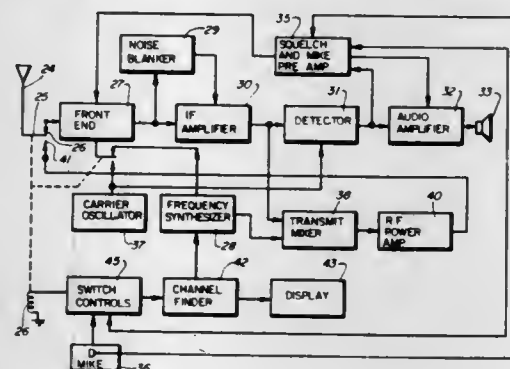
nected to said IF amplifier for detecting said audio signal, an audio amplifier connected to said detector means for amplifying said audio signal, and means for connecting an audio speaker to said audio amplifier;

means responsive to the receipt of said audio signal for providing a control signal indicative of the presence of an audio signal on the selected channel;

an RF transmitting section for the RF band including a carrier oscillator for producing a carrier signal, means for generating an audio signal, means connected to said carrier oscillator and said generating means for modulating said carrier signal with said audio signal, means connected to said modulating means for amplifying said modulated signal, a transmit mixer connected to said amplifying means and to said frequency synthesizer means for mixing said selected local oscillator signal with said modulated signal, means connected to the output of said transmit mixer for amplifying said output, and means for connecting said amplifying means to said antenna means to thereby transmit on said selected channel;

manually operable means for energizing either said transmit section or said receive section;

said frequency synthesizer means including a phase-locked-loop and being operable to provide said selected local



oscillator signal in response to a preselected input signal being applied thereto;

memory means for storing a plurality of said preselected input signals corresponding to said plurality of channels;

[processing] circuit means for controlling said frequency synthesizer means and for retrieving said preselected input signals from said memory means, said [processing] circuit means being adapted to operate in a clear channel finder mode wherein said preselected input signals concerning said channels are retrieved sequentially from said memory means in response to the presence of said control signal and are applied to said frequency synthesizer means; said sequential retrieval terminating during the absence of said control signal when [the] a retrieved preselected input signal corresponds to a clear channel available for transmission and in an active channel finder mode wherein said various preselected input signals concerning said channels are retrieved sequentially from said memory means in response to the absence of said control signal and are applied to said frequency synthesizer means, said sequential retrieval terminating during the presence of said control signal when [the] a retrieved preselected input signal corresponds to an active channel available for reception.

PLANT PATENTS

GRANTED FEBRUARY 14, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,189

LILY NAMED LE REVE

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Aug. 9, 1982, Ser. No. 406,379

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its profuse production of pink, somewhat upfacing bowl-shaped flowers borne on strong stiff upward-projecting pedicels, and the long lasting quality of the blooms whether on the plant or as cut flowers.

5,191

AFRICAN VIOLET PLANT

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Jun. 21, 1982, Ser. No. 390,800

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Don Juan, as described and illustrated, and particularly characterized by its semi-double to double lavender flowers carried on strong and erect peduncles so as to position the flower bouquet well above the dark foliage.

5,192

CHRYSANTHEMUM PLANT

Jack M. Meek, deceased, late of Salinas, Calif.; by Sandra J. Meek, executrix, Canyon, Tex., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 16, 1982, Ser. No. 388,950

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Flair and particularly characterized as to uniqueness, as herein described and illustrated, by the combined characteristics of flat capitulum form; daisy capitulum type; dark red ray floret color, with minimum color oxidation; diameter across face of capitulum ranging from 75 to 85 mm. at maturity; uniform eight week photoperiodic flowering response to short days; medium peduncle length; medium plant height (when grown as a single stem cut spray); tolerating 13° C. (55° F.) for initiation and development when grown as a single stem cut spray.

5,190

AFRICAN VIOLET PLANT

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Jun. 21, 1982, Ser. No. 390,641

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Ice Palace, as described and illustrated, and particularly characterized by its profuse flowering, and relatively large white single star-shaped flowers positioned on erect peduncles above the foliage.

PATENTS

GRANTED FEB. 14, 1984

ERRATA

For CLASS	See PATENT NO.
099-330	4,430,925
418-001	4,431,356
502-101	4,431,567
502-154	4,431,568
502-154	4,431,569
502-151	4,431,570
502-151	4,431,571
502-151	4,431,572
502-218	4,431,573
502-261	4,431,574
425-336	4,431,700
381-051	4,431,866

PATENTS

GRANTED FEBRUARY 14, 1984

GENERAL AND MECHANICAL

4,430,759
GLOVE

Donald Jackrel, 5 Maison Ct., Holbrook, N.Y. 11741
Filed Sep. 15, 1982, Ser. No. 418,574
Int. Cl.³ A41D 19/00

U.S. Cl. 2—159

6 Claims



1. A hand covering apparatus comprising in combination a flexible, protective outer covering layer, an inner lining layer disposed in telescoped relation to the outer covering layer to receive the wearer's hand, an intermediate layer of thin, flexible plastic sheet material interposed between said lining and said outer covering, said interposed layer being both waterproof and air permeable and being entirely free of any attachment to said other layers whereby said hand covering is waterproof and can breath freely.

4,430,760

NONSTRESS-BEARING IMPLANTABLE BONE PROSTHESIS

Thomas L. Smetstad, San Jose, Calif., assignor to Collagen Corporation, Palo Alto, Calif.

Filed Dec. 18, 1981, Ser. No. 332,325

Int. Cl.³ A61F 1/00

U.S. Cl. 3—1.9

6 Claims

1. An implantable nonstress-bearing bone prosthesis comprising particulate demineralized bone, dentin, or mixtures thereof contained within the interior of a medical grade flexible porous closed container made of bioerodible collagen, the pores of which are smaller than the particle size of the particulate demineralized bone or dentin, but large enough to permit passage of osteogenic and/or mesenchymal cells.

4,430,761

JOINT ENDOPROSTHESIS

Peter G. Niederer, Zollikofen, and Otto Frey, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 3, 1981, Ser. No. 317,746

Claims priority, application Switzerland, Feb. 19, 1981, 1091/81

Int. Cl.³ A61F 1/24

U.S. Cl. 3—1.91

2 Claims

1. A joint endoprosthesis comprising a shank having a blade-like portion formed with a smooth narrow lateral side, a smooth narrow medial side and a pair of side walls, each said side wall widening along a straight longitudinal median axis from a distal end with a conical taper symmetrically of said axis, said medial side

having an arcuate portion extending away from said median axis; and a plurality of parallel longitudinally extending grooves being straight along the entire length thereof in each said side wall, said grooves extending in the direction of said axis



parallel to said side walls and being spaced apart a distance from center-line to center-line of from 0.5 to 2.0 millimeters with each groove having a depth of from 0.2 to 0.5 millimeters to impede a flow of cement or fragments of spongy bone tissue during implantation.

4,430,762

AQUASSAGE

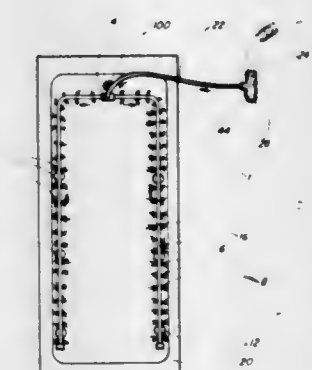
Mark Marshall, Rte. 3, Box 49-A-9, Prairieville, La. 70769

Filed Sep. 20, 1982, Ser. No. 419,729

Int. Cl.³ A61H 33/02

U.S. Cl. 4—543

17 Claims



1. An aquassage apparatus for blowing pressurized air within a water-filled bath tub for agitating said water, comprising:
a. a soft, flexible, elongate tubing passage comprising attachment means for thereby facilitating mounting thereof in any desired configuration, within said bath tub;
b. an air feeder hose connected to said tubing passage for introducing pressurized fluid thereinto;
c. a plurality of perforations provided through said tubing passage for facilitating the injection of pressurized fluid

- therethrough into said water-filled bath tub for agitating said water contained therein;
- d. a valve assembly, comprising:
- a valve assembly housing having a capped, outer end provided with a plurality of air slots therethrough; a lower, internal valve seat; a transverse port through one side thereof above said valve seat; an open, inner end; connection means provided on the outer surface of said housing in fluid communication with said transverse port, whereby said connection means is connected to said air feeder hose for introducing pressurized fluid thereto; a plurality of air slots provided through the sides of said housing below said valve seat and a plurality of flaps, each of which is hingedly mounted to the interior walls of said housing below said valve seat in covering relationship to said air slots, for movement between open and closed positions;
 - a valve member contained by said housing actuable by said pressurized air for movement between an open position whereby said valve member is forced completely out the way of said transverse port of said housing and a closed position whereby said valve member is forced by said pressurized air into fluidly sealing, seating engagement with said valve seat;
- e. a source of pressurized fluid connected to said open, inner end of said housing for conveying pressurized air through said transverse port of said housing and into said air feeder hose, and through said perforations of said tubing passage for blowing pressurized air within said water-filled bath tub, for thereby agitating said water.

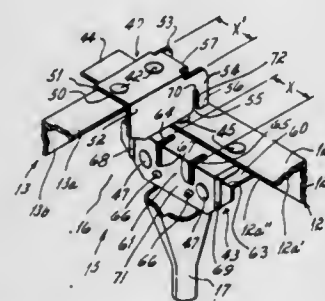
4,430,763 BED FRAME

Larry W. Whitehead, Lexington, N.C., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Mar. 16, 1981, Ser. No. 241,831
Int. Cl.³ A47C 19/00

U.S. Cl. 5—200 C

6 Claims



1. A bed frame comprising a cross rail and a side rail, and a connector assembly for connecting said cross rail and said side rail, said connector assembly comprising a cross rail bracket fixed to said cross rail and a side rail bracket fixed to said side rail, one of said brackets comprising two hooks and a locking lip extending between said two hooks, and the other of the said brackets comprising two slots in one wall thereof, said slots receiving said hooks in connected relation, and said lip bearing against a face of said slotted bracket so as to provide a substantially wobble free lock between said brackets, said cross rail bracket being formed from an inverted generally U-shaped workpiece, said hooks being formed from said bracket's side walls, and said locking lip being formed from said bracket's base plate, said side rail bracket being formed from an inverted generally L-shaped workpiece, said slots being disposed in said side rail bracket's side wall and base plate to cut cross the corner thereof, and the longitudinal axis of said cross rail bracket being disposed parallel to the longitudinal axis of said cross rail, and the longitudinal axis of said side rail bracket being

disposed generally parallel to the longitudinal axis of said side rail.

4,430,764 WAVELESS WATERBED WITH BUOYANT HONEYCOMB CORE

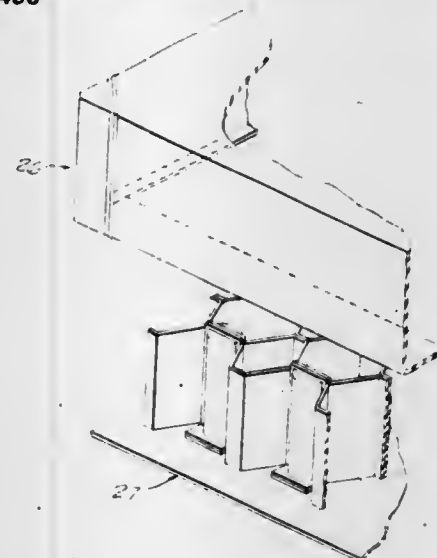
Alberto L. Finkelstein, 147 S. Thistle St., Brea, Calif. 92621

Filed Oct. 19, 1981, Ser. No. 312,626

Int. Cl.³ A47C 27/08

U.S. Cl. 5—450

2 Claims



1. A waterbed mattress comprising a top wall, a bottom wall, and four side walls, and including a buoyant honeycomb core means attached only to the bottom wall of the mattress and including a plurality of buoyant means between the openings in, and integrally formed with, said honeycomb core means, said honeycomb core comprising a plurality of sheets joined to one another at spaced intervals along lines extending laterally across said sheets and comprising a plurality of open areas between said lines and a plurality of sealed tubular areas between said open areas, said buoyant means comprising flotation-promoting means sealed inside said tubular areas.

4,430,765 FLAME RETARDANT MATTRESS

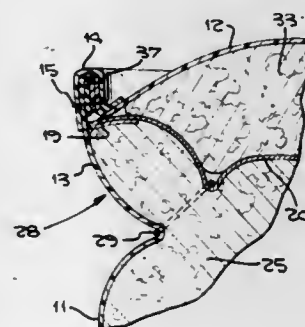
King Karpen, 407 #5 W. Duarte Rd., Arcadia, Calif. 91006

Filed Apr. 10, 1981, Ser. No. 253,072

Int. Cl.³ A47C 7/02

U.S. Cl. 5—459

6 Claims



1. A flame retardant mattress comprising an exposed perimeter side wall of a single thickness of sheet material and opposite parallel subcover sheets of fabric forming with said perimeter wall a complete substantially rectangular bag with stitched upper and lower cover edges, and a full complement of filler forming substantially the entire contents of said bag, said filler comprising a mass of cotton felt in which is blended a quantity of flame retardant chemical, a roll edge around the perimeter of each subcover sheet forming a corner, said roll edge comprising in part perimeter portions respectively of said side wall and said adjacent subcover sheet and including a portion of said cotton felt in impregnated condition and a marginal line of stitching, said marginal line of stitching extending between the side wall and the adjacent subcover sheet

and through the cotton felt, a surface cover sheet imperforate intermediate edge portions, there being a surface cover sheet over the outside of each subcover sheet and forming an exterior space therebetween, a layer of cotton felt impregnated with a quantity of flame retardant chemical in each said space, and a stitched perimetral closure seam around each edge of the side wall, said closure seam comprising marginal edges respectively of the side wall of single thickness and adjacent surface cover sheet in face to face engagement and with a line of permanent stitching through said marginal edges, said closure seam being at a location clear of said subcover sheet.

4,430,766

CEMENT SOLE ATTACHING PRESSES

Anton Muhlbach, Frankfurt am Main-Sossenheim, and Helmut Stemmler, Usingen, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

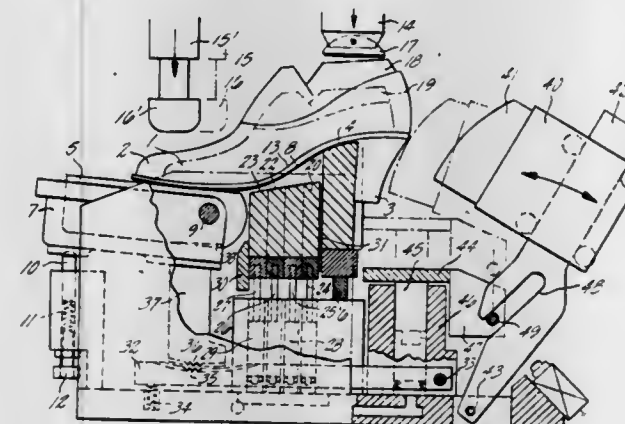
Continuation-in-part of Ser. No. 114,122, Jan. 21, 1980. This application Feb. 9, 1981, Ser. No. 232,722

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904807

Int. Cl.³ A43D 63/00

U.S. Cl. 12—16.1

4 Claims



1. A cementing press for cement attaching outsoles to lasted footwear, wherein a counter-support receiving the outsole and two presser-members are moved relative to one another, of which the one presser-member acts on the heel portion and the other on the toe portion of the last, the counter-support having pressure portions which accommodate themselves to the shoe bottom under pressure, such that in the toe and ball region, a freely-swinging rocker-assembly is provided, serving as a counter-support, and having a fulcrum extending transversely of the last within the toe and ball region, which rocker-assembly is provided with a locking means actuated before the application of full pressure, for the position which the rocker-assembly has assumed upon the shoe bottom being laid thereagainst.

4,430,767

TECHNIQUES FOR STIFFENING SHOE INSOLES

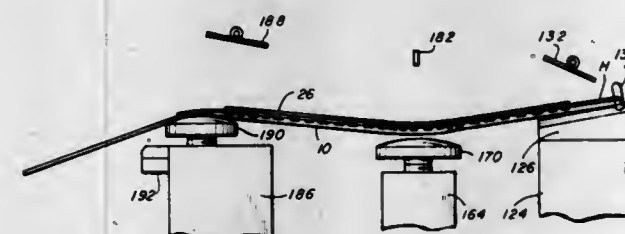
Jules N. Allard, Tyngsboro, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Filed Feb. 20, 1981, Ser. No. 236,569

Int. Cl.³ A43D 31/00; A43B 13/41

U.S. Cl. 12—146 S

17 Claims



1. A method for shaping an insole to a predetermined shape

and for stiffening the shank region of the insole in said predetermined shape comprising:

- providing an insole which has been pre-molded to a shape which substantially approximates said predetermined shape;
- holding at least selected regions of the pre-molded insole in said predetermined shape;
- while so holding the insole, causing an initially flexible, externally activatable material on said shank region of the insole to cure to a rigid state while on the insole and to adhere to the insole;
- whereby the externally activatable material will cure and conform to said predetermined shape and will, when cured, retain the shank region of the insole in said predetermined shape.

4,430,768

AGITATOR STRUCTURE FOR SUCTION CLEANERS

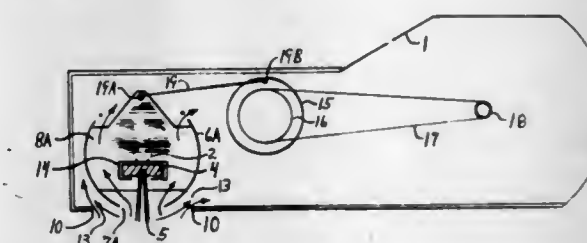
Harry E. Novinger, 4961 S. Chester St., Englewood, Colo. 80111

Filed Mar. 24, 1982, Ser. No. 361,394

Int. Cl.³ A47L 5/30

U.S. Cl. 15—381

7 Claims



1. In a suction cleaner body, rotatable agitator means therein, a power supply for rotating the agitator means, an airstream nozzle with mouth margins defining a plane, and the agitator means comprising:

- at least one cleaning strip having a back portion and a cleaning portion for contacting a surface to be cleaned;
- an agitator roll;
- means for carrying the cleaning strip in the agitator roll;
- means for rotatably connecting the agitator roll to the cleaner body;
- means for rotatably actuating the agitator roll in a reciprocating movement; and the agitator roll having portions of its surface defining a cylinder when rotated; and,
- the means for carrying the cleaning strip including cavity means for recessing the majority of the cleaning strip within the cylinder defined by the agitator roll when rotating, a walled shell in cross section disposed so as to define the outer dimension of the agitator roll, the shell having margins forming a first slot-like opening and a second slot-like opening, the first opening defining a portion of a cavity in which the cleaning strip is recessed, and the two openings providing ports for passage of air through the roll for cleaning the cleaning strip, and the agitator roll positioned relative the nozzle mouth margins so that the nozzle mouth plane is substantially tangent to the cylinder of the roll, for restricting the area of the nozzle mouth to arrange the airstreams into more effective shapes causing high speeds and pressure differentials across the surface to be cleaned for efficient cleaning.

4,430,769

WINDOW CLEANING DEVICE

Arne Bergström, Nottetäck, Sweden, assignor to Rolf Altgenug Corporation, Jarfalla, Sweden

Filed Nov. 16, 1981, Ser. No. 321,711

Claims priority, application Sweden, Nov. 17, 1980, 8008056

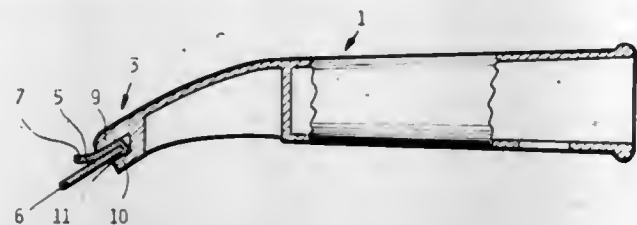
Int. Cl.³ A47L 1/06

U.S. Cl. 15—245

2 Claims

1. A window squeegee device comprising a handle having an attachment portion extending from one end thereof, and a

squeegee blade assembly detachably connected to said attachment portion, said attachment portion including a generally U-shaped opening comprising a first and a second wall extending from a base, said first wall including two shoulders having a space therebetween, and said second wall including a tongue extending from said base opposite said space, the edge of said tongue furthest from said base including a ridge extending



towards said space, said squeegee blade assembly comprising a U-shaped strip including a first and second leg pressure biased towards each other and extending from a strip base, for engaging a squeegee blade inserted between said first and second legs, the surface of each leg engaging the blade being planar, said first leg engaging said shoulders and said second leg including a cut-out portion into which extends said ridge.

4,430,770

DOOR OPERATING MECHANISM

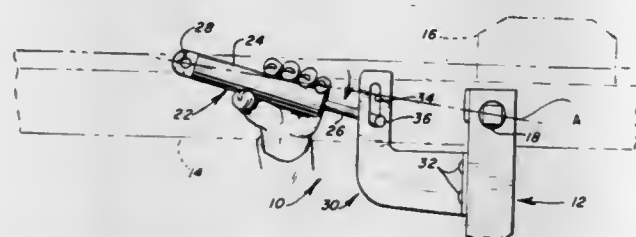
Frank M. Niekrasz, Homewood, and Matthew Rolek, Chicago, both of Ill., assignors to Ardco, Inc., Chicago, Ill.

Filed Sep. 28, 1981, Ser. No. 306,314

Int. Cl.³ E05F 1/10

U.S. Cl. 16—80

15 Claims



1. A door operating mechanism for use with a door hingedly connected to a door frame for swinging movement with respect thereto between opened and closed positions, comprising:

extensible spring means biased towards an extended condition connected to said frame, and linkage means operatively connecting said door and said spring means, and including hold-open means operative to permit said spring means to be selectively moved, when said door is in said opened position, from a first position wherein said door is biased to the closed position to a second position wherein said spring means bias said door toward said opened position to releasably hold the door in the opened position.

4,430,771

HINGE BRACKET-MOUNTING PLATE ASSEMBLY

Luciano Salice, Carimate, Italy, assignor to Deutsche Salice GmbH, Freiberg/Heutingsheim, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,211

Claims priority, application European Pat. Off., May 19, 1981, 81 103853.8; Fed. Rep. of Germany, Jul. 15, 1980, 3026796; Oct. 17, 1980, 3039328

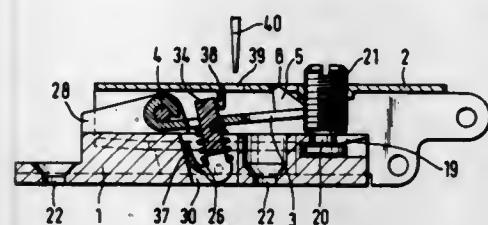
Int. Cl.³ E05D 7/04

U.S. Cl. 16—235

37 Claims

1. A hinge bracket-mounting plate assembly comprising: a hinge bracket; a mounting plate having an elongated track; one of said hinge bracket and said mounting plate having a detent opening including a detent abutment and the other of said hinge bracket and said mounting plate having a

spring-loaded detent lever including a detent nose at one end thereof, said detent lever engageable with said detent abutment when the hinge bracket has been inserted into said track of the mounting plate and pushed along said track, and adapted to be removed from said abutment; stop means for limiting the displacement of said hinge



bracket and said mounting plate relative to each other as the detent lever engages the detent abutment; said detent nose including an engaging side face adapted to engage the detent abutment in such a manner that the spring-loaded detent lever urges one of the hinge bracket and mounting plate without backlash against a complementary stop of the other.

4,430,772

DEVICE FOR SIMULTANEOUSLY DESHIRRING, SMOOTHING AND BRAKING A SHIRRED TUBULAR CASING

Wolfgang Michel, and Reinhold Becker, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

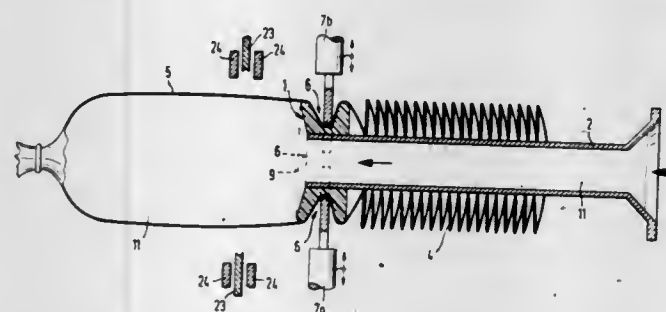
Filed May 13, 1982, Ser. No. 377,868

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120205

Int. Cl.³ A22C 11/00

U.S. Cl. 17—33

25 Claims



1. A device for deshirring, smoothing and braking a shirred tubular casing during the stuffing of the tubular casing with a fluid material, said device comprising a hollow body having an outer circumferential surface with a substantially circular cross section and having a central opening with fastening means so that the hollow body may be received on and releasably secured to the exterior surface of the stuffing horn of a stuffing device adjacent the stuffing horn outlet, said hollow body being disposable in the interior of a deshirred portion of a shirred tubular casing having a prescribed internal diameter, said hollow body being substantially rigid and having a substantially annular, cylindrical form with an outer periphery, presenting a plurality of smooth surfaces, the maximum outer diameter of the hollow body being smaller than the prescribed inner diameter in the unshirred condition of the tubular casing to be filled, and the outer circumferential surface of the hollow body being provided with an annular recess having a substantially V-shaped or U-shaped cross section, the minimum diameter of the hollow body in the region of the recess being from 25 to 65 percent smaller than the maximum diameter of the hollow body.

4,430,773

DEVICE FOR SIMULTANEOUS DESHIRRING, SMOOTHING AND BRAKING OF A SHIRRED TUBULAR CASING AND APPARATUS COMPRISING SAID DEVICE

Reinhold Becker, and Rudolf Petry, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

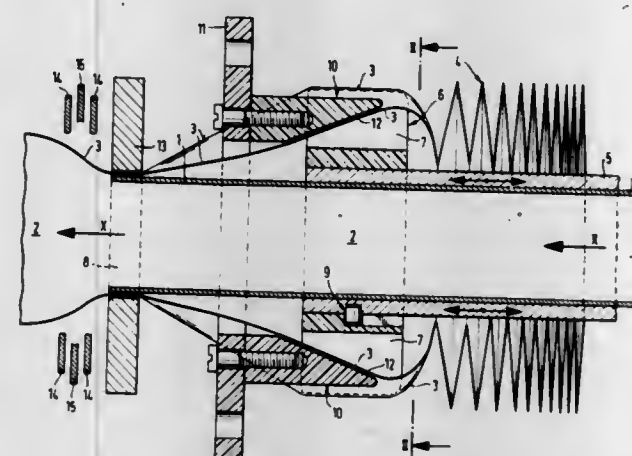
Filed Jun. 28, 1982, Ser. No. 392,603

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125836

Int. Cl.³ A22C 11/00

U.S. Cl. 17—33

14 Claims



1. A device for deshirring, smoothing and braking a shirred tubular casing into which a fluid mass flows under pressure from a stuffing horn of a stuffing machine, said device comprising an annular body having a central opening releasably securable to a stuffing horn, said annular body having recesses on its outer surface extending parallel to its longitudinal axis, said device further comprising elements for smoothing and braking the tubular casing, said elements having a configuration substantially corresponding to the configuration of said recesses, said elements and said annular body being displaceable relative to each other such that said elements may be moved between a position in which the elements are spaced from said recesses and a position in which said elements are at least partially extended into said recesses.

4,430,774

COMBING AND DRAWING FRAME

Jakob Bothner, Göppingen-Jebenhausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

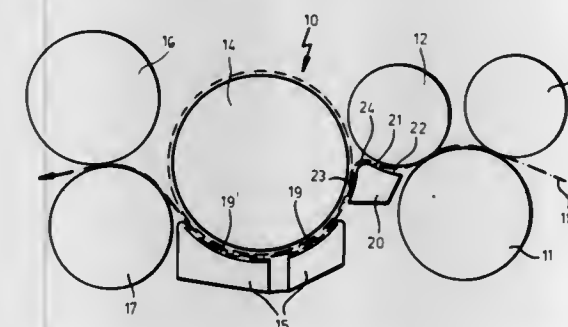
Filed Dec. 21, 1981, Ser. No. 332,855

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048501

Int. Cl.³ D01H 5/18

U.S. Cl. 19—105

13 Claims



1. In a combing and drawing frame for a spinning mill, for drawing and combing drawable collections of fibers in the form of sliver consisting of individual fibers, with a pair of feed rolls including an upper feed roll and a lower feed roll which deliver the collection of fibers to a comber cylinder cooperating with a comber bed, the surface speed of the comber cylinder being greater than the surface speed of the feed rolls, and

with a pair of delivery rolls mounted behind the comber cylinder, the improvement which comprises, between the pair of feed rolls and the comber cylinder and in front of the comber bed, a deflection guide for the sliver, this guide being at a small spacing from the comber cylinder and pressing the sliver against the upper feed roll, said deflection guide being constructed as a stationary deflection guide slideway for the sliver, this slideway having a first portion opposite the upper feed roll and a second portion opposite the comber cylinder.

4,430,775

MUFFLER SHIELD BANDING STRAP

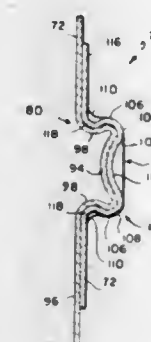
James C. Arthur, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 14, 1981, Ser. No. 330,561

Int. Cl.³ B65D 63/04; F16L 33/00

U.S. Cl. 24—20 CW

28 Claims



1. A strap connector for joining one part to another part for use with a vehicular exhaust system, comprising a band for encircling the parts, the band having an underlying end segment and an overlying end segment and interlinking means for joining the end segments and for tightening the band around the parts, the interlinking means including a first outwardly projecting shoulder section in the overlying end segment forming an inwardly opening bight, and a second outwardly projecting shoulder section in the underlying end segment adapted to fit into the bight of the first shoulder section, an indentation in the first shoulder section, and an indentation in the second shoulder section, the indentation in one of the shoulder sections nesting in the indentation in the other of the shoulder sections when the second shoulder section is received into the bight of the first shoulder section to prevent lateral misalignment of the end segments with respect to each other during both initial engagement and subsequent crimping together of said shoulder sections.

4,430,776

COMBINATION VIBRATION DAMPER AND FASTENER FOR UNION OF TWO PANELS

Yoshitaka Shimizu, Higashi-Osaka, and Norio Takahashi, Ibaraki, both of Japan, assignors to Matsushita Reiki Co., Ltd., Osaka and Nifco Inc., Yokohama, both of Japan

Filed Aug. 26, 1981, Ser. No. 296,530

Claims priority, application Japan, Sep. 8, 1980, 55-126574

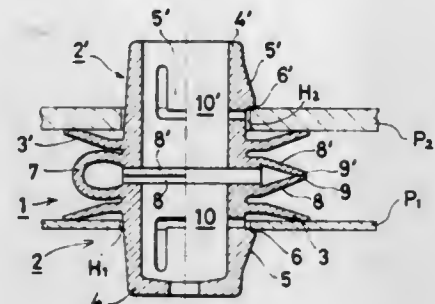
Int. Cl.³ A44B 17/00; H01B 17/00; F16F 7/00

U.S. Cl. 24—573

2 Claims

1. A combination vibration damper and fastener for use in the union of two panels, comprising in combination a pair of plastic fastener portions opposed back to back to each other across a space in the axial direction, said fastener portions each being composed of a head portion, a shank extended downwardly from said head portion, and an engaging piece provided on the outer surface of said shank and extended radially outwardly therefrom and toward the head portion to provide a surface for engagement with a panel being fastened, a plurality of arcuately spaced substantially U-shaped resilient connecting pieces manifesting resiliency in the axial direction and serving to connect the opposed head portions to each other, a

pair of vibration damper pieces extended in the radial direction from each head portion and manifesting resiliency in the axial direction, there being a plurality of arcuately spaced vibration damper pieces on each head portion substantially coplanar with and alternating with said connecting pieces, the leading ends of said damper pieces from the two head portions being



opposed to each other, said damper pieces normally being axially spaced apart and movable into engagement upon loading of said damper, said damper pieces extended aslant from the fastener head portions so as to be opposed to each other and extending radially a substantial distance beyond said shank.

4,430,777

SOCKET COMPONENT FOR SNAP FASTENER

Tadashi Takeda, 12 Banchi, 1 Chome, Kita-Kinomoto, Yao-city, Osaka, Japan

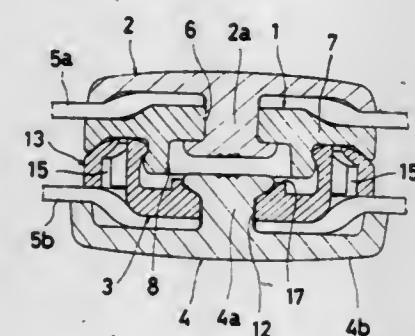
Filed Sep. 2, 1982, Ser. No. 414,027

Claims priority, application Japan, Apr. 13, 1982, 57-54200[U]

Int. Cl.³ A44B 17/00

U.S. Cl. 24—681

3 Claims



1. A plastic socket component for a snap fastener, comprising:

- a. a bottom wall having a centrally located opening for receiving a projection of a rivet of the snap fastener driven in from a face of a flexible sheet to form a calking stop; and
- b. a thick annular peripheral wall surrounding the periphery of said bottom wall to define a cavity for coupling with and uncoupling from a projection of a stud component of the snap fastener;
- c. said annular peripheral wall having
 - (1) an inner peripheral surface facing said cavity,
 - (2) a plurality of relatively long arcuate embossments located peripherally at the upper end of said inner surface,
 - (3) an outer peripheral surface radially outside said inner peripheral surface,
 - (4) a lower surface, adjacent said outer peripheral surface, for abutting the flexible sheet such that the flexible sheet exerts an upward force on said lower surface proportional to the thickness of the flexible sheet,
 - (5) a plurality of arcuate slits substantially equal in length and located respectively outwardly and radially aligned with said arcuate embossments and radially inwardly of said lower surface, and extending vertically entirely

through said peripheral wall so as to define elastic wall portions between said slits and said outer peripheral surface which resiliently deform upon application of the upward force to said lower surface, and

- (6) thick wall portions extending continuously between said inner and outer peripheral surfaces, disposed between respective adjacent pairs of said arcuate slits and having sufficient rigidity so as not to bend in response to the upward force, to thereby maintain the radial diameters of said cavity independently of the thickness of the flexible sheet.

4,430,778

CIRCLIP

Bo T. Sander, Upplands Väsby, Sweden, assignor to Svenskt Guldsmide i Upplands Väsby AB, Sweden

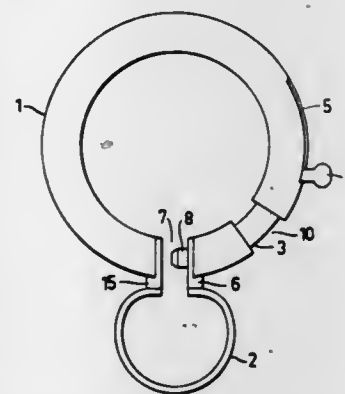
Filed Nov. 10, 1981, Ser. No. 320,122

Claims priority, application Sweden, Nov. 13, 1980, 8007966

Int. Cl.³ A44B 13/02, 15/00

U.S. Cl. 24—239

1 Claim



1. A circlip comprising a locking ring and a fastening ring of smaller size than the locking ring fastened together in a figure eight configuration, said locking ring having an entrance opening and a movable latch for opening and closing said entrance opening, said rings having spaced-apart opposite ends at the location where the rings are fastened together so as to form a slit between the central openings in the two rings, said locking ring being sufficiently deformable that its spaced-apart ends can be pressed together to close said slit; and retaining members located in said slit for maintaining said slit in a closed state after deformation of said locking ring.

4,430,779

APPARATUS FOR STEAM CONDITIONING TEXTILE FABRICS

Lawrence Rockman, 614 Woodbury Rd., Plainview, N.Y. 11803, and Peter Haft, 140 Kensington St., Brooklyn, N.Y. 11235

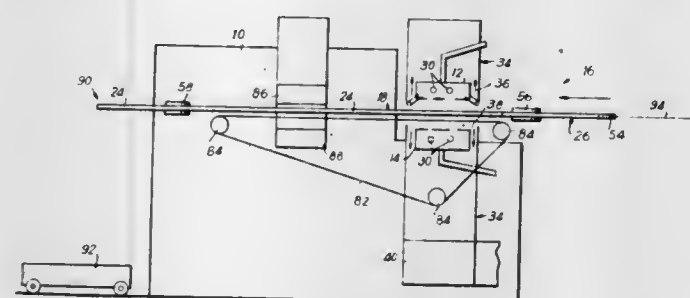
Continuation-in-part of Ser. No. 29,029, Apr. 11, 1979,

abandoned. This application Jan. 12, 1981, Ser. No. 223,994

Int. Cl.³ D06C 5/00, 7/00

U.S. Cl. 26—18.5

9 Claims



1. An apparatus for steam conditioning a fabric comprising: means for spreading said fabric in at least a transverse direction;

an upper steam box spaced a first predetermined distance

above the upper surface of the entire transverse dimension of the spread fabric;

a lower steam box spaced a second predetermined distance below the lower surface of the entire transverse dimension of the spread fabric and in superposed relationship to said upper steam box;

first steam means centered in said upper steam box and spaced said first predetermined distance above said upper surface for discharging steam in a first steam line across said entire transverse dimension of said upper surface;

an upper steam exhaust passage adjacent said first steam means along at least the entire length of said first line, said upper steam exhaust passage defining an outer boundary of said upper steam box;

blower means effective to withdraw substantially all of said steam delivered by said first steam means above said surface through said upper steam exhaust passage whereby said steam is prevented from migrating horizontally and is confined to at most said outer boundary of said upper steam exhaust passage;

second steam means centered in said lower steam box and spaced said second predetermined distance below said lower surface for discharging steam in a second line across said entire transverse dimension of said lower surface;

a lower steam exhaust passage adjacent said second steam means along at least the entire length of said second line, said lower steam exhaust passage defining an outer boundary of said lower steam box;

said blower means being further effective to withdraw substantially all of said steam delivered below said surface by said second steam means through said lower exhaust passage whereby said steam is prevented from migrating horizontally and is confined to at most said outer boundary of said lower steam box;

means for providing relative motion between said fabric and said upper and lower steam boxes in a direction at right angles to said transverse direction whereby said first and second lines are moved relative to said fabric; and

means for stopping said relative motion and said first and second means for delivering steam at a predetermined relationship of said fabric and upper and lower steam boxes whereby at least a predetermined portion of said fabric outside said outer boundaries of said upper and lower steam boxes remains free from said steam conditioning;

7. An apparatus for steam conditioning a fabric comprising: means for spreading said fabric in at least a transverse direction;

an upper steam box spaced a first predetermined distance above the upper surface of the entire transverse dimension of the spread fabric;

a lower steam box spaced a second predetermined distance below the lower surface of the entire transverse dimension of the spread fabric and in superposed relationship to said upper steam box;

first steam means centered in said upper steam box and spaced said first predetermined distance above said upper surface for discharging steam in a first steam line across said entire transverse dimension of said upper surface;

an upper steam exhaust passage adjacent said first steam means along at least the entire length of said first line, said upper steam exhaust passage defining an outer boundary of said upper steam box;

blower means effective to withdraw substantially all of said steam delivered by said first steam means through said upper steam exhaust passage whereby said steam is prevented from migrating horizontally and is confined to at most said outer boundary of said upper steam exhaust passage;

second steam means centered in said lower steam box and spaced said second predetermined distance below said lower surface for discharging steam in a second line across said entire transverse dimension of said lower surface;

a lower steam exhaust passage adjacent said second steam means along at least the entire length of said second line,

said lower steam exhaust passage defining an outer boundary of said lower steam box;

said blower means being further effective to withdraw substantially all of said steam delivered by said second steam means through said lower exhaust passage whereby said steam is prevented from migrating horizontally and is confined to at most said outer boundary of said lower steam box;

means for providing relative motion between said fabric and said upper and lower steam boxes in a direction at right angles to said transverse direction whereby said first and second lines are moved relative to said fabric;

means for stopping said relative motion and said first and second means for delivering steam at a predetermined relationship of said fabric and upper and lower steam boxes whereby at least a predetermined portion of said fabric outside said outer boundaries of said upper and lower steam boxes remains free from said steam conditioning;

at least one valve for controlling the admission of steam to said steam boxes;

at least one electric motor for driving said means for providing relative motion;

said means for stopping including a timing chain having pin elements thereon for respectively activating and deactivating said steam control valve and said at least one electric motor in a predetermined cyclical pattern; and

electric switch means actuatable by said pin elements and connected operably to said steam control valve and to said at least one electric motor.

4,430,780

FLUID FLOW COMINGLING JET

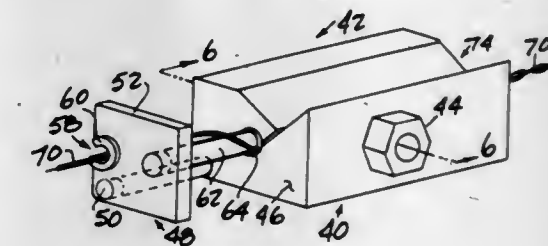
Stuart B. Sear, Lewisville, and Christopher A. Hill, King, both of N.C., assignors to International Machinery Sales, Inc., Winston-Salem, N.C.

Filed Jan. 11, 1982, Ser. No. 338,570

Int. Cl.³ D02G 1/16

U.S. Cl. 28—272

1 Claim



1. A forwarding comingling jet for use in comingling filaments of yarn having varying deniers, said jet having a body with a yarn chamber extending therethrough with entrance and exit openings at each end of the jet body, an air entry orifice intersecting said yarn chamber, the improvement comprising:

(a) pin means having its head positioned near the entrance opening of said yarn chamber to form an annular space so that filaments moving through the jet pass around the pin means through the annular space formed between the head of the pin means and the entrance opening;

(b) means for selectively adjusting the position of the pin means so that the position of the head of the pin means with respect to the entrance opening can be adjusted to vary the flow and forwarding characteristics of the jet; and

(c) an access slot extending the length of the jet body and communicating with the yarn chamber to permit the jet to be threaded.

4,430,781

METHOD OF PRODUCING A SCALE

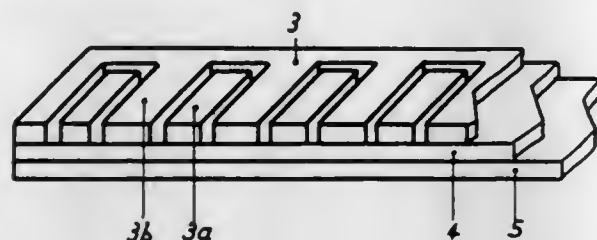
Hans Meyer, 24, rue du Bugnon, 1020 Renens, Switzerland
Filed Aug. 5, 1982, Ser. No. 405,700

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138765

Int. Cl.³ H01G 1/00

U.S. Cl. 29—25.42

5 Claims



1. A method for producing a scale suitable for capacitive scanning, consisting of a plurality of successive elements which are arranged in a regular order on an insulating base, in which regular order at least certain ones of the elements are electrically isolated from each other and other of the elements are in electrical contact with each other wherein the improvement comprises the steps of: cutting a continuous band of electrically conductive material to form the elements in such a way that all of the elements have at least partial connections with the band and the band has uninterrupted longitudinal edges, fastening said band on an insulating base in order to obtain a band assembly composed of two layers and removing the longitudinal edges of the band assembly by cutting said band assembly in such a manner that said certain ones of the elements to be isolated are separated from their connections with the continuous band of electrically conductive material and said others of the elements remain connected to said continuous band.

4,430,782

APPARATUS AND METHOD FOR BURNISHING MAGNETIC DISKS

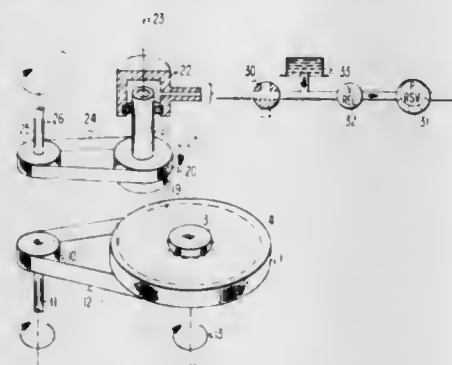
Randy J. Bornhorst, and Arlen J. Bowen, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,689

Int. Cl.³ B24B 39/00, 7/04

U.S. Cl. 29—90 R

10 Claims



1. Apparatus for finishing the surface of a flexible magnetic disk comprising:
first drive means for rotating a flexible disk about a first axis perpendicular to the plane of said disk,
a manifold rotatable about a second axis parallel to and spaced from said first axis,
said manifold having a planar surface perpendicular to said second axis,
a plurality of openings in said planar surface
a burnishing blade mounted in at least one of said openings with a blade edge positioned substantially coplanar with

said manifold planar surface, the ends of said blade edge being spaced from the wall of said openings,
means for applying a vacuum to said manifold to draw a flexible disk toward said manifold planar surface, and
second drive means for rotating said manifold about said second axis.

4,430,783

METHOD OF MAKING A ROCKER ARM

Joseph L. Wherry, Perrysburg, Ohio, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio

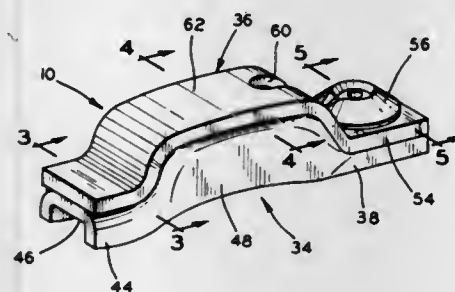
Division of Ser. No. 134,447, Mar. 27, 1980, Pat. No. 4,346,678.

This application Aug. 23, 1982, Ser. No. 410,355

Int. Cl.³ B23P 15/00; B21D 53/84

U.S. Cl. 29—156.4 R

6 Claims



1. A method of making a stamped rocker arm of the cam-follower type comprising providing an upper metal strip and a lower metal piece, forming a rounded recess in an end portion of the metal piece to receive a lifter post having an end on which said rocker arm can pivot, forming an additional recess at another end portion of said metal piece to receive an end of a valve stem, forming a generally convex portion in said metal piece between said rounded recess and said additional recess, forming an intermediate convex portion on said metal strip to be engaged by a cam, and forming a slot in said metal strip extending at least to said convex portion thereof and to one end portion thereof, affixing said metal strip to said metal piece whereby said slot forms a lubricant groove with a portion of said metal piece and with the convex portion of said metal piece being in contiguous relationship with said intermediate convex portion of said metal strip, and forming a hole through said metal piece communicating with said rounded recess and with said strip slot at the one end portion of said strip.

4,430,784

MANUFACTURING PROCESS FOR ORIFICE NOZZLE DEVICES FOR INK JET PRINTING APPARATI

Kenneth Brooks, Charlotte, N.C.; Paul R. Smith, Princeton, W. Va., and Thomas E. Morris, Concord, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 123,629, Feb. 22, 1980, Pat. No. 4,282,533.

This application Feb. 9, 1981, Ser. No. 232,457

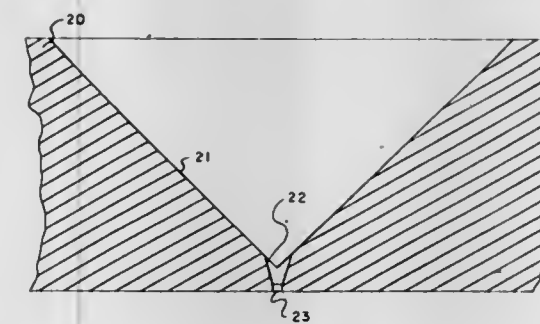
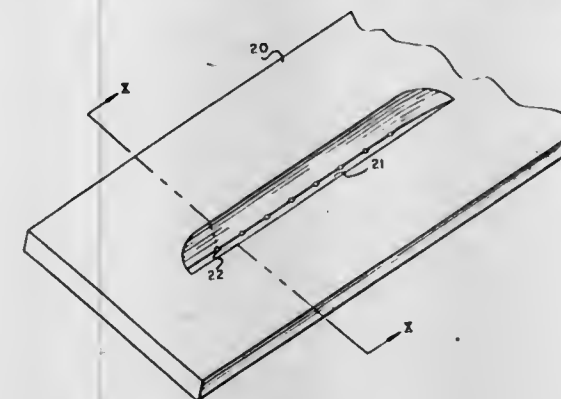
Int. Cl.³ B23P 15/16

U.S. Cl. 29—157 C

2 Claims

1. A process for the preparation of a unitary metallic multi-orifice nozzle member suitable for use in ink jet printing, said process comprising grooving in one face of a single, flat metal plate member having opposite planar faces and a thickness of from 500 to 5000 microns with at least one groove, having a depth such that the deepest part of the groove is within 25 microns to 250 microns of the face opposite said one face of the plate, punching a plurality of equi-spaced frustoconical sec-

tions into said groove of said plate member, forming a cylindrical portion into each of said frustoconical sections and through



said plate member an opening having an exit portion and then deburring the exit portion of said cylindrical portion.

4,430,785

METHOD OF MANUFACTURING A MAGNETIC FUEL OR WATER TREATMENT DEVICE

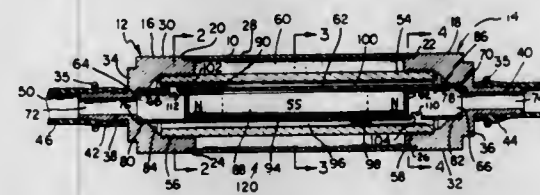
Charles H. Sanderson, 3717 Fritch Ave., Fort Wayne, Ind. 46806

Division of Ser. No. 167,921, Jul. 14, 1980, Pat. No. 4,357,237, which is a continuation-in-part of Ser. No. 98,294, Nov. 28, 1979, abandoned. This application Aug. 20, 1982, Ser. No. 409,907

Int. Cl.³ B21D 53/00; B21K 29/00; B23P 15/26

U.S. Cl. 29—157 R

2 Claims



1. A method of manufacturing a magnetic water or fuel treatment device comprising:
providing an elongate bar magnet,
providing a tubular inner casing of non-magnetic material having opposite end portions with apertures therein, and inserting the magnet in the inner casing such that the magnet is captured therein between said apertures and held against axial movement relative to the inner casing,
providing a tubular intermediate casing made of ferromagnetic material having ends and an inner diameter greater than the outer diameter of the inner casing,
providing a pair of end fittings each having a gradually tapered passage therein wherein the tapered passages have respective maximum inner diameters greater than the outer diameters of the ends of the inner casing and minimum inner diameters less than the outer diameters of the ends of the inner casing, and
threading the fittings on the ends of the intermediate casing and guiding the ends of the inner casing into the tapered passages thereby causing the ends of the inner casing to be deformed gradually inwardly by the tapered passages as the end fittings are threaded on the intermediate casing,

the tapered passages tightly seating against the ends of the inner casing to prevent radial and axial movement of the inner casing relative to the end fittings.

4,430,786

METHOD OF MAKING A WHEEL COVER SIMULATING A WIRE SPOKE WHEEL

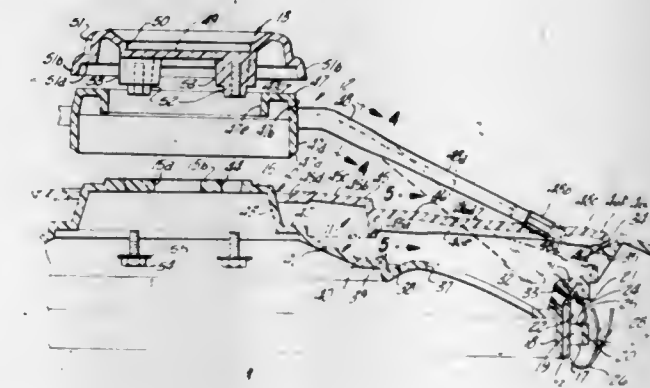
James Connell, 5017 Dianna Dr., Bloomfield Hills, Mich. 48013
Division of Ser. No. 140,035, Apr. 14, 1980, Pat. No. 4,397,504.

This application May 17, 1982, Ser. No. 378,708

Int. Cl.³ B21D 53/32

U.S. Cl. 29—159 A

2 Claims



1. The method of fabricating an ornamental wheel cover to simulate a vehicle wheel with wire spokes, the steps of forming a retainer having a central hub and a peripheral rim spaced by an intermediate body, the rim having a portion adapted to be secured to a rim flange of a vehicle wheel and also having a plurality of spoke retaining recesses therein at circumferentially spaced locations, molding a one-piece plastic spoke assembly of resilient material to provide an annular member of smaller diameter than said rim and a plurality of resilient spokes having radially inner ends integral with said annular member at a plurality of circumferentially spaced locations, the spokes extending generally radially from their inner ends to radially outer ends insertable respectively within a set of said recesses, applying bending force to said spokes to move their radially outer ends resiliently toward said retainer and reduce the radial extent of each spoke sufficiently to enable radial alignment of its radial outer end with its respective recess for insertion therein while simultaneously supporting said retainer and spoke assembly coaxially in axially spaced relation to effect the radial alignment of each radially outer end with its respective recess, thereafter progressively moving the coaxial retainer and spoke assembly axially toward each other while simultaneously relaxing the bending force progressively to enable gradual return of said spokes to their unstressed condition to maintain said radial alignment and effect insertion of said radially outer ends into their respective recesses, thereafter securing said spoke assembly to said retainer.

4,430,787

SUCKER RODS WITH IMPROVED COUPLING CAPABILITY AND METHOD

Harold W. Paramore, 7617 Fox River Ct., Fort Worth, Tex. 76112, and Jacky Burkes, Rte. 4 - Box X-5, Midland, Tex. 79701

Filed May 4, 1981, Ser. No. 260,346

Int. Cl.³ B22D 19/10

U.S. Cl. 29—402.11

3 Claims

1. A method of refurbishing the threaded end portions of used sucker rods, comprising the steps of:
cutting off the threaded end portions of the used rods;
rethreading the rod ends;

securing an internally threaded pin end coupler on a selected end of said rethreaded rod; and



securing an internally threaded box end coupler on the opposite end of said rethreaded rod.

4,430,788

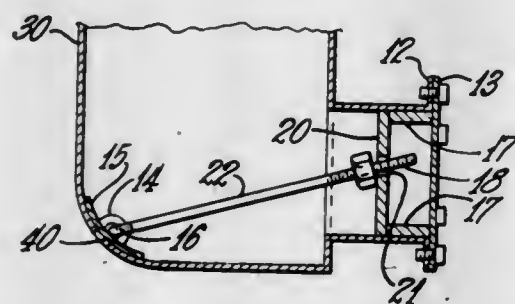
REPAIR OF DOUBLE SHELL HEAT EXCHANGERS
Eugene M. Haynes, Hebron, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Feb. 23, 1981, Ser. No. 237,201

Int. Cl.³ B23P 7/00; D06F 79/00

U.S. Cl. 29—402.14

3 Claims



1. A method of repairing double shell apparatus comprising an inner shell and an outer shell having an annulus therebetween, the inner shell having an aperture therethrough, which comprises:

- forming an access opening in the outer shell;
- forming biasing means in said access opening;
- inserting through said access opening first cover means adapted to seal said aperture, said first cover means being attached to extension means;
- biasing said first cover means and extension means to seat said first cover means in closing relationship to said aperture and to position said extension means in contact with said biasing means; and,
- closing said access opening.

4,430,789

METHOD FOR MANUFACTURE OF TARGET BOARDS FOR DARTS OR ARCHERY

Edward W. J. Wu, No. 62, Wu Chuan Si Er St., Taichung, Taiwan

Filed Dec. 17, 1981, Ser. No. 331,763

Int. Cl.³ B22D 11/126; B28B 11/12

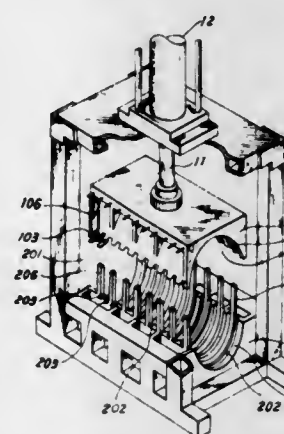
U.S. Cl. 29—527.1

3 Claims

1. A method of forming a target board for darts or archery, comprising the steps of:

- providing an upper mold having a first semicylindrical cavity with a plurality of first arcuate grooves arranged in parallel and equally spaced;

- providing a lower mold having a second semicylindrical cavity with a plurality of second arcuate grooves corresponding with said first arcuate grooves of said upper mold, said second cylindrical cavity being symmetrical to and corresponding with said first semicylindrical cavity of the upper mold;
- placing an upper clamp member in each of said first arcuate grooves, said upper clamp members being detachably retained by a retaining means;
- placing a lower clamp member in each of said second arcuate grooves of said lower mold;
- placing a bunch of fibrous material on said second cylindrical cavity of said lower mold;
- forcing said upper mold towards said lower mold and tightly pressing said bunch of fibrous material into a cylindrical fibrous bundle;
- releasably coupling each of said upper clamp members to a corresponding one of said lower clamp members to maintain said fibrous material tightly pressed together in a cylindrical shape;
- detaching said upper clamp members from said upper mold;
- moving said upper mold away from said cylindrical fibrous bundle;
- removing said cylindrical fibrous bundle and clamp members from said lower mold with said clamp members remaining on said fibrous bundle;
- cutting said fibrous bundle between said clamp members into a plurality of clamped, circular pieces;
- bonding a circular reinforcing plate onto one planar side of each circular piece;
- decoupling said clamp members on each circular piece;
- removing said decoupled clamp members from each circular piece;
- placing a pair of metal strips adjacent to the circular piece;
- forcing said metal strips around the periphery of said circular piece;
- securing said metal strips together to form a protective band around the outer periphery of said circular piece; and
- placing a decoration cover sheet over said circular piece.



4,430,790

METHOD OF MAKING A JOSEPHSON JUNCTION
Hiroshi Ohta, Wako, Japan, assignor to Rikagaku Kenkyusho and Science and Technology Agency, both of Japan

Division of Ser. No. 151,693, May 20, 1980, Pat. No. 4,366,494.

This application Jul. 21, 1982, Ser. No. 400,356

Int. Cl.³ H01L 39/22

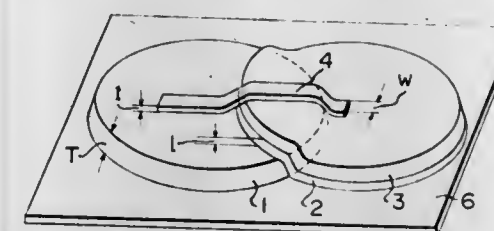
U.S. Cl. 29—569 R

7 Claims

1. A method of making superconducting devices as defined comprising the steps of:

- preparing a substrate;
- sputtering and depositing a superconductor material on said substrate to form an underlying superconductor layer;
- sputtering and depositing a spacer material on said underlying superconductor layer;
- sputtering and depositing a second superconductor material on said spacer to form an overlying superconductor layer at an offset position with respect to said underlying superconductor layer;
- sputter-etching the whole surface of the so-built laminar deposition for atomically cleaning;
- sputtering and depositing a barrier material on the whole surface of the laminar deposition;
- putting on the laminar deposition a resist mask of the same shape and size as a weak link to be formed across the thickness of the spacer;
- chemically etching or dry-etching the unmasked part of the laminar deposition to leave the barrier material under said resistant mask; and
- removing said resistant mask from the laminar deposition.

- putting on the laminar deposition a resist mask of the same shape and size as a weak link to be formed across the thickness of the spacer;
- chemically etching or dry-etching the unmasked part of the laminar deposition to leave the barrier material under said resistant mask; and
- removing said resistant mask from the laminar deposition.



4,430,791

SUB-MICROMETER CHANNEL LENGTH FIELD EFFECT TRANSISTOR PROCESS

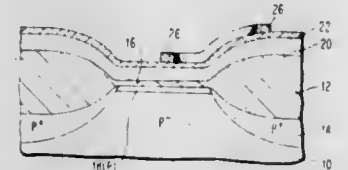
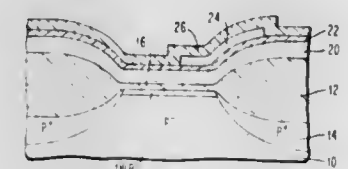
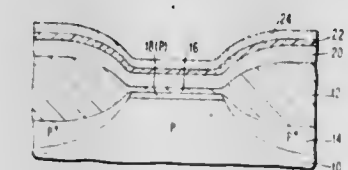
Robert C. Dockerty, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,891

Int. Cl.³ H01L 21/22, 21/265, 21/28

U.S. Cl. 29—571

21 Claims



1. A method for fabricating a semiconductor integrated circuit structure having a sub-micrometer width device element comprising:

- providing a semiconductor substrate;
- forming a surface isolation pattern in said semiconductor substrate which isolates regions of said semiconductor within said substrate from one another and which regions are designated to contain devices;
- forming at least one layer over said regions designated to contain devices;
- etching said at least one layer so as to result in a patterned layer having substantially vertical sidewalls some of which sidewalls extend across certain of said regions designated to contain devices;
- forming a controlled sub-micrometer thickness layer on said sidewalls;
- removing by etching said patterned layer which leaves a pattern of controlled sub-micrometer thickness layer portions of which extend across said certain of said regions; and
- forming the desired pattern of PN junctions in said substrate using said controlled sub-micrometer layer as a mask.

- forming the desired pattern of PN junctions in said substrate using said controlled sub-micrometer layer as a mask.

4,430,792

MINIMAL MASK PROCESS FOR MANUFACTURING INSULATED-GATE SEMICONDUCTOR DEVICES WITH INTEGRAL SHORTS

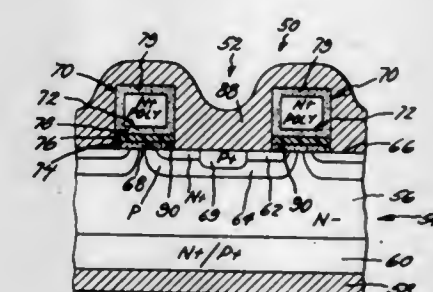
Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 396,226, Jul. 8, 1982, abandoned. This application Aug. 9, 1982, Ser. No. 406,738

Int. Cl.³ H01L 21/265

U.S. Cl. 29—571

12 Claims



1. A self-aligned process for manufacturing an insulated-gate semiconductor device including an integral short, said process comprising:

- providing a semiconductor wafer including a first region of one conductivity type having a principal surface, and preparing the wafer by forming on the principal surface a gate insulating region layer, and forming on the gate insulating region layer a conductive gate electrode layer;
- forming an etch resist mask having openings defining the ultimate locations of upper electrode regions, and initially etching in areas defined by the mask openings through the gate electrode layer at least to the gate insulating layer with minimal undercutting of the etch resist mask;
- introducing into the first region impurities appropriate to form a shorting region of the opposite conductivity type while employing un-etched portions of the gate electrode layer as a mask;
- laterally etching the previously un-etched portions of the gate electrode layer, thereby defining gate electrodes extending upwardly from and spaced along the gate insulating layer and first region principal surface;
- introducing into the first region between the gate electrodes impurities appropriate to form a base region of opposite conductivity type and an upper electrode region of the one conductivity type within the base region, the gate electrodes serving as masks during the introduction of impurities, and diffusing the impurities introduced to appropriately locate and configure the base and upper electrode regions such that at the principal surface the base region exists as a band of opposite conductivity type between the upper electrode region and the first region, with active portions of the band underlying at least a portion of at least one gate electrode and being separated by portions of the gate insulating layer;
- oxidizing at least the gate electrode sidewalls; and
- forming a metallized upper electrode region terminal in ohmic contact with the upper electrode and shorting regions, and forming a metallized gate terminal in ohmic contact with the gate electrode.

4,430,793

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING SELECTIVE INTRODUCTION OF A DOPANT THRU A DEPOSITED SEMICONDUCTOR CONTACT LAYER

Cornelis M. Hart, Sunnyvale, Calif., assignor to U.S. Philips Corporation, Tarrytown, N.Y.

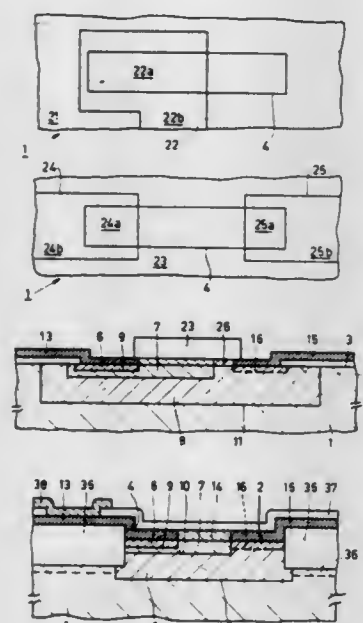
Filed Jan. 11, 1980, Ser. No. 111,401

Claims priority, application Netherlands, Jan. 15, 1979, 7900280

Int. Cl.³ H01L 21/20, 21/225

U.S. Cl. 29—578

14 Claims



1. A method of manufacturing a semiconductor device in which: an electrically insulating layer with an aperture through it lies along an upper surface of a semiconductor body; a semiconductor layer on the insulating layer and on the entire section of the upper surface within the aperture has a first portion of a first conductivity type extending at least to the aperture, has a second portion of a second conductivity type opposite to the first conductivity type extending at least partway through the aperture, and has a third portion distinct from the first and second portions extending at least partway through the aperture to adjoin a specified part of the body; and a semiconductor circuit element has a first zone of the first conductivity type extending along a part of the aperture to adjoin the first portion, has a second zone of the second conductivity type at least partly in the body extending along at least a part of the aperture to adjoin the second portion and adjoining the first zone below it, and has a third zone of the first conductivity type in the body extending to the upper surface within the aperture, spaced apart from the first zone, and adjoining the second zone below at least part of the first zone; characterized by:

providing the insulating layer with the aperture through it along the upper surface;

depositing semiconductor material on the insulating layer and in the aperture to form the semiconductor layer; and selectively introducing (1) a semiconductor dopant of the second conductivity type into a first part of the semiconductor layer occupying a segment of the aperture along its lateral edge and into an adjoining second part of the semiconductor layer above the insulating layer and (2) a semiconductor dopant of the first conductivity type into a third part of the semiconductor layer occupying a part of the segment along the lateral edge and into an adjoining fourth part of the semiconductor layer above the insulating layer.

4,430,794

DISPOSABLE RAZOR DEVICE FOR CUTTING AND TRIMMING NOSTRIL HAIR

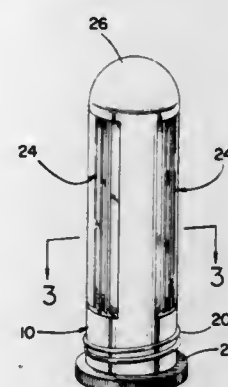
William T. Miller, 1633 Cornwall La., Newport Beach, Calif. 92660

Filed Mar. 25, 1982, Ser. No. 361,508

Int. Cl.³ B26B 19/00

U.S. Cl. 30—29.5

4 Claims



1. A disposable razor device for cutting and trimming the hair on the inner surfaces of the nostril passages, the device comprising:

a main tubular body member having a dome-shaped end adapted to be alternately inserted into each of said nostril passages;

means formed on the opposite end of said body to rotate said body;

razor-cutting means mounted longitudinally along said body member and recessed therein;

said razor-cutting means comprising a razor-blade insert which includes:

a razor-blade-securing frame member,

a first razor blade secured in said frame member,

a second razor blade secured in said frame member and space from said first razor blade, and juxtapositioned thereto;

a first razor-blade insert; and

a second razor-blade insert;

each of said razor blade inserts being mounted in said body and being oppositely positioned from each other;

a removable cover member adapted to be removably secured to said body to cover said razor-cutting means.

4,430,795

SAFETY DEVICE FOR CHAIN SAW

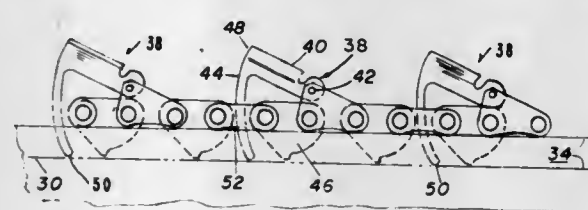
Robert Wetzel, 2724 Whitetail Deer Rd., Bath, Pa. 18014, and Richard Bates, R.D. #1, Box 403, Schuylkill Haven, Pa. 17972

Filed Aug. 2, 1982, Ser. No. 404,503

Int. Cl.³ B27B 17/02

U.S. Cl. 30—382

11 Claims



1. In a motor driven chain saw having a hollow guide bar and a chain operatively driven about the perimetrical edge thereof, the improvement comprising:

(a) a link positioning device, located within said hollow guide bar, which is capable of assuming either of two positions—a first cutting position and a second non-cutting position, said device being normally biased in said second position;

(b) a plurality of pivotable links in said chain, each contacted by said positioning device, which are pivoted into a cutting mode when said positioning device is in its first position and which return to a non-cutting mode when said device is in its second position; and,

(c) means for overcoming said normal bias in order to shift said link positioning device from its second position to its first position and to thereby permit cutting.

4,430,796

METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF POINTS ON A THREE DIMENSIONAL THING

Haruki Nakagawa, Saitama, Japan, assignor to Kosaka Laboratory Ltd., Tokyo, Japan

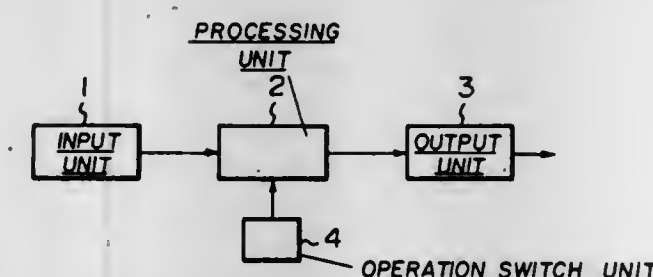
Filed Feb. 3, 1982, Ser. No. 345,806

Claims priority, application Japan, Feb. 9, 1981, 56-16830

Int. Cl.³ G01B 7/28

U.S. Cl. 33—1 M

6 Claims



5. A coordinate transformation apparatus including:

an input means for receiving coordinates of points on a first section of a three dimensional thing defined based on a first coordinate system and coordinates of points on a second section of the thing defined based on a second coordinate system, said first and second sections having an overlapped portion; and,

a processing means for (i) determining the positional relation between the first and second coordinate systems, (ii) processing the coordinates of at least three points which are determined on the overlapped portion between said first and second sections and defined based on said first and second coordinate systems; and (iii) transforming said coordinates of the points on the second section defined based on the second coordinate system into those in the first coordinate system using said positional relation between said first and second coordinate systems.

4,430,797

PLOTTING DEVICE

Hans Eder, Accum/Schortens, Fed. Rep. of Germany, assignor to Franz Kuhlmann Präzisionsmechanik und Maschinenbau GmbH & Co. KG, Wilhelmshaven, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,100

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110271

Int. Cl.³ B43L 13/00

U.S. Cl. 33—1 M

9 Claims

1. A plotting device comprising

a traveling carriage having a drawing head;

means for measuring distances traveled by said carriage, said measuring means emitting a signal representing the displacement of said traveling carriage;

a counter for determining measured values of coordinates in a basic Cartesian coordinate system from said signal emitted by said measuring means;

an indicator unit in which said measured coordinate values may be displayed;

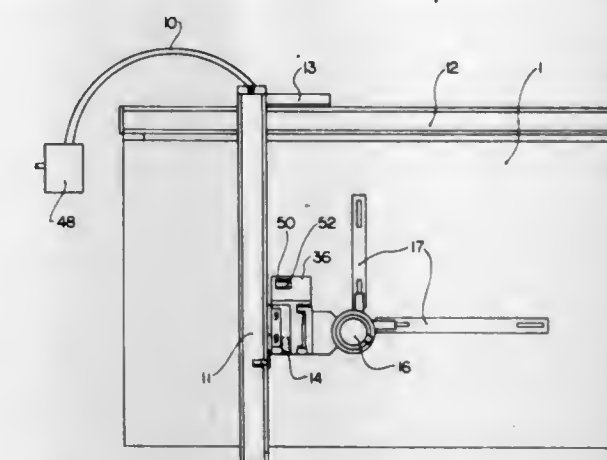
conversion means for transforming said measured coordinate values into coordinate values of a selective other coordinate system;

a control unit with means for selecting coordinate transfor-

mation and selective output of measured or transformed coordinate values to said indicator unit;

a memory unit for storing selected individual coordinate values from said conversion means;

a register whose contents designate the selected respective actual transformation of coordinates; and



a data processing unit connected with said memory unit, said register, and said control unit for receiving coordinate values from said memory unit and the associated contents from said register and for transmitting said received coordinate values and associated register contents via a standard interface for further processing in storage equipment or operating equipment which may be connected to said standard interface.

4,430,798

ANGLE MEASUREMENT METHOD

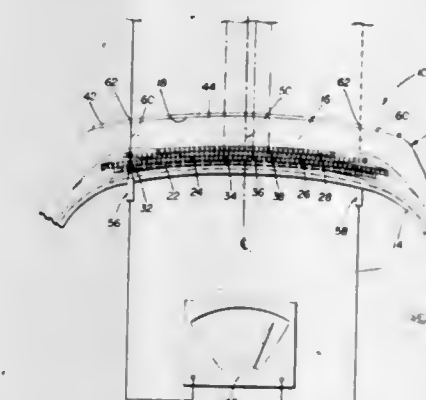
Randall D. Carleton, Oklahoma City, Okla., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1982, Ser. No. 424,817

Int. Cl.³ G01B 7/00

U.S. Cl. 33—1 N

7 Claims



- trical conductivity, on the end of one steel reinforcing element on one of said cut section edges;
- f. locating, via another end of said indicator means and thereby completing the circuit, the corresponding end of said one steel reinforcing element on the other end of said cut section edges, while observing that said reinforcing element crosses said longitudinal centerlines;
- g. drawing a line, parallel to said radial centerline, across each of said cut section edges, corresponding to the location of the ends of said one steel reinforcing element;
- h. marking the ends of said parallel lines, on the longitudinally opposed edges of said recording means;
- i. connecting the ends of said parallel lines across said recording means via an oblique line; and
- j. measuring the bias angle between said oblique line and the longitudinal centerline of said recording means.

4,430,799

ERROR COMPENSATION SYSTEM

Alfred Affa, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

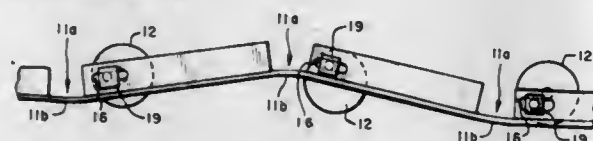
Filed Aug. 17, 1982, Ser. No. 408,863

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136981

Int. Cl.³ G01B 11/04

U.S. Cl. 33—125 R

5 Claims



1. In an encapsulated length measuring instrument for measuring the relative position of two objects, said instrument comprising a scale extending along a measuring direction and a scanning unit guided to move along the scale to generate a measuring signal, the improvement comprising:
- a one piece correction profile element which defines a plurality of deflectable regions of reduced cross sectional area interposed between a plurality of rigid segments;
- means for mounting the correction profile element adjacent the scale such that the correction profile element extends generally along the measuring direction;
- means, included in the mounting means, for adjusting the contour of the correction profile element such that the correction profile element bends at least a portion of the plurality of deflectable regions substantially without bending at the plurality of rigid segments; and
- means for correcting the measuring signal by an amount which varies as a function of the contour of the correction profile element.

4,430,800

DETECTING DEVICE FOR THE NUMBER OF ROTATION OF A WHEEL AT A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 16, 1981, Ser. No. 321,898

Claims priority, application Japan, Nov. 29, 1980, 55-171527[U]

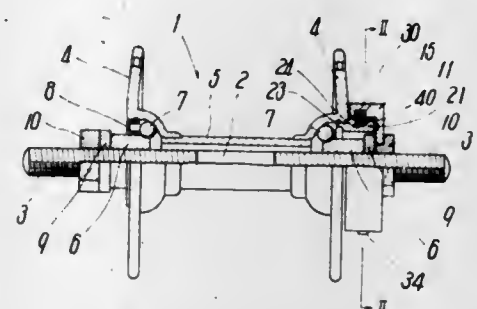
Int. Cl.³ G01B 3/12

U.S. Cl. 33—141 E

8 Claims

1. A detecting device for detecting the number of rotations of a bicycle wheel having a hub shaft fixed to a bicycle frame, a hub shell which is supported rotatably to said hub shaft and has a pair of flanges, and a pair of bearing members for rotatably supporting said hub shell, said detecting device comprising a fixing member separate from but fixed to said hub shaft and a rotary member fixed to said hub shell and rotating together therewith, said fixing member being positioned in close proximity to said rotary member, each of said fixing member and rotary member comprising cylindrical bodies and having

respective opposing circumferential peripheral surfaces in close proximity to one another and radially outwardly of said hub shaft, one of said opposing peripheral surfaces containing a detecting element having a changeable electrical state and



the other of said opposing peripheral surfaces containing actuators for changing the electrical state of said detecting element, so that the number of rotations of said wheel can be detected by rotations of said hub shell.

4,430,801

APPARATUS FOR MEASURING A BELT CONSTRUCTION AND METHODS

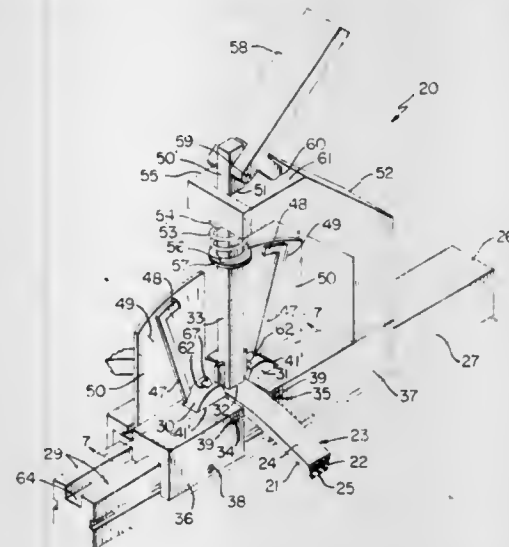
Lee R. Burris, Porter Township, Christian County, and James D. Hill, Jr., Turnback Township, Lawrence County, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 26, 1982, Ser. No. 362,212

Int. Cl.³ G01B 3/56, 5/24

U.S. Cl. 33—174 E

31 Claims



1. In an apparatus for measuring the angle of at least one side surface of an endless power transmission belt construction of the V-belt type wherein said belt construction has a top surface and a bottom surface with a pair of opposed non-parallel side surfaces therebetween, said apparatus having a first part against which said belt construction is adapted to be disposed in a belt construction measuring position thereof and having a second part pivotally mounted to pivot on an axis thereof and being adapted to be pivotally disposed against said one side surface to indicate the angle thereof by the relation of its pivoted position relative to a reference means when said belt construction is against said first part in said measuring position thereof, the improvement wherein said apparatus has moving means operatively interconnected to said second part to tend to move the same toward said belt construction in a direction substantially transverse to said axis thereof when said belt construction is in said measuring position thereof, a moveable holding member adapted to engage said belt construction to hold said belt construction when in said measuring position thereof, and means operatively interconnected to said holding means for tending to move said holding member in a direction

toward said belt construction when said belt construction is in said measuring position thereof.

4,430,802

VEHICLE WHEEL ALIGNMENT TESTING APPARATUS

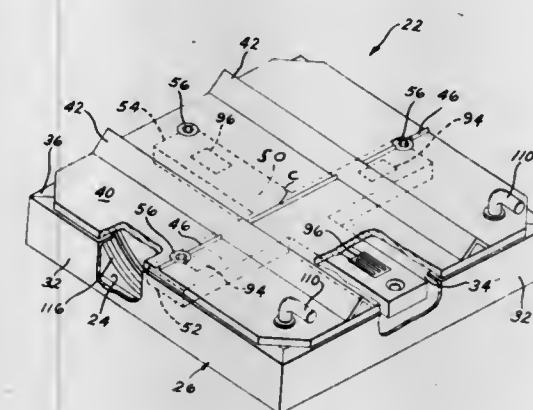
Thomas O. Cole, Bowling Green, Ky., assignor to Daniel T. Rodrigues, Laverne, Tenn.

Filed Mar. 1, 1982, Ser. No. 353,769

Int. Cl.³ G01B 7/315

U.S. Cl. 33—203.12

7 Claims



1. A vehicle wheel alignment testing apparatus for selectively measuring the caster angle of the wheel, said apparatus comprising:

- a stationary base;
- a wheel platform supported on the base, and means on the platform for centering the center of the wheel substantially on the imaginary center of the platform;
- the platform including an elongated bar transducer located substantially within the vertical central longitudinal plane of the wheel and having electrical strain-measuring means forward and rearward of the wheel axis for sensing the location of the load point of the wheel relative to a point on the true vertical central transverse plane of the wheel; and a remote monitoring means with electrical circuit means joining the electrical strain-measuring means for displaying the caster angle by the monitoring means.

4,430,803

CIRCUIT FOR LEVITATED BALL INCLINOMETER

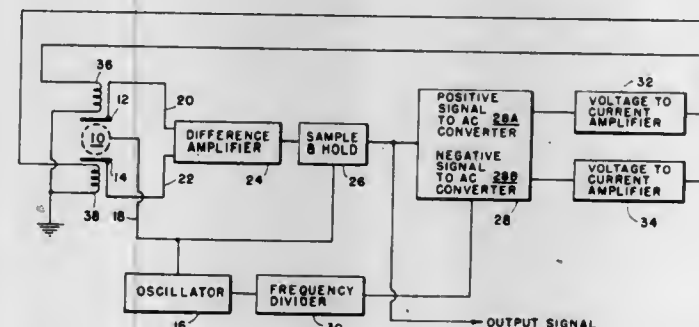
Thomas E. Flanders, Houston, Tex., assignor to General Electric Company, Philadelphia, Pa.

Filed Jun. 15, 1982, Ser. No. 388,680

Int. Cl.³ G01C 9/06

U.S. Cl. 33—366

3 Claims



3. In a levitated ball inclinometer having a ferromagnetic ball positioned between opposed pairs of electromagnets, an improved circuit for driving the coils of said electromagnets on any one axis comprising:

oscillator means for producing a high frequency alternating current;

means for applying said high frequency current to said ferromagnetic ball;

said high frequency current passing to the pole pieces of the respective pairs of electromagnets in proportion to the distance of said ball from each said pole piece;

difference amplifying means receiving the currents from a pair of said pole pieces on one axis and producing an output representative of the difference between said currents;

sample and hold circuit means receiving the output of said difference amplifying means and producing a voltage level, the polarity of which is an indication of to which of said pair of pole pieces said ball is closest and the magnitude of which is an indication of the amount of displacement of the ball along said axis;

first converter means responding to a positive output from said sample and hold circuit means by producing an alternating current voltage;

first voltage to current amplifier means receiving the output from said first converter means and delivering an alternating current to the coil of one of said pair of pole pieces;

second converter means responding to a negative output from said sample and hold circuit means by producing an alternating current voltage; and

second voltage to current amplifier means receiving the output from said second converter means and delivering an alternating current to the coil of the other of said pair of pole pieces.

4,430,804

DEVICE FOR SETTING INCLINATION

Bo Nordgren, Vikingavägen 57, 183 43 Täby, and Ivar Johansson, Södra Stationsgatar, 7 940 20 Öjebyn, both of Sweden

PCT No. PCT/SE81/00095, § 371 Date Nov. 24, 1981, § 102(e)

Date Nov. 24, 1981

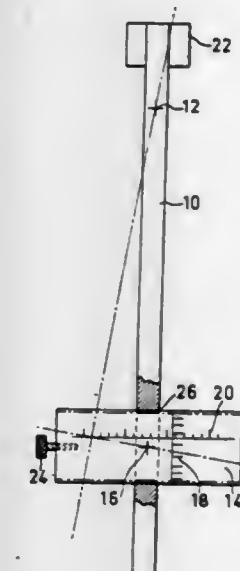
PCT Filed Mar. 25, 1981, Ser. No. 328,546

Claims priority, application Sweden, Mar. 26, 1980, 8002352

Int. Cl.³ G01C 9/12

U.S. Cl. 33—398

3 Claims



1. An apparatus for aligning and leveling objects comprising a reference member having upper and lower ends and front and rear surfaces, means for pivotally mounting said reference member about an axis which extends generally parallel to said front and rear surfaces thereof at a point adjacent said upper end of said reference member, a first weight means mounted adjacent said upper end of said reference member and above said axis, a second weight means mounted to said reference member between said axis and said lower end of said reference member, said second weight means being transversely adjustable with respect to said reference member and being extendable beyond said front and rear surfaces thereof, said second weight means having an elongated axis and first and second

ends disposed generally perpendicularly to said axis, a weight adjustment means mounted to one of said ends of said second weight means, said weight adjustment means being adjustable with respect to said one end of said second weight means whereby the center of gravity of said second weight means may be adjusted along said axis thereof.

4,430,805

RAIL TYPE UNIVERSAL PARALLEL RULER DEVICE

Hiroshi Mutoh; Masami Hikawa; Yoshinori Watanabe, and Kouichi Yamazaki, all of Tokyo, Japan, assignors to Mutoh Industry, Ltd., Tokyo, Japan

Continuation of Ser. No. 104,466, Dec. 17, 1979, abandoned.

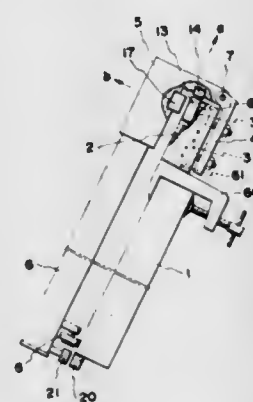
This application Aug. 24, 1982, Ser. No. 410,921

Claims priority, application Japan, Dec. 23, 1978, 53-162229; Dec. 23, 1978, 53-162230; Feb. 21, 1979, 54-20001; Jul. 20, 1979, 54-91482

Int. Cl.³ B43L 13/02

U.S. Cl. 33—438

7 Claims



1. A rail type universal parallel ruler device for mounting on a drawing board, comprising: a horizontal rail means for mounting on the top edge of the drawing board which is horizontal during use of the drawing board and having a pair of roller bearing surfaces disposed along the entire length of said horizontal rail means, a horizontal cursor means mounted on the horizontal rail means for shifting movement along the horizontal rail means, roller means disposed in pressure contact with said pair of roller bearing surfaces and said roller bearing surfaces guiding the horizontal cursor means for shifting movement along the horizontal rail means and preventing the horizontal swing shifting of the horizontal cursor means in a direction parallel to the surface of the drawing board and perpendicular to the longitudinal direction of the horizontal rail means, a vertical rail means pivotally connected to the horizontal cursor means at a point laterally offset from the centerline of said horizontal rail means in a direction remote from the drawing board when the horizontal rail means is mounted on the edge of the drawing board, said vertical rail means extending downwardly along the inclined board and having a further pair of bearing surfaces disposed along the entire length of said vertical rail means, a vertical cursor means mounted on the vertical rail means for shifting movement, a further roller means disposed in pressure contact with said further pair of roller bearing surfaces and said further bearing surfaces guiding said vertical cursor means along said vertical rail means and preventing the horizontal swing shifting of said vertical cursor means in a direction parallel to the surface of said drawing board and perpendicular to the longitudinal direction of said vertical rail means, a head connected to said vertical cursor means, a first magnetic member disposed along the surface of said horizontal rail means along substantially the entire length thereof and parallel to the surface of the drawing board, and a second magnetic member on the upper part of said vertical rail means and opposed to said first magnetic member with a like polarity surface opposed to said first magnetic member for exerting a repulsive force therebetween in a direction opposite the direction in which the force due to the weight of said vertical rail means and said vertical cursor means is exerted on the pivotal connection of said vertical rail means

and said horizontal cursor means when the drawing board is inclined or is horizontal.

4,430,806

MICROWAVE AGRICULTURAL DRYING AND CURING APPARATUS

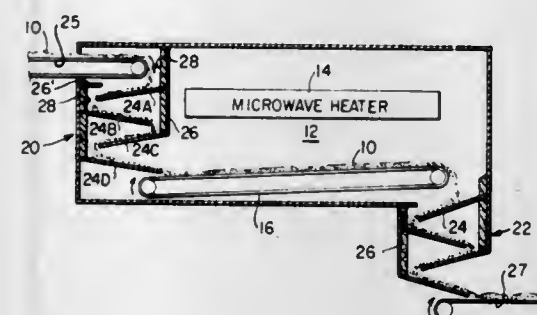
Harry C. Hopkins, Rte. 2, Box 109, Williamston, N.C. 27892

Filed Nov. 10, 1981, Ser. No. 319,900

Int. Cl.³ F26B 23/08

U.S. Cl. 34—1

7 Claims



1. A method of drying organic products comprising the steps of: continuously passing said products into an operating microwave cavity through labyrinth seals that create a meandering path so that the microwaves cannot escape from said cavity due to said meandering path, heating said products so as to drive off at least 10% of their moisture content, but without damaging said products, and continuously removing said products from the microwave cavity through labyrinth seals that create a meandering path so that the microwaves cannot escape from said cavity.

4,430,807

PROCESS FOR DRYING WATER-WET MEMBRANES

Thomas E. Davis, Lafayette, and Dana C. Overman, III, Pleasant Hill, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1982, Ser. No. 378,973

Int. Cl.³ F26B 3/00, 5/04; B01D 59/10

U.S. Cl. 34—9

8 Claims

1. A method for drying a water-wet, cellulose ester membrane, which comprises the steps of:

- contacting a first side of the membrane with a liquid mixture compatible with the membrane, said liquid mixture comprising a first component which is a C₁ to C₆ hydrocarbon in which water is soluble to at least ten weight percent and a second component which is essentially immiscible in water, has a solubility parameter of no greater than about 9.5 (cal/cm³)^{0.5} and exhibits poor hydrogen bonding, said contact with the liquid occurring while the other side of the membrane is swept with an inert gas or maintained at a reduced pressure relative to the first side of the membrane so as to maintain essentially continuously a lower chemical potential for the first component of the liquid mixture on the second side of the membrane, the composition of the liquid mixture being such that (1) the first component of said mixture pervaporates through the membrane more rapidly than the second component and (2) the liquid in contact with the membrane has a lower chemical potential for water than the membrane itself;
- after a predominant amount of the water initially present in the water-wet membrane has been removed from the membrane, adjusting the composition of the liquid mixture in contact with the membrane so that the quantity of the second component which pervaporates through the membrane exceeds the quantity of the first component pervaporating through the membrane;
- removing the liquid mixture from contact with the mem-

brane after the membrane is essentially free of both water and the first component of the liquid mixture; and (d) treating the membrane to remove essentially all residual liquid remaining in the membrane.

4,430,808

HAIR DRYER

Yuritsugu Toyomi, and Yukio Wada, both of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

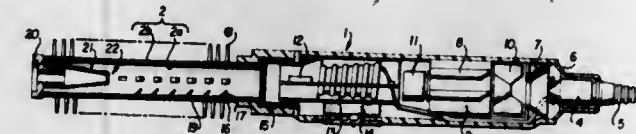
Filed Apr. 19, 1982, Ser. No. 369,795

Claims priority, application Japan, Apr. 30, 1981, 56-67209

Int. Cl.³ A45D 20/50

U.S. Cl. 34—97

8 Claims



- A hair dryer comprising: a body portion, said body portion including means for drawing in ambient air, means for heating said air so drawn in and means permitting said heated air to be conducted from said body portion in a blowing current; and a cylindrical hair-winding attachment attached by one of its ends to said body portion and adapted to receive said heated air from said body portion, said hair-winding attachment having a series of air blowing holes disposed along its length, said air blowing holes decreasing in size sequentially from its attached end, and a series of air rectifying tabs, each tab associated with one of said air blowing holes, said tabs decreasing in size sequentially from the attached end of said attachment and so disposed with respect to their respective air blowing holes as to deflect the heated air received by said attachment from said body portion out through their respective air blowing holes;
- a hot air vent part attached to the other end of said attachment, said part including at least one hot air vent; and a valve for controlling said hot air vent part, said valve disposed inwardly of said part in said attachment and being capable of directly sensing the air temperature in said attachment and to open when said air temperature rises to a predetermined abnormal degree.

4,430,809

FRONT DRUM ACCESS AND SUPPORT FOR DRYER

William A. Jackson, Hartford Township, Van Buren County, and Karolis Jautakis, Chikaming Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 24, 1981, Ser. No. 324,583

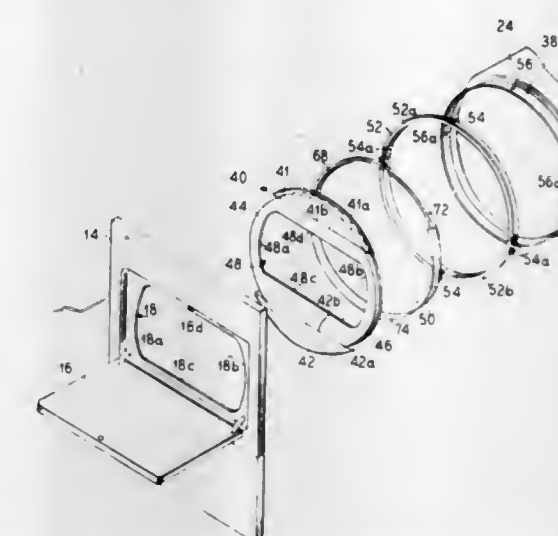
Int. Cl.³ F26B 11/04

U.S. Cl. 34—133

15 Claims

- In a clothes dryer having a rotatable drum with an inner wall surface forming a front circular opening for receiving clothes to be dried, motor means for driving said drum and a cabinet having a front wall for housing said drum and motor, a drum front support means comprising: wall means forming a non-circular access opening in said front wall of said cabinet;
- a front support ring having a portion connected to and supported by said wall means, said portion conforming to the non-circular shape of said access opening, another portion of said support ring forming a circular bearing surface projecting inwardly of said drum circular opening;
- a split bearing ring between said inner surface of said drum circular opening and said bearing surface of said support ring;
- tab means for connecting said split bearing ring to said drum inner wall surface, said tab means adapted to allow move-

ment of said ring relative to said drum surface due to heat expansion and contraction of said ring and said drum; and



support bearing and seal means mounted between said split bearing and said circular bearing surface for supporting said drum front on said front support ring.

4,430,810

SOLE FOR SPORTS SHOES, PARTICULARLY FOR SHOES USED FOR LONG-DISTANCE RUNNING ON HARD TRACKS

Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to Adidas Sportschuhfabriken Adi Dassler KG, Herzogenaurach, Fed. Rep. of Germany

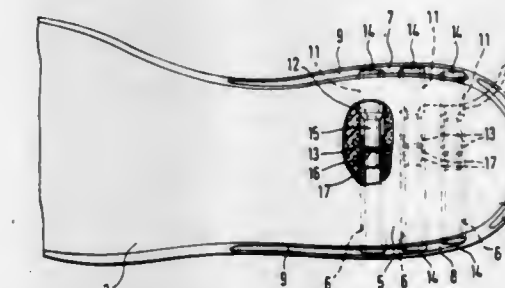
Continuation-in-part of Ser. No. 117,195, Jan. 31, 1980. This application Jul. 29, 1981, Ser. No. 288,182

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904540; May 31, 1979, 2922136; Aug. 1, 1980, 3029258

Int. Cl.³ A43B 13/04, 5/04; A43D 5/00

U.S. Cl. 36—32 R

7 Claims



- A sole for a sports shoe of a soft yielding material, the sole including a tread face, a shank, and a portion thickened rearwardly from the shank to form a heel wedge, the heel wedge comprising a plurality of recesses arranged in a row substantially parallel to each other and extending transversely to the longitudinal axis of the sole and substantially parallel to the tread face and being open at both side edges of the heel wedge, at least one supporting member of elastically bendable material closely fittingly and replaceably inserted into one of said recesses, said bendable material being of greater hardness than said soft yielding material of the sole to increase the overall hardness of the sole, and securing means for securing said at least one supporting member in said recess.

4,430,811 FOOTWEAR

Hozuma Okada, Kyoto, Japan, assignor to Sakashita Co., Ltd., Kyoto, Japan

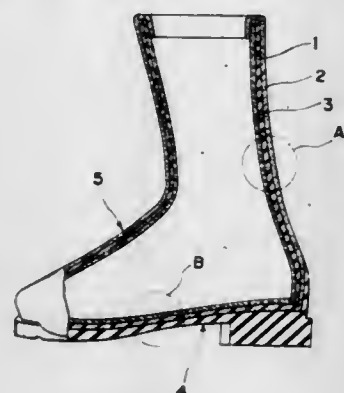
Filed Jan. 4, 1982, Ser. No. 336,591

Claims priority, application Japan, Sep. 30, 1981, 56-146393[U]

Int. Cl.³ A43B 23/00, 13/14, 13/38

U.S. Cl. 36—45

7 Claims



1. Footwear comprising; an intermediate layer made of foamed urethane and having first and second opposite surfaces; an outer cover bonded to the first surface of the intermediate layer and so shaped as to cover at least a portion of the foot of a wearer; and an inner cover bonded to the second surface of the intermediate layer and held in position to contact the foot of the wearer when the footwear is in use; said inner cover being of a double-layered structure including first and second layers of fabric joined together, the first layer being a woven or knitted fabric and adapted to contact the wearer's foot and the second layer being bonded to the intermediate layer, the fabric of said first layer having a relatively high moisture permeability and a relatively low moisture holding capability whereas the fabric of said second layer has a relatively high moisture holding capability.

4,430,812 ENDLESS BELT DREDGER

Arie Van der Ent, Nieuw-Lekkerland, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

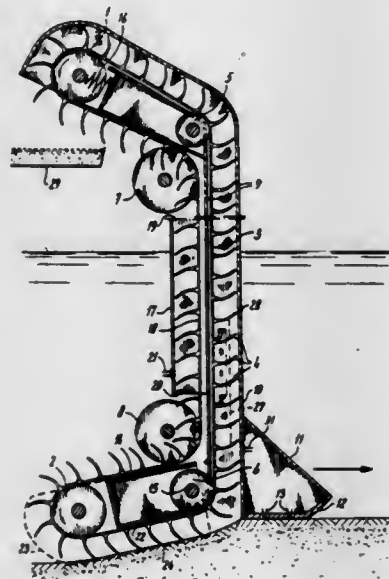
Filed Sep. 28, 1982, Ser. No. 426,183

Claims priority, application Netherlands, Nov. 5, 1981, 8105010

Int. Cl.³ E02F 3/08, 3/14

U.S. Cl. 37—69

12 Claims



1. In dredging apparatus comprising a floating device, a

frame suspended on the floating device, reversing wheels carried by the frame, an endless conveyor trained about the reversing wheels, means carried by the conveyor for loosening and feeding upwardly the marine soil, and means for receiving material discharged from an upper portion of the conveyor; the improvement in which the endless conveyor is an endless belt flexible in at least one direction perpendicular to its surface, said means carried by the conveyor comprising digging blades secured to the belt, the frame having a tube open at top and bottom and through which only an upwardly running section of the endless belt extends and which embraces only the upwardly running section of the belt and blades with a small clearance, the frame having a part projecting downwardly beyond the tube and having a reversing wheel for the belt, said part being mounted for vertical swinging movement about a horizontal axis relative to the frame so as to adjust the digging angle such that the belt that passes about said part engages the bottom to be dredged and moves marine soil into the lower end of said tube.

4,430,813 RAILROAD TRACK RELAYING MACHINE COMPRISING A PLOUGH

Sergio Valditterra, Novi Ligure, Italy; Ivo Cicin-Sain, Bussigny, and Jaime Berga, Mezieres, both of Switzerland, assignors to Matisa Materiel Industriel S.A., Crissier, Switzerland

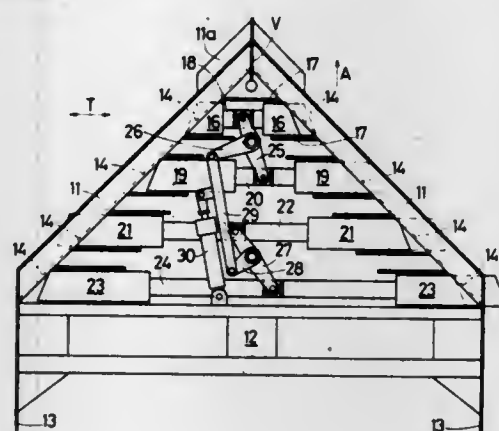
Continuation-in-part of Ser. No. 227,681, Jan. 23, 1981, Pat. No. 4,403,430. This application Nov. 19, 1981, Ser. No. 322,933

Claims priority, application European Pat. Off., Mar. 6, 1981, 81200253

Int. Cl.³ E02F 5/22

U.S. Cl. 37—104

8 Claims



1. A railroad track relaying machine comprising a plough frame, a V-plough on said frame for ejecting laterally the compact old ballast and forming a cut for laying new ties, two blades provided in the ploughshare area of said plough for disaggregating and/or thrusting aside the old ballast, said blades being movably mounted on the plough frame beneath and substantially parallel to said ploughshares, and actuating means for imparting to said blades periodic movement of translation along a closed path having a component perpendicular to the ploughshares and such that outer portions of said blades protrude, in the outer operating position thereof, from said ploughshares, said actuating means comprising means for imparting a circular motion to the front portion of each blade and means for imparting an elliptical motion to the rear portion of each blade, said elliptical motion having its major axis substantially perpendicular to said ploughshare.

4,430,814 FABRIC TENSIONING ROLLER

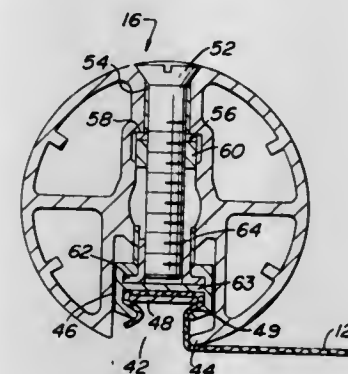
Stanley S. Wulc, Rydal, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Filed Oct. 30, 1981, Ser. No. 316,590

Int. Cl.³ D06C 3/08

U.S. Cl. 38—102.91

10 Claims



1. A fabric tensioning device comprising a roller having a longitudinally extending peripheral channel, a discrete fabric holder in said channel, said fabric holder having an opening on one side which is exposed in said channel and adapted to receive and grasp an edge portion of fabric, first means on the roller and connected to the opposite side of said fabric holder for selectively moving a portion of the fabric holder relative to the roller in a direction perpendicular to the longitudinal axis of the roller for image or fabric repositioning at preselected locations along the roller, and second means facilitating movement of the fabric holder longitudinally in said channel relative to said first means whereby additional image or fabric repositioning can be effected.

4,430,815 FABRIC TENSION APPARATUS FOR SCREEN PRINTING FRAME

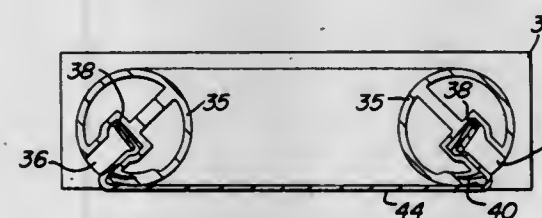
Stanley S. Wulc, Rydal, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Filed Nov. 2, 1981, Ser. No. 317,374

Int. Cl.³ D06C 3/08

U.S. Cl. 38—102.91

7 Claims



1. A screen printing apparatus comprising a screen printing frame attached to the edge portions of a screen fabric, the frame having spring means supported thereon in contact with the fabric to provide for a limited movement of the fabric by deformation of the spring means instead of relying only on stretching of the fabric, said frame supporting a plurality of rollers each having a channel for receiving an edge portion of the fabric, each roller having said spring means adjacent the channel, said spring means being an integral part of the roller.

4,430,816 MARKER SYSTEM

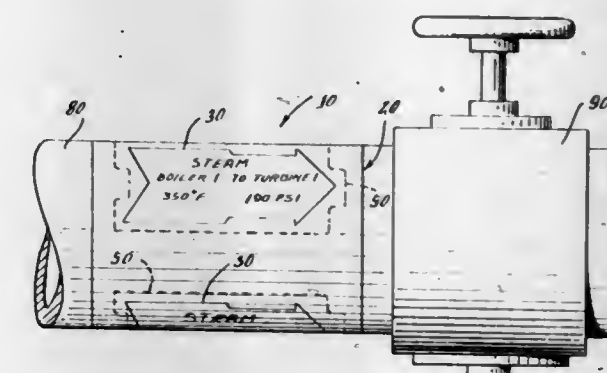
Fenmore R. Seton, North Haven; Mary R. Crespo, Hamden, and Robert F. Rackliff, Stony Creek, all of Conn., assignors to Seton Name Plate Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 235,935, Feb. 19, 1981, abandoned. This application May 13, 1982, Ser. No. 377,834

Int. Cl.³ A44C 3/00

U.S. Cl. 40—2 R

6 Claims



1. A tape system for marking pipes, comprising: a front protective layer having a transparent window area; a pressure sensitive adhesive layer formed on a back side of the protective layer; a release backing releasably deployed against the adhesive layer behind the front protective layer, the release backing having a pre-cut window backing portion generally registered with said transparent window area and a handling portion defined by the remainder of the release backing; said pre-cut window backing portion being removable from the adhesive layer and the handling portion so as to expose a portion of the adhesive layer adjacent the transparent window, while leaving another portion of the adhesive layer covered by the handling portion; and an information card sized to be adhered against the back of the transparent window area within the area which is exposed by the removal of the pre-cut window backing.

4,430,817 CARD STORAGE APPARATUS

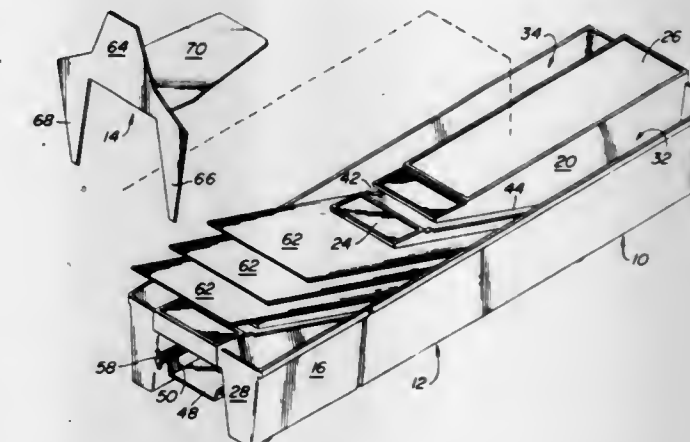
George D. Germain, Westminster, and Donald M. Luby, Weston, both of Mass., assignors to Simplex Time Recorder Co., Gardner, Mass.

Filed Oct. 26, 1981, Ser. No. 290,033

Int. Cl.³ G09F 1/10

U.S. Cl. 40—124.2

13 Claims



1. Card storage apparatus comprising a card rack having at least one trough extending longitudinally along the rack, said card rack having a plurality of slots transversely disposed with each slot aligned with an inclined channel adapted to receive a card, each channel communicating with said trough so that a card can be inserted into the trough and held in the channel.

portion of each card can be exposed in the trough, and a separable card stripper for stripping cards from said channels through their associated slots, said card stripper having a handle portion for manipulating the stripper and a stripping portion receivable in said trough for contacting the exposed portions of said cards, whereby said stripper can extract the cards into a stack as it is moved along the trough, and a removable card stop supportable by the card rack for providing multiple card depth positions within said channels.

4,430,818

ELECTRONIC MOBILE

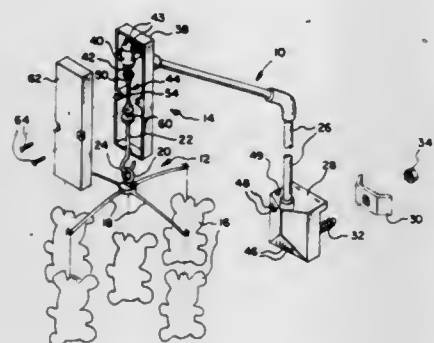
Kenneth N. Marcus, Tipp City, Ohio, assignor to The Dolly Toy Company, Tipp City, Ohio

Filed Apr. 19, 1982, Ser. No. 369,452

Int. Cl.³ G09F 19/00

U.S. Cl. 40-429

8 Claims



1. A device for storing and delivering rotational energy, for use in combination with a source of rotational energy including a motor having a shaft and adapted for actuation for a predetermined period at predetermined intervals, and an object to be rotated, the device comprising:

at least one multi-filament non-braided cord, each said cord operatively connected at a first end thereof to said rotational energy source, whereby said cords are wound by and in response to actuation of said energy source; each said cord further being operatively connected at a second end thereof to said object to be rotated, whereby said object is urged to rotate following deactivation of said energy source; and

first and second cap members, said first cap member being detachably connected to said shaft of said motor, said second cap member being detachably connected to said object to be rotated, said first and second cap members further having each of said cords connected therebetween.

4,430,819

DISPLAY SIGN ASSEMBLY

Vernon P. Chandler, 1403 Braewood, Duncanville, Tex. 75137

Filed Nov. 12, 1981, Ser. No. 320,419

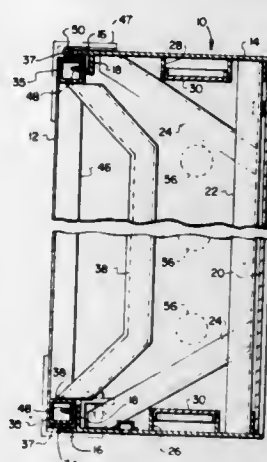
Int. Cl.³ G09F 13/04

U.S. Cl. 40-564

11 Claims

4. A display sign having a sign face comprising a sheet of relatively thin flexible material having a surface with visible indicia and adapted to be mounted on a frame under tension; said sign including a main frame, and a face frame removably supported on said main frame, said face frame comprising a continuous perimeter member for supporting said sheet across a space delimited by opposed portions of said perimeter member, said perimeter member comprising a tubular member of substantially rectangular cross-section including a first surface for supporting said sheet substantially coplanar with said surface with visible indicia, a second surface supporting said sheet and not coplanar with said first surface, a plurality of spaced apart tapping type threaded fasteners engaged with said perimeter member for fastening said sheet to said second surface under a preselected tension; means for detachably securing said perimeter member to said main frame, and at least one brace

member connected to opposed longitudinal portions of said perimeter member at opposite ends of said brace member, respectively, said brace member spanning said space delimited



by said perimeter member in such a way that a major portion of said brace member stands off from the plane of said sheet to minimize perceived shadow on the surface of said face.

4,430,820

EJECTED CARTRIDGE CASE RECEIVER

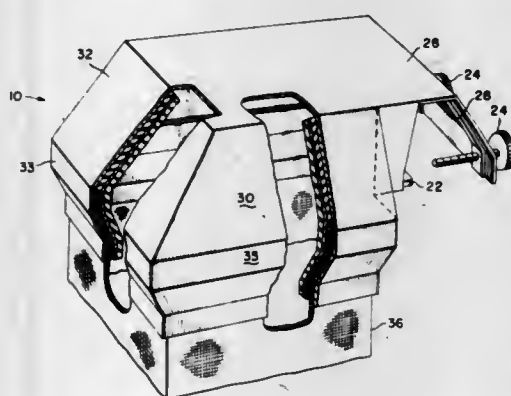
Cecil D. Marsh, 913 N. Benson Ave., Upland, Calif. 91786

Filed Jan. 8, 1982, Ser. No. 338,029

Int. Cl.³ F41C 27/00

U.S. Cl. 42-1 T

18 Claims



1. Apparatus for collecting cartridge cases ejected from an associated firearm, including an action and an elongated barrel having a geometric axis, which comprises:

a container having at least first and second elongated flanges disposed in mutually perpendicular relationship with the first flange disposed in substantially perpendicular relationship to the geometric axis of the barrel;

a deflection surface for deflecting ejected cartridge cases, said deflection surface having at least a first part which is generally planar and which is disposed in oblique relationship to said first elongated flange, said deflection surface being a lamination, and

means for removably securing said container to the associated firearm adjacent to the action thereof.

4,430,821

AMMUNITION CLIP

William A. Vincent, 6779 E. Cave Creek, Cave Creek, Ariz. 85331

Filed Jul. 2, 1981, Ser. No. 279,866

Int. Cl.³ F41C 25/02

U.S. Cl. 42-50

2 Claims

1. An improved ammunition clip of the type wherein an elongated chamber formed by side walls and an end wall

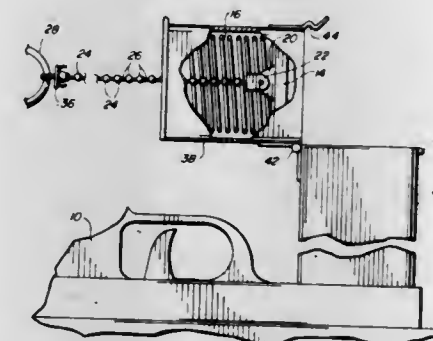
houses a pressure plate which is forced by a spring against cartridges stacked within said chamber so as to move cartridges remaining in said clip toward a first end thereof opposite said end wall each time a cartridge is extracted from said first end, the improvement comprising:

first means coupled to said pressure plate and passing through said end wall for manually retracting said pressure plate against the force of said spring; and second means in said end wall for locking said first means and restraining said pressure plate in a retracted position to permit easy loading of cartridges into said clip through said first end;

said first means comprises:

a chain coupled to said pressure plate and consisting of alternating sections of larger and smaller dimensions; and

a pull ring coupled to an end of said chain outside said chamber;



said second means comprises:

an aperture in said end wall of sufficient size to permit passage of the sections of said chain larger dimension; and

a slot in said end wall and contiguous with said aperture, said slot having a width which is larger than said smaller dimension but narrower than said larger dimension, said pressure plate being restrained by placing one of said alternating sections of smaller dimension in said slot; and

said chamber comprises first and second sections hingedly coupled together at a point intermediate said end wall and said first end such that said pressure plate may be retracted and restrained at a location between said end wall and the point where said first and second sections are coupled together to permit the loading of said clip while mounted in a weapon.

4,430,822

FIREARM, PARTICULARLY A RIFLE

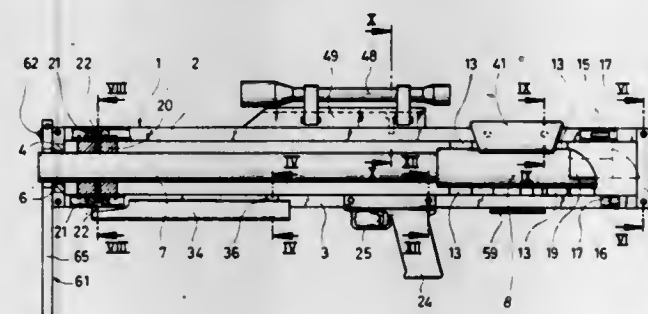
Hans Fromming, Herrsching, and Otto Repa, Oberndorf, both of Fed. Rep. of Germany, assignors to Carl Walther GmbH, Ulm, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,412

Int. Cl.³ F41C 7/00, 23/00

U.S. Cl. 42-71 R

19 Claims



1. In a firearm, particularly a rifle a frame comprising a pair of substantially parallel rods normally disposed in vertically

spaced relationship to define an upper rod and a lower rod and means for firmly connecting said rods together, said rods each have a front end and a rear end, a shoulder support detachably connected to the rear ends of said rods, a breech assembly fastened between said rods adjacent the rearward end of said frame such that when a breech lock mechanism of the assembly is fully opened the mechanism is positioned immediately in front of said shoulder support, and a barrel between said upper and lower rods and attached to said breech assembly, longitudinally adjustable means on said frame for controlling oscillation of the barrel during firing, said rod connecting means comprises a substantially vertical first crosspiece connecting said front ends of said rods, said first crosspiece having an opening therein and said barrel extending through said opening without contact with said first crosspiece and a second crosspiece connecting the rear ends of said rods.

4,430,823

FISHING LINE RETENTION DEVICE

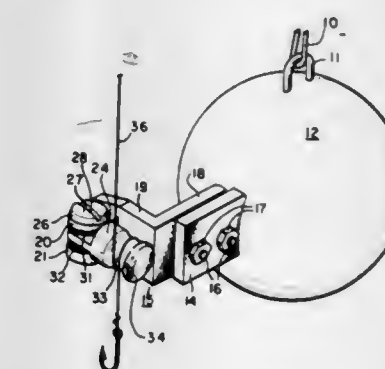
Walter J. Henze, Norristown, and William A. Purcell, Philadelphia, both of Pa., assignors to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.

Filed Mar. 12, 1982, Ser. No. 357,698

Int. Cl.³ A01K 91/00

U.S. Cl. 43-43.12

7 Claims



1. A fishing line retention device for attachment to a weight of a trolling apparatus and for attachment to a fishing line which comprises

a bracket secured to said weight, a body portion pivotably mounted by a pivot pin on said bracket for movement in a horizontal plane from a transverse position to a rearward position, the pivot pin being engaged with portions of the body portion and the bracket and having a threaded portion in engagement with the bracket, spring washers on said pivot pin engaging a part of the body portion and said bracket, said bracket being an angular bracket with two arm portions, and said body portion having a spool carried thereby for engagement by the fishing line and for release of the fishing line in the rearward position.

4,430,824

COMPOSITE-PICTURE FORMING PLAY KIT

Shuzo Yamamoto, c/o Yasuyuki Yamamoto, 120 Ohaota, Kashiwashi, Chiba, Japan

Filed Jan. 7, 1982, Ser. No. 337,571

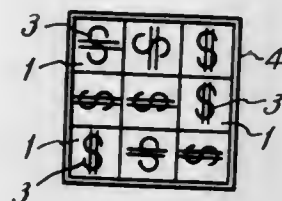
Int. Cl.³ A63H 33/00

U.S. Cl. 46-16

4 Claims

1. A composite-picture forming play kit of the type including a first set of block pieces formed of an optically transparent material and a second set of block pieces; said block pieces in each of the first and second sets of block pieces carrying thereon respective figures such as letters, symbols or the like pattern; an open-top case adapted to accommodate the first and second sets of block pieces both in a regular two-dimensional

array in such a manner that each of the block pieces in the first set lies within said case on and in registry with one of the block pieces in the second set so that a set of composite pictures are formed by the figures carried by said pair of block pieces overlying on each other, with said composite picture being visible as viewed from the first block piece set side and each



changeable by changing the angular position of said two block pieces relative to each other; and a partitioning plate of opaque material slidably insertable into the case from one side thereof to separate the first set of block pieces from the second set of block pieces, wherein the case is formed in at least one of two opposing side walls thereof with a horizontally extending guide slot to guidingly receive said partitioning plate.

4,430,825

EDUCATIONAL TOY USING NUMERICAL FIGURES TO FORM A HUMAN HEAD

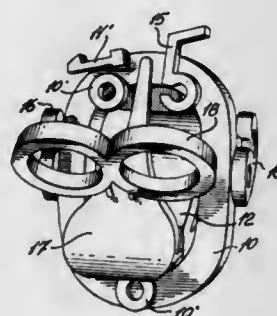
Michel Leboeuf, 24, 3rd Ave., East, La Sarre, Province of Quebec, Canada J0Z 2M0

Filed Jun. 8, 1981, Ser. No. 271,632

Int. Cl.³ A63H 33/00

U.S. Cl. 46-22

1 Claim



1. An educational toy comprising a plurality of different numerical figures, each one having a three-dimensional body defining surfaces at right angles to each other, at least one complete set of said numerical figures presenting the ten different arabic numerals, from 0 to 9 inclusively, the zero and the one being made in both a larger size and a smaller size, the two, the three, the four, the seven, and the eight are made only in said larger size, and the five, the six, and the nine are made only in said smaller size; said numerical figures including a zero of larger size forming the outline of a face, a zero of smaller size representing an eye or a mouth, a two representing the back of the head and connected at right angles to the zero of larger size, a one of larger size, a four and a seven interchangeably connected at right angles to said zero of larger size and each representing a nose, a one of smaller size representing an eyebrow, a three representing a mustache, a five representing an eye, a six representing an ear, an eight representing eye-glasses and a nine representing an ear; each said numerical figure being provided with interconnection means for detachably and interchangeably connecting said figures together, some of said interconnection means being located on at least two of said surfaces of said bodies for interconnecting said bodies at right angles to each other, whereby said numerical figures can be interconnected in different ways to represent a three-dimensional human head having different facial expressions, suggestive of different human emotions.

4,430,826 CONNECTING DEVICE FOR ADJUSTABLY AND DETACHABLY INTERCONNECTING A PLURALITY OF ELONGATED BUILDING COMPONENTS

Jan Ryaa, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland

Filed Nov. 23, 1981, Ser. No. 324,088

Claims priority, application Denmark, Nov. 25, 1980, 5010/80

Int. Cl.³ A63H 33/10; F16B 7/10

U.S. Cl. 46-29

10 Claims



1. A connecting device for adjustably and detachably interconnecting pairs of elongated building components in a toy building set and including a pair of connectors, each of which comprises a first tubular member, the primary sleeve, adapted to receive said components at respective ends having a substantially cylindrical external surface and a pair of annular end faces, one of said end faces being provided with a plurality of axially extended projections for engagement with complementary projections on an adjacent connector, and a second tubular member, the secondary sleeve, adapted to receive said components at respective ends, disposed at a right angle relatively to the primary sleeve and having a pair of end faces, one of said end faces being integral with the cylindrical surface of the primary sleeve and means for clamping said connectors in said relationship.

4,430,827

PICK-UP VEHICLE

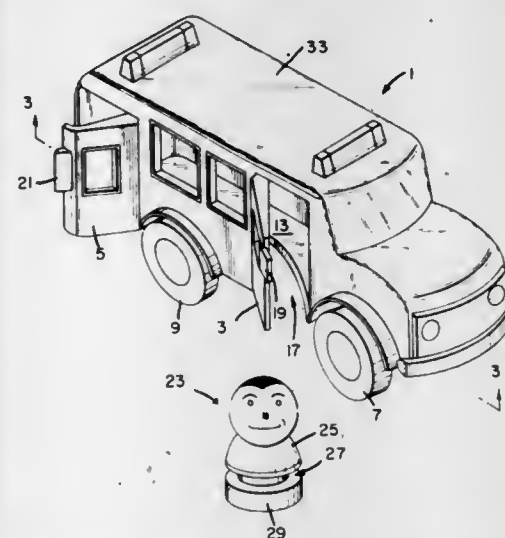
Francis X. Rice, 212 Valley Rd., River Edge, N.J. 07661, and Andrey V. Mackey, 42 Lawrence La., Ambler, Pa. 19002

Filed Aug. 30, 1982, Ser. No. 413,244

Int. Cl.³ A63H 11/10

U.S. Cl. 46-202

18 Claims



1. A toy vehicle which comprises:

- a housing including a planar floor portion, forming an external surface thereof,
- support means secured to said housing and depending below said floor portion,
- a pair of openings each disposed in an outer surface of said housing which have a major component of one axis thereof substantially normal to said floor and spaced from each other,

- a continuous slot formed in said floor and extending between said two openings, and
- object means responsive to movement of said vehicle in a predetermined direction parallel to the plane of said floor portion for movement along said slot.

4,430,828

PLANT ORIENTED CONTROL SYSTEM

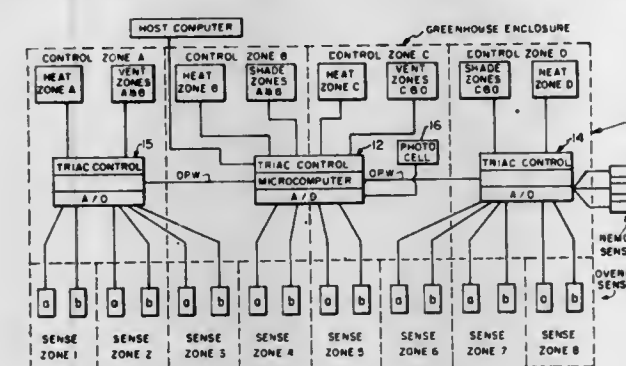
James R. Oglevee, and Kirk A. Oglevee, both of Connellsville, Pa., assignors to Oglevee Computer Systems, Connellsville, Pa.

Filed Mar. 8, 1983, Ser. No. 472,889

Int. Cl.³ B01F 3/02; A01G 9/00

U.S. Cl. 47-17

7 Claims



1. A system for controlling environmental conditions in greenhouses having a plurality of crop beds within one greenhouse enclosure arranged into a plurality of sense zones and a plurality of control zones comprising:

- a plurality of sensors stationed over crop beds within each sense zone comprising an aspirated enclosure and means therein for generating analog electrical signals indicative of wet bulb and dry bulb temperatures and also means for generating an analog electrical signal indicative of incident light over the bed;
- a microcomputer located within the greenhouse comprising:
 - a central processing unit with associated scratch memory and program memory sections;
 - an analog to digital input section for receiving the analog electrical signals from the sensors;
 - an output section for converting computer logic signals to electrical signals at power levels to operate electromechanical apparatus; and
 - serial digital pathway means for connecting the central processing unit, input section and output section;
- said program memory programmed with:
 - a task for inputting digital data from the input section indicative of wet bulb and dry bulb temperatures and for calculating the moisture content of the atmosphere over each bed and for inputting digital data from the input section indicative of light intensity;
 - a task for selecting temperature and moisture command levels based upon the intensity of incident light and comparing the input temperature and moisture content with said selected command levels for each sense zone; and
 - a task which in response to said comparison generates commands to the output section capable of initiating therethrough electromechanical action associated with each control zone to move the temperature and moisture content for each sense zone toward the selected command levels.

4,430,829

MOISTURE CONTROL APPARATUS

Bernard Zeltner, Aix en Provence, and Gaston Marmonnier, Marseille, both of France, assignors to Manufacture Provencale de Matieres Plastiques, Marseille, France

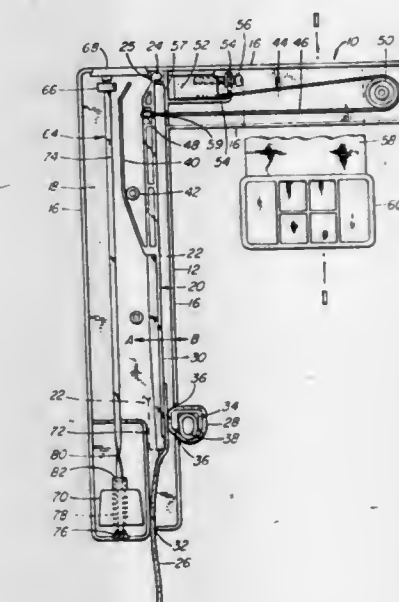
Filed Jan. 22, 1982, Ser. No. 341,887

Claims priority, application France, Apr. 3, 1981, 81 06906

Int. Cl.³ A01G 9/02

U.S. Cl. 47-81

22 Claims



1. Apparatus for controlling moisture content in soil in a plant container comprising:

- a housing having a lower region defining a first opening and a side defining a second opening located upwardly from the first opening;
- moisture feed and feed interruption device comprising a lever pivotally mounted at a pivotal position within the housing and depending from the pivotal position towards the lower region to enable a first water absorbent fabric carried by the lever to extend through the first opening and project from the housing, the lever being pivotally movable to move part of the first fabric into and out of contact with a second water absorbent fabric to transfer water from the first fabric to the second fabric and through the second opening to the outside of the housing, the lever having a biasing means to pivotally urge the lever in one direction to move the first fabric out of contact with the second fabric; and
- moisture detection and moisture control means comprising:
 - a moisture-responsive, stretchable and shrinkable material which stretches when in contact with moisture and shrinks during drying, the material contained within the housing and extending between one location at which it is anchored and another location at which it coacts with the lever to pivot the lever in the other direction and against the urgency of the biasing means and thus move the first fabric into contact with the second fabric as the material shrinks;
 - a moisture-transfer absorbent fabric having a first part open to the interior of the housing in the vicinity of the material and a second part depending from said first part and from the housing, to transfer moisture upwardly to said first part and into the housing in the vicinity of the material.

4,430,830

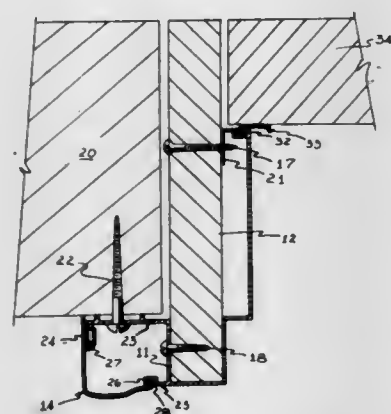
DOOR OR WINDOW JAMB ASSEMBLY

Vernon R. Sailor, Elkhart, Ind., assignor to Sailor Manufacturing Company, Elkhart, Ind.
Continuation-in-part of Ser. No. 171,731, Jul. 24, 1980, Pat. No. 4,330,972. This application Jul. 20, 1981, Ser. No. 284,557
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ E06B 1/04

U.S. Cl. 52—211

7 Claims



1. A preconstructed frame assembly adapted for insertion into a door or window opening defined by an outlining wall structure, said frame assembly comprising an outer frame having spaced margins and including a U-shaped part at one of said frame margins, said U-shaped part terminating in an out-turned wall, a wooden inner frame member, one edge of said inner frame member fitting into said outer frame U-shaped part with said out-turned wall of the outer frame being located to project outwardly from the inner frame member, said inner frame member extending generally coextensively with said outer frame member between said frame margins, said frame member out-turned wall and inner frame member adapted to overlaid spaced portions of said wall structure defining said opening when said frame assembly is inserted into said opening, said frame member out-turned wall constituting means for receiving fasteners anchored into said wall structure at said opening, a cover strip coextensive with said outer frame, means for connecting said cover strip to said outer frame over said out-turned wall of said outer frame to cover said fasteners when anchored into said wall structure.

4,430,831

WINDOW BUCK AND FRAME

Melvin T. Kemp, Layton, Utah, assignor to Bowman & Kemp Steel & Supply, Inc., Ogden, Utah
Filed May 14, 1982, Ser. No. 378,053

Int. Cl.³ E06B 1/04

U.S. Cl. 52—211

12 Claims

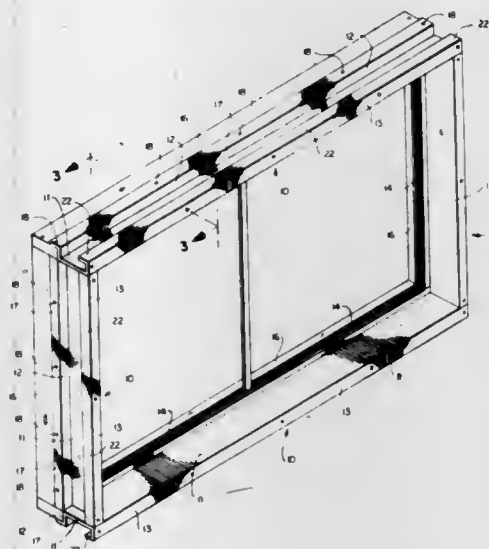
1. A nonbracing, self-framing window buck and frame for forming a framed window opening in a cast concrete wall or the like, said window buck and frame comprising

four elongate, rigid channel members, each of said channel members comprising a substantially flat base, with first and second legs extending from mutually respective longitudinal side edges of said base, so that said channel members have a substantially U-shaped cross section, said channel members further being attached together in substantially end-to-end arrangement to form the periphery of a framework circumscribing a substantially rectangular opening, with the flat base of said channel members facing said opening and with the legs of said channel members extending outwardly from said opening;

a window frame adapted to fit within said opening, said window frame having a peripheral mounting flange which is adapted to abut the outside face of mutually respective flat legs of said channel members at one side of said framework;

four elongate members attached together in substantially

end-to-end arrangement to form a substantially rectangular, frame structure, said frame structure being adapted to abut, along one of its rectangular, side edge faces, the peripheral mounting flange of said window frame; and means for firmly connecting said first legs of said channel



members at least at spaced intervals therealong, to said frame structure, such that said frame structure and said framework are in substantial registry with each other, with said peripheral mounting flange on said window frame held securely between said frame structure and said framework.

4,430,832

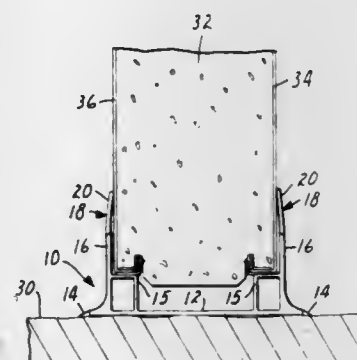
FLOOR SEALING GASKET

Kenneth L. Kaiser, and William C. Shirley, both of Hudson, Wis., assignors to Nor-Lake Incorporated, Hudson, Wis.
Filed Sep. 25, 1981, Ser. No. 305,457

Int. Cl.³ E04F 19/04

U.S. Cl. 52—238.1

6 Claims



1. A floor sealing gasket comprising an elongate strip having a base whose bottom surface is generally flat, wherein a flexible downwardly projecting tip extends along at least one edge of said bottom surface, said strip being conformable to surface irregularities of said floor, wherein generally parallel arms extend upwardly from each side of said base along the length thereof, wherein the upper portion of each arm includes a flexible wing which is biased inwardly, wherein said parallel arms are adapted to engage the outer major surfaces of a wall panel, wherein internal shoulders are disposed within said gasket, one of said shoulders being disposed adjacent one of said arms and the other of said shoulders being disposed adjacent the other of said arms, wherein said internal shoulders are adapted to support the bottom edge of said wall panel.

4,430,833

WALL PROTECTION ASSEMBLY

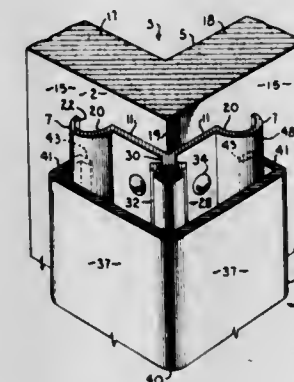
Claude P. Balzer, and Edward M. Corman, both of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.

Filed Apr. 13, 1981, Ser. No. 253,867

Int. Cl.³ E04F 13/06, 19/02

U.S. Cl. 52—255

7 Claims



1. A corner protection assembly secured to a corner area of a wall structure comprising surfaces of two non-planar wall members intersecting at an angle for protecting the corner from damage resulting from impacts thereto when said assembly is operationally positioned over said corner; said assembly comprising:

(a) a semi-resilient cover member having opposite ends and an apex spaced from and between said cover member ends; said cover member apex being positioned so as to align with the corner when the assembly is operationally positioned so as to be secured to the corner area of the wall structure and such that said apex is generally aligned with a plane bisecting the angle of the intersecting walls when the assembly is operationally positioned; each of said ends being adapted to be connected to one of said wall members at a location spaced from the corner; said cover member overlying the corner area when operationally positioned;

(b) spacing means generally extending between said corner and said cover member in the region of said cover member apex so as to retain said cover member in spaced apart relation with respect to the corner when said cover member is operationally positioned; and

(c) resilient stop means retainingly positioned between said cover member and the corner area allowing partial deformation of said cover member inwardly to cushion impacts thereto and cooperating with said spacing means to urge said cover member in spaced apart relation with respect to said corner.

4,430,834

BUILDING CONSTRUCTION SYSTEM

Eberhard G. Rensch, 1, Sentier des Roses, CH - 1820 Montreux, Switzerland

Filed May 20, 1981, Ser. No. 265,586

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020048; Apr. 29, 1981, 3116993

Int. Cl.³ E04B 5/00

U.S. Cl. 52—281

8 Claims

1. A building construction assembly comprising; a plurality of vertical posts having flat integral and laterally projecting mounting flanges;

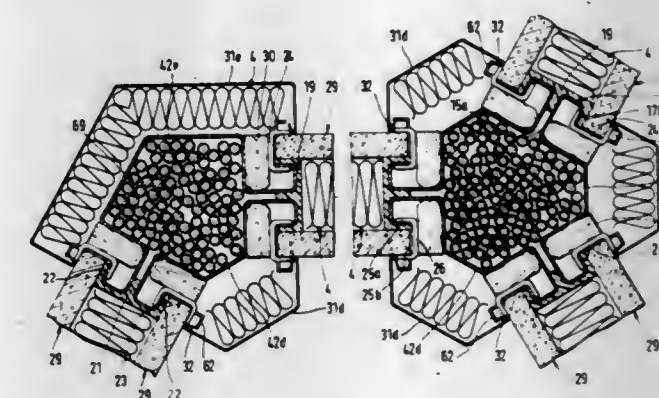
a plurality of horizontal members having integral and laterally projecting mounting flanges, a plurality of said flanges lying generally in a plane and annularly bounding an opening, the posts and members being of polygonal section and each being formed of a plurality of profile-section shell elements each having two such flanges, each post and member having a plurality of generally planar faces, the flanges each projecting perpendicularly from a respective face;

an inner lip extending generally parallel to the respective

face from each of the flanges, each lip having an outer edge;

an outer lip extending substantially perpendicular to the respective face from the respective outer edge toward the respective element, the lips being integral with the respective shell elements;

at least one wall panel in said opening and having an outer



edge lying against the outer lips of said flanges defining said opening; and

a plurality of clips each having one arm engaging and bearing in one direction perpendicular to said plane on said panel and another arm engaging and bearing in the opposite direction on the outer lips of said flanges defining said opening, whereby said clips secure said wall panel to said members and posts.

4,430,835

ELEVATOR CAB

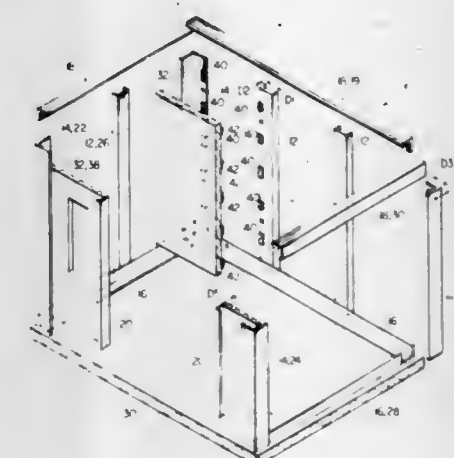
Richard J. Ericson, Southington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 20, 1981, Ser. No. 294,600

Int. Cl.³ E04B 1/00

U.S. Cl. 52—282

3 Claims



1. An elevator cab comprising:

a frame comprising vertical supports and horizontal supports interconnected together, the vertical supports defining the cab walls, the horizontal supports defining the cab floor and ceiling, and characterized by: panels attached to the frame and comprising expanded core plastic material,

first fastener assemblies located at vertically spaced-apart points between each panel and a vertical support for holding the panels in position on the support, each first fastener assembly comprising hook-like fasteners having two joinable sections, one attached to the panel, the other to the vertical support, and

second fastener assemblies disposed between vertically adjacent first fastener assemblies, for holding the joinable sections in compression, each second fastener assembly

comprising a nut embedded in the panel and a bolt that extends through the vertical support into the nut, said vertical supports comprising channel supports which are U-shaped and L-shaped supports, the L-shaped supports defining the corners of the cab wall, the channel supports being disposed between said L-shaped supports for defining a cab wall frame between said corners and there being at least two such channel supports for the wall opposite the cab entrance and one channel support between adjacent panels on the same cab wall, said channel support having its widest solid surface facing inward to the cab interior, to which surface said first fastener assembly is attached and through which said bolt extends, and its open end facing the elevator hoistway walls, each channel support having a flat width ratio of 60 or less, wherein the flat width ratio is equal to the support width over the support thickness, and said horizontal supports including L-shaped supports which are attached to each vertical support.

4,430,836

FRAME ASSEMBLY FOR DOOR LIGHT

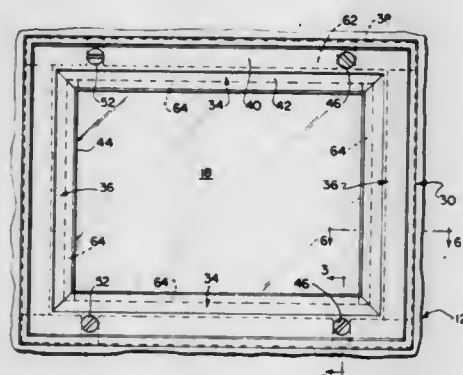
H. Smith McKann, Fredericksburg, Va., assignor to General Products Co., Inc., Fredericksburg, Va.

Filed Jun. 18, 1982, Ser. No. 389,887

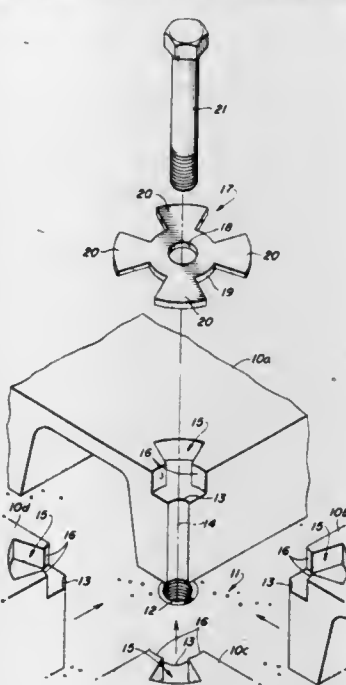
Int. Cl.³ E04F 19/06; E04B 1/62

U.S. Cl. 52—455

16 Claims



(15) being formed to increase in width along said radius, that each of said corner portions (10a, etc.) is further grooved parallel to said common axis (14) to present a cylindrical bore coaxial with said common axis, and in a key washer member (22) having a plurality of dovetailed tabs formed to fit, respectively, said recesses (15) of said plurality of corner portions (10a, etc.) and a cylindrical stem (23) extending centrally from said member (22) dimensioned to fit said cylindrical bore.

4,430,838
PANEL JOINTS

Gurdip S. Bains, Bonneville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

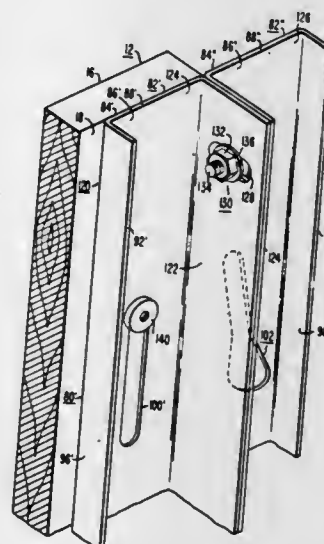
Division of Ser. No. 175,974, Aug. 7, 1980, Pat. No. 4,363,201.

This application Aug. 27, 1982, Ser. No. 412,367

Int. Cl.³ E04B 1/40

U.S. Cl. 52—584

3 Claims



1. A panel joint for quickly assembling, and disassembling, two upstanding, in-line non-metallic panel members while aligning front surfaces thereof in a common plane, notwithstanding different thickness dimensions, via a vertical motion

4,430,837

FASTENING ARRANGEMENT FOR ABUTTING STRUCTURAL MEMBERS

Bernard Kirschenbaum, Denver, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,382

Int. Cl.³ E04B 1/38; E01C 5/00

U.S. Cl. 52—506

11 Claims

1. A fastening arrangement for joining a plurality of structural floor section members having contiguous top bearing surfaces at corner portions (10a, 10b, 10c, 10d) thereof, and

of a joining member concealed on the rear surfaces, comprising:

first and second adjoining, upstanding wall panel members having front and rear surfaces, and adjacent edges, with said adjacent edges in contact with one another, a plurality of spacer members having head and shank portions fixed in vertically spaced relation to the rear surfaces of said first and second wall panel members, along their adjacent edges,

and an elongated joining member having first and second joint elements each having first and second leg portions disposed at right angles to one another to define longitudinally extending corner portions,

each of said first leg portions of said first and second elements having a plurality of spaced elongated slots, with the slots in said first element including sides parallel with its longitudinally extending corner, and with the slots in said second element including sides which are parallel with one another but inclined relative to its longitudinally extending corner,

said first and second elements being in contact with said first and second wall panel members, respectively, with the spacer members on said first wall panel member captured by the slots in the first element, and the spacer members on said second wall panel member captured by the slots in the second element,

said second leg portions of the first and second joint elements including openings therein, with the openings in at least one of the second leg portions of the first and second joint elements being elongated in a direction selected to provide the adjustment of one wall panel member relative to the other, to orient their front surfaces in a common plane,

said second leg portions of the first and second joint elements having flat side surfaces facing the other wall panel member,

said first and second joint elements being positioned relative to one another to align the front surfaces of the first and second wall panel members in a common plane, with the flat surfaces of the second leg portions being in surface-to-surface contact, and with the openings in one of the second leg portions being aligned with openings in the other second leg portion,

and clamping means releasably clamping the second leg portions of said first and second joint elements together to maintain the selected relative positions thereof,

said clamping means including fastener means comprising a plurality of vertically spaced nut and bolt combinations which couple the contacting second leg portions via said aligned openings,

said joining member being in a downwardly displaced frictionally locked position, with the inclined slots in the second joint element forcing the associated spacer members on the second wall panel member towards the first wall panel, to urge the adjoining edges of the first and second wall panel members tightly together, said joining member being releasable from said locked position by an upward force applied thereto.

4,430,839

SCAFFOLD FRAME

Gunter Butters, New South Wales, Australia, assignor to W. R. Carpenter and Co. Ltd., Manly Vale, Australia

Filed Jan. 21, 1982, Ser. No. 341,370

Claims priority, application Australia, Jan. 23, 1981, PE7350

Int. Cl.³ E04G 1/14

U.S. Cl. 52—696

1 Claim

1. A walk-through scaffolding frame comprising, a first frame component having at least one horizontal cross member connecting to vertical members; two separate second frame components each having first and second upright tubular members which are fixed together by spaced cross bars so that the upper end of each said first member terminates above said second member, while the lower end of said second member termi-

nates below said first member, wherein the lower ends of the vertical members of the first frame component and the upper ends of the second upright members are provided with co-operating male and female couplings enabling telescopic engagement thereof so that each vertical member is engaged with



the upper end of a corresponding second upright tubular member, and the upper end of each first tubular member is provided with a coupling member of C-shaped configuration to engagingly encompass said cross member so as to prevent vertical relative movement therebetween.

4,430,840

FOAM, COMPOSITION AND METHOD USEFUL FOR RETROFIT INSULATION

Nelson Malwitz, Brookfield, Conn., assignor to Sealed Air Corporation, Fairlawn, N.J.

Division of Ser. No. 391,007, Jun. 23, 1982, Pat. No. 4,401,769.

This application Mar. 24, 1983, Ser. No. 478,314

Int. Cl.³ E04G 21/00; E04C 1/00

U.S. Cl. 52—743

22 Claims

22. A process for filling a wall cavity with insulation comprising the steps of

opening a hole into said cavity;

adding foam forming reactants to said cavity through said hole in amounts such that the foam produced will at least fill said cavity, said foam forming reactants comprising crude diphenyl methane diisocyanate, a catalytic amount of isocyanurate polymerizing catalyst, water, and methylene chloride, wherein said water and methylene chloride are present in amounts effective to provide a gel time which exceeds the rise time for said foam; and allowing said foam forming reactants to form said foam and to fill said cavity.

4,430,841

METHOD OF FILLING A CRACK IN CONCRETE

Akihiro Yamaguchi, and Masatoshi Ohkura, both of Tokyo, Japan, assignors to Sho-Bond Construction Co., Ltd., Japan

Filed Dec. 11, 1980, Ser. No. 215,633

Claims priority, application Japan, Nov. 20, 1980, 55-164293

Int. Cl.³ E04B 1/00

U.S. Cl. 52—744

2 Claims

1. A method of filling a crack in concrete by supplying a binder under pressure from a binder supply source into the crack, comprising the steps of providing a pressure buffering portion intermediate the binder supply source and the crack for passing the binder from the binder supply source to the crack, the buffering portion having an elastic tube, an end pipe connected to one end of the elastic tube and a flat washer at an end of the end pipe, engaging the washer over and around the crack with the end pipe end over the crack, providing a supply pipe between the supply source and an opposite end portion of the elastic tube with means for connecting the elastic tube and the supply pipe, and providing check valve means for preventing the binder supplied from flowing backwards out of the

elastic tube, buffering the binder supply pressure exerted on the crack by increasing the capacity of the elastic tube, storing



a reserve of the binder in the elastic tube, and supplying the crack with the binder by the continuous reduction and capacity of the elastic tube so that the crack does not increase in size.

4,430,842

PROCESS FOR APPARATUS FOR THE MANUFACTURE AND FILLING OF PACKAGES

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

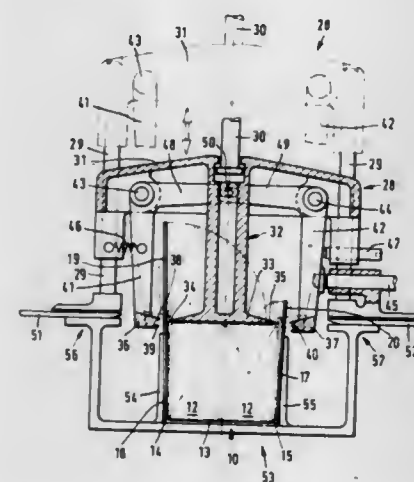
Filed Apr. 3, 1981, Ser. No. 250,791

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014392

Int. Cl.³ B65B 11/10

U.S. Cl. 53—220

6 Claims



1. An apparatus for folding a carton blank (11) around a plurality of individual packs (12), comprising:

- first means for folding a carton blank in a U-shape around a plurality of individual packs arranged thereon to define upstanding opposite side walls (16, 17) extending into cover tabs (19, 20),
- means for vertically compressing the contents of the packs under predetermined pressure to establish the height thereof,
- means for horizontally creasing the upstanding side walls to define folding edges (22, 23) thereon at a height corresponding to the established height of the compressed packs, and
- second means for folding in the cover tabs at said creased edges over the tops of the compressed packs in an overlapping manner, wherein the means for compressing comprises a vertically movable, horizontal sensing plate (33), wherein the creasing means comprises two pairs of vertically spaced embossing edges (38, 39) individually disposed outwardly of the side walls and movable laterally inwardly into creasing engagement therewith, said sensing plate having sharp edges (34, 35) on opposite sides thereof cooperable with said embossing edges to form said folding edges, and wherein said sensing plate adjoins a vertically upstanding ram member (32), wherein said embossing edges are defined on lower ends of crank arms (41, 42)

pivotaly mounted to said ram member, and wherein upper ends of said crank arms are pivotaly joined for simultaneous movement.

4,430,843

MAILING AND DISPLAY PACKAGE

Dennis Favale, 1920 N. Ruby St., Melrose Park, Ill. 60160

Filed Aug. 20, 1981, Ser. No. 294,460

Int. Cl.³ B65B 61/00; B65D 75/38, 65/18

U.S. Cl. 53—410

3 Claims



- The method of packaging an article comprising: forming a blank from paper board or the like stock, dividing the blank into panels by means of a fold line, forming a window in the blank, the window being symmetrically formed on each side of the fold line, applying an adhesive to the blank around the window, covering the window by applying a transparent film material to the adhesive, applying a second coating of adhesive to the blank on the same side of the blank as the transparent film was applied to, forming the two panels into a v-shaped configuration with the fold line at the base of the "v" and edges of the blank forming the ends of the "v", placing the article inside the v-shaped configuration, securing the two panels together around the article with the transparent material forming a display pouch for the article.

4,430,844

METHOD OF AND APPARATUS FOR WRAPPING ARTICLES

Robert C. James, Sheboygan, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Apr. 27, 1981, Ser. No. 257,565

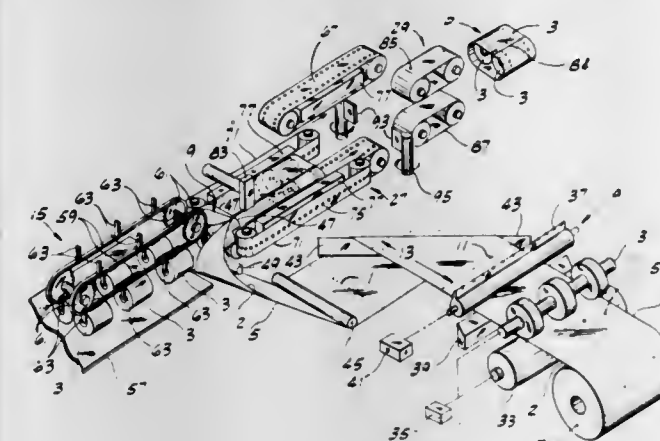
Int. Cl.³ B65B 9/06

U.S. Cl. 53—450

23 Claims

- The method of wrapping units to be wrapped comprising: passing a web of sheet material for wrapping the units from a supply roll through a positively driven web feeding means for positively and continuously feeding the web forward at a predetermined speed; forming lines of weakness in the web extending across the web at wrapper length intervals as it is positively fed forward from the supply roll by said web feeding means; passing the web with the lines of weakness therein to and through a tube forming means and thence between a plurality of endless drive belts; positively delivering units to be wrapped forward one after another at said speed to the tube forming means for being wrapped in the web travelling forward through said means, with the units spaced at intervals corresponding to the wrapper length interval and with spaces between the units; the web in travelling through said means being wrapped

around the units with its margins brought together to form it into a tube around the units, with the units spaced lengthwise of the tube, and with the lines of weakness extending girthwise of the tube at said wrapper length intervals in the spaces between the units; operating said drive belts positively and continuously to take up the web from said web feeding means, to pull it through the tube forming means and to feed the tube with the units enwrapped therein forward between the belts at said speed; said positive feed of the tube with the units enwrapped therein starting as the tube with a unit therein exits from



the tube forming means and before the positive delivery of that unit to the tube forming means is completed, the positive delivery of that unit to the tube forming means being completed before the wrapping of the web around that unit to form the tube is completed; the segments of the tube between the lines of weakness forming a series of wrappers for the units adapted to be separated at the lines of weakness; and pulling the leading wrapper of the series of wrappers with the units therein forward at a higher speed to sever it, with the unit therein, from the tube at the line of weakness between said leading wrapper and the preceding wrapper.

4,430,845

FOLDER FOR POLYFILM

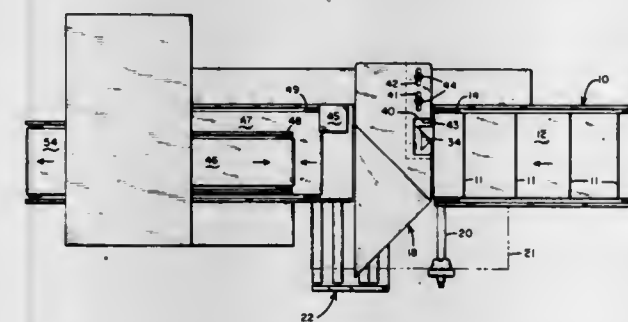
Hans A. Dohrendorf, Menomonie, Wis., assignor to Doboy Packaging Machinery Inc., New Richmond, Wis.

Filed Dec. 24, 1980, Ser. No. 220,260

Int. Cl.³ B65B 9/06

U.S. Cl. 53—550

2 Claims



- A machine for wrapping products in heat sealable thermoplastic film, comprising:
 - an infeed conveyor for moving products at a given spacing to a film forming station;
 - a film supply for providing an unfolded web of thermoplastic film of a predetermined width to said film forming station;
 - a generally rectangular sheet of rigid material having an isosceles right triangle integrally formed therewith, one leg of said isosceles right triangle being an extension of one side edge of said rectangular sheet and the other leg of

said isosceles right triangle being integrally joined to the edge of said rectangular sheet adjacent to said one side edge, said rectangular sheet being folded diagonally from the point of intersection of the hypotenuse of said right triangle with said adjacent edge and the intersection of said one side edge and the edge of said rectangular sheet parallel to said adjacent edge of said rectangular sheet; (d) said rectangular sheet having a notch in the form of an isosceles right triangle, one leg of said triangular notch extending inwardly from said adjacent edge of said rectangle a predetermined spaced distance from said intersection of said hypotenuse with said adjacent edge; (e) a triangular projection folded parallel to the surface of said rectangular sheet and integrally joined along one edge to the hypotenuse of said right triangular notch for converting said unfolded web of thermoplastic film into a continuous folded web defining a generally flat tube enveloping the products exiting from said infeed conveyor with one major surface of said flat tube having one side edge thereof folded inwardly towards the products and the edge of the other major surface of said flat tube overlapping said inwardly folded portion of said one surface; (f) side sealing means; and (g) means for moving said flat tube exiting from said film forming means past said side sealing means such that a substantially continuous seal is formed between said inwardly folded portion of said one major surface and the overlapping portion of said other major surface.

4,430,846

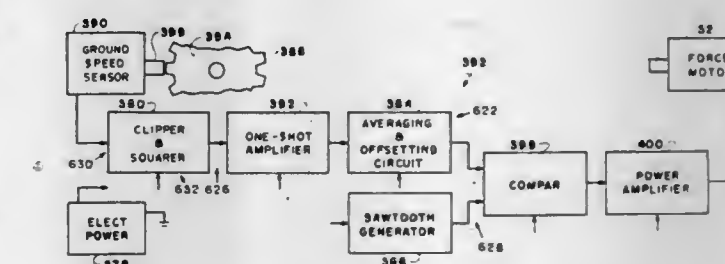
ELECTROHYDRAULIC DRIVE AND CONTROL
Glen T. Presley, Angola, Ind., and Lloyd L. Lautzenhiser, Ridgecrest, Calif., assignors to Electro-Hydraulic Controls, Inc., Angola, Ind.

Filed Jan. 15, 1982, Ser. No. 339,483

Int. Cl.³ A01D 69/00

U.S. Cl. 56—10.2

19 Claims



- In an agricultural harvesting machine (350) of the type that operates between minimum and maximum ground speeds, that includes a crop-transporting mechanism (358), and that includes means for driving said crop-transporting mechanism at variable crop-transporting velocities, the improvement in which said driving means comprises:
 - a source of pressurized fluid (374);
 - a fluid motor (38) having a rotary output shaft (370) that is operatively connected to said crop-transporting mechanism;
 - electrohydraulic valve means (36), comprising a hydraulic valve (376) that is connected to said source of pressurized fluid and to said fluid motor, and comprising an electrical force-motor (52) that is operatively connected to said hydraulic valve and that includes force-motor coil means (296) for energizing said force-motor, for supplying pressurized fluid from said source of pressurized fluid to said fluid motor;
 - a source of electrical power (378);
 - ground-speed sensor means (380) for producing an electrical input signal that is a function of said ground speeds; and
 - electronic control means (382), being connected to said ground-speed sensor means, to said source of electrical power, and to said force-motor coil means, for applying an effective driving voltage to said force-motor coil means

that is a function of said input signal, and for cooperating with said electrohydraulic valve means to supply pressurized fluid from said source to said fluid motor at fluid flow rates that drive said crop-transporting mechanism at crop-transporting velocities which are greater than said ground speeds for all ground speeds from zero to a maximum harvesting speed, and at ratios of crop-transporting velocity to ground speed which decrease as said ground speed increases from zero to said maximum harvesting speed.

4,430,847

COMBINE FEED REVERSER

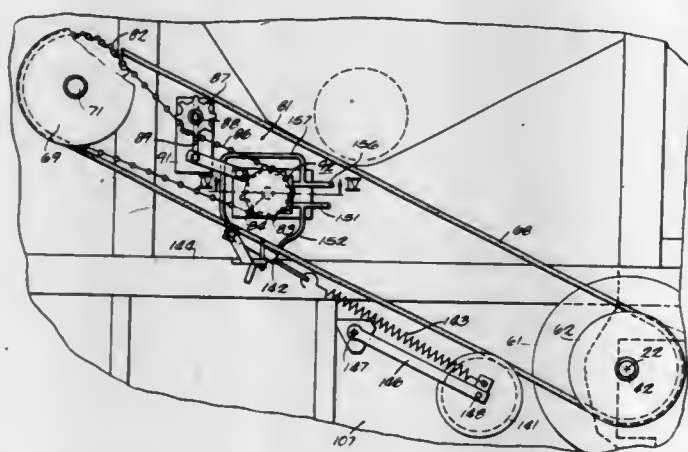
Wayne M. Tourdot, Blue Springs, and Larry A. Matthes, Independence, both of Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 23, 1982, Ser. No. 401,336

Int. Cl.³ A01D 69/00

U.S. Cl. 56—10.7

11 Claims



5. In a mobile harvester having a header including a conveyor mechanism, a crop processor, a feeder including a conveyor mechanism for moving crop material from the header to the crop processor, an engine, a power train connecting the engine to the conveyor mechanisms to drive the latter in a crop feeding direction, including a feeder clutch, the combination comprising,

a feed reverser mechanism operable to drive said conveyor mechanisms in reverse independently of power transmission through said power train, said feed reversing mechanism having drive means operable to drive said conveyor mechanisms in reverse, including a hydraulic motor having an output shaft,

a one-way clutch operatively interconnecting said output shaft and said conveyor mechanisms whereby the latter are driven in reverse when said hydraulic motor is operated, said one-way clutch serving to disconnect said hydraulic motor from said conveyor mechanisms when the latter are driven in said crop feeding direction by said power train, and

control means for selectively operating said hydraulic motor including control logic insuring disengagement of said feeder clutch when said hydraulic motor is operated.

4,430,848

DOUBLE ACTION MANUAL CONTROL FOR WALK-BEHIND MOWER

Wayne M. Wistrom, McDonough, Ga., assignor to McDonough Power Equipment, Division of Fuqua Industries, Inc., McDonough, Ga.

Filed Sep. 28, 1981, Ser. No. 305,975

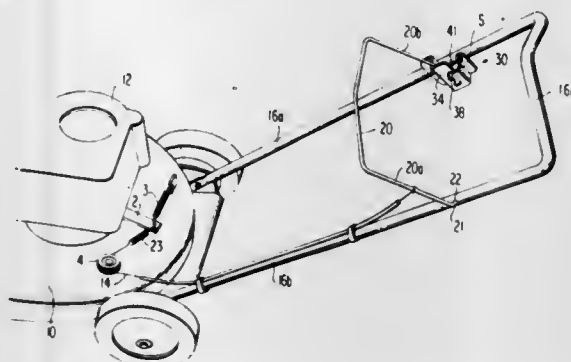
Int. Cl.³ A01D 69/10

U.S. Cl. 56—11.3

15 Claims

1. In a power-driven lawn mower having a cutting blade, a brake-clutch mechanism for controlling operation of the cutting blade, handle bars for manipulating the mower from behind; a control mechanism for operating the brake-clutch mechanism including a control handle having opposite sides and being operatively connected to said brake-clutch mechanism

to operate the same, one side being pivotally mounted to an adjacent first position of the handle bars, a bracket fixed to another portion of the handle bars opposite said first portion, a slot in said bracket having an enlarged opening therein, the other side of said control handle having a portion mounted in said slot for pivotal movement as well as for movement along the slot, said bracket having a stop surface located above the enlarged opening in the slot, means biasing said control handle to a normal position wherein said brake-clutch mechanism is engaged to prevent actuation of the cutting blade and wherein said portion of said other side of the control handle is registered



tered with the opening in the slot such that pivotal movement of said control handle is prevented by engagement with said stop surface and by receipt of said one portion of said other side of the control handle in said opening, said control handle being pivotally movable out of the normal position and into a depressed position against the handle bars but only after said portion of said other side of the control handle is first moved along the slot out of registry with said opening, movement of said control handle to said depressed position causing actuation of said brake-clutch mechanism to release the cutting blade for operation.

4,430,849

HARVESTER FOR TEA OR THE LIKE

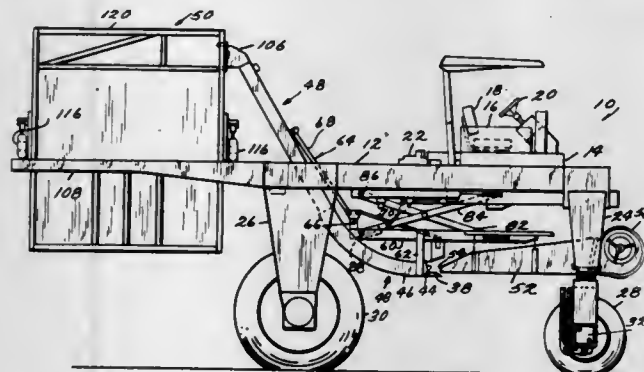
Robert W. Wilson, Charlotte, and Olin C. Trull, Monroe, both of N.C., assignors to Powell Manufacturing Co., Bennettsville, S.C.

Filed Nov. 3, 1981, Ser. No. 317,783

Int. Cl.³ A01D 87/10, 46/04

U.S. Cl. 56—12.8

13 Claims



1. A harvester for tea or the like comprising:
a wheeled vehicle adapted to straddle at least one row of plants;
a cutter bar carried horizontally and transversely by said vehicle in position to clip the tops of the plants in a row on forward movement of said vehicle;
a blower and manifold assembly carried by said vehicle for emitting a horizontally-elongated vertically narrow stream of air rearwardly and downwardly across the top of said cutter bar for blowing clippings rearwardly of said bar to a conveyor assembly, the undersurface of said

blower and manifold assembly and the airstream-defining outlet thereof being spaced above and forwardly of said bar to enable the tops of the plants to stand upright in the path of the airstream while being clipped;

a closed ramp-like conveyor assembly having an open mouth extending along the rear edge of said cutter bar to receive the airstream and clippings blown thereby, said conveyor assembly extending rearwardly and upwardly of said mouth to convey the clippings to a collection receptacle by the airstream entering said mouth; and means mounting said cutter bar, conveyor assembly and blower and manifold assembly to said vehicle for vertical adjustment relative thereto to adjust the aboveground cutting height of said bar.

4,430,850

SPINDLE MOUNTING FOR RING SPINNING MACHINE

Wolfgang Igel, Ebersbach; Frieder Probst, Eisingen; Gerhard Haussmann, Ebersbach-Sulpach, and Max Hartmannsgruber, Krichheim, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

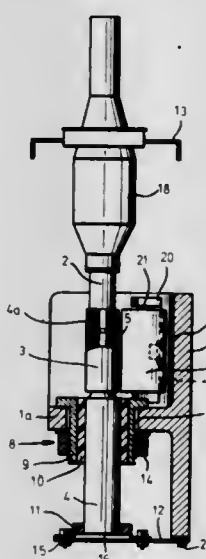
Filed Nov. 19, 1981, Ser. No. 323,081

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3043806

Int. Cl.³ D01H 7/04

U.S. Cl. 57—130

3 Claims



1. In a ring spinning machine, in combination;
a rail provided with a horizontal flange having a row of spaced-apart apertures;
a plurality of rigid sleeves with vertical axes respectively mounted in said apertures;
a plurality of elastic bushings respectively inserted into said sleeves;
a plurality of upright shafts respectively supported in said bushings, each of said shafts having an upper extremity projecting above the respective bushing and further having a lower end projecting beyond said bushing below said flange;
a plurality of vertical spindles having lower extremities provided with respective whorls, said lower extremities being rotatably journaled on said upper extremities of respective shafts;
a pair of retaining rings independent of the respective sleeve fastened to said rail below said flange, said retaining rings elastically engaging said lower end through resilient, annular inserts at locations vertically spaced from each other and from the respective bushing;
a driving belt stretched above said flange in tangential contact with said whorls for jointly rotating said spindles; and
a plurality of pressure rollers carried on said rail on a side of said driving belt opposite said whorls and offset from said whorls in the direction of belt motion, said whorls having

diameters substantially less than 30 mm, said pressure rollers having diameters substantially greater than 30 mm.

4,430,851

TWISTED CERAMIC FIBER SEWING THREAD

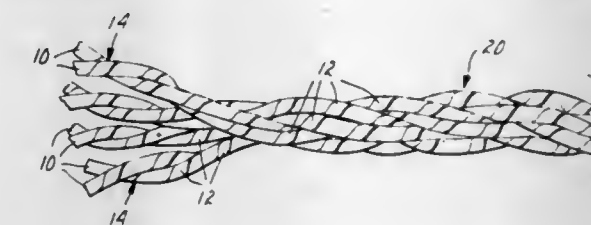
Douglas C. Sundet, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1982, Ser. No. 344,053

Int. Cl.³ D02G 3/04, 3/02, 3/16

U.S. Cl. 57—211

30 Claims



1. A sewing thread comprising:

at least two strands of continuous non-vitreous ceramic fibers selected from the class consisting of graphite-containing, silicon carbide-containing, and ceramic metal oxide-containing fibers, at least one of which strands is served with organic or inorganic yarn, said strands being twisted in one direction, and an assembly of the resulting twisted strands plied with other strands of non-vitreous continuous ceramic fibers selected from the class consisting of graphite-containing, silicon carbide-containing, and ceramic metal oxide-containing fibers in the opposite direction to form a thread.

4,430,852

POLYOLEFIN PRODUCTS AND METHODS OF MAKING

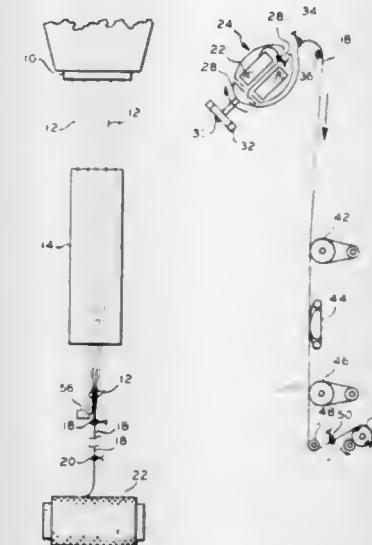
Charles S. Hatcher, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 93,339, Nov. 13, 1979, abandoned. This application Jul. 1, 1982, Ser. No. 394,088

Int. Cl.³ D01D 5/22; D02G 3/00

U.S. Cl. 57—247

53 Claims



1. A process for making a filament yarn comprising:
melt spinning a polypropylene resin having a molecular weight distribution of less than about 7 and a resin melt flow between about 20 and about 60, applying a finish and taking up the filament yarn at a speed of at least about 800 meters per minute.
7. A polypropylene filament yarn product melt spun from a polypropylene having a molecular weight distribution of less than about 7 and a melt flow between about 20 and about 60, said filaments having a birefringence above about 0.15, a tenacity above about 2.4 grams per denier, an elongation between

about 100% and about 300% and a denier per filament of less than about 25.

4,430,853

HIGH TEMPERATURE RESISTANT SEWING THREAD AND METHOD OF FORMING SAME

Eddie W. Scott, Mebane, and Errol N. Seltzer, Greensboro, both of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,242

Int. Cl.³ D01H 13/26, 3/00

U.S. Cl. 57-247

12 Claims

1. A synthetic sewing thread of continuous multifilament construction characterized by its ability to lessen the buildup of heat at the needle of a high speed sewing machine during the operation thereof, even during the sewing of relatively heavy weight fabrics, so as to allow the thread to be utilized as a substitute for the sewing threads conventionally required in high temperature sewing applications, such as cotton spun yarns or cotton sheathed core yarns, said thread comprising at least one yarn having a plurality of crimped texturized continuous synthetic filaments, said crimped texturized filaments having a nonlinear crimped configuration providing bulk to the thread and being entangled with one another along the length of the thread and being further bound together by twist, and said thread having a heat protective lubricant coating applied thereto and penetrating the filament bundle.

4,430,854

PROCESS AND APPARATUS FOR ENERGY RECOVERY FROM SOLID FOSSIL INERTS CONTAINING FUELS

Fritz Adrian, Ratingen, and Hans-Joachim Pogrzeba, Essen, both of Fed. Rep. of Germany, assignors to Steag AG, Essen, Fed. Rep. of Germany

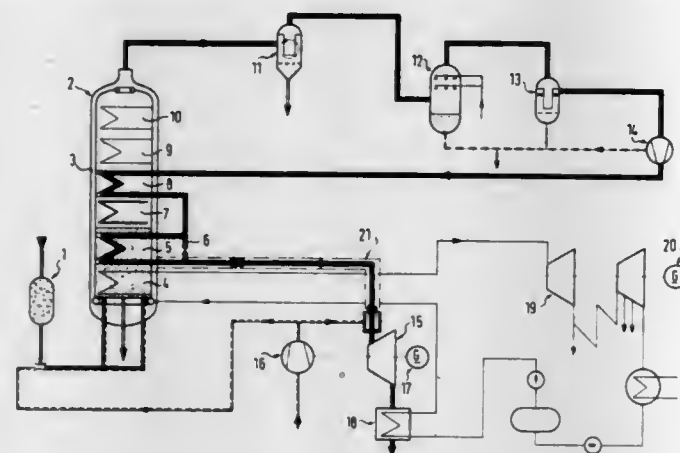
Filed Jun. 22, 1981, Ser. No. 275,768

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024474; Jun. 28, 1980, 3024478

Int. Cl.³ F02C 3/26

U.S. Cl. 60-39.02

14 Claims



1. A process for generating energy from solid fossil fuels containing inerts in at least one of a steam turbine and a gas turbine, said process comprising the steps of:

- supplying said fuel to a pressure fluidized bed in a reactor;
- burning said fuel in the reactor with the aid of compressed combustion air supplied to the reactor for generating heat and flue gases in the reactor;
- supplying water to the reactor to generate steam with the heat;
- supplying the steam to the steam turbine;
- sharply cooling the flue gases inside the reactor by heat exchange with at least one fluid passed through the reactor;
- cleaning, under pressure, the cooled flue gases of injurious material caused by the inerts;

passing at least a portion of the cooled and cleaned flue gases through the reactor to reheat the cooled flue gases; supplying the heated, cleaned flue gases to a gas turbine; and passing the compressed combustion air to the reactor in counter-current gas-gas heat exchange relation with the reheated flue gases.

4,430,855

PROCESS FOR DETECTION OF ROTATING STALL

Pierre E. Deneux, Vaux le Penil; Patrick J. Faure, Courances; Denis R. G. Laffitte, Miramas, and Michel E. M. Lemaoult, Livry sur Seine, all of France, assignors to SNECMA, Paris, France

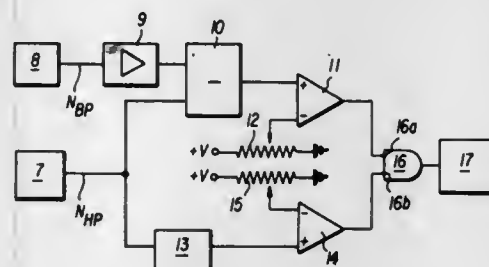
Filed Aug. 13, 1981, Ser. No. 292,577

Claims priority, application France, Aug. 13, 1980, 80 18024

Int. Cl.³ F02C 9/28

U.S. Cl. 60-39.03

5 Claims



1. A process for detecting rotating stall in a turbojet engine having at least two revolving spools including a high pressure spool and a low pressure spool, comprising: measuring the rotational speeds (N_{HP} , N_{BP}) of each of the two spools; obtaining the derivative relative to time dN_{HP}/dt the rotation speed (N_{HP}) of the high pressure spool; multiplying the rotation speed (N_{BP}) of the low pressure spool by a first constant value A; subtracting from the rotation speed (N_{HP}) of the high pressure spool the product ($A \cdot N_{BP}$); comparing the subtraction result ($N_{HP} - A \cdot N_{BP}$) with a second constant value B; comparing the derivative dN_{HP}/dt with a third constant value C; and, generating a command signal serving to trigger a procedure enabling restoration of the engine's normal operating conditions as soon as the following relationships are met,

$$N_{HP} - (A \cdot N_{BP}) > B, \text{ and } \frac{dN_{HP}}{dt} > C$$

where constant values A and B are determined for the considered engine by the coefficients of the line which is tangent to all the normal operating curves showing the variations of the rotational speeds (N_{HP} , N_{BP}) of each of the two spools in the coordinates N_{HP} and N_{BP} , this line being of the shape:

$$N_{HP} - A \cdot N_{BP} = B;$$

and where constant value C is determined for the considered engine with regard to the normal deceleration conditions of the engine which meets the following relationship:

$$\frac{dN_{HP}}{dt} < C.$$

4,430,856

PORT LINER AND METHOD OF ASSEMBLY

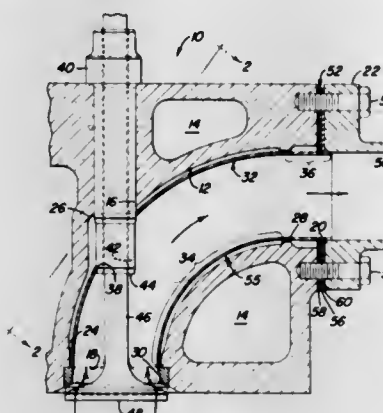
David W. Niedert, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 13, 1981, Ser. No. 321,141

Int. Cl.³ F01N 3/10

U.S. Cl. 60-272

8 Claims



1. An improved port liner which is designed to be inserted into an exhaust passage formed in a cylinder head of an engine, said exhaust passage extending from a combustion chamber to an exhaust manifold, a valve seat located at an end of said exhaust passage adjacent to said combustion chamber which is contactable by a movable valve having a valve stem, said valve stem guided by a valve guide mounted in a passageway formed in said cylinder head which intersects said exhaust passage, wherein the improvement comprises:

- (a) a liner having an arcuately-shaped section and a straight section, both sections having an outside diameter which is smaller than the inner diameter of said exhaust passage, and an opening formed in an outer surface of said arcuately-shaped section for permitting the passage of said valve guide therethrough, said liner, when inserted into said exhaust passage, forming a relatively uniform air insulating layer between the outer surface of said liner and the inner surface of said exhaust passage for facilitating the flow of hot exhaust gases from said combustion chamber to said exhaust manifold with a minimum loss of thermal energy; and
- (b) an annular shoulder formed on the inner surface of said exhaust passage approximate said exhaust manifold, said shoulder having an inner diameter which is larger than the outer diameter of said inner and which serves to prevent said liner from being wrongly inserted into said exhaust passage.

4,430,857

EXHAUST GAS CLEANING SYSTEM FOR A V-TYPE INTERNAL COMBUSTION ENGINE

Yasuo Ikenoya, Kawagoe, and Youzi Simizu, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 329,992

Claims priority, application Japan, Dec. 12, 1980, 55-178310[U]

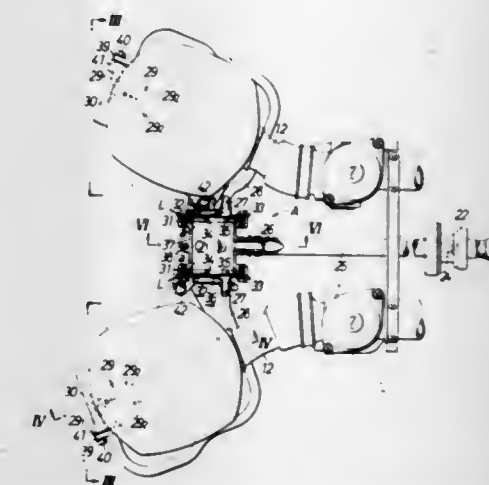
Int. Cl.³ F01N 3/30

U.S. Cl. 60-274

16 Claims

1. An exhaust gas cleaning system for an internal combustion engine including two cylinders arranged in V-shape and an exhaust system with exhaust ports, comprising: secondary air supplying means connected to said exhaust system for supplying secondary air thereto; reed valve means incorporated in said secondary air supplying means and adapted to open and close under the action of pulsating pressure of exhaust gas developing during engine operation, said reed valve means being disposed in a space defined between said two cylinders; and secondary air supplying pipe means connecting said reed valve means with said exhaust ports and forming a part of said

secondary air supplying means, said pipe means being wound so as to surround said respective cylinders, said secondary air supplying means including an expansion chamber in each cylinder, a main passage in each cylinder connecting said pipe



4,430,858

ELECTRICAL GENERATING SYSTEM

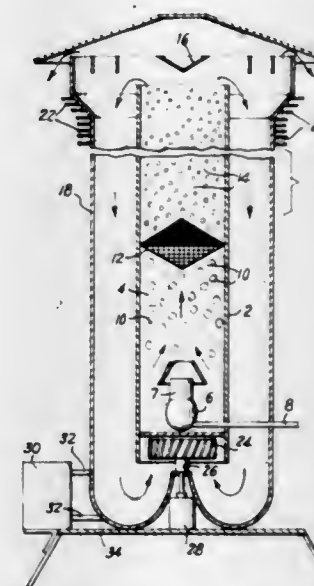
Clarence W. Shaw, 3805 Hawkshead Dr., Austin, Tex. 78759

Filed Aug. 13, 1982, Ser. No. 407,927

Int. Cl.³ F16D 31/06

U.S. Cl. 60-398

10 Claims



- 1. An electrical generating system comprising:
 - (a) a tubular chamber for confining an upstanding column of liquid;
 - (b) a combustion chamber disposed within the tubular chamber for combusting fuel;
 - (c) means for directing products of combustion from the combustion chamber into the upstanding column of liquid for heating the liquid and dispersing bubbles of the products of combustion therein to reduce the density of the liquid and cause same to rise in the tubular chamber;
 - (d) the upper end of the tubular chamber being exposed to the atmosphere for permitting:
 - i. the bubbles of the products of combustion to separate from the liquid and dissipate into the atmosphere, and
 - ii. The separated liquid to fall over the upper edge of the tubular chamber and downwardly along the exterior

surface thereof for recirculation through the lower end of the tubular chamber; and
(e) a turbine disposed within and driven by the stream of recirculating liquid.

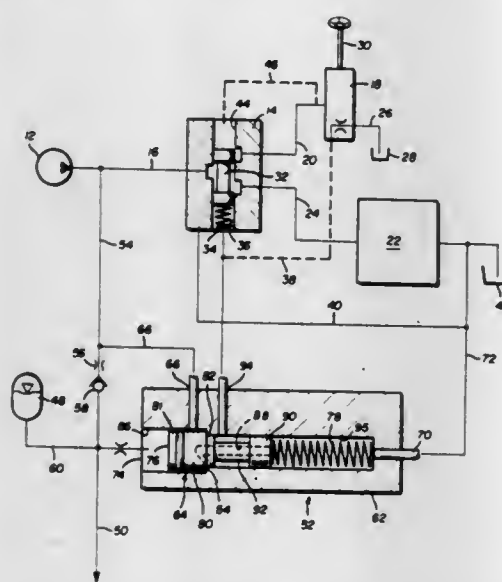
4,430,859

HYDRAULIC ACCUMULATOR CHARGING CIRCUIT
Arthur E. Hirsch, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 6, 1981, Ser. No. 251,584
Int. Cl.³ F15B 1/02

U.S. Cl. 60—418

3 Claims



1. A hydraulic circuit for charging an accumulator, said hydraulic circuit comprising:

- a fixed displacement pump in fluid communication with said accumulator for charging said accumulator to a preset pressure level;
- a steering control valve disposed in series flow relationship between said pump and a steering motor;
- a priority flow divider disposed in series flow relationship between said pump and said steering control valve, said flow divider including an inlet port in communication with said pump, a first discharge port in fluid communication with said steering control valve, and a second discharge port in fluid communication with an auxiliary circuit, said flow divider including valve means to control fluid flow from said inlet port to said discharge ports, and means biasing said valve means toward a position permitting substantially all of the fluid flow to pass from said inlet port to said first discharge port;

means for communicating a load pressure signal from downstream of said steering control valve to exert a biasing force on said valve means in the same direction as said biasing means and means communicating a pilot pressure signal from upstream of said steering control valve to exert a biasing force on said valve means in opposition to said biasing means, and said load pressure signal being in fluid communication with a steering relief means in said flow divider; and

a charging valve including a valve member, an inlet port in fluid communication with said pump, a first outlet port in fluid communication with said load pressure signal means, and a second outlet port in communication with a reservoir, the fluid pressure in said accumulator being communicated to one end of said valve member to bias said valve member to a neutral position against a spring means at the other end of said valve member to prevent fluid flow into said charging valve through said charging valve inlet port when said accumulator is charged to said preset pressure level, and said valve member being shifted away from said neutral position by said spring means in response to the accumulator pressure dropping below said preset level to permit fluid flow from said pump to enter said inlet port in

said charging valve and be discharged through said first outlet port to said flow divider whereby a pressure buildup occurs at said flow divider and said pump which is communicated to said accumulator to recharge said accumulator and shift said valve member back to its neutral position.

4,430,860

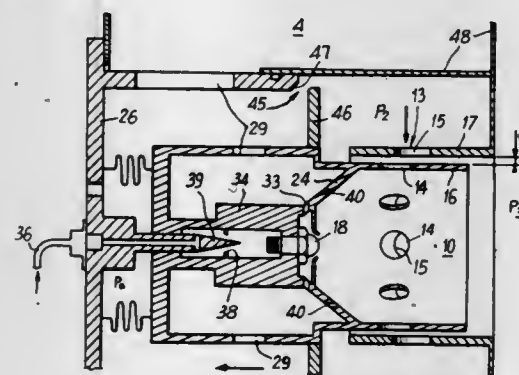
SUPERCHARGED INTERNAL COMBUSTION ENGINES, INTER ALIA DIESEL ENGINES

Jean F. Melchior, Neuilly-sur-Seine, and Thierry Andre, Paris, both of France, assignors to The French State, Paris, France
Continuation of Ser. No. 216,367, Dec. 15, 1980, abandoned.

This application Apr. 4, 1983, Ser. No. 481,269
Claims priority, application France, Dec. 19, 1979, 79 31038
Int. Cl.³ F02B 33/44

U.S. Cl. 60—606

15 Claims



1. A supercharged internal combustion engine comprising a compressor supplying fresh air in parallel to the engine and to a bypass having an auxiliary combustion chamber and a turbine which receives the engine exhaust gases and the gases from the auxiliary combustion chamber and mechanically drives the compressor, the bypass being divided into two main branches, the first of which ends in a dilution region or "secondary region" downstream of the upstream part or "primary region" of the auxiliary combustion chamber and has first throttle means having a variable flow cross-section, whereas the second branch starts from a place on the first branch upstream of the first throttle means and opens into the primary region via second means for throttling the flow cross-section, the second throttle means comprising coupled passages having a variable common free cross-section and formed respectively in an internal and an external cylindrical means which are movable relative to one another, one of them at least partly bounding the primary region whereas the other at least partly bounds a cavity directly connected to the compressor outlet, at least one fuel injector opening into the primary region in the immediate neighbourhood of the aforementioned coupled passages, means being provided for correspondingly varying the flow rate of the fuel injector or injectors and also varying the flow rate of air entering the primary region via the common free section of the coupled passages, by moving the inner cylindrical means relative to the outer means, the engine being characterized in that:

the second throttle means also have constant-section passages in parallel with the aforementioned coupled passages;

the internal and external cylindrical means having radial dimensions such that, allowing for the thermal expansion coefficients of the material of which they are formed and their upper and lower operating temperatures, the radial clearance between them is always sufficient to prevent any lateral contact between the cylindrical means irrespective of the operating conditions of the auxiliary combustion chamber; and

third throttle means having a variable flow section are mounted upstream of or at the coupled passages of the

second throttle means, depending on the direction in which the air flows in the second branch of the bypass, and are actuated so that:

- (a) their minimum flow section is zero and
- (b) irrespective of the amounts to which the second and third throttle means are instantaneously opened, the flow section of the third throttle means is always either zero or much greater than the free section of the coupled passages of the second throttle means.

4,430,862

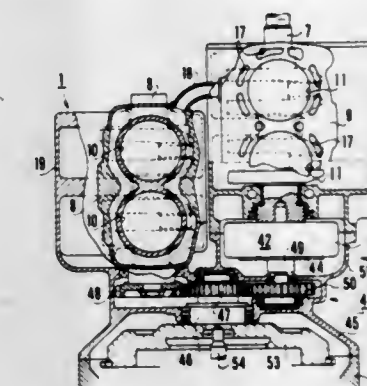
INTERNAL COMBUSTION ENGINE FOR VEHICLES
Toru Yamakawa, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,687

Claims priority, application Japan, Aug. 30, 1980, 55-120247; Sep. 12, 1980, 55-127700; Sep. 12, 1980, 55-127701
Int. Cl.³ F02B 73/00

U.S. Cl. 60—718

14 Claims



4,430,861

OPEN CYCLE OTEC PLANT

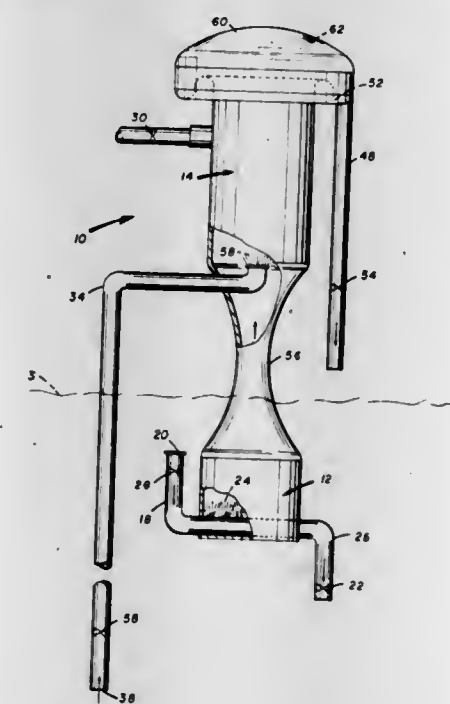
William H. Avery, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Jun. 3, 1982, Ser. No. 384,506

Int. Cl.³ F03G 7/04

U.S. Cl. 60—675

8 Claims



1. An open cycle fluid thermal energy conversion apparatus which includes:

- a first chamber
- a second chamber adjacent to the first chamber
- a warm fluid supply means connected to the first chamber to provide warm fluid to the first chamber;
- a means for vaporizing the warm fluid in the first chamber into fluid vapor;
- a means disposed between said first and second chambers for using the pressure difference to accelerate to approximately supersonic speeds the fluid vapor from the first chamber to the second chamber;
- a cold fluid supply means connected to the second chamber to dispense a cold fluid into the fluid vapor to convert the momentum and kinetic energy of the fluid vapor into a condensed fluid with a potential energy of height in the second chamber;
- a power generating means connected such that the power generating means is driven by one of the aforementioned fluids to generate power;
- and a collection means connected to collect and discharge the condensed fluid.

4,430,863

APPARATUS AND METHOD FOR INCREASING THE SPEED OF A DISPLACER-EXPANDER REFRIGERATOR
Ralph C. Longworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 7, 1982, Ser. No. 385,612

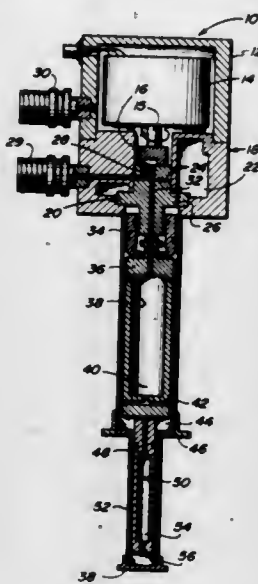
Int. Cl.³ F25B 9/00

U.S. Cl. 62—6

3 Claims

1. In a cryogenic refrigerator of the type comprising a housing containing a piston, said piston and said housing defining a variable volume chamber, means to cause reciprocation of said piston by admission of a high pressure fluid to said variable volume chamber, said high pressure fluid causing movement of said piston to produce refrigeration by expansion of said fluid and electrically driven rotary valve means including a valve

disk to admit and exhaust fluid from said variable volume chamber that improvement comprising:
increasing the number of ports of said rotary valve beyond two to at least three ports spaced 120° apart, whereby fluid is admitted to and exhausted from said variable vol-



ume chamber with more frequency than every 180° of rotation of said rotary valve thus increasing the speed of reciprocation of said piston and the refrigeration capacity of said refrigerator regardless of whether the motor used to rotate said valve is operated on 50 or 60 cycle power.

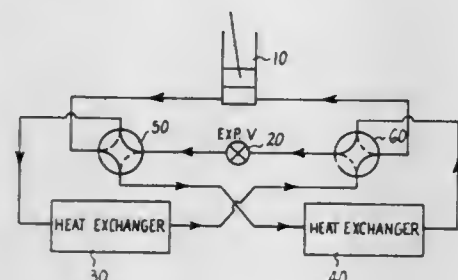
4,430,864

HYBRID VAPOR COMPRESSION AND DESICCANT AIR CONDITIONING SYSTEM

Balakrishnan Mathiprakasam, Overland Park, Kans., assignor to Midwest Research Institute, Kansas City, Mo.
Filed Dec. 31, 1981, Ser. No. 336,280
Int. Cl.³ F25D 17/06

U.S. Cl. 62—94

9 Claims



1. An air conditioning process for room air comprising the steps of:

- providing first and second heat exchangers each having a desiccant therein disposed for thermal contact with a selected fluid flow;
- providing a refrigerant;
- compressing said refrigerant;
- routing said compressed refrigerant through a selected heat exchanger;
- concurrently routing a fluid flow to the heat exchanger of step d in a manner to condense said refrigerant with rejected heat resulting from said condensation simultaneously regenerating said associated desiccant;
- conveying said condensed refrigerant to the other heat exchanger;
- routing the room air at first temperature and humidity levels to said other heat exchanger receiving said condensed refrigerant in a manner to evaporate said refrigerant by the removal of sensible heat from said room air with said desiccant simultaneously removing the latent heat of said room air whereupon said temperature and humidity levels of said room air are simultaneously re-

duced from said first temperature and humidity levels to second temperature and humidity levels;
(h) returning the processed air of step g to said room;
(i) denoting one of said exchangers as the selected heat exchanger in step d; and
(j) repeating steps c through i whereby to continuously condition said air.

4,430,865

METHOD FOR COOLING A PROCESS GAS STREAM

Robert B. Davis, Nyack, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Dec. 20, 1982, Ser. No. 451,190
Int. Cl.³ F28C 1/00

U.S. Cl. 62—121

2 Claims

1. In a method for cooling a process gas stream with a liquid cryogen, said stream being recycled through a pipe in a closed system comprising a reactor containing at least one pipe wherein, at the initiation of the instant method:

- the flowrate of the stream is in the range of about 10,000 scfm to about 350,000 scfm;
- the temperature of the stream is in the range of about 75 degrees F. to about 450 degrees F.; and
- the pressure of the system is in the range of about 150 psig to about 1000 psig;

and wherein, at any time during the effectuation of the instant method:

- the temperature differential between any two points in the pipe separated by at least about eight times the nominal pipe diameter is no greater than about 200 degrees F.; and
- the minimum temperature of the pipe is at least about minus 20 degrees F.,

the improvement comprising adjusting the flowrate of the liquid cryogen, which is introduced into the pipe at about the midpoint between the two points referred to in paragraph (iv), above, counter to the direction of the stream, in accordance with the following equations:

- when the downstream temperature, T₂, is above minus 20° F.:

$$A = \frac{B \times C \times (T_1 - T_2)}{D + [E \times (T_2 - T_3)]}$$

- when the downstream temperature, T₂, reaches minus 20° F.:

$$A = \frac{B \times C \times (T_1 + 20)}{D + [E \times (-20 - T_3)]}$$

wherein:

A=flowrate of liquid cryogen into pipe in pounds per hour

B=stream flow upstream of point of introduction of liquid cryogen in pounds per hour

C=heat capacity of stream upstream of point of introduction of liquid cryogen in BTU's per pound per degree F.

D=heat of vaporization of liquid cryogen in BTU's per pound

E=heat capacity of nitrogen vapor in BTU's per pound per degree F.

T₁=stream temperature in degrees F. measured at a distance of at least about three times the nominal pipe diameter upstream from the point of introduction of liquid cryogen

T₂=combined stream and cryogen temperature in degrees F. measured at a distance of at least about five times the nominal pipe diameter downstream from the point of introduction of liquid cryogen

T₃=saturation temperature of liquid cryogen in degrees F.

4,430,866

PRESSURE CONTROL MEANS FOR REFRIGERATION SYSTEMS OF THE ENERGY CONSERVATION TYPE

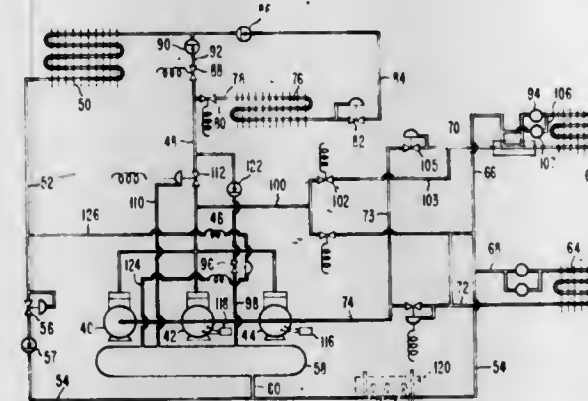
Benjamin R. Willits, Lawrenceville, N.J., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 7, 1982, Ser. No. 415,003

Int. Cl.³ F25B 41/00

U.S. Cl. 62—196.4

7 Claims



4,430,869

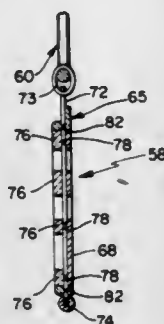
PENDANT FRAME WITH RETAINED ELEMENTS
Domenic A. Zinni, Cranston, R.I., assignor to B.B. Greenberg Company, Providence, R.I.

Filed Mar. 1, 1982, Ser. No. 352,889

Int. Cl.³ A44C 25/00

U.S. Cl. 63—23

1 Claim



1. A jewelry ornament comprising an elongated pin having an enlarged head, a plurality of ornament elements having apertures therethrough slidably received on said pin in substantially aligned relation, said pin being received in said apertures, retaining means releasably retaining said elements on said pin in abutting relation whereby said elements cooperate to define a pendant, and a frame defining an opening substantially the same configuration as the periphery of said ornament and having an inwardly extending flange, said ornament being received in said frame with the perimetric portion thereof engaging said flange, said frame having apertures therethrough aligned with said element apertures, said pin also being received in said frame apertures, said retaining means being disposed on said pin externally of said frame.

4,430,870

CONTROL ARRANGEMENT FOR A ROTATABLE WINDING ARRANGEMENT

Karl Winter, Friedrich Gille, both of Obertshausen, and Hans Lotz, Muhlheim, all of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Fed. Rep. of Germany

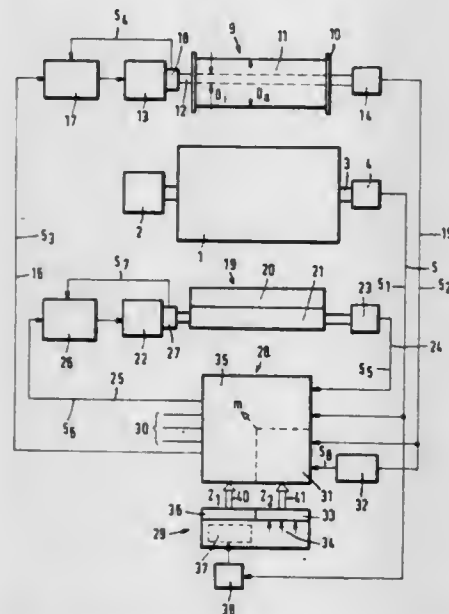
Filed Mar. 19, 1982, Ser. No. 359,994

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111113

Int. Cl.³ D04B 27/10

U.S. Cl. 66—210

16 Claims



1. A control arrangement for a motor of a rotatable winding arrangement having a main shaft, comprising:
(a) a first signal generator coupled to said winding arrangement for generating a main shaft signal signifying the angular displacement of said main shaft;
(b) a second signal generator coupled to said rotatable ar-

angement for generating a feedback signal bearing a predetermined relation to the extent of rotation of said rotatable arrangement;

(c) input means coupled to said first signal generator and programmed to provide an input size signal that varies in response to said main shaft signal; and

(d) control means coupled to said input means and said first and second signal generators for controlling the angular speed of said motor of said rotatable arrangement in response to said main shaft signal, said feedback signal and said input size signal, whereby said programmed input means can change the angular speed of said rotatable arrangement.

4,430,871

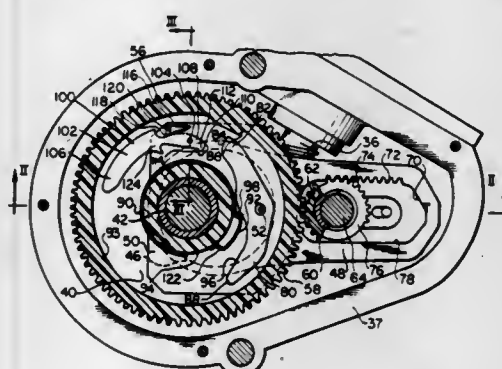
NEUTRAL PUMP-OUT FOR AUTOMATIC WASHER
Robert A. Brenner, St. Joseph Township, Berrien County, and Thomas H. Buckleitner, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 22, 1982, Ser. No. 452,284

Int. Cl.³ D06F 37/40

U.S. Cl. 68—12 R

11 Claims



1. In an automatic laundry appliance, including:
a tub for receiving wash liquid,
a receptacle within said tub for receiving a clothes load,
a motor selectively coupled to a first drive means in a first direction of rotation for agitating a clothes load and in a second direction of rotation to a second drive means for spinning said receptacle containing said clothes load,
a pump means driven by said motor for removing said wash liquid from said tub,
a presettable sequential control means for controlling a cycle of operation including a period when said first drive means is decoupled followed by a period when said second drive means is coupled to said motor,
a delay means for delaying coupling of said second drive means until said pump means has removed a quantity of said wash liquid from said tub, said delay means comprising:

an automatically actuatable rotating engagement means for drivingly engaging said second drive means; and
latch means preventing engagement of said engagement means with said second drive means after said engagement means has been automatically actuated by rotation of said motor in said second direction until said control means interrupts said motor operation in said second direction, said latch means including means to capture said engagement means upon subsequent interruption of said motor operation in said second direction permitting re-engagement of said engagement means with said second drive means upon resumption of said motor operation in said second direction.

4,430,872

METHOD AND APPARATUS FOR PLATE EDGE PREPARATION FOR UOE PIPE MAKING PROCESS
Yutaka Mihara, Tokyo, and Tomoshige Sudo, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

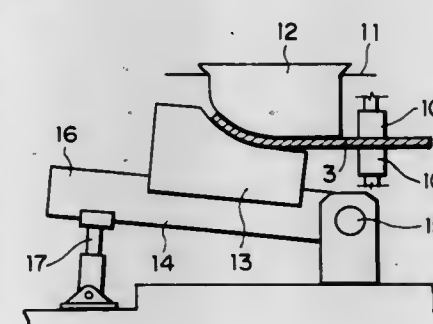
Filed Feb. 12, 1981, Ser. No. 233,824

Claims priority, application Japan, Feb. 14, 1980, 55-18010

Int. Cl.³ B21D 51/00, 11/00, 39/00

U.S. Cl. 72—51

10 Claims



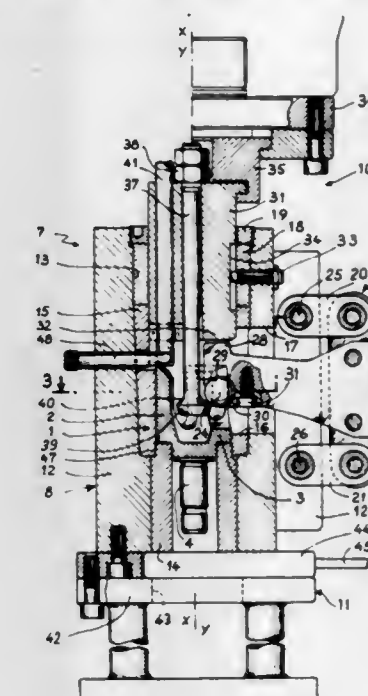
1. In a method of bending a longitudinal edge of a metal plate for use in making pipes in accordance with the UOE process, by using an anchored male die of a predetermined curvature with a movable female die of a corresponding or larger curvature, with the plate to be bent held therebetween, said male die and said female die each having die surfaces, and applying a force to the female die thereby to produce a pipe with no peaking created on the seams after O-ing; the improvement comprising

mounting the female die on an extended bed having two ends, one end being rotatably attached to a support about a fulcrum point;

adjusting the location of the female die on the bed to position its die surface opposite the die surface of the male die, and at a desired distance from the fulcrum point of the bed on the support;

and applying a force at the other end of the bed, causing the bed to rotate about the support and thereby cause pressing force to be applied by the female die to the plate against the male die.

side link and said second side link, the ball holder being fixed by an end thereof opposed said one end to said second side link



whereby the ball holder is movable relative to said support by relative mobility of said first and second side links.

4,430,874

VERTICAL COILER FURNACE AND METHOD OF ROLLING

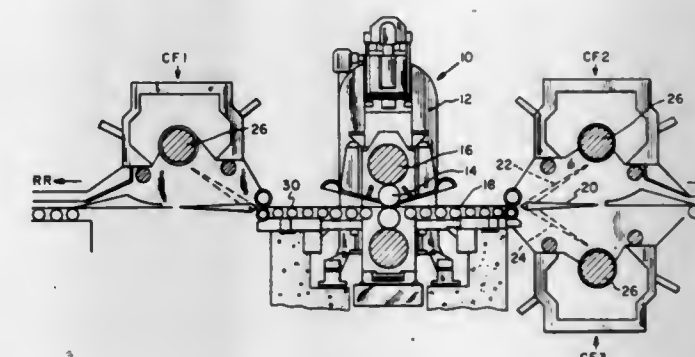
George W. Tippins; Vladimir B. Ginzburg, both of Pittsburgh, and Wayne G. Pottmeyer, Murrysville, all of Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed Sep. 29, 1981, Ser. No. 307,015

Int. Cl.³ B21B 41/02, 1/26

U.S. Cl. 72—202

9 Claims



4,430,873
APPARATUS FOR FORMING GROOVES HAVING A CURVED AXIS AND A CIRCULAR CROSS-SECTIONAL SHAPE

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenger Spicer, Poissy, France

Filed Dec. 30, 1981, Ser. No. 335,660

Claims priority, application France, Jan. 21, 1981, 81 01027

Int. Cl.³ B21D 17/04; B21J 5/12

U.S. Cl. 72—75

10 Claims

1. An apparatus for forming a groove having a curved axis and a circular section in a blank, said apparatus comprising a support adapted to maintain the blank in position, a ball holder, a ball which is carried at one end of the ball holder and laterally projects from the ball holder, means for displacing the ball holder, an articulated quadrilateral structure which has a first side link rigid with said support, a second side link opposed to said first side link and two opposed side links respectively and freely pivotally articulated to and interconnecting said first

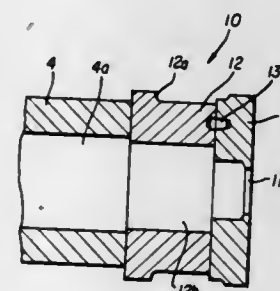
4. In a hot strip mill for rolling steel slabs and the like along a pass line including a roughing train or mill and a finishing train, the improvement comprising an intermediate mill positioned between the roughing train or mill and the finishing train, said intermediate mill including a reversing mill, at least one coiler furnace positioned upstream of the reversing mill and two coiler furnaces positioned downstream of the coiler furnace, said two coiler furnaces being in vertical alignment with one furnace above the pass line and the other furnace below the pass line whereby either downstream coiler furnace may receive a workpiece and direct it to the finishing mill while the other of said downstream coiler furnace may be processing another workpiece, said intermittent mill operable independent of the finishing train.

U.S. Cl. 72—205 Int. Cl.³ B21B 39/08

where ΔT represents the acceptable front-tail strip temperature differential, T_F is the front end temperature of the slab entering TM1, α is the temperature loss rate at 1800° F. in °F./sec., n is a parameter defining the variation of α with temperature, °F.⁻¹ and t is the time interval between the moment when the slab front enters TM1 and the moment when the slab tail enters TM1, wherein n and α are functions of h .

Claims priority, application Japan, Dec. 27, 1980, 55-188152
Int. Cl.³ B21C 25/02, 35/06
U.S. Cl. 72-273.5

2 Claims

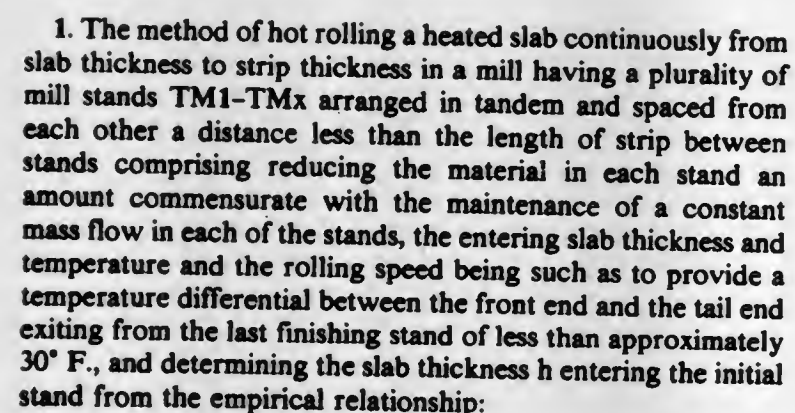


1. A method for cleaning a container on an indirect extrusion press which includes, a die stem, a pressurizing stem and a loose die having an extruding die portion and a separable cleaning die portion, which comprises at least one cycle of the following steps:

setting said loose die on said die stem;
automatically cleaning the inner surfaces of said container
while simultaneously extruding a billet by movement of
said loose die relative to said pressurizing stem and said
container;
shearing an unextruded portion of said billet from said loose
die;
ejecting said loose die from said container;
replacing said separable cleaning die portion with a further
cleaning die portion in an ejected position while retaining
said extruding die portion; and
resetting said loose die on said die stem wherein said clean-
ing die portion is replaced following each cleaning and
extruding step of each of said cycle.

Filed Sep. 29, 1981, Ser. No. 306,894
Int. Cl.³ B21B 1/00, 1/04
U.S. Cl. 72-234

11 Claims

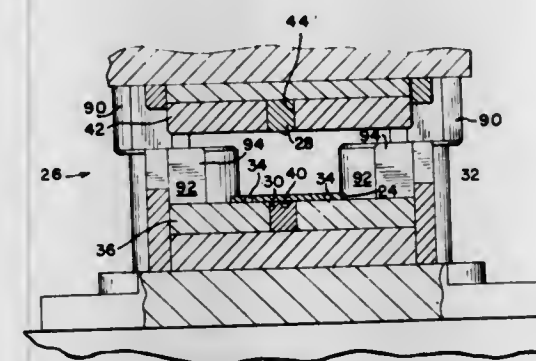


Filed Oct. 26, 1981, Ser. No. 315,335
Int. Cl.³ B21D 35/00

U.S. Cl. 72-340

6 Claims

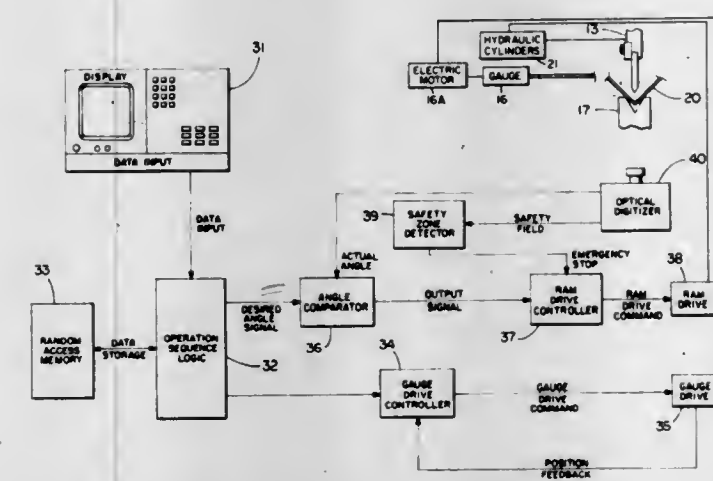
1. Method of forming the stitch forming area of a sewing machine throat plate comprising the steps of:
progressively pressing a contoured forming punch against one side of a planar throat plate blank with increasing pressure until the punch platen contacts the planar face of the blank, the pressing action creating a plastic flow of



Filed Jun. 12, 1981, Ser. No. 273,231
Int. Cl.³ B21D 11/22

U.S. CL. 72-389

3 Claims



1. Apparatus for controlling a press brake during a series of bends in a workpiece, the press brake including a gauge, a ram, and a die, said apparatus comprising:

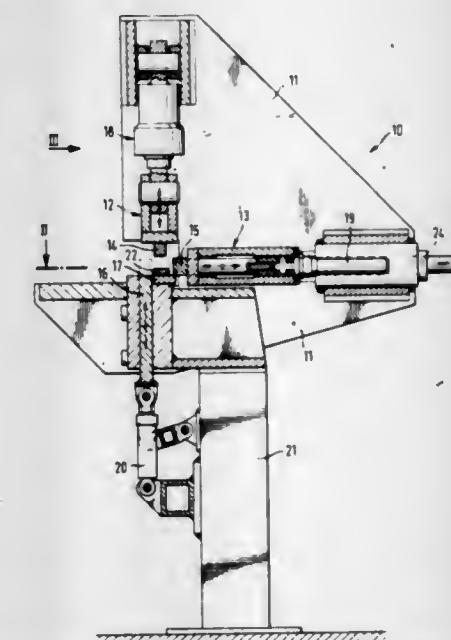
- (a) input means for providing for the input of data indicating desired angles of bend and gauge positions and for the input of instructions for processing said data;
- (b) operation sequence processing means for processing said data according to said instructions to produce output control signals, said control signals including gauge position signals and angle of bend signals;
- (c) means for positioning said gauge in response to said gauge position signals produced by said processing means; and
- (d) bending operation means for causing angles of bend in the workpiece in response to said angle of bend signals

- (i) sensing means for sensing the actual angle of bend of the workpiece,
- (ii) comparator means for comparing the actual angle of bend of the workpiece with a comparison angle, the comparison angle bearing a relationship to the angle of bend signal produced by said operation sequence processing means,
- (iii) command means for producing ram and die relative position output signals in response to the comparison between the actual angle of bend of said workpiece and the comparison angle; and
- (iv) means for positioning said ram relative to said die in response to said relative ram and die relative position output signals.

Claims priority, application Finland, Apr. 21, 1980, 801276
Int. Cl.³ B21J 7/14; B21D 31/06

U.S. Cl. 72-400

4 Claims



1. An apparatus for straightening suspension bars removed from cathode plates in an electrolytic refining plant which apparatus comprises means for conveying bars to a straightening station in a direction which is longitudinal with respect to the bars, a frame, a vertical press device, a horizontal press device and a drive device which is fitted to drive the horizontal press device, comprising a stop plate movable in the vertical direction and against which the said horizontal press device is fitted to press the suspension bar when the stop plate is in its upper position, and means for ejecting a straightened suspension bar laterally.

Filed Dec. 28, 1981, Ser. No. 334,580
Claims priority, application Austria, Jan. 21, 1980

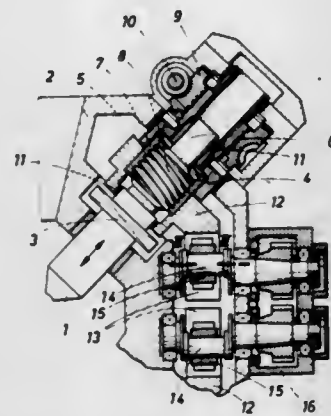
Int. Cl.³ B21D 41/00

7 Claims

U.S. Cl. 72-402

1. In a swaging machine comprising a machine frame,

at least four angularly spaced apart, radially extending rams longitudinally guided in said machine frame and held against rotation therein,
 a plurality of power screws, each of which is rotatably mounted in said machine frame and operatively connected to one of said rams,
 a plurality of swaging drive trains, each of which is operable to impart an oscillating angular motion to one of said power screws so as to reciprocate the associated ram for a swaging operation, and
 a plurality of adjusting drive trains, each of which is operable to actuate one of said power screws so as to adjust the stroke position of the associated ram,



the improvement residing in that each of said power screws has a first screw-threaded portion associated with a respective one of the swaging drive trains,
 each of said rams has screw threads in threaded engagement with said first screw-threaded portion of the associated power screw,
 each of said power screws has a second screw-threaded portion associated with a respective one of the adjusting drive trains, and
 each of said adjusting drive trains comprises an adjusting nut having female screw threads in threaded engagement with said second screw-threaded portion of the associated power screw.

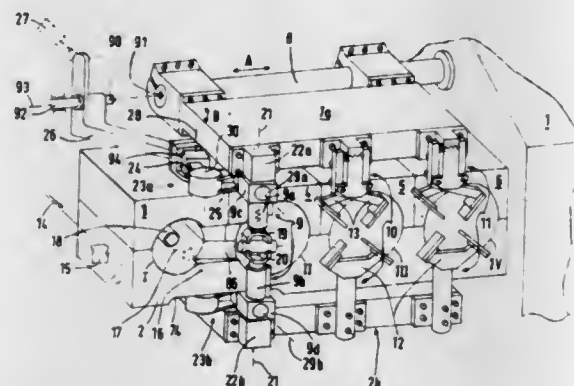
4,430,882

MULTI-STAGE METAL-WORKING MACHINE
 Ulrich Steinhauser, Allschwil, Switzerland, assignor to Hatebur Umformmaschinen AG, Reinach, Switzerland
 Filed May 29, 1981, Ser. No. 268,206
 Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021695

Int. Cl.³ B21D 43/05

U.S. Cl. 72-405

5 Claims



1. Multi-stage metal-working machine for working metal blanks, the blanks being rotated through virtually 90° during transfer from one station to the adjacent station, rotation taking place about a rotation axis (21) running transversely to the longitudinal extension of the blanks and transversely to the pressing direction, a pair of gripping-jaws being provided for transporting the blanks between the two adjacent stations, the

two gripping-jaws (19,20) of the said pair of jaws being attached, via two gripping-jaw carriers (9a,9b) to gripping-jaw carrier boxes (7a,7b), each of the latter being rigidly coupled to a main shaft (8), which is driven to reciprocate (A) and to oscillate (B) about its own axis, each of the two gripping-jaw carriers (9a,9b) being connected, in a torsionally rigid manner, to a rotation device (9c,9d) which is mounted in a manner allowing rotation about the rotation axis (21), one end of a guiding mechanism (23a,23b) acting on the said rotation device (9c,9d) and the other end of the guiding mechanism being anchored at a point which is fixed with respect to the gripping-jaw carriers (9a,9b), this other end possessing a connecting rod (24) and a coupling link (25), the coupling link (25) being connected to the connecting rod (24) via an articulated coupling (30,53) which permits the coupling link (25) to execute compound angular movement and the said coupling link (25) additionally acting on the rotation device (9c,9d) via an articulated joint (50), the latter ensuring that the rotation device (9c,9d) is driven by the coupling link (25), in a torsionally rigid manner, in the sense of rotation about the rotation axis (21), whilst on the other hand allowing, with regard to opening and closing movement of the gripping-jaws, mutual pivoting of the rotation device (9c,9d) and the coupling link (25) in a plane passing through the rotation axis (21) in such a way that the coupling (30, 53) is guided, under the influence of translational movement of the gripping-jaw carriers (9a,9b) on a circular arc about a stationary axis (28) of the end of the connecting rod (24) and, as this occurs, rotates the rotating device (9c,9d) and hence the gripping-jaw carrier (9a, 9b) and the gripping-jaw (19, 20) through 90°.

4,430,883

DEVICE FOR THE CALIBRATION OF AN ULTRASONIC TRANSDUCER

Michel J. Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

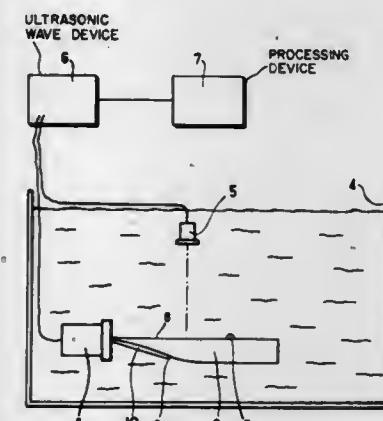
Filed Jan. 25, 1982, Ser. No. 342,329

Claims priority, application France, Feb. 2, 1981, 81 01935

Int. Cl.³ G01N 29/00

U.S. Cl. 73-1 DV

4 Claims



1. A device for the calibration of an ultrasonic transducer by measurement of the reflection of plane ultrasonic waves from a rigid spherical target, comprising:

- (a) a flat ultrasonic calibration transducer;
- (b) a rigid body having one edge which bears against the front of the calibration transducer and which comprises a first principal surface which extends perpendicularly to said front and which is situated in a symmetry plane of the transducer;
- (c) a rigid hemisphere whose equatorial plane coincides with the first principal surface of the body so that the hemisphere projects from the body and with the centre of the sphere situated on a symmetry axis of the calibration transducer;
- (d) a container filled with a liquid in which ultrasonic waves

can propagate and in which the calibration transducer, the body and the hemisphere are immersed;
 the ultrasonic transducer to be calibrated also being immersed in the container so that its front faces the first principal surface of the body, and being displaceable so that a beam of ultrasonic energy to be emitted or received by said transducer can pass through any point situated within or near the hemisphere.

4,430,884

METHOD FOR TESTING HYDRAULIC RELEASES

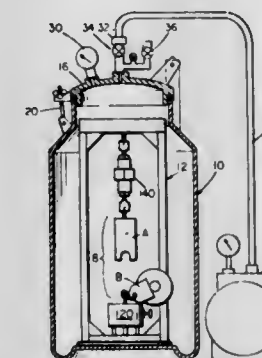
George E. Landrigan, Lynnfield, Mass., assignor to Landrigan Corporation, Boston, Mass.

Filed Dec. 14, 1981, Ser. No. 330,576

Int. Cl.³ G01L 27/00; G01M 19/00

U.S. Cl. 73-4 R

4 Claims



1. In a method of testing a marine hydraulic release of the type used to secure life rafts and the like to ships comprising placing the hydraulic release on a tension stand and applying tension to it to approximate service conditions, enclosing the thus tensioned hydraulic release in a superatmospheric pressure vessel, applying compressed air to the interior of the closed vessel in a manner to subject the hydraulic release directly to air under superatmospheric pressure, gradually increasing the superatmospheric air pressure to simulate corresponding hydraulic pressure related to submergence of the device below the surface of the sea while monitoring an air pressure gauge sensitive to the superatmospheric pressure within the vessel, detecting the instant of release of the hydraulic release in response to the directly contacting superatmospheric air pressure and noting the reading of said air pressure gauge at the time of such release, only those hydraulic releases which release in a predetermined superatmospheric air pressure range under the applied tension being accepted,

the improvement wherein said method further comprises placing a load cell in direct line with said hydraulic release on said tension stand in the manner that the load cell is exposed to the same tension that is applied to said hydraulic release, said load cell having an output connected to a tension indicating device,

said tensioning indicating device being adapted to read out changes in tension of one or a few pounds, gradually increasing the tension upon said hydraulic release and load cell by use of an adjusting means until a predetermined desired level is reached as determined by said load cell output shown on said indicating device, monitoring the reading of said tension indicating device over a period, prior to said release, when no change is made to said adjusting means, and rejecting those hydraulic release units which show a decrease in tension on said load cell during said period, said decrease in tension denoting a deteriorated condition of said hydraulic release unit, placing said tension stand with said tensioned hydraulic release into said superatmospheric pressure vessel and applying said compressed air while said hydraulic release remains tensioned, undisturbed on said tension stand, and completing said test by increasing said air pressure and detecting the instant of release while said load cell remains in place, whereby said hydraulic release can be tested

under accurately known tension without risk of loss of tension prior to said test.

4,430,885

APPARATUS FOR DETERMINING THE BURN RATE OF UNCURED PROPELLANT

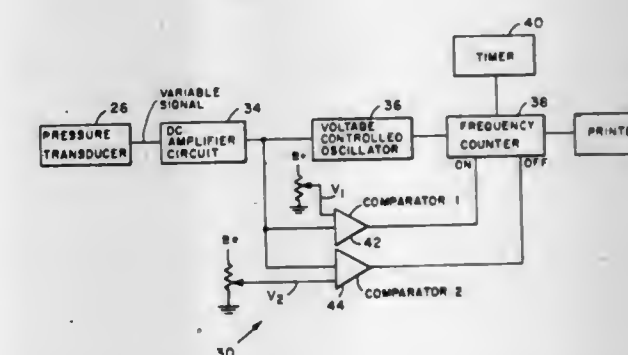
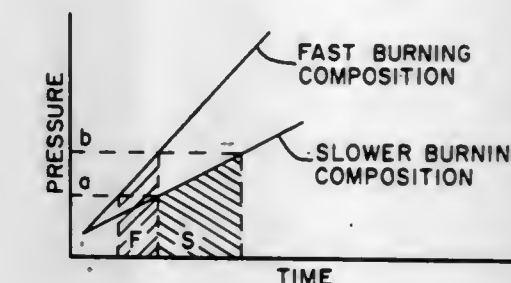
Chester W. Huskins, and Leroy J. Williams, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1982, Ser. No. 383,402

Int. Cl.³ G01N 33/22

U.S. Cl. 73-35

4 Claims



1. A closed vessel apparatus for rapidly determining the burning rate of a sample of uncured propellant comprising:
 - a. a closed vessel having said uncured propellant therein;
 - b. ignition means in contact with said propellant sample for ignition thereof;
 - c. a pressure transducer mounted in said vessel for detecting the pressure rise therein responsive to pressure after ignition of said propellant;
 - d. analyzer means connected to said pressure transducer and disposed for integrating the area under a pressure versus time curve between predetermined pressure points;
 - e. triggering means for the start of said analyzer at a preset voltage level and the stop of said analyzer at a second preset voltage level, said preset voltage levels corresponding to said predetermined pressure points; and,
 - f. print out means for providing a print out of the area integrated under the curve between the two pressure points, whereby the area is taken as a measure of the burning rate of the uncured propellant.

4,430,886

METHOD AND APPARATUS FOR SENSING CLOGGED NOZZLE

Alvin A. Rood, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jan. 15, 1982, Ser. No. 339,730

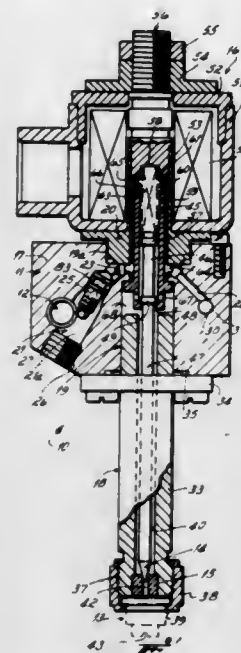
Int. Cl.³ G01B 13/00

U.S. Cl. 73-37

14 Claims

1. The method of sensing partial clogging of a nozzle of a liquid dispensing gun, which gun contains a valve upstream of the nozzle, which method comprises locating a flow restriction in the liquid flow stream upstream of the gun valve, and

measuring pressure changes in the flow stream between the flow restriction and the valve when the valve is changed the one block and closing of the valve, the water may be pressurized to test the pipe.



from closed to open condition whereby a pressure change of less than a predetermined value is indicative of a partially clogged nozzle.

4,430,887

PIPE TESTER WITH MULTIPLE FLUID SOURCE CONNECTIONS

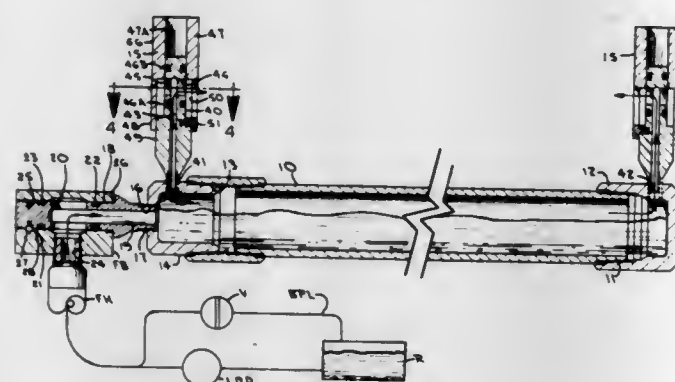
William M. Roberts, Deer Park, and Fred L. Herman, Houston, both of Tex., assignors to Hydra Systems Mfg. Inc., The Woodlands, Tex.

Filed Mar. 15, 1982, Ser. No. 358,244

Int. Cl.³ G01N 3/02

U.S. Cl. 73—49.5

11 Claims



1. Apparatus for use in hydrostatically testing a length of pipe, comprising a pair of plugs respectively connectible to opposite ends of the pipe to close same, a pin having means for connecting it to one of the plugs, a bore therein which opens to the one plug when the pin is connected thereto, an outer cylindrical surface having a pair of seal rings carried thereabout in spaced-apart relation, and ports connecting the bore with said outer surface intermediate the seal rings, a bleed valve for connection to the other plug to permit air to be bled from the pipe as it is filled, and a pair of blocks each having a bore therein slidable over the outer surface of the pin and into a position in which seal surfaces within its bore are sealably engaged by both seal rings, and a port therein connecting with its bore intermediate the seal surfaces, the port of one such block having means for connection to a hose from a low pressure, high volume pump, whereby the pipe may be filled with water while air is bled through the valve, and the port of the other block having means for connection to a hose from a high pressure, low volume pump, whereby, upon replacement of

4,430,888 SYSTEM FOR THE RAPID ANALYSIS OF WATER-BORNE OIL SPILLS

Andre Lepain, Rosiere; Robert Bronchart, Brussels, and Roger Remacle, Lasne, all of Belgium, assignors to Labofina, S.A., Belgium

Division of Ser. No. 230,637, Feb. 2, 1981, Pat. No. 4,388,407.

This application Nov. 12, 1982, Ser. No. 440,937

Int. Cl.³ G01N 9/04

U.S. Cl. 73—61.1 R

1 Claim



1. Apparatus for the rapid determination of the water content of a water-containing oil pollutant comprising a narrow elongated cup (10) of known volume, a pair of vertically disposed glass tubes (11, 14) juxtaposed end to end and linked together by flow control means, the upper tube (11) having a constant diameter larger than that of cup 10 which is self-contained within tube (11), the lower tube (14) having a constant diameter smaller than that of the upper tube (11) and having said flow control means comprising a tap (12) at its upper part, an enlarged lower end (15), and a movable plate 16, previously standardized in percent of water slidably located vertically along the lower glass tube (14).

4,430,889

DYNAMIC FLUID TESTING APPARATUS AND METHOD

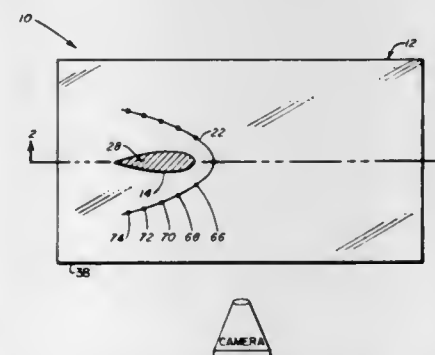
David L. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 2, 1981, Ser. No. 326,541

Int. Cl.³ G01N 15/08

U.S. Cl. 73—61.4

11 Claims



1. An apparatus for dynamically testing a fluid, comprising: a housing; filter means, disposed in said housing, for providing a path through which the fluid can pass from an exterior surface of said filter means to the interior of said filter means; movement means for moving the fluid at a controllable fluid

shear rate relative to said filter means along an interface between the fluid and said filter means; means for flowing the fluid into said housing under pressure at a first time; means for depositing at a second time a filter cake to define said exterior surface of said filter means; and means for flowing another fluid into said housing under pressure at a third time, a portion of said another fluid passing through said filter means; wherein the fluid includes a filter means treatment substance; said filter cake includes a drilling mud; and said another fluid includes a cement slurry.

4,430,890

TWO LAYER HYDRAULIC ANALOGY METHOD FOR TESTING SUPERSONIC GAS FLOWS WITH SHOCK WAVES

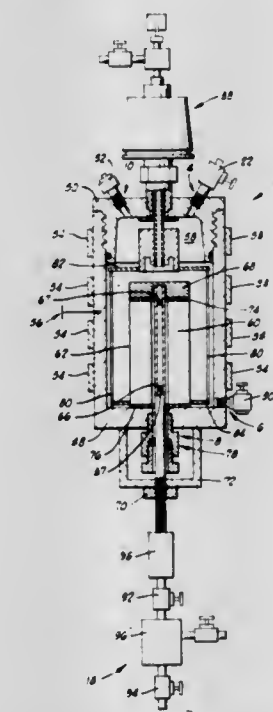
Franklin D. Hains, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1982, Ser. No. 378,161

Int. Cl.³ G01M 9/00

U.S. Cl. 73—147

14 Claims



1. A method of studying steady state supersonic gas flow characteristics at desired locations by simulating the specific heat ratio of the gas and the Mach number of the supersonic flow, the steps comprising:

providing for a container having a flat bottom; establishing in the container a body of liquid having a lower layer of a liquid of depth H_2 and density D_2 resting on the container bottom and further having an upper layer of a liquid of depth H_1 and density D_1 less than said lower layer density floating on said lower layer for simulating the specific heat ratio of the gas, said layers form an interface therebetween; providing for a cross-sectional model submerged in said liquid body, said model rests on the container bottom and extends through said interface terminating within the upper layer; causing relative flow between the model and the body of liquid for simulating the Mach number of said gas flow; measuring the depth of the lower layer at said locations to be studied while said relative flow takes place, said measurements being analogous to supersonic gas flow characteristics.

4,430,891

METHOD AND APPARATUS FOR MEASURING VOLUME

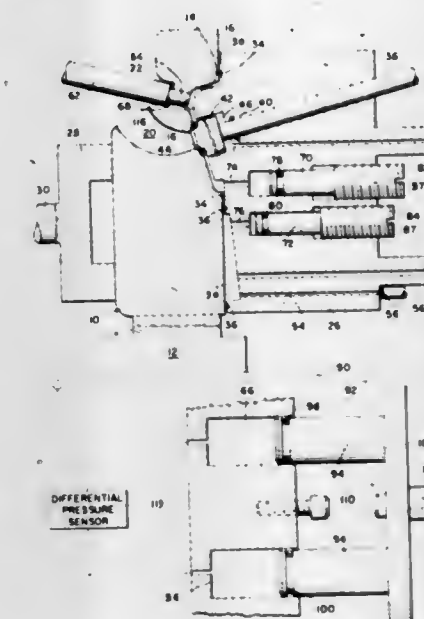
Albert E. Holm, 7259 First St., Marine City, Mich. 48039

Filed Dec. 21, 1981, Ser. No. 332,885

Int. Cl.³ G01F 17/00

U.S. Cl. 73—149

25 Claims



1. The method of measuring the volume of a test chamber by comparing it with a reference chamber of known volume comprising the steps of: sealingly closing both chambers; while maintaining the temperatures of the two chambers substantially equal, injecting accurately related quantities of a gas into each chamber; comparing the pressures in each chamber and reading the difference as a function of the volume of the test chamber; and reading the rate of change of the pressure difference in the two chambers as a function of chamber leakage and disregarding the volume measurement if the rate exceeds a determined value.

4,430,892

PRESSURE LOSS IDENTIFYING APPARATUS AND METHOD FOR A DRILLING MUD SYSTEM

Allen J. Owings, 710 St. Ives, Houston, Tex. 77079

Filed Nov. 2, 1981, Ser. No. 317,004

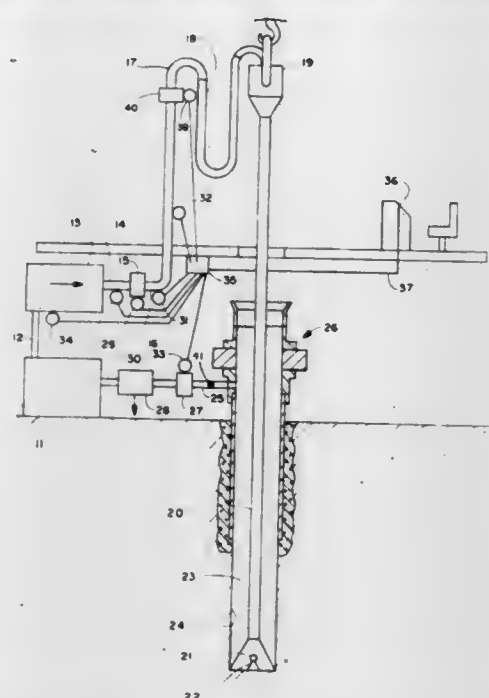
Int. Cl.³ E21B 47/10

U.S. Cl. 73—151

4 Claims

1. In an oilwell drilling mud circulation system having continuing mud returns, a method of identifying system failures, comprising the steps of: monitoring standpipe pressure; monitoring mud pump speed; monitoring mud pump flow rate; monitoring mud return flow rate; signaling a drill pipe washout if standpipe pressure decreases and mud pump speed, mud pump flow rate and mud return flow rate increase; signaling a

mud pump failure if mud pump speed increases and mud pump flow rate decreases; signaling a leak in the surface system when



standpipe pressure decreases, mud return flow rate decreases, and mud pump flow rate remains constant.

4,430,893

PNEUMATIC LUNG ANALOG FOR SIMULATION OF SPONTANEOUS BREATHING AND FOR TESTING OF VENTILATORY DEVICES USED WITH SPONTANEOUSLY BREATHING PATIENTS

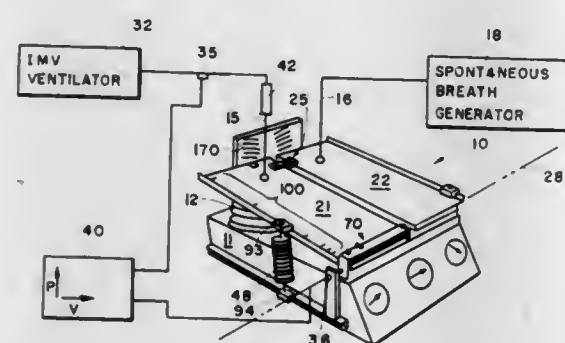
Clare E. Barkalow, Comstock Park, Mich., assignor to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed Nov. 16, 1981, Ser. No. 321,434

Int. Cl.³ G01F 3/22

U.S. Cl. 73-168

44 Claims



1. A pneumatic lung analog for testing a ventilator comprising:

- a frame;
- a test ventilator expansible chamber disposed on said frame for receiving the output of a test ventilator;
- a movable wall disposed on said test expansible chamber; means for applying a force to said movable wall in a direction that expands said test expansible chamber and thus simulates human lungs in spontaneous breathing; and
- means for providing a measure of the pressure and volume of air supplied to said test expansible chamber by a ventilator when said means for pulling is actuated, whereby the function of the ventilator is quantitatively determined.

4,430,894 ADJUSTABLE FLUID RESISTORS FOR USE IN AN INTEGRATING ACCELEROMETER

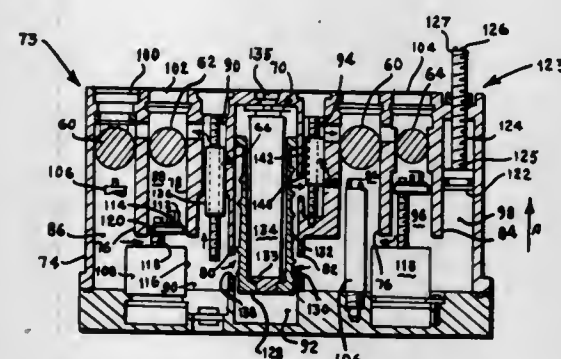
William C. Albert, Boonton, and Bart J. Zoltan, Old Tappan, both of N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,059

Int. Cl.³ G01P 15/00

U.S. Cl. 73-497

5 Claims



1. An improved multi-output integrating accelerometer comprising:

- a case with a plurality of vertical passages and a plurality of horizontal passages defining a closed void within said case, said vertical and said horizontal passages interconnected in a predetermined manner;
- a damping fluid disposed in said case and said passages;
- a proof mass disposed in a plurality of said vertical passages, said vertical passages having said proof masses therein being proof mass passages, each of said proof masses translating through said proof mass passages in response to an external acceleration, only one of said proof masses translating at any one time, said proof mass passages connected in parallel by said horizontal passages;
- means responsive to a predetermined movement of each of said proof masses for generating an output indicative of said external acceleration, said responsive means fixedly mounted in said proof mass passages;
- a temperature compensated damping device for maintaining a substantially constant damping coefficient of said damping fluid disposed in said case and said passages, said damping device mounted in one of said vertical passages wherein the bottom of said vertical passage having said damping device receives said damping fluid from said proof mass passages through said horizontal passages;
- a volume adjusting device mounted in one of said vertical passages, said volume adjusting device being adjustable from the exterior of said case, said volume adjusting device changing an effective path length of said damping device by the movement of a piston in said volume adjusting device; and
- a pair of externally adjustable fluid resistors mounted in said vertical passages, said fluid resistors extending the temperature operating range and allowing for fine adjustment of said accelerometer.

4,430,895

PIEZORESISTIVE ACCELEROMETER

Russell F. Colton, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 2, 1982, Ser. No. 345,251

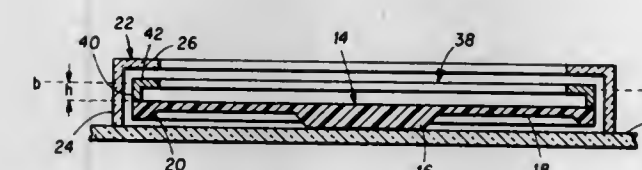
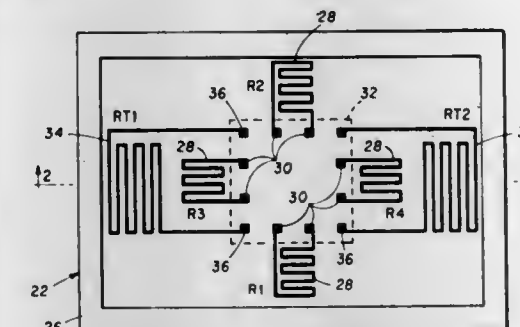
Int. Cl.³ G01P 15/12

U.S. Cl. 73-497

18 Claims

1. An acceleration transducer comprising:
- a mounting substrate;
 - a central pedestal support portion coupled to said substrate;
 - an elastic semiconductor diaphragm portion coupled to and peripherally surrounding said central pedestal support portion and extending generally parallel to said substrate;

a mass ring portion coupled to and peripherally surrounding said diaphragm portion and spaced from said substrate, said mass ring portion being movable in response to acceleration to cause bending movement of said diaphragm portion; and



means coupled to said diaphragm portion for detecting strain induced in said diaphragm portion in response to bending movement of said diaphragm portion for providing an output signal representing acceleration.

4,430,896

METHOD AND APPARATUS FOR DETECTING CRACK PRODUCED IN WORKPIECE IN DISTORTION REMOVAL PROCESSING

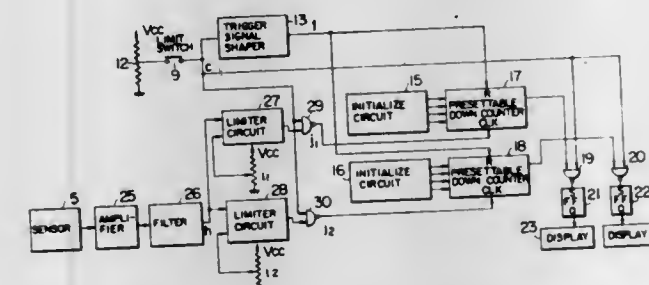
Kazuo Fujimori, and Akira Banno, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 24, 1982, Ser. No. 361,252

Int. Cl.³ G01N 29/04

U.S. Cl. 73-587

5 Claims



2. An apparatus for detecting cracks produced in a workpiece when the workpiece is processed so that the distortion thereof is mechanically removed, which comprises:

- a sensor receiving an acoustic emission signal from the workpiece and embedded in a particular portion of a distortion removing machine; and
- a detector circuit responsive to the output of said sensor to compare the output of said sensor with a first and second reference value, representative, respectively, of non-occurrence of cracking, and acoustic emission signals due to causes other than cracking of the workpiece, to provide a detection signal indicative of occurrence of the cracks when the output of said sensor exceeds both of said first and second reference values and the distortion removing machine exerts a pressure to the workpiece.

4,430,897

ACOUSTIC MICROSCOPE AND METHOD Calvin F. Quate, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

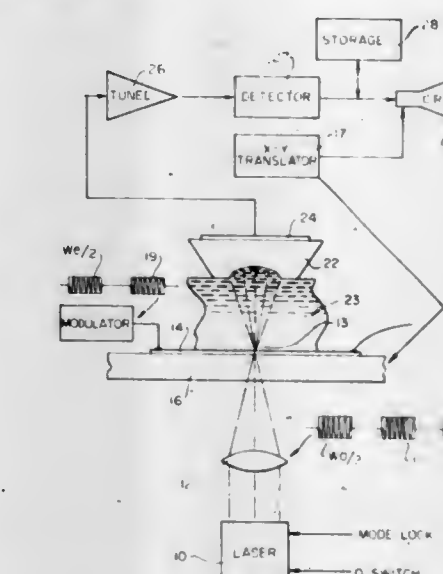
Filed May 14, 1981, Ser. No. 263,551

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ G01N 25/72, 29/00

U.S. Cl. 73-606

31 Claims



1. An acoustic microscope comprising
- first means for heating an object of interest so that the object thermally expands responsive thereto,
 - second means for heating the object of interest at the region of interest so that the object at the point of interest thermally expands responsive thereto, the thermal expansion by both sources provides output acoustic waves and means for sensing said acoustic waves and providing an output signal representative of the expansion due to the heating by said first and second heating means.

4,430,898

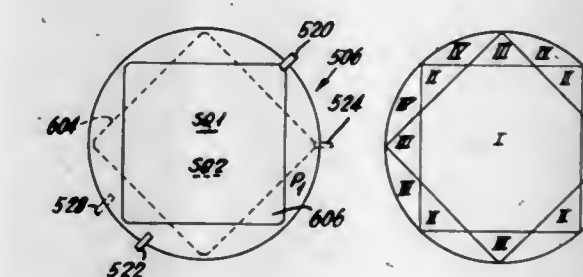
PULSE-ECHO ULTRASOUND SYSTEM UTILIZING CONJUGATE EMITTING AND RECEIVING APERTURES William S. Trimmer, Belle Mead, and David H. R. Vilkomerson, Princeton, both of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Dec. 30, 1981, Ser. No. 335,919

Int. Cl.³ G01N 29/04

U.S. Cl. 73-624

17 Claims



1. A pulse-echo ultrasound system including an active element of piezoelectric material having a plurality of acoustic apertures formed of separate electrode areas positioned generally along a common focal axis, comprising:

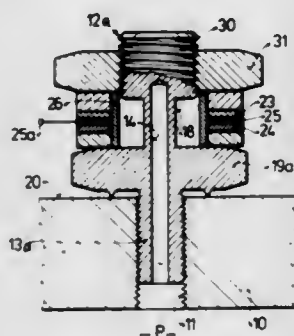
- (a) a first pulsing aperture means including a first one of said electrode areas for producing sound focused into higher intensity central focal lobe and asymmetric side lobe regions; and
- (b) a second receiving aperture means including a second one of said electrode areas for receiving echoes of sound produced by said pulsing aperture means, said receiving aperture means being rotated about said common focal

axis with respect to said pulsing aperture means so as to exhibit a greater sensitivity to echoes from said central focal lobe than to echoes from said side lobes.

4,430,899

FLUID PRESSURE SENSOR, PARTICULARLY DIESEL ENGINE INJECTION PUMP PRESSURE SENSOR
Wolf Wessel, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 3, 1982, Ser. No. 374,403
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122375

Int. Cl.³ G01L 9/08; G01M 15/00
U.S. Cl. 73—754 9 Claims



1. Fluid pressure sensor, particularly for high fluid pressures (P) in a chamber within a housing (10) having a bolt (12, 12a) secured in a wall of the housing, said bolt (12, 12a) being formed with a bore (14) which communicates with said chamber so that fluid, under pressure, in said chamber will penetrate into the bore; and a pressure-sensitive element (21-26) providing an output signal representative of the pressure of the fluid wherein the bolt has one end (13, 13a) thereof secured in fixed position in the wall of the housing; means (19, 30, 31) are provided clamping the pressure-sensitive element between the wall of the housing and the other end of the bolt; and said bolt has a region (18) which is elastically deformable upon application of said fluid pressure (P), which region is positioned between both said ends, the outer diameter of the bolt being reduced in said region (18) to leave a thin-walled section of the bolt permitting deformation thereof under application of fluid pressure, and thus provide for reduction of clamping pressure on the pressure-sensitive element to provide said output signal representative of pressure in the chamber.

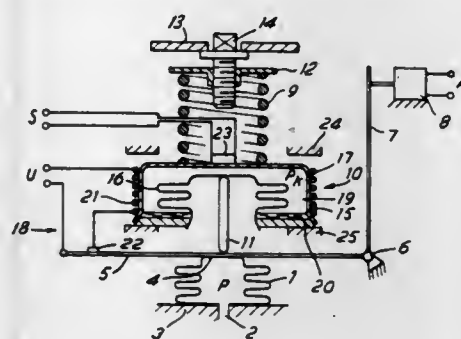
4,430,900

PRESSURE RESPONSIVE SWITCHING DEVICE PARTICULARLY PRESSOSTAT OR THERMOSTAT
Knud V. Valbjørn, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Dec. 28, 1981, Ser. No. 334,582
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1981, 3101448

Int. Cl.³ G01L 7/06, 9/02
U.S. Cl. 73—701 13 Claims

1. A pressure responsive switching device such as a pressostat or thermostat, comprising, an operating element subject to an operating pressure, contact switch means for operating equipment externally of said switching device, an actuating element for operating said switch means which is loaded in one direction by said (an) operating element (subject to an operating pressure) and in the other direction by a main spring, (a contact) said switching means being operable by said actuating element after a predetermined displacement thereof, a force path between said operating element and said main spring including (a) an auxiliary force transmission device having a

physical response quantity variable with a force transmitted thereto by said operating element, and a measured value gener-

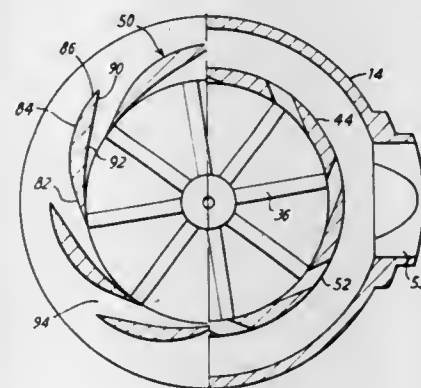


ator connected to said force transmission device which emits an electric analog signal in response to said physical quantity.

4,430,901

FLUID METER
Ivor T. Rogers, Luton, England, assignor to Brown Boveri Kent Limited, United Kingdom
Filed Jul. 17, 1981, Ser. No. 284,336
Claims priority, application United Kingdom, Jul. 24, 1980, 8024246

Int. Cl.³ G01F 1/06
U.S. Cl. 73—861.33 7 Claims



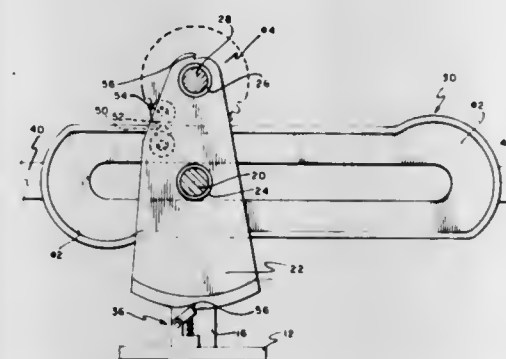
1. A fluid meter comprising a meter body provided with inlet and outlet ports enabling the meter to be installed in a fluid flow line; a measuring element disposed within the meter body to define a generally cylindrical measuring chamber; a vane rotor mounted within the chamber for rotation about the axis of the chamber; a series of apertures provided in the measuring element mutually spaced circumferentially of the chamber and arranged to direct fluid flow from the inlet port to the vanes of the rotor in a series of jets perpendicular to the axis of the chamber, each aperture having a radially inner opening and a radially outer opening; measuring element outlet means communicating between the chamber and the outlet port and means associated with the rotor for driving a counting device whereby revolutions of the rotor may be counted to provide a measure of fluid flow through the meter, characterized in that the apertures provided in the measuring element are bounded in the circumferential direction by respective pairs of opposing first and second aperture faces, a first aperture face of each aperture having a radially inner throat portion which is substantially tangential to the measuring chamber, and a radially outer curved portion which is curved convexly of the aperture; the corresponding second aperture face having a radially outer throat portion which opposes the throat portion of said first aperture face and forms therewith a flow directing throat, wherein said curved portion of the first aperture face extends sufficiently in a circumferential direction to approach closely the radially outer throat portion of an adjacent second aperture face, the radially outward opening in

each aperture being large compared with the circumferential spacing between said openings.

4,430,902

APPARATUS AND METHOD OF CONVERTING RECIPROCATING MOTION TO ROTARY MOTION
Kenneth S. McClure, R.R. #1, Thayer, Kans. 66776
Filed Jul. 17, 1981, Ser. No. 284,372
Int. Cl.³ F16H 19/04

U.S. Cl. 74—31 10 Claims



1. An apparatus for converting reciprocating motion of varying potential to rotary motion of uniform potential comprising:

- a base with a pair of support members integrally bound to said base and each support member including a structure defining a common shaft aperture;
- a common shaft rotatably lodged within the common shaft aperture of each of the support members;
- a flywheel means bound to an end of said common shaft;
- a rotatable element having a structure defining a pinion aperture and an element aperture wherethrough said common shaft rotatably passes for mounting thereon said rotatable element;
- an endless rack assembly reciprocally mounted on said common shaft for reciprocating motion through a stroke;
- a cooperating pinion assembly rotatably mounted through and within the pinion aperture of said rotatable element operative to track the endless rack assembly; and
- lock means secured to said base cooperating with said rotatable element for blocking rotation of said element during a substantial portion of said stroke; said rack assembly is formed with a cam element and the rotatable element carries a cam follower means for maintaining the pinion assembly in contact with the rack assembly; the surface of the cam element is so contoured such that the cam follower means is operative to move the rotatable element to disable the lock means.

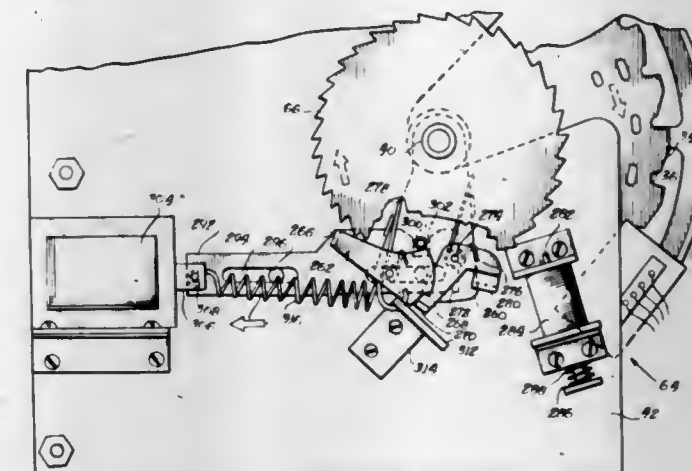
4,430,903

GAMING APPARATUS HAVING MANUALLY CONTROLLABLE OPERATING SPEED
Donald E. Hooker, Wilmette, and Roman A. Tojza, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Division of Ser. No. 119,217, Feb. 7, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,406
Int. Cl.³ F16D 41/02, 41/12; A63F 5/00

U.S. Cl. 74—153 25 Claims

1. A drive mechanism for increasing the rotational speed of a shaft carrying a toothed ratchet means in response to actuation thereof and comprising:
plate means that is movable relative to said shaft from a rest position to an extended position;
pawl means carried by said plate means and being adapted to be moved relative to said plate means and engage the toothed ratchet means;
means for biasing and said pawl means toward engagement with said ratchet means;
latch means carried by said plate means for retaining said

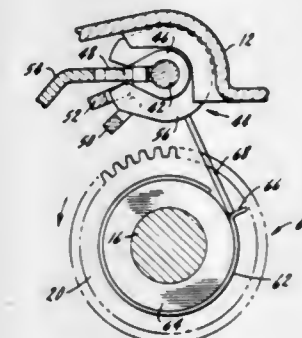
pawl means out of engagement with said ratchet means and for releasing said pawl means when operated;
means for operating said latch means to release said latch means in response to activation thereof;
drive means operably connected to said plate means for moving the same from said rest position to said extended position subsequently of the activation of said operating means;



means for disengaging said pawl means and for resetting said latch means in response to movement of said plate means to said extended position;
means for sequentially activating said latch means operating means followed by said drive means in response to initiation thereof; and,
means for detecting the rotational speed of said shaft and for initiating operation of said activating means in response to the detection of the rotational speed being slower than a predetermined speed.

4,430,904

MULTIPLE SPEED RATIO TRANSMISSION WITH ANTI-CLASH BRAKE
Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 24, 1981, Ser. No. 295,410
Int. Cl.³ F16H 57/10; G05G 5/10, 9/00; B60K 41/26
U.S. Cl. 74—411.5 4 Claims



2. A multiple speed ratio transmission comprising an input shaft, an output shaft, a plurality of constantly meshed gears defining a plurality of speed ratios, another gear movable into meshing relationship with said constantly meshed gears for defining another speed ratio, said speed ratios being selectively engageable for establishing torque delivery paths between said input and output shafts, control means movable sequentially for first selecting and then engaging said speed ratios, and means for applying a frictional braking force to one of said constantly meshed gears upon movement of said control means for selection of said other speed ratio, said braking means including a friction ring having an interference fit on said one constantly meshed gear for rotation therewith, said friction

ring having an outwardly extending tab, and means for blocking rotation of said friction ring upon movement of said control means for selection of said other speed ratio, said blocking means including an arm movable into the rotational path of said tab in response to movement of said control means for selection of said other speed ratio, said control means including a selector rotatable on an axis for selecting one of said speed ratios and slidable on said axis for engaging said one speed ratio, and an interlock rotatable with said selector for locking the remainder of said speed ratios against engagement upon sliding of said selector on said axis for engaging said one speed ratio, said arm extending from said interlock for rotation therewith into said rotational path of said tab.

4,430,905

MOTOR VEHICLE STEERING COLUMN

Raimon S. Bruguera, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

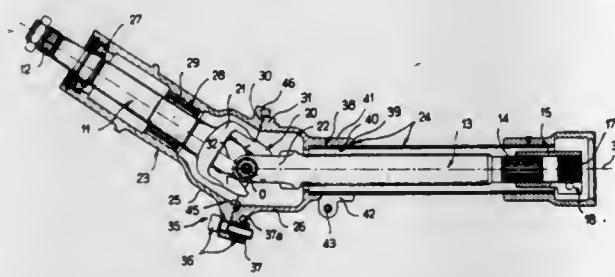
Filed Feb. 9, 1981, Ser. No. 232,616

Claims priority, application Spain, Feb. 7, 1980, 489058

Int. Cl.³ B62D 1/18

U.S. Cl. 74—493

5 Claims



1. A vehicle steering column, having two control shaft sections connected end to end by an articulated coupling means, characterized in that it also has two casings respectively protecting said sections and assembled end to end by means of flanges defined by enlarged ends of the two casings, at least one of the flanges is inclined with respect to the normal to the longitudinal axis of the casing to which it belongs and in that means for clamping said flanges are operative for at least two relative angular positions of the said casings, said clamping means having several bolts mounted at the periphery of one of said flanges, the nut of each bolt being arranged in the form of a catch capable of coming into engagement on clamping with a peripheral shoulder of the other flange, and the perimeter of said casing ends being circular so as to allow an infinite number of relative angular positions for the two afore-mentioned casings, one of said casings comprising two parts which are rotatable relative to each other, one of said two parts defining the flange for said one casing, said one part further defining means adjacent the enlarged end of said one casing to secure said one part to said other part and said other part being fixed to a portion of the vehicle.

4,430,906

COMPOSITE WRIST PIN AND PROCESS

Matthew W. Holtzberg, Ringwood, N.J., and Lawrence D. Spaulding, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,331

Int. Cl.³ F16C 3/04

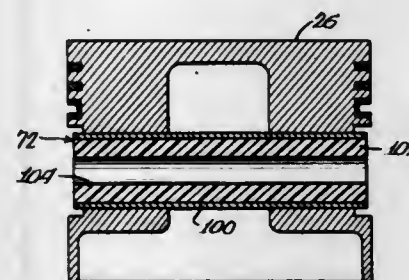
U.S. Cl. 74—595

38 Claims

1. A composite engine part, comprising:
a piston;
a connecting rod;
a metal sleeve for pivotally receiving and operatively connecting said piston and said connecting rod;
an amide-imide resinous polymeric core for positioning within said sleeve;
said metal sleeve and polymeric core cooperating with each other to form a wrist pin;
said piston, connecting rod, core, and said sleeve maintain-

ing their structural relationship, shape and integrity at engine operating conditions.

23. A process for forming and connecting a composite wrist pin, comprising the steps of:
molding an amide-imide resinous polymer to form a core;
allowing said amide-imide resinous polymeric core to cool below its plastic deformation temperature;



post curing said core by solid state polymerization;
press fitting said cured core into a metal sleeve; and
pivotally connecting a piston to a connecting rod by pivotally fitting said sleeve in the wrist pin holes of said piston and said connecting rod.

4,430,907

THROTTLE CONTROL LINKAGE WITH NON-LINEAR OUTPUT

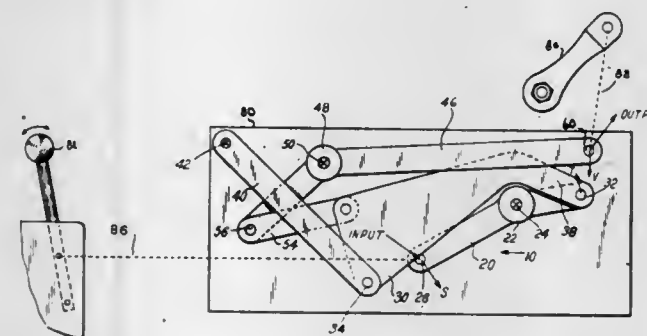
Avi Ben-Porat, Norwalk, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 28, 1980, Ser. No. 211,238

Int. Cl.³ G05G 1/04

U.S. Cl. 74—516

10 Claims



1. A linkage system adapted to be connected between a pilot's input lever and a power output lever of an engine, said linkage system being operative to vary the displacement ratio characteristics between the input and output levers, with the amount of displacement of said output lever being greater than the displacement of the input lever during a first portion of the stroke of said input lever and with the amount of displacement of said output lever being less than the displacement of the input lever during a second portion of the stroke, said linkage system comprising:

mounting means providing a support for said linkage system;
an input crank having an intermediate pivot point, said pivot point being pivotally connected to said mounting means, and with one end of said input crank being connected to said pilot's input lever;
a bellcrank of generally triangular configuration having first, second and third corner connecting points, with said first corner connecting point being pivotally connected to the opposed end of said input crank;
a linear fixed link having one end thereof pivotally connected to said mounting means and with the opposed end of said fixed link being pivotally connected to said second corner connecting point of said bellcrank;
a linear coupler link having one end thereof pivotally connected to said third corner connecting point of said bellcrank; and

an output crank having an intermediate pivot point, said pivot point being pivotally connected to said mounting means, with one end of said output crank being pivotally connected to the opposed end of said coupler link and with the opposed end of said output crank being pivotally connected to said engine power output lever and wherein the angles defining said triangular bellcrank are arranged such that the displacement ratio between said input and output levers varies over the stroke of the input lever whereby a given displacement of the input lever during said first portion of its stroke results in a greater amount of displacement of the output lever, while the amount of displacement of the input lever during said second portion of the stroke results in smaller amount of displacement of the output lever such that greater sensitivity is obtained during said second portion of the stroke.

4,430,908

SPLIT PATH ELECTRIC VEHICLE POWERTRAIN

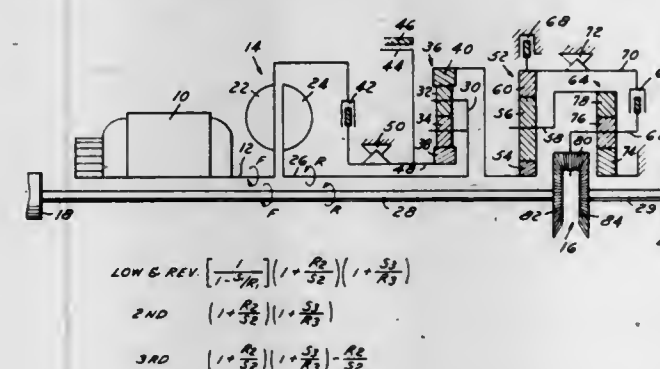
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 8, 1981, Ser. No. 299,906

Int. Cl.³ F16H 47/08, 37/08, 57/10

U.S. Cl. 74—688

12 Claims



1. A multiple speed ratio power transmission having three forward speed ratios and a reverse drive ratio comprising:
a compound planetary gearset having a first sun gear, a first ring gear, a first carrier, and first and second planet pinions journaled on the first carrier, the first planet pinions being in meshing engagement with the first sun gear and the second planet pinions, the second planet pinions being in meshing engagement with the first ring gear and the first planet pinions;
second and third gearsets each having a sun gear, a ring gear, a carrier, and planet pinions journaled on the carrier in meshing engagement with the sun gear and ring gear;
a driving member;
a driven member connected to the carrier of the first gearset;
hydrokinetic coupling means for driveably connecting the driving member to the driven member;
first clutch means for connecting the driving member to the first sun gear during operation in the second and third forward speed ratios;
second clutch means for connecting the carrier of the third gearset to the ring gear of the second gearset during operation in the third forward speed ratio;
first brake means for fixing the first sun gear against rotation during operation in the first forward speed ratio;
second brake means for fixing the ring gear of the second gearset against rotation during operation in the first and second forward speed ratios;
third brake means for fixing the ring gear of the second gearset against rotation during operation in the reverse drive ratio; and
fourth brake means for fixing the first sun gear against rotation during operation in the reverse drive ratio.

4,430,909

DUAL OUTPUT STAGE FOR INTERNAL PLANETARY GEAR WINCHES

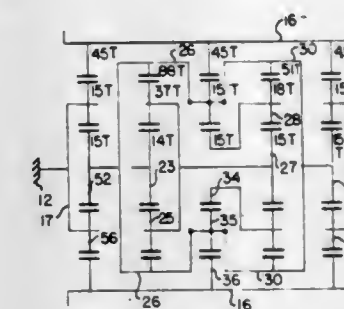
Roland A. Magnuson, King, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Aug. 3, 1981, Ser. No. 289,824

Int. Cl.³ F16H 37/06

U.S. Cl. 74—705

11 Claims



1. A planetary gear transmission having at least one input and an output coupled to a driven member, the improvement comprising a torque-splitting mechanism driven by said one input, to split the torque from said one input and said output from said torque-splitting mechanism having dual, separate torque multiplication paths to said driven member for increasing the final output torque capacity to the driven member.

4,430,910

CLUTCH CONTROL VALVE FOR AN AUTOMATIC TRANSMISSION CONTROL CIRCUIT

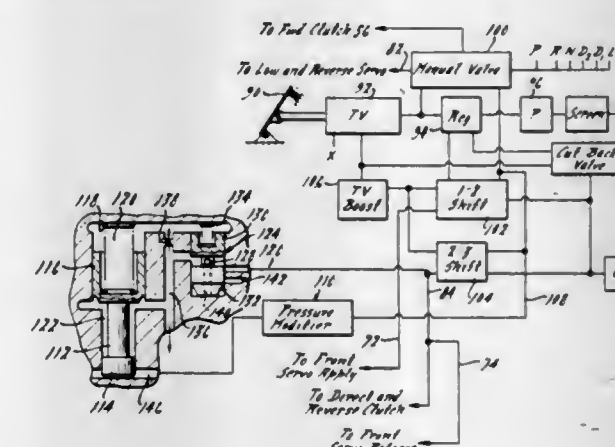
George E. Lemieux, Livonia; John E. Cochran, Dearborn Heights, and Robert S. Anderson, South Lyon, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 8, 1981, Ser. No. 271,063

Int. Cl.³ B60K 41/16

U.S. Cl. 74—867

11 Claims



1. In an automatic power transmission mechanism having relatively movable gear elements that define plural torque delivery paths between a driving member and a driven member;

a fluid pressure operated clutch adapted to connect two torque delivery elements of said driveline together to effect a torque ratio change;
a fluid pressure source, conduit means including a high pressure portion connecting for pressure source to said clutch and including also a shift valve for distributing fluid pressure to and for exhausting fluid pressure from said clutch; and
an accumulator valve means in communication with a portion of the conduit structure that communicates with the clutch for delaying and cushioning the application of the clutch upon movement of the shift valve to effect clutch engagement and a pressure modifier valve means commu-

nicating with said high pressure portion of said conduit means for establishing a modulated pressure;
said pressure modifier valve means being in communication with said accumulator valve means whereby the latter is subjected to the modulated pressure to change the calibration of the accumulator valve means whereby it compensates for the effect of a centrifugal pressure build up in said clutch.

4,430,911

FORWARD-REVERSE POWERSHIFT CONTROL

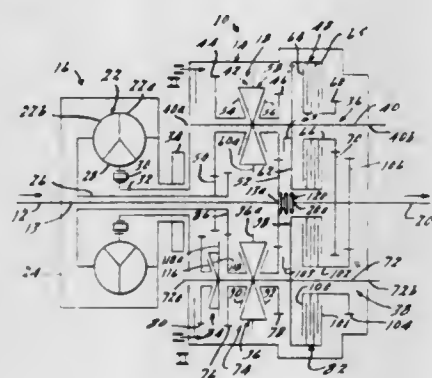
Timothy J. Morscheck, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 16, 1981, Ser. No. 331,395

Int. Cl.³ B60K 41/10, 41/22

U.S. Cl. 74—868

15 Claims



5. In a transmission of the type including input and output shafts; a plurality of power paths disconnectable from both shafts; a plurality of forward speed ratio gears associated with one path and in constant driving relation with one of the shafts; at least one forward and one reverse speed ratio gear associated with another path and in constant driving relation with the one shaft; clutch means associated with each gear and selectively engageable to connect one of the gears with the associated path while the path is otherwise disconnected from the shafts; a powershift clutch associated with each path and alternately engageable to complete driving connections between the shafts via the selected one gears for up, down, and reverse shifting the transmission; an improved control system comprising:

- a shift selector means moveable between forward, neutral, and reverse positions;
- signal means providing a signal proportional to the output shaft speed;
- means operative to effect the selective engagements of the clutch means and the alternate engagements of the powershift clutches in response to the position of said selector, means and changes in the magnitude of said speed signal;
- means operative to effect engagement of the clutch means associated with one forward speed ratio gear associated with the one path independent of the shift selector positions; and
- reverse sequence means shiftable between states respectively effecting engagement and disengagement of the clutch means associated with the reverse gear in the other path and operative once shifted into said engagement state to provide a latching signal maintaining said state while said speed signal is below a predetermined magnitude and independent of changes in said shift selector position, whereby the transmission may be powershifted between forward and reverse in response to movement of the selector mean between said forward and reverse positions.

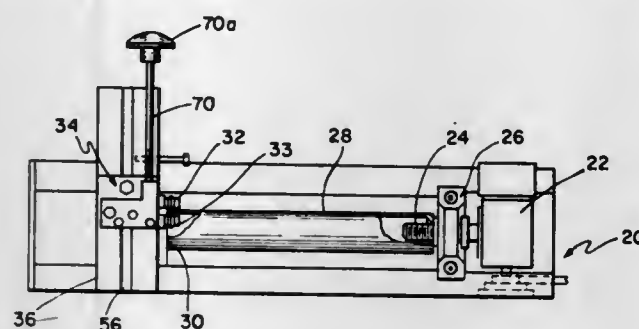
4,430,912
CUTTING APPARATUS AND METHOD
William P. Gundy, Amherst, N.H., assignor to NPC Systems Inc., Milford, N.H.

Filed Jul. 13, 1981, Ser. No. 283,110

Int. Cl.³ B23B 5/14

U.S. Cl. 82—58

6 Claims



1. Apparatus for forming, and exactly centering, an integral, annular crown of V cross section on the edge of the hollow cylindrical drill tube of a diamond core drill bit, said apparatus being of the type having means for power rotating said drill tube around a horizontal axis by support at one end having a cutter head mounted for selective positioning proximate the free, rotating, other end of said tube for cutting the end edge thereof, said apparatus characterized by:

- said cutter head having a pair of cutter arms, each pivoted to the other, at one end, and each having a roller cutter of V section, at the other end thereof, one said arm having a pair of equally spaced apart, opposite, flat, planar, parallel outer faces extending from said one end to proximate said other end;
- and said cutter head having a cutter arm housing formed by a pair of spaced apart plates, having flat, planar, parallel, inner faces extending from proximate said one end to proximate the other end of said arms and in intimate sliding contact with the outer faces of said one arm to guide said arm, within said housing in its path of pivoting, the other said arm being affixed between said plates to pivot therewith;
- and thrust screw mechanism, operable in said housing, proximate said other ends of said arms thereof, for pivoting said one arm and said housing, with its affixed other arm, toward each other to cut said V shape crown.

4,430,913

CUT-OFF AND FACE MACHINE

Calvin C. Williamson, Napa, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Mar. 23, 1982, Ser. No. 360,905

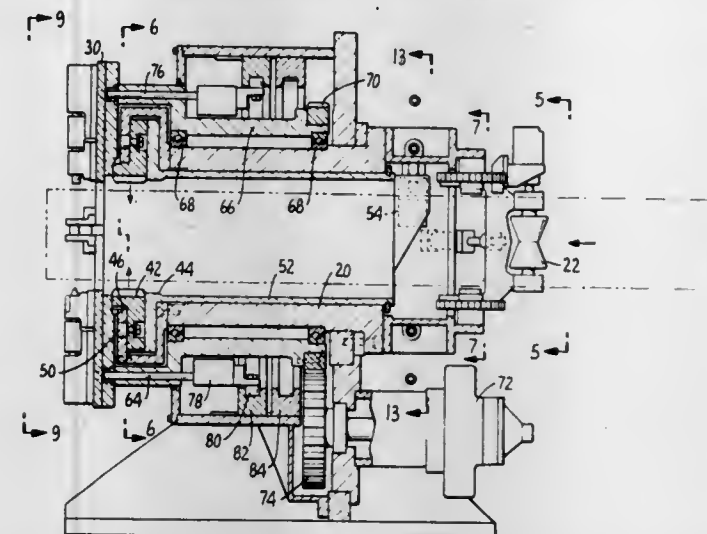
Int. Cl.³ B23B 3/04

U.S. Cl. 82—70.2

19 Claims

1. Apparatus for preparing the end face of a pipe to enable it to be conveniently welded to the end of another pipe to form a continuous pipeline, comprising:
- means for clamping a pipe in a predetermined stationary position;
 - a tool mounting plate disposed around a pipe clamped in said position;
 - means for rotating said mounting plate around the pipe;
 - at least one each of a cutting knife, a bevelling knife, and a deburring knife mounted on said mounting plate;

means for advancing said cutting knife in a radial direction while said mounting plate is rotating; and



means for advancing said bevelling knife and said deburring knife in a radial direction independently of the advancement of said cutting knife.

4,430,914

ROTARY APPARATUS FOR ADVANCING A WEB

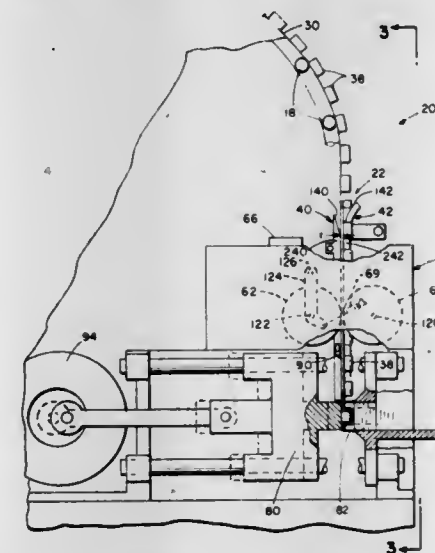
Karl H. Keim, South Portland, Me., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Jul. 10, 1981, Ser. No. 282,066

Int. Cl.³ B26F 1/40

U.S. Cl. 83—35

15 Claims



15. In a method for use with a thermoforming press adapted to form individual articles in the body of a thermoplastic web which has a degree of inherent stiffness, said method using a trimming station for trimming the formed articles from the web subsequent to their formation, said trimming station including a trimming press mounted for reciprocating movement against the web for trimming the articles from the web, web transport means to advance said web to said trimming station in repeated indexing movement, and a web guide means directly engaging the web and positioned to guide the advancing web into registry with said trimming press, the improvement in said method including transporting said web to said trimming station by means of at least a pair of rotary advancing means directly engaged with the web at spaced locations across the width of the web, periodically rotating said advancing means to produce said indexing movement and periodically releasing the drive engagement of said rotary advancing means with said web to allow the interaction of

the web with said guide means to realign the web in the absence of constraint by said rotary advancing means.

4,430,915

LUMBER SORTER AND METHOD

Jeffrey D. Rutherford, Veneta, Oreg., assignor to Swan-Ford Enterprises, Noti, Oreg.

Filed Jul. 13, 1981, Ser. No. 282,918

Int. Cl.³ B27B 5/04

U.S. Cl. 83—104

19 Claims



2. A lumber edging picker conveyor comprising: lumber drive means for receiving boards and adjacent edgings from a lumber edger and for driving the boards and the edgings along a predetermined path; and inclined ramp means for conveying only the boards along an upwardly inclined path while the boards and the edgings are being driven by said lumber drive means, so that the boards will be progressively displaced vertically with respect to the edgings; the conveyor being adapted to receive lumber from an edger having a first, a second, and a third saw, the second and third saws being transversely displaceable to saw boards of various widths; said inclined ramp means comprising a first upwardly inclined ramp member disposed to receive boards cut between the first and second saws, and a second upwardly inclined ramp member disposed to receive boards cut between the second and third saws, said second ramp member including means for transverse displacement thereof to accommodate for transverse displacement of the second and third saws, said first and second ramp members being no wider than the cut boards they are adapted to receive.

4,430,916

APPARATUS FOR MAKING SLATS FOR A SLATTED BLIND

Gerardus H. Edixhoven, Voorschoten, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

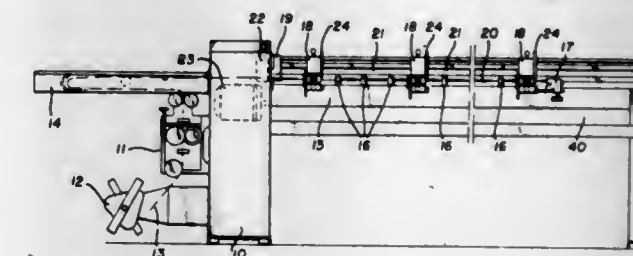
Filed Jun. 22, 1981, Ser. No. 275,676

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029456

Int. Cl.³ B21D 45/02

U.S. Cl. 83—159

10 Claims



1. In or for apparatus for making slats for a slatted blind, such apparatus including a discharge table to receive strip material and stamping and cutting stations associated with said discharge table, a device for ejecting finished slats from said discharge table, said ejecting device comprising in combination an arm pivotable about an axis transverse to the intended direction of ejection, said arm being adapted to engage a finished slat, and an actuating member to rotate with a rotating shaft and, in part of its cycle of rotation to engage said arm and

urge said arm in said intended direction of ejection, said actuating member including resilient means through which it engages said arm and being adapted to provide sufficiently low initial acceleration of said arm in said direction to prevent damage to said slats.

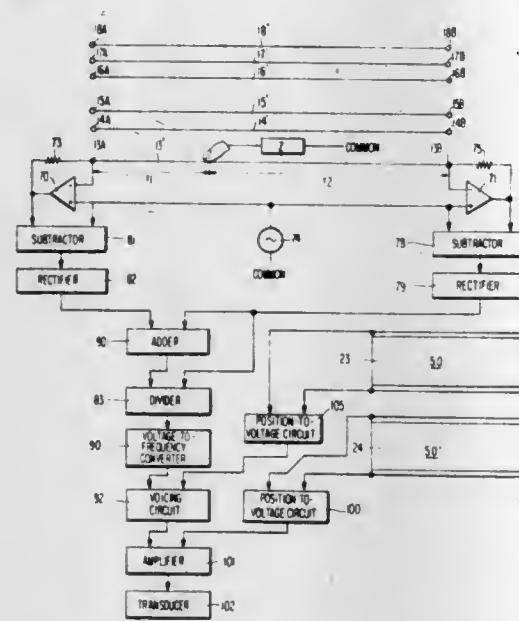
4,430,917 **HAND-HELD MUSICAL INSTRUMENT AND SYSTEMS** **INCLUDING A MAN-MACHINE INTERFACE** **APPARATUS**

William Pepper, Jr., Bethesda, Md., assignor to Peptek, Incorporated, Bethesda, Md.

Filed Aug. 22, 1979, Ser. No. 68,802
Int. Cl.³ G10H 1/18, 1/46

U.S. Cl. 84—1.01

6 Claims



1. A musical instrument comprising a frame member, a plurality of one axis touch panel resistance elements on said frame member extending between at least two boundaries on said frame member,

an electronic circuit means connected to each of said resistance elements for locating points on said resistance elements through which points an electrical current passing through the body of the musician flows when touched by a finger of said musician and producing a signal corresponding to the pitch of a note to be played, and means for sensing pressure exerted by said finger of a musician on each said resistance element and producing a signal corresponding to said pressure, said signal corresponding to pressure being utilized to give said musician simultaneous control over another musical characteristic of the note to be played in addition to the pitch.

4,430,918 **ELECTRONIC MUSICAL INSTRUMENT** Frank Meno, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

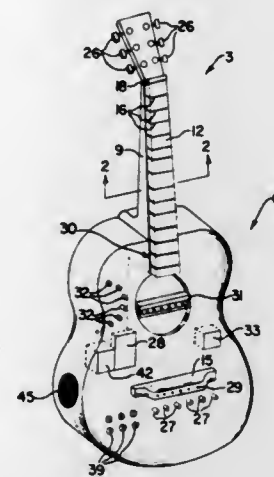
Filed Feb. 16, 1982, Ser. No. 348,985
Int. Cl.³ G10H 1/34, 5/00

U.S. Cl. 84—1.16

9 Claims

1. An electronic musical instrument comprising a body,
a fingerboard attached to said body and having an electrically conducting upper surface,
a plurality of spaced parallel resistance wire strings disposed adjacent to said upper surface,
means for electrically energizing said strings,
means for attaching said strings to said instrument in relative spaced relationship with respect to said conductive surface so that displacing a string to contact said conductive surface completes an electrical circuit having an output voltage associated therewith and displacing said string to contact said surface at differing points along the length of

the string varies the resistance in the circuit thereby providing means for variably controlling the output voltage of the circuit, and plucking said string produces a vibrating mechanical tone, and



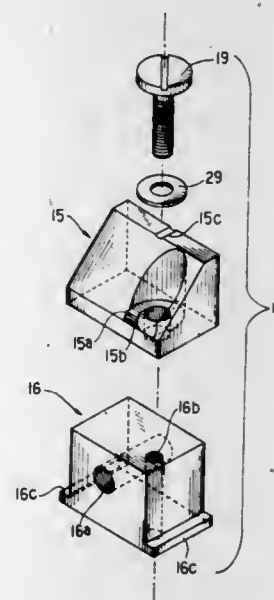
means for converting the output voltage of said circuit into a predetermined frequency.

4,430,919 **GUITAR BRIDGE** Kazuhiro Matsui, Toyooka, Japan, assignor to Hoshino Gakki Co., Ltd., Nagoya, Japan Filed Mar. 30, 1982, Ser. No. 363,605 Claims priority, application Japan, Aug. 5, 1981, 56-116424[U]

Int. Cl.³ G10D 3/04

U.S. Cl. 84—299

3 Claims



1. A guitar bridge comprising:
a main body having a plurality of transversely spaced openings formed therein for receiving a plurality of longitudinally adjustable saddles, each of said openings having upper shoulders formed in the side upper ends and lower shoulders formed in the side lower ends, each of said saddles being positioned in a corresponding one of said openings wherein each of said saddles comprises a string receiving portion and a holding portion, said string receiving portion having a concave impression in its upper surface adapted to receive a guitar string, and having its lower surface engaged with and supported by said upper shoulders, said holding portion fitting within said opening and having laterally extending flange portions resting on said lower shoulders, said holding portion having a threaded hole extending therethrough for receiving an adjusting screw;

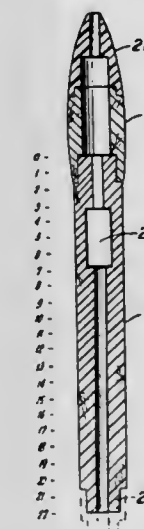
an adjusting screw extending in a fore-and-aft direction through said opening and through said threaded hole and operable, upon rotation, to adjust the position of said saddle in a fore-and-aft direction, and to maintain said saddle in its adjusted position; and
a holding screw passing through said string-receiving portion and said holding portion, connecting said portions and operable upon tightening of said holding screw to maintain said string-receiving portion and said holding portion in firm contact with said upper shoulders and lower shoulders, respectively, to prevent undesired lateral or rotational movement of said saddle.

4,430,920 **CLARINET BORE HAVING VARYING DIAMETERS** Alois Werschnik, Mädelegabelstrasse 57, 8000 München 82, Fed. Rep. of Germany Filed Dec. 17, 1980, Ser. No. 217,227 Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952329

Int. Cl.³ G10D 7/06

U.S. Cl. 84—382

13 Claims



1. A clarinet comprising variable diameter sections of a mouthpiece, a barrel, an upper clarinet body, a lower clarinet body, and a bell, with a longitudinal bore extending through, and wherein

(a) said longitudinal bore of said upper clarinet body comprises an enlarged portion, a first narrower portion extending from the top of said enlarged portion to the top of said upper clarinet body, and a second narrower portion extending from the bottom of said upper clarinet body to the bottom of said enlarged portion;
(b) said upper clarinet body having an individual unit consisting of at least 22 theoretical consecutively numbered sections of equal length from the top of said upper clarinet body;
(c) said enlarged portion being located anywhere in a zone ranging between sections 14 to 2, and formed by an increase in the diameter of said longitudinal bore;
the diameter at the narrowest point of said longitudinal bore of said upper clarinet body defining a theoretical, cylindrical base bore of equal diameter.

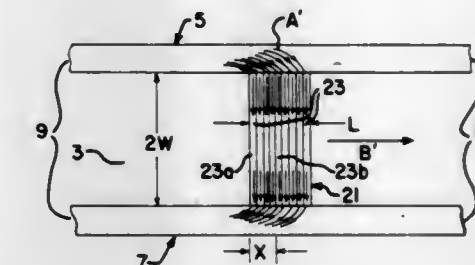
4,430,921 **ARMATURE WITH GRADED LAMINATIONS** William F. Hughes, Cambridge Springs, and Frederick J. Young, Bradford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa. Filed Nov. 25, 1981, Ser. No. 324,908 Int. Cl.³ F41F 1/02

U.S. Cl. 89—8

7 Claims

1. An armature for conducting a very large dc current between two parallel, electrically conductive rails while being driven down the gap between the rails under the influence of

the electromagnetic forces generated by the application of said very large dc current to the breech end of said rails, said armature comprising a plurality of laminations of electrically conductive material stacked in the direction of travel of the armature from the breech end to the muzzle ends of said rails and each ridging said gap between the rails, with the relative elec-

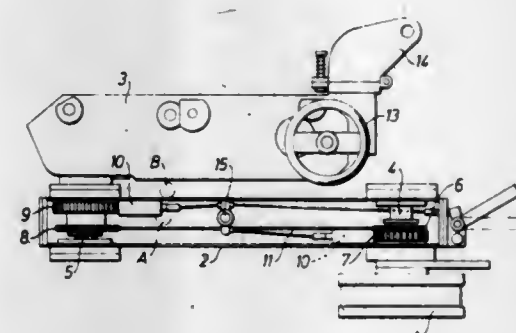


trical conductivity of each lamination increasing from those closest to the breech end of the rails to those closest to the muzzle end of the rails such that for a selected velocity of the armature as it is driven toward the muzzle end of the rails by said very large dc current, the current density through each lamination is substantially the same.

4,430,922 **GUN-MOUNT FOR MACHINE GUNS OR WEAPONS OF A SIMILAR KIND** Jorgen L. Fog, Skovlunde, and Jorgen Nielsen, Farum, both of Denmark, assignors to Disa A/S (Dansk Industri Sundikat A/S), Denmark Filed Jun. 4, 1981, Ser. No. 270,389 Claims priority, application Denmark, Jun. 10, 1980, 2502/80 Int. Cl.³ F41F 21/02

U.S. Cl. 89—37 H

8 Claims



1. Gun-mount comprising two mutually hinged swivel arms in staggered position the one at a higher level than the other, the lower one of said arms at its free end being pivotally mounted around a vertical pivot journal, while the upper other arm has fittings at its free end pivotally fastening to a gun mounting fork for swivel action of the gun, coupling means including a flexible coupling element for coupling the upper and lower arms to cause them to pivot together, releasable lock means for releasable locking of the two swivel arms in an arbitrary mutually revolving position including first lock means for locking said one arm and second lock means for locking said other arm and common control means for simultaneously locking said first and second lock means, said first and second lock means being separate from said coupling means.

4,430,923

WRIST MECHANISM IN AN INDUSTRIAL ROBOT
Hajimu Inaba, and Susumu Ito, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

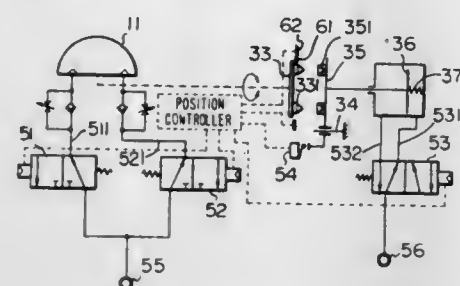
Filed May 27, 1981, Ser. No. 267,573

Claims priority, application Japan, Jun. 4, 1980, 55-74162

Int. Cl.³ F15B 13/06, 21/02

U.S. Cl. 91-61

1 Claim



1. An industrial robot wrist mechanism positionable to a plurality of predetermined positions, comprising:
 - a rotatable wrist member;
 - a rotary actuator having a rotor movable about an axis under the influence of fluid pressure, said wrist member being fixed to said rotor for movement therewith;
 - a casing affixed to said rotary actuator;
 - a first board positioned within said casing and fixed to said rotatable member for rotation therewith, said first board having a pair of tapered pins extending axially therefrom and a peripheral projection extending laterally therefrom;
 - a plurality of sensing devices fixed adjacent to said first board within said casing and arranged to detect a plurality of angular positions of said projection about said axis;
 - a second board mounted to be rotatively fixed and axially movable within said casing, said second board being formed with a plurality of tapered receptacles arranged to receive said tapered pins in different rotational positions of said first board;
 - a fluid operated piston connected to said second board and operable to move said second board axially with respect to said first board;
 - a first magnetic valve for controlling fluid flow from a first source of fluid pressure to said piston, and second and third magnetic valves for controlling the fluid flow from a second source of fluid pressure to said rotary actuator;
 - said valves being so connected that energization of said first magnetic valve will cause fluid from said first source to operate said piston to move said second board axially away from said first board and disengage said pins from said receptacles, whereafter energization of said second magnetic valve will allow fluid from said second source to operate said rotary actuator to rotate said rotor together with said wrist member and said first board until said projection is detected by a selected one of said sensing devices, whereupon energization of said third magnetic valve will disconnect said rotary actuator from said fluid source to cause said rotor to stop, and thereafter deenergization of said first valve will cause fluid from said first source to operate said piston axially to move said second board toward said first board and engage said tapered pins into a selected pair of said receptacles, whereby angular positioning of said wrist member is carried out.

4,430,924

PETROLEUM PUMPING UNIT

Richard P. Dunn, and Wilbur D. Garrels, both of Wichita Falls, Tex., assignors to Hydrowell SA, Caracas, Venezuela

Filed Aug. 28, 1981, Ser. No. 297,261

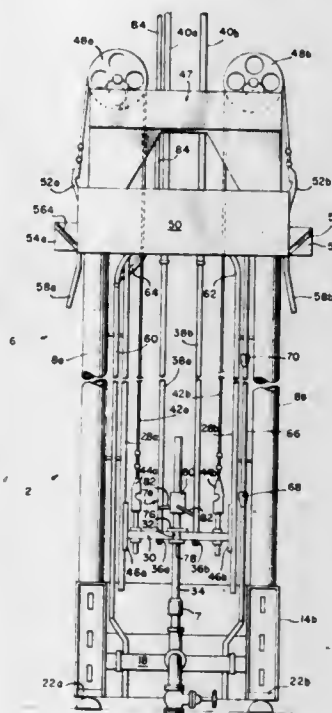
Int. Cl.³ F01L 25/08; F01B 15/00; F15B 13/06

U.S. Cl. 91-277

33 Claims

1. A petroleum pumping unit for attachment to the well polish rod of a well head comprising: support means, a fulcrum assembly positioned on said support means, a mast assembly

means attached to and movable about said fulcrum assembly between a first, folded position substantially parallel to said support means and a second, erect position substantially perpendicular to said support means, said mast assembly means including a pair of elongated, spaced masts, polish rod bridle means mounted on said mast assembly means for reciprocal movement between said masts in a direction substantially perpendicular to the longitudinal axis of said support means when



said mast assembly means is in the second erect position, said polish rod bridle means including attachment means for attaching the well polish rod to said polish rod bridle means and at least first and second driving means secured to said polish rod bridle means for moving said bridle means between said masts, said first and second driving means mounted in limited universal movement mounting means between said masts and secured to said polish rod bridle means on opposite sides of said attachment means in spaced relationship thereto.

4,430,925

PRESSURE VESSEL WITH IMPROVED SECURITY

Paul Kunz, Deishardtstr. 3, D-5419 Döttesfeld, Fed. Rep. of Germany

Continuation of Ser. No. 209,428, Nov. 24, 1980, abandoned.

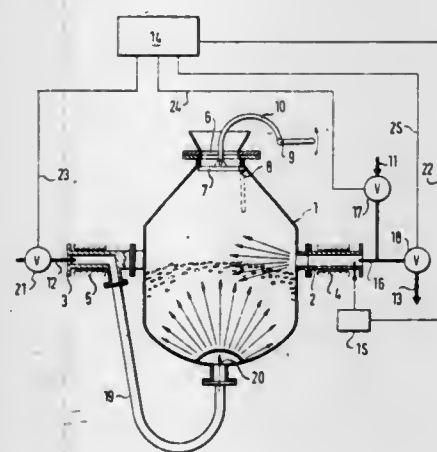
This application Aug. 23, 1982, Ser. No. 410,550

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948360

Int. Cl.³ A47J 27/09; A23N 7/00

U.S. Cl. 99-330

14 Claims



1. A rotatably-supported pressure vessel having a feed opening at the top for receiving product to be treated, a normally-

open cover, means for closing the cover to close the feed opening, a first pressure medium supply means embodying a control valve for supplying steam at low pressure to the interior of the vessel at the bottom thereof, a second pressure medium supply means embodying a control valve for supplying steam at high pressure to the interior of the vessel between the bottom and the top and control means including control circuitry for opening the valve for introducing low pressure steam into the vessel while the cover is open and for maintaining the valve for introducing high pressure steam closed, and pressure sensing means in the control circuitry characterized in that it is responsive only when the pressure within the vessel reaches said predetermined low pressure developed in the vessel when closed by the delivery of low pressure steam into the closed vessel for opening the valve for introducing high pressure steam into the closed vessel.

4,430,926

HYDRAULIC ROTARY-PERCUSSIVE MACHINES

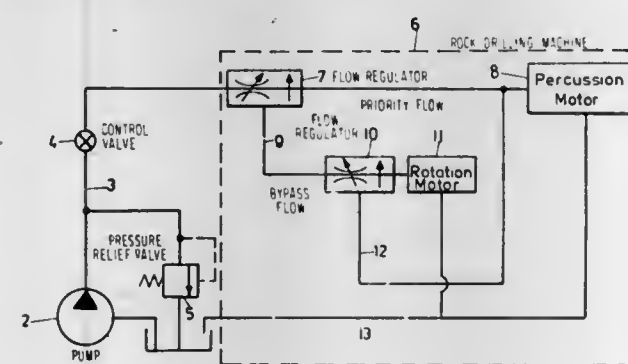
Trevor E. Wallace, Sandton, South Africa, assignor to The Steel Engineering Company Limited, Roodepoort, South Africa
Continuation of Ser. No. 804,155, Jun. 6, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 3,770

Claims priority, application South Africa, Jun. 4, 1976, 76/3344

Int. Cl.³ F15B 11/00

U.S. Cl. 91-516

1 Claim



1. A hydraulic rotary percussive machine comprising a percussion motor, a rotation motor, a feed line to the machine from a source of fluid under pressure, a control valve in the feed line, a return line from the machine, and downstream of the control valve first flow regulating means, a first passage leading from the first flow regulating means to the rotation motor, a second passage leading from the first flow regulating means to the percussion motor, the first flow regulating means establishing priority of flow to the first passage and bypass flow to the second passage only after a predetermined constant flow to the first passage has been established, operation of the control valve establishing, controlling and interrupting flow to the first flow regulating means, a restrictive orifice between the control valve and the first flow regulating means leading to the second passage to ensure that the percussive motor achieves a predetermined idling speed before the rotation motor receives priority, the restrictive orifice being a second flow regulating means which establishes priority flow to the percussion motor.

4,430,927

HYDRAULIC VALVES

William S. Turnbull, Wolverhampton, England, assignor to Rubery Owen (Hydraulics) Limited, Wednesbury, England
Continuation of Ser. No. 161,143, Jun. 19, 1980, abandoned.
This application Nov. 2, 1982, Ser. No. 438,597

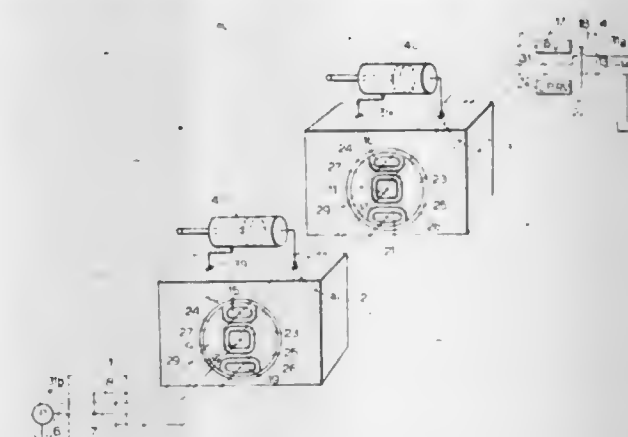
Int. Cl.³ F15B 13/08

U.S. Cl. 91-530

10 Claims

8. In an hydraulic circuit for the operation of at least one hydraulically actuated device, said circuit having a source of hydraulic fluid, hydraulic fluid pressure supply means extending from said source to said device for the supply of hydraulic

fluid under pressure to said device and fluid pressure return means extending from said device to said source for exhausting of hydraulic fluid from said device to said source, a sectional control valve interposed between the fluid source and the device and comprising an inlet section, an outlet section and a working section, and means to clamp said inlet and outlet sections together with said working section therebetween, corresponding fluid supply and return passages formed in the sections of which the fluid supply passage is connected in the path of the fluid pressure supply means from the source to the device whilst the fluid pressure return passage is connected in the path of the fluid pressure return means from the device to the source, the supply and return passages in said working



section registering respectively with the supply and return passages in the sections to which said working section is clamped, said working section and a section to which said working section is clamped having contiguous planar sealing surfaces including portions surrounding respectively the supply and return passages, a depressed drain area in one of said planar sealing surfaces within which are located the planar sealing surface portions surrounding the supply passages, and, isolated therefrom the planar sealing surface portions surrounding the return passages, a groove in one of said sealing surfaces enclosing and in fluid communication with said drain area, a resilient sealing member in said groove and drain passage means for draining said depressed area to a low pressure region of the valve.

4,430,928

PISTON ASSEMBLY AND A METHOD FOR MANUFACTURING PISTON ASSEMBLIES

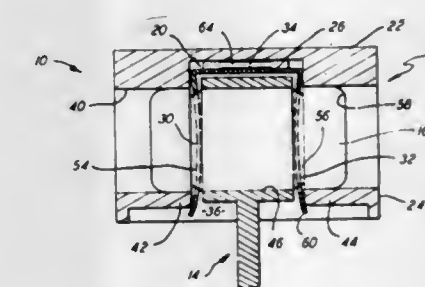
John Magnarelli, Liverpool, and Matthew Rybinski, Minoa, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,633

Int. Cl.³ F16J 1/14; F16C 9/04

U.S. Cl. 92-187

12 Claims



1. A piston assembly comprising:

- a piston body including a head extending across a forward end of the body and a sidewall extending rearward from the head, and defining a longitudinal recess and a transverse piston bore intersecting the longitudinal recess;
- a connecting rod extending within the longitudinal recess, and defining a rod bore aligned with the piston bore;
- a wrist pin supported within the piston bore, extending

through the rod bore, and supporting the connecting rod for pivotal movement relative to the piston body; and a retaining spring positioned within the longitudinal recess, holding the wrist pin within the piston bore, and maintaining the connecting rod spaced from the sidewall of the piston body, and including a central member located between the wrist pin and the head of the piston body, first and second side members extending rearward from opposed sides of the central member, between the connecting rod and the sidewall of the piston body, maintaining the connecting rod spaced therefrom, and defining aligned spring openings receiving the wrist pin, and resilient tab means extending forward from the central member, engaging the head of the piston body, and urging the first and second side members into pressure contact with the wrist pin to maintain the wrist pin within the piston bore.

4,430,929

VENTILATION MECHANISM

Masuo Shimomura, Nagoya, and Tsuneo Uchimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

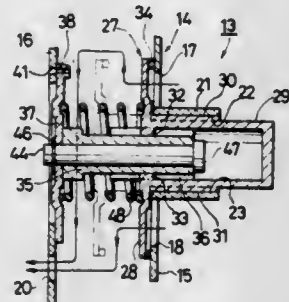
Filed Aug. 5, 1981, Ser. No. 290,360

Claims priority, application Japan, Aug. 9, 1980, 55-109581

Int. Cl.³ B60H 1/24

U.S. Cl. 98—2.18

8 Claims



1. A ventilation mechanism mounted in an opening on a front lateral side of a vehicle body, comprising: a non-rotatable valve member located in the opening and axially movable between two positions for permitting or blocking air flow through said opening, said opening and said valve are non-circular in shape so as to be positioned at a lowermost front corner of a front door window of said vehicle; a rotor supported in said opening, said rotor being rotatably mounted relative to the vehicle body and adapted to undergo controlled angular rotation in relation to movement of said valve member; and control means comprising a plurality of cam grooves formed in one of said valve member and said rotor and at least one pawl projection provided on the other of said valve member and said rotor for engagement with said cam grooves, whereby said rotor rotates through a predetermined angle by engagement of said at least one pawl projection with said cam grooves due to movement of said valve member, and said valve member is held in a ventilating open position or a closed non-ventilating position according to the position of said pawl projection in said cam grooves.

4,430,930

COATED FOOD FRYER

Glenn E. Walser, Lubbock, Tex., assignor to Automated Food Systems, Inc., Duncanville, Tex.

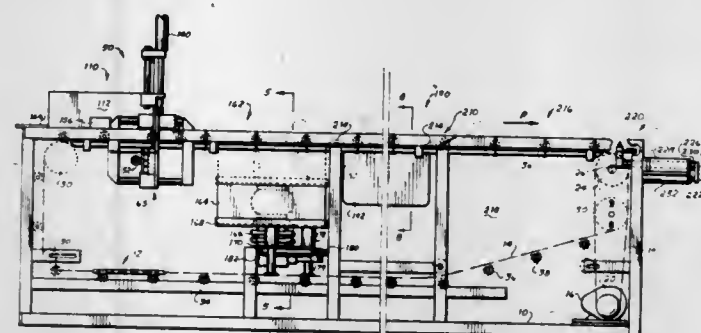
Division of Ser. No. 893,011, Apr. 3, 1978, Pat. No. 4,379,795.

This application Feb. 7, 1983, Ser. No. 464,618

Int. Cl.³ A47J 37/12

U.S. Cl. 99—331

12 Claims



1. In a machine for preparing and frying coated food articles impaled upon sticks including

- a clamp means for clamping said sticks,
- a fry tank with hot grease therein,
- a coating bin with a coating substance therein, the improved structure comprising in combination with the above:
- a frame having a frame axis,
- said frame having attached thereto in order along the frame axis
 - a load module,
 - a coating module,
 - a fry module, and
 - an unload module,
- said coating bin connected to said frame within said coating module,
- said fry tank connected to said frame within said fry module,
- a chain on the frame for horizontally moving the clamp means from the load module to the coating module to the fry module to the unload module and down and return and up to the load module,
- said clamp means is on the chain,
- elevating means on each end of the fry tank for elevating the sticks and food thereon above the chain and above obstacles to movement of said food articles,
- dip means connected to said frame for elevating the coating bin and dipping said food articles in said coating bin, and
- unload means connected to said frame for unclamping said sticks within said unload module.

4,430,931

VEGETABLE PEELING DEVICE

Wei K. Hsu, Elmhurst, N.Y., assignor to Promar, Inc., Jersey City, N.J.

Continuation of Ser. No. 170,620, Jul. 21, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 404,555

Int. Cl.³ A23N 7/00, 7/10

U.S. Cl. 99—589

11 Claims

1. A vegetable peeling apparatus for peeling generally cylindrical vegetables comprising:

- at least first and second pairs of parallel knife members:
- resilient means for urging the knife members of each pair of knife members toward each other to position spaced apart by a distance of less than a diameter of said vegetable;
- guide means on the upstream side of each of said knife members, said guide means having outwardly flaring parts effective to guide said vegetable between said pair of knife members;
- means for pushing a vegetable to be peeled completely be-

tween all of said pairs of parallel knife members, said guide means being effective for moving said parallel knife members of each pair of knife members apart a distance sufficient to accommodate the vegetable therebetween; means on each knife member for slicing a strip of peel from the vegetable as it is forced therepast whereby said first

cutter and said guard also formed with an inwardly facing peel shearing surface near the rim, (b) the chip breaker having upstanding blades in parallelism with and overlapping at least a portion of said shearing surface.

4,430,933

TRIMMER FOR VEGETABLES USING FIXED SHEAR BAR AND UNSHARPENED ROTARY MEMBERS COOPERATIVE THEREWITH

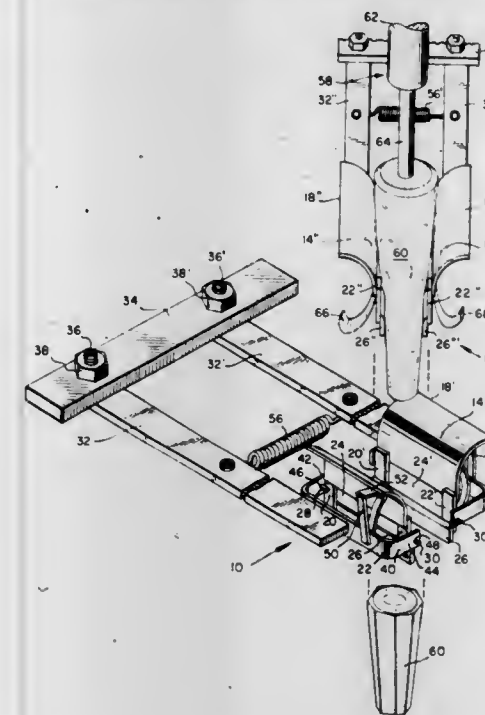
Vernie A. Boots, Belle Glade, Fla., assignor to A. Duda and Sons, Oviedo, Fla.

Filed Dec. 17, 1979, Ser. No. 104,413

Int. Cl.³ A23N 15/00, 15/04, 15/08

U.S. Cl. 99—641

12 Claims



and second strips of peel are sliced from opposed sides of the vegetable; and said at least first and second pairs of parallel knife members being angularly offset from each other so that each pair of knife members slices first and second strips of peel from different surface portions of the vegetable.

1. A trimmer unit for the removal of stems, roots and the like from vegetables without the use of sharpened members, comprising an elongate, stationary shear bar having a pair of opposed machined edges, and an elongate rotary member operatively disposed on each side of said shear bar, and essentially parallel thereto, each rotary member having at least one raised, helically disposed portion on its exterior, arranged to be driven in close proximity to the respective machined edge of said shear bar, said shear bar and the pair of rotary members constituting a planar array upon which vegetables can be poured, with the interaction of the helically disposed portions with the machined edges of said shear bar bringing about the ready removal of the stems and roots from the vegetables without damaging their saleability, said shear bar being supported essentially continuously along its length by an elongate support member, said shear bar and said support member together forming a configuration having a substantially T-shaped cross section, a shear bar support station located under each end of said elongate support member, with at least one support station also being located between the end stations, each support station having precision adjustment means such that the clearance between said machined edges and said helically disposed portions can be minimized while still avoiding direct contact therebetween.

4,430,932

LIVE KNIFE ASSEMBLY

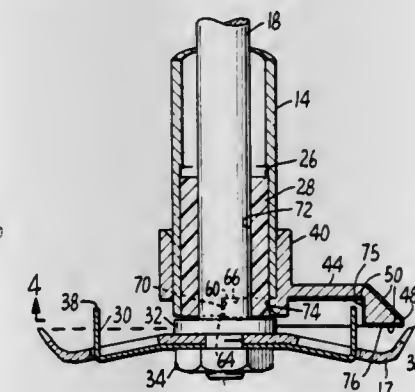
Oldrich J. Tichy, Concord, and David G. Herndon, Rohnert Park, both of Calif., assignors to Atlas Pacific Engineering Company, Emeryville, Calif.

Continuation-in-part of Ser. No. 236,233, Feb. 20, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,167

Int. Cl.³ A23N 7/00

U.S. Cl. 99—593

10 Claims



1. In a fruit peeling mechanism which includes a shaft housing, a drive shaft rotatable within the housing and extending outwardly of the housing at one end thereof, a rotary peeling cutter mounted on the drive shaft one end for rotation with the shaft, a chip breaker mounted on the drive shaft one end and a guard mounted on the shaft housing for cooperation with the cutter for adjusting the depth of a cut made by the cutter into a piece of fruit during a peeling operation, the improvement comprising:

(a) the guard formed with a peripheral rim having an outwardly facing fruit engaging surface which cooperates with said cutter to form a depth of peel gage for said

4,430,934

SAFETY AND WARNING DEVICES FOR BALING PRESSES

Albert Goldhammer, Zum Hecht 46, 7770 Überlingen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,163

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942219; Oct. 18, 1979, 2942228

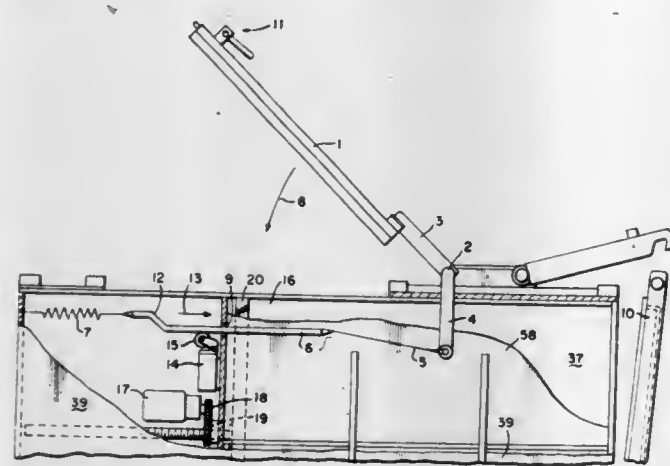
Int. Cl.³ B30B 15/14

U.S. Cl. 100—53

14 Claims

1. A safety device for inactivating a pressing plate drive of a baling press when a filler lid pivotally mounted on a press housing is opened, said safety device comprising: switch means disposed on the housing in a position remote from the path of movement of the filler lid, said switch means being operative to energize the pressing plate drive and including a sensing member, lever means rigidly connected to the filler lid and extending

from the pivotal mounting of the lid in a direction opposite from the lid, operating rod means connected to the lever means and configured and arranged to move in a displacement path to engage the switch sensing member upon opening movement of the lid.



ment of the lid to operate the switch means to inactivate the pressing plate drive, and energy store means connected to the operating rod means to store energy during closing movement of the filler lid and to release stored energy during opening movement of the lid.

4,430,935 PRINTER

Hideo Fushimoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

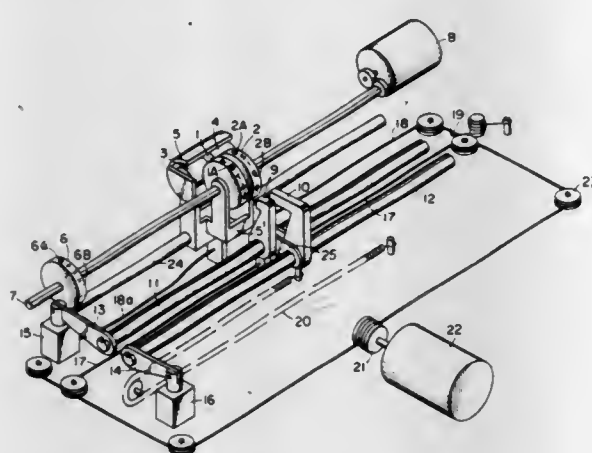
Filed Apr. 21, 1981, Ser. No. 256,039

Claims priority, application Japan, May 9, 1980, 55-61276

Int. Cl.³ B41J 7/00

U.S. Cl. 101-93.11

7 Claims



1. A serial printer comprising:
 - a first shaft;
 - a first type wheel rotatable around and movable along said shaft;
 - a first ink roller for bearing a first color ink and adapted to be in contact with and to be moved together with said first type wheel and along said shaft;
 - a second type wheel rotatable around and movable along said shaft;
 - a second ink roller for bearing a second color ink different in color from the first color ink and adapted to be in contact with and to be moved together with said second type wheel and along said shaft;
 - first hammer means opposing to said first type wheel and movable along a second shaft having a different axis than said first shaft;
 - second hammer means opposing to said second type wheel

and movable along a third shaft having a different axis than said first and said second shafts; single motor means for simultaneously moving said first and second type wheels and said first and second ink rollers along said first shaft and said first and second hammer means along said respective second and third shafts; first driving means for driving said first hammer means; and second driving means for driving said second hammer means.

4,430,936

STRIKER MECHANISM FOR A HIGH SPEED SERIAL PRINTER

Contardo Adamoli, Castellamonte, and Francesco Tonengo, Chivasso, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

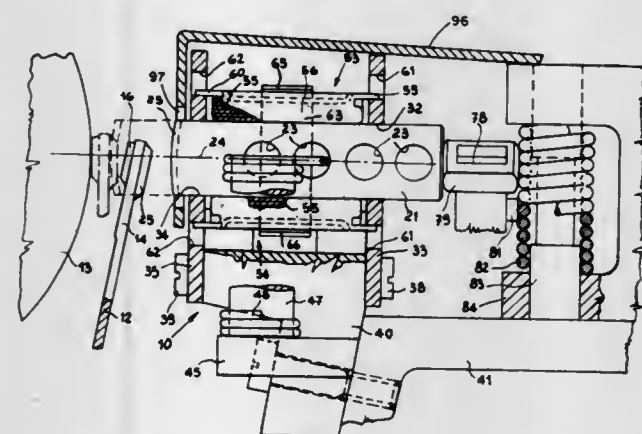
Filed May 28, 1981, Ser. No. 268,104

Claims priority, application Italy, Jun. 5, 1980, 67870 A/80

Int. Cl.³ B41J 9/42

U.S. Cl. 101-93.48

10 Claims



1. A striker mechanism for a high speed serial printer, including a characters bearing element and a platen, an elongated hammer having a longitudinal axis substantially perpendicular to said platen, a striking surface substantially perpendicular to said longitudinal axis for striking said characters bearing element toward said platen when the hammer is actuated, and one friction surface substantially parallel to said longitudinal axis; means for selectively actuating said hammer toward said platen in striking direction parallel to said longitudinal axis guide means for guiding said hammer during its actuation; and means for damping the vibrations of said hammer during its movements toward and away from said platen, said damping means comprising at least one damper element of soft material having a damping surface substantially parallel to the longitudinal axis of said hammer, means for maintaining said damper element substantially fixed with respect to said guide means, and means for urging said damper element toward said hammer for causing a predetermined pressure between said damping surface and said one friction surface, wherein said hammer comprises another friction surface opposite to said one friction surface, and wherein said damping means further comprises at least another damper element of soft material having a damping surface substantially parallel to the longitudinal axis of said hammer and constantly in contact with the other friction surface of said hammer.

4,430,937

FRONT REGISTER LAYS FOR SHEET-FED ROTARY PRINTING MACHINES

Heinz W. Hubner, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

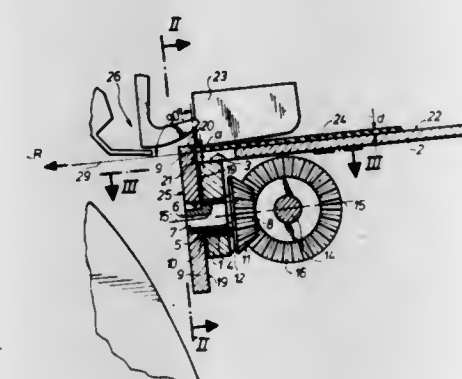
Filed Mar. 27, 1981, Ser. No. 248,095

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014366

Int. Cl.³ B41F 13/24; B65H 9/04

U.S. Cl. 101-232

4 Claims



1. A front register lay assembly for registering the leading edges of sheets to be fed over a feed metal sheet into a sheet-fed rotary printing machine, said front register lay assembly comprising:

- a plurality of front register lay fingers;
- means rotatably supporting said front register lay fingers for motion in an arc about an axis of rotation which is parallel to the sheet feed direction;
- a registering surface on each said lay finger, each said registering surface being generally vertical and perpendicular to the direction of sheet feed when each said finger is in engagement with said sheet, each said registering surface contacting a leading edge of the sheet as the sheet is supported on the feed metal sheet; and,
- drive means to carry said front register lay fingers in said arc into and out of engagement with said leading edge of each of said sheets on said feed metal sheet whereby each of said sheets is registered and then released so that it can pass to the rotary printing machine.

4,430,938

FUZE SAFETY DEVICE

Ulf Jander, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

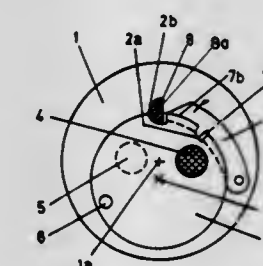
Filed Sep. 9, 1981, Ser. No. 300,543

Claims priority, application Sweden, Sep. 25, 1980, 8006697

Int. Cl.³ F42C 15/26

U.S. Cl. 102-232

6 Claims



1. A safety apparatus for an ammunition unit such as a projectile, shell, rocket or the like, said apparatus comprising: a rotatable slide member for defining safe and armed conditions of the ammunition unit, said slide member being rotatable between a first position in which the ammunition

unit is unarmed and a second position in which the ammunition unit is armed; first locking means responsive to a first condition for releasing said slide member for rotation when said first condition reaches a predetermined value; second locking means responsive to a second condition for releasing said slide member for rotation when said second condition reaches a predetermined value; and third locking means, operatively associated with said first and second locking means and operable in the event that said second condition occurs before said first condition so that said second locking means is the first to release said slide member, for preventing subsequent release of said slide member by said first locking means, whereby said slide member cannot be rotated to the armed position unless said first condition precedes said second condition.

4,430,939

LINEAR SHAPED CHARGES

Gordon Harrold, c/o QED Design & Development Ltd., Borough Green, Kent, England

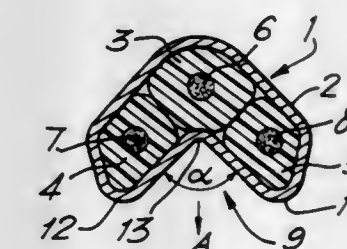
Filed Nov. 19, 1981, Ser. No. 323,129

Claims priority, application United Kingdom, Nov. 19, 1980, 8037093

Int. Cl.³ F42B 1/02

U.S. Cl. 102-307

7 Claims



1. A linear shaped charge comprising an elongate explosive body having a longitudinally extending indentation therein of substantially V-shaped cross section which indentation is provided with a cladding material, wherein the explosive body comprises a plurality of elongate explosive elements, one of which is positioned above and adjacent the apex of the indentation and is separated from the remainder of the explosive body, and means are provided for initiating detonation of the explosive body in said one element.

4,430,940

FIREARM CARTRIDGE ADAPTER

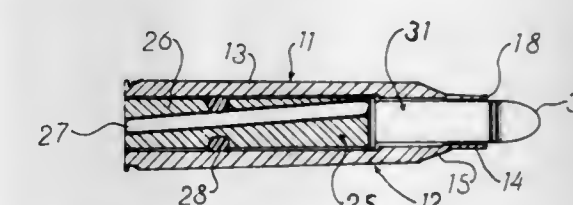
Neil B. Jermunson, Box 3034, Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 168,112, Jul. 14, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 393,131

Int. Cl.³ F42B 5/02, 9/02

U.S. Cl. 102-446

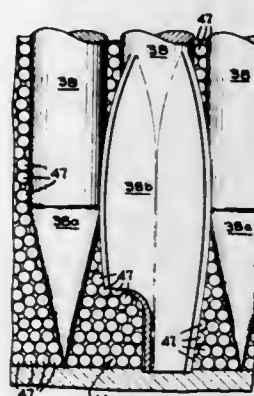
5 Claims



1. A cartridge adapter for a firearm including a chamber, a barrel and a center firing pin, said cartridge adapter including a body portion having an outer surface with cylindrical sections of differing outer diameters, said body portion being capable of intimate contact with said chamber of said firearm, a smaller of said cylindrical outer sections being joined to a

larger cylindrical outer section through a tapered intermediate outer section, an axial passage through said body portion including a first passage section extending from the free end of said smaller cylindrical outer section to the opposite end thereof, a second passage section within said body portion extending from the free end of said larger cylindrical outer section toward said first passage section but terminating short of the opposite end of said larger cylindrical outer section, a shoulder section adjacent the internal end of said second passage section, a third passage section slightly larger than said first passage section extending from said shoulder section toward the inner end of said first passage section, a fourth tapered passage section joining the adjacent ends of said first and third passage sections, said fourth passage section being disposed adjacent the juncture of said smaller cylindrical outer section and said tapered intermediate outer section, said first passage section having a diameter substantially the same as that of a smaller diameter cartridge case, said first, third and fourth passage sections together having a length substantially the same as that of said smaller diameter cartridge case, a firing assembly disposed within said second passage section having a diameter and a length substantially the same as that of said second passage section, said firing assembly including a breech block member and a firing pin extension member, said breech block member including a throughbore, said throughbore extending from a central point on the free end of said breech block member to a peripheral point on the opposite end of said breech block member, said breech block member having a smooth cylindrical outer surface along substantially its entire length except for a transverse annular recess intermediate the length thereof, said annular recess having a depth sufficient to intersect said throughbore at a point therealong, said firing pin extension member being disposed within said throughbore and extending from one end thereof to the opposite end thereof, said firing pin extension member having a smooth cylindrical outer surface, an O-ring disposed within said annular recess of said breech block member, said O-ring contacting said second passage section throughout its length and further contacting both said second passage section and said firing pin extension member along a portion of its length; whereby inserting a smaller diameter cartridge into the free end of said second passage section and advancing same until the rear end of said cartridge bears against said shoulder section and the bullet thereof extends from the free end of said first passage section, inserting said firing assembly into the free end of said second passage section to bear against said rear end of said smaller cartridge, and said cartridge adapter is inserted into a firearm chamber, the firing of said firearm will cause the firing pin thereof to strike the exposed end of said firing pin extension member driving same against the periphery of the rear of said smaller diameter cartridge to fire same and cause the bullet thereof to be forced through and from the barrel of said firearm.

missiles, a plurality of missiles received in said compartment, and a plurality of finely divided smooth particulates in the form



of glass spheres received in said compartment with the missiles to support the missiles during acceleration of the projectile.

4,430,942 MISSILE/CANISTER LATERAL SUPPORT PAD FLYOUT CONTROL SYSTEM

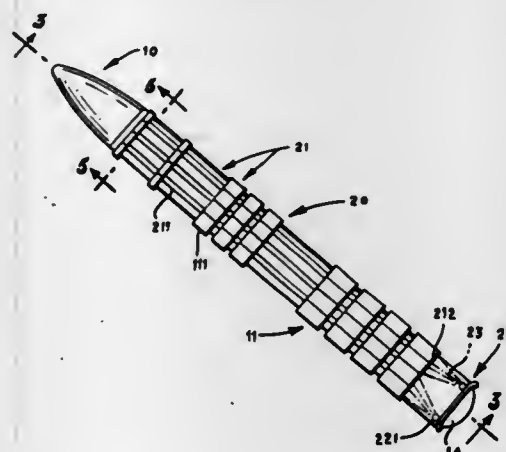
Roy J. Heyman, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1981, Ser. No. 318,655

Int. Cl.³ F42B 13/16

U.S. Cl. 102—520

7 Claims



1. An improved missile/canister support pad control system for insuring proper alignment of a missile in a canister and for removing upon flyout a plurality of support pads detachably mounted to a side of said missile and in sliding contact with said canister, said missile having a sabot-seal that contains efflux from a gas generator during a low velocity launch, said support pad control system comprising:

- a network of rods longitudinally disposed on said side of said missile, said rods having said support pads fixedly mounted thereon, each of said rods having a naturally straight section proximal to a nozzle of said missile and a naturally curved section proximal to a missile nose, whereby in a released position said curved section arches away from said missile, said curved section having a shape of about a quarter circle;
- a pivot ring detachably secured to said missile near said nozzle;
- means for connecting said network to said pivot ring; and
- means for releasing said network and said pivot from said missile after flyout.

4,430,941

PROJECTILE WITH SUPPORTED MISSILES

Harry Raech, Jr., San Jose, and Donald R. Kennedy, Los Altos, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed May 27, 1968, Ser. No. 741,148

Int. Cl.³ F42B 13/50

U.S. Cl. 102—496

15 Claims

1. A projectile having a compartment therein to receive

4,430,943

FIN-STABILIZED PROJECTILE HAVING A SABOT BASE AND FORMING A PRACTICE PROJECTILE

Erich Bock, Nuremberg, and Wolfgang Mosig, Hartmannshof, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

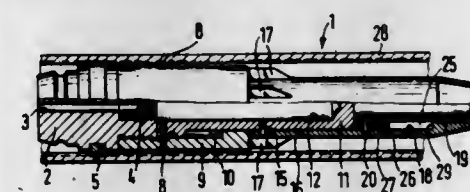
Filed Jul. 24, 1981, Ser. No. 286,617

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028378

Int. Cl.³ F42B 5/22

U.S. Cl. 102—522

7 Claims



1. A practice device having a sabot-driven sub-caliber fin-stabilized practice projectile, said device comprising:

- (a) a sabot base, said sabot defining a longitudinal axis within a barrel, said sabot having:
 - (i) a passageway for propellant gas;
 - (ii) a longitudinally driven piston mounted within said sabot, said piston driven from a first position to a second position by propellant gas passing through said passageway;
 - (iii) first coupling means securing said piston to said sabot in a first position until a predetermined gas pressure is developed behind said piston to shear the first coupling and drive said piston from said first to said second position,
- (b) a sub-caliber fin-stabilized practice projectile mounted on said piston, said projectile having:
 - (i) a projectile shell having external fins;
 - (ii) a projectile head driven by said piston, and
 - (iii) second coupling means for securing said projectile to said piston, said second coupling means being sheared by momentum imparted to said projectile head by the piston as it terminates its travel at its second position, whereby propellant gas expels the sabot from a barrel while simultaneously driving said piston from its first position to its second position and thereby launch the projectile by momentum imparted from said sabot and said piston.

4,430,944

MOBILE APPARATUS AND METHOD FOR CLEANING BALLAST SUPPORTING A TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 9, 1981, Ser. No. 232,883

Claims priority, application Austria, Feb. 25, 1980, 1043/80

Int. Cl.³ E01B 27/10, 27/17

U.S. Cl. 104—7 R

11 Claims



1. A mobile apparatus for cleaning ballast supporting a track, which comprises a train arranged for non-stop movement on the track in an operating direction, the train including

- (a) a ballast cleaning machine comprising
 - (1) a track lifting mechanism and
 - (2) means for cleaning the ballast and for separating the cleaned ballast from a waste component,

(b) a series of freight cars arranged to receive and transport the waste component,

(c) a ballast tamping machine arranged between the ballast cleaning machine and the series of freight cars, the ballast tamping machine being arranged forwardly of the ballast cleaning machine in the operating direction and comprising

- (1) an additional track lifting mechanism and
- (2) a tamping head capable of intermittent movement along the track, and

(d) a conveyor means for conveying the waste component from the ballast cleaning machine to respective ones of the freight cars, the conveyor means comprising

- (1) a first conveyor means section arranged to convey the waste component along the series of freight cars and
- (2) a second conveyor means section arranged on the tamping machine, the second conveyor means section having an input end adjacent the ballast cleaning machine and arranged to receive the waste component therefrom, and an output end adjacent an input end of the first conveyor means section and arranged to deliver the waste component thereto.

4,430,945

MOBILE TAMPING, LEVELING AND LINING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

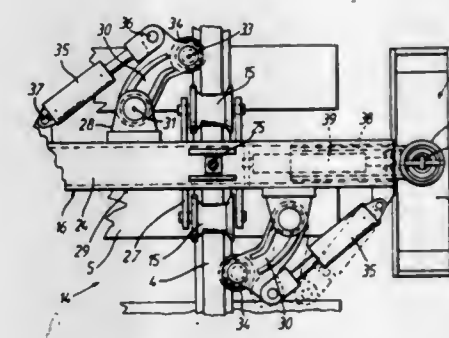
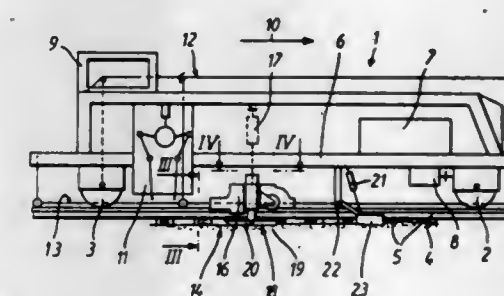
Filed Aug. 5, 1981, Ser. No. 290,193

Claims priority, application Austria, Sep. 4, 1980, 4462/80

Int. Cl.³ E01B 29/04

U.S. Cl. 104—7 B

5 Claims



1. A mobile track tamping, leveling and lining machine for correcting the position of a track and comprising

- (a) a tool carrier mounted on the machine for movement along, and on, the track rails,
- (b) lifting and lining drive means for vertically and laterally moving the tool carrier,
- (c) track engaging tool means mounted on the carrier and comprising only two track rail engaging and exiting rollers for each track rail, the rollers being arranged on opposite sides of the rail and having a circumferential configuration conforming to the side faces and undersides of the head of the rail on the opposite sides thereof,
- (d) a pivoting arm connected to each one of the track rail engaging rollers and independently pivotal on the tool carrier about a respective vertical axis for pivoting the rollers in a plane substantially parallel to the track, and

- (e) drive means connected to each one of the pivoting arms for driving the rollers into force-transmitting engagement with the conforming side face and underside of a respective one of the track rails.

4,430,946

MOBILE MACHINE AND METHOD FOR COMPACTING BALLAST

Josef Theurer, Vienna, and Johann Hansmann, Klosterneuburg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H., Vienna, Austria

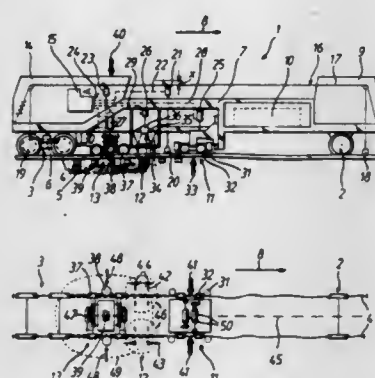
Filed Oct. 21, 1981, Ser. No. 313,606

Claims priority, application Austria, Jan. 16, 1981, 172/81

Int. Cl.³ E01B 27/17

U.S. Cl. 104—7 B

21 Claims



1. A mobile machine for compacting ballast of a ballast bed supporting a track consisting of two rails fastened to ties resting on the ballast, comprising

- (a) a machine frame,
- (b) undercarriages supporting the machine frame on the track rails for movement in an operating direction,
- (c) a ballast tamping unit vertically movably mounted on the machine frame, the tamping unit including
 - (1) pairs of reciprocable and vibratory tamping tools arranged to tamp ballast under respective ones of the ties upon immersion of the tamping tools in the ballast when the tamping unit is vertically moved,
- (d) a track correction unit mounted on the machine frame forwardly of the tamping unit in the operating direction,
- (e) a track correction reference system for controlling the track correction unit,
- (f) a track stabilization unit mounted on the machine frame rearwardly of the tamping unit in the operating direction in a range of the machine frame extending from the tamping unit to one of the undercarriages immediately following the tamping unit, no undercarriage supporting the machine frame on the track between the tamping unit and the one undercarriage, the track stabilization unit including
 - (1) a chassis,
 - (2) guide roller means firmly holding the chassis in engagement with the track rails and guiding the chassis along the track upon movement of the machine frame in the operating direction,
 - (3) vibrator means for imparting essentially horizontal vibrations to the track, and
 - (4) power drive means connecting the chassis to the machine frame and arranged to impart essentially vertical load forces to the chassis, and
- (g) control means for operating the ballast tamping, track correction and track stabilization units.

16. A method of compacting ballast of a ballast bed supporting a track consisting of two rails fastened to ties resting on the ballast with a mobile machine comprising a machine frame supported on undercarriages for moving the machine in an operating direction, the ballast compacting method including the steps of

- (a) tamping ballast successively under respective ones of the ties in successive tamping zones,
- (b) simultaneously imparting to the track essentially horizontal vibrations extending transversely to the track and subjecting the track to essentially vertical load forces in successive ballast stabilization zones immediately adjacent, and rearwardly of, the successive tamping zones, the stabilization zones overlapping the tamping zones, whereby the ballast in the overlapping zones is so fluidized that it attains a maximum density and a correspondingly reduced volume, causing the track supported on the ballast to sink to a desired level corresponding to the reduced ballast volume, and
- (c) holding the track at the desired level under the load of one of the undercarriages rearwardly of the overlapping ballast tamping and stabilization zones in the operating direction.

4,430,947

SHELF SUPPORT SYSTEM

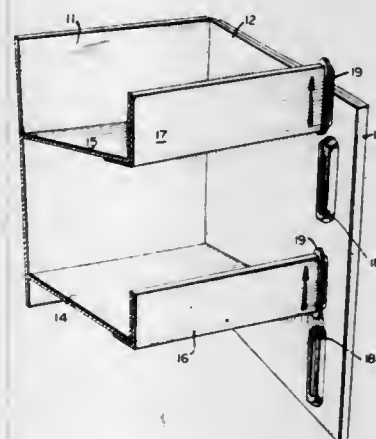
Martin C. Kvame, Huron, Ohio, assignor to Displayco Midwest, Inc., a division of Schiffenhaus Packaging Corporation, Sandusky, Ohio

Filed Mar. 31, 1981, Ser. No. 249,438

Int. Cl.³ A47B 3/00

U.S. Cl. 108—111

26 Claims



1. A support system for shelving or the like comprising a pair of load bearing members, one of which is attached to a shelf and the other of which is attached to a wall or the like on which said shelf is mounted, said first member comprising a male connector element in the form of an elongated flange with an integral locking means and said second member comprising a female connector element in the form of an elongated socket with an integral slot for accepting said male connector element, wherein said male connector element is adapted to snap into the female connector element for engagement and slide from the female connector element for disengagement, said male connector element further comprises a guard member integral with and spaced from the end of the elongated flange portion and arranged substantially perpendicular thereto, said male connector element further comprises a second integral flange portion that is essentially an extension of the first flange portion that is located on the opposite side of said guard member.

4,430,948

FUEL STOKER AND FURNACE

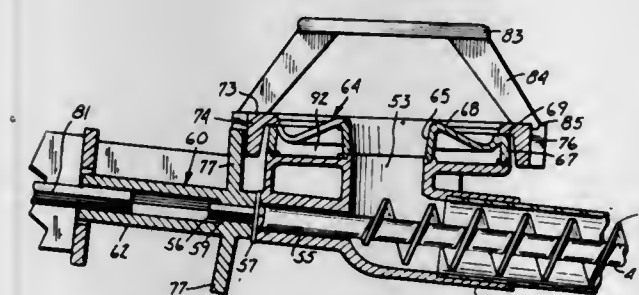
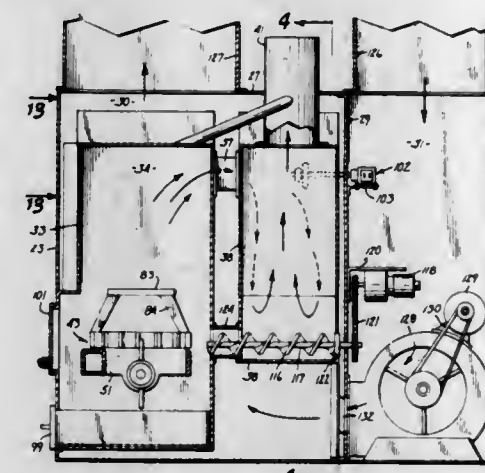
Tony L. Schafer; Stephen A. Schafer; Gregory L. Schafer, and H. Darwin Swett, all of Dickinson, N. Dak., assignors to Western Heating, Inc., Dickinson, N. Dak.

Division of Ser. No. 309,245, Oct. 7, 1981, which is a continuation-in-part of Ser. No. 240,213, Mar. 3, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,325

Int. Cl.³ F23K 3/18

U.S. Cl. 110—101 R

23 Claims



1. A solid fuel burning assembly comprising:

- a combustion air housing having walls defining a chamber and a generally flat top surface for support of a grate, and having a central fuel opening at a first central location connected to a central fuel port for passage of solid fuel from a location beneath the housing to a location above the housing;
- a fuel grate located on the top surface of the housing, said fuel grate having an inner annular wall disposed in surrounding relationship to said central fuel opening of the housing with a lower edge in generally sealing relationship to the housing top surface, an outer annular wall radially spaced from the inner annular wall and having a lower edge in generally sealing relationship to the housing top surface, a grate surface extending between the inner annular wall and the outer annular wall and spaced from the top surface of the housing, said grate surface configured sloping gently downward from the upper edge of the inner annular wall to a trough bottom and sloping steeply upward from the trough bottom to the upper edge of the outer annular wall to form an annular solid fuel burning trough, said outer annular wall having an upper horizontal ledge, said grate surface having a plurality of air circulation openings extended between the upper edges of the inner annular wall and the outer annular wall open to the space between the grate surface and the housing top surface;
- a rotatable annular agitator and discharge ring mounted coaxially on the grate having an inner edge supported on the horizontal ledge of the outer annular wall of the grate, a horizontal planar upper surface for conveying ashes to the periphery of said agitator and discharge ring for discharge of the ashes, a vertical sidewall disposed in straddling relationship to the outer annular wall of the grate, and a plurality of peripherally spaced, vertical teeth outwardly extended from the sidewall for substantially the height of the sidewall;

ding relationship to the outer annular wall of the grate, and a plurality of peripherally spaced, vertical teeth outwardly extended from the sidewall for substantially the height of the sidewall;

a fuel screw conveyor assembly including a tubular screw conveyor housing assembled to the fuel entry port of the combustion air housing, a conveyor shaft located in the tubular screw conveyor housing and a conveyor flight on the conveyor shaft to deliver fuel to the fuel entry port to be moved through the fuel opening to the grate;

said conveyor shaft having a portion extending through the combustion air housing beyond the fuel opening;

means to rotate the agitator and discharge ring including a ring rotating sprocket assembled to the end of the conveyor shaft for rotation with the conveyor shaft, said sprocket having at least one outwardly extended sprocket tooth positioned for engagement with the agitator and discharge ring teeth upon rotation of the sprocket, said sprocket tooth of sufficient length to result in said engagement at a point higher than a median line between the top and bottom of said agitator and discharge ring teeth to rotate said agitator and discharge ring;

a rotatable annular agitator and discharge ring mounted coaxially on the grate having an inner edge supported on the horizontal ledge of the outer annular wall of the grate, a horizontal planar upper surface for conveying ashes to the periphery of said agitator and discharge ring for discharge of the ashes, a vertical sidewall disposed in straddling relationship to the outer annular wall of the grate, and a plurality of peripherally spaced, vertical teeth outwardly extended from the sidewall for substantially the height of the sidewall;

a fuel screw conveyor assembly including a tubular screw conveyor housing assembled to the fuel entry port of the combustion air housing, a conveyor shaft located in the tubular screw conveyor housing and a conveyor flight on the conveyor shaft to deliver fuel to the fuel entry port to be moved through the fuel opening to the grate;

said conveyor shaft having a portion extending through the combustion air housing beyond the fuel opening;

means to rotate the agitator and discharge ring including a ring rotating sprocket assembled to the end of the conveyor shaft for rotation with the conveyor shaft, said sprocket having at least one outwardly extended sprocket tooth positioned for engagement with the agitator and discharge ring teeth upon rotation of the sprocket, said sprocket tooth of sufficient length to result in said engagement at a point higher than a median line between the top and bottom of said agitator and discharge ring teeth to rotate said agitator and discharge ring;

means for rotation of the sprocket and conveyor shaft; said housing having at least one air supply opening in the top surface thereof communicating with said chamber and located beneath the grate surface to supply air under pressure to the grate surface through the grate openings for purposes of combustion with solid fuel introduced to the grate through the fuel opening; and

means to supply combustion air under pressure to said chamber including a combustion air duct connected to the combustion air housing at a second location remote from the first central location of the fuel entry port.

19. A solid fuel burning assembly for installation in a furnace, comprising:

a combustion air housing having walls defining a chamber and a generally flat top surface for support of a grate, and

having a central fuel opening at a first central location connected to a central fuel port for passage of solid fuel from a location beneath the housing to a location above the housing;

a fuel grate located on the top surface of the housing, said fuel grate having an inner annular wall disposed in surrounding relationship to said central fuel opening of the housing with a lower edge in generally sealing relationship to the housing top surface, an outer annular wall radially spaced from the inner annular wall and having a lower edge in generally sealing relationship to the housing top surface, a grate surface extending between the inner annular wall and the outer annular wall and spaced from the top surface of the housing to support fuel during combustion in a combustion area located above the grate surface, said grate surface configured sloping gently downward from the upper edge of the inner annular wall to a trough bottom and sloping steeply upward from the trough bottom to the upper edge of the outer annular wall to form an annular solid fuel burning trough, said outer annular wall having an upper horizontal ledge, said grate surface having a plurality of air circulation openings extended between the upper edges of the inner annular wall and the outer annular wall open to the space between the grate surface and the housing top surface; a rotatable annular agitator and discharge ring mounted coaxially on the grate having an inner edge supported on the horizontal ledge of the outer annular wall of the grate and a horizontal planar upper surface for conveying ashes to the periphery of said agitator and discharge ring for discharge of the ashes;

means to rotate the agitator and discharge ring; said housing having at least one air supply opening in the top surface thereof communicating with said chamber and located beneath the grate surface to supply air under pressure to the grate surface through the grate openings for purposes of combustion with solid fuel introduced to the grate through the fuel opening;

means to supply combustion air under pressure to said chamber including a combustion air duct connected to the combustion air housing at a second location remote from the first central location of the fuel entry port;

means to supply fuel to the grate for combustion; a combustion burner plate assembly including a relatively horizontal combustion burner plate member located vertically spaced above the grate surface and combustion area, said burner plate member of sufficient horizontal dimension and positioned to deflect rising products of combustion back toward the combustion area of the grate assembly; and

leg means supporting the combustion burner plate member above the combustion area of the grate assembly.

4,430,949

SHAVINGS—OR CHIPS—FIRED BURNER UNIT FOR HEATING BOILERS

Ake Ekenberg, Söderby, 762 00 Rimbo, Sweden
PCT No. PCT/SE81/00103, § 371 Date Nov. 20, 1981, § 102(e)
Date Nov. 20, 1981, PCT Pub. No. WO81/02922, PCT Pub. Date Oct. 15, 1981

PCT Filed Mar. 31, 1981, Ser. No. 325,438
Claims priority, application Sweden, Apr. 1, 1980, 8002478
Int. Cl.³ F23N 5/24

U.S. Cl. 110—193

6 Claims

1. A burner unit for shavings or chips for firing in a boiler, including a combustion chamber, fire bars and a stoker apparatus for feeding the chips to the boiler comprising:

a feeder stub, said stoker apparatus of the burner unit being connected to said feeder stub arranged in an upper portion of the boiler;

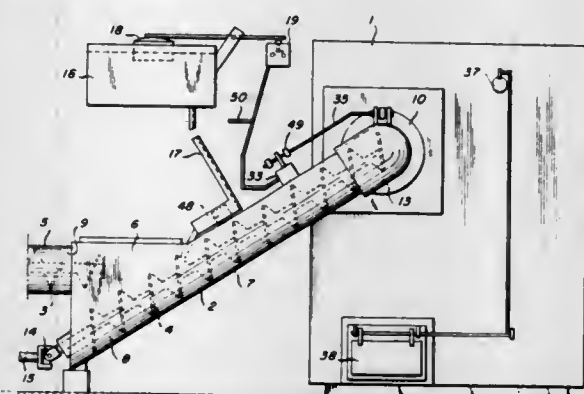
control means for the burner unit for regulating the quantity of chips fed by the stoker apparatus;

a predesiccation chamber for the burner unit being posi-

tioned inside the combustion chamber of the boiler above the fire bars in the boiler;

said predesiccation chamber being formed of several separate building components with the same shape at their upper and lower portions, and with mainly closed side walls;

said building components being insertable into an existing boiler and being stackable one on the top of the other within the boiler;



an upper portion of said building components being adapted to receive the chips fed in through the feeder stub; a middle portion of said building components is a chip chamber provided with a sloping plane for feeding chips to an adjustable firing grid; and a lower portion of said building components is formed for the combustion of the chips and for the ignition of the chips; said firing grid being formed as an outlet below the chip chamber.

4,430,950

INCINERATOR

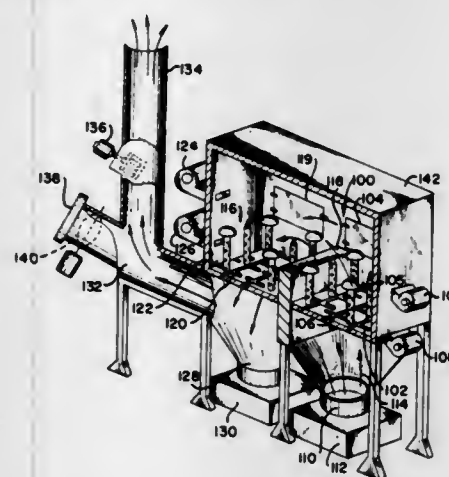
Sam Foresto, 243 Willis Ave., Mineola, N.Y. 11501

Filed Aug. 3, 1982, Ser. No. 404,665

Int. Cl.³ B09B 3/00

U.S. Cl. 110—235

21 Claims



15. An incinerator for burning waste material placed therein and having a flue for exhausting smoke and waste gases produced by the burning, comprising:

a combustion chamber having a plurality of burning stations arranged in substantially side-by-side relation, each comprising means for receiving and burning waste material disposed thereon;

means for forcing flames and waste gases from the burning material on adjacent burning stations in opposite directions, upwardly from one burning station and downwardly from a next adjacent burning station;

means for conducting the gases forced in one direction from the burning material on one burning station to, into and

through the burning material on the next adjacent burning station in the opposite direction; conduit means connected between said combustion chamber and the flue and in fluid communication with the last of said plurality of burning stations; and means for isolating said conduit means from all other burning stations, whereby waste gases produced by burning waste material in said combustion chamber pass through said conduit means.

16. A method of incinerating waste material comprising the steps of:

burning waste material on a first grate; burning waste material on a second grate mounted in substantially side-by-side relation to said second grate and provided with perforated tubes extending above and below the burning waste material thereon;

directing the flames and hot waste gases from the burning material on said first grate to the burning waste material on said second grate and the hot waste gases from the burning material on said first grate through said perforated tubes into and through the burning waste material on said second grate; and

directing the hot waste gases resulting from the burning on said first grate and the burning on said second grate towards a chimney.

4,430,951

PROCESS FOR CLEANING OF FLUE GASES OF A POWER PLANT WITH THE AID OF A COAL DUST BURNING FLAME AND APPARATUS FOR CARRYING OUT THE PROCESS

Heribert Breidenbach, Essen, and Strauss Udo, Bochum, both of Fed. Rep. of Germany, assignors to Steag AG, Essen, Fed. Rep. of Germany

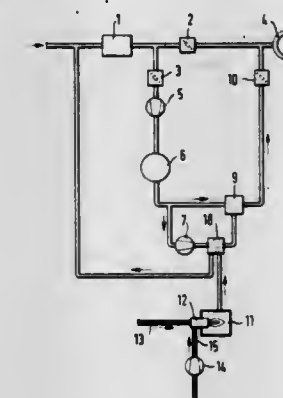
Filed Aug. 27, 1982, Ser. No. 412,105

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136480

Int. Cl.³ F23J 11/00

U.S. Cl. 110—345

10 Claims



1. A process for the cleaning of flue gases heated in a coal dust fired power plant boiler comprising the steps of: filtering the flue gases to remove dust therefrom; wet desulfurizing at least a portion of the flue gases; burning coal dust to provide reheating gases for the flue gases;

carrying out a heat exchange between the desulfurized flue gases and the reheating gases to reheat the flue gases for discharge from the power plant; and thereafter adding the reheating gases to the flue gases before the flue gases undergo wet desulfurization.

7. Apparatus for cleaning flue gases heated in a coal dust fired power plant boiler comprising:

a dust filter for receiving flue gases from the boiler and for removing dust therefrom;

a wet desulfurization means coupled to said dust filter for desulfurizing at least a portion of the flue gases;

at least one coal dust burner for providing reheating gases for the flue gases;

a heat exchanger coupled to said wet desulfurization means

and said coal dust burner for carrying out a heat exchange between the desulfurized flue gases and the reheating gases to reheat the flue gases for discharge from the power plant; and

conduit means coupled to said heat exchanger for adding the reheating gases to the flue gases upstream of said wet desulfurization means.

4,430,952

PLANTER GAUGE WHEELS WITH ADJUSTABLE EQUALIZER MECHANISM

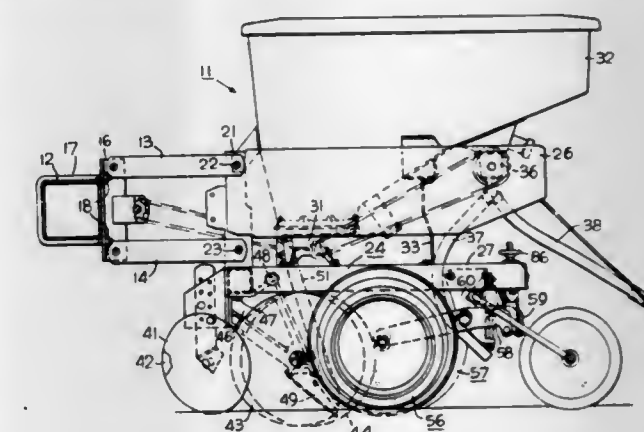
David L. Murray, La Porte, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 7, 1982, Ser. No. 415,150

Int. Cl.³ A01C 5/06

U.S. Cl. 111—85

3 Claims



1. In an agricultural implement including a frame adapted for connection in towed relation to a draft appliance and a soil penetrating tool secured to said frame, the combination comprising:

first and second laterally spaced gauge wheels operable to support said frame and control the working depth of said soil penetrating tool and

means mounting said wheels in supporting relation to said frame including

a pair of longitudinally extending walking beams in side-by-side relation to one another for supporting said wheels, respectively,

means rotatably supporting said wheels on corresponding front ends of said walking beams,

means mounting intermediate portions of said beams on said frame for independent vertical pivotal movement, and

an equalizer mechanism interconnecting the corresponding rear ends of said beams including

a pulley at the rear of said frame,

a support rotatably mounting said pulley and adjustably secured to said frame for vertical adjustment of said pulley between predetermined raised and lowered positions, and

a flexible tension member having opposite ends connected to said corresponding rear ends of said beams and an intermediate portion reeved about said pulley.

4,430,953

SEWING MACHINE NEEDLE DRIVE MECHANISM

Henry J. Spies, P.O. Box 384, Station "B", London, Ontario, Canada N6A 4W1

Filed Feb. 24, 1981, Ser. No. 237,583

Int. Cl.³ D05B 1/10, 55/10, 55/14

U.S. Cl. 112—165

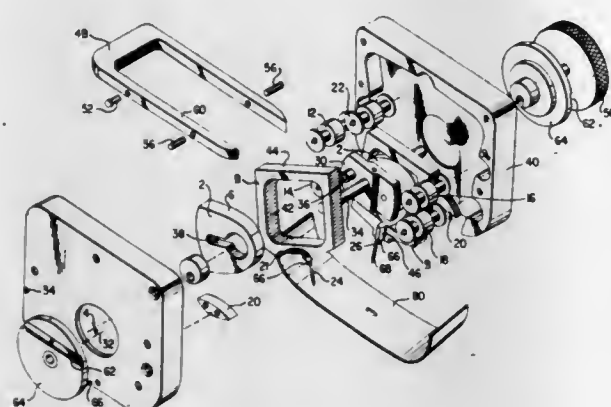
11 Claims

1. A needle drive mechanism for a sewing machine, comprising:

(a) a frame;

(b) an eccentric cam mounted to the frame for rotation about

- an axis and having a peripheral bearing surface of predetermined contour;
- (c) a cam cage follower having an inner bearing surface circumscribing the peripheral bearing surface of the cam, against portions of which, inner bearing surface portions of the peripheral bearing surface bear to move the cam cage follower through a cycle as the cam rotates a revolution, the cam cage follower also having an outer bearing surface;
- (d) edge guide means positioned about the outer surface of the cam cage follower to bear against parts on the surface



- thereof and govern the movement and orientation of the cam cage follower throughout its cycle and
- (e) needle securing means associated with the cam cage follower to maintain a needle in predetermined orientation with respect to the cam cage follower,
- the shape and position of the functional bearing surfaces on the cam cage follower being determined, and the cam cage follower being positioned with respect to the cam peripheral bearing surface and the edge guide means, such that rotation of the cam causes the cam cage follower to move in a manner which will achieve a predetermined movement and orientation of a needle secured in the needle securing means.

4,430,954

CARGO TANK SUPPORT

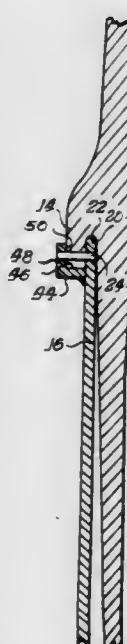
Alan L. Schuler, Hingham, Mass., assignor to General Dynamics Corporation, St. Louis, Mo.

Continuation of Ser. No. 211,763, Dec. 1, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,091

Int. Cl.³ B63B 25/12

U.S. Cl. 114-74 A

3 Claims



1. In a marine vessel for transporting liquefied gas at a temperature below about -50° C., an aluminum cargo tank for holding the liquefied gas and a support structure for mounting said tank in the hull of the vessel, which support structure

includes a two-piece metallic skirt with a first aluminum piece having an undersurface and being directly affixed to said tank and depending therefrom, a second nonaluminum piece being connected to said hull, wherein the improvement comprises: the upper end of said second piece being proportioned to be received in an annular region formed between the outer surface of said cargo tank and said first piece, said upper end interfacing in supporting contact with the surfaces which define said annular region and extending to the upper end of said annular region, one of said pieces having a rounded, vertically extending notch, the other of said pieces having a rounded end with a curvature and diameter to fit into the rounded notch to fill the same and to provide a rounded interface between the pieces, said second piece extending substantially vertically downward from said upper end directly to the hull structure of said ship, whereby the weight of said tank is substantially entirely borne by said upper end,

means mechanically interconnecting said first and second skirt pieces to prevent relative rotational movement between said pieces and prevent upward displacement of said tank, and

a horizontal flange affixed to the outer surface of said second piece which engages said undersurface of said first piece.

4,430,955

FLEXIBLE FLOATING BOOM COMPRISING TRANSVERSE STIFFENERS OF VARIABLE STIFFNESS

Bernard Jaffrennou, Echirolles, and Maurice Cessou, Com-munay, both of France, assignors to Institut Francais Du

Petrole, Rueil-Malmaison and Societe Rolba, Fontaine, both of, France

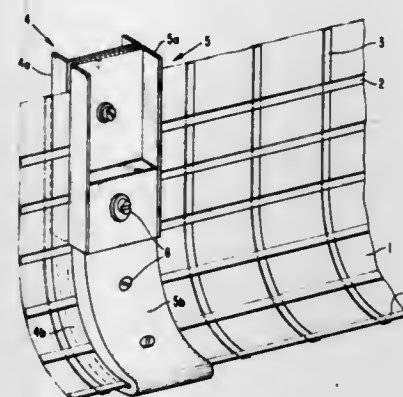
Filed Feb. 18, 1981, Ser. No. 235,475

Claims priority, application France, Feb. 14, 1980, 80 03245

Int. Cl.³ E02B 15/04

U.S. Cl. 114-267

23 Claims



1. A floating boom comprising a flexible structure made up of a longitudinally extending barrier having transverse stiffening means which extend throughout from the top to the bottom of said boom with float means attached thereto and adapted for supporting said flexible structure in a substantially vertical position in water, said stiffening means having in at least at the lower part thereof a stiffness progressively decreasing toward the lower edge of the boom, and said stiffening means being adapted for resiliently bending at the lower part when the boom is in use, in response to a water current of sufficient velocity to cause said bending, and adapted for simultaneously preventing any substantial change in the inclination of the remainder of the boom in the water.

4,430,956

SPRAY BOOTH WITH UNDEPOSITED COATING MATERIAL COLLECTION SYSTEM

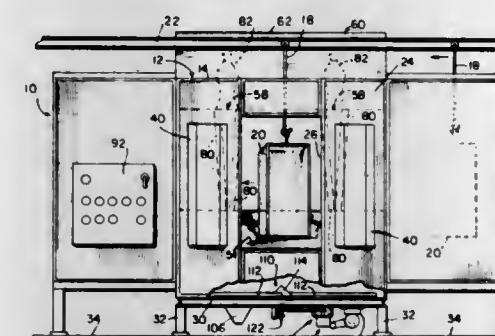
Robert L. Koch, II, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Filed Jun. 1, 1982, Ser. No. 383,354

Int. Cl.³ B05C 15/00

U.S. Cl. 118-326

20 Claims



1. A system for applying a coating material to articles, comprising a booth having top, bottom, and back walls, dispensing means for depositing coating material onto the articles in the booth, one of the top and back walls including a vent opening, an exhaust fan coupled to the vent opening for pulling atmosphere from the booth in a first direction through the vent opening, at least one filter positioned between the dispensing means and the vent opening for collecting undeposited coating material present in the atmosphere being pulled from the booth, filter-cleaning means positioned between the filter and the fan for cleaning the filter, the filter-cleaning means including an air source, at least one venturi tube coupled to the vent opening adjacent the air source for directing a pulse of air through the filter in a second direction to dislodge the collected coating material therefrom and allow it to fall to the bottom wall, the bottom wall including a collection opening for collecting undeposited coating material which falls to the bottom wall, sweeping means for sweeping undeposited coating material on the bottom wall into the collection opening.

4,430,957

APPARATUS FOR APPLYING SOLID PARTICLES TO THE IMAGE CARRIER ON A NON-IMPACT PRINTER

Bernard Cherbuy, Belfort, and Raymond Bongrain, Danjoutin, both of France, assignors to Cii/Honeywell Bull (Societe Anonyme), Paris, France

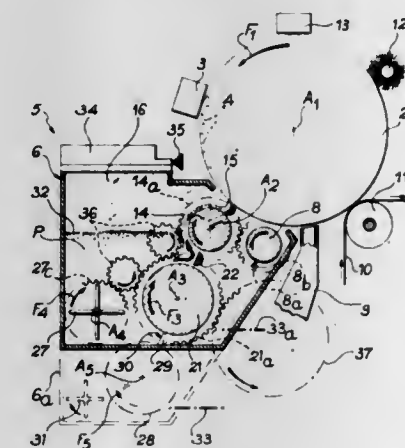
Filed Feb. 10, 1983, Ser. No. 465,613

Claims priority, application France, Feb. 11, 1982, 82 02205

Int. Cl.³ G03G 15/09

U.S. Cl. 118-657

20 Claims



1. Apparatus for applying solid particles to the image carrier (2) of a non-impact printer comprising a tank (6) containing a supply of the particles, a first cylindrical conveying device (21) mounted for rotation in said tank on a first axis (A3), a cylindri-

cal conveying member (14) mounted for rotation in said tank on a second axis (A2), a first deflector (15) interposed between the conveying member (14) and the carrier (2) and a second deflector (22) interposed between the conveying device (21) and the conveying member (14) to allow the transfer of particles from the conveying device (21) to the conveying member (14) and thence to the carrier (2) upon rotation of the first conveying device (21) and the conveying member (14).

4,430,958

TIRE HANDLING AND SPRAYING APPARATUS

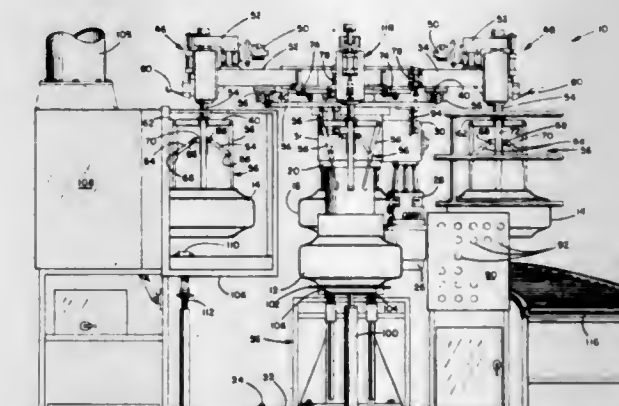
Joseph C. Boggs, Nashville, Tenn., assignor to Armstrong Rubber Company, Madison, Tenn.

Filed Apr. 12, 1982, Ser. No. 367,568

Int. Cl.³ B05C 5/00

U.S. Cl. 118-668

17 Claims



1. An apparatus for handling a tire with an interior rim and spraying a fluid on the tire, comprising;
- a rotatable center stand having a center axis about which said center stand is rotatable;
- at least one rotatable head mounted on said center stand and having a head axis about which said head is rotatable;
- at least one tire grasping means extending from said head for selectively grasping and releasing the interior rim of the tire and being operable to rotate in unison with said head to selectively spin the tire;
- stand drive means for selectively rotating said center stand to move said head and tire grasping means in a circular path about the center axis and for selectively stopping the rotation of said center stand in at least three positions to stop said head and tire grasping means in a load position, a spray position and a discharge position;
- head drive means mounted on said center stand for selectively rotating said head to rotate said tire grasping means;
- first actuating means for actuating said tire grasping means to grasp the interior rim of the tire when said head and said tire grasping means are stopped in the load position;
- second actuating means for actuating said head drive means to rotate said head about said head axis to rotate said tire grasping means and spin the tire when said head is in the spray position;
- third actuating means for actuating said tire grasping means to release the interior rim of the tire when said head is in the discharge position; and
- means for spraying fluid on the tire when said head, tire grasping means and tire are in the spray position.

4,430,959

SEMICONDUCTOR VAPOR PHASE GROWING APPARATUS

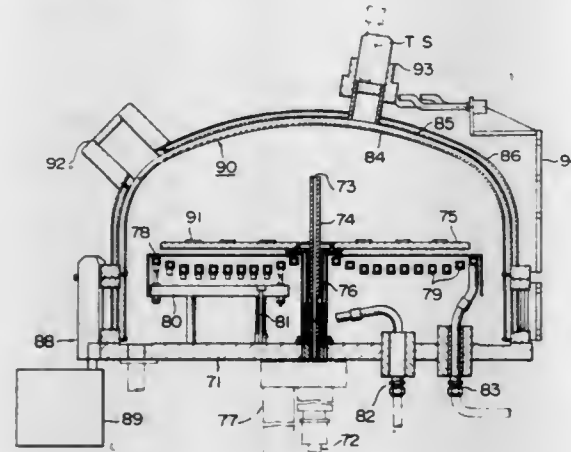
Hitoshi Ebata, Mishima, and Shigetugu Matunaga, Gotenba, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,231

Claims priority, application Japan, Jan. 28, 1982, 57-11997
Int. Cl.³ B05C 1/00, 3/00

U.S. Cl. 118—697

11 Claims



1. Semiconductor vapor phase growing apparatus comprising:

- a reaction furnace for vapor phase growing a semiconductor on a semiconductor substrate;
- means for heating said substrate;
- sources of various gases necessary for vapor phase growth;
- a pipe line network for interconnecting said reaction furnace and said sources;
- valve means connected in said pipe line network for supplying predetermined quantities of said gases to said reaction furnace; and
- control means for supplying control signals to said valve means,
- said control means including a first memory region for storing a process program group comprising a group of process programs including informations regarding a time for designating a process of vapor phase growth in said reaction furnace, gases utilized, flow quantities thereof and furnace temperature, and a second memory region that stores a system program that decodes said process program group for producing control signals for said valve means.

4,430,960

ARRANGEMENT FOR KEEPING FATTENED POULTRY

Hans J. Nagel, Contrescarpe 27, D-2800 Bremen 1, Fed. Rep. of Germany, and Egon Schumacher, Barnstorf, Fed. Rep. of Germany, assignors to Hans Joachim Nagel, Bremen, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,175

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 3042043

Int. Cl.³ A01K 31/00

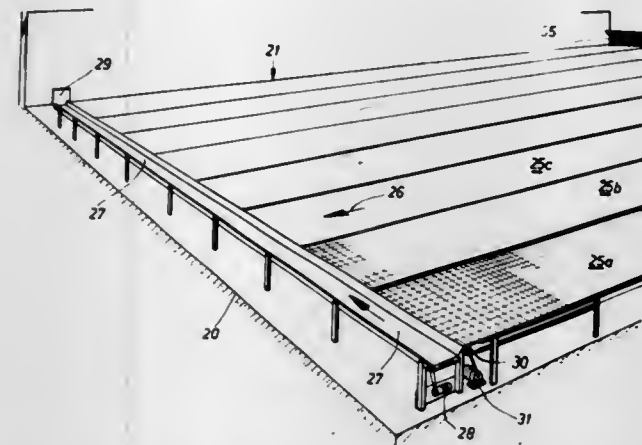
U.S. Cl. 119—22

20 Claims

1. An apparatus for housing small animals, comprising:
- a housing enclosure;
 - an animal conveyor supporting floor (21), said supporting floor comprising a plurality of intersecting supporting profiles (33) made of a soft elastic material, said supporting profiles being interconnected so as to form a plurality of openings (34) in said supporting floor, said supporting profiles having an interior hollow portion opening downwardly, said supporting profiles forming a plurality of mats (32), said supporting floor being divided into a plu-

rality of adjacent tracks, (25a, 25b, 25c . . .), each of said tracks comprising a plurality of said mats;

a plurality of supporting members (38) embedded in said mats and extending in a direction transverse to a conveying direction of said supporting floor;



lateral conveying members connected to said supporting members for conveying said supporting members and said tracks along said conveying direction; and

a plurality of soft elastic coverings (40) formed in a region above said supporting members.

4,430,961

INSECTICIDE IMPREGNATED TAG FOR USE ON AN ANIMAL'S TAIL OR LEG

Lester M. Steckel, Box 235, Taylor, Nebr. 68879

Filed Aug. 16, 1982, Ser. No. 408,474

Int. Cl.³ A01K 13/00, 29/00

U.S. Cl. 119—156

3 Claims



1. A tag for an animal's tail, comprising,
- a flat, flexible member impregnated with insecticide, and a strap means secured to said flat member adapted to be wrapped around and secured to the animal's tail,
 - said flat member having opposite sides and ends, said flat member having a plurality of spaced-apart openings formed therein, said strap means having a plurality of spaced-apart pegs thereon which detachably receive said openings.

4,430,962

FORCED FLOW VAPOR GENERATOR PLANT

Pawel Miszak, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 16, 1981, Ser. No. 331,372

Claims priority, application Switzerland, Dec. 23, 1980, 9497/80

Int. Cl.³ F22D 7/00

U.S. Cl. 122—406.5

5 Claims

1. A forced flow vapor generator plant comprising
- treatment means for desalinating a flow of water to a conductivity of less than 0.2 microsiemens per centimeter and to a silicon content of less than 0.02 parts per million;
 - a high pressure feed pump for pumping a flow of water from said treatment means;
 - a vapor generator having a plurality of vertical tubes disposed in seal-tight relation to each other to define an evaporator about a combustion chamber, a plurality of vertical tubes disposed in seal-tight relation to each other

4,430,964

FLUID INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kenneth M. Coppock, 8025 18th Ave., N.E., Seattle, Wash. 98115

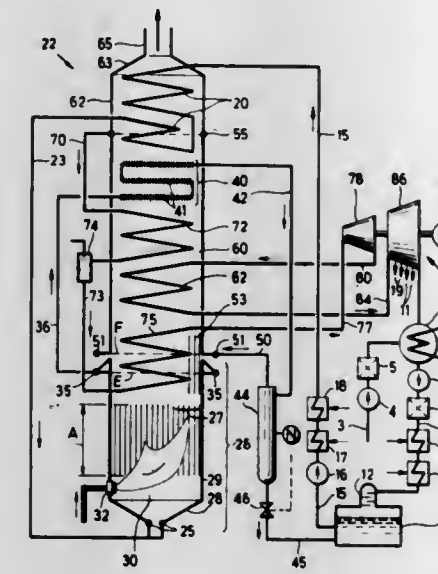
Filed Jun. 23, 1981, Ser. No. 276,472

Int. Cl.³ F02B 19/00

U.S. Cl. 123—25 B

12 Claims

and to said evaporator tubes to define a first superheater about a flue above said combustion chamber, an economiser within said flue connected to and between said feed pump and said evaporator to deliver a heated flow of water to said evaporator, and a final evaporator within said flue upstream of said economiser and connected to said evaporator to receive a mixture of water and vapor therefrom; and



a water-separating means connected to said final evaporator to receive a mixture of water and vapor therefrom, said water-separating means having a return line communicating with a position between said treatment means and said evaporator for returning separated water thereto and a tube communicating with said first superheater to deliver vapor thereto whereby the plant is operable on a once-through flow through said evaporator in a load range above 50% of full load.

4,430,963

SYSTEM FOR GENERATING DRY COAL WEIGHT SIGNAL FOR COAL FEEDER AND CONTROL SYSTEM BASED THEREON

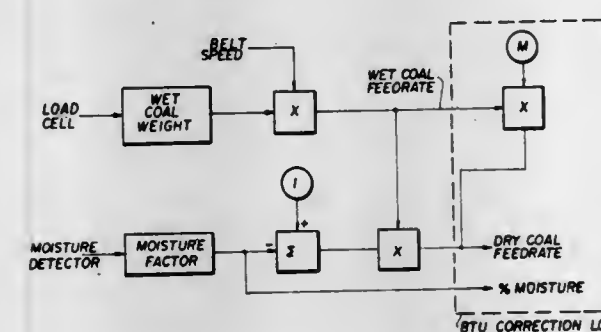
Alain Finet, Newbury, Ohio, assignor to General Signal, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,613

Int. Cl.³ F22B 37/42

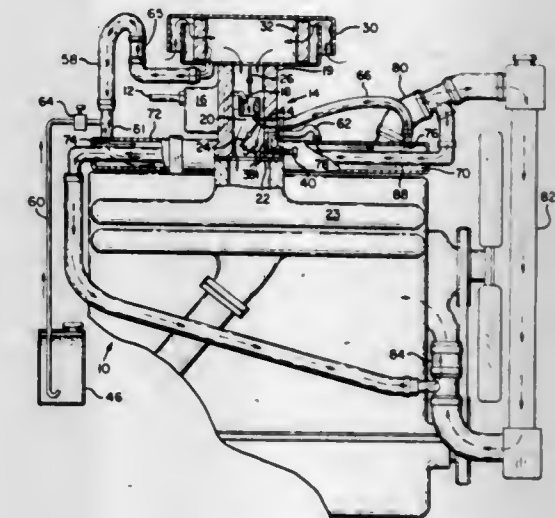
U.S. Cl. 122—449

20 Claims



1. A system for generating a dry coal weight signal for a coal feeder comprised of a conveying means and a drive means for driving said conveying means at a selected speed, said system comprising:

- means for measuring the density of coal being fed by said feeder;
- means for measuring the torque applied to said drive means;
- computing means receiving input from said measuring means for computing the dry weight of said coal; and
- means for communicating said calculated dry weight in the form of a signal to said drive means.



1. A carburetor for an internal combustion engine comprising:

- a fuel delivery tube having an outlet which connects to a combustion chamber of an internal combustion engine;
- means for providing a stream of fluid fuel and air inside the tube;
- a throttle valve inside the tube;
- upstream inducting means connected to the fuel delivery tube for inducting a first stream of fuel additive fluid into the tube at such a position that when the throttle valve is closed the passageway for additive fluid from the upstream inducting means to the delivery tube is blocked;
- downstream inducting means connected to the delivery tube for inducting a second stream of the fuel additive fluid into the delivery tube, the second stream being inducted at a position downstream of the throttle valve so that there is a substantially uninterrupted passageway from the downstream inducting means to the combustion chamber;
- additive fluid reservoir means connected to the upstream and downstream inducting means;
- a heat exchange tube connected to the engine in such a manner that a stream of heated engine coolant flow there-through;
- a jacket extending along the tube so that a fluidtight compartment is defined between the tube and the jacket, the compartment having an inlet and a primary outlet opening at spaced locations and a secondary outlet opening located therebetween, the inlet and outlets being positioned so that the fuel additive fluid flows countercurrently to the coolant whereby temperature of the additive fluid progressively increases as it flows from the inlet to the primary outlet;
- means connecting the reservoir to the inlet;
- means connecting the primary outlet to the upstream inducting means; and
- means connecting the secondary outlet to the downstream inducting means.

4,430,965

THROTTLE OPENER FOR CARBURETORS

Noriyuki Kurihara, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

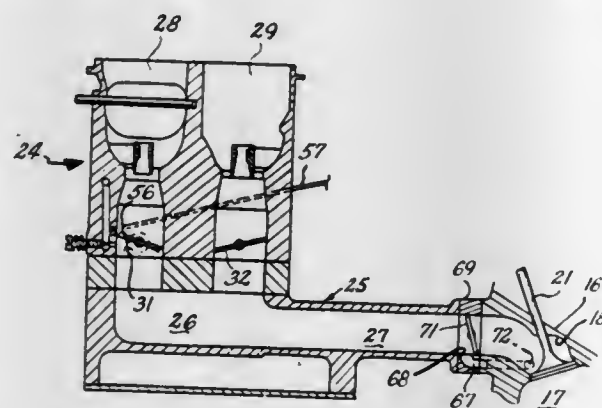
Filed May 15, 1981, Ser. No. 264,057

Claims priority, application Japan, May 26, 1980, 55-70532

Int. Cl.³ F02M 3/00

U.S. Cl. 123-328

9 Claims



1. A throttle control device for an internal combustion engine having an induction passage and a throttle valve in said induction passage, said control device comprising an operating member moveable between a normal position and an operative position, means operatively connecting said operating member to said throttle valve wherein said throttle valve may be positioned in a partially opened position when said operating member is in its operative position, a vacuum motor responsive to a sub-atmospheric pressure operatively connected to said operating member for moving said operating member from its normal position to its operative position when a sub-atmospheric pressure is exerted on said vacuum motor, and means for communicating said vacuum motor only with a point in said induction passage upstream of the idle position of said throttle valve for controlling said vacuum motor by the pressure at said point.

4,430,966

HEAT REGULATION CIRCUITS FOR VEHICLES EQUIPPED WITH AN ELECTRIC RETARDER

Andre Marandet, Saint Gratien, and Jean-Claude Sertori, Taverny, both of France, assignors to Labavia - S.G.E., Bois-d'Arcy, France

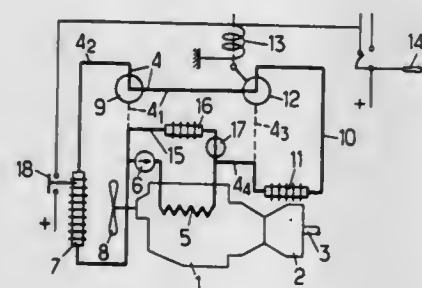
Filed Mar. 8, 1982, Ser. No. 356,033

Claims priority, application France, Mar. 24, 1981, 81 05885

Int. Cl.³ F01P 3/12

U.S. Cl. 123-41.1

10 Claims



1. A closed liquid circuit system for the heat regulation of a vehicle having an internal combustion engine and an electrical retarder, the closed circuit having first and second circuit sections,

said first circuit section including said internal combustion engine, a radiator, and a circulating pump for circulating liquid through said closed circuit,

said second circuit section including a retarder heat exchanger,

valve means disposed between said first and second circuit

sections for controlling the flow of liquid through said closed liquid circuit,

said retarder having means for generating a ventilation air flow through the retarder and in heat exchange relation with the heat exchanger for transmitting heat from said electrical retarder to said heat exchanger when said electrical retarder is energized and for cooling said heat exchanger by said ventilation air flow when said electrical retarder is not energized,

whereby said ventilation air flow from said electrical retarder is useful for both heating and cooling liquid in said retarder heat exchanger.

4,430,967

TWO CYCLE DIESEL ENGINE

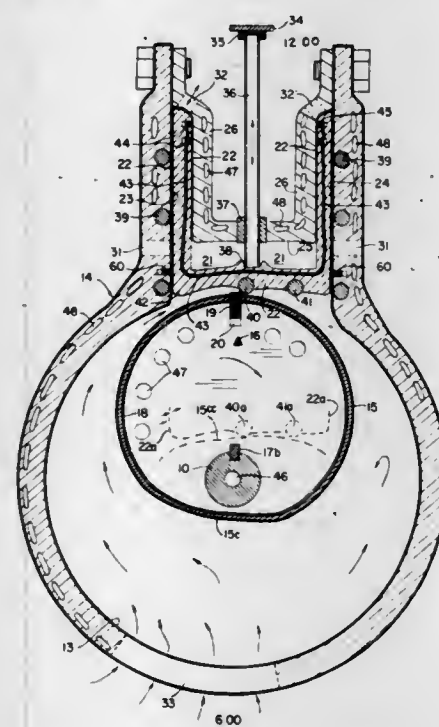
Robert H. Williams, Rt. 2, Box 44, Bandera, Tex. 78003

Filed Feb. 8, 1982, Ser. No. 346,609

Int. Cl.³ F02B 33/24

U.S. Cl. 123-65 VA

6 Claims



1. A rotary internal combustion engine having a rotary compressor compartment and a combustion-expansion compartment, both sealed between the same parallel end walls, the compressor compartment comprising a cylinder bore in a stator, a rotary piston fixed eccentrically to a shaft which is journaled in the end walls, the piston to travel clockwise, its head barely clearing the cylinder bore, fitted with a transverse wiper blade spring-biased outward in a slot on the longest radius of the eccentric piston to yieldably sweep the cylinder bore to compress air into the combustion-expansion compartment;

the stator having a first face turned vertically upward from the cylinder bore in the vicinity of 11:00 o'clock and a second face turned vertically upward between 1:00 and 2:00 o'clock, the two parallel faces enclosing, with the end walls, a rectangular space above and communicating with the cylinder space, the rectangular space being a cavity into which the combustion-expansion compartment recedes on its upward travel;

the combustion-expansion compartment comprising a U-shaped element, or U-box, in the form of a rectangular metal plate bent vertically upward at two places to form a U, its sides of equal height, the compartment closed on its ends by the end walls, fitted closely and slidably between the end walls and between the vertical faces of the stator with yieldable seals, the U-box to ride at all times on the eccentric piston to reciprocate upward with it into the stator space and downward with it into the cylinder space, the U-box closed above by a rectangular casting fitted downward inside the U, its ends and sides turned upward

to form bolting flanges, the end flanges bolted to the end walls, the side flanges extending above the extremity of upward travel of the vertical sides of the U-box, thence drawn over to meet the vertical faces of the stator and bolted to them; the side flanges and vertical stator faces thus forming vertical channels, closed by the end walls, into which channels the vertical sides of the U-box recede during their upward travel, the bottom of the inserted casting constituting a combustion chamber head, or compression head, and the chamber enclosed inside the U-box between the end walls and between the compression head and the bottom of the U-box constituting a combustion-expansion chamber;

the U-box fitted with one-way inlet valves on its counter-clockwise vertical side to admit air compressed by the clockwise-rotating piston in a first phase of compression, pressure inside the combustion-expansion chamber forcing the valves shut as the U-box travels upward into the stator space at the end of the first phase of compression, in which the piston finishes pumping the air out of the cylinder bore into the U-box when the piston head arrives at the base of the counter-clockwise vertical face of the stator in the vicinity of 11:00 o'clock;

the U-box so positioned across the top of the cylinder bore that its base forms roughly a chord to cause the eccentric piston head to continue to force the U-box radially upward till the piston head reaches top center, the function constituting a second phase of compression to squeeze the combustion chamber to a smaller volume to raise the level of air pressure in the combustion chamber;

a fuel injector positioned to inject a charge of fuel into the compressed air in the combustion chamber and the fuel ignited by ignition means in timed relation to the position of the piston head when it is near top center, to produce a timed expansion of the combustion gases to force the U-box downward to cause the piston to rotate in a clockwise direction;

a horizontal port through the stator near the base of each of the two vertical stator faces on a level with the combustion chamber and a port in the upper end of each of the two vertical channels, the four ports to vent the engine after the piston head passes 4:00 o'clock, the downward travel of the eccentric piston allowing the sides of the U-box to drop past the horizontal ports to uncover them and at the same time drop out of their respective channels to uncover the ports in the channels;

the one-way inlet valves in the counter-clockwise face of the U-box yieldable, to admit air when the pressure inside the combustion-expansion chamber drops below that of the air in the compressor, a few pounds per square inch at this stage of compression, to let the compressed air quickly sweep the spent gases out of the combustion-expansion chamber;

the U-box caused to start its upward course by the clockwise travel of the eccentric piston to force the sides of the U-box upward closing off the horizontal ports and closing the vertical channels to re-seal the combustion chamber for the next charge of compressed air.

4,430,968

CYLINDER HEAD FASTENING STRUCTURE FOR INTERNAL COMBUSTION ENGINES

Yorio Futakuchi, Shizuoka, and Nobuaki Oshiro, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 7, 1982, Ser. No. 363,636

Claims priority, application Japan, Mar. 31, 1981, 56-48968

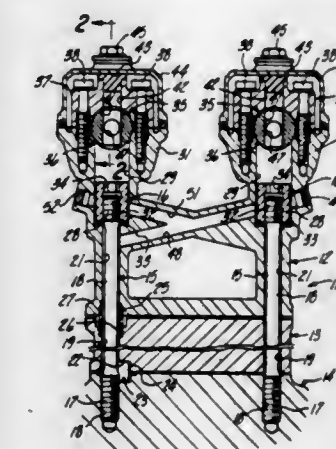
Int. Cl.³ F01L 1/00

U.S. Cl. 123-90.27

15 Claims

1. In a construction for an overhead cam internal combustion engine comprising a cylinder head adapted to be affixed to another component of the engine by at least one fastener, the improvement comprising a cam shaft journaled for rotation relative to said cylinder head, said cam shaft being positioned

in overlying relationship to said fastener and means defining an access opening passing through said cam shaft and adapted to



pass a tool for tightening said fastener without removal of said cam shaft.

4,430,969

COMPOSITE ROCKER ARM AND PROCESS

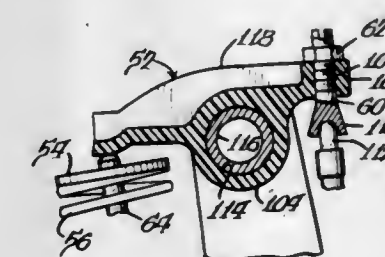
Matthew W. Holtzberg, Ringwood, N.J., and Lawrence D. Spaulding, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,362

Int. Cl.³ F01L 1/18

U.S. Cl. 123-90.39

30 Claims



1. A composite engine part, comprising:

a thermoplastic, amide-imide resinous polymeric rocker arm comprising a reaction product of a trifunctional carboxylic acid compound and at least one diprimary aromatic diamine, said amide-imide rocker arm having a pivot portion about which the rocker arm pivots, a valve drive portion for driving a valve and a driven portion, and said amide-imide rocker arm maintaining its structural shape and integrity at engine operating conditions.

19. A process for forming a composite rocker arm for use in an engine, comprising the steps of:

injection molding a thermoplastic, amide-imide resinous polymer to form an amide-imide rocker arm-shaped blank; allowing said amide-imide, rocker arm-shaped blank to cool below its plastic deformation temperature; and post curing said amide-imide, rocker arm-shaped blank by solid state polymerization to enhance its strength and integrity.

4,430,970

COMPOSITE TAPPET

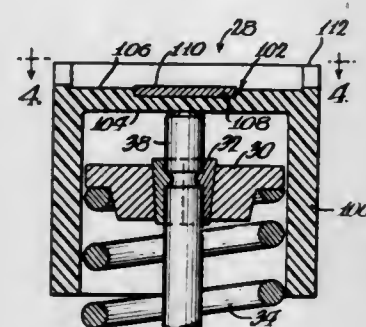
Matthew W. Holtzberg, Ringwood, N.J.; Steven J. Henke, Woodridge, and Wray V. McKenzie, Jr., West Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,361

Int. Cl.³ F01L 1/14

U.S. Cl. 123—90.51

29 Claims



1. A composite engine part, comprising:
 - a metal cam-engaging shim providing a cam seat for abuttingly engaging and being driven by an overhead cam;
 - a thermoplastic, amide-imide resinous polymeric tappet having a disc with a top defining a countersunk recess for receiving said cam-engaging shim and a bottom providing a valve seat for abuttingly engaging and reciprocatingly driving a valve, an elongated annular skirt depending downwardly from said disc and cooperating with said valve seat to provide a valve-spring receiving chamber for receiving a valve spring retainer, and an annular rim providing a cam guide rail extending integrally upwardly from said disc in a direction generally opposite said skirt to substantially contain said cam, said cam-guide rail cooperating with said top of said disc and said cam-engaging shim to form a composite cam seat chamber; and
 - said amide-imide tappet and said cam-engaging shim maintaining their structural shapes, integrity and relationship at engine operating conditions.

20. A process for forming a composite engine part, comprising the steps of:

inserting a core in a generally tappet-shaped cavity of a mold providing a die to define a generally tappet-shaped molding chamber;

injection molding a thermoplastic, amide-imide resinous polymer to form a generally tappet-shaped blank having an annular skirt for receiving a valve-spring retainer, a generally circular disc extending across said skirt, and a cam-guide rail extending generally opposite said skirt for substantially containing a cam, said injection molding including injecting said amide-imide polymer into said tappet-shaped cavity through a sprue at a location generally opposite said core to generally fill said molding chamber and substantially minimize knit lines in said amide-imide tappet-shaped blank;

allowing said tappet-shaped blank to cool below its plastic deformation temperature;

removing said core from said die;

post curing said amide-imide tappet-shaped blank by solid state polymerization to enhance the strength and integrity of said amide-imide tappet-shaped blank;

countersinking a recess in said disc; and

placing a metal shim in said recess to provide a cam seat for engaging said being driven by said cam.

4,430,971

INTERNAL COMBUSTION ENGINE

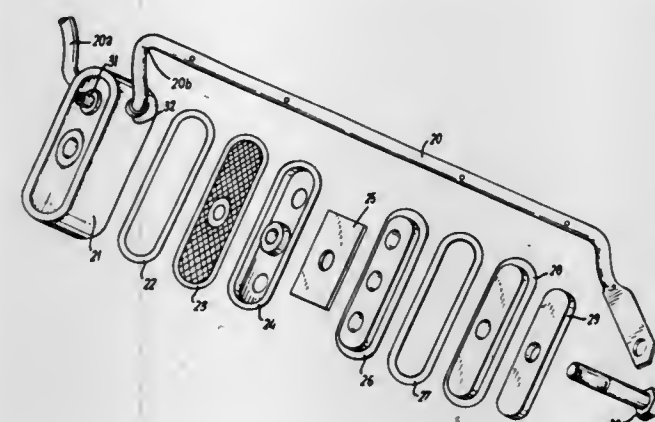
Norman Holding, 91 Liverpool Rd., Longton, Preston, Lancashire, England

Filed Dec. 28, 1981, Ser. No. 335,103

Int. Cl.³ F01L 9/10

U.S. Cl. 123—90.34

3 Claims



1. A lubricating system for an overhead camshaft of an internal combustion engine that has a cylinder block and a cylinder head wherein there are communicated passages for oil under pressure which lead to an outlet at a surface on the cylinder head, said lubricating system comprising a conduit that extends lengthwise along the camshaft and has ports at spaced intervals along its length from which oil is sprayed towards the camshaft to lubricate interfaces between it and parts that it engages, said conduit having one end portion communicated with said outlet and being supported at its said one end portion by means of a bolt threaded into a hole in the cylinder head that opens to said surface in spaced relation to said outlet, said lubricating system being characterized by:

- A. a case having
 - (1) a front wall,
 - (2) an opposite rear wall wherein there is an inlet, and
 - (3) a side wall extending between said front and rear walls and sealingly connected with them;
- B. said front and rear walls having aligned apertures through which said bolt extends for securing the case to the cylinder head with its said rear wall overlying said surface and said inlet in register with said outlet;
- C. means on said rear wall for sealingly connecting said inlet with said outlet;
- D. annular means on the case, spaced from said rear wall, providing a sealed connection between the case and said one end portion of the conduit whereby that end portion is supported by the case and the interior of the conduit is communicated with the interior of the case; and
- E. a filter element in said case through which oil is constrained to pass in flowing from said inlet to the interior of the conduit.

4,430,972

RETAINING DEVICE FOR FUEL PUMP PUSH ROD

Henry A. Jackstadt, Sycamore, Mo. 65758

Filed Oct. 5, 1981, Ser. No. 308,803

Int. Cl.³ F02B 77/00

U.S. Cl. 123—198 R

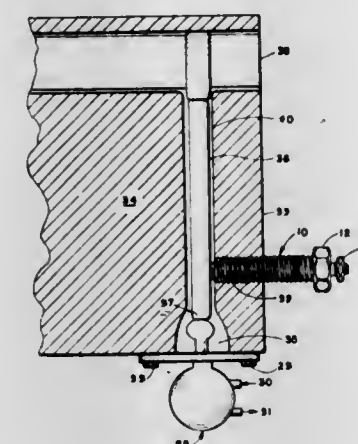
3 Claims

1. A retaining device for holding a push rod during removal of a fuel pump comprising:

- (a) a hollowed bolt having a polygonal head, an externally threaded shaft extending from the inner face of said head and terminating in a distal end, a cylindrical passageway within said bolt coaxially aligned with the center axis thereof, and a depression recessed into the outer face of said head, said passageway communicating between said distal end and depression,

- (b) a second bolt having a small head whose outside diameter does not exceed the inside thread diameter of the threaded

- shaft of said hollowed bolt, a thin shaft extending from the inner face of said small head and terminating in a distal end, the outside diameter of said thin shaft being such as to pass freely within said passageway, said second bolt being positioned such that the thin shaft enters said passageway at the distal end of the shaft of said hollowed bolt and continues therethrough into said depression,
- (c) fastening means adapted to be housed within said depression and adapted to adjustably engage the distal end of said thin shaft, and



- (d) a coil spring of substantially cylindrical configuration disposed about said thin shaft, the extremities of said spring being in abutment with the distal end of the shaft of said hollowed bolt and the inner face of the small head of said second bolt, the outside diameter of said spring being less than the inside thread diameter of the threaded shaft of said hollowed bolt,
- (e) whereby force applied axially to said small head in the direction of the polygonal head of said hollowed bolt causes reversible movement of said small head toward said polygonal head.

4,430,973

BYPASS AIR INTAKE CONTROL FOR AN INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

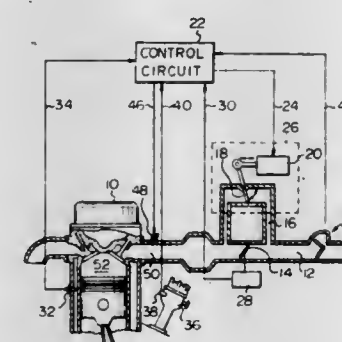
Filed Jul. 31, 1981, Ser. No. 288,771

Claims priority, Application Japan, Aug. 5, 1980, 55-106732

Int. Cl.³ F02D 1/04

U.S. Cl. 123—339

6 Claims



1. A method of controlling the air intake of an internal combustion engine having an intake passage, a throttle valve disposed in said intake passage, and an air bypass passage communicating a location in the intake passage upstream of the throttle valve with a location in the intake passage downstream of the throttle valve, the method including generating a rotational speed signal corresponding to the actual rotating speed of the engine, generating a reference speed signal corresponding to a desired idling speed, comparing the rotational speed signal with the reference speed signal, generating a control output signal corresponding to a difference between the rota-

tional speed signal and the reference speed signal, and adjusting the cross-sectional flow area of the bypass passage in response to the control output signal, wherein the improvement comprises:

monitoring the engine load by

generating an air intake signal representing the actual flow rate of air drawn into the engine,

generating a load condition signal in response to the air intake signal and the rotational speed signal,

comparing said generated load condition signal with a predetermined reference load signal, and

generating a first signal when the load condition signal is greater than the predetermined reference load signal and a second signal when the load condition signal is less than the predetermined reference load signal;

generating a load discrimination signal whenever the first signal changes to the second signal, indicating that the engine is in transition from a heavy load condition to a light load condition;

generating a throttle position signal when the throttle valve changes from an open condition to the fully closed condition; and

incrementing said control output signal by a predetermined value in response to the simultaneous occurrence of said load discrimination signal and said throttle position signal so as to increase the cross-sectional flow area of the bypass passage during engine deceleration from a heavy load condition.

5. Apparatus for controlling auxiliary air delivered to an internal combustion engine having a main intake passage, a main throttle valve disposed in the intake passage, a bypass passage communicating a first part of the main intake passage upstream of the main throttle valve to a second part of the main intake passage downstream of the main throttle valve, a control valve disposed in the bypass passage, means for generating a signal representing the air flow rate Q into the engine, means for generating a signal N representing the rotational speed of the engine, means for generating a reference speed signal N_f representing a desired idling speed, means for generating a control signal corresponding to the difference between N and N_f, and means for actuating the control valve in response to the control signal so as to reduce the difference between N and N_f, wherein the improvement comprises:

means responsive to the air flow rate signal Q and the rotational speed signal N for generating a load condition signal representing the ratio Q/N;

means for generating a reference load signal corresponding to a transition level between a light engine load and a heavy engine load;

means responsive to the load condition signal and the reference load signal for generating a load discrimination signal whenever the value of the load condition signal is greater than the value of the reference load signal and for a predetermined time period after the engine load decreases from above to below the value of the reference load signal;

means for generating a throttle position signal when the main throttle valve changes from open to fully closed;

means connected to the control signal generating means for incrementing the control signal by a predetermined amount in response to the simultaneous occurrence of the load discrimination signal and the throttle position signal.

4,430,974

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Günter Bofinger, Vaihingen, and Werner Faupel, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

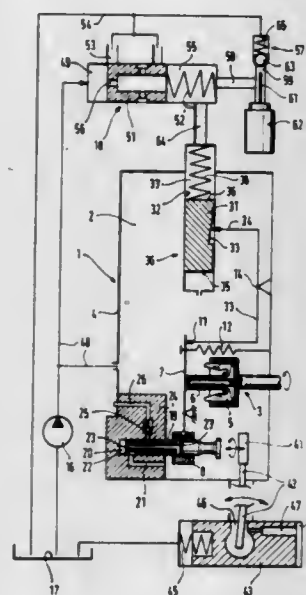
Filed Sep. 14, 1982, Ser. No. 417,976

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148214

Int. Cl.³ F02M 59/20

U.S. Cl. 123—387

4 Claims



1. In a fuel injection pump for an internal combustion engine, including:

- an rpm proportional fuel supply pump;
 - a housing within which a suction chamber is defined, into which fuel is supplied by the fuel supply pump as a function of rpm;
 - a control arm, a fuel injection quantity adjustment member, full load stop means, and a mechanical rpm governor situated within the suction chamber, said control arm being acted on by said mechanical rpm governor and being connected to the fuel injection quantity adjustment member, said adjustment member having an adjustment path which is limited by the full load stop means for the purpose of setting the maximum allowable full load fuel injection quantity;
 - an adjustment element and means defining a restoring force, said adjustment element being fuel operated against the restoring force for regulating the onset of fuel injection;
 - a pressure control valve including a pressure chamber, a return chamber, a shut-off opening, a movable wall separating the pressure chamber from the return chamber, and means generating a restoring force applied to the movable wall, said movable wall controlling the extent of opening of the shut-off opening; and
 - a pressure valve situated downstream of the pressure valve, said pressure valve operating as a function of at least one engine operating parameter,
- said pressure valve and said pressure control valve both serving to influence the fuel pressure of the fuel injection pump, the improvement comprising:
- an adjustment device including a movable adjusting element, and spring means exerting a force against one end of the movable adjusting element, wherein:
- (i) the position of the control arm is influenced by the adjustment device;
 - (ii) the adjustment device is connected to have the suction chamber pressure applied to the movable adjusting element in opposition to the force exerted by the spring means; and
 - (iii) the adjustment device is connected between the pressure valve and the pressure control valve such that the pressure between the pressure valve and the pressure

control valve is applied in the direction of the force exerted by the spring means.

4,430,975

THROTTLE VALVE ACTUATING SYSTEM USED IN IGNITION TYPE INTERNAL COMBUSTION ENGINES

Takashi Ishida, Ooi, and Noboru Tominari, Tokyo, both of Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

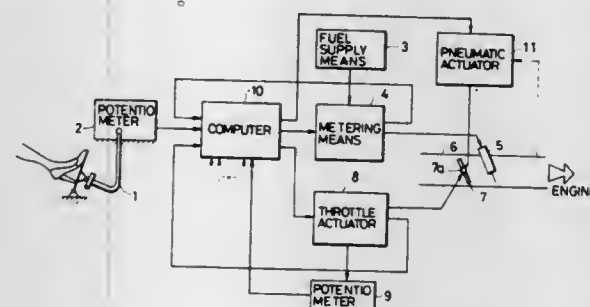
Filed Jun. 3, 1982, Ser. No. 384,523

Claims priority, application Japan, Jun. 12, 1981, 56-89509

Int. Cl.³ F02D 9/02

U.S. Cl. 123—399

5 Claims



1. A throttle valve actuating system used in an electronic control fuel injection system for spark ignition internal combustion engines which controls air flow rate as a function of fuel flow rate, comprising metering means capable of selecting a fuel injection amount in response to a depression amount of an accelerator pedal; various sensors for respectively detecting a selected fuel injection amount, engine operating state and environmental conditions; a computer connected to said metering means and sensors and capable of operating an air amount to be supplied in conformity with the engine operating state by putting in output signals from said metering means and sensors; a throttle servo-mechanism connected to said computer and including a throttle actuator connected to a throttle valve to determine a proper opening degree of said throttle valve on the basis of the result of the operation of said computer; a pneumatic actuator connected to said throttle valve and capable of being actuated by a manifold vacuum to open and close said throttle valve; and an electromagnetic valve connected to said computer and capable of being controlled to be opened and closed by an output signal from said computer, said pneumatic actuator being actuated by said manifold vacuum through said electromagnetic valve.

4,430,976

METHOD FOR CONTROLLING AIR/FUEL RATIO IN INTERNAL COMBUSTION ENGINES

Toshio Kondo; Shigenori Isomura; Akio Kobayashi, and Katsuhiko Kodama, all of Kariya, Japan, assignors to Nippon-denso Co., Ltd., Kariya, Japan

Filed Oct. 16, 1981, Ser. No. 312,076

Claims priority, application Japan, Oct. 20, 1980, 55-147352

Int. Cl.³ F02B 3/00

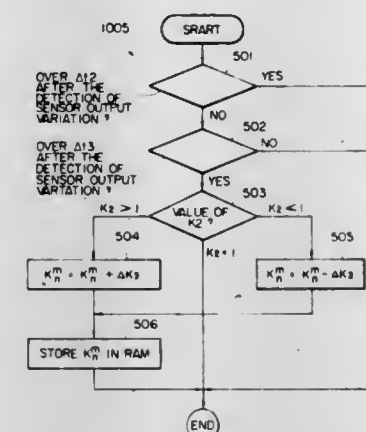
U.S. Cl. 123—440

8 Claims

1. A method for controlling air/fuel ratio in an internal combustion engine equipped with a feedback control system which controls the air/fuel ratio in accordance with an output signal of a gas sensor detecting the concentration of a gas component in the exhaust gasses of said engine, said method comprising the steps of:

- (a) integrating said output signal from said gas sensor for obtaining an integration correcting amount, which will be used for modifying a variable defining air/fuel ratio;
- (b) calculating an engine condition correcting amount, which will be also used for modifying said variable, on the basis of engine condition parameters;
- (c) storing said engine condition correcting amount in a memory;

- (d) renewing said engine condition correcting amount stored in said memory by using said integration correcting amount within a predetermined period of time from the instant of variation of said output signal of said gas sensor from its one state indicative of a rich mixture to the other state indicative of a lean mixture or vice versa, or after the



instant of increase or decrease in said integration correcting amount;

- (e) calculating said variable by using engine condition parameters; and
- (f) controlling the air/fuel ratio by correcting said variable by both said integration correcting amount and said engine condition correcting amount.

4,430,977

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Minoru Shimada, Shiga, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

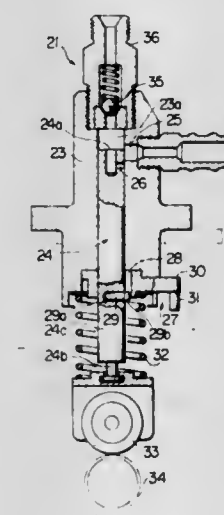
Filed Feb. 25, 1981, Ser. No. 237,884

Claims priority, application Japan, Feb. 28, 1980, 55-25713; Dec. 5, 1980, 55-172488; Dec. 5, 1980, 55-175400; Dec. 5, 1980, 55-175401; Dec. 6, 1980, 55-175227; Dec. 6, 1980, 55-175228; Dec. 6, 1980, 55-175229; Dec. 11, 1980, 55-178680; Dec. 11, 1980, 55-178681; Dec. 11, 1980, 55-178682; Dec. 11, 1980, 55-178683; Dec. 11, 1980, 55-178684

Int. Cl.³ F02M 41/02

U.S. Cl. 123—449

1 Claim



1. A fuel injection pump for internal combustion engines of the type having a plunger with a unitary diameter adapted to be reciprocatingly moved within a barrel which also serves as a pump body to pressurize and deliver a fuel before establishment of communication between a fuel relief port formed in a wall of said barrel and a fuel pressurizing chamber, said plunger being adapted to be rotated relative to said barrel to change timing of establishment of said communication thereby to adjust an amount of the fuel delivered per stroke of said plunger, characterized by a plunger rotating member rotatably mounted in a lower end of said barrel and coupled to said

plunger for rotation together with said plunger, and a plunger spring coupled to a lower end of said plunger spaced from the lower end of said barrel such that a portion of said plunger surrounded by said plunger spring and said plunger spring extend downwardly from the lower end of said barrel and exposed exteriorly,

and further wherein said plunger is provided with a pin radially projecting outward from the outer peripheral surface of said plunger located adjacent the lower end of said barrel, and said plunger rotating member is provided with a single axial groove formed in an inner peripheral surface thereof which is in sliding contact with said plunger to receive said pin and axially guide the same.

4,430,978

DIRECT LIQUID INJECTION OF LIQUID PETROLEUM GAS

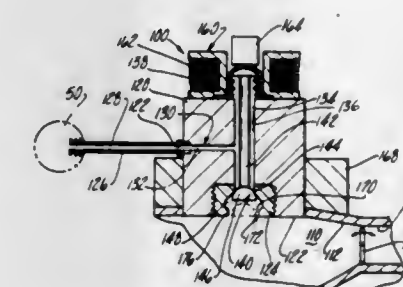
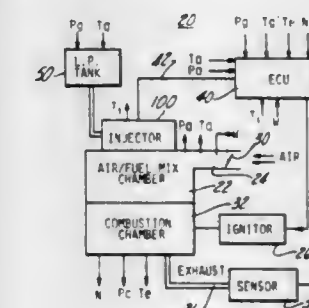
Donald J. Lewis, Troy, and Jack R. Phipps, St. Clair Shores, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 28, 1981, Ser. No. 306,259

Int. Cl.³ F02M 21/04

U.S. Cl. 123—478

41 Claims



1. A fuel injection system for releasing liquified high vapor pressure fluids or fuel such as Propane and Butane into at least one air/fuel mixing chamber from a means for storing the fluid in a pressurized, liquid state comprising:

electronic control unit responsive to at least one operating parameter of the system for generating an activation signal indicative of the amount of fluid to be released into the at least one air/fuel mixing chamber;

injection means mounted proximate each at least one air/fuel mixing chamber for releasing quantities of the high vapor pressure fluid, into the at least one air/fuel mixing chamber in response to said activation signal;

means for sensing a difference in density of the fuel within said injection means, as compared to the density of fuel upstream thereto, including correction means for generating a correction factor indicative of said difference;

means for sensing the temperature difference between the fuel within said injection means and said storage means; and

means for modifying said activation signal by said correction factor during those times when the temperature of the fuel within said injection means exceeds the temperature of the fuel within said storage means.

4,430,979

AIR-FUEL RATIO CONTROL SYSTEM

Makoto Shikata, Musashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo; Nissan Motor Co., Yokohama, both of Japan

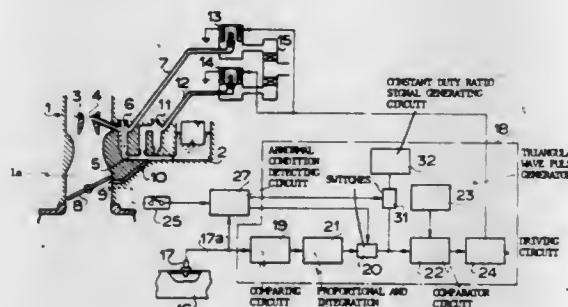
Filed Aug. 1, 1980, Ser. No. 174,375

Claims priority, application Japan, Aug. 2, 1979, 54-98920

Int. Cl.³ F02B 3/00; F02M 7/00

U.S. Cl. 123-479

9 Claims



1. In an air-fuel ratio control system for a carburetor of an internal combustion engine having an intake passage thereof, a throttle valve in the intake passage, an exhaust passage communicating with the engine, first detector means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage, an on-off electromagnetic valve means for correcting the air-fuel ratio of air-fuel mixture supplied to the intake passage by an air-fuel mixture supply means, the improvement comprising

electronic control means comprising a comparator circuit means for comparing an output signal of said first detector means and a driving circuit means for producing a driving output for driving said electromagnetic valve means in dependency on an output signal of said comparator circuit means for controlling the air-fuel ratio to approximately the stoichiometric air-fuel ratio,

second detector means for detecting an idling operation of said internal combustion engine and producing an idle detected signal during the idling operation,

constant signal generating circuit means for producing a constant signal and when actuated for selectively operating said on-off electromagnetic valve means via said driving circuit means at a predetermined pulse duty ratio,

switch means for rendering said electronic control means non-responsive to the output signal of said first detector means and responsive to said constant signal, and

abnormal condition detecting circuit means comprising a retriggerable monostable multivibrator responsive to pulses corresponding to an excessive output waveform of said first detector means, and for detecting the excessive output waveform when said concentration of the exhaust gases deviates excessively from the stoichiometric air-fuel ratio, said abnormal condition detecting circuit means being retriggered by the pulses to produce one mode of signals for actuating said switch means so as to maintain said electronic control means responsive to the output signal of said first detector means and non-responsive to said constant signal, and to produce another mode of signals for actuating said switch means when one of said pulses continues for a predetermined period under the condition of the production of said idle detected signal, so that the electronic control means is operated by the constant signal for further aggravating the deviation of the air-fuel ratio.

4,430,980

FUEL PUMP CUT-OFF CIRCUIT

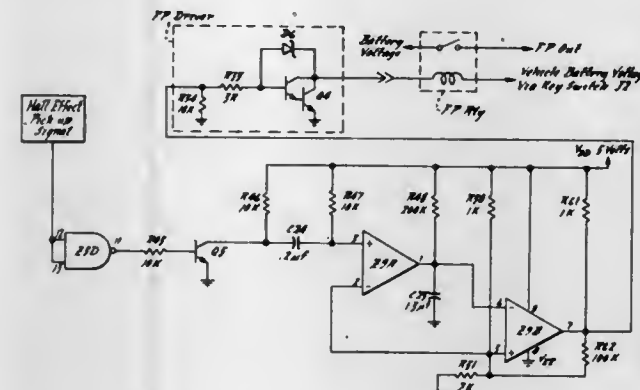
Wilman A. Pidgeon, Huntsville, Ala., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 16, 1983, Ser. No. 495,274

Int. Cl.³ F02M 59/00

U.S. Cl. 123-497

4 Claims



1. In an electronic fuel injection control system for an internal combustion engine having an electromagnetic fuel pump, a fuel pump relay, fuel metering means, a signal source of ignition pulses, and a supply voltage, a fuel pump cut-off circuit comprising:

a first comparator means;

a second comparator means;

a first wave shaping/timing means coupling said signal source of ignition pulses to the non-inverting input of said first comparator means;

said first wave shaping/timing means for reshaping said ignition pulses in a predetermined way to create a newly shaped pulse train which is one half the frequency of the said signal source of ignition pulses;

a reference voltage means which presents a preselected reference voltage to the inverting input of said first comparator means and to the non-inverting input of said second comparator means;

a second wave shaping/timing means for reshaping the output of said first comparator means in a predetermined way such that said signal source of ignition pulses below a preselected reference frequency will not cause a change in the output state of said second comparator means;

said second comparator means which accepts at its inverting input the output of said first comparator means as reshaped by said second timing means and accepts at its non-inverting input said preselected reference voltage from said reference voltage means; and

fuel pump driver means connected to the output of said second comparator means and responding thereto for controlling the energization and deenergization of said fuel pump relay.

4,430,981

TEMPERATURE RESPONSIVE AIR INDUCTION APPARATUS

J. H. Thomas, and S. Azzopardi, both of Glamorgan, Wales, assignors to Fram Europe Limited, United Kingdom

Filed Feb. 16, 1982, Ser. No. 348,637

Claims priority, application United Kingdom, Feb. 17, 1981, 8104995

Int. Cl.³ F02M 31/00

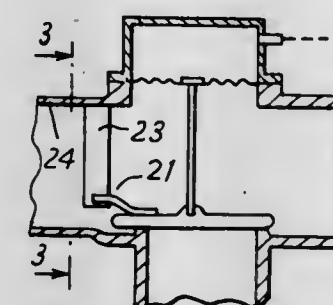
U.S. Cl. 123-556

3 Claims

1. A temperature responsive air induction apparatus comprising an air induction duct (2) operable to conduct induction air from a source of relatively unheated air, an inlet duct (5) joined to said induction duct (2) operable to conduct heated air into said induction duct and mix with the relatively unheated air, the juncture of said inlet duct with said induction duct forming an annular seating surface, a temperature dependent vacuum control member (6, 7, 4... 15, 23) operable to control

the flow of heated air from said inlet duct into said induction duct, said control member including:

a flap (4) hinged at one end, upstream of the juncture of said induction duct and said inlet duct, said flap including a flat undersurface adapted to seat upon said annular seating surface and including another hinge located proximate the middle of said flap, opposite said undersurface for receiving a bar (7) extending from a vacuum operable diaphragm and a detent (21) positioned on said one end and including a cantilevered end extending upstream therefrom; and



a flat bi-metal element having side portions and arranged such that an edge of the side portions is edge-on to the flow of unheated air, said element extending downwardly within said induction duct such that a side portion is adjacent to and extends below said cantilevered end of said detent, said element movable in a lateral manner in response to the temperature of the unheated air to engage said detent to apply force to said cantilevered end to prevent complete reclosure of said flap when the unheated air temperature is below a predetermined value.

4,430,982

CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

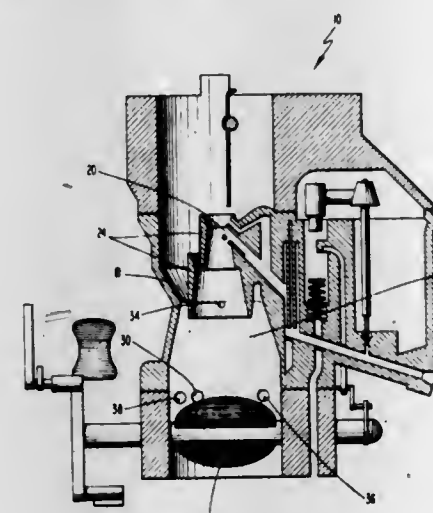
Luis A. R. Diaz, Santiago, Chile, assignor to Ramirez Development Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,642

Int. Cl.³ F02M 25/06

U.S. Cl. 123-568

17 Claims



1. In a flow-type carburetor for an internal combustion engine having at least two cylinders and an exhaust system conducting exhaust gas from said cylinders, said carburetor including an air intake for receiving air, a venturi and a fuel nozzle cooperating to create an air-fuel mixture and conducting said air-fuel mixture through a throttle valve to said cylinders, the improvement comprising:

(a) an exhaust conduit conducting exhaust gas from said exhaust system to said carburetor;

(b) an exhaust gas port in the wall of said carburetor proximate said throttle valve in fluid communication with said exhaust conduit for introducing said exhaust gas into an area in said carburetor defined between said venturi and

said throttle valve, within the limitations imposed by the size of said exhaust gas conduit and port, the amount of exhaust gas introduced into said area being solely controlled by the difference between exhaust gas pressure within said exhaust system and fluid pressure in said area as determined by throttle valve position; and

(c) air introducing means directly conducting air into said area for increasing the percentage of air in said air-fuel mixture in said area.

4,430,983

CARBURETOR BLEED AIR CONTROL SOLENOID IMPROVEMENT

William A. Hagen, St. Ann, Mo., assignor to ACF Industries, Inc., New York, N.Y.

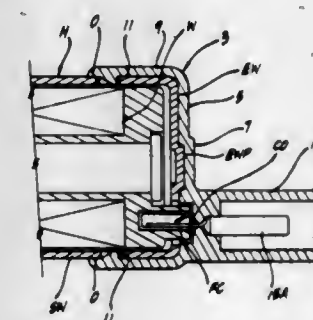
Continuation of Ser. No. 218,278, Dec. 19, 1980, abandoned.

This application Sep. 20, 1982, Ser. No. 420,424

Int. Cl.³ F02M 23/00

U.S. Cl. 123-585

12 Claims



1. In a pulsing solenoid attached to a carburetor for an internal combustion engine, the solenoid controlling bleed air to a carburetor fuel circuit and the solenoid having a housing in which the elements comprising the solenoid are contained, the improvement comprising an end closure for the solenoid including a unitary cover having a base section configured to fit against an end wall of the housing; a forwardly extending skirt section fitting about the side wall of the housing adjacent the end wall thereof, the skirt section having a plurality of tabs projecting from the inner wall of the skirt section, the tabs being received in appropriate openings in the side wall of the housing; a connector shield projecting rearwardly from the base section of the cover; and, a pair of electrical connectors mounted in the shield and extending through the base section of the cover, the electrical connectors matingly connecting with a pair of electrical connectors in the solenoid housing, the electrical connectors mounted in the shield further connecting with an electrical cable routed from an electronic control unit whereby an electrical signal from the control unit is supplied to the solenoid through the cable and the electrical connectors in the shield to operate the solenoid.

4,430,984

BRACKET FOR BREAKERLESS IGNITION SYSTEM

Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 23, 1981, Ser. No. 324,143

Int. Cl.³ F02P 1/00

U.S. Cl. 123-647

18 Claims

1. A bracket for mounting a switching means of a breakerless ignition system to a leg portion of an armature core that supports an induction coil, comprising:

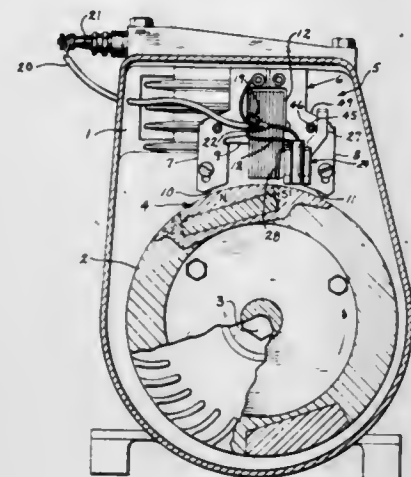
a housing that defines a chamber for containing the switching means;

a pair of spaced guide surfaces projecting from one side of said housing which form a guideway for slidably receiving the leg portion of said armature core;

resilient means projecting from said housing to engage said induction coil to prevent vibration of said housing between said coil and core; and

a resilient arm member projecting from said housing having

a locking surface formed thereon so that as said housing is slid onto said leg portion the arm member is in a flexed



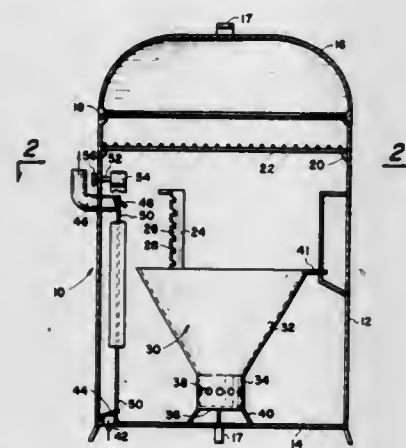
position until said arm member snaps into a locked position whereby said locking surface engages an abutment surface on said leg portion.

4,430,985 THERMOSTATICALLY CONTROLLED CHARCOAL COOKER

Robert C. Huneycutt, 703 Dryden Cir., Stillwater, Okla. 74074
Continuation of Ser. No. 99,405, Dec. 3, 1979, abandoned. This application Jan. 28, 1982, Ser. No. 343,453
Int. Cl.³ F24B 3/00

U.S. Cl. 126—25 A

7 Claims



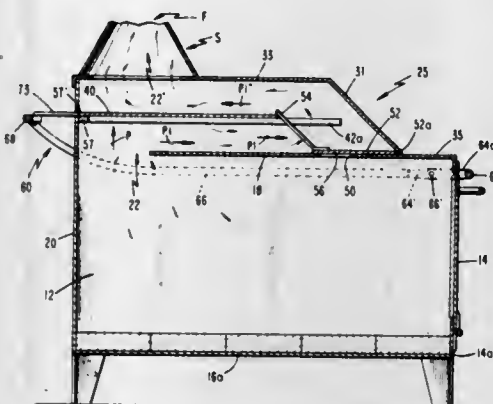
1. A thermostatically controlled self-contained charcoal cooker comprising a receptacle having a lid providing access to the interior thereof, rack means removably supported within the receptacle for receiving food thereon to be cooked, a firebox adjustably disposed within the receptacle for providing variable distance between the cooking heat and the food on the rack means, dual valve means providing communication between the interior and exterior of the receptacle for controlling the supply of air to the interior of the cooker, the dual valve means comprising a first valve disposed in an inlet in the proximity of the lower portion of the cooker for controlling the supply of air to the proximity of the lower portion of the firebox, and a second valve disposed in an outlet in the proximity of the upper portion of the cooker for controlling the supply of air thereto, and connector rod means operably connected between the valves for simultaneous opening and closing of the valves, and heat sensitive control means disposed to sense the temperature within the cooker and operably connected with the valve means for opening and closing of the valves for controlling the temperature within the cooker during a cooking operation.

4,430,986 FUEL BURNING STOVE WITH HANDLE OPERATED DAMPER AND BAFFLE MEANS

Jon C. Thalib, 10301 Falls Rd., Potomac, Md. 20854
Filed Feb. 19, 1982, Ser. No. 350,394
Int. Cl.³ F24C 1/00

U.S. Cl. 126—60

14 Claims



1. In a stove for burning wood or like combustible materials, including a generally rectangular firebox having a door, an air inlet and a rear discharge opening communicating with and located above the firebox; a heating chamber positionable above a horizontally disposed upper wall of the firebox and dimensioned to cover the discharge opening and a portion of the upper wall, said heating chamber comprising a horizontally extending top wall located above the upper wall, a pair of side walls and a back wall connected to corresponding walls of the firebox and a bottom portion defined by said upper wall portion of the firebox and the discharge opening, and further including a baffle plate operatively positioned for sliding movement in the heating chamber to control the exhaust path of smoke and hot volatile gases between the rear discharge opening of the firebox and an exhaust outlet formed in the top wall of the heating chamber, said baffle plate extending horizontally between and spaced apart from said upper wall portion and the top wall to define a lower exhaust passage with said upper wall portion and an upper exhaust passage with the top wall, means for moving said baffle plate between a forward position towards the front wall and a rear position towards the back wall to respectively define a tortuous exhaust passage in the rear position wherein hot gases travel from the firebox through the rear discharge opening to flow within the lower passage and around the baffle plate through the upper passage for discharge into the outlet, and a more direct exhaust passage in the forward position wherein hot gases travel directly from the rear opening to the outlet without flowing substantially through said upper or lower passage, and means supporting said baffle plate for sliding movement within the heating chamber.

4,430,987 INFRARED HEATING SYSTEM AND APPARATUS

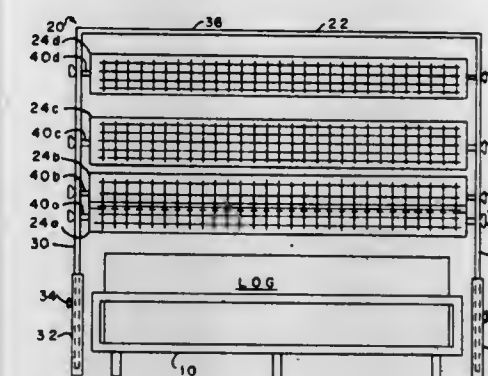
Anton H. Heller, 78 Wantagh Ave., Levittown, N.Y. 11756
Filed Dec. 10, 1980, Ser. No. 215,091
Int. Cl.³ F23L 11/00

U.S. Cl. 126—141

6 Claims

1. A system for concentrating and directing heat energy into a space to be heated comprising:
(a) a source of heat energy which produces a flame and combustion products;
(b) an array of elongated, substantially planar means for absorbing heat energy from said source, wherein the means is heated to a temperature in excess of about 1200° F. for emitting infrared radiation, at least one of the means having a transverse axis positioned at an angle of about 45° to the transverse axis of another of the means;
(c) means for arranging the array of absorbing and emitting means to direct said infrared radiation both upwardly and downwardly into the space to be heated; and

(d) means for positioning the array of absorbing and emitting means for preventing the flame from entering the space and for channeling the combustion products into the external atmosphere at a location remote from the space;



(e) wherein said absorbing and emitting means comprises a perforated sheet of a high temperature alloy adapted to permit the passage of combustion products therethrough.

4,430,988 HEATING OF UNDERWATER EQUIPMENT

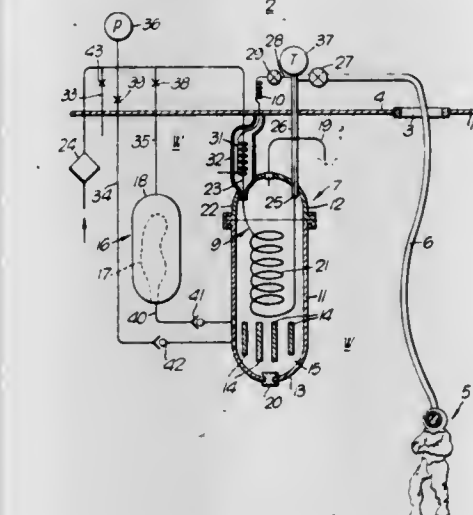
Alan Krasberg, 24 Devanha Gardens, Aberdeen, AB1 2UU, Scotland

Filed Mar. 4, 1981, Ser. No. 240,409

Int. Cl.³ A61F 7/00

U.S. Cl. 126—206

20 Claims



1. In submersible apparatus for use in underwater operations, which includes a hull to house personnel, heat generating means associated with the hull which has

(a) a reaction chamber defining therein a reaction zone for chemical reactants capable of reacting together exothermically and producing a gaseous by-product;
(b) means for introducing reactants to the reaction zone; and
(c) means for venting the gaseous by-product from the reaction chamber; the improvement comprising valve means through which water may be drawn by the "air-lift" effect of exiting gas through the venting means wherein the valve means comprises a portion of the reaction chamber which defines an aperture and a valve member which is adapted to close the aperture and which is operable to open the aperture at a predetermined temperature to enable entry of water to the reaction zone and/or dumping of reaction zone contents on reaction runaway, the water being drawn into the reaction zone through the aperture by the "air-lift" effect of gas exiting through the venting tube.

4,430,989 GAS COOKING RANGE

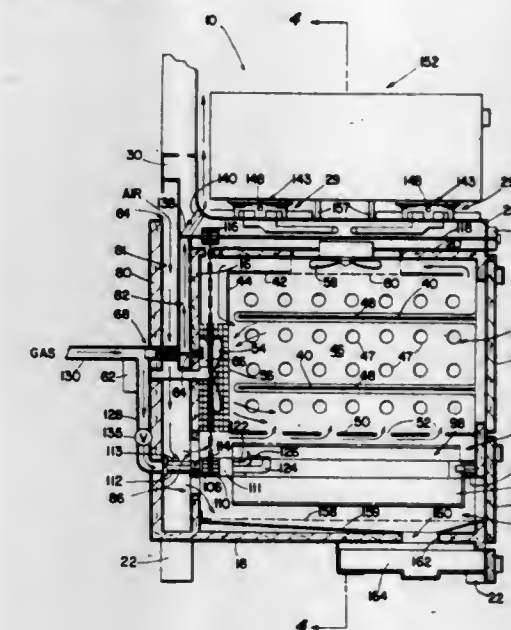
Rajendra K. Narang, and Kamlesh Narang, both of 1525 Bonnie Rd., Macedonia, Ohio 44056

Filed Dec. 10, 1980, Ser. No. 215,074

Int. Cl.³ A21B 1/00

U.S. Cl. 126—273 R

18 Claims



1. In a gas cooking range, the combination comprising:
(a) an oven compartment;
(b) a broiler compartment located beneath the oven compartment;
(c) a burner element located near the interface between the oven compartment and the broiler compartment, the burner element movable from a first position where heat is directed primarily toward the oven compartment to a second position where heat is directed primarily toward the broiler compartment; and
(d) means for moving the burner element between the first and second positions.

4,430,990 BODY HARNESS DEVICE

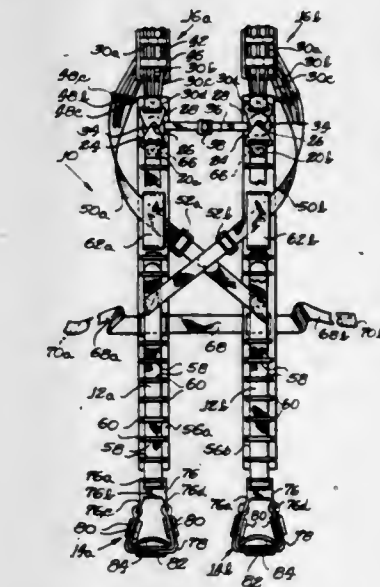
George Whitehead, 365 Hawthorne Cir., Apt. #4, Mt. Prospect, Ill. 60056

Filed May 27, 1982, Ser. No. 382,394

Int. Cl.³ A61B 19/00

U.S. Cl. 128—1 R

7 Claims



1. A body harness device for use by male and female partners during coitus and adapted to be worn by one of the partners, said device comprising a pair of elongated straps each of which

has an end terminating in a shoulder strap arrangement adapted to engage the wearer's shoulders with the elongated straps disposed generally lengthwise of the wearer's back in substantially parallel laterally spaced relation along their full lengths, a waist strap cooperative with and extending transverse to said laterally spaced elongated straps, said waist strap being adapted to releasably encircle the wearer's waist, each of said shoulder strap arrangements including a shoulder strap pivotally connected to the terminal end of the corresponding elongated strap and configured to extend forwardly from the back of the wearer over a corresponding shoulder of the wearer and thereafter extend downwardly and rearwardly about the corresponding lateral rib area and diagonally across the wearer's back to connect to the opposite elongated strap such that a force applied generally longitudinally downwardly on either one of the elongated straps when extending lengthwise of the wearer effects application of a force on each of the wearer's shoulders which is of less magnitude than the applied force, and foot engageable means connected to each of said elongated straps at a position spaced from the corresponding shoulder strap arrangement so as to enable selective application of downward forces on said elongated straps.

4,430,991

SURGICAL RETRACTOR STAY DEVICE AND TUBE CONNECTOR

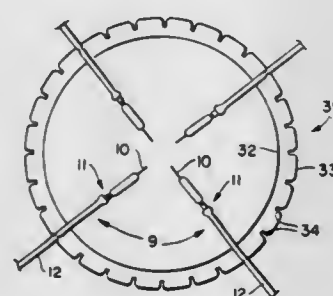
W. Dale Darnell, Caledonia, Miss., assignor to Humboldt Products Corp., Columbus, Miss.

Filed Nov. 5, 1981, Ser. No. 318,654

Int. Cl.³ A61B 17/02

U.S. Cl. 128—20

6 Claims



1. A surgical retractor stay comprising:

- a retaining member having a body portion, an elongated stud portion extending from one end of said body portion, and an enlarged knob portion on the end of said elongated stud portion opposite said body portion;
 - a hook member having a sharp hooked end and having a shank portion embedded within said retaining member body portion with said sharp hooked end protruding from the end thereof opposite said elongated stud portion; and
 - a length of hollow tubing having one end extending over said retaining member knob portion and at least a part of said retaining member stud portion;
- said retaining member knob portion and stud portion and the internal diameter of said hollow tubing being dimensioned for tight fitting containment and retention of said hollow tubing on said knob portion and stud portion when said hollow tubing is stretchingly installed thereover.

4,430,992

TREATMENT APPARATUS

Rudolf Christ, Freiherr-von-Drais-Strasse 50, 6801 Neckarhausen, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,052

Int. Cl.³ A61H 1/00

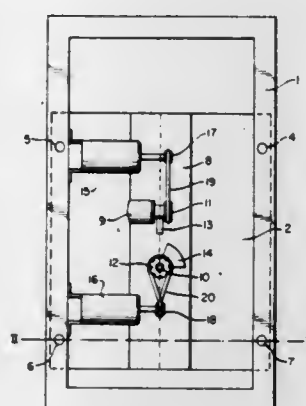
U.S. Cl. 128—33

11 Claims

1. A treatment apparatus for oscillatory treatment of the body of a patient, said apparatus comprising:
- frame means;
 - a support member resiliently mounted on said frame and

defining a support surface for at least a part of the body of a patient;

rotary eccentric weight oscillation generating means on said support member and selectively operable for generating a first rotating oscillation component extending in a first plane and applying said first oscillation rotating component to said support surface for oscillating said support surface relative to said frame and for generating a second rotating oscillation component extending in a second plane different from and non-parallel to said first plane and applying said second rotating oscillating component to said support surface for oscillating said support surface and in combination with the first oscillating rotating com-



ponent, producing oscillations of said support surface ranging from a reciprocal oscillation of said support surface in said first plane to a reciprocal oscillation in said second plane and including complex three dimensional oscillations of said support surface which are resultants of said oscillations in said first and second planes;

drive means on said frame flexibly connected to said oscillation generating means, said drive means being adjustable to vary independently at least one of the frequency and amplitude of said first component and at least one of the frequency and amplitude of said second component for varying said oscillating rotating components to produce said reciprocal and said complex oscillations.

4,430,993

Patent Not Issued For This Number

4,430,994

RESPIRATORY GAS HEATING AND HUMIDIFYING METHODS AND APPARATUS

Burrell E. Clawson, 823 W. 16th, Newport Beach, Calif. 92663, and James Weigl, 2241 Chicago Ave., Riverside, Calif. 92507

Filed May 11, 1981, Ser. No. 262,080

Int. Cl.³ A61M 15/00

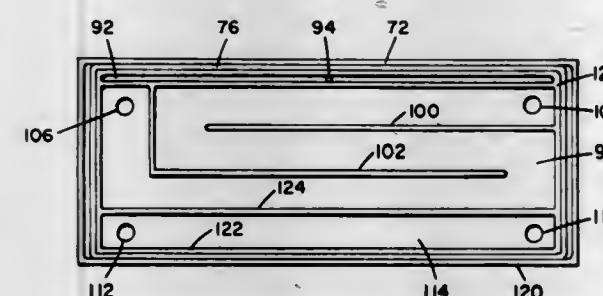
U.S. Cl. 128—203.27

16 Claims

3. In combination:
- humidifying means in the form of a heat conductive surface and means for forming a film of water on said surface by

migration of water over said surface from one region to another, when supplied with water, and means for flowing respiratory gas over said surface for humidifying the respiratory gas;

heating means in the form of a heater in thermal contact with said heat conductive surface for heating the water at the



outer surface of said film and the respiratory gas flowing over said film;

said conductive surface of said humidifying means being formed of a material whose appearance is altered when wet, and means in the form of a transparent cover for permitting viewing of said regions of said surface.

4,430,995

POWER ASSISTED AIR-PURIFYING RESPIRATORS

Joseph R. Hilton, 2 Goldfinch Gardens, Guildford, Surrey GU4 7DN, England

Filed May 24, 1982, Ser. No. 381,632

Claims priority, application United Kingdom, May 29, 1981, 8116424

Int. Cl.³ A62B 7/10

U.S. Cl. 128—204.21

11 Claims



1. An air-purifying device for attachment to a facepiece of

the positive pressure type for providing purified air to the wearer of the facepiece, said air-purifying device comprising:

- (a) electrically powered pump means for pumping air, said pump means including inlet means and outlet means;
- (b) means connecting said pump means to a source of electrical power and including means for varying the power supplied from said power source to said pump means;
- (c) means for removing contaminants in the air;
- (d) means connecting said contaminant removing means to said pump inlet;
- (e) means defining an expandable chamber having an inlet and an outlet;
- (f) means biasing said expandable chamber towards a collapsed condition for maintaining a positive pressure in said chamber;
- (g) means connecting said chamber inlet with said pump outlet;
- (h) means adapted to connect said chamber outlet to a facepiece;
- (i) sensing means for sensing the degree of expansion of said expandable chamber; and
- (j) means connecting said sensing means with said power varying means for varying the power supplied to said pump means in dependence on the state of expansion of said expandable chamber.

4,430,996

RESECTOSCOPES

Ludwig Bonnet, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

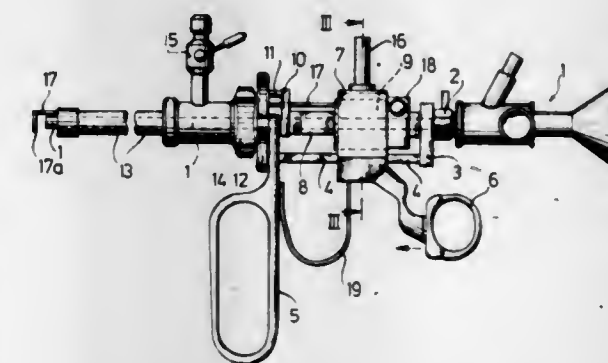
Filed Aug. 22, 1980, Ser. No. 180,367

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 7924359[U]

Int. Cl.³ A61B 17/36

U.S. Cl. 128—303.15

3 Claims



1. In a resectoscope of the kind comprising an optical system extending through a shaft and an HF cutting electrode which is axially displaceable by means of a guided bearer on a guide traversing the optical system, said electrode being rotatable together with said shaft around the axis of the optical system, the improvement in that said optical system is a stereo system that provides a viewing angle of 180°, and a cylinder is provided with a fastening device securing the proximal end of said cutting electrode, said cylinder being rotatably installed within said guided bearer, said guide being of polygonal cross-section and rotatable conjointly with said cutting electrode and said shaft around the axis of said optical system, and in that said guided bearer is guided on a second guide provided with a handle at the distal extremity and connected rigidly at the proximal end to a coupling of said optical stereo system, whereby the electrode and shaft may be rotated about the axis of the optics while the optics is held in a stationary plane by said handle and second guide.

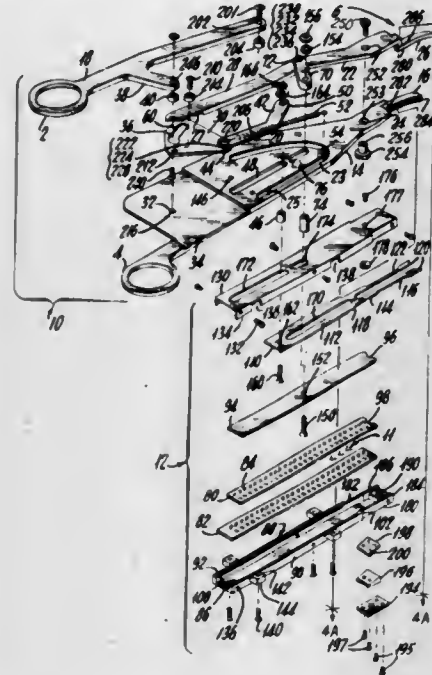
4,430,997

MULTIPLE CLIP APPLIER

John DiGiovanni, Irvington, and Donald M. Golden, Cherry Hill, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Nov. 19, 1980, Ser. No. 208,368
Int. Cl.³ A61B 17/12

U.S. Cl. 128—326

15 Claims



1. A scissors-type medical instrument for sequentially applying a plurality of ligating clips comprising:
first and second jaws disposed in confronting relationship at the distal end of said instrument and adapted to be pivoted together by the scissors action of the instrument to hold and set a ligating clip;
first and second scissors handles operatively connected to said jaws to open and close said jaws;
bias means biasing said handles and said jaws in a fully open position when said instrument is at rest;
a mechanism disposed between the jaws and the handles; said mechanism including means for providing a reciprocating long-stroke motion for delivering successive clips to the jaws, said long-stroke motion means acting initially proximally as said handles are closed from said biased, fully-open rest position to a fully-closed position, and said long-stroke motion means then returning distally only under the influence of said bias means so that a clip rests between said jaws, ready to be applied to a ligating site, when said long-stroke motion means is at rest; and,
said mechanism further including means synchronized with said long-stroke motion means for providing a reciprocating short-stroke motion for feeding clips in succession; said mechanism providing the motion to feed a successive clip into position for advancement to said jaws during the normal closing of said first and second scissors handles from said rest position and to automatically deliver a succeeding clip to said jaws, ready for setting, only under the influence of said bias means as said first and second of the scissors handles return to said fully-open rest position.

4,430,998

WOUND CLOSING DEVICE

Robert J. Harvey, Emeryville; Philip Litwak, Novato, both of Calif.; William A. Ribich, Lexington, Mass., and John M. Dubowik, Nashua, N.H., assignors to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Jun. 1, 1982, Ser. No. 383,759

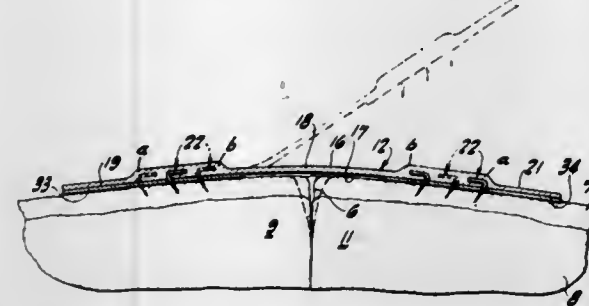
Int. Cl.³ A61B 17/08

U.S. Cl. 128—335

4 Claims

1. A wound closing device for engaging the flesh adjacent an elongated cut comprising a band of flexible material of predetermined thickness having an inside face and an outside face, a

pair of integral rib portions each upstanding from said outside face and spaced from each other to leave a central portion of said band of said predetermined thickness adapted to overlie said cut and spaced from the ends of said band to leave side portions of said band of said predetermined thickness, means defining areas of adhesion on said inside face at said side portions thereof, and a pair of individual hooks, each hook having a base embedded in a respective one of said rib portions and having a needle connected to said base and extending therefrom and projecting through said inside face adjacent an area of adhesion, said needles being in positions converging toward each other.



tions thereof, and a pair of individual hooks, each hook having a base embedded in a respective one of said rib portions and having a needle connected to said base and extending therefrom and projecting through said inside face adjacent an area of adhesion, said needles being in positions converging toward each other.

4,430,999

OSTEOGENESIS STIMULATING CATHODE ASSEMBLY FOR USE WITH AN INTERNAL FIXATION DEVICE

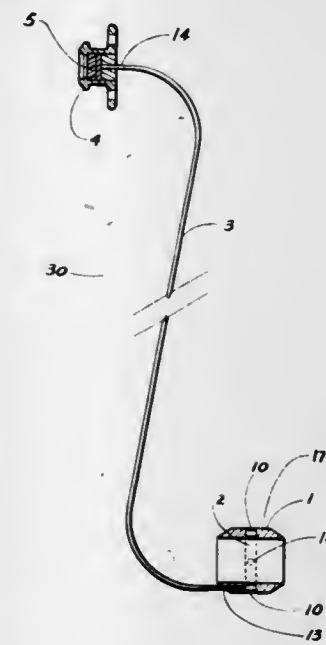
Carl T. Brighton, Malvern; Jonathan Black, King of Prussia, both of Pa., and Joyce K. Eyerly, White Bear Lake, Minn., assignors to Trustees of the University of Pennsylvania and Zimmer, Inc.

Filed Nov. 10, 1981, Ser. No. 320,309

Int. Cl.³ A61N 1/18

U.S. Cl. 128—419 F

15 Claims



1. A cathode assembly for use in conjunction with an internal fixation device and a means for supplying current to said cathode for the purpose of stimulating osteogenesis, said means comprising a stimulating means, said assembly comprising:
carrier means for post insertion attachment to said fixation device; and
at least one cathode mounted on said carrier means, said carrier means comprising a biocompatible non-conductive material, said carrier means further formed in the shape of a sleeve sized so as to be slidable over at least a portion of said fixation device for mounting thereon.

4,431,000

TRANSCUTANEOUS NERVE STIMULATOR WITH PSEUDORANDOM PULSE GENERATOR

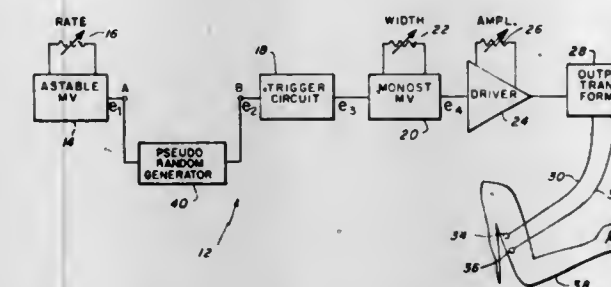
Russell B. Butler; Nancy A. Helm, and A. Walter MacEachern, all of Littleton, Mass., assignors to Gatron Corporation, Woburn, Mass.

Continuation-in-part of Ser. No. 964,560, Nov. 29, 1978, abandoned. This application May 23, 1980, Ser. No. 152,747

Int. Cl.³ A61N 1/36

U.S. Cl. 128—421

7 Claims



1. A transcutaneous nerve stimulator comprising:
a digital electronic pseudorandom pulse generator and a current source for providing a series of electrical current pulses of generally trapezoidal and monophasic waveform, to mimic the typical physiological waveforms, at a continuously varying rate, the pulses being substantially identical to each other in amplitude and duration; and
a pair of electrodes, each electrode being connectable to the outer skin of a body to apply the electrical pulses across a portion of the body and thereby deliver the pulses through a nervous system to the brain.

4,431,001

STIMULATOR SYSTEM

Bo H. Hakansson; Roy A. Saario, and Roy A. Saario, both of Lund, Sweden, assignors to Crafon Medical AB, Sweden

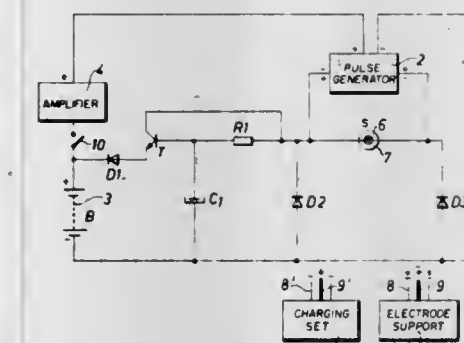
Filed Sep. 10, 1981, Ser. No. 300,952

Claims priority, application Sweden, Sep. 17, 1980, 8006523

Int. Cl.³ A61N 1/36

U.S. Cl. 128—421

13 Claims



1. An electrical stimulator system having a rechargeable potential source, said stimulator system coupled to an electrode support provided for receiving a plurality of electrical stimulating bipolar pulses generated by said stimulator system and alternatively to a charging device provided for charging said rechargeable potential source, said stimulator system comprising, generating means for generating a plurality of electrical stimulating bipolar pulses to be received by said electrode support when coupled to said stimulator system, and a charging circuit arranged between said generating means and said rechargeable potential source for connecting said charging device to said rechargeable potential source for charging thereof when said charging device is alternatively coupled to said stimulator system, said charging circuit including a voltage dependent element connected through the parallel combination of an energy storage element and a resistor element between said pulse generating means and said rechargeable

potential source and means for preventing communication between said bipolar pulse generated by said generating means and said rechargeable potential source along said charging circuit when said electrode support is coupled to said stimulator system while permitting communication between said rechargeable potential source and said charging device along said charging circuit when said charging device is alternatively coupled to said stimulator system.

4,431,002

MODULATED DEEP AFFERENT STIMULATOR

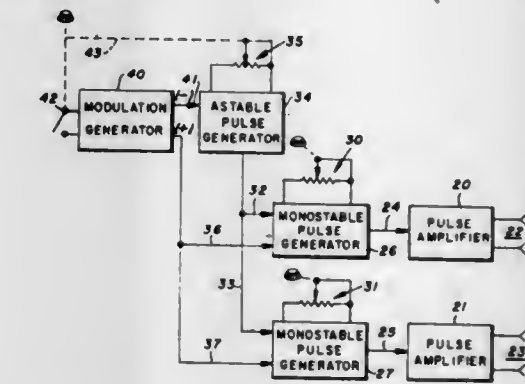
Donald D. Maurer; David E. Swift, both of Anoka, and Zosim Ioffe, St. Paul, all of Minn., assignors to EMPI Inc., Fridley, Minn.

Filed Jun. 8, 1981, Ser. No. 271,258

Int. Cl.³ A61N 1/36

U.S. Cl. 128—422

8 Claims



1. A medical stimulator comprising:
astable pulse generator means for supplying a first train of electrical pulses, means operatively connected to said pulse generator means operable to adjust the pulse rate range of said electrical pulses;
monostable pulse generator means connected to the astable pulse generator means for receiving electrical pulses therefrom, means operably connected to the monostable pulse generator means operable to adjust the width of the electrical pulses in said first train of electrical pulses over a predetermined range while simultaneously adjusting amplitude of the electrical pulses;
means connected to said monostable pulse generator means for applying said pulses to a patient; and
modulation means connected to the astable pulse generator means and monostable pulse generator means for causing cyclic increase and decrease in the limits of said rate range and simultaneously causing decrease and increase in said pulse rate to produce electrical pulses in said means for applying said pulses to a patient at levels sufficient to produce muscle contractions and stimulation of deep afferent nerves and cause the release of endogenous opiates to suppress pain.

4,431,003

SELF ADJUSTING MEDICINAL SOLE AND/OR MEDICINAL INSTEP-RAISER

Tibor Sztancsik, Budapest, Hungary, assignor to Konsumex Kültureskedelmi Vallalat, Budapest, Hungary

Filed Jan. 11, 1982, Ser. No. 338,215

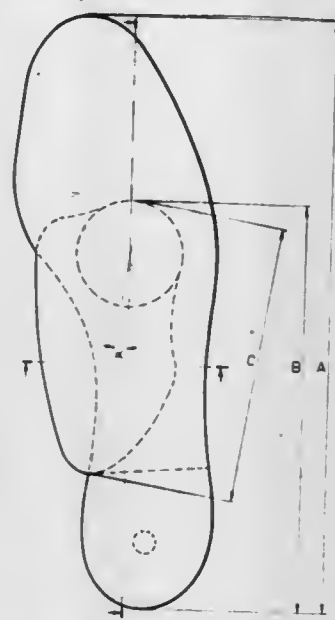
Int. Cl.³ A43B 7/14

U.S. Cl. 128—594

5 Claims

1. A self-adjusting medical instep-raiser for insertion in footwear having an interior length H, the instep raiser comprising a lower stiffening plate having the general outline of a sole of a foot with the inside periphery thereof being essentially concave from proximate the toes to the start of the heel, the length of the stiffening plate being equal to or slightly smaller than the interior length H; a closed longitudinal arch support hose of flexible material having a roughly scalene triangular shape with heavily rounded corners affixed to the stiffening plate in

the region defining the longitudinal and cross arches of the sole, the hose having its front edge at a distance of $\frac{1}{3}H \pm 5$ percent as measured from the end of the heel, and being canted at an angle of 5 to 15 degrees with respect to the longitudinal axis of the stiffening plate and proceeding from the cross arch proximate the toes in a direction of the inner part of the heel a distance of $\frac{4}{9}H \pm 10$ percent, the inner outline of the hose



connecting with the concave line of the stiffening plate in a nearly straight, slightly convex line; a filling material within the longitudinal arch support hose, said filling material pliantly changing shape in response to variations in the distribution of forces thereon occasioned by movement of the wearer, and an upper covering plate superposed over the hose and affixed to the lower stiffening plate.

4,431,004

IMPLANTABLE GLUCOSE SENSOR

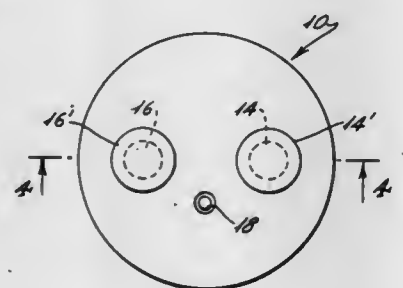
Samuel P. Bessman, 2025 Zonal Ave., Los Angeles, Calif. 90033; Ennis C. Layne, 9128 Huntington Dr., San Gabriel, Calif. 91775, and Lyell J. Thomas, 1900 Pelican Ave., San Pedro, Calif. 90732

Filed Oct. 27, 1981, Ser. No. 315,282

Int. Cl.³ A61B 5/00

U.S. Cl. 128—635

8 Claims



1. In a method for measuring the glucose content in body fluids by ascertaining the output differential between a pair of adjacent oxygen sensors placed into contact with body fluids, one of said oxygen sensors being unaltered, the other of said oxygen sensors containing glucose oxidase positioned between said other sensor and body fluids placed into contact with said other sensor, whereby the sensor pair measures an oxygen content differential in body fluids placed into contact with the sensor pair, said measured differential corresponding to the extent oxygen in the body fluids has been removed by oxidation of glucose in the body fluids, being thereby a reading for the glucose content in the body fluids, the improvement which comprises measuring the level of oxygen in the body fluids and adjusting said measured differential according to the level of oxygen, whereby the adjusted measured differential constitutes

a more accurate reading for the glucose content in the body fluids.

4,431,005

METHOD OF AND APPARATUS FOR DETERMINING VERY ACCURATELY THE POSITION OF A DEVICE INSIDE BIOLOGICAL TISSUE

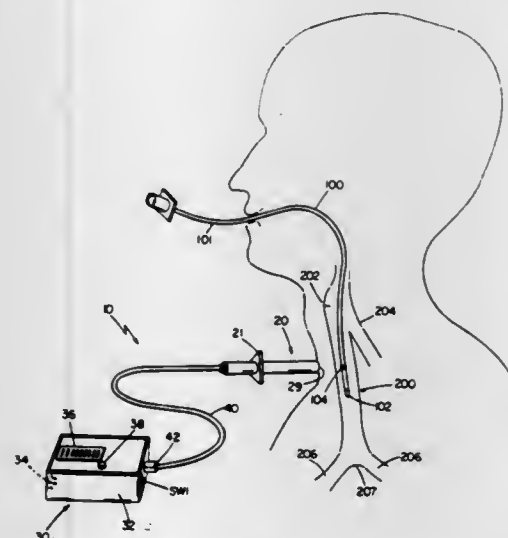
William McCormick, Carlisle, Mass., assignor to McCormick Laboratories, Inc., Belmont, Mass.

Filed May 7, 1981, Ser. No. 261,531

Int. Cl.³ A61M 16/00; A61B 5/05

U.S. Cl. 128—656

9 Claims



1. A method for determining accurately the position of a device inside biological tissue comprising: placing magnetically permeable metal on the device to be detected; creating a balanced field by means of a probe, said field becoming disturbed when metal having magnetic permeability is disposed within said field; directing said probe towards the biological tissue containing the device so that a portion of the field penetrates a surface area of the biological tissue; scanning said probe until said field becomes disturbed; generating a signal by a circuit attached to said probe when said field becomes disturbed; and marking the surface of the biological tissue beneath which said field becomes disturbed by moving a removable slide on said probe to the tissue surface area where said field becomes disturbed while said probe is in place, removing said probe while holding said slide on the surface area, and marking the surface area using said slide as a guide.

4,431,006

PASSIVE ULTRASOUND NEEDLE PROBE LOCATOR

William S. Trimmer, Belle Mead; Bayard Gardineer, Jr., Skillman, and Andreas Hadjicostis, North Brunswick, all of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Jan. 7, 1982, Ser. No. 337,899

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660

16 Claims



1. In a system for deriving an image of a region of a body by applying ultrasound energy to the region by means of an external transducer a probe and probe locator apparatus comprising:

- (a) hollow needle means thereby defining a probe for insertion into the body; and
- (b) ultrasonic energy transmission means, a portion of which is removably located within said hollow needle means, including
 - (i) passive solid conduit means, removably carried within said needle means, for detecting ultrasound energy near the tip region of said needle means and for conveying said energy through said needle means and outside the body; and
 - (ii) electrically active ultrasound transducer means coupled to receive ultrasonic energy from said conduit means outside the body and adapted to produce an output signal to said system indicative thereof, whereby the location of the probe within the image area may be determined.

4,431,007

REFERENCED REAL-TIME ULTRASONIC IMAGE DISPLAY

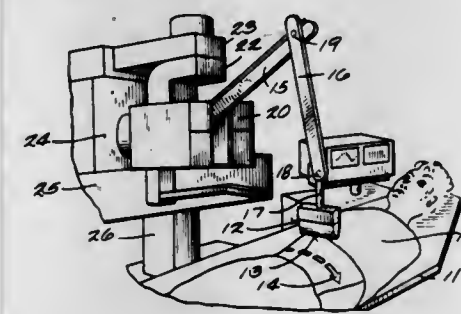
Paul G. Amazeen, Folsom, and Patrick L. Sutcliffe, Citrus Heights, both of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,526

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660

2 Claims



- 1. An ultrasound imaging system for displaying static and real-time images simultaneously comprising:
 - a transducer unit including a linear array of juxtaposed transducer elements having their end faces lying substantially in a common plane, said elements being subject to activation in a predetermined order for projecting ultrasound beam pulses into a body and receiving echos originating at impedance discontinuity points in the body, said elements converting the echos to electric echo signals corresponding to the intensities of the echos, the lines along which the beams and echos travel being designated as vectors,
 - a base,
 - an articulated arm assembly including proximal, intermediate and distal arm members, the proximal member being pivotally mounted to the base and the distal member being pivotally connected to an intermediate member, the length of the transducer element array being arranged perpendicular to the length of said distal arm and the distance from the pivot axis of the distal arm to the end face at the center of the array constituting the total length of the distal arm member, said arm assembly supporting said transducer unit and constraining it to move and transmit said beams in a single selected plane,
 - a memory array having input means for said echo signals, said array having locations to which the echo signals are addressable in correspondence to locations in the body from which the signals originate, and having address input means,
 - means for generating repeatable sequences of vector sync pulses, the first pulse in a sequence initiating a frame,
 - means for activating said transducer elements to transmit said beam pulses, said means for activating responding to

occurrence of the sync pulses by activating the elements in said predetermined order, means for developing signals, respectively, representative of the X and Y coordinates of the center of the linear array, means for developing signals, respectively, representative of the distances in the X and Y directions of the currently active transducer element from the center of the linear array, means for summing the signals representative of said X coordinate and X distance and means for summing the signals representative of said Y coordinate and Y distance to thereby yield discrete signals representing, respectively, the X and Y position coordinates of the active transducer element, means for developing signals representative of the rate of change of the distance of the echos in the X and Y directions from the active element in respect to time as the echos are being returned to the active transducer from the point where the echo originates, means responsive to said signals representative of said rate of change by developing signals representative of the distance of said points in the X and Y directions from said X and Y positions coordinates of the active transducer element, means responding to the signals representative of the X and Y positions of the active transducer element and the signals representative of the distance of said points from said X and Y positions by producing addresses that are coupled to said address input means for storing the echo representative signals corresponding to picture elements in memory array locations along vectors corresponding to the locations at which the echos originate in the body to thereby store pixels composing an image frame corresponding to the present position of said transducer to thereby provide for a real-time display of the image presently in the plane of the transducer array, movement of said transducer resulting in said locations being no longer addressed so as to result in static storage of the real-time image preceding said movement whereupon a new set of addresses are generated for the real-time image frame corresponding to the position in which said transducer has been moved, and means for displaying the static stored image and the real time image simultaneously.

4,431,008

ULTRASONIC MEASUREMENT SYSTEM USING A PERTURBING FIELD, MULTIPLE SENSE BEAMS AND RECEIVERS

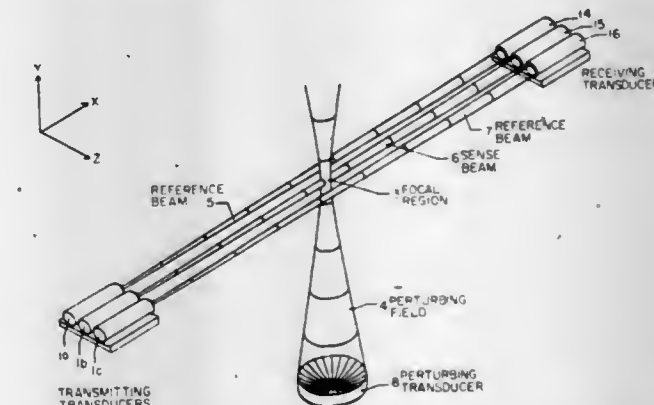
James F. Wanner, R.R. 2, Box 58C, Charlotte, Vt. 05445, and Clinton D. Janney, 37 Colonial Sq., Burlington, Vt. 05401

Filed Jun. 24, 1982, Ser. No. 391,542

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660

4 Claims



- 1. A system for ultrasonic inspection of a living substance including
 - perturbing means to perturb an interior volume of said substance by ultrasonic waves, said perturbing means includ-

ing a first transducer, a first oscillator connected to said first transducer, and means to cause the waves produced by said first transducer to produce a heated focal region; means to produce a collimated ultrasonic sense beam directed through said focal region and means to produce at least one reference beam directed near said focal region but not through it, said sense beam means and said reference beam means including an ultrasonic transmitting transducer to produce its respective collimated beam, a reference oscillator which is a source of continuous oscillations of ultrasonic frequency, and gating means connected between said source and said transducer to produce bursts of oscillations which are fed to its said transducer, thus producing discrete trains of ultrasonic waves; at least two ultrasonic receiving transducers each positioned to receive respectively said sensing beam and said reference beam and at least two phase comparison circuits with one phase comparison circuit being connected to each of said receiving transducers and to the reference oscillator for its respective transmitting transducer to respond to time of flight changes in the respective beams caused by transmission of the sense beam through said focal region with said heating compared to transmission of the sense beam through said focal region without said heating; and means to compare time of flight changes in the sense beam and said reference beam in order to lessen the adverse effects of tissue movement of the living substance during the measurement.

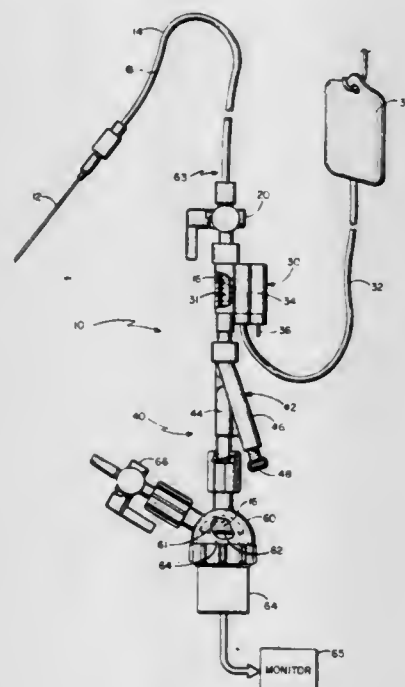
4,431,009

APPARATUS FOR MEASURING BLOOD PRESSURE
Joseph A. Marino, Jr., and Matthew E. Bellin, both of Minneapolis, Minn., assignors to Biomedical Dynamics Corporation, Minneapolis, Minn.

Filed Sep. 8, 1981, Ser. No. 299,671
Int. Cl.³ A61B 5/02

U.S. Cl. 128—673

13 Claims



1. An apparatus for measuring blood pressure comprising: an open-ended catheter having a first end adapted to be inserted into a blood vessel; pressure transducing means including a fluid chamber, said pressure transducing means being adapted to develop a useful signal responsive to pressure variations in the fluid chamber;

a duct providing a fluid passageway open between a second end of said catheter and said transducing means fluid chamber; adjustable restrictor means in series with said catheter and said pressure transducing means for damping resonant pressure waves, said restrictor means having a passageway therethrough forming a part of said duct, said restrictor means passageway being provided with an orifice in said duct, the restrictor means including adjustable means to adjust the size of said orifice; a single pressure transmitting physiological fluid filling said catheter, said duct and said transducing means fluid chamber to transmit the blood pressure variations directly to said fluid chamber without the use of an intermediate fluid, and an infusion device for constantly adding said pressure transmitting fluid to said duct, the infusion device having an infusion passageway forming a part of said duct.

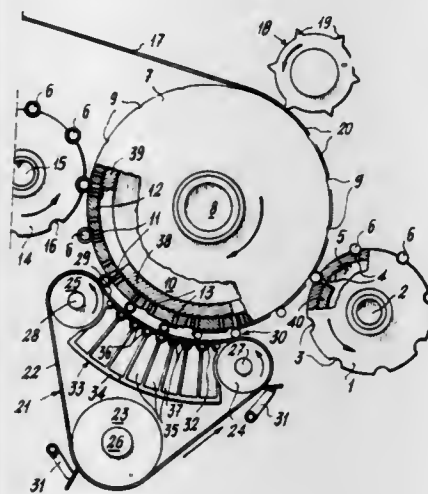
4,431,010

CIGARETTE FILTERS APPLYING DEVICES
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed Jun. 11, 1981, Ser. No. 272,759
Claims priority, application Italy, Jun. 20, 1980, 49022 A/80
Int. Cl.³ A24C 5/47

U.S. Cl. 131—94

6 Claims



1. In a cigarettes filters applying device comprising a main rotating drum for receiving on its cylindrical surface a plurality of units disposed in parallel arrangement with the axis of said drum; at least a pair of rollers positioned adjacent to said drum and having axes parallel to the axis of said drum; a movable continuous web mounted around said rollers so that a section of said web between said rollers faces said drum defining in combination with said drum a rolling passage of about the same width as the diameter of said units; a counteracting element disposed between said rollers on the side of said section of said web opposite to said rolling passage and defining at said rolling passage a concave guide and sliding surface for said web, coaxial with said drum, said guide and sliding surface being constructed of a material having a low coefficient of friction; the improvement residing in that retaining means are provided in association with said counteracting element but separated from said web section for adheringly retaining said web section to said guide and sliding surface.

4,431,011

PROCESS FOR EXPANDING TOBACCO WITH WATER
Ronald D. Rothchild, 106 Rynda Rd., South Orange, N.J. 07079
Filed Sep. 23, 1981, Ser. No. 304,713
Int. Cl.³ A24B 3/18

U.S. Cl. 131—296

11 Claims

1. A method for expanding tobacco in which tobacco containing at least 15% moisture by weight is heated by a stream of gas, the temperature of said gas being from about 300° F. to about 800° F., such that relative velocity between said gas and said tobacco particles is from about 15 ft/sec to about 150 ft/sec, over substantially the entire residence of the tobacco in said gas stream.

4,431,014

COIN SORTING MACHINE

Shinji Yokomori, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Tokyo, Japan

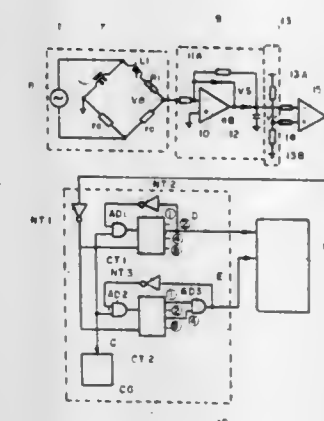
Filed Feb. 1, 1982, Ser. No. 344,547

Claims priority, application Japan, Feb. 10, 1981, 56-17464; Feb. 17, 1981, 56-20905

Int. Cl.³ G07D 5/08

U.S. Cl. 133—3 R

3 Claims



4,431,012

HAIR-CURLER

Gemma Brenn Albertoni, Via Ghiringhelli, 15, Bellinzona, Switzerland

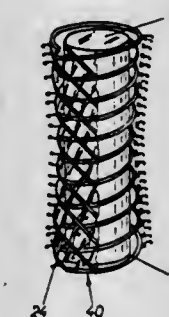
Filed Apr. 1, 1982, Ser. No. 364,464

Claims priority, application Italy, Apr. 15, 1981, 21182 A/81; Oct. 28, 1981, 24745 A/81

Int. Cl.³ A45D 2/00

U.S. Cl. 132—40

10 Claims



1. A hair curler comprising:

an outer cover having a generally cylindrical configuration and formed of a fabric having extending outwardly therefrom a plurality of thread-like bristles each having a shaped head for hooking and retaining hair; an inner support member positioned within said outer cover and defining a generally tubular support therefor, said support member having radial open areas for providing ventilation for hair wrapped around and hooked by said outer cover; and said outer cover being elastically deformable in all directions, and said inner support member being elastically deformable at least at local areas thereof, such that the assembly of said outer cover and said inner support member is elastically deformable to conform to the shape of the head of the user of said curler.

1. A coin sorting machine comprising:
a coin passage;
a coin sensor proximate said coin passage;
a bridge circuit means including said coin sensor and establishing an equilibrium only once when a specie passes said coin sensor;
transferring circuit means for transmitting a signal indicating a variation in the output of said bridge circuit means;
standard means for providing first and second predetermined referential values;
checkup circuit means connected to said transferring circuit means and to said standard means to receive the output of said transferring circuit means, said checkup circuit means including first and second checkup elements, said first element comparing said signal with said first referential value and producing a first output pulse when said signal is beyond a first limit defined by said first referential value, said second element comparing said signal with said second referential value and producing a second output pulse when said signal value is beyond a second limit defined by said second referential value; and
a sorting output circuit means connected to said checkup circuit means and producing an output indicating that a coin passing said coin sensor is a specie when and only when said first and second checkup elements both produce a single pulse output in response to the passing of the coin.

4,431,015

GLASS WASHER AND STERILIZER

Tore H. Noren, Box 219, Petaluma, Calif. 94952

Filed Jul. 19, 1982, Ser. No. 319,637

Int. Cl.³ B08B 3/02

U.S. Cl. 134—55

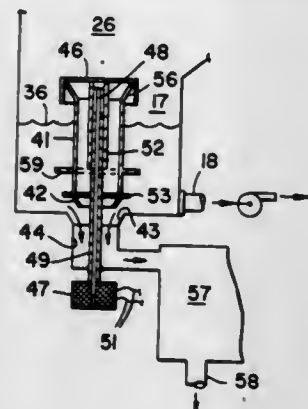
7 Claims

1. An improved washer and sterilizer having a housing defining a wash and rinse compartment with a sump at the bottom thereof comprising

4,431,013

Patent Not Issued For This Number

a large discharge pipe extending from the bottom of said pump and having a valve seat about the top thereof, a hollow cylinder disposed in said sump and having an open tapered bottom for engaging said valve seat and a cap mounted in spaced relation to the open top thereof, a solenoid disposed below said sump and discharge and having a push rod extending upwardly through a first



fixed tube slidably disposed in a second tube depending from said cap for striking said cap to raise said cylinder upon solenoid actuation, and an external flange about said cylinder above the tapered lower end thereof for damping upward movement of said cylinder by movement of the flange through water in said sump.

4,431,016

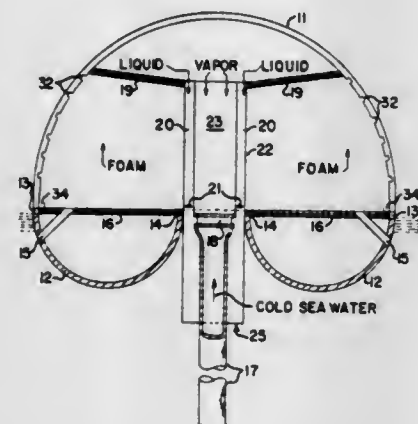
METHOD AND APPARATUS FOR FOAM LUBRICATION
Clarence Zener, 3955 Bigelow Blvd., Pittsburgh, Pa. 15213

Filed Sep. 29, 1981, Ser. No. 306,867

Int. Cl.³ F17D 1/00; F03G 7/04

U.S. Cl. 137-1

5 Claims



1. A method for preventing the breakdown of foam moving through a conduit having inner and outer surfaces comprising the steps of:

- applying a fluid to the inner surface of the conduit, and
- causing the foam to move through the conduit.

4,431,017

PIPE TAPPING METHOD AND APPARATUS

Albert Willemssen, Mulgrave, Australia, assignor to James Hardie & Coy Pty. Limited, Sydney, Australia

Filed Jun. 11, 1981, Ser. No. 272,690

Claims priority, application Australia, Jun. 30, 1980, PE4271

Int. Cl.³ F16K 43/00

U.S. Cl. 137-15

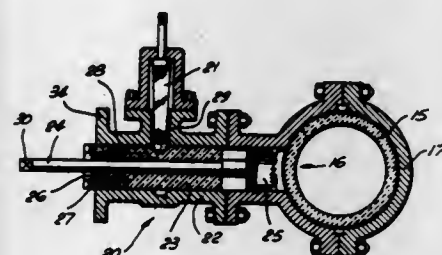
11 Claims

1. A method of tapping a main pipe for connection of a branch pipe thereto, comprising the steps:

- presenting a drill to one side of the main pipe from within a tubular enclosure including a valving means, the tubular enclosure having a closed outer end portion and having its inner end constituted by and sealed against the wall of the

main pipe to be drilled, the drill including guide means in sealed engagement within said tubular enclosure, and a structural cooperation being provided within the tubular enclosure between the valving means and the drill guide means that maintains said tubular enclosure as a sealed chamber as well as retaining the drill and its guide means within the tubular enclosure after drilling the pipe and until a longitudinal extension can be added to the tubular enclosure,

- rotating the drill and applying endwise pressure to it from outside the enclosure thereby to drill a hole in and through one side of the main pipe,



- after drilling, adding a longitudinal closed end extension to the outer end of the enclosure,
- releasing the structural retaining cooperation between the valving means and the drill and its guide means and retracting the drill and its guide means away from the main pipe, through said outer end portion and at least partly into said extension,
- using the valving means to apply a transverse valve closure across the tubular enclosure and between the retracted drill and the main pipe, and
- removing the longitudinal extension and the drill from the tubular enclosure.

4,431,018

REVERSE BUCKLING RUPTURE DISK APPARATUS AND MANUFACTURING METHODS

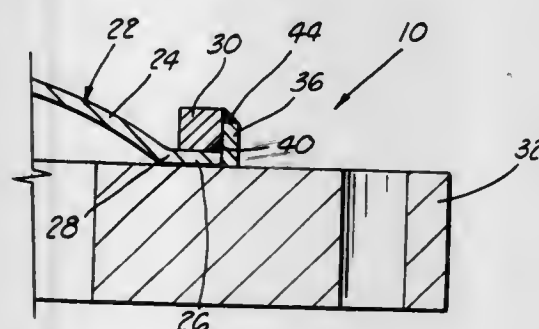
Michael C. Finnegan, Limerick, Ireland, assignor to BS&B Safety Systems, Ltd., Limerick, Ireland

Filed Jan. 28, 1982, Ser. No. 343,413

Int. Cl.³ F16K 13/04

U.S. Cl. 132-68 R

7 Claims



1. A reverse buckling rupture disk apparatus comprising:
 - a reverse buckling rupture disk having a concave-convex portion connected to an annular flange portion by a transition connection;
 - an annular support ring positioned adjacent the annular flange portion of said rupture disk on the convex side thereof welded to said annular flange portion; and
 - an annular support member adapted to be clamped between companion bolted flanges positioned adjacent the other side of said annular flange portion of said rupture disk and welded to said support ring.

4,431,019

FLUID FLOW CONTROL DEVICE

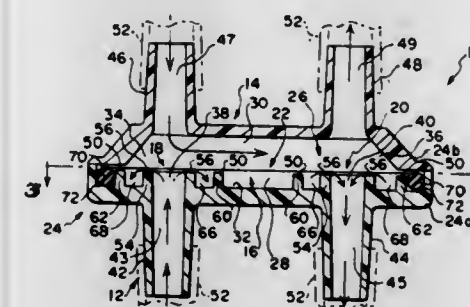
Clinton V. Kopp; James Hitchcock, both of Barrington, and Martin Miller, Lake-in-the-Hills, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 25, 1981, Ser. No. 277,414

Int. Cl.³ B01D 31/00; F16K 31/365

U.S. Cl. 137-87

5 Claims U.S. Cl. 137-110



1. A fluid flow control device comprising
 - a housing peripherally enclosing an interior area, normally planar flexible wall means extending across said interior area to compartmentalize said interior area into first and second chambers,
 - means for forming a first upstanding ridge in said first chamber terminating in a generally planar first surface which faces said flexible wall means in a normally noncontiguous relationship,
 - means for forming second and third upstanding ridges in said first chamber positioned, respectively, concentrically inwardly and concentrically outwardly of said first upstanding ridge, forming an inner fluid flow path between said first and second upstanding ridges and an outer fluid flow path between said first and third upstanding ridges, respectively, in generally planar second and third surfaces, each of which faces said flexible wall means in generally said same normally noncontiguous relationship as said first generally planar surface,
 - means for forming in said first upstanding ridge an inlet passage having an opening which extends through said first generally planar surface to conduct a first fluid into each of said inner and outer fluid flow paths subject to a determinable pressure,
 - means for forming in said first upstanding ridge an outlet passage having an opening which extends through said first generally planar surface in a region spaced from said inlet passage opening to conduct the first fluid from each of said inner and outer fluid flow paths,
 - means for forming spaced passages communication with said said second chamber for conducting a second fluid through said second chamber subject to a determinable pressure,
 - said flexible wall means being operative in response to fluid pressure differentials between said first and second chambers for displacement out of its normally planar position into farther and closer association with said openings of said inlet passage and said outlet passage in said first upstanding ridge to restrict the conduction of fluid through said inlet and outlet passages to establish and thereafter maintain substantial equilibrium between the pressure of the first fluid and the pressure of the second fluid, and
 - said first, second, and third ridges being operative for supporting said flexible wall means in a generally coplanar position while said flexible wall means is displaced in its closest association with said openings of said inlet and outlet passages.

4,431,020

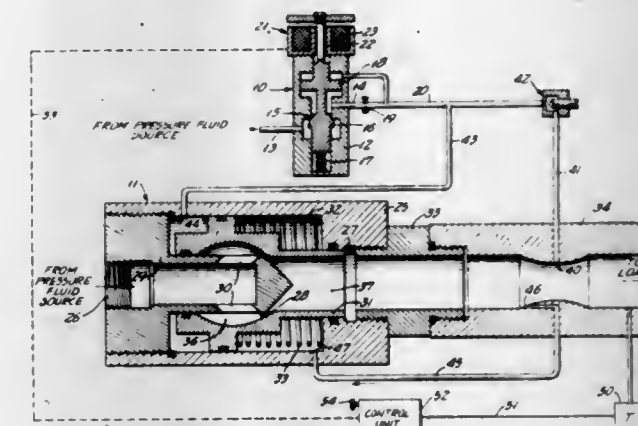
FLOW-CONTROL SYSTEM HAVING A WIDE RANGE OF FLOW-RATE CONTROL

Slawomir Kowalski, Rockaway, N.J., assignor to Marotta Scientific Controls, Inc., Boonton, N.J.

Filed Oct. 8, 1981, Ser. No. 309,802

Int. Cl.³ F16K 31/363

9 Claims



1. In combination, a pilot valve and a main valve for controlling delivery of pressure fluid from an upstream source to a downstream load;
 - said pilot valve comprising a pilot-valve body with a passage between an inlet connected to said source and an outlet-line connection and having a valve-member seat therebetween, a flow restriction between said seat and said outlet-line connection, a pilot-valve member coacting with said seat, solenoid-operated means for applying to said pilot-valve member a valve-opening force proportional to solenoid-excitation, and fluid-pressure operated means differentially responsive to pressure on opposite sides of said flow restriction for establishing a constant delivery of pilot-valve outlet flow in said outlet-line connection for a given solenoid excitation and substantially independent of changes in source pressure;
 - said main valve comprising a main-valve body having a passage between an inlet connected to said source and an outlet-line connection to said load and having a valve-member seat therebetween, a flow restriction in said outlet-line connection, whereby near said last-mentioned restriction there exists a first region of relatively low-pressure main-valve outlet fluid flow and a second region of relatively high-pressure main-valve outlet fluid flow upstream from said main-valve outlet flow restriction, fluid-pressure responsive means for operatively positioning said main-valve member and differentially responsive to pressure on one side for developing main-valve opening force and on the other side for developing a balancing force in opposition to the opening force, and a connection from said second region to said other side for developing balancing force from main-valve outlet pressure sampled from said main-valve outlet restriction; first means including a throttling orifice connecting the pilot-valve outlet-line connection to said first region, and second means connecting the pilot-valve outlet-line connection to said one side of the fluid-pressure responsive operating means of said main valve; whereby, depending upon the excitation of said solenoid, pilot-valve flow will be delivered to said load essentially with a first characteristic of proportionality to solenoid excitation; and further whereby main-valve flow will be additionally delivered to said load essentially with a second and steeper characteristic of proportionality to solenoid excitation, the pilot-valve flow rate at which said second characteristic becomes operative being a function of the setting of said throttling orifice.

4,431,021

NEEDLE VALVE

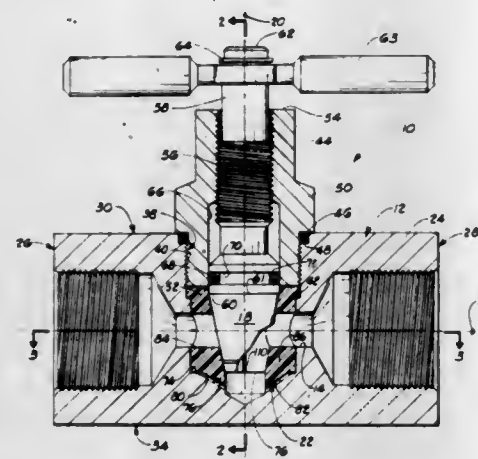
John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Filed Dec. 24, 1981, Ser. No. 334,449

Int. Cl.³ B67C 3/16

U.S. Cl. 137—205

5 Claims



1. In a valve of the type having a valve body and a frusto-conical member axially moveable in the valve body to obstruct a flow passage formed through the valve body transversely to the direction of movement of the frusto-conical member, wherein a cylindrical valve chamber intersecting the flow passage is formed in the valve body coaxially with said frusto-conical member and wherein the valve further comprises a flexible, tubular liner disposed within the valve chamber and having a frusto-conical bore to receive said frusto-conical member, said liner having apertures formed through portions thereof aligned with said flow passage, the improvement:

wherein a slot is formed in portions of the valve body forming one end of the valve chamber facing the small end of the frusto-conical member, said slot extending parallel to said flow passage;

wherein said liner is characterized as having a cylindrical outer surface formed on a diameter slightly smaller than the diameter of the valve chamber;

wherein said liner is split into two semi-cylindrical members positioned to either side of a plane bisecting the valve chamber perpendicularly to the flow passage; and

wherein at least one of said semi-cylindrical members of the liner has a tab formed on one end thereof to extend into the slot at said one end of the valve chamber, thereby fixing the orientation of the liner about said frusto-conical member while enabling expansion of the liner.

4,431,022

LINE REMOVABLE VALVE STRUCTURE WITH EXTENSIBLE SEAL RINGS ON VALVE CARTRIDGE

Robert L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Jan. 13, 1982, Ser. No. 339,138

Int. Cl.³ F16K 43/00

U.S. Cl. 137—315

16 Claims

1. A line-removable valve structure comprising:

a pair of opposing, parallel plates with flow passageways therethrough;

means on said plates around said flow passageways for connection of said plates in a pipeline;

rigid framework members interconnecting said plates along the sides thereof;

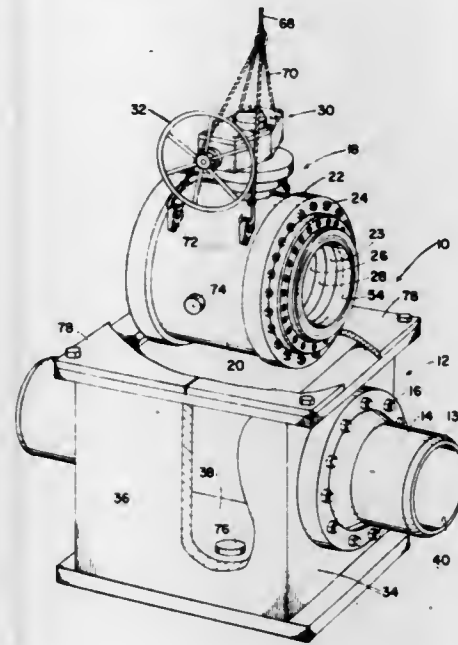
a valve cartridge with generally planar end walls and containing a movable valve closure member and seal rings, received between said parallel plates;

a seal carrier ring axially movable on one of said end walls;

a main seal ring carried at the front of said seal carrier ring

for sealing against one of said parallel plates around the flow passageway;

a tail seal ring carried around said seal carrier ring to seal between said end wall and said carrier ring throughout movement thereof; and



force-applying means for biasing said seal carrier ring axially outward and into engagement with one of said parallel plates; and means for relieving said force-applying means to enable removal of said valve cartridge from between said parallel plates.

4,431,023

PRESSURE RELIEF DEVICE

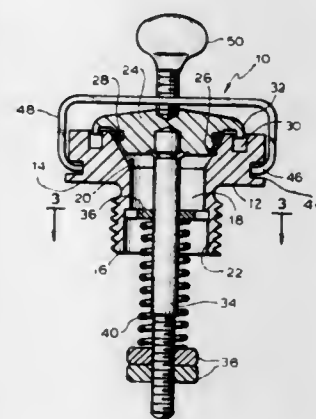
Wendell D. Johnson, Rochester, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,257

Int. Cl.³ F16K 17/04, 15/02

U.S. Cl. 137—316

3 Claims



1. A pressure relief device comprising a valve body (12) having a hexagonal portion (14), a valve head (24) having a lip (32) about the periphery of the head, said lip being arranged to enter a groove (30) formed in the valve body, a valve stem (34) affixed to the valve head, a spring (40) compressively arranged to urge the valve head in seated condition to prevent fluid from passing through the valve body, and a clamp (48) arranged to maintain the valve head in seated condition on the valve body, wherein the clamp (48) has bent portions (46) arranged to engage a circular groove (44) formed in the valve body hexagonal portion (14) which allows rotation of the clamp to clear the corners of the hexagonal portion so that the clamp may be removed from the valve body.

4,431,024

FLOAT-CONTROLLED VALVE FOR TOILET FLUSH TANKS

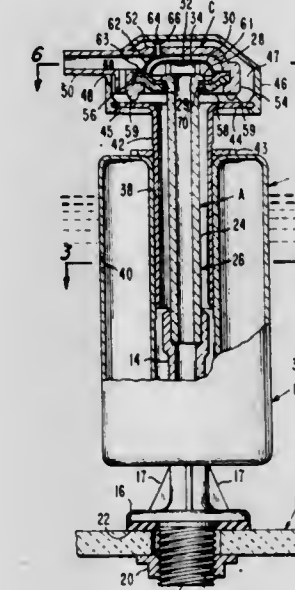
Patrick Gallagher, Albuquerque, N. Mex., assignor to Trenton Pipe Nipple Company, Trenton, N.J.

Filed Oct. 19, 1981, Ser. No. 313,049

Int. Cl.³ F16K 31/34, 33/00

U.S. Cl. 137—413

17 Claims U.S. Cl. 137—422



1. A liquid level control device for a flush tank or the like, comprising:

- (a) an upstanding fill tube structure mountable in said tank in communication with a source of liquid under a predetermined line pressure, said structure having an upper end that includes a valve seat, said structure further including a flow deflector spaced upwardly from the valve seat to define upper and lower pressure chamber portions respectively located above and below the deflector;
- (b) a valve chamber assembly supported on the upper end of the fill tube structure for movement in respect thereto and including a valve chamber and a valve element in the lower pressure chamber portion movable within said chamber out of and into engagement with said seat to valve-opening and closing positions respectively, said chamber communicating with the fill tube structure to normally maintain line pressure within the chamber, the chamber having a bowl-fill exit opening, and a pilot valve means in the upper chamber portion normally closing said opening and extending in a position inclined from the vertical in which it is biased away from said opening responsive to the exertion of pressure exerted against the pilot valve means in a vertical path, said pilot valve means thereby being actuatable to permit leakage through the exit opening to a extent effective to reduce pressure in the area of the pilot valve means in the upper chamber portion while maintaining pressure in the area of the valve element in the lower chamber portion, whereby to bias the valve element to its fully open position as a result of the pressure differential produced in said chamber; and
- (c) means for shifting the valve assembly to its respective positions including:

- (1) a float shiftable downwardly and upwardly in a vertical path in respect to both the fill tube structure and the valve assembly responsive to dropping and elevation, respectively, of the liquid level within the tank, and
- (2) means having a fixed connection to the float so as to shift upwardly and downwardly therewith in said vertical path to bias the valve assembly to its seated position when the float is shifted upwardly, said last named means engaging the pilot valve means when it moves downwardly in the vertical path with the float to actuate the pilot valve means to its open position.

4,431,025

BACK FLOW PREVENTION VALVE

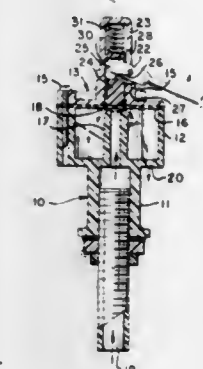
Lawrence H. Edwards, 3102 5th Ave. North, Lethbridge, Alberta T1J 4A2, Canada

Filed Jan. 21, 1982, Ser. No. 341,393

Claims priority, application Canada, Dec. 3, 1981, 391416

Int. Cl.³ F16K 31/18, 33/00

4 Claims



1. In a float-responsive valve of the type used for establishing a desired fluid level in a tank, and comprising a valve seat, a valve element for cooperating with the valve seat, lever means having a fulcrum adjacent the valve element, and float means on the lever means responsive to fluid level to operate the lever to close the valve when the tank is full, said float being movable between upper and lower limits, the improvement comprising a lost-motion connection between the float lever and the valve element, said connection having sufficient lost motion to prevent said float lever from forcing said valve open at any position of said float, and resilient means biasing the valve towards its seat, whereby in the absence of fluid pressure the resilient means forces the valve element against the seat and prevents siphoning of fluid from the tank through the valve regardless of the position of said float and the float comes into play only in further closing the valve when the fluid level reaches its desired level and the float is at its upper limit.

4,431,026

PRESSURE CONTROL VALVE

Siegfried Fehrenbach, Markgröningen; Eberhard Utz, Stuttgart, and Kurt Herbst, Burgstetten, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 124,047, Feb. 25, 1980, Pat. No. 4,327,767.

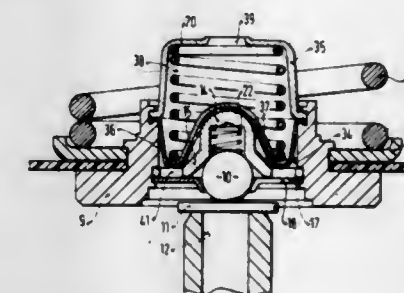
This application Nov. 6, 1981, Ser. No. 318,769

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912799

Int. Cl.³ F16K 31/12

U.S. Cl. 137—510

1 Claim



1. A pressure control valve comprising a housing, a membrane within said housing arranged to extend across said housing to enclose a space in said housing, a support assembly secured to said membrane coaxially therewith, a bore in said support assembly, a spring loaded valve assembly in said bore and secured to said support assembly, a fixed valve seat secured to said housing to provide a valve seat for said spring loaded valve assembly, an elastic storage membrane which

extends completely across said bore in said support assembly relative to said spring loaded valve assembly opposite from said valve seat,

- a cap secured to said support assembly relative to said bore thereon,
- a storage spring seated on one end in said cap and on another end on said elastic storage membrane,
- whereby said elastic storage membrane serves as a storage means and is capable of being deviated by a fluid under pressure counter to said storage spring.

4,431,027

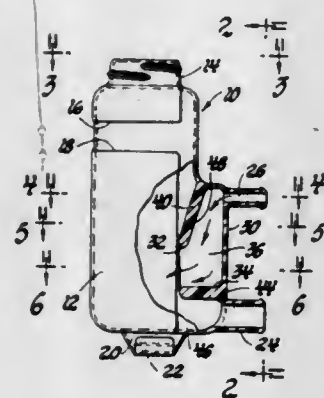
RESERVOIR FOR REMOTE FLUID SYSTEM

John J. Sabina, Jr., Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1981, Ser. No. 255,996
Int. Cl.³ E03B 11/00

U.S. Cl. 137-574

3 Claims



1. A fluid reservoir molded of polymeric material and adapted for enhanced anti-turbulent storage of fluid entering at a high velocity from a fluid system, comprising, a main storage chamber portion, an antechamber portion separated from the main chamber portion, a fluid inlet opening formed adjacent the upper end of the antechamber portion for receiving high-velocity fluid from the fluid system, means adjacent the lower end of the antechamber portion defining an opening communicating the interiors of the antechamber and main chamber portions, the area of said communicating opening being a predetermined large multiple of the area of said inlet opening for passage of fluid from the antechamber portion to the main chamber portion at a velocity substantially reduced from that entering at said inlet opening, and the cross-sectional area across the direction of fluid flow of said antechamber between the ends thereof varying without discontinuity from a smallest area adjacent said inlet opening to a largest area adjacent said communicating opening for anti-turbulent transition of the velocity of fluid flow between said high and reduced values thereof.

4,431,028

MULTIPLE ORIFICE VALVE WITH LOW VOLUME FLOW CONTROL

Fred W. Hendrick, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 6, 1981, Ser. No. 251,394
Int. Cl.³ F16K 47/04, 3/08, 3/32

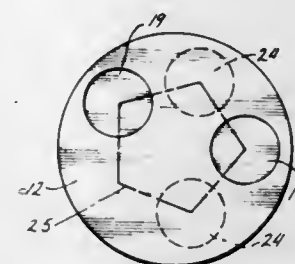
U.S. Cl. 137-625.3

15 Claims

1. In a multiple orifice flow control valve comprising: a valve body;
- a downstream disk fixed in the valve body;
- an upstream disk concentric with and in face-to-face engagement with the downstream disk;
- means for rotating the upstream disk;
- a single pair of fluid flow holes through the otherwise imperforate downstream disk; and
- a single pair of fluid flow holes through the otherwise imperforate upstream disk;

the improvement wherein:

each of said holes is located at an apex of a regular polygon having at least five sides concentric with the disks, the pair



of holes through each disk being separated by one imperforate apex of the polygon clockwise from one of the holes and at least two imperforate apexes of the polygon counterclockwise from said hole.

4,431,029

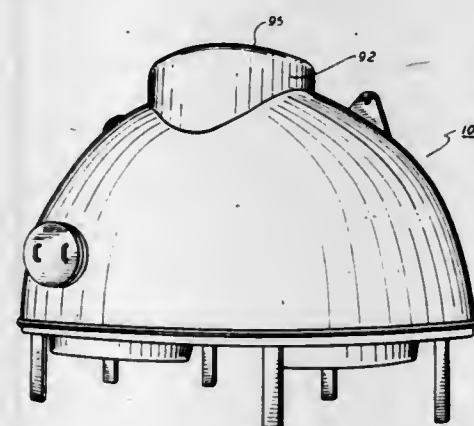
METHOD OF MAKING SHELLS FOR SWING PLATE VALVES

Roy Williams, Cranbury, N.J., assignor to Satco Div. of Beco Enterprises, Inc., Bridgewater, N.J.

Filed Jan. 4, 1982, Ser. No. 336,559
Int. Cl.³ F16K 27/10; B23K 31/02

U.S. Cl. 137-802

4 Claims



2. The method of forming a flat plate swing valve shell comprising in combination the steps of:

- (a) cutting a commercially available pressure vessel head having a first dome-shaped vertical cross-section, and a circular base in half along its vertical diameter, thereby forming a pair of substantially equivalent half-dome sections each having a semi-circular base;
- (b) rotating each of said half-dome sections through a 90° angle about the axis of the intersection of the plane of said circular base and the plane of said vertical diameter, thereby aligning the perimeters of said semi-circular base to form a seam therebetween;
- (c) bonding said rotated half-dome sections along said seam, thereby forming a valve shell having a second dome-shaped vertical section and an elliptical base;
- (d) cutting an upper circular opening symmetrically about the apex of said dome-shaped valve shell;
- (e) forming a cylindrical entry port adjacent said upper circular opening; and
- (f) bonding said cylindrical entry port to said dome-shaped valve shell above said circular opening.

4,431,030

FLUID TIMING ELEMENT, ESPECIALLY A PNEUMATIC TIMING ELEMENT FOR USE IN HOUSEHOLD APPLIANCES, SUCH AS ELECTRIC TOASTERS

Jiri Nachazel, Stein an der Traun, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

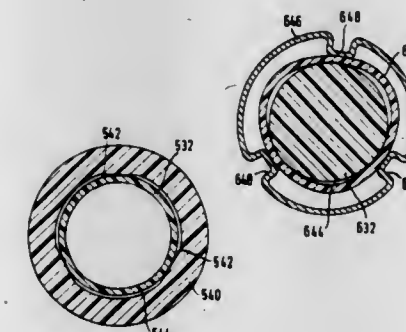
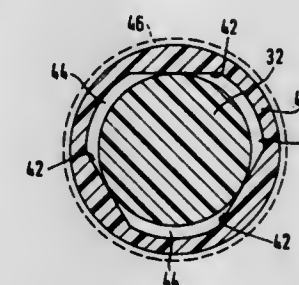
Filed Aug. 28, 1980, Ser. No. 182,458

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935299

Int. Cl.³ F15D 1/02; F01B 29/08

U.S. Cl. 138-45

8 Claims



1. Fluid timing element, comprising a nozzle, a needle being at least partly insertable into said nozzle forming a choke gap therebetween, at least one of said nozzle and said needle being axially tapered, said nozzle and said needle being axially movable relative to each other for adjusting said choke gap, said nozzle and said needle having different cross-sectional shapes and having at least two wall sections distributed over the peripheries thereof projecting into and constricting said choke gap, said nozzle and said needle being axially pressable into each other to exert radial pressure on each other for elastically deforming said cross-sectional shapes thereof over a given normal adjustment range and said nozzle having thin walls formed of elastic material being drawn toward said needle by said radial pressure.

4,431,031

PRE-RINSE HOSE

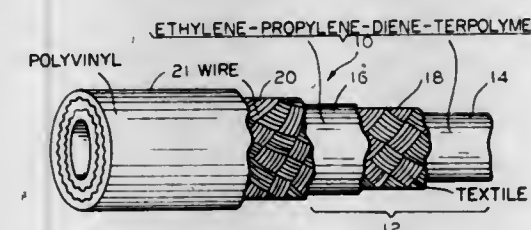
Ralph Ettlinger, Glencoe, Ill., assignor to Amco Corporation, Chicago, Ill.

Filed Mar. 29, 1982, Ser. No. 363,252

Int. Cl.³ F16L 13/14

U.S. Cl. 138-109

14 Claims



1. A pre-rinse hose for use in coupling a faucet and pre-rinse

spray head comprising an inner tube having openings at opposite ends; textile braid applied around the inner tube; an outer tube disposed around the textile braid, said outer tube having openings at opposite ends; a wire braid applied around the outer tube, a cover disposed around the wire braid to create an air space between said outer tube and said cover; a hollow stem securely fixed in each end of said inner tube, said hollow stem having a body disposed within said inner tube and a portion extending outwardly from said inner tube with a flange disposed on the end of said portion outside of said inner tube and a plurality of outwardly extending spaced-apart, sharp-edged annular barbs disposed on the body of the stem to bite into the inner tube of the hose; a ferrule adaptable to be crimped and compressed over each end of said hose to compress the hose around said hollow stems; and a wrench-faced nut disposed on each of said stems between said hose and stem flange, said nut having an internally threaded section to receive said faucet and spray head; and a spring disposed around the end of the hose connected to the faucet.

4,431,032

TAR-DEPLETED LIQUID SMOKE TREATMENT OF FOOD CASINGS

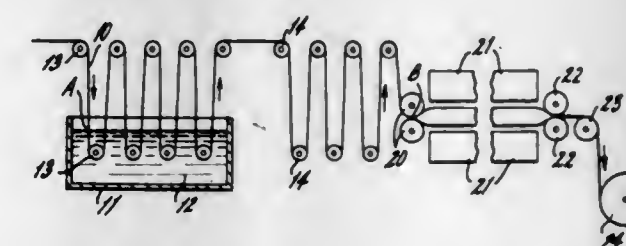
Myron D. Nicholson, Lockport, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 311,909, Oct. 16, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 417,172

Int. Cl.³ D03D 13/00; A23L 1/22; A22C 13/00

U.S. Cl. 138-118.1

12 Claims



1. A tar-depleted liquid smoke treated tubular food casing prepared by the steps of providing a tar-containing aqueous liquid smoke solution at temperature below about 40° C. and having an absorptive power of at least about 0.25 at 340 nm. wave length; at least partially neutralizing said aqueous liquid smoke solution by contacting a high pH constituent therewith in sufficient quantity to raise the pH thereof to above about 4 to thereby form a tar-enriched fraction and a tar-depleted liquid smoke fraction; controlling the temperature of said aqueous liquid smoke solution during said neutralizing so that the solution temperature does not rise above about 40° C.; separating said tar-enriched fraction and said tar-depleted liquid smoke fraction to recover the latter as a tar-depleted liquid smoke; and treating a surface of a tubular food casing with said tar-depleted liquid smoke in sufficient quantity to provide an absorptive index of at least about 0.2 at 340 nm. wave length for the casing wall.

4,431,033

TAR-DEPLETED LIQUID SMOKE TREATMENT OF FOOD CASINGS

Myron D. Nicholson, Lockport, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 312,366, Oct. 16, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 417,173

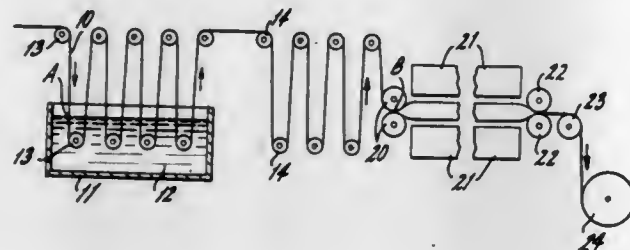
Int. Cl.³ D03D 13/00; A22C 13/00; A23L 1/22

U.S. Cl. 138-118.1

13 Claims

1. A tar-depleted smoke colored and smoke flavored tubular food casing prepared by the steps of: providing a tar-containing aqueous liquid smoke solution having an absorptive power of at least about 0.25 at 340 nm. wave length and an organic

liquid solvent which is either nonreactive with said liquid smoke solution or reactive with said liquid smoke solution to form a derivative liquid solvent, said liquid solvent being immiscible in the liquid smoke environment and having a hydrogen bonding solubility parameter of at least about 2.7; contacting said liquid smoke solution and said liquid solvent in a volume ratio between about 1:1 and about 65:1 of liquid smoke



solution to liquid solvent, under extraction conditions to form a tar-enriched solvent fraction and a tar-depleted liquid smoke fraction; separating the fractions to provide said tar-depleted liquid smoke; and treating a surface of a tubular food casing with said tar-depleted liquid smoke in sufficient quantity to provide a casing wall containing smoke coloring and flavoring constituents and having an absorptive index of at least about 0.2 at 340 nm. wave length.

4,431,034 HOSE

Gasim M. B. O. Abdullaev; Faramaz G. O. Maxudov; Gabil G. Aliev; Tofik K. O. Ismailov; Damad M. S. O. Miri-Zade; Ilgam A. O. Gasanov; Yashar A. O. Gadzhiev, and Rovshan I. O. Shakhmamedov, all of Baku, U.S.S.R., assignors to Institut Matematiki I Mekhaniki, Baku, U.S.S.R.

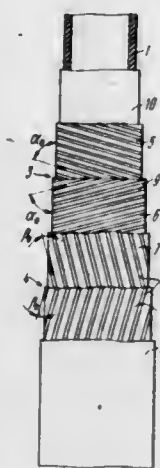
PCT No. PCT/SU80/00061, § 371 Date Dec. 1, 1980, § 102(e) Date Dec. 1, 1980, PCT Pub. No. WO80/02186, PCT Pub. Date Oct. 16, 1980

PCT Filed Apr. 2, 1980, Ser. No. 217,012

Claims priority, application U.S.S.R., Apr. 2, 1979, 2739152 Int. Cl.³ F16L 11/08

U.S. Cl. 138—130

3 Claims



1. A flexible hose for the conveyance of fluids comprising:
 - a. an inner supporting tube of an elastic material;
 - b. an interlayer of a non-metallic fabric placed directly on the surface of said inner supporting tube;
 - c. a first pair and a second pair of reinforcing plies placed directly one over the other, each of said plies comprising a set of helically wound threads and each of said pairs being formed by two symmetrically wound sets of threads, the winding angles of said sets of threads lying within the range of from 75° to 90° and from 0° to 20°; the first pair of reinforcing plies being placed directly on said interlayer and having said threads wound at an angle

- between 75° and 90° relative to the longitudinal axis of the hose;
- the second pair of reinforcing plies having said threads wound at an angle between 0° and 20° relative to the longitudinal axis of the hose; the reinforcing plies in each pair are oppositely wound with the same helix angle and are disposed directly one over the other;
- additional pairs of reinforcing plies having said threads wound at angles varying within the above-mentioned ranges; and
- d. an outer protective cover made of an elastic material and placed on the surface of the outermost reinforcing ply.

4,431,035 WOVEN FABRIC WITH COVERED EDGES AND METHOD OF A MANUFACTURE

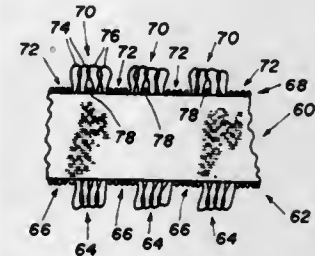
Roger Young, Lincoln, and Klaus E. Schoeffler, Newark, both of Del., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jun. 25, 1980, Ser. No. 163,019

Int. Cl.³ D03D 35/00

U.S. Cl. 139—383 R

21 Claims



1. A method for weaving a fabric comprising:
 - providing a warp shed with a cover thread and a first edge wire adjacent a first edge warp thread of said shed, said cover thread and said first edge warp thread being in opposite positions in said shed;
 - inserting a weft thread through said warp shed from said first edge to form a weft loop at said first edge;
 - returning said weft thread to said first edge to form a weft loop at said second edge;
 - knitting a binder thread about said weft loop to bind said weft loop at said second edge;
 - reversing said warp shed; and
 - repeating aforementioned steps to form a fabric having a first edge warp thread covered on its exterior edge by a serpentine patterned cover thread and having a second edge warp thread covered on its exterior edge by said knitted binder thread.

4,431,036 MECHANISM FOR BRAKING A WEFT YARN IN A WEAVING MACHINE

Markus Schnyder, Elsau-Raterschen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 8, 1982, Ser. No. 338,099

Claims priority, application Switzerland, Jan. 30, 1981, 608/81

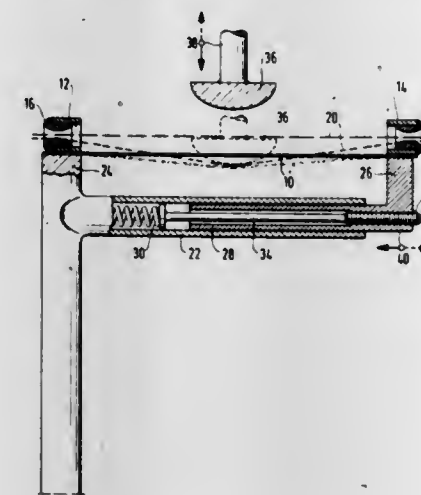
Int. Cl.³ D03D 47/34

U.S. Cl. 139—429

10 Claims

1. A mechanism for braking a weft yarn in a weaving machine, said mechanism comprising
 - a flexible brake band;
 - means for guiding a weft yarn over said brake band;
 - at least one brake member for pressing the weft yarn against said brake band;

at least one linearly movable carrier mounting said brake band thereon; and



a return means for displacing said carrier during pressing of the weft yarn against said brake band.

4,431,037 LOW PARTICULATE LIQUID FILLING MACHINE AND METHOD

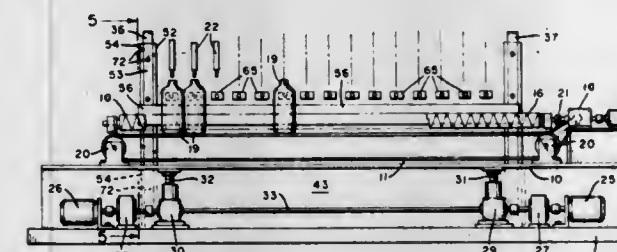
William R. Schevey, Honesdale, Pa.; Frank Calderoni, Antioch, Calif.; Raymond E. Trunk, Madison, N.J.; Harold M. Lehman, Dover, N.J., and John J. Jandura, Jr., Towaco, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 28, 1981, Ser. No. 334,662

Int. Cl.³ B65B 3/04

U.S. Cl. 141—5

7 Claims



6. A method for automatically simultaneously filling a plurality of bottles with a high purity liquid without contact being made between a filler head and a container wherein the containers are delivered and aligned horizontally on a support beneath a plurality of filler heads and wherein the support is raised by vertical lifting and lowering so that during the filling operation the aperture of a filler head is received within a container when the containers have been elevated to a predetermined height, characterized in that drive means to exclusively raise and exclusively lower said support are continuously and simultaneously operated at a substantially uniform rate, means to engage the disengage said drive means, respectively, to raise and lower said container support and inhibiting vibration during vertical movement of the supporting by employing wear plates to the vertical supports for said container support.

4,431,038 ACTUATING HOLDER FOR COMBINED ELECTRIC ERASER-PENCIL SHARPENERS

Philip L. Rome, 1058 Baseline Rd., Claremont, Calif. 91711

Filed Mar. 5, 1981, Ser. No. 240,786

Int. Cl.³ B43L 23/02

U.S. Cl. 144—28.1

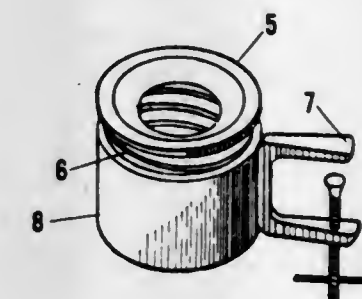
3 Claims

1. A self actuating holder for supporting a type of combined electric eraser-pencil sharpener with a motor actuation trigger

switch mounted on one side of a tapered cross section body, said holder comprising:

a collar having a tapered bore with a lower minimum diameter which is greater than that required to permit passage of the combined eraser pencil sharpener to be supported without compression of said combined sharpener's side mounted actuation trigger switch, said lower minimum diameter being also less than the largest diameter of the tapered body of said combined sharpener to be supported, whereby said combined sharpener can be circumferentially contacted and supported at the axial position on its tapered body which is the position above said switch at which said sharpener's tapered external diameter becomes larger than said collar bore;

a cup shaped base structure having a top opening and a lesser bottom opening, said bottom opening having a diameter less than the diameter of said combined eraser-pencil sharpener's tapered body when measured at the axial position of the top of said actuation switch, and greater



than the diameter of said sharpener's tapered body when measured at the axial position of the bottom of said actuation switch, whereby said combined sharpener cannot be passed through said bottom opening without said side mounted external trigger switch being fully actuated by compression; and

a helical coil spring with a constant external diameter less than said top opening in said cup shaped base structure, said spring having an upper end internal diameter greater than said collar bore minimum external diameter and a lower end internal diameter greater than said base structure bottom opening diameter, said spring positioned within said cup shaped base between said collar and said base bottom opening so that said eraser pencil sharpener can be normally supported with its side mounted actuation switch positioned unactuated above said bottom opening until downward pressure from insertion of a pencil in said sharpener moves said switch downward against said spring until said switch is compression activated by closure within said base bottom opening.

4,431,039 INVOLUTED DISC SLICER

Robert D. Barwise, Bovey, Minn.; Rodger A. Arola, and Edsel D. Matson, both of Hancock, Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,661

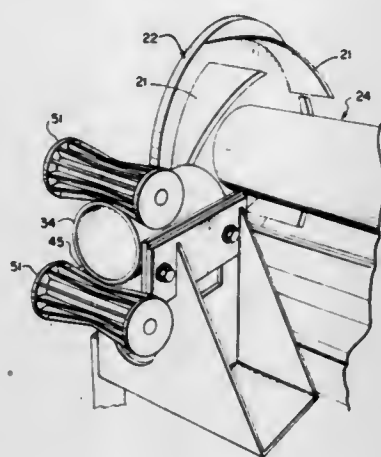
Int. Cl.³ B27L 11/02

U.S. Cl. 144—176

20 Claims

1. A slicing device for reducing a workpiece into blocks of engineered length comprising:
 - a rotatable shaft means having an axis of rotation;
 - at least one generally circular disc carried on said shaft means and generally perpendicular thereto for rotation therewith;
 - at least one curved cutting blade attached to said disc and having a cutting edge comprising an involute segment

radially spaced from said shaft and positioned on said blade generally opposite from said disc; power means for rotating said shaft;



feed means mounted proximate to said cutting blade for feeding said workpiece generally perpendicularly to said shaft.

4,431,040

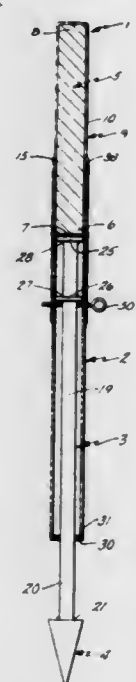
MANUAL IMPACT-TYPE LOG SPLITTER AND METHOD FOR MAKING SAME

Kenneth L. Friedrich, 11337 52nd, Lowell, and Jeffrey H. Te-Pastte, Rte. 2, Newaygo, both of Mich.
Continuation-in-part of Ser. No. 212,692, Dec. 3, 1980. This application Oct. 26, 1981, Ser. No. 314,657

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 C

39 Claims



1. In a manual, impact-type log splitter, the improvement comprising:

a hollow tubular housing having a transverse cross-sectional shape which is substantially uniform along its entire length;

a ram having an upper end thereof with means for slidably mounting the same in the interior of said housing for reciprocation therein, and a lower end with means connected therewith for splitting wood;

an elongate weight having a transverse cross-sectional shape which is substantially uniform along its entire length, geometrically similar to the transverse cross-sectional shape of said housing, and sized for grasping and close telescoping reception into the upper end of said housing; said weight having a lower end extending into said hous-

ing upper end, and upper end extending outwardly from said housing upper end a predetermined distance of sufficient length to be firmly grasped by two hands; means for fixedly anchoring the lower end of said weight in the upper end of said housing; and a resiliently compressible sleeve disposed over and enveloping the upper end of said weight and at least a portion of the upper end of said housing, whereby the lower end of said weight forming an impact surface against which the upper end of said ram abuts during operation, and the upper end of said weight forming a handle, covered by said sleeve for secure, comfortable operation of said log splitter.

4,431,041

VIDEO CAMERA CASE

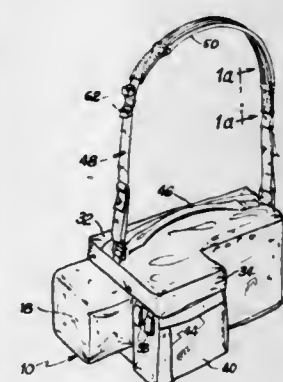
Steven G. Leiserson, 9190 Manor Dr., La Mesa, Calif. 92041

Filed Aug. 12, 1982, Ser. No. 407,380

Int. Cl.³ A45C 11/38, 13/04; A45F 3/12

U.S. Cl. 150—52 J

3 Claims



1. A case for a video camera comprising: a main body having: a rigid frame shaped to substantially follow the contours of said camera; an inner lining inside said frame for shielding said camera from said frame; an outer covering over the exterior of said frame; means for carrying said case; an accessory pouch removably attached to said body; and wherein said body defines a laterally extended overhang and said pouch is fastened thereunder.

4,431,042

ANTISKID TIRE CHAIN

Gordon W. E. Daniel, Mandal, Norway; assignor to Norsk Kjettingindustri A-S Alf Nosted, Mandal, Norway

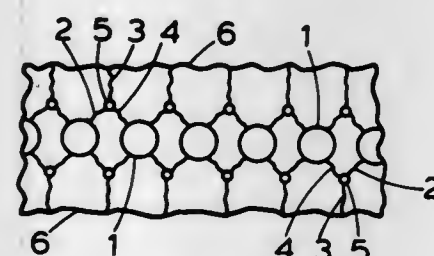
Filed Mar. 19, 1982, Ser. No. 359,836

Claims priority, application Norway, Mar. 19, 1981, 810939; Feb. 22, 1982, 820546

Int. Cl.³ B60C 27/00

U.S. Cl. 152—243

4 Claims



1. In an antiskid tire chain comprising a plurality of cross chains which are systematically arranged in groups of three along the tire chain, one end link of each cross chain in a group being joined in a junction member from which said cross

chains extend in different directions, the improvement of said junction member being in the form of an open link defining an internal longitudinal slot and having a slit opening through which said end link of each of said three cross chains has been hooked into said junction member longitudinal slot, said longitudinal slot and said slit opening both having a width equal to or slightly larger than the diameter of the cross links, and said longitudinal slot having a length equal to or slightly larger than three times the cross link diameter, the intermediary one of said hooked in end links thereby blocking said slit opening against disconnection of the remaining end links.

4,431,043

AUTOMATIC TIRE INFLATION SYSTEM

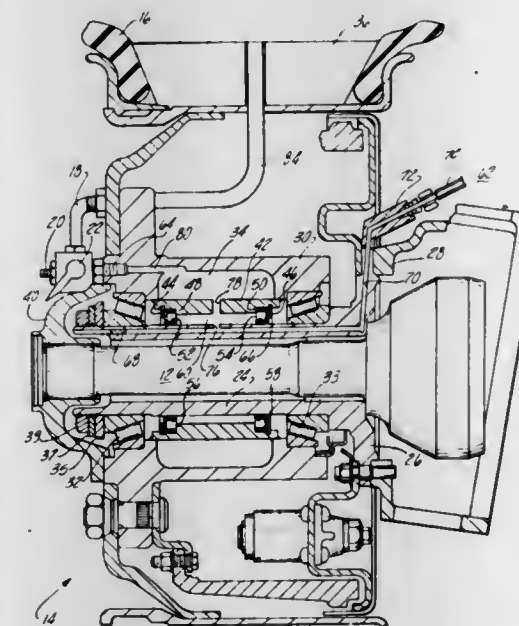
Fred L. Goodell, Grosse Ilse, and Michael J. Ellison, Canton, both of Mich., assignors to AM General Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 288,834, Jul. 31, 1981. This application Oct. 16, 1981, Ser. No. 311,855

Int. Cl.³ B60C 23/10, 29/00

U.S. Cl. 152—417

10 Claims



1. In an automatic tire inflation/deflation system having a plurality of wheel assemblies for the tires of a vehicle, each wheel assembly having a rotatable portion connected to its associated tire and a nonrotatable portion connected to the vehicle, the improvement comprising:

a nonrotatable elongated annular spindle; a hub having an enlarged central interior cavity, said hub being mounted for rotation about said spindle on a pair of spaced bearings;

an axle passing through said spindle and connected to the hub; a pair of annular sealing rings, each sealing ring having a channel-like cross section with a substantially rigid body and a generally horizontally extending flexible lip portion about its inner periphery;

receiving means in the rotating portion of the wheel assembly on both sides of said cavity and inboard of said bearings, adapted to hold the body of said sealing rings laterally in place so that their respective lip portions ride on the spindle; and

means defining a sealed air passageway through which tire inflation air may pass during both inflation and deflation of the tire, said passageway extending from an inlet in inner portions of the spindle to an outlet in exterior portions of the hub, said passageway including an opening in said spindle between the lip portions of said seals and further including said cavity.

4,431,044

SECURITY CLOSURE APPARATUS FOR BUILDINGS

Paul Bruneau, Checy, France, assignor to Usine de Metallurgie du Berry (UMB), Vierzon, France

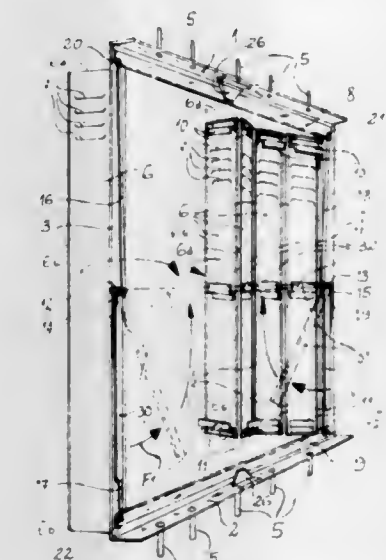
Filed Jul. 30, 1979, Ser. No. 61,861

Claims priority, application France, Jul. 31, 1978, 78 22651

Int. Cl.³ E06B 3/48; E05C 19/18

U.S. Cl. 160—117

14 Claims



1. Closing system of the type comprising at least one set of panels which comprises a plurality of panels, of which one is an affixed panel movably mounted to a fixed frame, and the furthestmost panel from the affixed panel within the same set being an end panel adapted for engagement to a fixed frame or to another end panel, said panels being connected to each other by joints, the panels having an upper and lower free extremity, at least one panel of each set having two respectively upper and lower rims, the closing system comprising two locking elements for the closed system which are positioned in the vicinity of the free extremities of the panels and which are movably mounted relative to the frame between an active position in which they cooperate with all of the deployed panels to make them unitary with the frame and a retracted position in which they leave all the panels free, means being provided for locking the two elements in the active position, each of the upper and lower rims being placed against a portion of the frame which is continuous and parallel to the aligned rims of the deployed panels and the locking element which, in its active position, straddles simultaneously all the aligned upper rims and a portion of the frame whereas the other locking element in its active position straddles simultaneously all the aligned lower rims and another portion of the frame.

4,431,045

APPARATUS FOR PRESSURE TREATMENT OF A MOVING WEB

Lars G. Josefsson, 2786 Sechelt Dr., North Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 343,358, Jan. 27, 1982. This application Mar. 22, 1982, Ser. No. 360,583

Int. Cl.³ D21F 3/00, 3/04

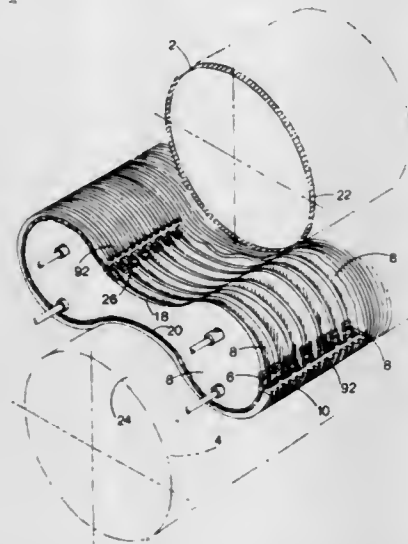
U.S. Cl. 162—358

9 Claims

1. An apparatus for pressure treating a body of continuously moving material, comprising:

a curved movable surface; a movable flexible belt facing the movable surface and spaced a small distance therefrom so as to accommodate the moving material between the surface and the belt; a continuous movable roller chain disposed behind and in contact with the belt for providing support thereto; chain support means for supporting a moving length of the roller chain in pressure contact with the belt in a shape complementary to the shape of the surface;

the support means including a flexible, bag-like member capable of receiving a fluid and being conformable to the



shape of the surface, such that the length of material under simultaneous pressure engagement between the surface and the belt can be varied.

4,431,046

AUTOMATED LOW-PRESSURE CASTING MECHANISM AND METHOD

Günter Phillips, Cologne, Fed. Rep. of Germany, assignor to Russ-Elektroofen Produktionsgesellschaft mbH & Co., Cologne, Fed. Rep. of Germany

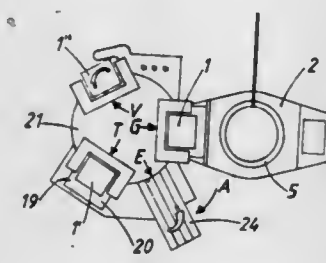
Filed Dec. 15, 1980, Ser. No. 216,276

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950597

Int. Cl.³ B22C 11/04

U.S. Cl. 164—119

10 Claims



1. An automatically controlled low-pressure casting process characterized by the combination of the steps:

- A. Introducing in a casting station the first of a plurality of molds which are arranged spaced apart about the periphery of a revolving table;
- B. Lowering said mold, which has previously been closed, onto the furnace nozzle of a low pressure casting furnace comprising a proportioning chamber filled with a protective gas;
- C. Raising the pressure of said protective gas, thereby causing molten metal to rise through an ascending pipe of said furnace and said furnace nozzle and to fill said closed mold;
- D. Lowering the pressure of said protective gas thereby returning surplus metal within said furnace nozzle and said ascending pipe into said furnace, and raising said mold to its initial position;
- E. Simultaneously submerging and removing a second mold, which has been opened and disposed to a substantially horizontal position of its mold halves, in and from a treating bath at an immersion station;
- F. Also simultaneously preparing a third mold in a preparation station for casting subsequent to tilting a mold support means into a horizontal disposition and arcuately

moving one of said mold halves into a horizontal disposition;

- G. Turning said molds, opening said first mold and removing said casting therein before said first mold reaches said immersion station;
- H. Closing said third mold and tilting said mold support means back into a vertical disposition after finishing the preparation of said mold; and
- I. Continuing to turn said molds on a circular path until each said mold has reached the next of said stations whereupon the aforesaid steps are repeated.

4,431,047

GAS-VENTING ARRANGEMENT INCORPORATED WITH A MOLD

Takahiko Takeshima; Mitsuji Matsui; Tadashi Ueki, all of Ube, and Tsuneo Ueno, Shimonoseki, all of Japan, assignors to Ube Industries, Ltd., Japan

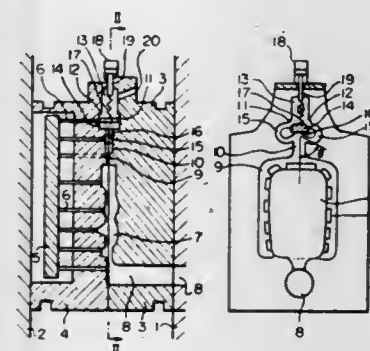
Filed Sep. 19, 1980, Ser. No. 188,257

Claims priority, application Japan, Sep. 27, 1979, 54-123167; Mar. 6, 1980, 55-27362; Mar. 7, 1980, 55-27891

Int. Cl.³ B22D 17/14, 17/20

U.S. Cl. 164—253

23 Claims



1. A gas-venting arrangement incorporated with a mold formed of stationary and movable mold halves with parting faces perpendicular to the axis of the mold and together defining a cavity to be filled with a metal melt, said gas venting arrangement comprising:

- a. a valve chamber formed in said mold, said valve chamber having an axial extension and including an enlarged forward portion, a constricted rear portion, and a valve seat formed between said forward and rear portions;
- b. a gas vent passage formed in said mold connected to said cavity and to a forward end of said forward portion of said valve chamber;
- c. a gas discharge passage formed in said mold and opening on an inner side surface of said rear portion of said valve chamber to communicate with the outside of said mold;
- d. at least one by-pass passage formed in said mold branching from a point on said gas vent passage to an opening on an inner side surface of said forward portion of said valve chamber;
- e. a valve having an axial extension coaxial with said axial extension of said valve chamber and slidably received in said forward portion of said valve chamber for movement between a first position, wherein said valve cooperates with said valve chamber to prevent said gas vent passage from communicating with said gas discharge passage through said forward portion of said valve chamber and to permit said by-pass passage to communicate therewith through said valve chamber, and a second position, wherein said valve rests against said valve seat and cooperates with said valve chamber to prevent both said by-pass passage and said gas vent passage from communicating with said gas discharge passage through said valve chamber; and
- f. urging means for biasing said valve into said first position and permitting movement of said valve into said second position under axial impingement against said valve of a

portion of said melt injected into said cavity and forced to flow through said gas vent passage into said forward portion of said valve chamber, said urging means being adjusted and said by-pass passage being dimensioned and configured to permit movement of said valve into said second position before a second portion of said melt reaches said forward portion of said valve chamber through said by-pass passage.

4,431,049

BAYONET TUBE HEAT EXCHANGER

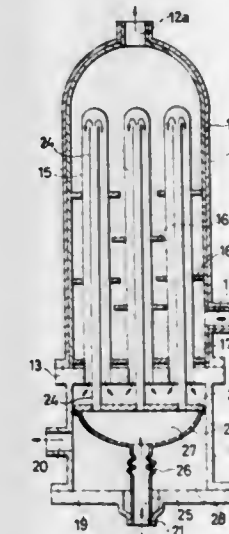
Jun Zamma, Yachiyo; Yoshinori Nishimura, Chiba; Youichi Nakajima, Chiba, and Tadaaki Sakai, Chiba, all of Japan, assignors to Toyo Engineering Corporation, Japan

Filed Oct. 14, 1980, Ser. No. 196,626

Claims priority, application Japan, Nov. 27, 1979, 54-152432 Int. Cl.³ F28D 7/12; F28F 9/02

U.S. Cl. 165—142

4 Claims



4,431,048

HEAT-EXCHANGE FAN APPARATUS

Kunihito Mori, Toyonaka; Masao Torigoe, Itami, and Toshiyoshi Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Japan

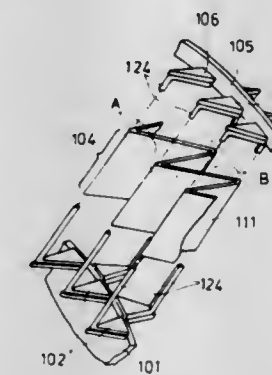
Filed Aug. 24, 1981, Ser. No. 296,246

Claims priority, application Japan, Sep. 1, 1980, 55-121644; Oct. 15, 1980, 55-144947; Mar. 4, 1981, 56-31843

Int. Cl.³ F28D 11/02; F28F 13/12

U.S. Cl. 165—88

14 Claims



1. A heat-exchange fan apparatus for effecting forced circulations of two separate fluids through separate paths and, at the same time, with heat exchanging relation therebetween, said fan having a centrifugal impeller of thin-disk type, made with heat-conducting material, and having an axis of rotation, characterized in that:

- said impeller has a concentric corrugated part made with corrugated thin sheet having a number of corrugations forming grooves and ridges substantially radially extending on both sides thereof and being disposed around said axis, and a narrow ring shaped part is provided at the periphery of said impeller and which is on a plane perpendicular to said axis and continuous with the peripheral ends of said corrugated thin sheet,
- at least a part of the end parts of said grooves of said corrugated thin sheet at the outer periphery of said impeller forms open ends facing in a radially outward direction,
- said grooves on one side and on the other side of said impeller forming channels for the two separate fluids flowing in a radial direction in each groove upon the rotation of said impeller,
- with said corrugated thin sheet isolating the two separate fluids and allowing a heat-exchange between said separate fluid thereacross, and
- said open ends at the outer periphery of said grooves forming an outlet for said separate fluids flowing outwards in a substantially radial direction.

1. A heat exchanger comprising:

- a pressure proof cylindrical shell having inlet and outlet nozzles for a first fluid and defining a first fluid space;
- a first tube sheet connected to said shell to close said first fluid space;
- a group of bayonet tube outer ducts connected in said shell, one end of each of said outer ducts being closed and another end thereof passing through and being open at said first tube sheet which is secured to one end of said shell;
- a group of bayonet tube inner ducts inserted in said group of outer ducts, with an annular space being provided between each of said outer and inner ducts and clearance being provided at the closed end of each of said outer ducts to permit each of said inner ducts to communicate with said annular space;
- only a single inner duct located in only a single outer duct defining each one of a plurality of duct assemblies;
- a tube side pressure chamber provided in contact with said first tube sheet and which has an outlet nozzle for a second fluid; and
- a hot gas separation chamber for the second fluid, disposed in said tube side pressure chamber, said hot gas separation chamber having a second tube sheet spaced inwardly from said first tube sheet and from said side pressure chamber, one end of each of said group of inner ducts connected to said second tube sheet and being opened to the inside of said hot gas separation chamber which also communicates with an inlet nozzle for the second fluid through an inlet duct connected to said hot gas separation chamber, the second fluid adapted to be introduced into said hot gas separation chamber and to flow through said inner ducts and said annular space between said inner and outer ducts, thereby exchanging heat with the first fluid;
- said hot gas separation chamber connected to said side pressure chamber only at said inlet duct of said hot gas separation chamber.

4,431,050

STACKED-PLATE HEAT EXCHANGER MADE OF IDENTICAL CORRUGATED PLATES

John J. Martin, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Oct. 16, 1981, Ser. No. 312,309

Int. Cl.³ F28F 3/04; F28D 9/02

U.S. Cl. 165—166

3 Claims



1. A heat exchanger device formed of a plurality of plates made of relatively thin metallic material, each of said plates being annular and including a central aperture, said plates being stacked so as to provide heat transfer through said plates to and from a series of alternating primary and secondary fluid flow passages formed between alternate stacked plates, said plates being of identical configuration and size, with pairs of said plates being stacked in back-to-back relationship such that one plate is rotated 180° about a diametrical axis relative to other plate, said pairs of plates being secured together to form a construction pair for formation of said stack, said pairs of plates having spaced openings therein aligned when stacked to form inlet and outlet to and from one of said series of flow passages in a direction longitudinal of said stacked plates, each said plate formed with an alternating arrangement about the circumference thereof of patterns of (1) radial corrugations extending between said spaced openings intermediate the radially inner and outer edges of the plate to define complementing channel-forming, generally parallel wave formations on both surfaces of said plate; and (2) waffle-shaped patterns extending between said spaced openings and providing complementing channel-forming, generally parallel wave formations extending both radially and circumferentially of said plate on both surfaces of said plate, with each said plate further including an array of alignment embossments radially disposed adjacent the inner radial edge thereof.

4,431,051

SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

James B. Adams, Jr., Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 19, 1981, Ser. No. 323,119

Int. Cl.³ E21B 34/10

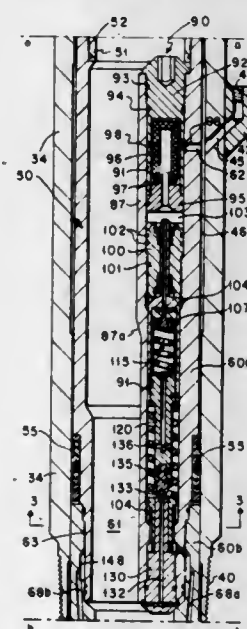
U.S. Cl. 166—72

15 Claims

1. A surface controlled subsurface safety valve comprising:
 - a. safety valve housing means with a fluid flow path there-through;
 - b. valve closure means associated with the safety valve housing means and adapted for movement between a first position opening the flow path and a second position closing the flow path;
 - c. control chamber means adapted to receive control fluid from the well surface and to shift the valve closure means from its second position to its first position when the pressure of fluid within the control chamber is greater than a preselected value;
 - d. resilient means for urging the valve closure means to shift

from its first position to its second position when the pressure of fluid within the control chamber is less than a preselected value;

- e. a pilot valve means having a first position allowing communication of control fluid from the well surface to the control chamber when the pressure of control fluid within the pilot valve exceeds a preselected value and blocking fluid communication between the control chamber and the flow path;
- f. the pilot valve means having a second position blocking communication of control fluid from the well surface with the control chamber and allowing fluid within the control chamber to communicate with the flow path;
- g. the pilot valve means comprising a first valve means and second valve means;
- h. the first valve means having a first position blocking fluid



communication between the control chamber and the flow path when the valve closure means is in its first position and a second position allowing communication between the control chamber and the flow path;

- i. means for biasing the first valve means towards its second position allowing communication of fluids between the control chamber and the flow path;
- j. means for biasing the second valve means towards a position blocking communication of control fluid from the well surface through the pilot valve means to the control chamber; and
- k. control fluid pressure above a first preselected value shifting the first valve means to its first position and control fluid pressure above a second higher preselected value overcoming the biasing means of the second valve means to allow control fluid communication with the control chamber.

4,431,052

DOWNHOLE SEAL FOR LOW PROFILE OIL WELL PUMPING INSTALLATIONS

Robert G. James, Whittier, Calif., assignor to Armco Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 66,631, Aug. 15, 1979, Pat. No. 4,262,742. This application Nov. 18, 1980, Ser. No. 207,946

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

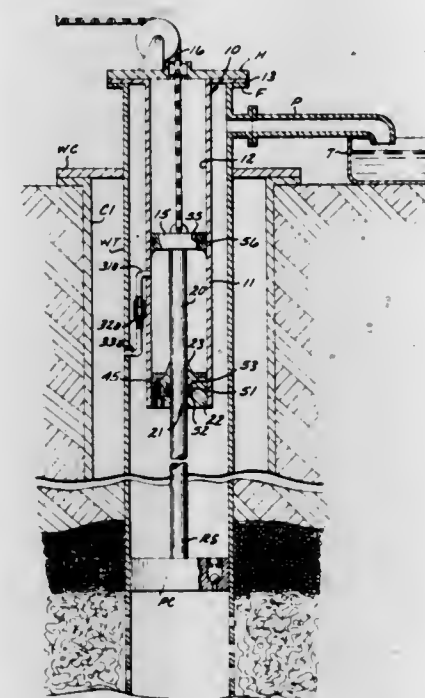
Int. Cl.³ E21B 43/00

U.S. Cl. 166—112

3 Claims

1. A downhole seal assembly conformed for suspension from a well head including a well casing and a well tubing annularly received therein and adapted to extend into the interior of said well casing comprising:
 - a cylinder including a flange on one end thereof adapted to

attach to said well head and conformed to align said cylinder within said well;
 a piston slidably received on the interior of said cylinder;
 a rod connected to said piston and aligned to extend through said cylinder into said well;



an annular plug inserted in the other end of said cylinder including a central opening conformed to slideably receive said rod; and
 a check valve deployed in said plug and aligned to relieve said cylinder upon the downward translation of said piston.

4,431,053

WELL DRILLING TOOL

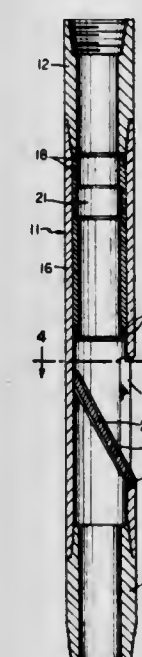
Timothy N. Morrow, deceased, late of New Iberia, La. (by Ann M. Morrow, administratrix), assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,535

Int. Cl.³ E21B 31/14

U.S. Cl. 166—117.5

7 Claims



1. Well drilling tool for fishing operations comprising in combination
 - a hollow sub adapted for connection into a string of pipe used for a fishing operation,
 - a sliding sleeve in said sub,
 - a gate in said sub adapted to cooperate with said sliding

sleeve, said gate leaving said hollow sub open during the beginning of said fishing operation, and
 means associated with said sleeve for sliding it to a different position to permit shifting said gate in the event that a fish is plugged,
 whereby an outside string shot may be employed without pulling said string of pipe to change subs.

4,431,054

SEAL ASSEMBLY RELEASING TOOL

Daniel C. Woodman, Hermosa Beach, Calif., assignor to Hughes Tool Company, Houston, Tex.

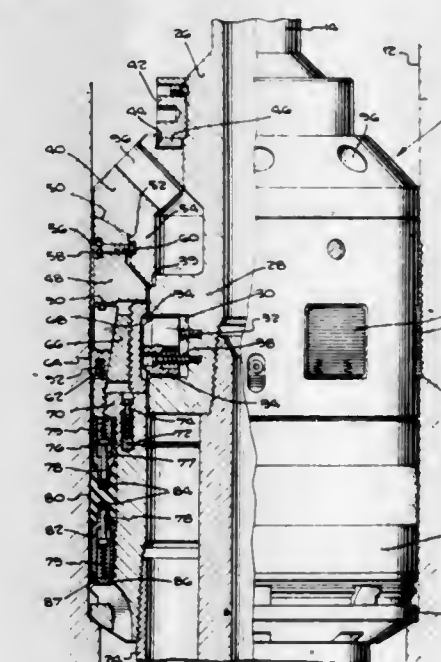
Continuation of Ser. No. 193,314, Oct. 2, 1980, Pat. No. 4,333,528. This application Apr. 23, 1982, Ser. No. 371,145

The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.

Int. Cl.³ E21B 23/00

U.S. Cl. 166—125

6 Claims



1. In a well formed with an outer well head casing and a concentric inner well head casing mounted upon a hanger which lands upon a shoulder formed on the inner surface of said outer well head casing having a casing hanger seal assembly mounted between said hanger and said outer casing an improved seal assembly releasing tool comprising: a shaft for lowering said tool into said outer casing of said well; an outer support case rotatably mounted upon said shaft; an inner unlocking element rotatably mounted within said outer support case; a planetary gear mounted between said outer case and said inner element; said outer support case having a first cylindrical surface area which slidably fits within a first cylindrical opening of said seal assembly, the surface of which is relieved to form first cam surfaces therein; first cam follower means extending from said first surface area of said outer support case for engaging said first cam surfaces in said first cylindrical opening surface; said inner unlocking element having a second cylindrical surface area which slidably fits within a second concentric cylindrical opening of said seal assembly the surface of which is relieved to form second cam surfaces therein; and second cam follower means extending from said second surface area of said inner unlocking element for engaging said second cam surfaces on said second cylindrical opening surface; wherein rotation of said tool turns and locks said first cam followers into said first cam surfaces and continued rotation turns and locks said second cam followers into said second cam surfaces in an opposite direction for releasing said seal assembly.

4,431,055

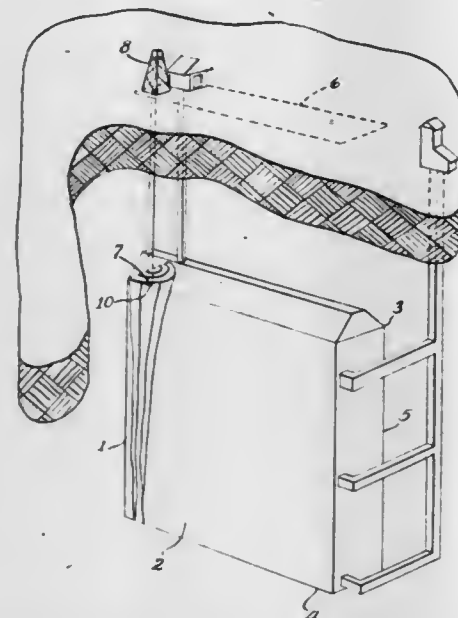
METHOD FOR SELECTIVE PLUGGING OF DEPLETED CHANNELS OR ZONES IN IN SITU OIL SHALE RETORTS

David R. Parrish, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 119,085, Feb. 6, 1980, abandoned. This application Jun. 23, 1981, Ser. No. 276,482
Int. Cl.³ E21B 43/247, 47/00

U.S. Cl. 166—251

4 Claims



1. A process for enhancing the recovery of shale oil from an in situ oil shale retort comprising the steps of:
forming a generally vertical in situ oil shale retort in an underground formation of raw oil shale;
initiating a flame front in an upper portion of the in situ oil shale retort to emit combustion gases defining a heating front;
injecting air into said flame front to support said flame front and drive said combustion gases defining said heating front generally downwardly in said in situ oil shale retort;
retorting a portion of said raw oil shale in said in situ oil shale retort with said heating front to liberate shale oil;
combusting said retorted portion with said flame front leaving a combusted portion defining a depleted zone;
detecting said depleted zone;
substantially plugging said combusted portion defining said depleted zone by injecting an aqueous liquid substantially free of a formation plugging amount of solute into said combusted portion of said in situ oil shale retort defining said depleted zone at a temperature up to the temperature of said combusted portion to crumble at least a portion of said combusted shale in said combusted portion to form fine shale particles which substantially fill cracks in the combusted shale of said depleted zone so as to selectively increase the resistance of said depleted zone to the flow of said combustion gases; and
retorting another portion of said raw oil shale in said in situ oil shale retort with said heating front to liberate more shale oil while simultaneously substantially preventing said combustion gases from passing through said plugged portion to enhance the recovery of said shale oil.

4,431,056

STEAM FLOOD OIL RECOVERY PROCESS

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,759

Int. Cl.³ E21B 43/24

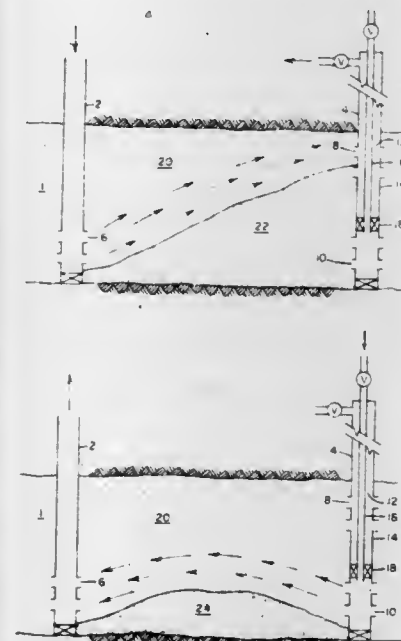
U.S. Cl. 166—263

2 Claims

1. A method for recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least two wells, one injection well and

one production well, said injection well being in fluid communication with the lower portion of the formation, said production well containing two flow paths from the surface, the first being in fluid communication with at least a portion of the upper part of the formation, and the second being in fluid communication with at least a portion of the lower part of the formation, comprising:

(a) injecting steam into only the lower portion of the formation via the injection well and producing fluids including oil from the upper portion of the formation via the first path in the production well until vapor phase steam production occurs at the production well thereby sweeping



oil primarily in the upper portion of the formation between the injection well and the production well; and
(b) thereafter injecting a thermal recovery fluid comprising steam as hot water into the lower portion of the formation via the second flow path in the production and recovering fluid from the lower portion of the formation via the injection well until the fluid bearing recovered from the injection well comprises an unfavorable amount of steam or water thereby sweeping oil primarily in the lower portion of the formation between the injection well and the production well whereby the vertical conformance of the steam drive is significantly improved and oil recovery is enhanced.

4,431,057

PROCESS AND DEVICE FOR INJECTING A LIQUID AGENT USED FOR TREATING A GEOLOGICAL FORMATION IN THE VICINITY OF A WELL BORE TRAVERSING THIS FORMATION

Jean Colonna, Joinville Le Po; Jean-Michel Fitremann, Carquetou; Richard Genin, Nantes, and Jean-Paul Sarda, Rueil-Malmaison, all of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

Continuation of Ser. No. 161,616, Jun. 20, 1980, Pat. No. 4,298,066. This application Jun. 30, 1981, Ser. No. 279,287
Claims priority, application France, Jun. 21, 1979, 79 16188

Int. Cl.³ E21B 33/138

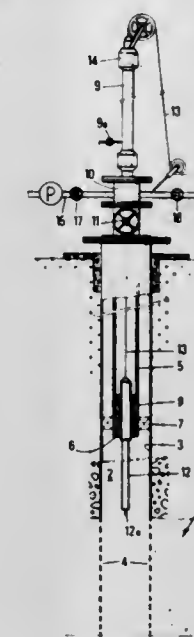
U.S. Cl. 166—285

7 Claims

1. In a process of contacting an underground hydrocarbon containing geological formation with a liquid treating agent to consolidate the formation, the improvement in said contacting comprising spraying said underground hydrocarbon containing formation with said liquid treating agent in the form of droplets having a diameter not exceeding 10 microns effective to substantially homogeneously penetrate and impregnate the formation with the liquid phase while preserving a substantially homogeneous permeability thereof.

6. An apparatus for use in a process of contacting an under-

ground hydrocarbon containing geological formation with a liquid treating agent to consolidate the formation, the apparatus comprising spraying means adapted for being lowered into a hydrocarbon producing well adjacent said formation, and adapted for producing a mixed spray of gas and liquid treating



agent having said liquid treating agent in the form of droplets not exceeding 10 microns, whereby when said apparatus is employed to effect consolidation of a formation, said droplets produced are effective to substantially homogeneously penetrate and impregnate the formation with the liquid phase while preserving a substantially homogeneous permeability thereof.

4,431,058

WASH TOOL METHOD FOR SUBTERRANEAN WELLS

Jack D. Spencer, Long Beach, Calif., and John V. Salerni, Kingwood, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Mar. 16, 1981, Ser. No. 243,234

Int. Cl.³ E21B 37/00

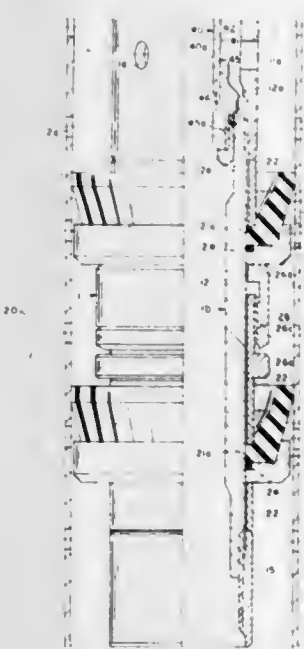
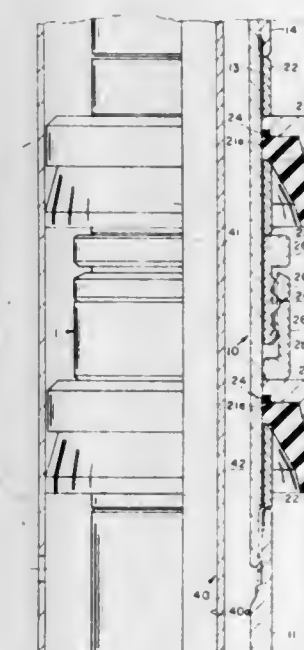
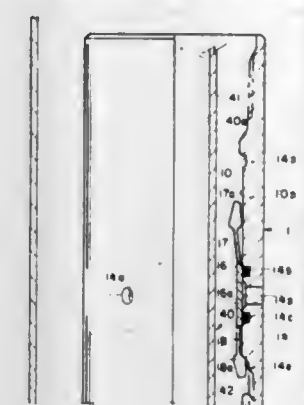
U.S. Cl. 166—312

3 Claims

1. The method of washing casing perforations and connected formation channels of a subterranean well comprising the steps of:

- inserting an outer tubular body into the well on a tubing string, said outer tubular body having radial ports alignable with a selected set of casing perforations, an open bottom communicable with the casing bore, annular sealing elements engaging the well casing above and below the said radial ports, and a radial bypass port disposed above said annular sealing elements;
- sealing the annulus between said outer tubular body and the casing above all casing perforations;
- inserting an inner tubular body having an open bottom bore within the outer tubular body on a second tubular string, a continuous annular passage thereby being defined between said outer and inner tubular bodies and said outer and inner tubing strings, the bore area of said inner tubular body being substantially less than the area of the annular passage;
- effecting a seal between the bottom end of said inner tubular body and the bore of said outer body at a position axially below said radial ports;
- circulating washing fluid downwardly through said annular passage, thence outwardly through said radial ports and through said casing perforations and said formation channels, thence around the exterior of the casing, and thence upwardly through the casing bore and the inter-

connected bore of the inner tubular member and its tubing string to the surface of the well; and



(f) maintaining said port open during step (a), and closing said bypass port during step (c).

4,431,059

VERTICALLY MOORED PLATFORM ANCHORING

Kenneth A. Blenkarn, and Pierre A. Beynet, both of Tulsa, Okla., assignors to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 899,608, Apr. 24, 1978, abandoned.

This application Jul. 6, 1981, Ser. No. 280,590

Int. Cl.³ B63B 21/50

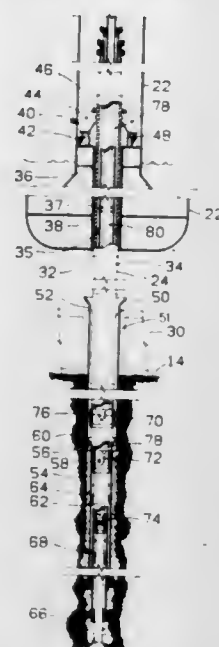
U.S. Cl. 166—359

12 Claims

12. A system for anchoring a vessel floating on a body of

water to a plurality of concentric casings anchored in the floor of a the body of water which comprises:

- a tensioned first riser conduit connected at its lower end to one of said concentric casings;
- a rigid vertical support bearing connecting an upper end portion of said first riser conduit to said vessel;



a horizontal bearing between an upper end portion of said first riser conduit and said vessel to transmit horizontal forces therethrough;

a second tensioned riser conduit within said first riser conduit and connected at its lower end to another of said concentric casings, and,

support means supporting said second riser conduit from said vessel.

4,431,060

EARTH WORKING MACHINE AND BLADE CONDITION CONTROL SYSTEM THEREFOR

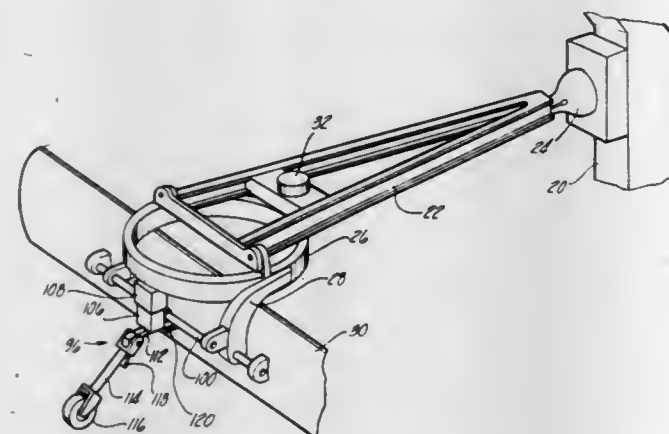
Roland D. Scholl, Dunlap, and Gene B. Easterling, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 15, 1981, Ser. No. 278,491

Int. Cl.³ E02F 3/76; A01B 63/111

U.S. Cl. 172-4.5

10 Claims



10. In an earth working machine including an articulated frame (10) adapted for moving over the earth and having a front frame section (15) and a rear frame section (18) pivotally coupled with said front frame section (15), an earth working blade (30), means (22, 26, 28) for mounting said blade (30) for rotation on said front frame section (15), means (38, 40) connected between said blade mounting means (22, 26, 28) and said front frame section (15) for adjustably supporting said blade mounting means (22, 26, 28) on said front frame section (15), apparatus for automatically controlling said supporting means (38, 40) to maintain said blade (30) at a preselected slope relative to a reference plane irrespective of lateral movement of

said front frame section (15) relative to said rear frame section (18), the improvement comprising:

- blade circle angle detector means (96) for sensing rotation of said blade (30) relative to the line-of-flight thereof, said angle detector means (90) being connected with said blade (30) and being operational to sense the line-of-flight of said blade (30) only when said angle detector means (90) engages the earth;
- angular position sensing means (90) for sensing changes in the inclination of said rear frame section (18) relative to said reference plane;
- electronic resolver means (94) for producing a control signal indicative of the degree of both the rotation of said blade (30) relative to said line-of-flight and the inclination of said rear frame section (18) relative to said reference plane; and
- control means (88, 60, 64) for operating at least one of said adjustable supporting means (38, 40) and maintaining said blade (30) at said preselected slope thereof.

4,431,061

LEEVE SCALPER

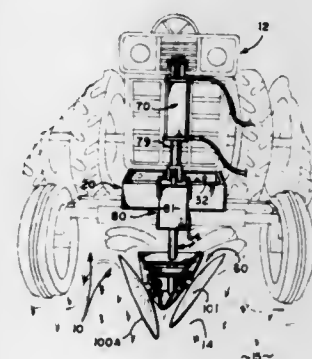
Garland M. White, Rte. 1, Box 176, Harrisburg, Ark. 72432

Filed Jul. 15, 1982, Ser. No. 398,645

Int. Cl.³ E02F 5/00; A01B 13/02

U.S. Cl. 172-810

4 Claims



1. A rigid, hydraulically controlled levee scalper for use with conventional farm tractors or the like for precutting old levees, the scalper comprising:

- rigid, box like frame means adapted to be secured to the front of said tractor or the like;
- rigid channel mount means secured to the front of said frame means in generally perpendicular relation therewith;
- elongated, rigid stanchion means adapted to be secured within said channel mount means, an upper end of said stanchion means terminating in a first coupling adapted to be coupled to a hydraulic cylinder assembly;
- plow assembly means including a pair of rotatable cutting discs oriented in a generally V-shaped configuration pointing generally forwardly of said tractor for engaging a levee, the plow assembly means including disc-supportive, central frame means and elongated strut means rigidly coupled to said central frame means and extending vertically upwardly therefrom, said strut means terminating in an upper, second coupling adapted to be coupled to said hydraulic cylinder assembly and responsive to said hydraulic cylinder assembly for moving said central frame means and thus said discs between levee engaging and levee disengaging positions; and,
- rigid strut guide means adapted to be secured about said channel mount means and including guide box means for receiving said strut means, said guide box means permitting axial displacement of said strut means relative thereto while resisting torsional or lateral displacements thereof.

4,431,062

ROTATING DRIVE FOR IMPACT HAMMER

Karl Wanner, Echterdingen, and Manfred Bleicher, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP79/00033, § 371 Date Jan. 9, 1980, § 102(e)

Date Dec. 26, 1979, PCT Pub. No. WO79/01041, PCT Pub.

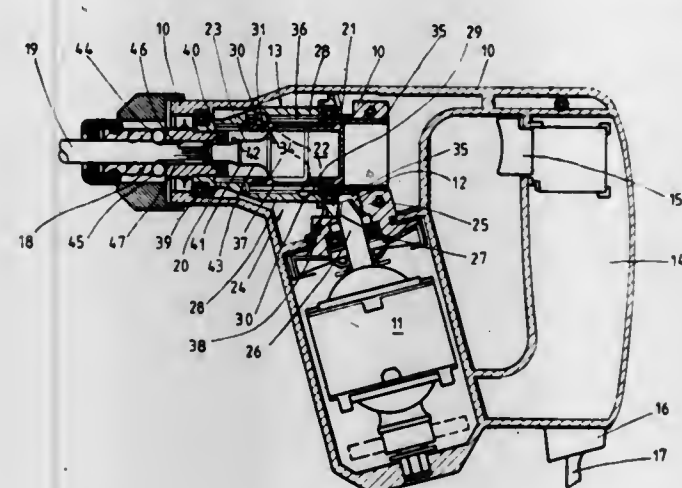
Date Nov. 29, 1979

PCT Filed May 4, 1979, Ser. No. 195,142

Int. Cl.³ B25D 11/10; B23B 45/02

U.S. Cl. 173-104

68 Claims



1. Hand-held power tool, specifically an impact drill or hammer, with an electric drive motor, by means of which a rotary sleeve impacting upon a tool retainer holding a tool can be rotatably driven by a transmission, and by means of which an impacting mechanism can furthermore be driven, having an axially oscillating drive piston, an impactor impinged by the drive piston over an air cushion which will transmit its impact energy onto the tool, and having a translation drive acting upon the drive piston with a rotatably driven drive member, with a curved guide and at least one actuator following the curved guide and acting upon the drive piston to effect its axial displacement, characterized;

- (1) by the drive member consisting of a drive sleeve (28; 728) coaxial with and concentrically enclosing the drive piston (27; 721) and the impactor (23; 723),
- (2) by the drive sleeve (28; 728) having a guide surface (30; 780) closed in itself in the circumferential direction and having an essentially steadily rising or falling incline with curve maxima (32; 734) and curve minima (33; 733),
- (3) by the actuator being designed as a separate and freely movable at least one displacing body (31; 782; 783) and being in immediate contact with the drive piston (21 or 721) at a location adjoining the guide surface (30 or 780), and
- (4) by the displacing body (31; 782; 783) being prevented from deviating along the guide surface (30 or 630 or 780) by a positive retaining means (35-37; 665; 677; 784; 785) securing the displacing body like a cage, but being held in the axial direction with a degree of freedom required for following this guide surface.

4,431,063

DRIVE MECHANISM FOR DRILL

Michael O. Dressel, Englewood; Horace M. Varner; LaValle V. Brummert, both of Littleton, and John W. Bodle, Castle Rock, all of Colo., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 9, 1981, Ser. No. 309,867

Int. Cl.³ B23Q 5/00

U.S. Cl. 173-149

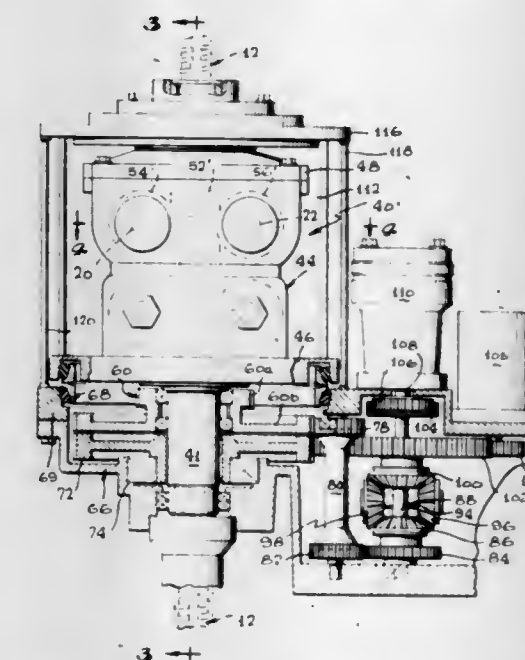
7 Claims

1. A drive mechanism for a drill wherein said drill includes a shaft having a plurality of articulated attached sections and a notch cut axially along said shaft, said drill drive including an external housing, a rotatable housing within said external housing having a baseplate, a

pair of chains in said rotatable housing formed of drive links, one portion of said drive links and said drill shaft having surface projections and another portion of said drive links and said drill shaft having mating grooves for mating with said projections to drive said drill shaft, conventional intermediate links between said drive links and drive means for driving said chains to move said drill shaft axially, and

second drive means for rotating said rotatable housing to rotate said drill shaft;

characterized in that said rotatable housing includes openings of substantial size in close proximity to the outside



surfaces of said chains to enable rock particles to escape therefrom,

said external housing includes openings of substantial size to enable rock particles to escape from the body of said drive mechanism,

said drive means for driving said chains includes a worm drive in an enclosed housing attached to said rotatable housing

said second drive means is enclosed in a separate housing forming part of said external housing, and

a large diameter rotary seal is positioned between said external housing and said baseplate.

4,431,064

HYDRAULIC DRIVE APPARATUS FOR DOWNHOLE TOOLS PROVIDING ROTATIONAL AND TRANSLATIONAL MOTION

Gary R. Bright, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 5, 1981, Ser. No. 318,476

Int. Cl.³ E21B 4/02

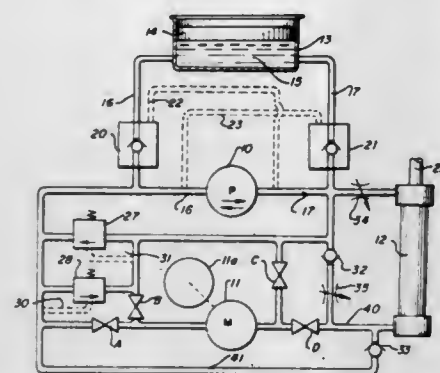
U.S. Cl. 175-93

4 Claims

1. An hydraulic drive apparatus for use in downhole tools comprising:

- (a) an electric motor driven positive displacement pump capable of being driven in either direction and controllable from the surface;
- (b) an hydraulic motor connected by dual conduit means to said pump and adapted to be driven thereby;
- (c) a cutting tool element capable of rotational and translational movement and connected to said hydraulic motor so as to be rotationally driven thereby;
- (d) an hydraulic piston interconnected to said cutting tool element so as to impart translational movement thereto as said piston is moved;
- (e) conduit means interconnecting the outlet of said hydraulic motor to said hydraulic piston at one end whereby advancing translational movement of said cutting tool

element is imparted thereto at a rate which varies with the rate of rotational movement of said cutting tool;
(f) and check valve means in one of said dual conduit means for preventing the flow of hydraulic fluid from said pump



to said hydraulic motor when said pump is driven in one direction and causing said fluid to exert force upon the opposite end of said hydraulic piston to effect retracting translational movement thereto retracting said cutting tool element.

4,431,065

UNDERREAMER

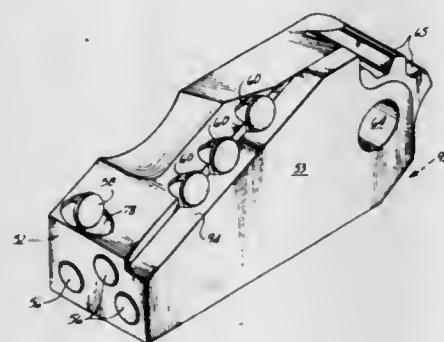
Thomas L. Andrews, Costa Mesa, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 26, 1982, Ser. No. 352,775

Int. Cl.³ E21B 10/32, 10/46

U.S. Cl. 175-269

58 Claims



1. A cutting arm for an underreamer comprising:
 - a steel body having a leading side, a trailing side, an outer end face and means for connecting the arm to an underreamer;
 - a plurality of receptacles in the body each containing a tungsten carbide insert;
 - at least a portion of the tungsten carbide inserts comprising cutters each having a tungsten carbide body supporting a diamond cutting face facing in the same general direction as the leading side of the body and at least one of the cutters being a gage cutter which is adjacent the outer end face of the body for cutting the gage of a hole being reamed; and
 - at least one tungsten carbide insert in the outer end face between the leading side and the body of the gage cutter inserted in the steel body for minimizing erosion of the outer end face between the leading side and the body of the gage cutter.

4,431,066

STRESSED RELIEVED BIT LEG FOR AN EARTH BORING BIT

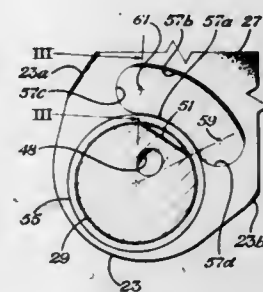
Robert A. Cunningham, Bellaire, and George E. Dolezal, Friendswood, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Feb. 18, 1981, Ser. No. 235,481

Int. Cl.³ E21B 10/08

U.S. Cl. 175-372

4 Claims



1. In an earth boring bit of the type having multiple bit legs, each bit leg having a depending bearing pin for rotatably carrying a cutter, and an annular fillet formed at the junction at the bearing pin and bit leg, the improvement comprising:
 - a depression formed in the inside surface of each of the bit legs to relieve stress at the junction, the depression being curved in vertical cross-section and having a lower edge that commences at the top of the fillet; the depression extending circumferentially about the top of the bearing pin and terminating in two discernable side edges, each spaced inward from a side of the bit leg.

4,431,067

WIRELINE PROTECTOR WITH CLAMPING MECHANISM

Homan C. Tullos, Lafayette, La., and Dewey W. Woods, Livingston, Tex., assignors to Kelly Bushing Tools, Inc., Lafayette, La.

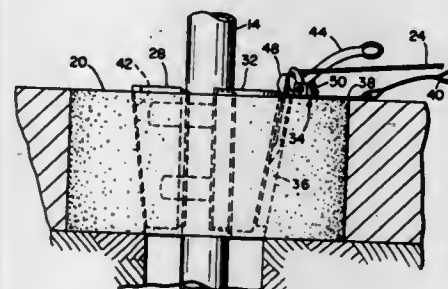
Continuation-in-part of Ser. No. 148,393, May 9, 1980, Pat. No. 4,317,491. This application Mar. 20, 1981, Ser. No. 246,095

The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.

Int. Cl.³ E21B 3/04

U.S. Cl. 175-57

15 Claims



1. A wireline protector for protecting an electrical wireline used in a downhole drilling operation where such wireline passes through the opening in a drilling rotary table through which the drill string passes, said wireline protector comprising:
 - an elongated section capable of extending through the opening in the rotary table without interfering with the drill string, said elongated section having an elongated opening into which the portion of the wireline passing through the rotary table can be inserted so as to be substantially surrounded by said elongated section for protecting the wireline; a second section extending approximately perpendicularly to said elongated section and capable of being arranged in engagement with the rotary table for maintaining said wireline protector in place; and clamping means capable of clamping the wireline for preventing its movement.

4,431,068

EXTENDED REACH DRILLING METHOD

Thomas B. Dellinger, Duncannonville, and Wilton Gravley, Carrollton, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 12,931, Feb. 16, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,334

Int. Cl.³ E21B 7/06

U.S. Cl. 175-61

5 Claims

METHOD AND APPARATUS FOR FORMING AND USING A BORE HOLE

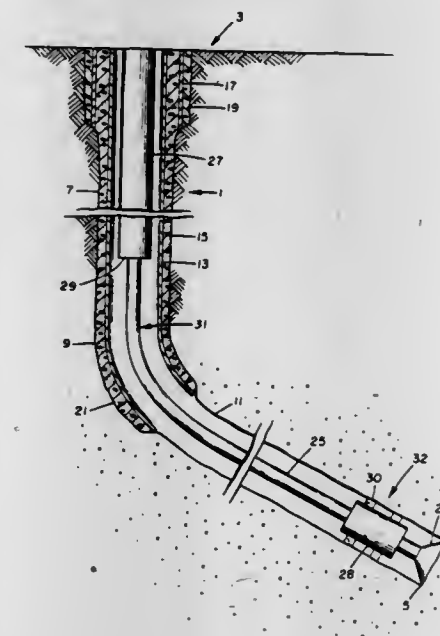
Ben W. O. Dickinson, III, 2125 Broderick St., San Francisco, Calif. 94115, and Robert W. Dickinson, 40 Maplewood Dr., San Rafael, Calif. 94901

Filed Jul. 17, 1980, Ser. No. 169,759

Int. Cl.³ E21B 7/06, 7/18

U.S. Cl. 175-61

42 Claims



1. A method of drilling a highly deviated wellbore into the earth's crust by a rotary drilling technique wherein a drill string comprised of drill collars and drill pipe is used to advance a drill bit attached to the drill pipe at the lower end of said drill string into the earth and form said wellbore, comprising:

- (a) forming a first portion of said wellbore to extend into said earth's crust from a surface location thereof to a kick-off point at about the lower end of said first portion; said first portion of said wellbore being at an angle with the vertical of not greater than about 40 degrees; said first portion of said wellbore being of sufficient depth to accommodate a sufficient length of drill collars to provide a desired weight-on-bit for effective drilling;
- (b) initiating a second portion of said wellbore at said kick-off point and deviating said second portion to a highly deviated angle from the vertical of greater than 60 degrees;
- (c) extending said second portion of said wellbore into the earth's crust with said drill string arranged to provide for said drill collars to be located essentially within said first portion of said wellbore, said drill collars being connected at the lower portion thereof with said drill pipe and said drill bit being connected to the lower portion of said drill pipe to be located within said second deviated portion of said wellbore to provide compressive force on said drill bit;
- (d) continuing step (c) until the lowermost drill collars in said first portion of said wellbore descend to a location at about said kick-off point;
- (e) pulling said drill collars from said wellbore;
- (f) adding additional drill pipe into said drill string below said drill collars; to insure that said drill collars will be located essentially within said first portion of the wellbore and
- (g) rerunning said drill pipe into said wellbore and repeating steps (c) and (d).

1. The method of forming an underground bore hole using an apparatus comprising an elongate eversible rolling diaphragm with outer and inner walls interconnected at their forward end by a rollover area and being open at the other end, said outer wall being restrained, said inner wall defining to its interior a central passageway, an annular space for driving fluid being provided between said outer and inner walls, a hollow central pipe being provided in said central channel to extend proximal to said rollover area, said inner wall and central pipe defining therebetween a drilling fluid annulus, said method comprising the steps of

- (a) positioning the apparatus so that the rollover area projects into a proximal underground formation,
- (b) directing drilling fluid through said drilling fluid annulus and the central pipe to drill the formation to form cuttings of the formation and a slurry containing said cuttings at the proximal underground formation of increased susceptibility to penetration,
- (c) directing driving fluid through said driving fluid annular space to bear against said rollover area and to cause the inner wall adjacent said rollover area to progressively undergo a transformation in shape and become the outer wall to move the rollover area forwardly into the thus-formed slurry in the earth formation, and
- (d) carrying said central pipe forward in said central passageway as a function of the forward movement of said rollover area.

33. The method of forming an underground cased bore hole comprising the steps of

- (a) excavating the bore hole in an underground formation,
- (b) inserting a casing into the bore hole comprising a hollow pipe formed of a helical spring-like winding which is liquid permeable between the turns of the winding,
- (c) inserting a flexible two walled tubular sheath with a spacing between the walls into the bore hole together with the casing to surround the casing, and
- (d) filling the spacing between the walls with particulate packing capable of filtering solids of a predetermined size.

4,431,070

HIGH SPEED PRECISION WEIGHING AND FILLING METHOD AND APPARATUS

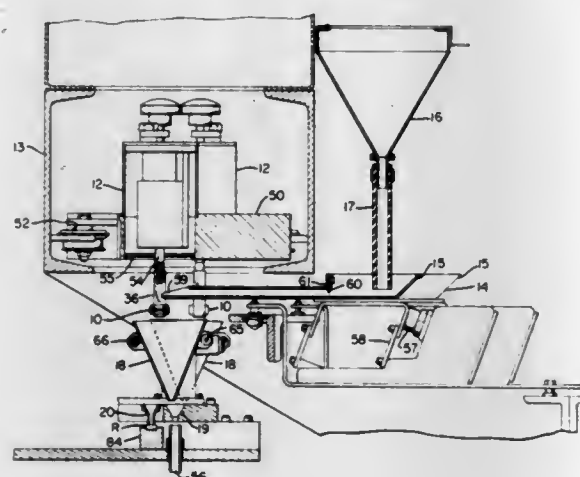
James S. Andrews, Westminster, Colo., assignor to Hierath & Andrews Corp., Wheat Ridge, Colo.

Filed Oct. 13, 1981, Ser. No. 311,147

Int. Cl.³ G01G 13/22, 13/16, 13/24; B07C 5/16

U.S. Cl. 177-102

23 Claims



1. In a precision weighing system for weighing out in rapid succession predetermined amounts of a comminuted material in which a source of material supply includes means for feeding and discharging the material under the control of a weigh sensor which is operative to sense the weight of material discharged from said material source into a receptacle, the improvement comprising:

a weigh pan including a receptacle portion disposed to receive material from said material source, and rotating means associated with said weigh pan;

activating means responsive to a signal generated by said weigh sensor when a predetermined amount of material is discharged into said receptacle to energize said rotating means over a predetermined time interval whereby said rotating means is operative to impart a rotational force to said weigh pan thereby causing said weigh pan to dump the contents of material discharged into said receptacle; means for retaining said weigh pan in a predetermined rotational position after dumping the contents from said receptacle; and

a discharge funnel disposed beneath said weigh pan to receive the contents of material dumped by said weigh pan, a fill funnel and reject funnel in juxtaposed relation to one another beneath each discharge funnel, and tilting control means operative to selectively tilt said discharge funnel into alignment with one of said fill and reject funnels in response to the weight of material discharged from said material source into said weigh pan.

4,431,071

APPARATUS FOR DETERMINING THE MASS BY THE HECTOLITRE (SPECIFIC WEIGHT) OF VARIOUS PRODUCTS SUCH AS FOODSTUFFS, MORE PARTICULARLY CEREALS, GRANULOUS PRODUCTS AND THE LIKE

Georges Magat, 16 Rue du 8 Mai, and Jean Magat, 8 Rue du 8 Mai, both of 42110 Feurs, France

Filed Aug. 7, 1981, Ser. No. 290,816

Claims priority, application France, Aug. 8, 1980, 80 18081

Int. Cl.³ G01G 19/56, 23/02

U.S. Cl. 177-149

14 Claims

1. A device which permits the determination of specific weight of various materials comprising:

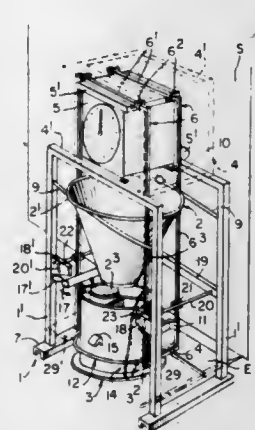
a frame;

a tapering hopper within said frame;

a measure within said frame; and

a weighing machine within said frame assembled such that

said hopper and said reference measure are independently positioned within said frame, such that said weighing machine is located in the upper part of said frame, and such that said weighing machine additionally comprises: a scale;



a clevis which supports said measure; and means for locking said clevis while filling, leveling and emptying of said hopper and for unlocking said clevis while weighing, such that said means permits the tipping of the measure after determination of specific weight.

4,431,072

WEIGHING DEVICE

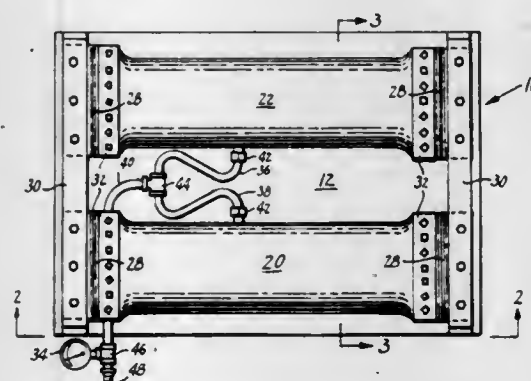
Sylvan G. Stepp, Rte. #2, North Branch, Minn. 55056

Filed Jan. 5, 1982, Ser. No. 337,157

Int. Cl.³ G01G 5/04, 21/00

U.S. Cl. 177-209

6 Claims



1. A portable weighing scale device for determining the axle weight of a vehicle comprising:

a tire receiving platform having guide rails on one side for positioning a vehicle tire;

at least one inflatable bag mounted on the platform side opposite the tire guide rails for direct contact with the ground to support the axle weight of a vehicle;

a fluid pressure gauge connected to said inflatable bag by air hoses where the axle weight supported by said fluid bag is readable on said fluid pressure gauge; and

a bracket means for attaching said at least one inflatable bag to the opposite side of said platform having flexible retaining bracket means fixed at each end of said inflatable bag and connected to the opposite side of said platform.

4,431,073

TWO SPEED FINAL DRIVE GEAR BOX

Jay J. Nagao, and Steven T. Dexter, both of Lafayette, Ind., assignors to Fairfield Manufacturing Co., Inc., Lafayette, Ind.

Filed Dec. 3, 1981, Ser. No. 327,300

Int. Cl.³ B62D 11/04

U.S. Cl. 180-6.48

9 Claims

1. A hydraulically shiftable, two speed final drive gear box

for each driven wheel of a hydrostatically driven vehicle, comprising:

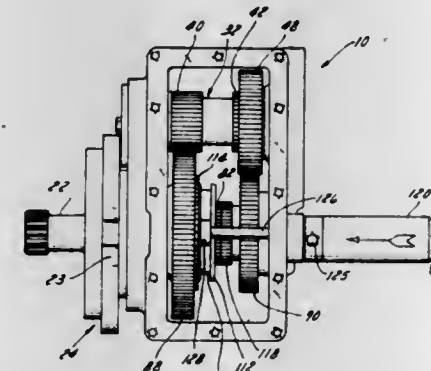
a housing (10) having complementary male and female mounting configurations (25, 27) so that one face of said housing may be mounted on a hydraulic motor and present, at the opposite face of said housing, a mounting configuration like that on said hydraulic motor;

an input shaft (32) and an output shaft (70) journaled for rotation in said housing about parallel axes;

first and second input gears (40, 48) coaxially mounted on said input shaft for torque transmission therewith;

first and second output gears (88, 90) journaled for rotation on said output shaft and in constant mesh with said first and second input gears, respectively;

a coupling (112) mounted axially slidable on said output shaft and linked thereto in torque transmitting relationship;



said coupling and said first and second output gears having full circumference, peripheral torque transmitting radially facing teeth (104, 113, 114, 118) adapted for selective 360° coupling between said coupling (112) and a selected one of said first and second output gears;

a fork (128) mechanically engaged with said coupling and movable axially in said housing to shift the axial position of said coupling (112) on said output shaft (70);

a hydraulic cylinder (120) connected to said housing;

a hydraulic piston (122) slidably disposed within said cylinder and connected to said fork;

a connector (124) in said hydraulic cylinder adapted to be coupled to a source of hydraulic fluid pressure to actuate said hydraulic piston;

whereby said coupling may be moved under hydraulic fluid pressure to couple said input and output shafts with the desired one of two gear ratios.

4,431,074

CRANE CARBODY AND LOWER AXLE CONSTRUCTION

David S. Langerud, Solon, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,299

Int. Cl.³ B62D 55/10

U.S. Cl. 180-9.48

3 Claims

1. A method of initially assembling a hollow axle body, axle member and hydraulic ram to form an adjustable length axle comprising the steps of:

securing a guide means and a cross bar inside said axle member;

inserting the rod end of said ram while in a contracted condition into said axle member over the cross bar;

sliding the rod end into position in said guide means;

pinning said rod end to said axle member;

inserting the ram and the axle member into said axle body;

extending said ram to extend beyond said axle body;

pinning said ram body to a base plate;

contracting said ram to position said base plate against said axle body; and

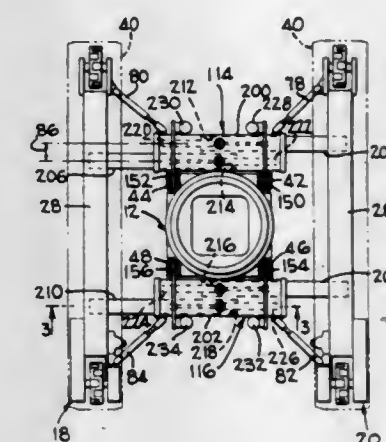
fastening said base plate to said axle body.

2. A crane having a carbody and left and right tread members, each of which has a drive sprocket, comprising:

a pair of sockets in each tread member, the distance between sockets on each member being equal and the sockets in one member being farther from its drive sprocket than the sockets in the other member;

front and rear pairs of ears on said carbody;

a first pair of fixed length axles, each having socket-engaging ends defining a first offset in a fore and aft direction with respect to each other;



a second pair of adjustable length axles, each having a hollow axle body with first and second axle members moveable therein and defining a second offset in a fore and aft direction and a hydraulic ram connected between each axle member and its associated axle body;

pin means for connecting one of said first and second pair of axles to said ears; and

means for securing said one pair of axles in said sockets.

4,431,075

WHEEL FOR VEHICLE

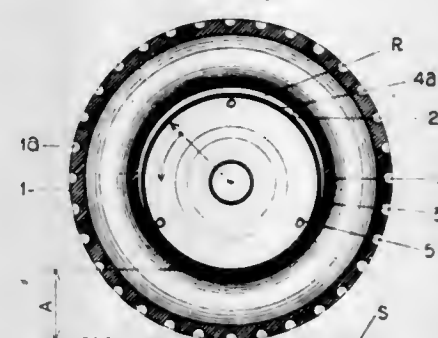
Kemal Butka, 372 Central Park West, New York, N.Y. 10025

Filed Jul. 9, 1982, Ser. No. 396,690

Int. Cl.³ B62D 55/00

U.S. Cl. 180-10

12 Claims



1. A wheel for a vehicle, comprising a tire having an outer contact surface of a predetermined axial dimension, and provided with a radially inner frame having an inner circumferential surface of a predetermined diameter and an axial dimension which is considerably smaller than the axial dimension of said contact surface of said tire; and a wheel disk located radially inwardly of said frame, connectable with a rotary drive of a vehicle and having an outer circumferential surface with a diameter which is smaller than the diameter of said inner circumferential surface of said frame and with an axial dimension which is considerably smaller than the axial dimension of said contact surface of said tire, whereby a gap is formed inside the wheel between said circumferential surfaces over a greater circumferential region of the latter and said circumferential surfaces are in contact with one another and thereby transmit a driving moment from said wheel disk to said frame and said tire over a considerably smaller circumferential region of said

circumferential surfaces than said greater circumferential region, and over the considerably smaller axial dimension of said circumferential surfaces than said contact surface of said tire, so that said frame with said tire is loosely arranged on said wheel disc and a friction between said contact surface of said tire and a road surface is reduced, whereas an additional friction takes place inside the wheel between said circumferential surfaces, but only within said smaller circumferential region and over said smaller axial dimension of said circumferential surfaces.

4,431,076

ADJUSTABLE COLLAPSIBLE WHEELCHAIR

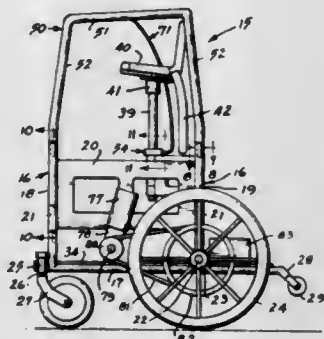
Robert C. Simpson, 1231 Azalea Dr., Tallahassee, Fla. 32301

Filed Jun. 24, 1981, Ser. No. 276,775

Int. Cl.³ A61G 5/00

U.S. Cl. 180—65 R

11 Claims



1. An adjustable wheelchair comprising a frame supported by ground engaging wheels, rod means vertically slidably carried by said frame, a seat mounted on said rod means, means for releasably securing the occupant of said wheelchair to said seat, locking means for securing said rod means in fixed adjusted position relative to said frame, control means spaced from said locking means, means for operatively connecting said control means to said locking means, said control means being selectively operated to release said locking means from secure engagement with said rod means, and armrest means carried by said frame, said means for releasably securing the occupant to said seat being operatively connected to raise said seat when an upwardly directed force is applied thereto by the occupant and said locking means is released, whereby the occupant of the wheelchair selectively adjusts the vertical position of said seat by releasing said locking means after which the occupant moves his body and said seat to a selected position.

4,431,077

VEHICLE SPEED CONTROL SYSTEM

Charles F. Burney, Milpitas, Calif., assignor to Travel Accessories Manufacturing Co., Inc., Orland, Calif.

Division of Ser. No. 23,027, Mar. 22, 1979, Pat. No. 4,352,403.

This application Sep. 29, 1982, Ser. No. 427,920

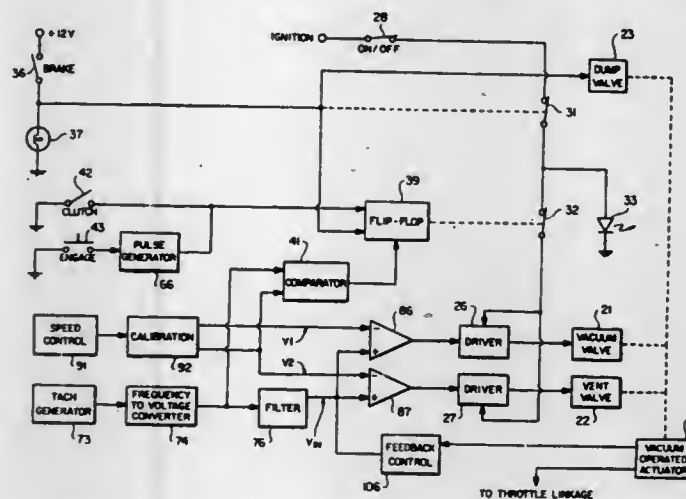
Int. Cl.³ B60K 31/00

U.S. Cl. 180—176

2 Claims

1. In a system for controlling the speed of a vehicle: means for providing an input signal corresponding to the speed of the vehicle, means for providing a reference signal corresponding to the desired speed of travel, comparator means for monitoring the input signal and the reference signal to provide an output signal corresponding to the relative levels of said signals, a vacuum-operated actuator connected to the throttle system of the vehicle, said actuator having a vacuum chamber, an electrically operated, normally closed valve connected to a source of vacuum and responsive to the output signal from the comparator means for applying vacuum to the actuator chamber to move the throttle in one direction, an electrically operated, normally open valve vented to the atmosphere and responsive to the output signal from the comparator means for venting the actuator chamber to move the throttle in the oppo-

site direction, and an electrically operated, normally closed valve vented to the atmosphere and responsive to the braking



system of the vehicle for venting the actuator chamber to release the vehicle from the control of the system upon braking of the vehicle.

4,431,078

SNOWMOBILE SUSPENSION SYSTEM

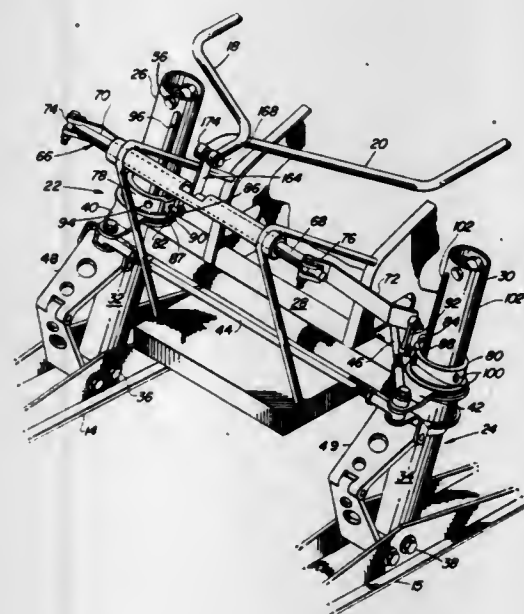
Russell L. Ebert, Pequot Lakes, Minn., and Stanley G. Hayes, Horicon, Wis., assignors to Deere & Company, Moline, Ill.

Filed Oct. 6, 1980, Ser. No. 194,596

Int. Cl.³ B62B 17/04; B62M 27/02

U.S. Cl. 180—193

6 Claims



1. In a snowmobile, including a frame, a front suspension suspending a pair of skis from the front of the frame for moving up and down relative to the frame and a rear suspension suspending a drive track beneath a rear portion of the frame for moving up and down relative to the frame, the front and rear suspensions respectively including a front pair of members which move up and down in concert with the skis and a rear member which moves up and down in concert with the drive track, and first and second biasing mechanisms, respectively acting between the frame and the front pair of members and the rear member to bias the front and rear members downwardly relative to the frame, the improvement wherein the second biasing mechanism includes an element mounted for movement in a first direction for decreasing the resistance of the second biasing mechanism to upward track movement as the displacement of the element in the first direction increases, and a motion transfer linkage means, connected between the front pair of members and the element, for transferring upward movement of the front pair of members to the element for moving the latter in the first direction to thereby decrease the

resistance of the second biasing mechanism of the rear suspension to upward track movement.

4,431,079

FOUR-WHEEL VEHICLE DRIVE SYSTEM

Kunihiko Suzuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

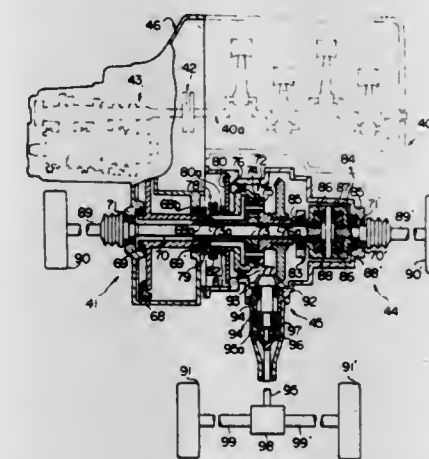
Filed Apr. 14, 1982, Ser. No. 368,680

Claims priority, application Japan, Apr. 30, 1981, 56-66288

Int. Cl.³ B60K 17/34

U.S. Cl. 180—233

10 Claims



1. A fourwheel drive system for a vehicle having at least first and second pairs of road wheels, comprising
a power unit having an output shaft rotatable about an axis in a lateral direction of the vehicle;
a power transmission gear unit including transmission input and output shafts each having an axis of rotation parallel with an extension of the axis of rotation of the output shaft of said power unit;
a power transfer gear rotatable about an axis parallel with the respective axes of rotation of the transmission input and output shafts, the transmission output shaft being held in driving engagement with the power transfer gear;
a first wheel drive unit comprising a differential gear assembly for the first pair of road wheels; and
a planetary gear assembly including at least first, second and third rotary members having a common axis of rotation aligned with the axis of rotation of said power transfer gear, each of the rotary members being constituted by any of an externally toothed sun gear, an internally toothed gear coaxially encircling the sun gear and a pinion carrier carrying at least one planet pinion gear held in mesh with sun gear and the ring gear and rotatable with respect to the pinion carrier about an axis parallel with said common axis, said power transfer gear being in driving engagement with the first rotary member of the planetary gear assembly, the second rotary member of the planetary gear assembly being held in driving engagement with said differential gear assembly;
low-and-high speed shifting clutch means adapted to provide coupling selectively between said power transfer gear and the third rotary member of the planetary gear assembly and between the third rotary member and a stationary member fixed in the vehicle;
a second wheel drive unit comprising right-angle power transfer gear means including a driving gear which is rotatable about an axis aligned with said common axis of rotation of said rotary members and which is located axially between said planetary gear assembly and said differential gear assembly transversely of the vehicle, said second rotary member being further in driving engagement with said driving gear so that the driving power transmitted to the second rotary member is split into two driving power components, one of which is to be carried to said differential gear assembly and the other of which is to be carried to the driving gear of said right-angle power transfer gear means, the right-angle power transfer gear means further including a driven

gear rotatable about an axis in a fore-and-aft direction of the vehicle and operatively engaged with said driving gear;
a driveline operatively intervening between said driven gear and said second pair of road wheels; and
two-wheel/four-wheel drive shifting means intervening between said driven gear and said driveline and operative to selectively provide coupling therebetween.

4,431,080

AUCTIONEER'S PODIUM ASSEMBLY

James E. Everhart, 148 E. Hill St., Long Beach, Calif. 90806

Filed Jun. 22, 1981, Ser. No. 276,017

Int. Cl.³ A47B 83/00

U.S. Cl. 182—15

1 Claim



1. A portable auctioneers podium that includes:
a. an elongate vertically disposed box like assembly that includes a rigid frame that supports a front panel and a pair of side panels, said frame at an elevated position thereon supporting a floor member having a rear edge portion and at a position adjacent the top of said frame a substantially horizontal desk surface defining member, and said assembly including a plurality of casters that movably support said assembly and permit the latter to be moved from location to location at an auction;
b. a platform of less width than that of the interior of said frame, said platform including a forward and a rear edge portion;
c. piano hinge means that pivotally connect said forward edge portion of said platform to said rear edge portion of said floor member; and
d. a plurality of legs secured to said platform at said forward and rear edge portion said legs of such length that when said platform is pivoted to a first position where it extends rearwardly from said assembly said legs contact the surface on which said assembly rests and support said platform at a substantially horizontal position, upon which an auctioneer can stand, and the weight of the auctioneer when so standing forcing said legs into frictional engagement with said supporting surface to the extent said assembly cannot be inadvertently moved relative thereto, and said platform capable of being pivoted to a second position where it is disposed within said assembly and rests on said floor member with said legs extending upwardly from the latter, and in which said second position said podium occupies a minimum of space and may be transported in a vehicle from one auction site to another.

4,431,081

SUSPENSION SYSTEM FOR MOVEMENT UNDER A CEILING

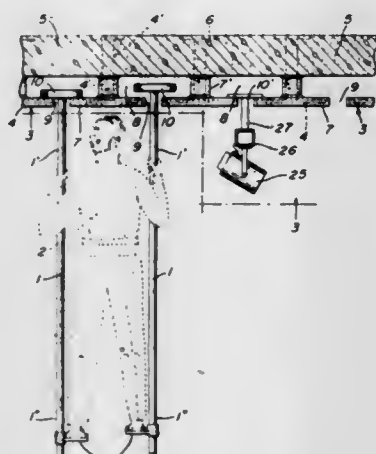
Pierre Gagnon, 5637, Wilderton Ave., Montreal, Quebec, Canada H3T 1S1, and Pierre LaForest, 1945, Bruxelles, Montreal, Quebec, Canada H1L 5Z5

Filed Jan. 21, 1983, Ser. No. 441,486

Int. Cl.³ A63B 25/00

U.S. Cl. 182—36

6 Claims



1. A suspension system for movement under a ceiling comprising, in combination, a false ceiling formed of a plurality of tiles, each of a regular geometric shape; attached means to rigidly secure each said tile to the regular roof or ceiling of a building with said tiles being in downwardly-spaced relationship, relative to said regular roof; said tiles being also arranged in consistent horizontally spaced relationship, defining a plurality of horizontally extending slots between said tiles; further comprising at least one pair of inverted stilts, each having an upper end and a lower end; said upper and freely extending through a slot, a flange overlying adjacent tiles under said roof or ceiling and secured to said upper end to support each stilt in one of said slots; said lower end being provided with a foot support means.

4,431,082

VEHICLE LADDER

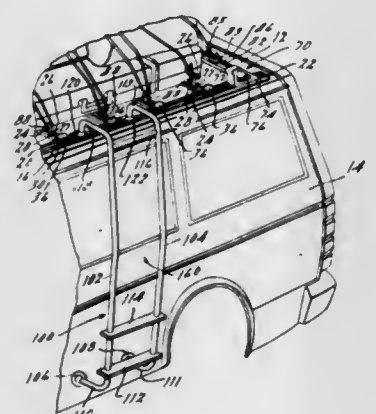
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Filed Dec. 30, 1981, Ser. No. 335,702

Int. Cl.³ E06C 5/00

U.S. Cl. 182—127

6 Claims



1. With a vehicle having an elevated top surface and side-walls, a vehicle ladder for access to said elevated top surface of a vehicle, comprising
a pair of elongated side members;
step means spanning said side members at substantially one end thereof; and
means for securing said ladder to said vehicle, comprising an article carrier disposed on said top surface, having at

least one elongated member secured to said surface having a longitudinally extending channel,
upper means for attachment of said side members to said article carrier elongated members including means for removeably engaging one end of each of said pair of elongated side members to one of said article carrier elongated members and operably associated with said channel comprising retainer members having engagement portions, at least one of which retainer members is insertable into said channel when the plane formed by the longest portion of said elongated side members forms an angle with said associated vehicle sidewall corresponding with alignment of said at least one retainer member engagement portion with said channel, and
lower means for attachment of said side members to said sidewalls,
wherein said upper and lower attachment means cooperate to removeably secure said side members and step means to said vehicle at any selected position along the length of said channel to provide ready access to the elevated top surface of the vehicle.

4,431,083

APPARATUS FOR LIFTING A MEMBER USING PARALLELOGRAM MOUNTED LINKS

Lyle E. York, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

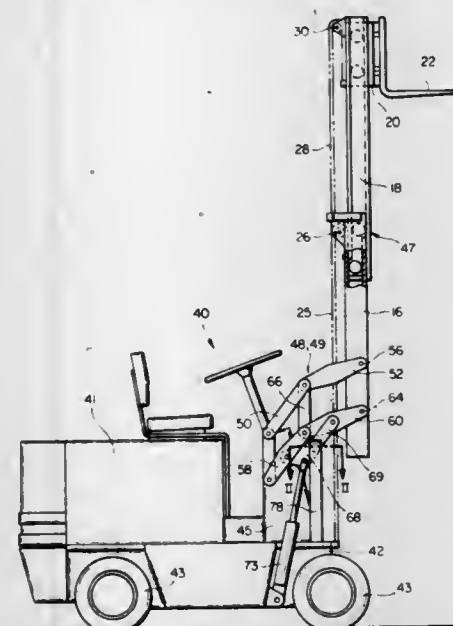
PCT No. PCT/US80/01403, § 371 Date Oct. 20, 1980, § 102(e) Date Oct. 20, 1980, PCT Pub. No. WO82/01362, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 20, 1980, Ser. No. 262,059

Int. Cl.³ B66B 9/20

U.S. Cl. 187—9 E

8 Claims



1. Apparatus (48) for lifting a member (47) relative to a frame (42), comprising:

- (a) an upper pair of elongate links (50,52) pinned together at a common end with a first pin (54), said pair of links (50,52) having one remote end pinned to the frame (42) with a second pin (55) and a second remote end pinned to the member (47) with a third pin (56);
- (b) a medial pair of elongate links (58,60) pinned together at a common end with a fourth pin (62), said pair of links (58,60) having one remote end pinned to the frame (42) with a fifth pin (63) and a second remote end pinned to the member (47) with a sixth pin (64);
- (c) an elongate connecting link (66) pinned with the first and fourth pins (54,62 respectively) to the common ends of the upper and medial pairs of links (50,52 and 58,60 respectively);
- (d) a lower pair of links (68,69) pinned together at a common

4,431,085

METHOD OF OPERATING AN ELEVATOR SYSTEM

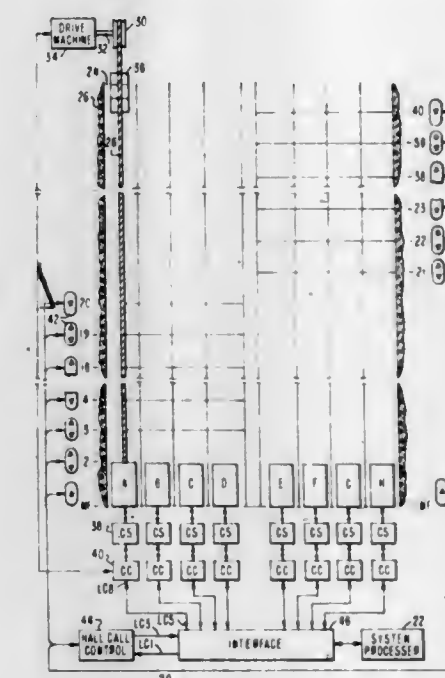
Robert C. MacDonald, West Caldwell, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1981, Ser. No. 324,363

Int. Cl.³ B66B 1/18

U.S. Cl. 187—29 R

5 Claims



1. A method of serving calls for elevator service in a building having a plurality of floors, including a main floor, and a plurality of cars for serving the floors, comprising the steps of:
providing a single system processor having a single predetermined strategy for serving calls for elevator service which includes the steps of dividing the floors of a building into a predetermined plurality of zones of contiguous floors, according to the locations of the floors relative to the main floor, and service directions from the floors, and increasing the number of zones in the building, beyond the predetermined plurality, by the steps of:

- (a) dividing the building into first and second groups of contiguous floors,
- (b) assigning certain of the elevator cars to serve only the first group, certain of the elevator cars to serve only the second group, and all of the cars to serve the main floor, and
- (c) applying the single predetermined strategy of the single system processor to each of said first and second groups of floors independently, such that each group is effectively treated as a separate building, with each being served by the complete strategy, as opposed to being treated as separate zones of a common strategy.

4,431,086

ELEVATOR SYSTEM

Thomas D. Moser, Murrysville, Pa.; Christopher J. Amenson, Boston, Mass., and Eliezer Sternheim, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1982, Ser. No. 344,252

Int. Cl.³ B66B 1/18

U.S. Cl. 187—29 R

9 Claims

1. An elevator system, comprising:
a building having a plurality of floors,
a plurality of elevator cars mounted in said building to serve the floors therein,
means in said building for registering calls for elevator service,
group supervisory control means for causing said elevator cars to serve registered calls according to a predetermined strategy;
a telephone system in said building,

4,431,084

INDUSTRIAL TRUCK

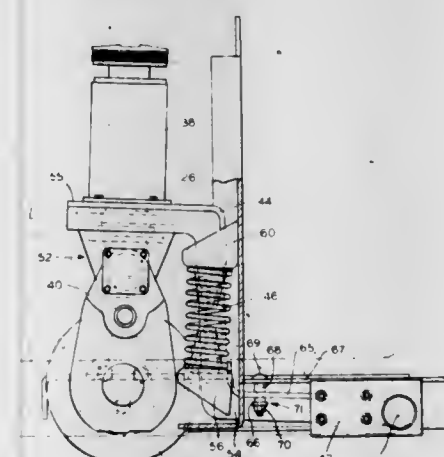
Robert E. Jones, Lexington, Ky., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 6, 1981, Ser. No. 260,969

Int. Cl.³ B66B 9/20

U.S. Cl. 187—9 R

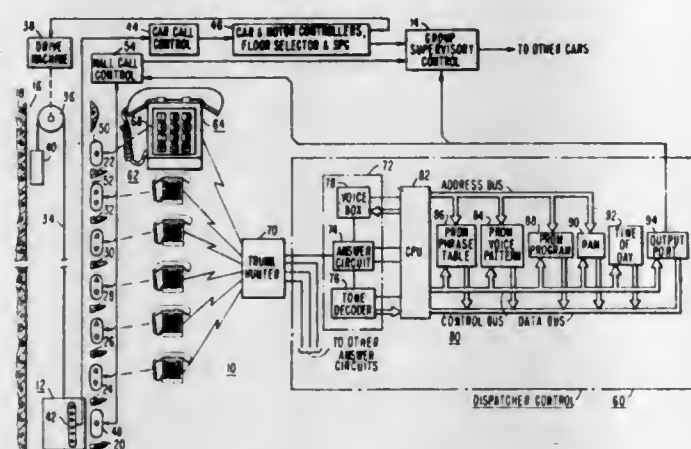
8 Claims



1. A battery powered industrial truck having a rigid frame, two unidirectional wheels one on each side adjacent one end of the frame, two caster wheels one on each side adjacent the other end of the frame, and a battery mounted in a fixed position on the frame, comprising:

- a drive unit pivotally mounted on the frame for pivoting about a transverse horizontally disposed axis, said drive unit comprising a steerable drive wheel and a drive motor,
- said drive wheel located adjacent the other end of the frame and between the said caster wheels,
- a spring mechanism connected between the frame and said drive unit for augmenting the force exerted by the weight of the drive unit on the supporting surface for the drive wheel,
- said spring mechanism comprising,
at least one upper spring bracket having a downwardly extending stop portion and mounted on said frame,
at least one lower spring bracket having an upwardly extending stop portion and mounted on said drive unit, and
a compression spring extending between said spring brackets,
- said stop portions located within said compression spring and spaced apart a predetermined amount to limit the upward pivotal movement of said drive unit, and
means to permit ready removal of the compression spring and substitution of a fixed structure, whereby a three wheel counter-balanced type industrial truck may be assembled instead of the five wheel type industrial truck, said fixed structure comprising a rigid strut joining together said stop portions.

and dispatching control means connected to said telephone system operable to receive and store telephone requests for elevator service,



said group supervisory control means being responsive to said telephone request for elevator service stored in said dispatching control means, to cause at least certain of said elevator cars to serve said request.

4,431,087

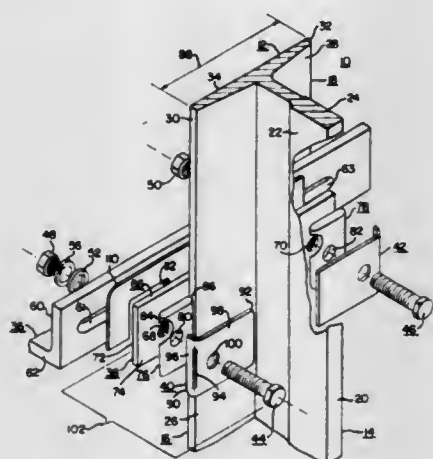
GUIDE RAIL CLAMPING METHOD AND ASSEMBLY
Herman S. Karol, Morris Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,226

Int. Cl.³ B66B 7/02

U.S. Cl. 187—95

8 Claims



1. A guide rail clamping assembly for fixing rail clips to an elevator guide rail while facilitating both fore-aft and between guide (BG) adjustment of the guide rail relative to a support structure, comprising:

- a first mounting member fastened to the supporting structure, said first mounting member including elongated opening means,
- a second mounting member having first and second tapped openings therein, said second mounting member being adjacent to said first mounting member, with its first and second tapped openings aligned with the elongated opening means,
- a guide rail section having first and second flanges, the backs of which contact said mounting member,
- first and second rail clip members engaging the first and second flanges, respectively, of said guide rail section, with said first and second rail clip members including an opening aligned with the first and second tapped openings, respectively, of said second mounting member,
- first and second bolts extending through the openings in the first and second rail clip members, respectively, and threadably engaging the first and second tapped openings, respectively, in the second mounting member, to tightly clamp and thereby lock the first and second flanges

of the guide rail section between the second mounting member and the first and second rail clip members, to provide a first clamping function associated with the first and second bolts which prevents relative motion between said second mounting member, said guide rail section, said first and second rail clip members, and said first and second bolts, including the prevention of any relative motion in the axial direction of said first and second bolts, said first and second bolts further extending through the elongated opening means in the first mounting member, permitting fore-aft and BG adjustment of the guide rail section without releasing the lock on the first and second flanges created by the second mounting member, the first and second rail clip members, and the first and second bolts, and first and second nuts threadably engaged with the first and second bolts, respectively, to clamp the rail clip members, guide rail section, and second mounting member, to the first mounting member and provide a second clamping function associated with said first and second bolts, which is independent of the first clamping function.

4,431,088

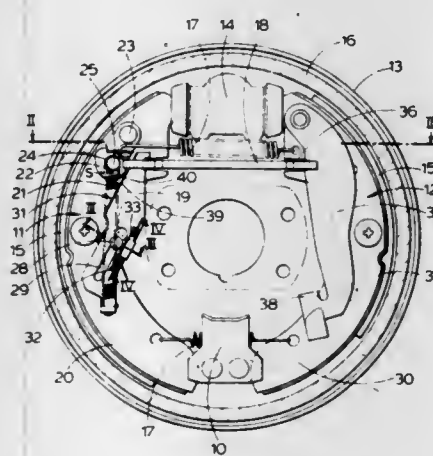
INTERNAL SHOE DRUM BRAKE ADJUSTING DEVICE
William E. Haines, Southam, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Sep. 9, 1981, Ser. No. 300,686

Int. Cl.³ F16D 51/52, 65/52

U.S. Cl. 188—79.5 GC

2 Claims



1. An internal shoe drum brake having an automatic adjuster and comprising:
- two brake shoes, each with a web thereon;
 - a strut assembly extending from one of said brake shoes to the other of said brake shoes;
 - an adjuster means for varying the overall length of the strut assembly operative between the two shoes;
 - a spring biasing the two brake shoes together;
 - a mechanical brake lever pivoted to the web of said one brake shoe and which has a free end thereof operable by mechanical means to apply the brake and which is abutable against the web of the one shoe, said spring loading the strut against the mechanical lever during normal service use of the brake, and the drum brake is deadadjusted by moving the free end of the lever out of abutment with the web of said one shoe so that the free end of the lever can be moved so that the lever no longer contacts the strut.

4,431,089

AUTOMATIC SLACK ADJUSTING DEVICE OF BRAKE LINKAGE

Julius Nadas, Echting, Fed. Rep. of Germany, and Nils B. L. Sander, Osby, Sweden, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

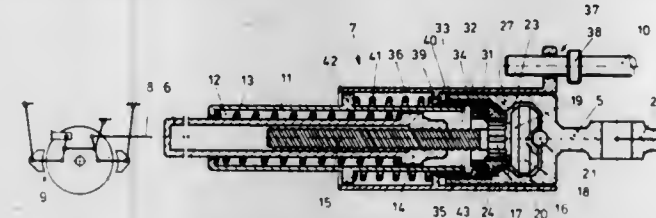
Filed Feb. 18, 1982, Ser. No. 350,101

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106178

Int. Cl.³ F16D 65/66

U.S. Cl. 188—196 D

11 Claims



1. A device for automatic adjustment of the slack of brake linkage on a rail vehicle and the like, comprising first and second telescoping rod members at least one of which is tubular, one of said rod members being connected to a brake motor and the other rod member connected to brake linkage on a vehicle, a screw coupling between said first and second rod members and comprising first and second screw coupling members, one of said screw coupling members comprising a nut threaded upon the other screw coupling member comprising a spindle shaft having a non-self-locking thread, one of said nut and shaft being rotatable and connected for limited axial movement to said one rod member and the other of said nut and shaft being nonrotatable and rigidly connected to said other rod member, a moveable stop member engageable with a stop upon travelling a distance corresponding to the desired slack in the brake linkage, a first spring exerting a force upon said moveable stop member toward said stop and parallel to the direction of the braking force, a control clutch member slideably mounted upon said rotateable screw coupling member for axial movement thereon and having a closed position connecting said rotateable screw coupling member to said one rod member, said control clutch member requiring a force substantially less than the force exerted by said first spring to move out of its closed position to an open position, said control clutch member having a control element urged by said first spring in a direction to close said control clutch member, a rotary clutch between said one rod member and said rotateable screw coupling member to transmit braking force from said one rod member to said rotateable screw coupling member when in the closed position and displaceable into its closed position in a direction opposite to that of said control clutch member, a pretensioned second spring between said first and second rod members and urging said one rod member in a direction opposed to the braking force, said control clutch member being free of force exerted by said second spring.

4,431,090

BOOT PROTECTOR FOR DISC BRAKE

Kazuhisa Kinoshita, Hanyu, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,181

Claims priority, application Japan, Sep. 8, 1980, 55-127502[U]

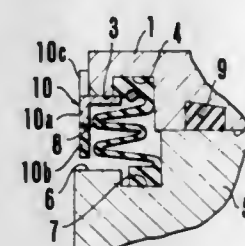
Int. Cl.³ F16D 65/00; F16J 15/52

U.S. Cl. 188—264 G

5 Claims

1. In a disc brake comprising an axially extending hollow cylinder defining an axially extending space with an opening in said cylinder into the space, the axis of the space and of the opening extending generally parallel with the axis of the cylinder, a piston mounted within the space in said cylinder and having a sliding surface thereon in sliding contact with the surface of the cylinder defining the space and the sliding direction of said piston extending in the axial direction of said cylinder, said piston having an end face located adjacent the open-

ing in said cylinder and arranged to support and press a friction pad into engagement with a disc, wherein the improvement comprises a boot located within the space in said cylinder adjacent the opening into the space and extending between said piston and said cylinder for forming a shield for the surface of said piston in sliding contact with said cylinder, a boot protec-



4,431,091

VEHICLE BRAKE SYSTEM

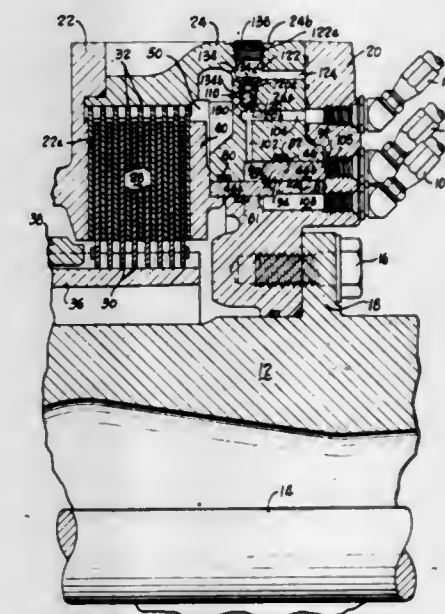
Harold R. Scibbe, Chardon, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Jan. 7, 1982, Ser. No. 337,699

Int. Cl.³ F16D 65/78, 25/06

U.S. Cl. 188—264 F

12 Claims



1. A brake system for a wheeled vehicle or the like, comprising:
- (a) a brake assembly operatively connected to a ground engaging wheel;
 - (b) brake operating means including a fluid pressure operated piston for actuating said brake assembly to arrest rotation of said wheel;
 - (c) brake assembly cooling means including fluid coolant for removing heat generated in said assembly;
 - (d) purging means for discharging gas from said brake operating means including structure defining first and second valve seats and passage means communicating said first valve seat with said brake operating means and said second valve seat communicating with said brake cooling means;
 - (e) said purging means further including a valve member engageable with one of said first and second valve seats, said valve member biased towards said first seat by fluid

coolant in said brake cooling means and biased towards said second seat, during brake actuation, by brake actuating fluid in said brake operating means such that in the absence of brake actuation pressure said valve member sealingly engages said first seat to prevent fluid flow from said brake cooling means to said brake operating means and during brake actuation, said valve member travels to said second valve seat under the influence of the brake actuating fluid pressure thereby discharging gas from said brake operating means into said brake cooling means.

4,431,092

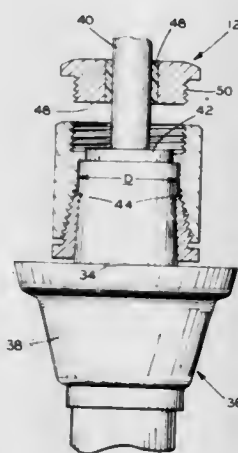
RETAINING DEVICE FOR A SHOCK ABSORBER ASSEMBLY

Kenneth D. Kloster, 6649 Mill Ridge Rd., Maumee, Ohio 43537
Filed Jul. 27, 1981, Ser. No. 286,984

Int. Cl.³ F16F 9/32

U.S. Cl. 188—321.11

2 Claims



1. In combination with a cylindrical shroud of a shock absorber assembly having a shock absorber located within said shroud and having a piston rod axially extending from one end of said shroud, retaining means for retaining said shock absorber within said shroud, said retaining means including a threaded cap having a piston rod receiving aperture, first and second hollow cylindrical members adapted to coaxially surround one end of said cylindrical shroud, one end of said first member adapted to threadably receive said threaded cap, the other end of said first member adapted to threadably engage at least an end portion of said second hollow member, and at least one of said hollow cylindrical members having jaw means adapted to be urged inwardly into engagement with said shroud upon the tightening of the threaded engagement between said first and second hollow cylindrical members, said jaw means including a collet portion having a plurality of radially movable arms, the one of said hollow cylindrical members having said jaw means including an externally threaded section, and the other of said members including an internally threaded section for threaded engagement with said externally threaded section of the one member, at least one of said external and internal threaded sections having a tapered portion whereby relative rotation between said members in one direction causes said collet arms to move radially inwardly to securely grip the outer wall of said shroud.

4,431,093

MOTION SNUBBER

Elmer C. Yang, Orange, Calif., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed Mar. 11, 1982, Ser. No. 357,174

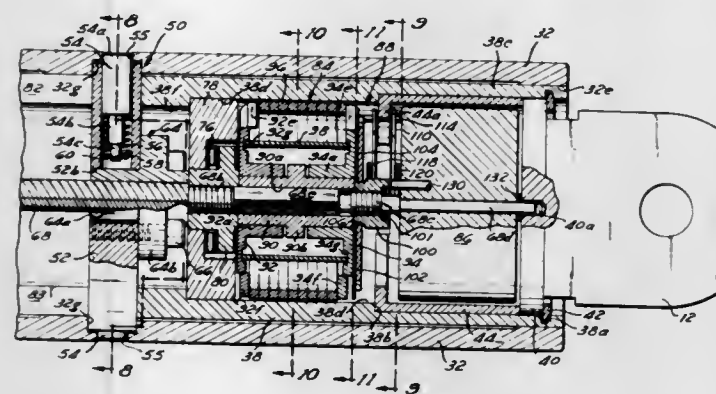
Int. Cl.³ F16F 7/04

U.S. Cl. 188—378

22 Claims

1. A motion snubbing device including first and second strut members mounted for relative reciprocation;
a balance wheel rotatably mounted on one of said strut members;
means for converting the reciprocation of said strut mem-

bers into oscillating movement of said balance wheel utilizing the movement of the strut members to drive the balance wheel in both directions of its oscillation; and



brake means connected to the balance wheel in a manner such that the inertia of said balance wheel initiates braking action by the brake means for limiting the reciprocation of said strut members.

4,431,094

HYDRODYNAMIC TORQUE CONVERTER WITH BRIDGING MEANS

Jean P. Parthuisot, Rueil Malmaison; Claude Chevalier, Jouare Pontchartrain, and Jean M. Bouvet, Boulogne-Billancourt, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

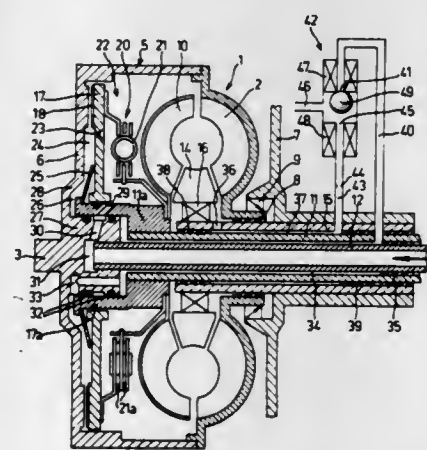
Filed Mar. 10, 1981, Ser. No. 242,340

Claims priority, application France, Mar. 10, 1980, 80 06166

Int. Cl.³ F16D 47/06; B60K 41/22

U.S. Cl. 192—3.3

11 Claims



1. A transmission device having input and output shaft means, a housing drivingly connected to said input shaft means and defining an enclosure, hydrodynamic torque converter means disposed within said housing enclosure and having an impeller member drivingly connected to said housing and a turbine member coupled to said output shaft means, and bridging means capable of coupling without substantial slip said impeller and turbine members,

said bridging means comprising

a clutch assembly having a control chamber and control piston means for coupling and uncoupling said turbine and impeller members, said piston constituting a movable wall common to both said control chamber and said housing enclosure and having a first restrictive orifice there-through to enable restricted fluid communication between said housing enclosure and said control chamber, said control chamber having spring means for urging said control piston towards a position where said impeller and turbine members are uncoupled,

a hydraulic circuit having a substantially constant-pressure unidirectional fluid source connected to said clutch assem-

bly, return means for returning said fluid from said clutch assembly to a fluid reservoir, by one at least of two pathways one only of which includes a second restrictive orifice exterior to said clutch assembly,
control valve means actuated independently of said hydraulic circuit for determining whether the pathway of said return means comprises only the pathway having the second restrictive orifice or includes the other said pathway as at least the principal fluid conveying conduit, said second restrictive orifice, when part of the sole pathway, providing means for moving said control piston toward a position in which said impeller and turbine members are uncoupled, whereas when the unrestricted return pathway is used, it provides means for moving said control piston toward a position in which said impeller and turbine members are coupled.

4,431,095

LOCK-UP TYPE AUTOMATIC TRANSMISSION

Masaaki Suga, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

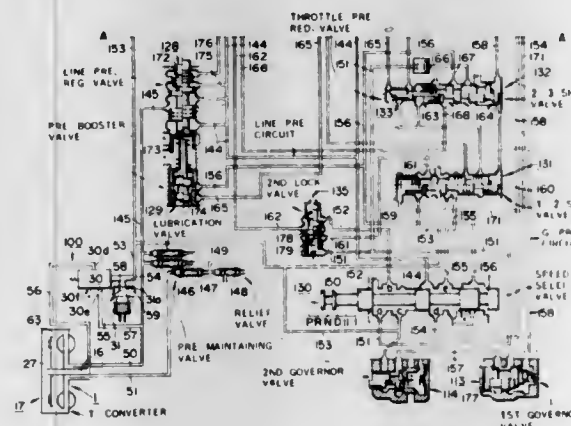
Filed Mar. 10, 1981, Ser. No. 242,181

Claims priority, application Japan, Mar. 12, 1980, 55-30226

Int. Cl.³ F16D 47/06; B60K 41/22

U.S. Cl. 192—3.31

4 Claims



1. A lock-up type automatic transmission comprising:
a torque converter having a pump impeller and a turbine runner;
a lock-up clutch having a clutch piston drivingly connected to said turbine runner and being selectively engageable with said pump impeller;
control means for engaging and disengaging said lock-up clutch, said control means including a lock-up control valve and a solenoid valve to control the shifting of said lock-up control valve;
lock-up decision means for producing a lock-up permission signal;
means for detecting a demand for shifting between two gear ratios in the transmission for producing a demand indicative signal;
delay means operatively connected with said demand detecting means for retarding the transmission of said demand indicative signal;
shifting operation detector means connected with said delay means for receiving said demand indicative signal therefrom for producing a shift signal having a predetermined time duration in response to said demand indicative signal; and
solenoid valve control means for controlling said solenoid valve to effect engagement of said lock-up clutch under conditions when said lock-up permission signal is present and said shift signal is absent, but to effect temporal disengagement of said lock-up clutch during the presence of said shift signal even when said lock-up permission signal is present.

4,431,096

DIRECT-COUPLING CLUTCH CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Koji Kobayashi, Toyota, and Keizo Kobayashi, Anjo, both of Japan, assignors to Aisin Warner Kabushiki Kaisha, Anjo, Japan

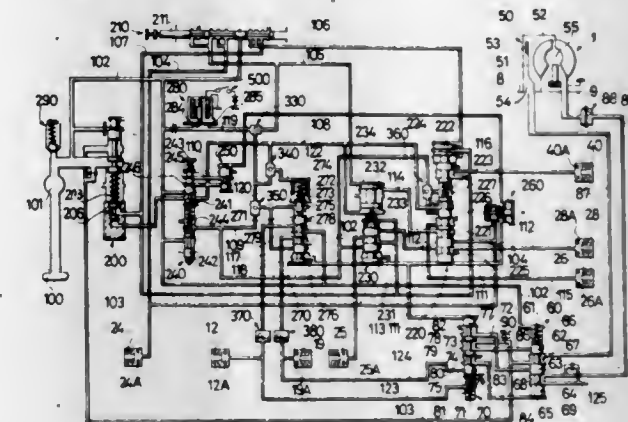
Filed Jan. 21, 1981, Ser. No. 227,011

Claims priority, application Japan, Jan. 22, 1980, 55-5942

Int. Cl.³ F16D 33/00

U.S. Cl. 192—3.31

3 Claims



1. In a hydraulic control system for an automatic transmission comprising plural forward range gears and a single reverse gear and equipped with a torque converter coupled with a direct-coupling clutch, the improvement therein comprising a direct-coupling clutch control system for the automatic transmission including:

a source of pressurized fluid;
a direct-coupling clutch engaging passage connected to said clutch, said direct-coupling clutch being engaged when fluid in said engaging passage is pressurized,
a direct-coupling clutch releasing passage connected to said clutch, said direct-coupling clutch being released when fluid in said releasing passage is pressurized;
a switch valve comprising a valve element being axially shiftable between first and second positions for selectively connecting said source of pressurized fluid to either said direct-coupling clutch releasing passage or to said direct-coupling clutch engaging passage, respectively, a first fluid chamber being located at one end of said valve element to which a line pressure from said source of pressurized fluid is applied for retaining said valve element in said first position, a spring member provided in said first fluid chamber applying a spring force to said one end of said valve element in the same direction with that of the force applied by said line pressure prevailing in said first fluid chamber for retaining said valve element in said first position for connecting said direct-coupling clutch releasing passage to said source of pressurized fluid, in all forward and reverse speed ranges other than the highest speed range, and when said automatic transmission is inoperative, and a second fluid chamber being located at the other end of said valve element to which a line pressure from said source of pressurized fluid is applied for retaining said valve element in said second position against a force acting on said valve element by the line pressure prevailing in said first fluid chamber and the spring force of said spring member; and
a lockup control valve comprising a valve element being axially shiftable between first and second positions, a first fluid chamber being located at one end of said valve element and communicating with a passage to which is applied a governor pressure which is derived from and varying in accordance with the vehicle speed, a second fluid chamber being located at the other end of said valve element to which a line pressure from said source of pressurized fluid is applied while said automatic transmission is shifted in the lower speed ranges other than a high speed

range, for retaining said valve element of said lockup control valve in said first position, a spring member provided in said second fluid chamber capable of applying a spring force to said other end of said valve element in the direction opposite to that of the force applied by said governor pressure, and a third fluid chamber for allowing communication between a passage to which a pressurized fluid from said source of pressurized fluid is applied, and said second fluid chamber of said switch valve while said valve element of said lockup control valve is positioned in said second position, said valve element of said lockup control valve being positioned in said second position so as to shift said valve element of said switch valve to said second position thereof for connecting said source of pressurized fluid to said direct-coupling clutch engaging passage when said governor pressure exceeds a selected pressure, and in said first position so as to shift said valve element of said switch valve in said first position thereof for connecting said source to said direct-coupling clutch releasing passage when said governor pressure is less than said selected pressure while said automatic transmission is shifted in said high speed range.

4,431,097

MULTIPLE DISK CLUTCH WITH FORCED LIFT AND SIMPLIFIED ASSEMBLY

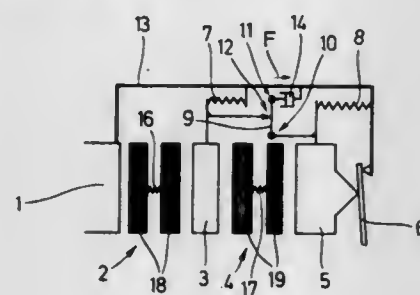
Erich Scheer, Eschenrdorf, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Oct. 23, 1981, Ser. No. 314,742

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041342

Int. Cl.³ F16D 13/56, 13/75, 13/68

U.S. Cl. 192—70.18

8 Claims



1. A multiple disk clutch, such as a double disk clutch, comprising a housing, a flywheel acting as a counter-pressure plate, an intermediate plate spaced from said flywheel, a first clutch disk positioned between said flywheel and intermediate plate, a spring-loaded pressure plate spaced from said intermediate plate on the opposite side thereof from said flywheel, a second clutch disk located between said intermediate plate and pressure plate, said first and second clutch disks arranged to be rotatably secured on and axially displaceable along an output shaft, at least one two-armed lever disposed in a plane substantially parallel with said first and second clutch disks, said at least one two-armed lever is pivotally supported on said intermediate plate about an axis of rotation extending radially of the axis of rotation of said clutch disks, one of the arms of said at least one lever is connected to one of said flywheel or said housing and the other arm is connected to said pressure plate, wherein the improvement comprises a first swivel joint connects said at least one lever to said housing and a second swivel joint connects said at least one lever to said pressure plate, a lifting spring biasing said intermediate plate in the direction toward said pressure plate, and said intermediate plate having a balance edge thereon with said balance edge disposed in supporting contact with said at least one lever approximately midway between said first and second swivel joints.

4,431,098 BIMETAL COIL MOUNTING ARRANGEMENT FOR VISCOUS FLUID COUPLING

Masaharu Hayashi, and Kenji Hattori, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

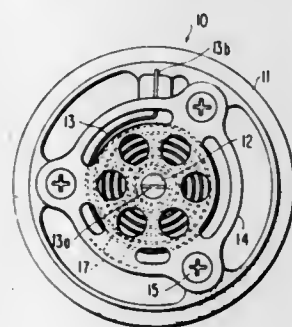
Filed Jul. 8, 1981, Ser. No. 281,273

Claims priority, application Japan, Jul. 9, 1980, 55-93626

Int. Cl.³ F16D 43/25

U.S. Cl. 192—82 T

2 Claims



1. A temperature responsive viscous fluid coupling comprising a cover member having a cavity, a shaft rotatably mounted in said cover member for controlling said coupling, plate means secured to said cover member over said cavity, a bimetal coil disposed in said cavity with the inner end thereof secured to said shaft and the outer end thereof secured to said cover member, flange means on said plate extending inwardly into said cavity adjacent the outer periphery of said coil and at least one resilient member circumferentially spaced from said outer end of said coil and secured to said flange means and said plate means adjacent said coil for damping vibrations transmitted to said bimetal coil, wherein said resilient member includes a first surface parallel to said plate means and a second surface parallel to said flange and perpendicular to said first surface with said first surface being spaced from an axially directed side surface of said bimetal coil by 0.2–0.5 mm and said second surface being disposed in abutment with the outer surface of said bimetal coil.

4,431,099

CENTRIFUGAL CLUTCH MECHANISM

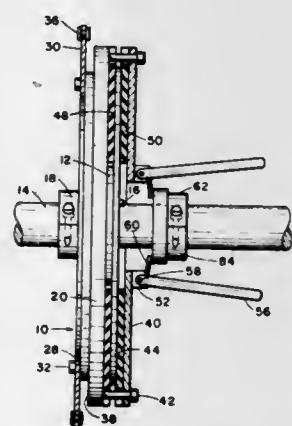
Paul C. Jackson, 2832 E. 1st Pl., Tulsa, Okla. 74104

Filed Mar. 9, 1981, Ser. No. 241,500

Int. Cl.³ F16D 13/42, 43/04

U.S. Cl. 192—105 C

4 Claims



1. A light weight centrifugal friction clutch assembly operable in the absence of a flywheel and interposed between a vehicle chain drive and a rotatable shaft, the clutch assembly comprising hub means disposed around the outer periphery of the shaft and secured thereto for simultaneous rotation therebetween, bearing means disposed around the hub means, drive plate means disposed around the outer periphery of the hub means and bearing means to provide independent rotation of the drive plate means with respect to the hub means, clutch

plate means secured to the hub means for rotation simultaneously therewith and axially spaced from the drive plate means, a plurality of circumferentially spaced segments secured to the drive plate means for rotation simultaneously therewith and spaced axially outboard of the clutch plate means, link means secured to each segment and responsive to centrifugal force for movement between a resting position and a driving position for moving the segments into a driving engagement with the drive plate means in the driving position of the link means, friction means interposed between the clutch plate means and drive plate means for frictional engagement with the clutch plate means in the driving engagement between the segments and drive plate means for transmitting rotation to the shaft, and wherein the link means comprises an independent link member pivotally secured to the inner end of each segment and movable between radially inward and radially outward positions in response to centrifugal force acting thereon, and means carried by each link member for securely urging the respective segment into said driving engagement with the clutch plate means in the radially outward position of the respective link member.

4,431,100

TORQUE FLUCTUATION DAMPER

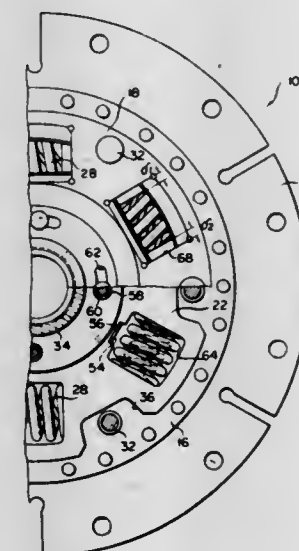
Masaueon Kajikawa, Hiroyuki Kitajima, and Tetsuo Tsuji, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,360

Int. Cl.³ F16D 3/66

U.S. Cl. 192—106.2

1 Claim



1. A damper to be interposed between an internal combustion engine and a power train for controlling the torque fluctuations of the engine, comprising:

- a housing having a drive plate to be connected to and driven by the engine;
- a driven plate coaxially mounted in the housing for angular displacement within limits, the driven plate being connected to the power train for imparting the torque thereto;
- means between the housing and the driven plate for frictionally transmitting the rotation of the former to the latter;
- a plurality of torsional or compression springs supported by the driven plate so as to be acted upon by the housing when a slip occurs in the frictionally transmitting means, each spring having opposite ends, an axial length, and opposite sides, each spring having its opposite ends disposed for engagement with opposed edges of the housing;
- said driven plate having therein a plurality of rectangular openings, each of said plurality of springs being mounted in one of said plurality of rectangular openings, each rectangular opening having a length in a direction of rotation of the damper equal to said axial length; and
- said housing, including said drive-plate, having a plurality

of windows coinciding with said rectangular openings, said windows defining said opposed edges at opposite ends of each window, said opposed edges of each window being separated in the direction of rotation of the damper by a distance larger than said axial length of the respective spring whereby variable spacings are present between the ends of the springs and said opposed edges; whereby the resonance frequency of the damper is reduced to a frequency less than a normal frequency range of torque fluctuations to which the damper is to be subjected.

4,431,101

CLUTCH ACTUATING CONTROL MECHANISM

Bernhard Limbacher, Niederwerrn, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

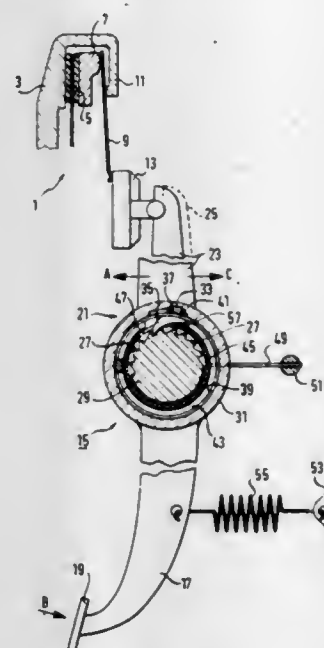
Filed Mar. 31, 1981, Ser. No. 249,472

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013436

Int. Cl.³ F16D 13/75

U.S. Cl. 192—111 A

8 Claims



1. An operating mechanism for a device, particularly a clutch of a motor vehicle, adapted to automatically change its normal actuating position conditional upon wear comprising: first lever means supported for rotation about a first axis operable to effect actuation of said operating mechanism upon rotation thereof in a first rotational direction; second lever means supported for rotation about said first axis and arranged in operative connection with said device; and ratchet means for effecting rotational actuation of said second lever means upon rotational actuation of said first lever means, said ratchet means comprising ratchet wheel means arranged concentrically with said first axis on said second lever means, pawl means provided on said first lever means pivotally supported relative thereto arranged in operative relationship with said ratchet wheel means, means biasing said pawl means into driving engagement with said ratchet wheel means, and control means located in a path of movement of said pawl means to swivel said pawl means out of engagement with said ratchet wheel means when a boundary position of wear is reached; said pawl means being arranged for pivotal motion about a pawl pivot axis and said control means being structured as a cylindrical sleeve provided with an opening therethrough for passage of said pawl means and arranged between said pawl pivot axis and said ratchet wheel means coaxially relative to said first axis in such a manner that a rim of said opening directed in said first rotational direction presses said pawl means out of engagement with said ratchet wheel means.

4,431,102

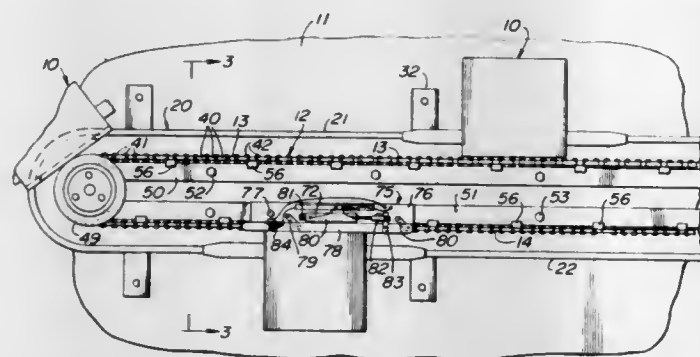
MULTI-STATION PRODUCTION CONVEYOR
Charles Bittner, Haddonfield, N.J., assignor to Precision Auto-
mation Co., Inc., Cherry Hill, N.J.

Filed Aug. 28, 1981, Ser. No. 297,223

Int. Cl.³ B65G 21/20

U.S. Cl. 198—345

2 Claims



1. A multi-station conveyor comprising an elongate endless drive element extending along a path having straight sections and turns connecting said straight sections, motive means effecting longitudinal movement of said drive element along said path, a track extending longitudinally along said drive element and having an upwardly facing bearing surface outwardly of an above said drive element, a carrier mounted on said track for movement therealong, drive element engaging means depending rigidly from said carrier between said track and drive element and normally urged inwardly into driven engagement with said drive element, declutching means inwardly of said track including a deflector for deflecting said engaging means outwardly out of engagement with said drive element for stopping said carrier, and a generally horizontal friction wheel mounted for rotation about a fixed axis centrally of each of said turns for bearing engagement with the inner side of said carrier extension passing along said turns.

4,431,103

ENGINE POSITIONING DEVICE IN ENGINE TEST DEVICE

Tsugio Sekii, Kobe, Japan, assignor to Mitsubishi Denki Kabu-
shiki Kaisha, Tokyo, Japan

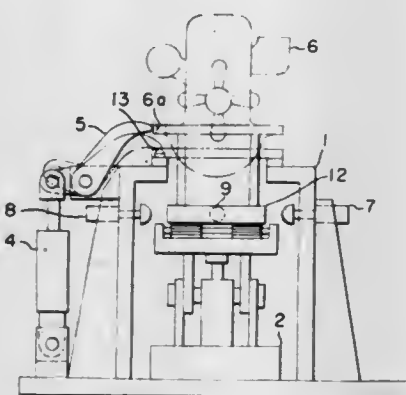
Filed Oct. 29, 1981, Ser. No. 316,274

Claims priority, application Japan, Nov. 14, 1980, 55-163733[U]

Int. Cl.³ B65G 47/00

U.S. Cl. 198—345

1 Claim



1. An engine positioning device comprising:
(a) a transferring conveyor adapted to move rectangular pallets in a predetermined direction;
(b) a positioning table on which engines may be releasably fixed, said positioning table being disposed above said transferring conveyor;
(c) a plurality of positioning pins projecting upwardly from

said positioning table, said positioning pins defining the work position of said engine positioning device;

- (d) a stopper for stopping a pallet being transferred on said transferring conveyor at a position slightly downstream of the work position;
(e) a return cylinder for adjusting the longitudinal position of the pallet on said transferring conveyor in the direction opposite to the predetermined direction;
(f) a pair of spaced transverse cylinders on each side of the work position for adjusting the transverse position and angular orientation of the pallet on said transferring conveyor;
(g) said return cylinder and said pairs of spaced transfer cylinders being usable to precisely position a plurality of holes in an engine carried by the pallet over said plurality of positioning pins;
(h) a lift for lowering said transferring conveyor after the pallet has been precisely positioned by said return cylinder and said pairs of spaced transfer cylinders such that said plurality of positioning pins are accepted in the holes in the engine; and
(i) a clamping mechanism for releasably clamping the engine to said positioning table.

4,431,104

INDEXING CONVEYOR SYSTEM

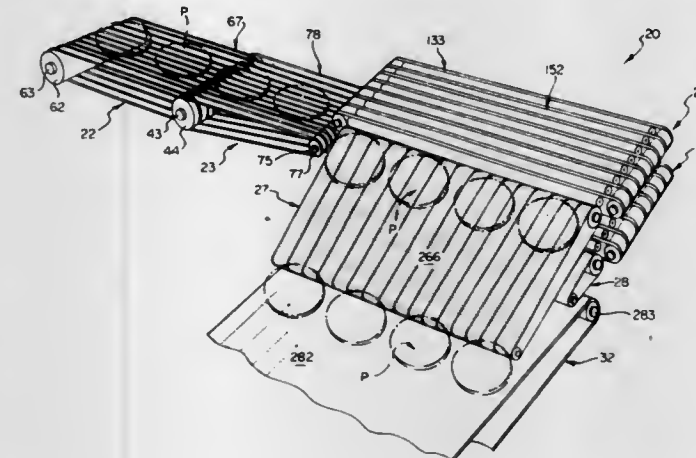
Gerald J. Orlowski, Scottsdale, Ariz., and Rodney D. Wicklund, Denver, Colo., assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 92,072, Nov. 7, 1979, abandoned. This application Aug. 14, 1981, Ser. No. 292,812

Int. Cl.³ B65G 47/26

U.S. Cl. 198—427

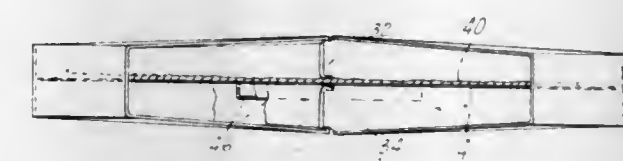
16 Claims



1. A conveyor system for receiving items that are rapidly dispensed at intervals from a source thereof and transporting the same to a point of use, said system comprising an elongated feed conveyor section for initially receiving and rapidly transporting said rapidly dispensed items, said feed conveyor section having upstream and downstream ends and transversely extending shafts at said ends, pulley means mounted on said shafts, a plurality of longitudinally extending, laterally spaced endless conveying elements engaged with the pulley means on said feed conveyor section shafts, a plurality of receiving conveyor sections spaced from said feed conveyor section and arranged in tiers, said feed conveyor sections each having upstream and downstream ends and being adapted to receive rapidly moving items being transported by said feed conveyor section, a pivotal conveyor section operatively disposed between said feed conveyor section and said receiving conveyor sections and being rapidly pivoted between positions for directing a predetermined number of items onto each of said receiving conveyor sections, said pivotal conveyor section including a frame having proximal and distal ends, the distal end of said frame having a shaft extending transversely thereacross, the proximal end of said frame being pivotally connected to the

shaft at the downstream end of said feed conveyor section, pulley means mounted on the shaft at the distal end of said frame, a plurality of longitudinally extending, laterally spaced endless conveying elements engaged with the pulley means at the downstream end of said feed conveyor section shaft and with the pulley means on the shaft at the distal end of said frame, the ends of the endless conveying elements of said feed and pivotal conveyor sections that are engaged with the pulley means at the downstream end of said feed conveyor section being arranged in alternating, interdigital relation, a guard section connected to said pivotal conveyor section for movement therewith, said guard section normally being spaced from but closely overlying items being transported on said pivotal conveyor section so as to avoid unnecessary and undesirable contact with said items and to prevent complete ejection of said items during rapid movements of said pivotal conveyor section actuating means connected to the frame of said pivotal conveyor section and operable to effect said rapid pivotal movements of said pivotal conveyor section between its respective positions wherein the distal end thereof is sequentially aligned with said receiving conveyor sections, and drive means for effecting rapid movement of the endless conveying elements of said feed and pivotal conveyor sections.

each of said sections including a top, a bottom, an outer side wall and an inner side wall,



each of said inner side walls being secured together to form a central prismatic space with said sections extending radially outwardly therefrom.

4,431,107

MODULAR RACK ARRAY

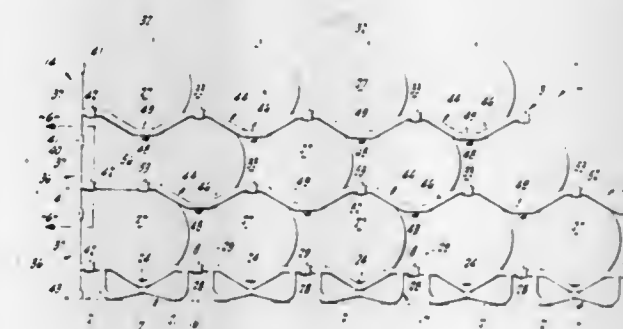
Ronald F. Bergstrom, Lodi, and Philip G. Bartko, Ione, both of Calif., assignors to Agri-Fab Industries, Incorporated, Lodi, Calif.

Filed Jan. 6, 1982, Ser. No. 337,323

Int. Cl.³ A47F 5/01

U.S. Cl. 211—49 S

5 Claims



1. A modular rack array for supporting rows of barrels in stacked vertical relation, comprising:

- a. a plurality of barrel supporting modular base sections, each of said base sections including: first and second undulating tubes, each of said tubes having a hill portion and a valley portion, said first tube and said second tube being arranged in parallel relation to cradle a respective barrel spanning said valley portions of said first tube and said second tube; a support footing mounted on said first and said second tubes, the bottom of said support footing being adapted to rest upon a horizontal surface, the height of said support footing being of sufficient vertical extent to elevate said valleys of said first and said second tubes above the horizontal supporting surface; and, base rack coupling means for interconnecting said first and said second undulating tubes with respective ones of an adjacent said modular base section to establish a longitudinal base rack and an associated base row of barrels;
b. a plurality of barrel supporting modular stacking sections, each of said stacking sections including: third and fourth undulating tubes, each of said tubes having a hill portion and a valley portion, said third tube and said fourth tube being arranged in parallel relation to cradle a respective barrel spanning said valley portions of said third tube and said fourth tube; and stacking rack coupling means for interconnecting said third and said fourth undulating tubes with respective ones of an adjacent said modular stacking section to establish a first longitudinal stacking rack and an associated first stacking row of barrels overlying and generally coextensive with said base rack and said base row, said third tube and said fourth tube being arranged in parallel relation above said first tube and said second tube, respectively, and said third and said fourth tubes being horizontally offset from said first and said second tubes so that said hill portions of said third and said fourth tubes overlie the subjacent barrel.

4,431,105

MATERIAL FEED UNIT FOR AN INJECTION MOLDING MACHINE

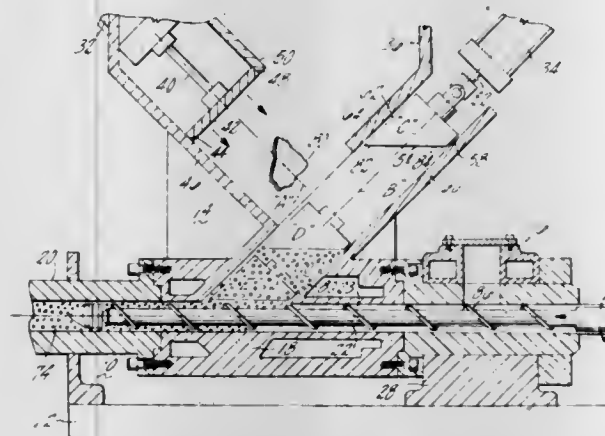
Gregory W. Meeker, and Frank W. Scarson, Jr., both of Webster, N.Y., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 15, 1981, Ser. No. 273,726

Int. Cl.³ B65G 47/18

U.S. Cl. 198—523

8 Claims



1. A material feed unit, for feeding material with a fibrous texture to an injection unit having a reciprocable screw, said material feed unit comprising:

- a hopper for receiving a quantity of said material;
a first angularly arranged reciprocal plunger in its retracted most position is enclosed by a partial inner wall of said hopper;
a second angularly arranged reciprocal plunger in its retracted most position is enclosed by a partial inner wall of said hopper;
said first and second plungers being arranged in the vertical plane that bisects the axis of rotation of said screw.

4,431,106

PACKAGE

Eugene L. de Christopher, 25 Beach Rd., Apt. L, Belvedere, Calif. 94920

Filed Feb. 25, 1982, Ser. No. 352,359

Int. Cl.³ B65D 85/36

U.S. Cl. 206—525

11 Claims

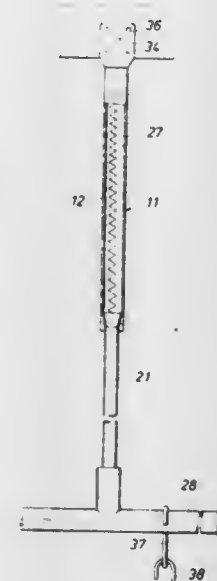
1. A package for an article comprising:
a plurality of rectangular shaped sections,

4,431,108

CLOTHES HANGER SUPPORT

Ellis M. Lee, 22534 Millgate, Spring, Tex. 77373
 Filed Oct. 31, 1980, Ser. No. 202,479
 Int. Cl.³ A47F 5/08

U.S. Cl. 211—113



1. A retracting clothes hanger support comprising:
 - (a) first and second telescoping tubular members;
 - (b) said first member at one end carrying a mounting plate adapted to be secured to an overhead surface;
 - (c) said second member at one end mounting a cross support adapted to receive clothing hangers;
 - (d) said first member at its other end having a tapered locking surface;
 - (e) said second member at its other end having a tapered locking surface adapted to wedge into a locked position against the tapered locking surface of said first member when said first and second members are extended to a maximum telescoped length; and
 - (f) resilient means interconnecting said first and second members whereby said first and second members are retracted to a minimum telescoped length with their respective tapered locking surfaces are disengaged.

4,431,109

BOOM EXTENSION STOWAGE SYSTEM

Joseph W. Behrendt, Sioux City, Iowa; John D. Evans, Nicholasville, and James W. Cox, Jr., Lexington, both of Ky., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 25, 1981, Ser. No. 238,290
 Int. Cl.³ B66C 23/62

U.S. Cl. 212—177



1. In combination with an elongated crane boom defined by a plurality of sections including a fly and a jib connectable to the fly by a socket for pivotal movement in a vertical plane about a pivot shaft, a mast extending upwardly from one of said boom sections, pendant lines connected between two sections of the boom and the mast for supporting jib from downward pivotal movement relative to the boom; the im-

13 Claims

provement which comprises abutment means on said fly, means defining a resilient hook shaped connector supported by said jib adjacent said pivot shaft and movable into abutting engagement with said abutment means for pivotally supporting the jib on said fly, said connector being effective to allow a limited amount of upward pivotal movement of the jib relative to the fly initially about said abutment means and thereafter about said pivot shaft after the socket engages said pivot shaft and to positively stop such movement at about 5° above the longitudinal axis of the boom.

4,431,110

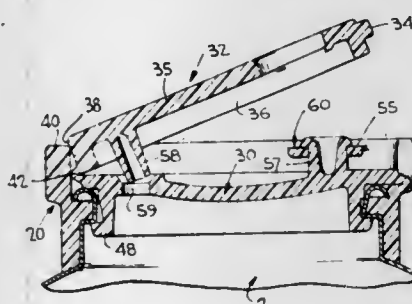
CHILD RESISTANT TAMPER INDICATING CLOSURE

Donald J. Roth, Westport, Conn., assignor to Continental Can Company, Inc., Stamford, Conn.

Filed Nov. 9, 1982, Ser. No. 440,397
 Int. Cl.³ B65D 55/02

U.S. Cl. 215—213

5 Claims



1. A closure assembly of the type including a container having a dispensing opening surrounded by an axially inwardly facing annular shoulder, a closure plug received in said container opening and having an enlargement defining an axially outwardly facing annular shoulder lockable behind said container shoulder, and a lever connected to said closure plug for applying a lifting force to a limited circumferential portion of said enlargement, the relationship between said shoulders being such that for most of the circumference of said container shoulder the lever is inoperative to remove said closure plug, and a circumferential portion of said container shoulder being relieved wherein when said limited circumferential portion of said enlargement is aligned with said relieved portion of said container shoulder said lever is operative to remove said closure plug, and said closure plug being rotatable within said dispensing opening relative to said container so as to be child-proof.

4,431,111

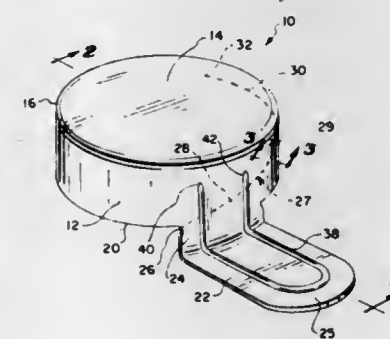
CLOSURE CAP FOR BEVERAGE CONTAINERS

Helmuth Prohaska, Neuhofen, Austria, assignor to Folienwalzwerk Bruder Teich Aktiengesellschaft, Obergrafendorf, Austria

Filed Apr. 12, 1982, Ser. No. 367,737
 Int. Cl.³ B65D 41/42

U.S. Cl. 215—256

22 Claims



1. A closure cap for a beverage bottle of the type which has

4,431,112

DRAWN AND IRONED CAN BODY AND FILLED DRAWN AND IRONED CAN FOR CONTAINING PRESSURIZED BEVERAGES

Hisakichi Yamaguchi, Ashiya, Japan, assignor to Daiwa Can Company, Limited, Tokyo, Japan

Division of Ser. No. 808,738, Jun. 22, 1977, Pat. No. 4,147,271.

This application Mar. 5, 1979, Ser. No. 17,126

Claims priority, application Japan, Aug. 20, 1976, 51-99296

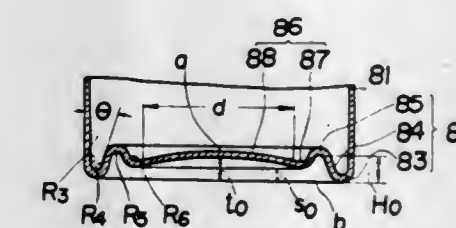
The portion of the term of this patent subsequent to Apr. 3, 1996,

has been disclaimed.

Int. Cl.³ B65D 8/04

U.S. Cl. 220—70

2 Claims



a beaded rim including an annular axial end and an annular groove defined by the beaded rim where it terminates on the exterior of the bottle neck, the beverage when contained in the bottle after the closure cap has been installed thereon being at some time subjected to physical effects likely to increase the interior pressure in the space above the beverage, and said closure cap comprising:

- A. a shallow substantially cylindrical inverted dish-like member having a cylindrical side wall, a substantially planar disc-shaped crown, the cylindrical side wall including a rounded annular juncture between the crown and the side wall forming an interior fillet, the dish-like member adapted to engage over the beaded rim of a bottle, the lower edge of the side wall being substantially circular and the side wall having a vertical dimension such that when said dish-like member is so engaged the side wall thereof may be crimped into engagement with the annular groove formed at the junction of said beaded rim with the bottle on its exterior,

- B. a rip tab having opposite side edges and a free end, said rip tab being connected to said lower edge along a small fraction of the circumference of said lower edge so that said rip tab is formed as an extension of said side wall, said rip tab having a length greater than the said vertical dimension of the side wall and extending generally radially outwardly of said side wall when said rip tab is in a horizontal plane, but adapted to be bent downwardly to lay close to the bottle neck when said closure cap is installed,

- C. a sealing member of gasket material disposed in said fillet on the interior of said dish-like member covering at least the upper portion of the interior of said side wall and extending radially inwardly of said crown at least sufficient to engage the annular axial end of the beaded rim of the bottle when installed,

- D. a rip line at least most of which is formed in said side wall of said dish-like member, said rip line having at least two parts, the first and beginning part commencing at a location comprising the meeting corner of one side edge of the rip tab and the lower edge of the side wall, continuing in a shallow rise from said lower edge and extending circumferentially of said side wall toward the rounded annular juncture in a direction to pass the second side edge of the rip tab, the second and terminating part being at a level spaced below the crown but at the upper part of said side wall and continuing circumferentially to a point on said level which is about half-way around the dish-like member from the location of the commencement of the rip line, said level, when the closure cap is installed, being at or slightly above the outermost diametrical extent of the said beaded rim,

- E. said dish-like member and rip tab being integrally formed by metal working including drawing from readily bendable sheet metal capable of work hardening to some extent whereby when installed said closure cap will be capable of containment of pressures which may be produced in said bottle above said beverage while enabling facile opening of said closure cap by pulling said rip tab in a generally circumferential movement to tear the side wall apart along said rip line.

1. A lightweight drawn and ironed can for containing a product capable of generating pressure equal to a first predetermined value (A) when heated at constant volume to a specified temperature,

said drawn and ironed can including a can body having a bottom closure wall made integral with a straight side wall and a top closure wall at the opening end of said can body, said bottom closure wall comprising an outer peripheral portion and a central portion surrounded by and integral with said peripheral portion, said outer peripheral portion including a first curved turning portion which is an extension of the lower end of the straight side wall, turns inwardly and upwardly and defines a standing base for said can body, an inclined wall which is an extension of said first curved turning portion and extends upwardly and nearly tangentially from said first curved turning portion toward the can longitudinal axis, and a second curved turning portion which is an extension of the top of said inclined wall,

said central portion comprising an annular, flat portion and a shallow central domed portion which is surrounded by and integral with said annular flat portion, said central portion being flexible and gradually distending under the influence of internal pressure increased gradually in said can thereby increasing the internal volume thereof, so that the maximum value of internal pressure that is generated when said can is filled with said product and said product reaches said specified temperature is limited to a magnitude of value (B) which is at least 0.3 kg/cm² less than said value (A),

the wall thickness of said central portion being such as to allow downward displacement of the center of said central portion by distension thereof under the influence of internal pressure so that said center is disposed in the vicinity of an end plane of said can whereby said can remains standing even at the maximum distension of said center,

the wall of said outer peripheral portion having a buckling resistant strength sufficient to withstand said pressure of value (B) but not sufficient to withstand said pressure of value (A), the wall thickness of said outer peripheral portion being thinner at least by 0.01 mm than the corresponding portion in a drawn and ironed can made of the same material, having the same internal volume, formed in the same shape and provided with a buckling resistant strength sufficient to withstand said pressure of value (A)

4,431,113

COVER ATTACHMENT DEVICE

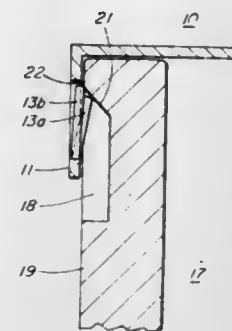
Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 7, 1982, Ser. No. 447,631

Int. Cl.³ B65D 41/16, 41/18

U.S. Cl. 220—306

4 Claims



1. An attachment means for removably attaching a cover means to a support means, said attachment means characterized by:

said cover means having a generally planar top surface and supporting at least two side pieces protruding, in the same direction, from said top surface at approximately right angles thereto;

latching means supported by said side pieces, at least one said latching means per side piece;

each said latching means comprising a plurality of prongs supported by said side piece at a location more remote from said top surface than the free ends of said prongs, and said free ends of said prongs biased out of the plane of said side piece; and

at least two recess means, one for each said latching means, are provided by said support means and situated so as to mate with said latching means when said cover is properly installed, and each said recess means having an internal surface at a predetermined angle, against which at least a portion of said respective latching means can bear so as to provide a latching engagement between each said latching means and its respective recess.

4,431,114

CONTAINER AND REMOVABLE COVER

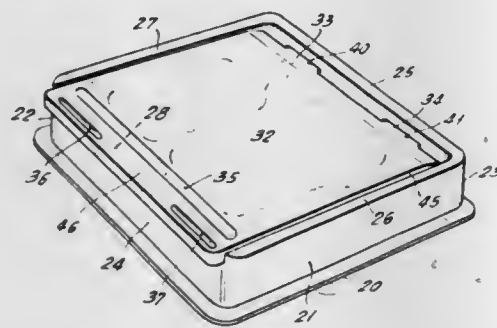
Arnold Kleinfeld, 12 Kanes La., Huntington Bay, N.Y. 11743

Filed Sep. 30, 1982, Ser. No. 431,016

Int. Cl.³ B65D 43/14, 51/04

U.S. Cl. 220—337

15 Claims



1. A container having side walls and a front wall, a back wall, a bottom wall and an open top, a ledge extending within the open top of the container below the top edge of each of the walls;

at least one slot at said back wall between said ledge and said back wall accessible above said ledge;

a cover member having an extending tang, said tang being insertable in said slot, said cover member being dimensioned to enter said top of said container and to rest on said ledge

and detent means at the front wall of the container for maintaining said cover in place when it is rotated from an open

position hinging upon said tang and slot to a closed position where the cover rests upon said ledge.

4,431,115

APPARATUS AND METHOD FOR SINGULATING SEEDLINGS

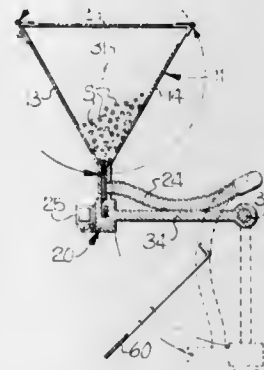
Larry F. Graham, and Roger P. Rohrbach, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Dec. 2, 1981, Ser. No. 326,471

Int. Cl.³ B65H 1/06

U.S. Cl. 221—63

11 Claims



1. Apparatus for singulating seedlings comprising:

elongate hopper means for containing bundled seedlings and having a length greater than the length of seedlings to be contained therewithin, said hopper means defining a seedling release opening parallel to the longitudinal axis of said hopper means and extending along portions of a side thereof and which has a length less than the length of seedlings to be contained within said hopper means,

vacuum nozzle means for engaging seedlings contained within said hopper means and for exerting on one engaged seedling a vacuum force perpendicular to the longitudinal axis of said hopper means and having a magnitude sufficient to separate the one seedling from other seedlings bundled therewith, and

means mounting said hopper means for rotation about said longitudinal axis and mounting said nozzle means and said hopper means for relative movement therebetween in a direction perpendicular to the longitudinal axis of said hopper means for intermittent tumbling of bundled seedlings within said hopper means and for singulation of successive separated ones of engaged seedlings.

4,431,116

APPARATUS FOR DISPENSING MERCHANDISE FROM A VENDING MACHINE AND VENDING MACHINE COMPRISING THE APPARATUS

Rolf Nehr Korn, Weender Strasse 63, 3400 Göttingen, Fed. Rep. of Germany

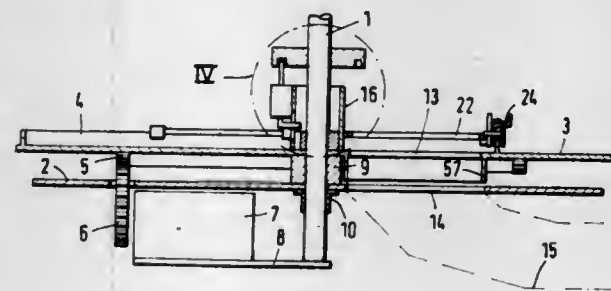
Filed Feb. 18, 1982, Ser. No. 349,962

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3107000

Int. Cl.³ B65G 59/06

U.S. Cl. 221—121

15 Claims



1. Apparatus for dispensing merchandise from a piles of

merchandise in which said piles of merchandise are arranged in a circle, which apparatus comprises, in combination, a centrally disposed, stationary axle, a disc rotatably mounted on said axle and adapted to extend under said piles of merchandise in said vending machine and having a track which is eccentric with respect to said axle,

an ejector assembly which is rotatably mounted on and extends radially from said axle over said disc and is carried by said disc and adapted to extend below said piles of merchandise and comprises an ejector, which is reciprocable along said ejector assembly under each of said piles of merchandise and operatively connected to said track, and coupling means for selectively coupling said ejector assembly to said axle so that said disc is rotatable relative to said ejector assembly, and for selectively coupling said ejector assembly to said disc so that said ejector assembly is adapted to be moved into alignment with a selected one of said piles of merchandise by a rotation of said disc,

said track being arranged to reciprocate said ejector along said ejector assembly in response to a rotation of said disc relative to said ejector assembly and having two peripheral portions which differ in height and are arranged to control the elevation of said ejector, one of said portions, being adapted to support said ejector so that it is movable under each of said piles of merchandise, the other of said portions being adapted to support the ejector so that it is engageable with the lowermost portion of each of said piles of merchandise, said track having two transitional portions connecting said two peripheral portions.

4,431,117

PROPELLANT STORAGE CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME

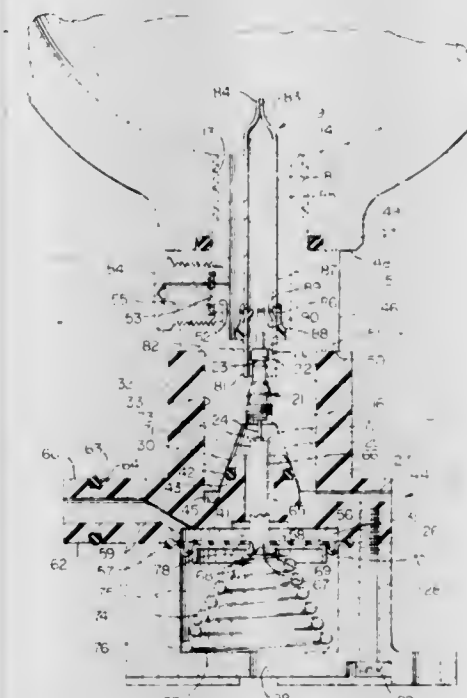
Francis S. Genbauffe, Irwin; Joseph J. Erdelsky, Jeannette, both of Pa., and Eugene C. Greenwood, Costa Mesa, Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 9, 1981, Ser. No. 328,942

Int. Cl.³ B67B 7/24; B65D 83/00; F16K 31/12

U.S. Cl. 222—3

40 Claims



1. In a propellant storage construction having a chamber for storing said propellant and a passage defining means leading to said chamber and containing a valve unit therein for opening and closing said passage defining means, said construction having a removable pressure regulator unit interconnected thereto and being operatively associated with said valve unit for operating said valve unit in relation to the pressure of said propellant having passed through said valve unit, the improvement wherein either said passage defining means or said pressure regulator unit defines a generally conical seat adjacent

said valve unit and on the side thereof opposite to said chamber and the other thereof has a generally conical nose-like member received in said seat to fluidly interconnect said pressure regulator unit to said passage means on said side of said valve unit.

4,431,118

ATTACK REPELLENT DEVICE

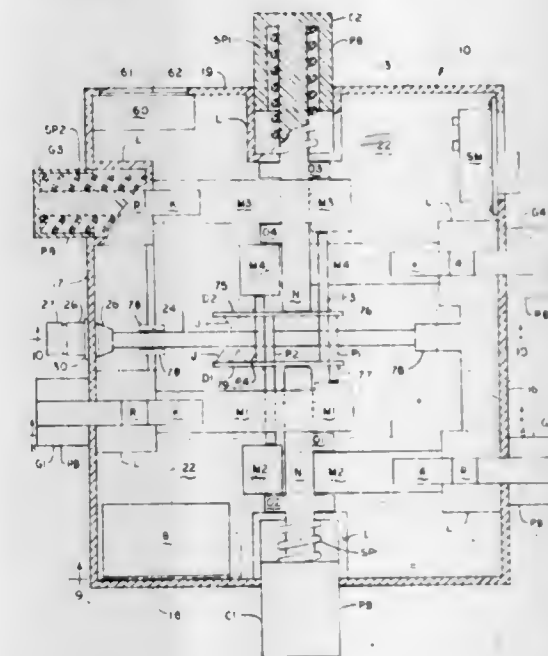
Bahram Namdari, P.O. Box 17366, Milwaukee, Wis. 53217

Filed Mar. 26, 1981, Ser. No. 248,031

Int. Cl.³ B67D 5/32; B67B 7/24

U.S. Cl. 222—39

9 Claims



1. An attack repelling device to be worn by a user and comprising:

a housing;

a fluid container mounted on said housing and containing fluid; said fluid container comprising a breakable portion which, when broken, enables fluid to flow from said container;

fluid release means on said housing and actuable by said user to break said portion of said fluid container;

and trigger means on said housing interengageably associated with said fluid release means and actuable by said user prior to actuation of said fluid release means to enable actuation of said fluid release means, said fluid release means comprises a pair of movable fluid release members, wherein said trigger means comprises a pair of movable trigger members interengageably related with each of said fluid release members, and wherein said pair of fluid release members are interengageably related with each other whereby said breakable portion of said fluid container cannot be broken until all trigger members and both fluid release members are actuated.

4,431,119

SELF-CLEANING, AEROSOL VALVE FOR SEPARATE FLUIDS

William R. Stody, 8659 Summerdale Rd., San Diego, Calif. 92126

Filed Nov. 19, 1981, Ser. No. 323,123

Int. Cl.³ B67D 5/56; B65D 83/00

U.S. Cl. 222—129

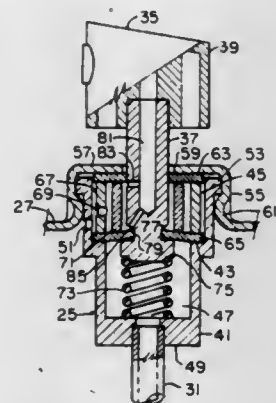
10 Claims

1. A self-cleaning cofluid dispensatory valve adapted to maintain separation of a first fluid from a second fluid prior to effluence, which comprises:

a housing having an upper open end first fluid transit chamber separated from a lower second fluid transit chamber;

a resilient annular sealing barrier disposed within said housing to maintain sealing separation of said chambers;

a unifier means affixed on said first fluid transit chamber to retain said valve in a definable unit;
 a resilient annular gasket adapted to provide sealing closure at said open end;
 a resiliently mounted dispensatory actuator means that includes an outwardly projecting, depressible, stem member that maintains slidable sealing engagement with said gasket and cooperative valvular engagement with said barrier;
 an annular valve seat means fitted loosely around said stem, and positioned engagingly between said gasket and said barrier;
 said valve seat being normally seated between said gasket and said barrier, and unseated by axial movement along said stem;
 said stem further maintaining cooperative sealing engagement with central portions of said barrier to urge said



seating and unseating and maintain sealing separation of said chambers;
 said stem also including a discharge passageway that is provided with at least one fluid port and at least one second fluid port;
 said ports each situated to allow first fluid discharge flow through said stem passageway when said actuator is in an intermediate operating position, whereas, said valve seat means is unseated;
 said first and second fluid ports further being situated to be within respective first and second fluid transit chambers to allow concurrent flow of first and second fluids through said stem passageway when said actuator is operated to its lowermost position, for cofluid dispensing;
 said valvular engagement being adapted to allow fluid flow communication between said second fluid port and said second fluid transit chamber when said actuator is operated for cofluid dispensing.

4,431,120

PACKAGING SYSTEM

Norman D. Burger, Culver City, Calif., assignor to Nicholas A. Mardesich, Inglewood, Calif., a part interest
 Division of Ser. No. 789,639, Apr. 28, 1977, abandoned. This application Oct. 2, 1980, Ser. No. 193,353
 Int. Cl.³ B65D 83/14

U.S. Cl. 222-192

21 Claims

1. An aerosol system comprising:
 - a container having a valve-controlled opening, a valve for dispensing the container contents, and a dip tube extending from said valve into said container contents; and
 - a composition in said container comprising:
 - (a) at least one hydrocarbon adsorbent solid and 0 to about 10% by weight of at least one water-encapsulating solid;
 - (b) at least one hydrocarbon propellant, substantially all of said hydrocarbon propellant being adsorbed by the hydrocarbon adsorbent solid, the ratio of said hydrocarbon propellant to said hydrocarbon adsorbent solid being in the range of about 6 to 1 to about 11 to 1; and
 - (c) a liquid composition present in sufficient amount to make said composition wet that includes 0 to about 25%

water, based on the weight of the container composition, the weight ratio of water to said water-encapsulating solid being in the range of about 3 to 1 to about 5 to 1.

4,431,121

GAME TOWING DEVICE

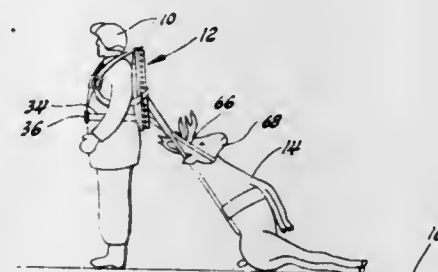
Ernest B. Bensette, 10621 Mt. Vernon Bldg. 5, Apt. 10, Taylor, Mich. 48180

Filed Apr. 13, 1983, Ser. No. 484,531

Int. Cl.³ B65D 51/04

U.S. Cl. 224-153

3 Claims



1. A game towing device comprising:
 - a frame;
 - shoulder strap means connected to the frame engageable about the user's body to support the frame on the users back;
 - an elongated carriage comprising a U-shaped member having an upper end and a lower end, and means for strapping a deer or other similar game on the lower end thereof;
 - means on the frame forming a pair of horizontally spaced supports adapted to be disposed in a generally vertical position;
 - means for pivotally connecting the upper end of the carriage to the frame supports at selected vertical positions thereon; and
 - stop means adjustably mounted on the supports for engaging the carriage to limit the lowermost pivotal position of the lower carriage end whereby the lower end of the carriage is spaced from the ground but pivotally movable with the deer as the user tows the deer strapped to the carriage.

4,431,122

GUN SUPPORT

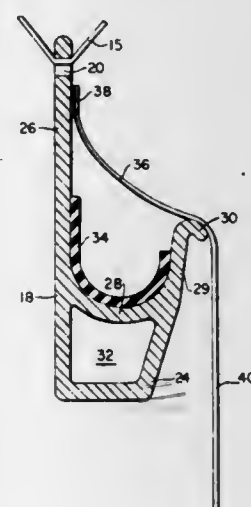
Frank Garmong, R.D. 5, 422 East, Kittanning, Pa. 16201

Filed May 12, 1983, Ser. No. 493,955

Int. Cl.³ F41C 29/00

U.S. Cl. 224-268

14 Claims



1. A gun support for carrying an elongated firearm, said support comprising:

an elongated body member;
 upwardly open elongated pocket means formed in said body member and extending longitudinally thereof and adapted to receive therein an elongated firearm for support of such elongated firearm adjacent the balance point thereof with said body extending longitudinally in opposite directions from such balance point;
 cushion means disposed in said pocket means and conforming therewith to cushion the support therein of such elongated firearm;
 adjustable, flexible support strap means engaging said body member intermediate the longitudinal ends thereof and above said pocket means whereby said body member and an elongated firearm carried thereby may be suspended from said strap means;
 and flexible cover means carried by said body member in a position to permit said cover means to overlie said pocket means to protect at least those portions of such elongated firearm located intermediate the longitudinal ends of said body member.

4,431,123

ARTICLE CARRIER FOR AUTOMOTIVE VEHICLES

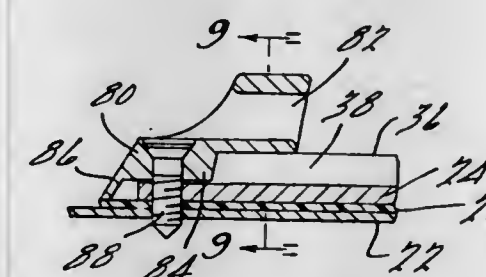
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 242,138, Mar. 9, 1981, abandoned, which is a continuation of Ser. No. 56,373, Jul. 10, 1979, abandoned, which is a division of Ser. No. 924,072, Jul. 7, 1978, Pat. No. 4,182,471, which is a division of Ser. No. 743,602, Nov. 22, 1976, Pat. No. 4,099,658, which is a continuation of Ser. No. 486,415, Jul. 8, 1974, abandoned. This application Apr. 18, 1983, Ser. No. 485,858

Int. Cl.³ B60R 9/04

U.S. Cl. 224-321

10 Claims



1. An article carrier for an automobile having a horizontally extending exterior body surface including a plurality of parallel slats fixedly secured on said horizontally extending exterior body surface and lying closely against said surface in a low profile configuration, said slats having a generally horizontal transverse cross-sectional width greater than its cross-sectional vertical height, each said slat having an upper article supporting surface, and end cap means including integral tie down means directly fixedly secured to said body surface and cooperating with said slats to restrain articles disposed on said slats out of contact with said body surface.

4,431,124

APPARATUS AND METHOD FOR GUIDING METAL STRIP

Thomas S. Campbell, and Robert E. Campbell, both of R.D. #1, Terri Dr., West Middlesex, Pa. 16159

Filed Jun. 4, 1982, Ser. No. 384,872

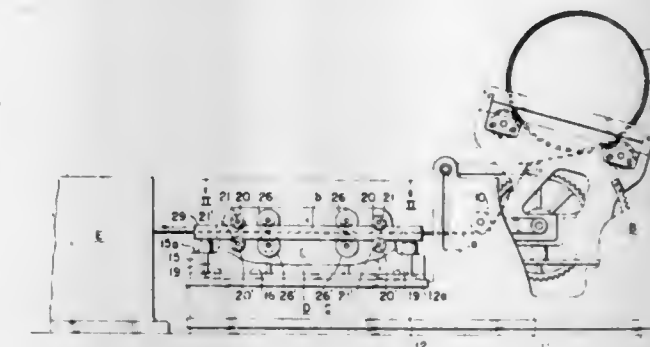
Int. Cl.³ B65H 25/26

U.S. Cl. 226-15

16 Claims

4. Aligning apparatus for strip material that is being positively advanced endwise from one station into a processing second station from a coil of the material at one station which comprises, pairs of strip material guiding rolls operatively positioned in a planar pass supporting and guiding relation with the strip material during its advancing movement and in

a transversely spaced-apart opposed relation with respect to each other for guiding the strip material in a substantially planar path between the two stations, a pair of longitudinally spaced-apart idler head and tail rollers operatively positioned along each side edge of the strip material, continuous alignment belts of flexible wear-resistant metal carried on said pairs of head and tail rollers and positioned in a side face to edge



engaging relation along opposite side edges of the strip material between the stations, said alignment belts being adapted to be moved by and to positively guide the strip material during its advancing movement, and upper and lower idler guide rollers positioned along each of said alignment belts for maintaining one side face thereof in engagement with an adjacent side edge of the strip material.

4,431,125

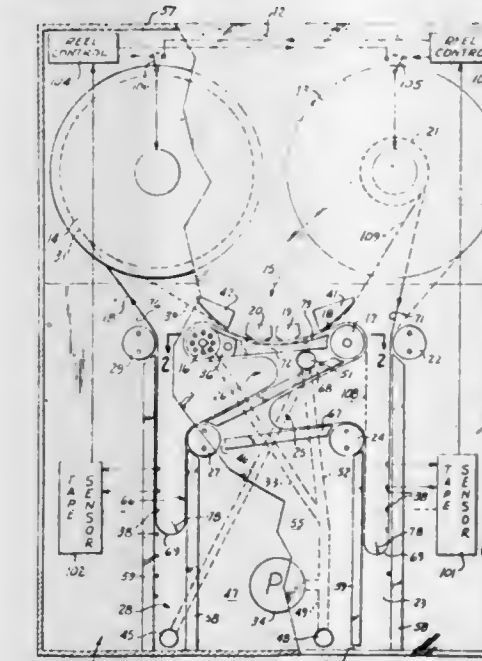
TAPE ADVANCING METHOD AND APPARATUS WITH FAST TAPE ADVANCE MODE

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 171,851, Jul. 24, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,854
 Int. Cl.³ B65H 17/32

U.S. Cl. 226-97

12 Claims



7. In apparatus for advancing tape having an information recording surface in an information transducing mode with the aid of a tape drive capstan, a first vacuum column at said tape drive capstan and a second vacuum column remote from said capstan, and for advancing tape past said head out of engagement with said head in a fast tape advance mode, the improvement comprising in combination:

means for applying said tape to said capstan and to said vacuum columns;
 means for advancing with said capstan said applied tape in said information transducing mode through said vacuum

columns and with said information recording surface in engagement with an information transducing head; means for selectively removing said tape from said first vacuum column and disengaging said tape from said capstan for said fast tape advance mode, while retaining said tape in said second vacuum column; means for generating a pressure gradient on a surface of said tape in a direction away from said head; means connected to said generating means for maintaining with said pressure gradient said tape out of engagement with said head while said tape is advanced through said second vacuum column in said fast tape advance mode; and means coupled to said second vacuum column for controlling said fast tape advance mode with said second vacuum column.

4,431,126

SPRING ACTUATED CAM RETRACTOR

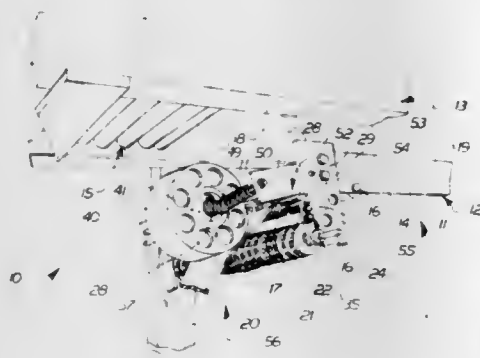
Robert F. Jones, Westfield Center, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 15, 1981, Ser. No. 273,539

Int. Cl.³ B29H 17/02; B65H 17/22

U.S. Cl. 226—121

7 Claims



1. An apparatus for presenting a feed stock of arbitrary length to an operator who manually pulls upon it, cuts off a predetermined portion and releases the remaining end portion of unused feed stock for retraction out of the zone of said operator's immediate subsequent operations, comprising,

- (a) a feeding surface upon which said feed stock rests, said feeding surface having a primary end and a discharge end, and upon which surface said feed stock is longitudinally translatable in either a forward or rearward direction,
- (b) cam roller means having
 - (i) a circumference corresponding to a maximum distance through which said remaining end is to be withdrawn, and
 - (ii) a flat chordal portion having a self-setting forward edge which rests against said feed stock supported near said primary end as said feed stock is pulled forward,
- (c) a cam shaft upon which said cam roller is rotatably disposed,
- (d) pivot arm means interconnected by said cam shaft, said pivot arm means being pivotably adjustable so as to provide a preselected spacing between said flat chordal portion and said feeding surface near its primary end, and,
- (e) torque exerting means to bias said cam roller when said feed stock is pulled forward, so that upon release of said remaining end portion it is retracted through a predetermined distance corresponding to a preselected portion of said cam roller's circumference.

4,431,127

APPARATUS FOR TEMPORARILY BINDING PAPER SHEETS

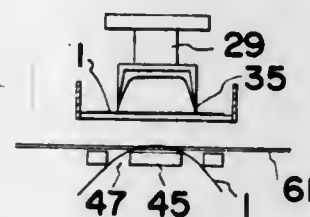
Kenji Watanabe, 6-9, 3-chome, Midorigaoka, Kita-ku, Kokura, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Sep. 25, 1981, Ser. No. 305,806

Int. Cl.³ B25C 5/08

U.S. Cl. 227—76

14 Claims



1. Apparatus for binding sheets of material using resilient, linear, fibroid needles, comprising a first member having a projection, a second member pivotally mounted on said first member, said second member having piercing means for piercing sheets to be bound, a third member pivotally mounted with said first and second members, said third member having an opening at a longitudinal end portion, said third member having supply means for supplying said needles to a position overlying said opening, and a fourth member pivotally mounted with said first, second and third members, said fourth member having slots for receiving said piercing means, said second member having a slit generally underlying said projection of said first member and juxtaposed to said piercing means such that said projection of said first member is operable to pass through said slit in said second member to pass to said piercing means, said piercing means generally overlying said opening in said third member and generally overlying said slots in said fourth member such that said piercing means is operable to engage a linear needle and push said needle through said opening in said third member and simultaneously temporarily transform said needle from a linear configuration to a generally inverted U-shaped configuration having a pair of temporarily bent leg portions and a central portion, said piercing means being operable to pierce said sheets located between said third and fourth members and to pass said leg portions of said needle through the pierced sheets into said slots in said fourth member, whereby upon withdrawal of said piercing means, said needle returns to its original linear configuration to thereby bind said sheets as said leg portions of said needle are disposed on one side of said sheets and said central portion of said needle is disposed on the opposite side of said sheets.

4,431,128

ONE PIECE BLANK FOR NESTING DOUBLE TRAY, COVERABLE, BURGER AND FRIES BOX

Mark A. Dirico, Marshfield, Mass., assignor to Hub Folding Box Co., Inc., Mansfield, Mass.

Filed Feb. 10, 1982, Ser. No. 347,521

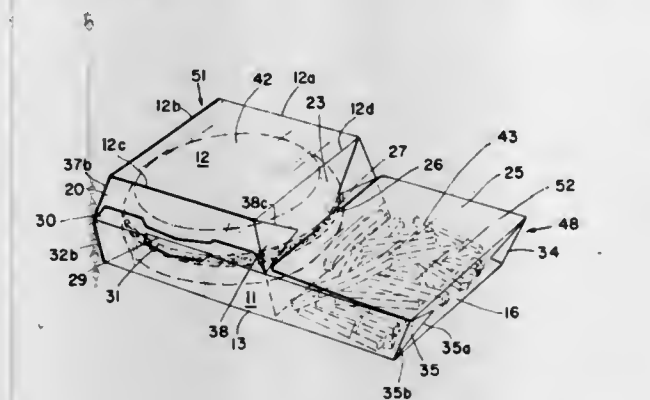
Int. Cl.³ B65D 5/22, 5/48

U.S. Cl. 229—33

6 Claims

6. A burger-fries box made from a one piece blank of cardboard or the like, said box comprising: an elongated main tray with fore and rear parts and four upstanding, outward tapering side walls and a cover tray extending laterally from the rear part of said main tray and hingedly connected thereto, along a longitudinal fold line to fold laterally along a longitudinal fold line, over the rear part of said main tray, said cover tray also having four, outward tapering, side walls depending downwardly therefrom when in cover position over said main tray; said main tray having an integral extension on the forward

side wall, of the fore part thereof, forming a hinged cover for said fore part;



and said cover tray having an integral extension on the forward side wall thereof forming a partition between the fore part and the rear part of said main tray.

4,431,129

FOLDING ICE-CREAM CARTON, CARTON BLANK, AND METHOD

Thomas W. Froom, Pittsford, N.Y., assignor to Rendoll Paper Corporation, Rochester, N.Y.

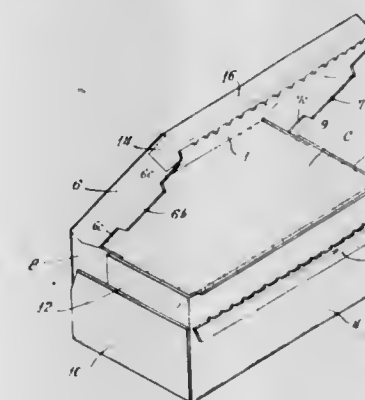
Division of Ser. No. 158,167, Jun. 10, 1980, Pat. No. 4,328,656, which is a division of Ser. No. 842,747, Oct. 17, 1977, Pat. No. 4,239,115. This application Dec. 17, 1981, Ser. No. 331,557

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.³ B65D 5/02, 5/54

U.S. Cl. 229—33

5 Claims



1. An integral blank for forming a top-opening carton having a front panel, a bottom panel, a rear panel, a cover panel, and a front cover sealing flap; said panels being articulated to one another in the order named, said front cover sealing flap being articulated to said cover panel, and said front cover sealing flap being adapted to overlie said front panel and to be sealed thereto to form said panels into a tube having a rectangular transverse cross section in opened-up position; said front and rear panels having laterally-projecting, inner end wall-forming flaps articulated thereto; said bottom panel having a laterally-projecting, outer end wall-forming flap articulated to a side thereof and adapted to be bent up to a position to overlie said inner end wall-forming flaps; said cover panel having a laterally-extending side cover flap articulated to a side edge thereof and adapted to overlie the inner end wall-forming flaps when the carton is erected; and the front cover flap having an extension articulated to a side edge thereof by a score line, which extension is adapted to be adhered to said side cover flap to form, with said cover panel, a cover hinged to said rear panel and adapted to overlie the side and front panels of the assembled carton; the improvement in which said extension is attached to the end of said front cover flap adjacent said side-cover flap by a vertical score line offset sufficiently to permit the said extension to overlie the side-cover flap in the erected carton and to be adhered thereto whereby, in the assembled

carton, the side cover flap lies flat against the outermost inner end wall-forming flap surfaces said last-named flap.

4,431,130

NEEDLEWORK SCRAP RECEPTACLE

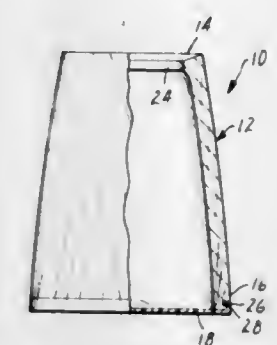
Wilfred E. Stageberg, 2215 Falcon Ave., St. Paul, Minn. 55119

Filed Sep. 29, 1982, Ser. No. 428,465

Int. Cl.³ B65D 91/00

U.S. Cl. 232—43.1

4 Claims



1. A receptacle for collecting needlework scrap, said receptacle comprising a generally tubular body member having a top end, a bottom end, and a through opening between said ends adapted to receive needlework debris inserted through the opening at said top end; and a base having an outer surface to rest on a planar surface, and an opposite top surface adapted to support the bottom end of said body member and to extend across said opening at said bottom end to retain needlework scrap in said opening; said base and the bottom end of said tubular body including means in releasable engagement for normally retaining said base across said bottom end and for affording separation of said base and body to facilitate removal of debris from within said opening.

4,431,131

HEATING ARRANGEMENTS AND CONTROL SYSTEMS THEREFOR

Malcolm B. McInnes, Blackburn, Australia, assignor to Pyrox Limited, Victoria, Australia

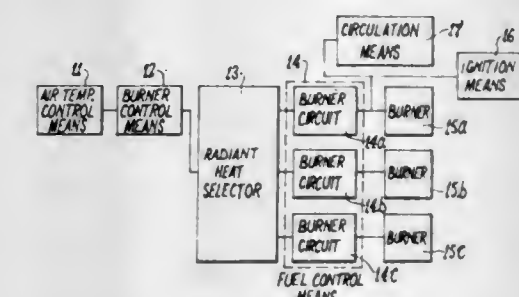
Filed Jul. 14, 1981, Ser. No. 283,197

Claims priority, application Australia, Jul. 15, 1980, PE4537

Int. Cl.³ F23Q 1/00

U.S. Cl. 236—11

25 Claims



fuel control means, connected to said burner control means, for controlling the fuel supply of the heating arrangement under the control of said burner control means; and

limiting means for limiting the radiant heat output of the heating arrangement by constraining the operation of said control means while simultaneously allowing some said heat output to heat the space to said target air temperature, said limiting means comprising a radiant heat selector connected to said fuel control means and operable to limit the operation of said fuel control means under the control of said burner control means so that the heat output of the heating arrangement enables said target air temperature to be approached but the radiant heat output of the heating arrangement is limited to a predetermined level.

4,431,132

CONTROL VALVE SYSTEMS FOR GAS WATER HEATERS

Michael J. Edmundson, Nelson; Christopher Halstead, Accrington, and Leslie Hammond, Burnley, all of England, assignors to Thorn Gas Appliances Limited, London, England

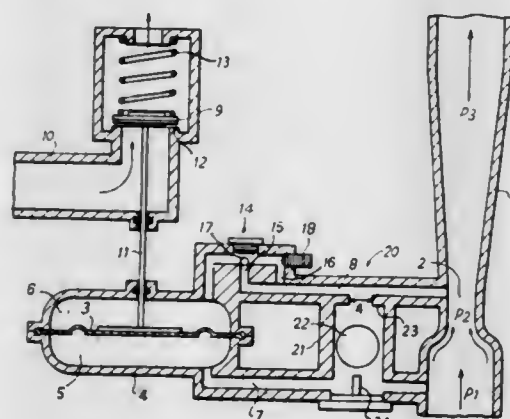
Filed Jun. 11, 1981, Ser. No. 272,642

Claims priority, application United Kingdom, Jun. 13, 1980, 8019406

Int. Cl.³ F22B 35/00; F28F 27/00

U.S. Cl. 236—25 A

3 Claims



1. A control valve system for a gas-fired, instantaneous water heater, including a pressure sensor responsive to the rate at which water is conveyed by a ducting means to a heat exchanger incorporating a gas burner, a control valve, operated by said pressure sensor, for controlling the supply of gas to the burner, a connecting system coupling said pressure sensor to the ducting means and a control arrangement to inhibit said pressure sensor from sensing the water flow until the flow exceeds a rate sufficient to cause the pressure sensor to open said control valve to an extent sufficient to permit a reliable flow of ignitable amounts of gas to said burner, and wherein said connecting system includes first and second passages connecting said pressure sensor to points upstream and downstream respectively of a flow restriction formed in said ducting means, and wherein said control arrangement includes a further passage, linking said first and second passages, and containing a moveable element that is capable of closing said further passage.

4,431,133

THERMOSTAT MOUNTING ASSEMBLY

Walter H. Roberson, Sr., 808 Second St., Altamonte Springs, Fla. 32701

Filed Aug. 12, 1981, Ser. No. 292,301

Int. Cl.³ F01P 7/02

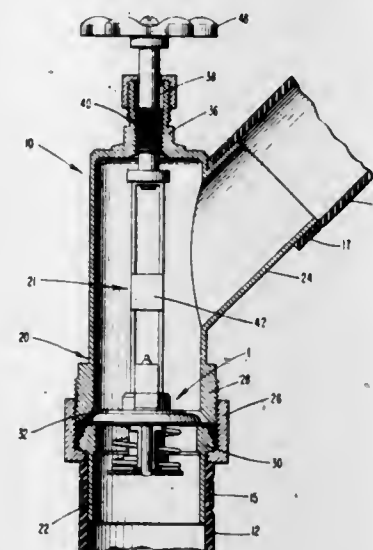
U.S. Cl. 236—345

9 Claims

1. An apparatus for establishing a continuous flow of a coolant liquid to bypass a standard thermostat located between an engine block and a radiator wherein the thermostat includes a

thermostatic element, a valve element, a valve seat and a spring acting as a biasing means to force the valve element against the valve seat, said apparatus comprising:

- a housing having only a fluid inlet port and a fluid outlet port with said inlet and outlet ports having a structural configuration for coupling to a radiator hose,
- support means located between the inlet and outlet ports in said housing for rigidly fixing the thermostat, within said housing, and
- manually operable means connected to said housing to effect a continuous flow of the coolant liquid bypassing the thermostat between the engine block and the radiator,



- said manually operable means includes direct engagement means to force the movable valve element of the standard thermostat from a closed position in which the valve element fails to open on normal operation to an open position which allows a continuous flow of coolant liquid to pass,
- the manually operable means includes handle means mounted on one external end of a rigid shaft member extending through the housing with the other end of the shaft member being inside the housing,
- said engagement means includes brace means mounted to the inside end of the shaft member and having a structural configuration to contact said movable valve element.

4,431,134

DIGITAL THERMOSTAT WITH PROTECTION AGAINST POWER INTERRUPTION

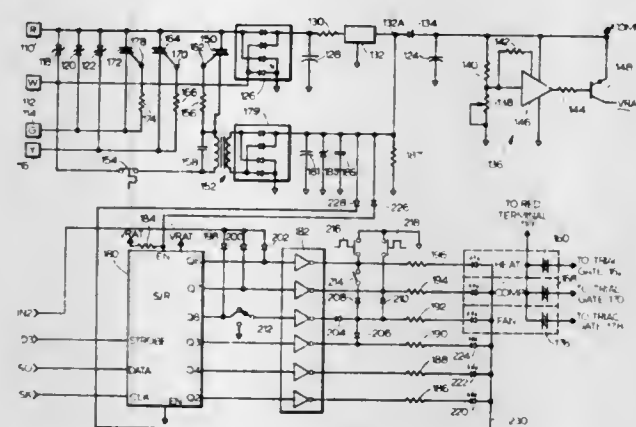
Donald B. Hendricks, Bloomington, and Austin R. Larson, Eagan, both of Minn., assignors to MicroComm Corporation, Minneapolis, Minn.

Filed Nov. 8, 1982, Ser. No. 439,776

Int. Cl.³ G11C 8/00; G06G 7/16

U.S. Cl. 236—46 R

11 Claims



1. A temperature control apparatus comprising: terminal means for connection to a source of AC power;

rectifier means connected to the terminal means for rectifying the AC power to produce a DC charging current; a voltage supply terminal;

voltage supply capacitor means for providing a DC supply voltage at the voltage supply terminal, the voltage supply capacitor means being charged by the DC charging current;

read/write storage means connected to the voltage supply terminal and powered solely by the DC supply voltage for storing time and temperature data, the read/write storage means being capable of retaining the time and temperature data so long as the DC supply voltage at the voltage supply terminal exceeds a first predetermined value;

temperature sensing means for sensing temperature; control circuit means powered solely by the DC supply voltage for providing temperature control signals as a function of the sensed temperature and the stored time and temperature data;

switching means connected between the voltage supply terminal and the control circuit means for supplying the DC supply voltage to the control circuit means when in a first state and for preventing the control circuit means from receiving the DC supply voltage when in a second state, the switching means having the first and second states as a function of a power control signal; and

voltage sensing means for sensing the DC supply voltage of the voltage supply terminal and providing the power control signal as a function of the sensed DC supply voltage, the power control signal causing the switching means to have the second state when the DC supply voltage is less than a second, higher predetermined value.

4,431,135

AIR NOZZLE AND METHOD

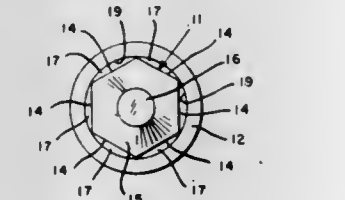
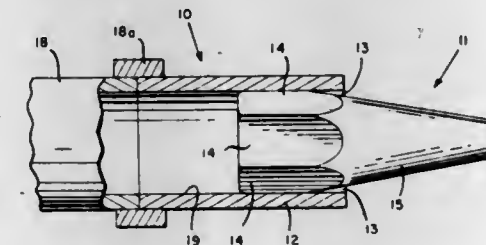
Richard G. Kaye, 154 Sunrise Hill Rd., Norwalk, Conn. 06851

Filed Nov. 25, 1981, Ser. No. 324,795

Int. Cl.³ B05B 7/06

U.S. Cl. 239—8

6 Claims



5. A method for modifying a round-tubular compressed gas conduit to reduce the noise of compressed gas flowing from the exit orifice thereof, to cause said gas to entrain a substantial volume of surrounding air to form a gas-air mixture and to cause said mixture to converge as a concentrated air flow, which comprises providing a unitary solid nozzle plug element, a portion of said plug element having a polygonal cross-section, said portion having a multiplicity of continuous longitudinal uniform flat surfaces along the outer surface thereof and having a tapered tip onto which said surface open, and press-fitting said plug element into tight frictional engagement within the exit orifice of the compressed gas conduit, so that said longitudinal flat surfaces form between themselves and the inner surface of said conduit a multiplicity of small continuous longitudinal gas passages, and at least a portion of the tapered tip of said plug element extends beyond the exit orifice of said

4,431,136

SLIT NOZZLE AND FAST-ACTING SHUTOFF VALVE

Karl Janner, Erlangen, and Klaus Gregorius, Neunkirchen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

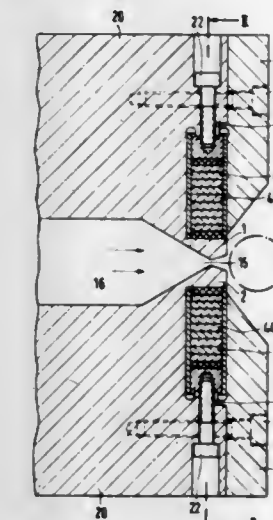
Filed Mar. 12, 1981, Ser. No. 242,920

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010178

Int. Cl.³ B01D 59/00

U.S. Cl. 239—102

4 Claims



1. A slit nozzle having a controllable fast-acting shut-off valve for producing pulse-like gas flows for selectively exciting gaseous mixtures with pulse-like laser radiation, the nozzle being formed of a nozzle body having an upper and a lower nozzle part defining a nozzle slit therebetween having an opening for a gas flow openable and closable in pulse-like manner, comprising means for mounting the nozzle parts, and at least one adjusting element for moving the nozzle parts relative to one another in a direction opposing an elastic restoring force of said mounting means and varying the width of said nozzle slit between zero and a nominal size, the upper nozzle part having a space thereabove, and the lower nozzle part having a space therebelow, said adjusting element being disposed in one of said spaces.

4,431,137

SOURCES FOR SPRAYING LIQUID METALS

Philip D. Prewett, Abingdon; Leonard Gowland, Grove, and Keith L. Aitken, Kennington, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 177,451, Aug. 12, 1980, abandoned. This application Nov. 3, 1982, Ser. No. 438,912

Claims priority, application United Kingdom, Aug. 23, 1979, 7929361

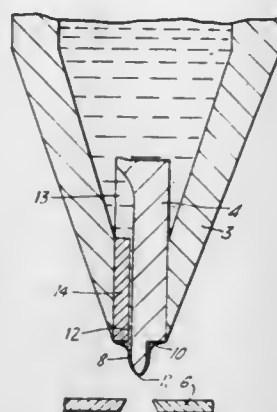
Int. Cl.³ B05B 5/00

U.S. Cl. 239—690

16 Claims

1. A source for producing a spray of drops of a liquid material under the action of an electric field, comprising a solid needle having an emitting point made of a material which is wetted by the liquid material and which has at most a low solubility in the liquid material, the emitting point having a vertex angle of between thirty and forty degrees, an annular structure surrounding the needle and from which the emitting point projects by a distance of between one and three millimeters, an extraction electrode, and supply and control means for supplying the liquid material to the emitting point at a controlled rate such that when an electric field is applied to the

emitting point of a magnitude such as to disrupt the liquid material at the emitting point a spray of drops of the liquid



material is produced, said supply and control means including a flow control device in the region where the needle emerges from the annular structure.

4,431,138

METHOD AND APPARATUS FOR WINDING YARN
Herbert Schiminski, Huckschagen, and Herbert Turk, Remscheid, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

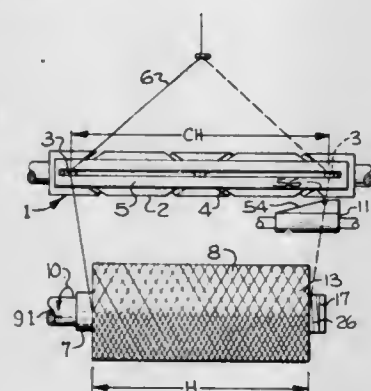
Filed Mar. 31, 1982, Ser. No. 363,847

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113751; Jun. 6, 1981, 3122705; Aug. 5, 1981, 3130975

Int. Cl.³ B65H 54/06, 67/04

U.S. Cl. 242—18 A

24 Claims



1. A method for continuously winding a high speed running yarn or the like onto bobbins serially delivered to a winding position, and without yarn stoppage or loss of yarn between bobbin changes, and comprising the steps of, winding the running yarn onto a rotating first bobbin positioned at the winding position, and including traversing the yarn at a location upstream of the winding position to thereby form a cross-wound package on the bobbin, laterally separating the rotating first bobbin with respect to the traversing location upon the bobbin becoming full, and such that the length of the running yarn between the traversing location and the full bobbin increases, and the traverse stroke of the yarn on the full bobbin decreases, and while continuing to wind the yarn onto the rotating full bobbin, moving an empty rotating second bobbin and an associated yarn catching notch to the running yarn path of travel between the traversing location and the laterally separated full bobbin, and such that the yarn catching notch is positioned axially beyond the yarn traverse stroke which is defined along such empty second bobbin, axially displacing the laterally separated rotating full bobbin so that an end portion thereof is laterally aligned with the plane of the yarn catching notch, and while continuing to wind the yarn thereon, terminating the traverse of the running yarn and moving the

yarn into the plane of the yarn catching notch, and so that the yarn is wound on the end portion of the rotating full bobbin and until it is caught by the notch, and with the yarn then being wound on the rotating empty second bobbin.

4,431,139

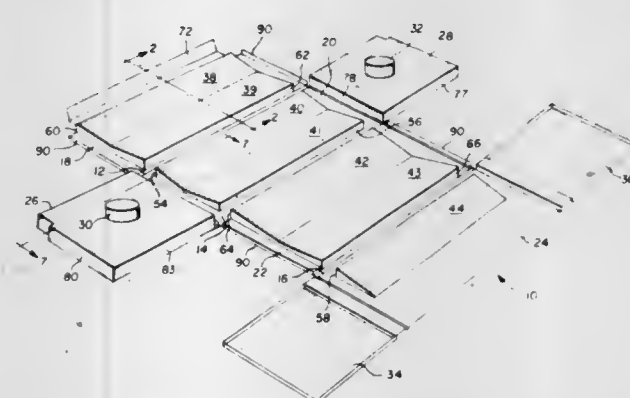
CONTAINER FOR LIGHT-SENSITIVE MATERIAL
Clive D. Barnsbee, Webster, and Marvin G. Decker, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,755

Int. Cl.³ B65H 19/02

U.S. Cl. 242—55.53

4 Claims



1. A container for light-sensitive material, said container comprising: first, second, third, and fourth rectangular panels of opaque material hingedly connected together in series along mutually parallel edges of said panels so as to be foldable at said edges to form a generally rectangular tube with four sides and two open ends; a cap associated with each end of said tube and adapted to close the container in a light-tight manner; and interlocking structure associated with said hingedly connected panel edges, said interlocking structure including (a) a first ridge having a surface on, and normal to, one panel adjacent each hinge connection, said ridge surface being spaced from the associated hinge connection by a predetermined distance, and (b) a second ridge having a surface on the other panel adjacent each hinge connection, said surface of the second ridge being substantially adjacent to its associated hinge connection and extending generally normal to its associated panel a distance substantially equal to said predetermined distance, so that when the hinge is folded such that the panels are generally normal to each other, the ridges increase the strength of the container and form a tortuous light path from the hinge to the interior of said container to inhibit any light which may leak through the hinge connection from reaching the material in the container.

4,431,140

CONTINUOUS PRESSURE ROLL WINDER

Richard S. Tetro, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Filed Nov. 27, 1981, Ser. No. 325,444

Int. Cl.³ B65H 19/20, 75/34

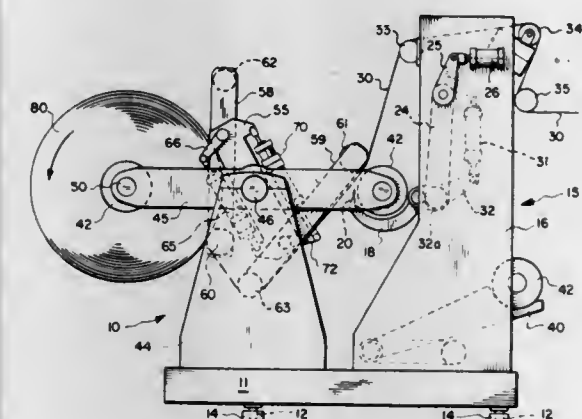
U.S. Cl. 242—56 A

5 Claims

3. In a turret-type winder for continuously winding a web of material, including stands supporting a transverse main shaft, a pair of turret arms on the main shaft having spindles at their remote ends for receiving transversely oriented cores thereon, onto which a web of sheet material is to be continuously wound, each of said turret arms including means defining secondary arm support plates associated therewith, each carry-

ing a pair of pivotally mounted secondary arms with their remote ends extending on either side of said support plates, the improvement comprising:

a primary web guiding and pressure roll carried on one of the remote ends of each of said secondary arms, each of said primary pressure rolls being movable into engagement with one of said cores and the winding rolls formed on said cores while maintaining a relative position on said winding roll throughout its minimum to maximum diameter with the lead-in web in a partially wrapped



condition on said pressure roll as said turret is indexed to carry the winding roll from a cut-off station through approximately 180° to an unloading station, a pair of auxiliary rolls, one each supported on the opposite ends of said secondary arms remote from said pressure rolls, and means interconnecting said primary and auxiliary rolls to be rotated together at the same speed by the engagement of one of said pressure rolls with a building roll on said turret arms.

4,431,141

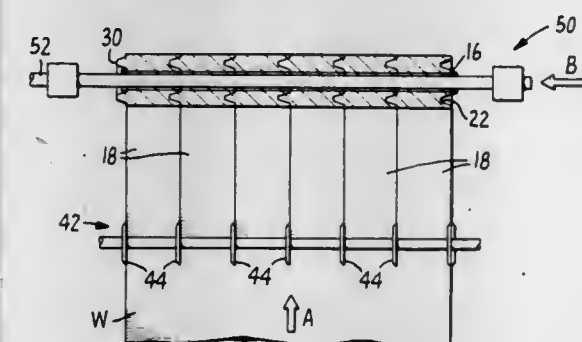
METHOD OF MAKING A ROLL PAPER PRODUCT
Rudolph W. Schutz, Walnut Creek, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 10, 1982, Ser. No. 387,293

Int. Cl.³ B65H 35/02, 17/02

U.S. Cl. 242—56.2

4 Claims



1. A method of making a plurality of roll paper products having a circular groove at one end and an aligned circular boss at the other end, said roll paper products being disposed end to end with the grooves of said roll paper products accommodating in nesting fashion the bosses of adjacent roll paper products, comprising the steps of:

transporting a parent paper web past a plurality of knives fixed in a cross machine direction relative to the parent web to cut the parent web into a plurality of elongated paper webs of substantially uniform width; transporting each elongated paper web having a substantially uniform width from a first location to a second location along a predetermined path of movement; at said second location, disposing a plurality of cores of predetermined length about a support shaft whereby said

cores are aligned end to end in a direction generally perpendicular to said path of movement; at said second location winding each said elongated paper web around a core by applying rotational forces to said support shaft to rotate said support shaft and said aligned cores; moving said support shaft and said aligned cores endwise in a first direction to provide relative axial displacement between each said elongated paper web and the core about which it is being wound laterally relative to said predetermined path of movement and laterally relative to said fixed knives as the elongated paper web is wound about the core to simultaneously form said groove and boss with the displaced elongated paper web convolutions; subsequently moving said support shaft and said aligned cores endwise in a reverse direction to provide relative axial displacement between each said elongated paper web and the core about which it is being wound after formation of said groove and boss; terminating relative axial displacement between each said elongated paper web and the core about which it is being wound by halting endwise movement of said support shaft and said aligned cores; continuing winding of each said elongated paper web about the core about which it is being wound by applying rotational forces to said support shaft to rotate said support shaft and said aligned cores; and terminating winding of each said elongated paper web on the core about which it is wound by ceasing the application of rotational forces to said support shaft.

4,431,142

WINDER HAVING WINDER SHAFT EXTRACTION DEVICE

Hiroshi Kataoka, 1-5-8 Asahi, Iyo-Mishima-shi, Ehime-ken, Japan

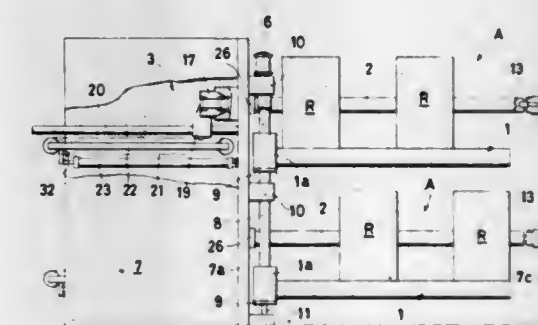
Filed Feb. 23, 1982, Ser. No. 351,531

Claims priority, application Japan, Feb. 24, 1981, 56-24994

Int. Cl.³ B65H 19/30, 25/22, 35/02

U.S. Cl. 242—68.1

2 Claims



1. A winder comprising: a frame plate; at least one roll receiver supported at one end by said frame plate of the winder in said a manner so as to be movable vertically and rotatable horizontally about a vertical axis and adapted to support at least one sheet roll from underneath at a sheet winding position, said roll receiver being capable of moving from a standby position under a winding shaft to a roll receiving position and from said sheet winding position to a position where the roll is removed, and at least one winding shaft extraction device for extracting and restoring a winding shaft from and to its operating position by moving said winding shaft in its axial direction, said roll receiver being movable upwardly from the standby position to the roll receiving position and the sheet roll being translatable from the sheet winding position to the position where the roll is removed by horizon-

tally rotating said roll receiver after the winding shaft is extracted from the roll by means of said shaft extraction device wherein operations of removing the roll and fitting a new core over the winding shaft can be carried out simultaneously.

4,431,143

SLIDING DRAG SYSTEM

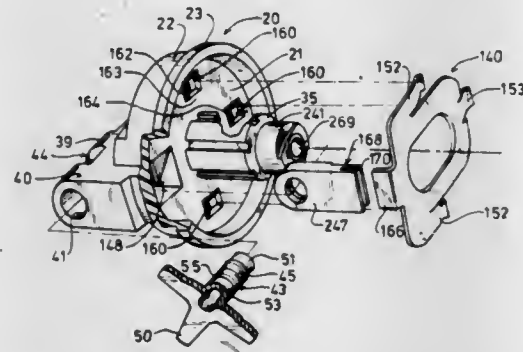
Elvis W. Moss, and John J. Mack, both of Tulsa, Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Nov. 4, 1982, Ser. No. 439,366

Int. Cl.³ A01K 89/02

U.S. Cl. 242—84.5 A

10 Claims



1. In a spinning reel having a body portion with a deck plate, a forwardly extending hub associated with the body portion and a line-carrying spool, rotatable about an axis lengthwise of the reel, a drag mechanism comprising:
 - a clutch ring including a cutout within which said hub is received;
 - first means for moving said clutch ring in a line transversely to the rotational axis of the spool;
 - second means for progressively guiding said clutch ring lengthwise in a forward direction when the guide ring is moved by the first means in one direction, and in a rearward direction when the clutch ring is moved by the first means oppositely to the one direction;
 - said clutch ring exerting a drag on the spool, said drag being variable depending upon the longitudinal position of said clutch ring as determined by said first and second means.

4,431,144

WATER SKI ROPE STORAGE ACCESSORY

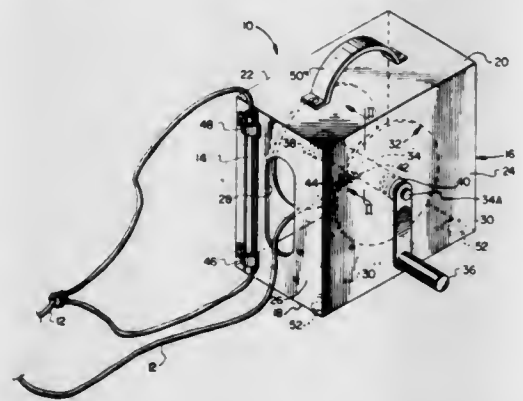
Christopher F. Foster, 3648 Foxboro La., Carrollton, Tex. 75007

Filed Jun. 10, 1982, Ser. No. 386,985

Int. Cl.³ B65H 75/40, 75/28

U.S. Cl. 242—85

3 Claims



1. A wind-up accessory for playing out, retrieving and storing a water ski rope and handle bar assembly comprising, in combination:
 - a box enclosure having a bottom panel, a top panel, left and right side panels and a front panel secured between said top and bottom panels, said front panel having a slot

opening and said bottom panel having perforations defining water drainage openings;

a reel including a spool rotatably supported in said box enclosure between said left and right side panels;

a crank handle coupled to said reel;

an eye bar attached to said spool for coupling engagement with a quick connect snap fastener attached to the end of a water ski rope; and,

first and second spring clasps secured to said front panel adjacent said slot opening, said spring clasp being spaced along one edge of said front panel for receiving and compressively engaging the handle bar of a ski rope assembly.

4,431,145

EMERGENCY LOCKING DEVICE FOR SAFETY BELT RETRACTOR

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikisha, Osaka, Japan

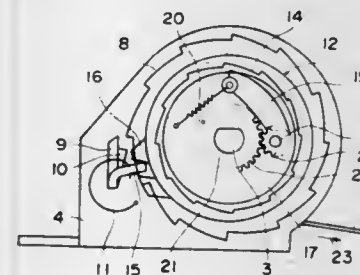
Filed Jul. 22, 1982, Ser. No. 400,748

Claims priority, application Japan, Aug. 11, 1981, 56-126406

Int. Cl.³ A62B 35/00; B65H 75/48; F16D 63/00

U.S. Cl. 242—107.4 B

5 Claims



1. An emergency locking device equipped with a safety belt retractor wherein a reel (2) for winding a safety belt (1) thereon is rotatably mounted on a fixed reel support (4) with a shaft (3) fixed to the reel (2) being journaled on the support (4), and the reel (2) is biased to rotate in a belt rewinding direction by a return spring (5), comprising:
 - a ratchet wheel (8) fixed to the reel (2);
 - a locking pawl (9) mounted on the reel support (4) so as to be movable between engaging and disengaging positions with respect to the ratchet wheel (8);
 - a releasing spring (11) urging the locking pawl (9) toward a disengaging position from the ratchet wheel (8);
 - a drum-shaped clutching wheel (12) rotatably mounted on the shaft (3), said clutching wheel (12) being provided with inner ratchet teeth (14) on its inner peripheral surface and engaging projections (16) on its outer peripheral surface, said engaging projections (16) being engaged with said locking pawl (9);
 - a locking initiating member (21) rotatably mounted on said shaft (3), said locking initiating member (21) being provided with a gear (21a) formed on its outer peripheral surface;
 - an inertia plate (17) rotatably mounted on said shaft (3);
 - a locking transmission pawl (19) pivotally mounted about an axis (18) on said inertia plate (17) and having a gear (22) engaged with the outer peripheral surface of said locking initiating member (21) so as to be movable between engaging and disengaging positions with respect to one of said inner ratchet teeth (14) according to the rotation of said inertia plate (17) with respect to said shaft (3); and
 - a biasing spring (20) urging said locking transmission pawl (19) to be disengaged from said inner ratchet teeth (14).

4,431,146

TAPE ENTRAINMENT DEVICE WITH A MOVABLE ENTRAINMENT ROLLER

Jean P. Merle, Clamart, France, assignor to Enertec, Montrouge, France

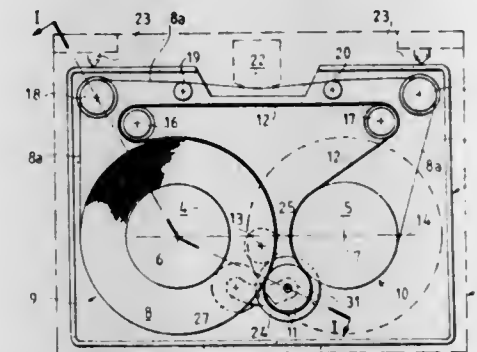
Filed Dec. 3, 1981, Ser. No. 327,298

Claims priority, application France, Dec. 12, 1980, 80 26362

Int. Cl.³ G11B 5/008, 15/26, 23/06

U.S. Cl. 242—192

5 Claims



1. In a magnetic recorder of the type including: a support; two spools mounted to rotate in the same plane on the support about two respective parallel axes; a tape encircling at least one of the spools, the tape and the two spools on which the tape can be wound forming two reels connected by an accessible portion of tape; a tape drive roller rotating in the same plane as the reels and tangentially to the peripheries thereof; and an endless belt, which is taut and able to withstand some stretching, passing between the roller and the reels and engaging an arc of the periphery of each of these reels in order to ensure tensioning of the accessible portion of tape;
 - means for driving said tape comprising:
 - a rotatably driven disc rigidly attached to and coaxial with said tape drive roller, said disc being tangential to and driven along its periphery by a drive disc, said drive disc having an axis of rotation situated on the same side of a line joining said spool axes as is said tape drive roller, said driven disc being arranged such that during winding off of said tape from one reel to the other said driven disc is forced mechanically to shift its position relative to the support along a circular path, whose axis is defined by the axis of said drive disc, said mechanical shifting of said driven disc being constrained by the movement of the periphery of the driven disc on said drive disc and by the force applied by the belt to said tape drive roller in the direction of the reels so as to cause said tape drive roller to follow a path approximating said circular path and to thereby frictionally drive the tape by means of said belt against which said tape drive roller bears.

4,431,147

STEERABLE ARTILLERY PROJECTILE

Isadore R. Paley, Rockaway, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 24, 1981, Ser. No. 334,096

Int. Cl.³ F42B 13/32

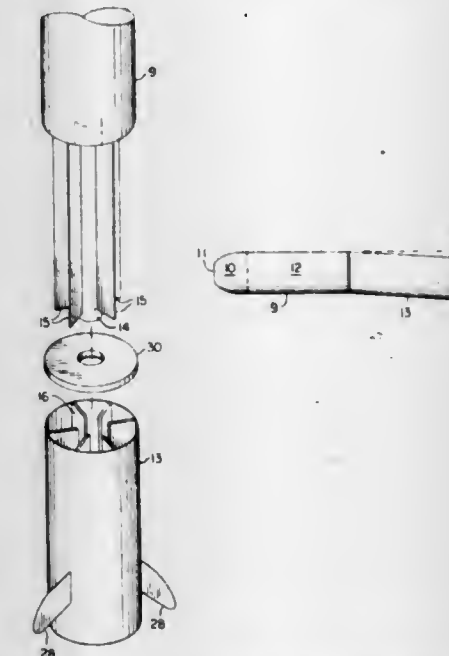
U.S. Cl. 244—3.3

6 Claims

5. A steerable artillery projectile utilizing an electro-optical circuit mounted in the front end of the projectile to home on a target by moving the projectile rear end which comprises:
 - a cylindrical piece fitting over an extension protruding longitudinally from the rear of the projectile front end, said extension having a first set of vanes extending radially outward from the longitudinal extension, said cylindrical piece being displaceably coupled to the projectile front end, said cylindrical piece having a second set of vanes extending radially inward toward the longitudinal axis thereof and when said cylindrical piece is displaceably coupled to the rear of said projectile front end the first and second sets of vanes mesh together to be close to but not touching each other, ones of said first set of vanes touching ones of said second set of

vanes and forming a closed chamber when the longitudinal axis of said projectile front end is not coaxial with the longitudinal axis of said cylindrical piece, and

a plurality of pressure means with at least one pressure means being located in each of said chambers and said pressure means may be actuated by said electro-optical circuit, the



4,431,148

SIMPLIFIED ANTI-RESONANT SUSPENSION DEVICE FOR A HELICOPTER

Rene L. Mouille, Ville "La Pinede", Le Coton Rouge, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

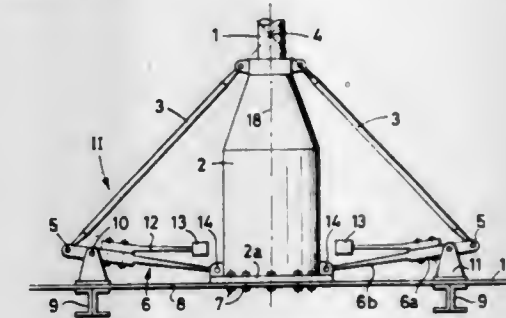
Filed Jan. 28, 1982, Ser. No. 343,511

Claims priority, application France, Feb. 9, 1981, 80 02472

Int. Cl.³ B64C 27/51

U.S. Cl. 244—17.27

18 Claims



15. Suspension system for the transmission box of a helicopter which includes a plate affixed to the bottom of the box in a plane perpendicular to the rotor axis, the box being connected to the helicopter frame by a minimum of three support pieces, each fixed on the box at its upper end, the lower end being connected to the outside end of a radial arm, itself connected to the collar of the box; each radial arm is connected to a strong point of the frame near this outside end, and a swiveling mass is mounted at one end of a support, the other end of which is connected with this radial arm; in this system, the plate is a membrane forming part of the helicopter structure, having features which make it subject to deformations by flexing through forces applied perpendicularly to its plane

and/or pivoting movements imparted to its center by the transmission box, but maintaining the membrane rigidity against traction/compression and shearing caused by stress and forces acting within its plane, such as the reaction couple of the rotor drive.

4,431,149 GEARED TAB

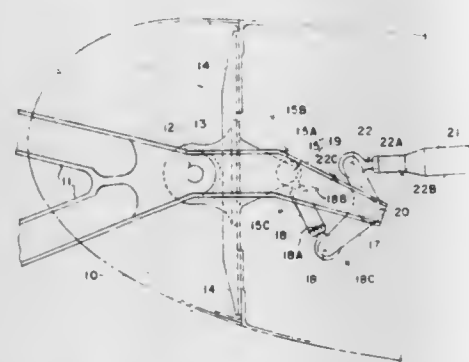
Mark G. Brislawn, Orange; David W. Bryant, Tustin, and Gerald A. Rayburn, Garden Grove, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 11, 1982, Ser. No. 347,807

Int. Cl.³ B64C 9/04, 9/10

U.S. Cl. 244—75 R

3 Claims



1. An aerodynamic geared tab system for an aircraft which comprises:

- a. an airfoil mounted for pivotal movement, about a first axis fixed relative to said aircraft, between predetermined first and second angular limits;
- b. a geared tab mounted for pivotal movement about a second axis fixed relative to said airfoil and displaced from said first axis, said tab and airfoil having a first substantially faired condition relative to each other at a first angular position of said airfoil intermediate said first and second angular limits; and
- c. linkage means, interconnecting said aircraft, airfoil and tab, and including a bell crank mounted to said aircraft for rotation about a third axis substantially parallel to said first axis and intermediate said first and second axes, a link pivotally connected at a first end thereof to a first end of said bell crank and at a second end thereof to said airfoil at a point intermediate said first and third axes, and a connecting rod pivotally connected at a first end thereof to a second end of said bell crank and at the second end thereof to said tab, said bell crank, link and connecting rod sized for counter-pivoting said tab, in response to pivotal movement of said airfoil, between a first maximum angular deflection of said tab relative to said airfoil near said first angular limit and an oppositely disposed second maximum angular deflection of said tab relative to said airfoil at a second angular position of said airfoil intermediate said first angular position and said second angular limit, and for pivoting said tab, in response to pivotal movement of said airfoil, between said second maximum angular deflection of said tab and a second substantially faired condition of said tab and airfoil near said second angular limit.

4,431,150

GYROSCOPICALLY STEERABLE BULLET

Edwin H. Epperson, Jr., Ontario, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Apr. 23, 1982, Ser. No. 371,044

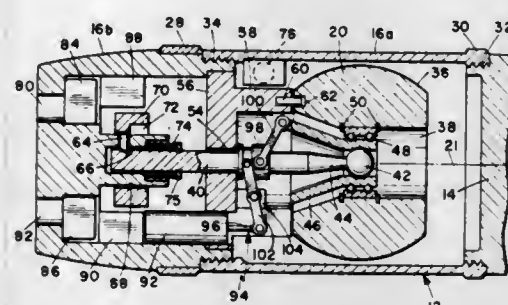
Int. Cl.³ F41G 7/00

U.S. Cl. 244—3.21

11 Claims

1. A steerable bullet comprising:
a projectile body having a longitudinal axis;
a gyro mounted within the projectile body including a rotor and means for supporting the rotor for rotation about a

spin axis initially coincident with the projectile axis and pivotable away from the projectile axis;
means for spinning the rotor;
means for providing steering commands; and
means responsive to the steering commands for pivoting the



spin axis of the rotor relative to the projectile axis during aerial flight of the projectile body so that the resulting precession torque of the spinning rotor will induce a change in the angle of attack between the projectile axis and the actual velocity vector of the projectile body whereby midcourse trajectory shaping will be achieved.

4,431,151

FIXTURE SUPPORTING CLIP

William R. Schonasky, 7300 Byrnsley La., Annandale, Va. 22003, assignor to Robert L. Fournier, Arlington, Va.; Carolyn L. Wade, Washington, D.C. and William R. Schonasky, Annandale, Va., a part interest

Filed Jul. 21, 1981, Ser. No. 285,443

Int. Cl.³ G12B 9/00

U.S. Cl. 248—27.1

7 Claims



1. A fixture supporting clip comprising a supporting leg and a clamping leg, a retaining flange extending from one end of said supporting leg and extending generally in the direction of said clamping leg, a clamping flange co-operable with said retaining flange, said clamping flange extending from an end of said clamping leg adjacent to said retaining flange and extending in the same general direction as said retaining flange, and hinge means hingedly connecting the other end of said supporting leg and said clamping leg for relative pivotal movement, said clamping leg extending away from said supporting leg at an angle and being movable to a position generally parallel to said supporting leg wherein said flanges are in generally parallel clamping relation, said supporting leg having an elongated opening for freely passing a fastener, and said clamping leg having aperture means generally aligned with said elongated opening and of a smaller size for receiving and holding a fastener over substantially the entire length of said elongated opening.

4,431,152

ADJUSTABLE CABLE RESTRAINT ASSEMBLY

Thomas W. Reed, Jr., Peru, Ind., assignor to Square D Company, Palatine, Ill.

Filed Dec. 10, 1981, Ser. No. 329,495

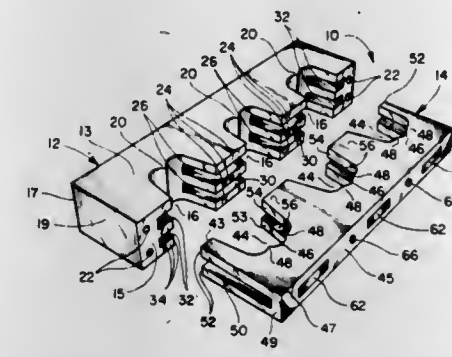
Int. Cl.³ F16L 3/08

U.S. Cl. 248—65

15 Claims

1. A cable restraint for restraining movement of electrical cables within an electrical housing containing a support member, said restraint comprising: a first mating element, a second mating element;

connecting means for connecting said first and second mating elements together; said elements having portions defining a passage therebetween;
securing means for securing one of said elements to said support member;
said mating elements each having a plurality of spaced apart



outwardly extending finger layers on opposite sides of said passage, each mating element including a recessed receiving portion intermediate said finger layers for receiving a portion of the finger layers of the respective other mating element to provide increased vertical and lateral stability to said restraint, said recessed receiving portions each including a pair of opposite side walls.

4,431,153

ROTARY CAM BRAKE

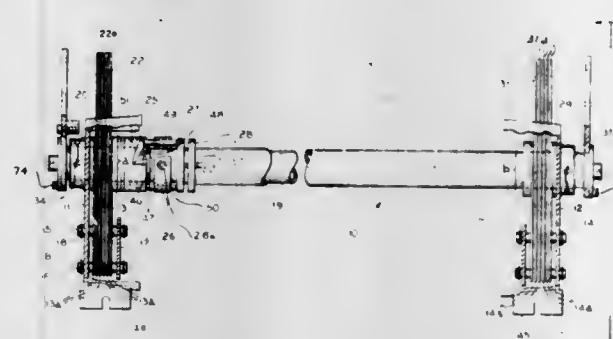
Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Company, Inc., Sheboygan, Wis.

Filed May 14, 1981, Ser. No. 263,681

Int. Cl.³ A47F 5/12

U.S. Cl. 248—188.1

8 Claims



1. Apparatus for adjustably supporting a drafting board, said apparatus comprising:

- a main shaft having first and second ends;
- at least two support brackets,
- said support brackets supporting said main shaft and allowing said main shaft to rotate with respect to said brackets;
- at least two brake assemblies,
- one said brake assembly positioned proximate each said support bracket,
- each said brake assembly including first and second sets of interdigitated brake leaves;
- at least two tilt bracket assemblies,
- each said bracket assembly rotatably mounted on said main shaft and providing attachment points for said drafting board;
- each said first set of brake leaves secured to one said support bracket;
- each said second set of brake leaves secured to one said tilt bracket assembly;
- said second set of brake leaves, and said drafting board brackets being thereby rotatable with respect to said first set of brake leaves and said support brackets;
- means to selectively transmit force to said brake assemblies to compress said interdigitated brake leaves together,
- said force transmission means including a control cam posi-

tioned concentrically about said main shaft intermediate said brake assemblies,
said control cam having at least one inclined surface formed thereon;
a first collar positioned concentrically on said main shaft intermediate said control cam and said first brake assembly;
said first collar having at least one dowel passing there-through,
said first collar attached to said main shaft to position each said dowel proximate to one said inclined cam surface;
tubular means positioned concentrically about said main shaft extending from said first collar to said first brake assembly;
means positioned concentrically about said main shaft extending from said control cam to said second brake assembly;
means anchoring said first and second brake assemblies on said main shaft; and
control means,
said control means adapted to rotate said control cam on said main shaft to bring one said dowel into contact with each said inclined surface of said control cam to thereby transmit sufficient force to said brake assemblies to compress said first and second sets of interdigitated brake leaves together to prevent rotation of said board brackets with respect to said support brackets,
said control means including means to adjust the distance through which said control means must be moved in order to release said compressive force.

4,431,154

HOLDER FOR MOUNTING ON A RAIL AND THE LIKE

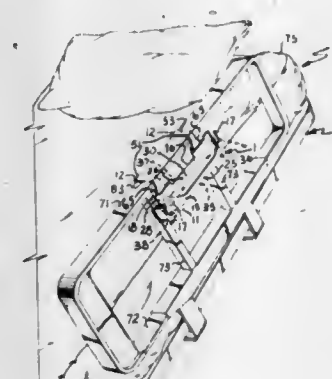
H. Keith Hamm, P.O. Box 135, Perry, Kans. 66703

Filed May 10, 1982, Ser. No. 376,301

Int. Cl.³ A47B 96/06; A47G 55/00

U.S. Cl. 248—215

5 Claims



1. A holder for a telephone having a cord extending therefrom for mounting on a rail and the like, which comprises:

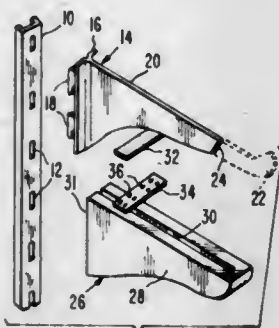
- (a) a body having:
 - (1) a back wall including opposite ends and a mid-section therebetween;
 - (2) a front wall having opposite ends and a mid-section therebetween;
 - (3) a bracket attached to said body back wall and having a bracket back wall in spaced relation therefrom;
 - (4) a receiver formed between said body and said bracket back walls; and
 - (5) a receptacle for said telephone between said body front and back walls;
- (b) a clip including a hook portion engageable with said rail and the like and a tab portion integrally connected to said hook portion and depending downwardly therefrom, said tab portion being slidably receivable in said receiver; and
- (c) lock means for removably securing said tab portion in said receiver.

4,431,155

COVER SLEEVE FOR SHELVING BRACKETS OF THE BLADE TYPERobert Engel, 265 Edinburg Rd., Mercerville, N.J. 08619
Filed Jun. 17, 1982, Ser. No. 378,661Int. Cl.³ A47G 29/02

U.S. Cl. 248-243

3 Claims



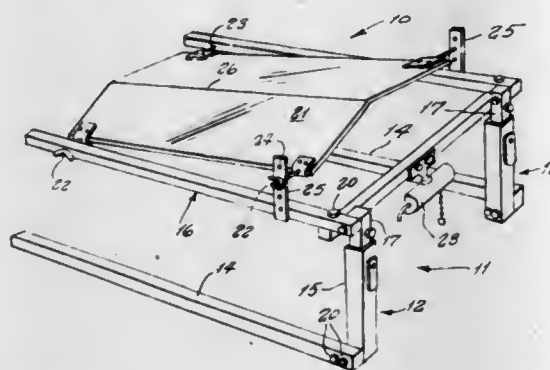
1. A cover sleeve for application to a shelf bracket of the type having a blade-like shelf support arm, comprising:
- (a) a block having a slot for receiving said arm; and
 - (b) means for engaging the arm against removal from the slot, said means being in the form of a shim foldable about the bracket arm within the slot, said shim including a length of foldable metal material having teeth adapted to engage in opposite sidewalls of the slot, the shim further including a double-sided adhesive tape foldable about the bracket arm for engagement therewith, and adapted to receive the folded length of metal material for connecting the same to the bracket arm.

4,431,156

DEVICE FOR READING IN BEDDigno Mena, 300 57th St., Apt. 14, West New York, N.J. 07093
Filed Sep. 7, 1982, Ser. No. 415,591Int. Cl.³ A47B 23/00

U.S. Cl. 248-445

3 Claims



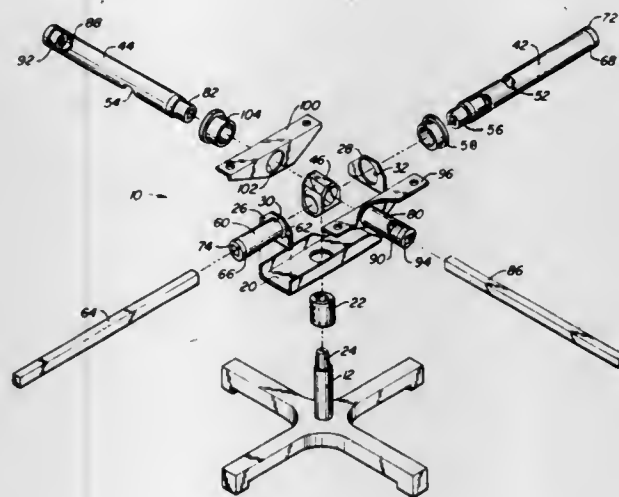
1. A reading matter support for a reclining person therebeneath, comprising, in combination, an upper horizontal U-shaped frame having a head bar and two spaced apart arms extending therefrom, a pair of vertically adjustable posts depending from the head bar, a pair of horizontal spaced apart legs extending from the lower ends of said posts parallel to said arms, said vertical posts serving as the forward end of said reading matter support for positioning adjacent the head of the reclining person and said arms and legs extending toward the feet of the person, an inverted V-shaped transparent panel for supporting a reading matter thereon and exposing a lower side of the reading matter through said panel to the person therebeneath, a first coupling device for clamping the lower ends of said panel to the free ends of said arms, a separate coupling device for vertical adjustable coupling of the upper ends of said panel to said arms, whereby the height and tilt of said panel can be independently adjusted, and said support does not extend excessively beyond the person's head.

4,431,157

PIVOTAL ADJUSTMENT MECHANISMTor Arild, P.O. Box 4063, Woodside, Calif. 94062
Filed Nov. 18, 1981, Ser. No. 322,558Int. Cl.³ F16M 13/00

U.S. Cl. 248-583

7 Claims



1. A pivotal adjustment mechanism for a pair of mutually movable members, said mechanism comprising:
- a first support means fixably connected to one of the two mutually movable members, with the support means having a pair of spaced apart, aligned upstanding braces, each brace having an aperture therein;
 - a tubular structure defined by first and second hollow tubes disposed at right angles to define a cross-shaped configuration in plan and fixably secured at their intersection, with the tubular structure being mounted on said support means with the intersection thereof being disposed between the upstanding braces and with the opposed ends of the first tube being rotatably received through the aligned apertures of the braces;
 - a first tube segment extending outwardly away from one brace in longitudinal alignment with the first tube and fixedly secured to said one brace, said first tube being rotatably mounted with respect to the first tube segment;
 - a first torsion bar extending longitudinally within the first tube and first tube segment, with one end thereof being affixed to the free end of the first tube segment and with the other end being affixed to the remaining opposed end of the first tube;
 - a second tube segment rotatably mounted to one end of the second tube and in longitudinal alignment therewith;
 - a second torsion bar longitudinally extending within the second tube and second tube segment, with one end thereof being affixed to the outer distal end of the second tube segment and with the other end thereof being affixed to the remaining free end of the second tube; and
 - a second support means fixedly secured to the remaining movable member, said second support means including a pair of spaced apart, downwardly projecting bracket members, with one bracket member being fixedly mounted to said second tube segment and with the other bracket member being rotatably mounted to the second tube adjacent the free end thereof whereby relative motion between the movable members is transmitted through the mechanism and restrained by the torsion bars.

4,431,158

CONTROLLED ROTATION SELF-INVERTING HOT TOP CASING

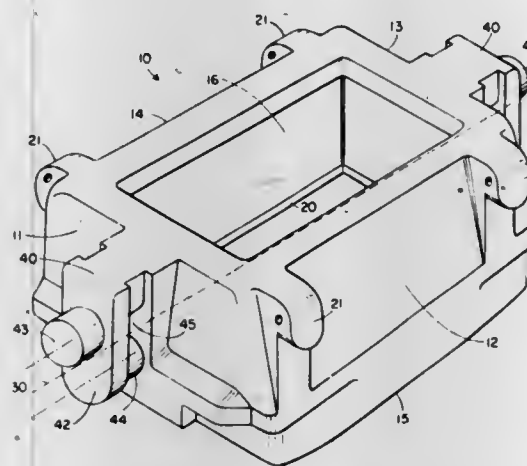
Donald C. Atkinson, Ellwood City, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 17, 1981, Ser. No. 293,319

Int. Cl.³ B22D 7/00, 7/10

U.S. Cl. 249-197

2 Claims



1. A hot top casing comprising a base for cooperation with an ingot mold body; an open top so that the molten metal flows through the casing to the ingot mold; portions extending beyond opposite ends of said casing and each having a further portion depending from the top of said casing downwardly toward the base, said further portions having two opposing sides with one closer to the casing and set between the casing and the other side, each further portion having a trunnion connected to and extending away from each of the two sides, each of said pairs of trunnions being displaced vertically with respect to the center of gravity of said casing whereby one pair of trunnions is displaced above the center of gravity of said casing and the other pair is displaced below the center of gravity.

4,431,159

VALVE AND COMPONENTS THEREFOR

George A. Stubbs, Warrington, England, assignor to British Nuclear Fuels Limited, Cheshire, England

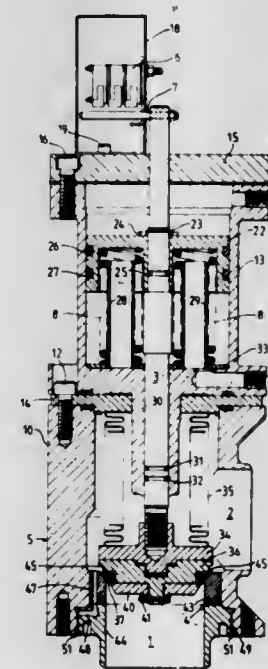
Filed Jul. 6, 1981, Ser. No. 280,780

Claims priority, application United Kingdom, Jul. 24, 1980, 8024276

Int. Cl.³ F16K 31/122

U.S. Cl. 251-63.6

3 Claims



1. A valve comprising an operating spindle in a valve body,

an insert in said valve body, said insert comprising a stainless steel annular seat member with a stellite layer on an inwardly tapered seat surface of said member and an aluminium carrier to which the stainless steel seat member is friction-welded, the carrier being externally screwthreaded for engagement with a corresponding screwthread in the valve body and externally welded to the valve body for sealing the insert in position, and a nickel loaded PTFE bush on said spindle for sealing engagement with said stellite layer on said tapered seat surface of said member on operation of said spindle to close the valve.

4,431,160

ELECTRIC CONTROL VALVE

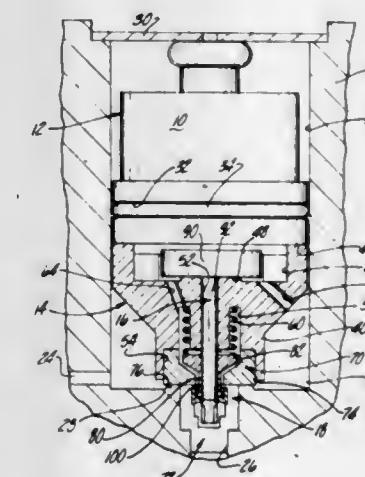
David L. Burt, Grosse Pointe, and Gregory J. Krawczyk, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 2, 1982, Ser. No. 364,815

Int. Cl.³ F16K 25/00

U.S. Cl. 251-86

1 Claim



1. A two piece control valve adapted to be received within a bore of a cooperating apparatus, the control valve comprising:

- a stator;
- a lower body member positioned adjacent to said stator including a plurality of passages including an axially extending bore;
- armature means including a magnetic member and a piston member reciprocable within said axially extending bore and situated within the said lower body member;
- valve means, movable with said armature means in response to the magnetic field generated by said stator for permitting the outflow of fuel therefrom;
- said valve means partially situated within said lower body member and including a movable valve closure element having a valve face and a stationary member defining a valve seat;
- said valve means further including self aligning means to permit said valve face to align with and seal upon said valve seat;
- said self-aligning means comprising:
 - a nut having a spherically shaped upper surface and secured to an end of said piston member extending from said lower body member;
 - a cup-shaped valve cap having walls the end of which define said valve face and a bottom having an opening therethrough, said bottom including a lower surface having a conically shaped surface and a spherically shaped upper surface, said opening adapted to permit said valve cap to be mounted onto the said extending portion of said piston member;
 - said self-aligning means further including a preload spacer having an upper surface and a bottom surface and a centrally located opening adapted to receive said piston member, said bottom of said preload spacer having a

conically shaped lower surface and positioned in contacting engagement with said upper surface of said valve cap; and
spring means for biasing said upper surface of said preload spacer towards an open condition.

4,431,161

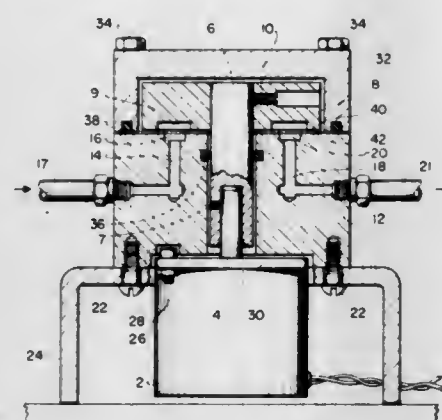
ROTARY VALVE

Collier M. Miller, Rosemont, and Robert Schmitz, Hatfield, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 27, 1981, Ser. No. 325,403

Int. Cl.³ F16K 31/02

U.S. Cl. 251—133

10 Claims



1. A valve comprising a valve body having at least two spaced apart fluid ports on a first face of said valve body, at least one fluid channel in said valve body between one of said ports and a fluid inlet means on said valve body and at least one fluid channel in said valve body between the other one of said ports and a fluid outlet means on said valve body, a selectively positionable valve plate having a fluid channel in a face thereof, said face of said valve plate being arranged to substantially cover said first face of said valve body to allow said fluid channel in said face of said valve plate to provide a fluid path between said fluid ports on said first face of said valve body in a first position of said fluid plate, a low friction coating separating said first face of said valve body from said face of said valve plate while exposing said spaced apart fluid ports to said fluid channel in said face of said valve plate in said position of said valve plate, motor means connected to said valve plate for selectively driving said valve plate between said first position and a second position wherein said fluid path between said spaced apart fluid ports is interrupted, and motor suspension means for suspending said motor means to allow the weight of said motor means to apply a pressure to said low friction coating.

4,431,162

LOW PROFILE CONE VALVE ASSEMBLY

Edwin S. Carlson, St. Charles, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Division of Ser. No. 134,231, Mar. 26, 1980, Pat. No. 4,318,531.

This application Aug. 26, 1981, Ser. No. 296,274

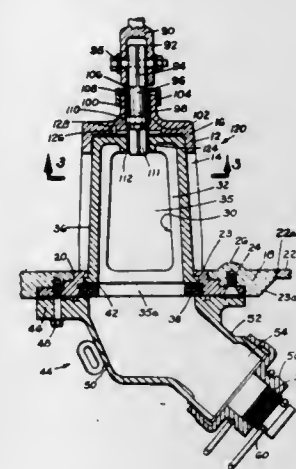
Int. Cl.³ F16K 51/00

U.S. Cl. 251—144

5 Claims

1. In a container outlet valve assembly comprising: a generally cone shaped housing extending upwardly into the container; the apex of said housing extending upwardly into the container; radially spaced outer openings in the housing for lading to flow out of the container; a cone valve located within the housing containing a valve body and spaced cone valve openings in said valve body which align with the outer openings in the cone housing when the cone valve is in open position; said container including a tank bottom flange having an

annular groove, and said housing including a housing flange located within said annular groove; said cone valve being rotatable upon a bearing integrally connected to said housing flange and located adjacent said annular groove, and extending only a short distance radially inwardly; a liner of low friction material attached to one of the outer surfaces of the cone valve and/or the inner surface of the cone housing and sealing said cone valve with respect to said cone valve housing; said cone valve being rotatable from said open position to a closed position in which said valve body closes the openings located in the cone valve housing; said cone valve having a hollow center



portion in communication with said cone valve openings and having a bottom opening; an unloading chamber located below the cone valve and said bottom opening and attached to a tank mounting flange with shearable fasteners which define a shear plane; said mounting flange, said housing flange, and said bearing all being located above said shear plane; said chamber being in fluid communication with said bottom opening; a top operating shaft for said cone valve engaging a connection portion formed in said cone valve adjacent said housing apex and extending upwardly to the tank top; whereby the flow path from the cone valve into the unloading chamber is unobstructed.

4,431,163

DEVICE FOR FIXING A COVER ON A BODY AND IN PARTICULAR ON A VALVE BODY

Pierre L. C. C. Barbe, Toul, France, assignor to Pont-A-Mousson S.A., Nancy, France

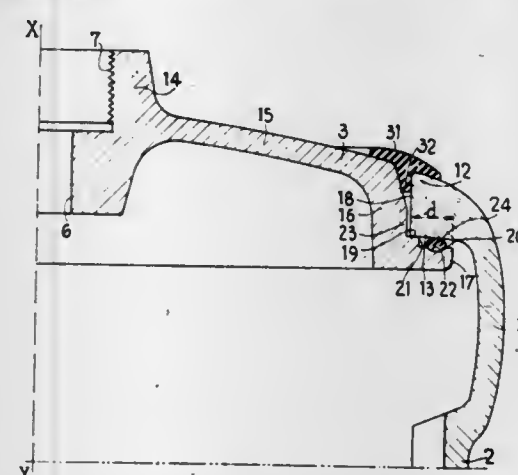
Filed Oct. 21, 1981, Ser. No. 313,716

Claims priority, application France, Oct. 24, 1980, 80 22768

Int. Cl.³ F16K 3/00; B65D 45/32

U.S. Cl. 251—367

12 Claims



1. In a structure comprising a hollow body having a substantially vertical axis, a cover, an annular sealing element interposed between the cover and the body, and means for maintaining the cover in position in the body in a direction parallel to said axis; the improvement wherein said maintaining means comprise a first groove in a peripheral portion of the cover, a

second groove in a peripheral portion of the body in confronting relation to the first groove, rigid elongate locking means engaged in said grooves and having a length and a width, which width is less than said length, a cavity in at least one of said peripheral portions, which cavity extends upwardly from the groove in said at least one peripheral portion and has a length longitudinally of said grooves which is substantially equal to the length of the locking means to allow selectively insertion and extraction of the locking means transversely of the length of the locking means, the cavity being so disposed relative to the grooves as to allow insertion of the locking means in the confronting grooves longitudinally of the locking means to a cover maintaining position, the locking means having a length which is a minor fraction of the perimeter of the hollow body, and the sealing element being in a compressed condition axially of the body when the locking means are in said cover maintaining position.

4,431,164

PROCESS AND APPARATUS FOR PRODUCING MICROSPHERES

Charles Jungo, Untersiggenthal, and Guido Ledergerber, Riniken, both of Switzerland, assignors to Gesellschaft zur Förderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen, Bern, Switzerland

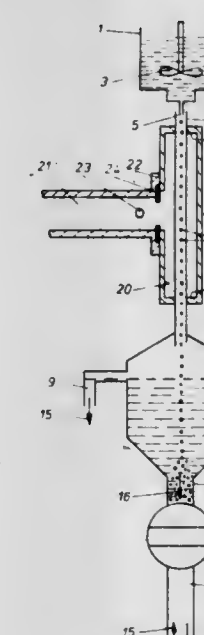
Filed Dec. 18, 1980, Ser. No. 217,741

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035845

Int. Cl.³ B22F 1/00; B29C 23/00; G21F 9/16, 9/04

U.S. Cl. 252—628

27 Claims



1. A process for producing microspheres comprising:
 - (a) providing a feed solution which contains a material to be formed into microspheres and an ammonia-donor compound, said feed solution being capable of gelling when heated;
 - (b) forming said solution into individual droplets;
 - (c) causing said individual droplets formed in step (a) to fall freely under the influence of gravity along a vertical path through a heating zone;
 - (d) subjecting said falling droplets in said heating zone to sufficient X-band range microwave radiation to cause the droplets to be heated by dielectric heating such that they will become sufficiently gelled that upon subsequent impact with and submersion in a washing liquid they will not be deformed or damaged; and
 - (e) causing said gelled droplets produced in step (d) to fall into a washing liquid so as to be recoverable as microspheres, said washing liquid consisting of an aqueous ammonia solution.

14. Apparatus for producing microspheres comprising: a supply chamber for a feed solution containing a material to

be formed into microspheres, said solution being capable of gelling when heated;
droplet-generating means at the bottom of said chamber for forming said solution into discrete droplets and releasing the latter one by one for gravitational free fall;
microsphere collection means disposed sufficiently beneath said droplet generation means to provide a free fall zone therebetween, said microsphere collection means containing a washing liquid consisting of an aqueous ammonia solution;
pipe means connected to said microsphere collection means to allow washing liquid to be supplied thereto and gelled microspheres to be simultaneously removed therefrom;
microwave radiation generation means associated with said apparatus for imposing X-band range microwave radiation in said free fall zone to thereby cause the free falling droplets to be heated by dielectric heating to a temperature where gelling occurs, such that said free falling droplets will commence gelling prior to impact with and submersion in the washing liquid in said microsphere collection means.

4,431,165

LINE STRINGING APPARATUS WITH LONGITUDINALLY ARRANGED HOOK SHANKS

Claude L. Chapman, 3300 W. Union Ave., Englewood, Colo. 80110

Filed Mar. 19, 1982, Ser. No. 359,841

Int. Cl.³ B66D 1/36

U.S. Cl. 254—134.3 R

10 Claims



1. Stringing apparatus for passing a threading line through a line holding structure on a tower with no side access while suspended from above by an aircraft carrying a hoist line with an end member, said apparatus comprising:
 - a threading member;
 - a hook-shaped leading line coupling part mounted on said threading member at a front position and a hook-shaped trailing line coupling part mounted on said threading member disposed rearwardly of and spaced from said leading line coupling part,
 - said leading line coupling part including a leading shank portion connected at one end to the threading member, a leading bend portion, and a leading free end portion defining a leading line-receiving opening between said leading free end portion and said leading shank portion and an inside line-receiving area along said leading bend portion, said leading shank portion extending substantially lengthwise of said threading member, said leading bend portion extending substantially transverse to said threading member, and said leading free end portion extending from said bend portion toward said trailing end of said threading member,
 - said trailing line coupling part including a trailing shank portion pivotally connected at one end to said threading member, a trailing bend portion, and a trailing free end portion defining a line-receiving opening between said trailing free end portion and said trailing shank portion, and a trailing line-receiving area along the inside of said trailing bend portion, said trailing shank portion extending substantially lengthwise of said threading member, said trailing bend portion extending substantially transverse to said threading member, and said trailing free end portion extending from said bend portion toward said leading end of said threading member and then laterally away from said leading shank portion, said trailing line coupling part being pivotal about an axis

substantially transverse to said threading member between a horizontally disposed lowered position and a vertically disposed raised position;
means for fastening a threading line to the trailing end of said threading member; and
tower catch means on said threading member for releasably fastening said threading member to the tower after said hoist line is released from said coupling part on said threading member, said hoist line being coupled to said trailing line coupling part for moving the leading end portion of said threading member and leading line coupling part through said structure, said tower catch means engaging the tower, said hoist line being released from said trailing coupling part and coupled to said leading line coupling part, and said threading member and threading line being moved through said structure while suspended from said aircraft.

4,431,166

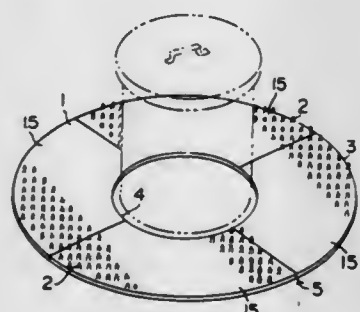
GARBAGE CAN MAT

Richard W. Marshall, 14 1518 Nakula St., Wahiawa, Hi. 96786
Filed Nov. 9, 1981, Ser. No. 319,736

Int. Cl.³ E04H 17/00

U.S. Cl. 256—1

3 Claims



1. A garbage can mat comprising a module which includes a male end portion, a middle portion, and a female end portion; means to prevent dogs from knocking over a garbage can which includes spaced rounded spikes projecting from the middle portion; and means to snap-fasten adjoining modules together to provide a positive lock and yet to unlock conveniently when desired which includes a L-shaped recess in the male end portion and at least two spaced pins projecting from a ledge of the male end portion and a L-shaped recess in the female end portion and at least two spaced holes in a ledge of the female end portion; the pins closely fit within corresponding holes of an adjoining module; the inner and outer borders of the module are curved and have a 90° arc; in combination with three other identical modules, the four modules are snap-fastened together to form a round configuration, whose inside circumference is slightly greater than the circumference of a garbage can to be protected.

4,431,167

ADAPTOR

Ronald A. Clarke, Macleod, Australia, assignor to The BOC Group plc, London, England

Filed Jul. 16, 1982, Ser. No. 398,749

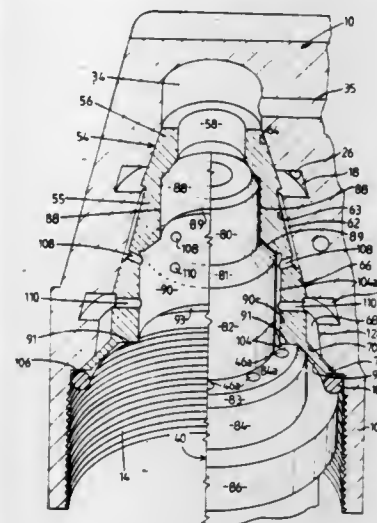
Int. Cl.³ B23K 7/00

U.S. Cl. 266—48

8 Claims

1. An adaptor for interconnecting a three outlet cutting torch head with a two inlet cutting tip, said cutting head having an inwardly convergent recess therein and first, second and third outlet ports communicating with said recess for delivery of cutting oxygen, heating oxygen and combustible gas respectively to the recess of said head and said cutting tip having respective first and second inlet ports for cutting oxygen and a mixture of combustible gas and heating oxygen, said first and second inlet ports being on a tapered portion of the tip, said adaptor having an inwardly convergent recess for receiving said tapered portion of said tip and a tapered portion for fit-

ment of the adaptor into said recess of the head; said adaptor being formed whereby in use with said tapered portion thereof inserted into said recess in said head and said tapered portion of said tip inserted into said recess of said adaptor, communication is provided, via first passageway means, between the first outlet port and the first inlet port and, via second passageway



4,431,168

APPARATUS FOR IMPROVED HEAT TREATMENT OF ELONGATED ALUMINUM ALLOY MATERIALS

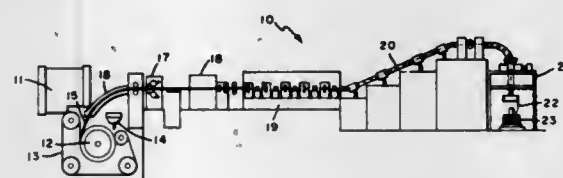
Joseph MacCraven, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 21, 1981, Ser. No. 332,992

Int. Cl.³ C21D 9/62

U.S. Cl. 266—104

6 Claims



1. Improved high speed aluminum-base alloy wire thermal treatment apparatus including at least two rotating electrical contact sheaves for contacting a continuously advancing elongate metallic wire material following a predetermined path which includes at least partial traversals around said rotating electrical contact sheaves, adjustable electrical current supply source means connected to said rotating electrical contact sheaves such that said continuously advancing elongate metallic wire material completes the electrical circuit to said adjustable current supply source means, the improvement characterized wherein the electrical current supply source has a high average to peak voltage ratio and including in combination therewith an elongate material accumulator enclosed in a chamber, further including therein first means for elevation of the temperature of the wire to a temperature within a first temperature range and second means for elevation of the temperature of the wire to a temperature within a higher, narrow second temperature range within the chamber, to maintain the temperature of said continuously advancing elongate metallic wire material at a desired elevated temperature for an extended period of time.

4,431,169

METHOD AND APPARATUS FOR PREVENTING THE INCLUSION OF SLAG INTO THE MOLTEN STEEL TAPPED FROM A CONVERTER

Koichiro Fuzii, Kure, and Sueki Kubo, Kitakyushu, both of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo and Kurosaki Refractories Co., Ltd., Fukuoka, both of Japan

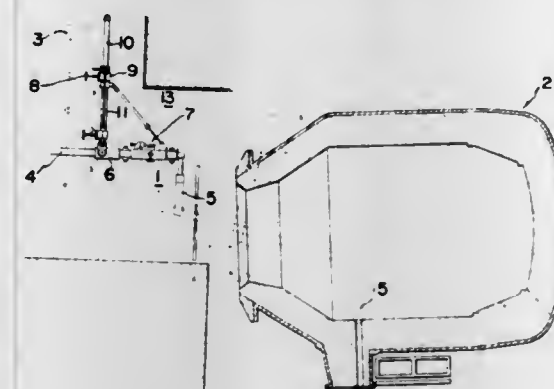
Filed Jun. 29, 1981, Ser. No. 278,117

Claims priority, application Japan, Jul. 5, 1980, 55-92049; Jul. 10, 1980, 55-94634

Int. Cl.³ C21B 5/46

U.S. Cl. 266—236

8 Claims



1. Apparatus for preventing the inclusion of slag into molten steel tapped from a converter comprising:

- (a) a water-cooled stopper supporting arm extensible into said converter,
 - (b) an elongated stopper pivotally mounted as a pendulum from said supporting arm, said stopper thereby being adapted to be substantially vertically disposed in said converter, said elongated stopper having the upper end thereof tiltably connected to the extremity of said support arm and the lower end thereof capable of coming into contact with an inner opening of a tap hole in said converter,
 - (c) an arm manipulating means being operable to extend, tilt, rotate and elevate said stopper support arm, and
 - (d) limiting means mounted on said stopper supporting arm, said limiting means being operable to limit the lift of said stopper above said tap hole after having come into contact with the inner opening of said tap hole,
- whereby the actuation of said arm manipulating means accurately positions said stopper into contact with said inner opening of said tap hole and said limiting means provides for positioning said stopper at a predetermined spaced position above said tap hole for various tilted positions of said converter such that molten slag is thereby delayed from flowing out of said tap hole.

4,431,170

DEVICE FOR THE MANIPULATION OF IMMERSION LANCES FOR METALLURGICAL FURNACES

Otto Hümmeler, Hofgutstrasse 21, D-5900 Siegen 1, Fed. Rep. of Germany

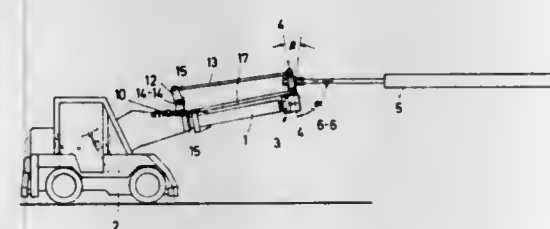
Filed Sep. 28, 1982, Ser. No. 426,186

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1981, 3142433

Int. Cl.³ C21C 5/30

U.S. Cl. 266—226

4 Claims



1. Device for the manipulation of immersion lances for

metallurgical furnaces, comprising a freely movable vehicle (2), having a forwardly extending supporting arm (1), a lance mounting (3) detachably mounted on the forward end of the supporting arm (1), means supporting said mounting on said arm about two swiveling and tilting axes (4—4, 6—6) extending at right angles to each other and to said supporting arm (1), said swiveling axis (4—4) being upright and said tilting axis (6—6) being horizontal, separate drive mechanisms (10, 11) for the swiveling and tilting motions of the immersion lance (5) carried by the vehicle (2), and linkages (13, 17) by which said drive mechanisms (10, 11) are connected to the lance mounting (3).

4,431,171

APPARATUS FOR OPENING THE TAP HOLE OF A METALLURGICAL FURNACE

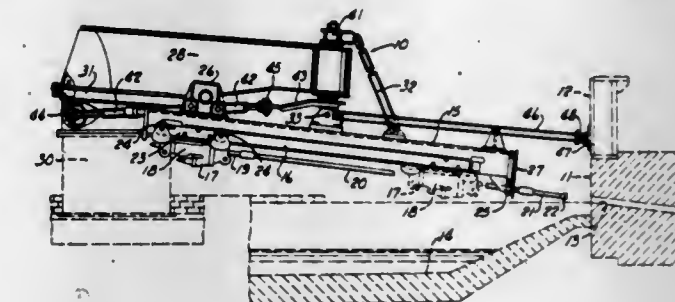
David W. Foster, Canonsburg, Pa., assignor to Bailey Industrial Products, Inc., Washington, Pa.

Filed Mar. 4, 1982, Ser. No. 354,653

Int. Cl.³ C21C 5/46

U.S. Cl. 266—271

19 Claims



1. Apparatus for tapping a wall of a metallurgical vessel including, mounting means forming a linear guide track, a drilling machine carried by said mounting means for reversible displacement along said track, motor means on said mounting means coupled with said drilling machine for effecting the reversible displacement thereof, stationary supporting means, a boom swingable on said supporting means and suspending said mounting means laterally offset from said supporting means, and mechanism coupled with said supporting means and said boom for selectively displacing said mounting means into an operative position and an inoperative position by swinging said boom on said supporting means, the improvement comprising, said mechanism including stationary sprocket means on said stationary supporting means, two motor means mounted on said boom and having flexible chain driving means connected at opposite ends therebetween with said chain means meshed with said sprocket means, said two motor means operable in cooperation with each other on said chain means to swing said boom about said stationary sprocket means and said support means.

4,431,172

DEVICE FOR ABSORBING PUNCHING SHOCK IN A PRESS

Choichiro Soda, Abiko; Kazuyoshi Aoi, Ibaragi; Kanichi Hattukano, and Toshio Sano, both of Yatabemachi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Aug. 3, 1981, Ser. No. 289,901

Claims priority, application Japan, Aug. 6, 1980, 55-107917

Int. Cl.³ F16F 9/00; 7/08; B21J 7/12; B26D 7/06

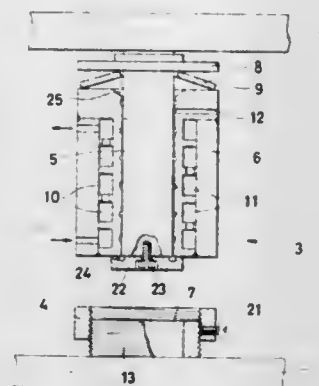
U.S. Cl. 267—119

7 Claims

1. A device for absorbing punching shock in a press assembly including a punch extending downwardly from a slide and a die disposed on a bolster cooperating with said punch to shear a workpiece, said device comprising:

- (a) a post extending downwardly from said slide;

- (b) an outer cylinder slidably mounted on said post and having a gap between the sliding surfaces of said cylinder and said post, said outer cylinder having a length less than the length of said post;
- (c) oil having a high viscosity of about 50 PaS at 25° C. disposed in the gap between the sliding surfaces of said outer cylinder and said post for impeding the sliding movement therebetween;



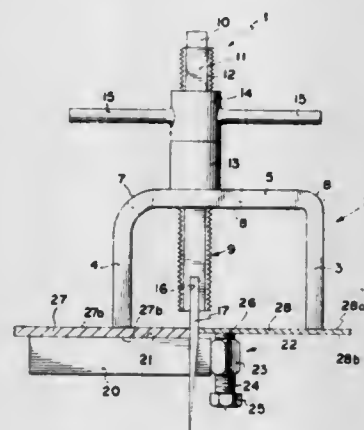
4,431,173

WELDERS PLATE ALIGNMENT TOOL

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581
Continuation of Ser. No. 337,482, Jan. 1, 1982, abandoned. This
application Apr. 18, 1983, Ser. No. 486,105
Int. Cl.³ B25B 5/14

U.S. Cl. 269-49

8 Claims



1. A welding tool for use in positioning in predetermined locations confronting edges of two members to be welded together and spaced by a gap, said tool comprising a U-shaped body having parallel legs engageable with one side of said members and being spaced apart by a bridge joining said legs at corresponding ends, the spacing between said legs enabling such legs to straddle the gap between said edges, said bridge having an opening therein; a drawbar extending through the opening in said bridge for reciprocable movements in opposite directions transversely of said bridge; a carrier at one end of said drawbar of such thickness as to pass through said gap, said carrier having a slot extending transversely therethrough; a force transmitting bar accommodated in the slot of said carrier for sliding movements transversely of said carrier substantially parallel to said bridge and being of such length as to span said gap and engage both of said members on opposite sides of said gap, said force transmitting bar having a flat, linear surface confronting but spaced from said bridge a distance to enable such surface to engage said members on the side opposite that

engaged by the legs of said body; adjustable thrust applying means; means mounting said thrust applying means on said force transmitting bar for movements transversely thereof toward and away from said bridge from a first position in which said thrust applying means does not extend beyond said surface of said force transmitting bar to a selected one of a number of other positions in which said thrust applying means does extend beyond said surface of said force transmitting bar and is engageable with one only of said members on one side of said gap; and rotary driving means independent of said thrust applying means carried by said drawbar for driving the latter relatively to said body in directions to enable said carrier and said force transmitting bar to be displaced conjointly in directions toward and away from said bridge.

4,431,174
VICE

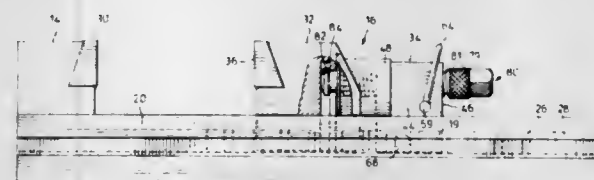
Arnold Varden, 10 Sarjeant Dr., Box 954, Barrie, Ontario, Canada L4M 4T6

Filed Dec. 11, 1981, Ser. No. 329,851

Int. Cl.³ B25B 1/02

U.S. Cl. 269-211

7 Claims



1. A quick-release vice or work holder comprising:
a bed;

a fixed jaw affixed to said bed; and
a movable jaw means;

said bed having a longitudinally extending T-shaped slot, said slot having opposing hidden substantially vertical faces each of said faces having a plurality of recesses therein, said movable jaw means having guide means and locking means, said guide means slidably mounted on said bed for travel therealong, said locking means including engaging means carried internally by said locking means and adapted to move transversely of said slot from a first position where said engaging means does not engage said recesses and said movable jaw means can be moved along said slot, to a second position where said engaging means can engage said recesses to lock said locking means with respect to said lock, said locking means comprising:
two pins; and

actuator means adapted to move from an unlocking position to a locking position which causes said pins to engage two of said recesses in said opposing hidden substantially vertical faces; and wherein said recesses are of part-curved shape such that when said actuator means is in said unlocking position, said pins will cam-out of said two of said recesses if a moderate force is exerted on said locking means in a direction along the bed of said vice.

4,431,175

FLOATING BELT FRICTION FEEDER

David W. Smith, Richardson, Tex., assignor to Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,436

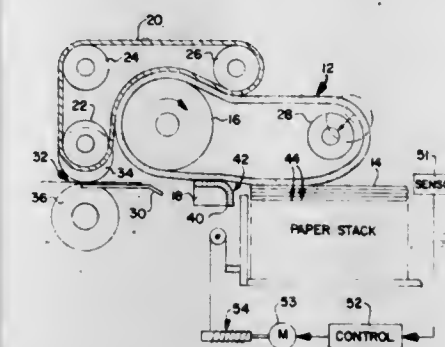
Int. Cl.³ B65H 3/04

U.S. Cl. 271-10

13 Claims

1. A sheet feeding apparatus for feeding individual sheets from a stack comprising:
an endless sheet feeding belt having a friction surface,
a drive pulley about which said belt is cantilevered in driving rotation about an endless path,
belt holding means for holding said belt in driving engagement with said drive pulley,

movable positioning means for positioning said belt in a first position in which the unsupported portion of said cantilevered belt floats freely in contact with said stack of sheets and frictionally engages the uppermost sheet in said stack



causing it to advance in the direction of said belt and a second position in which said belt is supported by said positioning means out of engagement with said stack by said positioning means.

4,431,176

DISPENSER FOR DISPENSING PHOTOGRAPHIC SHEETS FROM A STACK

Hugo F. Deconinck, Deurne-Zuid, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

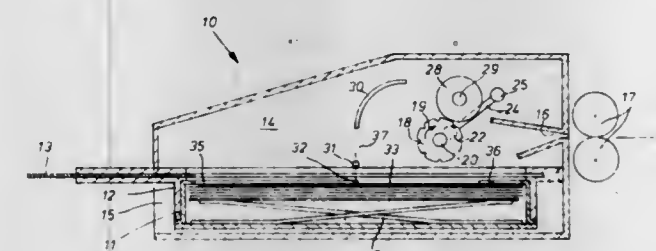
Filed Sep. 3, 1981, Ser. No. 299,010

Claims priority, application United Kingdom, Sep. 8, 1980, 8028897

Int. Cl.³ B65H 3/06

U.S. Cl. 271-22

5 Claims



1. A dispenser for dispensing photographic sheets from a stack, comprising a stack-containing and locating unit and a dispensing mechanism for removing the upper sheet from the stack, said mechanism comprising a bodily displaceable roller movable from a transporting position to a buckling position for frictionally engaging the upper sheet of the stack and exerting on such sheet a force causing buckle of a sheet portion and from buckling position to transporting position while carrying a free end of the sheet upwardly, a stationary co-operating, rotatably driven roller defining with the displaceable roller when in transporting position a roller nip for receiving the upwardly carried free sheet end and transporting the same from said unit, means supporting the bodily displaceable roller for free rotation about its axis and bodily pivotal movement about an axis that runs transversely with respect to the feeding direction of the sheets to and from said positions, uni-directional anti-rotation means associated with said displaceable roller for permitting free rotation of the roller as the latter is swung into buckling position, and that prevents rotation of said roller as the roller is subsequently pivoted to transport position, thereby to frictionally engage a portion of the sheet and produce the buckling of the sheet and the upward displacement of said one end of the sheet.

1039 O.G.-27

4,431,177

SHEET OFFSETTING AND REGISTERING APPARATUS

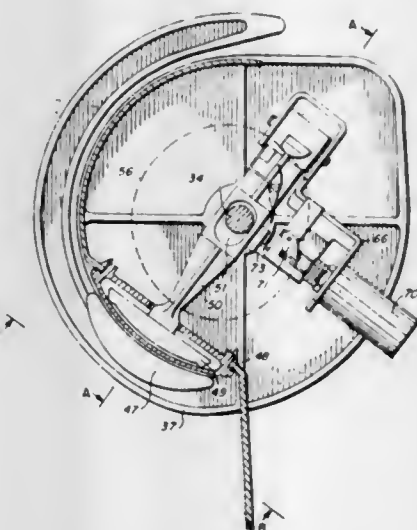
Jack Beery, Fairport, and Werner F. Hoppner, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1980, Ser. No. 182,343

Int. Cl.³ B65H 29/40, 9/10

U.S. Cl. 271-186

17 Claims



1. A sheet offsetting and registration apparatus comprising:
means to transport a sheet along a path from a sheet supply to a sheet receiving station;
means to restrain said sheet during a portion of the transport path adjacent the receiving station,
an offset registration member positioned along an edge of the sheet transport adjacent the portion of the transport path having said sheet restraining means, said offset registration member being movable laterally with a directional component perpendicular to the direction of sheet transport,
means to laterally move said offset registration member with a directional component perpendicular to the direction of sheet transport as said sheet is transported past said member whereby the side edge of said sheet is gently tapped, offset and registered during its path of travel to a first position,
said means to laterally move said offset registration member comprising means to urge said member forward perpendicular to the direction of sheet transport with a sheet edge tapping action to a first offset register position and means to retract said member to a standby position,
said means to urge and said means to retract comprising a pivotally mounted arm which engages said offset registration member at one end and has a cam follower at the other end, said arm being spring biased to urge said offset register member in a direction perpendicular to the direction of sheet transport, and a cam in operative relationship with said cam follower to urge said offset registration member toward the standby position,
said sheet offsetting and registration apparatus further including means to provide an intermediate sheet offset and registration position between said first offset register position and said standby position, said means including a stop portion fixed to said pivotal arm and a retractable latch which in latching position engages said stop portion inhibiting movement of said pivotal arm to said first offset position and means to retract said latch.

4,431,178

PAPER SHEET ACCUMULATOR ASSEMBLY

Eiichi Kokubo; Makoto Yamazaki, and Hiroshi Emori, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

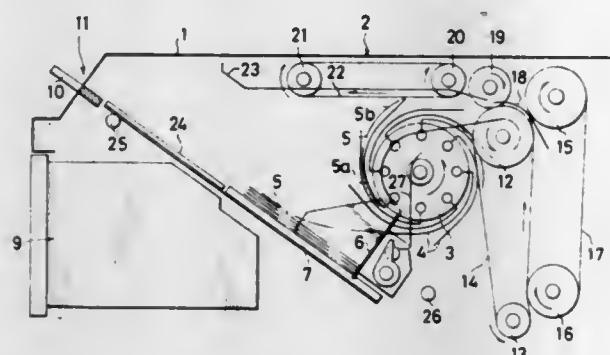
Filed Sep. 10, 1981, Ser. No. 301,009

Claims priority, application Japan, Sep. 11, 1980, 55-126549

Int. Cl.³ B65H 29/00

U.S. Cl. 271-187

2 Claims



1. A paper sheet accumulator assembly for receiving paper sheets, said accumulator assembly comprising a plurality of paddle wheels each having a plurality of paddles overlapping each other and adapted for rotation to receive paper sheets between said paddles, a guide belt driven to move at a speed substantially equal to the circumferential speed of the trailing free ends of said paddles and arranged adjacent to the peripheries of said paddle wheels, said paddle wheels being of predetermined length to avoid contact with said belt, and said paper sheets, located between said paddle wheels, contacting said guide belt only at a trailing end of said sheets, a scraper plate disposed below said paddle wheels for scraping said paper sheets away from said paddle wheels, and a carrier plate for receiving said paper sheets scraped from said paddle wheels.

4,431,179

TRANSPORT CHANNEL SYSTEMS

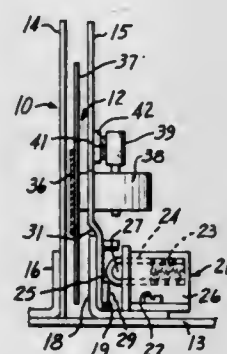
Dwight G. Westover, Sierra Madre, and Raymond M. McManaman, Glendora, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 16, 1982, Ser. No. 349,410

Int. Cl.³ B65H 5/02

U.S. Cl. 271-274

12 Claims



1. A method of facilitating service access to a transport channel bounded by a wall laterally containing the transport channel in a first position of said wall comprising in combination the steps of: providing a corner for receiving a margin of said wall at the transport channel; providing said wall with a ledge at said margin; exerting on said ledge at said margin a bias pushing said margin into said corner and releasably biasing said wall into said first position but permitting opening of the transport channel to some extent by manual tilting of said wall away from said transport channel; manually sliding said wall from the corner to open said channel entirely on one side thereof for complete access to the transport channel; and restoring said wall to said first position with said bias after termination of said tilting and after said sliding of the wall from the corner.

port channel to some extent by manual tilting of said wall away from said transport channel; manually sliding said wall from the corner to open said channel entirely on one side thereof for complete access to the transport channel; and restoring said wall to said first position with said bias after termination of said tilting and after said sliding of the wall from the corner.

4,431,180

ROLLER SUPPORTING ARRANGEMENT FOR ELECTROSTATIC COPYING APPARATUS

Tadanobu Nakajima, Nara, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

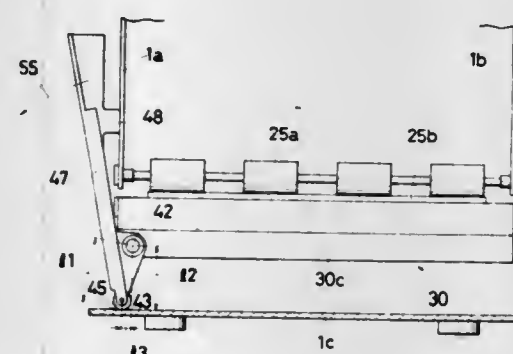
Filed Sep. 15, 1981, Ser. No. 302,354

Claims priority, application Japan, Sep. 22, 1980, 55-135086[U]

Int. Cl.³ B65H 5/06

U.S. Cl. 271-274

7 Claims



1. A roller supporting apparatus for use in an electrostatic copying apparatus of the type including an apparatus housing, a pair of fixing rollers, and a plurality of pairs of transport rollers, with the pair of fixing rollers and the pairs of transport rollers being spaced along a copy paper transport passage, said apparatus comprising:

a support frame for supporting a lower roller of the pair of fixing rollers and lower rollers of the pairs of transport rollers, said support frame having first and second spaced side walls extending parallel to the direction of copy paper transport along the copy paper transport passage and spaced end walls extending at right angles to said side walls, and said side walls having therein vertically elongated openings for supporting opposite ends of the lower fixing roller;

means, connected to said side walls and adapted to be connected to the apparatus housing, for spring-biasing upwardly the lower fixing roller supported within said openings;

a horizontal support shaft extending parallel to said copy paper transport direction and pivotally connected to said first side wall for pivotally mounting said support frame to the apparatus housing; and

means for selectively pushing said support frame upwardly about said support shaft to an operative position, whereat the lower fixing and transport rollers are in contact with the respective upper fixing and transport rollers, and for displacing said support frame downwardly about said support shaft to an opened position, whereat the lower rollers are spaced from the upper rollers, said pushing and displacing means comprising a control lever pivotally connected to said second side wall about an axis extending parallel to said copy paper transport direction, said control lever being pivotal about said axis between a first position whereat said support frame is at said operative position and a second position whereat said support frame is at said opened position.

6. A roller supporting apparatus for use in an electrostatic copying apparatus of the type including an apparatus housing, a pair of fixing rollers, and a plurality of pairs of transport

rollers, with the pair of fixing rollers and the pairs of transport rollers being spaced along a copy paper transport passage, said apparatus comprising:

a support frame for supporting a lower roller of the pair of fixing rollers and lower rollers of the pairs of transport rollers, said support frame including spaced side walls extending parallel to the direction of copy paper transport along the copy paper transport passage, first and second end walls extending at right angles to said side walls, a bottom portion having a surface inclined downwardly toward said first end wall from said second end wall in said copy paper transport direction, a stopper projection extending downwardly from said inclined surface at a position at the upstream end of said bottom portion with respect to said copy paper transport direction, and said side walls having therein vertically elongated openings for supporting opposite ends of the lower fixing roller;

means, connected to said side walls and adapted to be connected to the apparatus housing, for spring-biasing upwardly the lower fixing roller supported within said openings;

a horizontal support shaft extending transverse to said copy paper transport direction and pivotally connected to a downstream end of said support frame adjacent said first end wall with respect to said copy paper transport direction for pivotally mounting said support frame to the apparatus housing; and

means for selectively pushing said support frame upwardly about said support shaft to an operative position, whereat the lower fixing and transport rollers are in contact with the respective upper fixing and transport rollers, and for displacing said support frame downwardly about said support shaft to an opened position, whereat the lower rollers are spaced from the upper rollers, said pushing and displacing means comprising a bracket adapted to be fixed to a lower portion of the apparatus housing, a control lever having a lower end pivotally connected to said bracket about a pin extending transverse to said copy paper transport direction and an upper end, and a shaft pivotally connected to said control lever at a position between said lower and upper ends thereof and extending parallel to said pin over the entire width of said support frame, said shaft, when said support frame is in said operative position, contacting said inclined surface and said stopper projection.

4,431,181

COLLAPSIBLE GYM APPARATUS

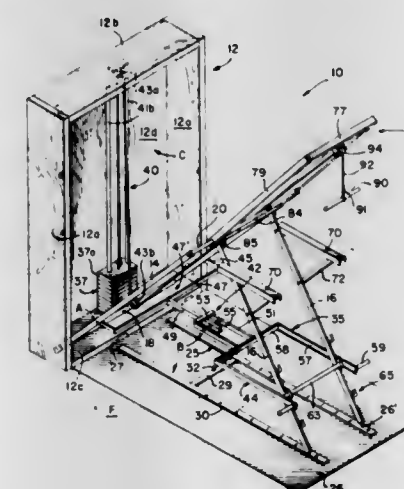
Steven E. Baswell, Rte. 1, Box 392, Ohatchee, Ala. 36271

Filed Jun. 18, 1981, Ser. No. 274,889

Int. Cl.³ A63B 1/00, 21/06

U.S. Cl. 272-62

24 Claims



1. A collapsible gym apparatus, comprising: (a) first and second pairs of legs pivotally connected at upper portions for selective movement between a stored foldup position and a stationary and fixed set-up position, said first and second pairs of legs forming an A-frame structure for supporting a user in the performance in body exercises; (b) exercising attachment means pivotally connected to at least one of the first and second pairs of legs for selective movement between a stored foldup position on said legs and a set-up position supported by the legs for performing body exercises, said exercising attachment means and first and second sets of legs capable of assuming a substantially flat, fold-up position for storage convenience; and (c) means for pivotally interconnecting said upper portions together, said upper connecting means including a pivot shaft passing through both the first and second pairs of legs, thereby enabling the first and second pairs to pivot with respect to each other between set-up and foldup position on said pivot shaft, wherein said second pair of legs is connected to the pivot shaft between the first pair of legs for selective forward pivotal movement outwardly from the first pair of legs and return to substantially flat foldup position between the first pair of legs, said pivot shaft being the sole upper interconnecting structure of said legs.

position and a stationary and fixed set-up position, said first and second pairs of legs forming an A-frame structure for supporting a user in the performance in body exercises; (b) exercising attachment means pivotally connected to at least one of the first and second pairs of legs for selective movement between a stored foldup position on said legs and a set-up position supported by the legs for performing body exercises, said exercising attachment means and first and second sets of legs capable of assuming a substantially flat, fold-up position for storage convenience; and (c) means for pivotally interconnecting said upper portions together, said upper connecting means including a pivot shaft passing through both the first and second pairs of legs, thereby enabling the first and second pairs to pivot with respect to each other between set-up and foldup position on said pivot shaft, wherein said second pair of legs is connected to the pivot shaft between the first pair of legs for selective forward pivotal movement outwardly from the first pair of legs and return to substantially flat foldup position between the first pair of legs, said pivot shaft being the sole upper interconnecting structure of said legs.

4,431,182

HUMAN FREE-FLIGHT AMUSEMENT DEVICES

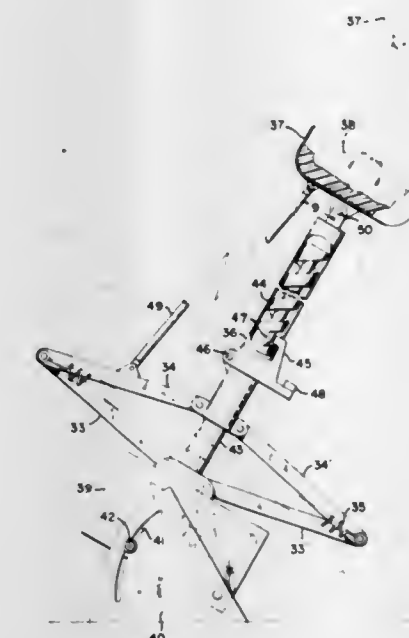
Francis D. Reynolds, 3060 W. Lake Sammamish Pky. N., Redmond, Wash. 98052

Filed May 3, 1982, Ser. No. 374,620

Int. Cl.³ F31B 7/00; A61G 7/04

U.S. Cl. 272-65

3 Claims



3. An amusement apparatus having means for accelerating at least one person into free flight, said means for accelerating comprising a base, a cradle and means attached to said base and to said cradle for causing controlled linear movement, acceleration and deceleration of said cradle, said means attached to

said base and to said cradle being a spring powered linear actuator, said spring powered linear actuator comprising a telescopic assembly further comprising a shaft and a tube telescopically slidable on said shaft, at least 4 links interconnecting said shaft and said tube, said links having first ends and second ends, said first ends being pivoted to said shaft and said tube and said second ends being pivoted to each other and a tension spring connected to said second ends pivoted to each other such that relative telescopic motion of said shaft and said tube in a first direction causes extension of said tension spring and relative telescopic motion of said shaft and said tube in a direction opposite to said first direction is caused by contraction of said tension spring.

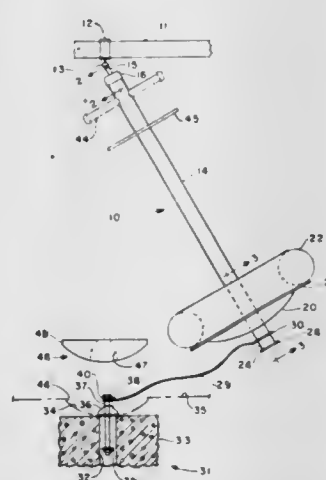
4,431,183 MOTION SIMULATOR

Paul E. Reimann, 1014 E. Center St., Bountiful, Utah 84010
Filed May 12, 1982, Ser. No. 377,516

Int. Cl.³ A63G 9/14

U.S. Cl. 272-85

7 Claims



1. A motion simulation device comprising:
 - a. a passenger carrying body;
 - b. overhead suspension means;
 - c. support structure, pivotally supported at a first end thereof to said suspension means and supporting said passenger carrying body near a second end thereof, said support structure including a section thereof near said second end and extending below said passenger carrying body;
 - d. a ring slidably mounted on said section; and
 - e. a resiliently extensible tether connected at a first end thereof to said ring, and at a second end thereof to a substantially fixed point beneath said suspension means.

4,431,184 AERIAL GYMNASTIC EXERCISER

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Jul. 21, 1980, Ser. No. 170,693

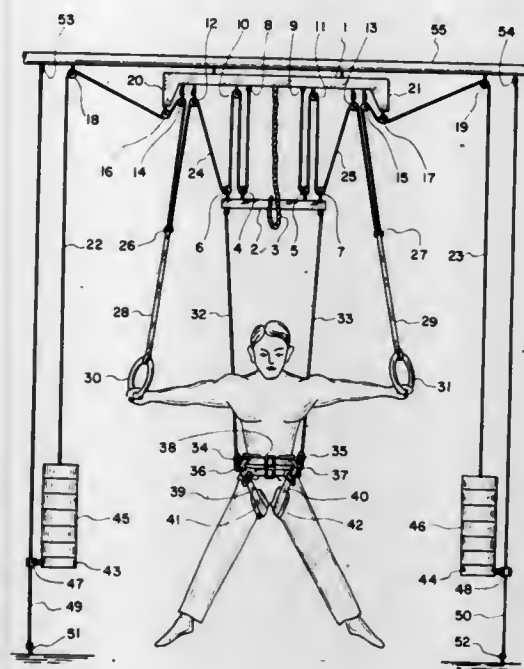
Int. Cl.³ A63B 7/02, 21/12

U.S. Cl. 272-109

7 Claims

1. An aerial gymnastic exerciser comprising in combination: a pair of overhead sheave means suspended from an overhead support; a pair of lower sheave means being connected to lower sheave support means; a harness depending from the lower sheave support means to support a gymnast; the suspension of the lower sheave support means from the overhead support including two cords, each with one end attached to either the overhead support or the lower sheave support means and threaded up and down through the respective pairs of upper and lower sheave means with the other end connected to hand grip means to be grasped by the gymnast; each of the overhead and lower sheave means comprising a plurality of pulley wheels with each of the cords threaded up and down therethrough comprising compound pulley systems; two adjustable weight means systems, each system including adjust-

able weights depending from one end of a cord with each cord passing upward and over at least one respective sheave



mounted on the overhead support outboard of the overhead sheave means and then continuing downwardly and terminating by being secured to the hand grip means.

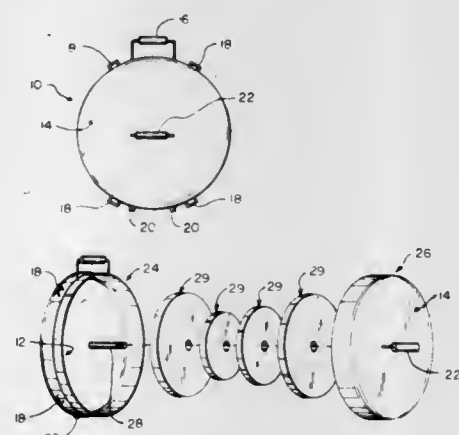
4,431,185 PORTABLE EXERCISE CASE CONTAINING BARBELLS OR THE LIKE

Roy R. Cisneros, 1022 27th St., Denver, Colo. 80205
Filed Nov. 13, 1981, Ser. No. 320,943

Int. Cl.³ A63B 21/12

U.S. Cl. 272-117

6 Claims



1. A portable exercise case comprising:
 - (a) at least one relatively heavy weight provided with a hole therethrough;
 - (b) a generally hollow receptacle for carrying and containing said weight and comprising a container portion having a generally open section and a closure or lid normally disposed over the container portion open section and adapted to be removably attached to said container portion;
 - (c) means for removably attaching said lid to said container portion;
 - (d) a rod mounted within and extending through said receptacle, said rod having a diameter or thickness sufficiently small to permit said rod to extend through the hole provided in said weight such that the weight may be mounted on said rod and may be carried and contained in said receptacle;
 - (e) a handle mounted on the outside of said receptacle for aiding a person's transporting of and lifting of the case;

- (f) at least one substantially flat surface means for engaging the body of a person exercising with the case.

4,431,186 BILLIARD GAME TABLE

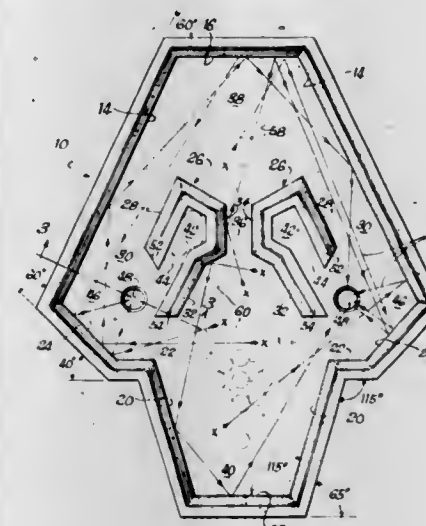
John Q. Gold, 352 69th St., San Diego, Calif. 92114

Filed Feb. 23, 1981, Ser. No. 236,783

Int. Cl.³ A63D 15/00

U.S. Cl. 273-3 A

8 Claims



1. A generally arrow-head shaped billiard table comprising:
 - (a) a flat bed;
 - (b) a plurality of bumpers defined on said bed to define an enclosed space, said bumpers comprising the following:
 - (i) a pair of angulated front sidewall bumpers approaching one another toward the front and forwardly terminating in a transverse front wall bumper;
 - (ii) a pair of angulated rear sidewall bumpers approaching one another toward the rear and rearwardly terminating in a transverse rear wall bumper;
 - (iii) first and second intermediate wall bumpers extending respectively between the forward ends of each of said rear sidewall bumpers and the rear ends of said front sidewall bumpers to define laterally opposite wing areas;
 - (c) a pair of pocket holes defined in said bed in the respective wing areas spaced from said first and second intermediate wall bumpers; and
 - (d) a pair of islands having bumpers extending parallel to respective ones of said front sidewall bumpers to define a pair of elongated generally longitudinally directed corridors therewith.

4,431,187 GOLF CLUB SHAFT

Joseph W. Rumble, Hartford, and William G. Sprague, Litchfield, both of Conn., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jun. 25, 1982, Ser. No. 391,988

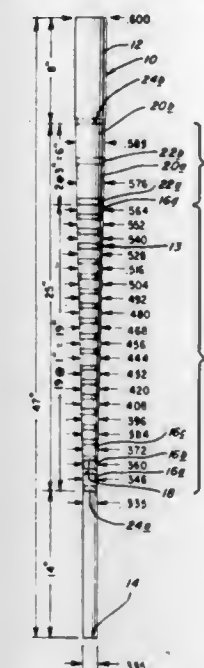
Int. Cl.³ A63B 53/12

U.S. Cl. 273-80 R

16 Claims

1. A golf club shaft having a grip end, a hosel end and a main shaft portion intermediate the grip and hosel ends, the main shaft portion having a plurality of step portions with each adjacent pair of step portions having a transitional portion therebetween, the main shaft portion comprising:
 - a first step portion extending partly along the length of the main shaft portion and having a first diameter;
 - a second step portion extending partly along the length of the main shaft portion and spaced from the first step portion and having a second diameter different than the first diameter; and
 - a transitional portion disposed between the first and second step portions having a tapered outer surface of changing diameter smoothly linking the first and second step portions, the length of the transitional portion being substan-

tially greater than the difference between the first and second diameters wherein the pattern of the step portions



and transitional portions of the main shaft portion is substantially as shown in FIG. 1.

4,431,188 BALL TYPE GAME APPARATUS WITH LATERALLY MOVABLE BALL STRIKING MECHANISM AND CONTROL THEREFOR

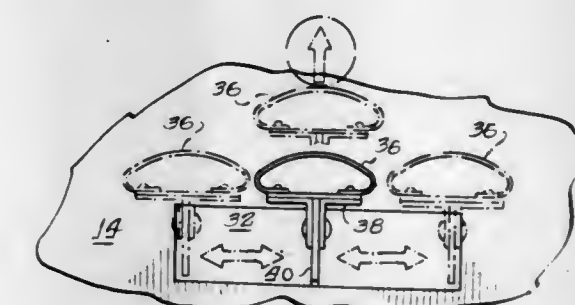
Donald E. Hooker, Wilmette, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed May 18, 1981, Ser. No. 264,582

Int. Cl.³ A63F 7/02, 7/26

U.S. Cl. 273-121 A

21 Claims



1. In a ball type game apparatus having a sloping playfield adapted to receive a ball thereon such that the ball gravitates toward a lower end of the playfield, the combination therewith comprising:
 - a carriage mechanism supported for lateral movement between predetermined limit positions relative to the playfield,
 - means biasing said carriage mechanism toward a selected one of said limit positions,
 - a ball striking mechanism carried by said carriage mechanism for lateral movement therewith and extending above said playfield so as to enable engagement with a ball,
 - and control means operatively associated with said carriage mechanism in a manner to enable selective lateral movement thereof, said control means including a player manipulatable actuator, and connecting means interconnecting said player actuator to said carriage mechanism including a connecting linkage normally engageable with said carriage mechanism so as to effect lateral movement thereof responsive to manipulation of said player actuator, said connecting linkage including means limiting the rate of movement of said carriage mechanism in a first lateral direction responsive to a predetermined rate of movement

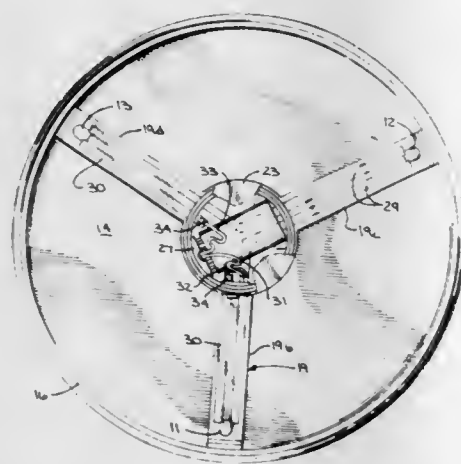
(h) a stock certificate representation for each share of stock of each company represented on each company square.

4,431,196

LIGHTING ADAPTER KIT AND METHOD FOR INSTALLING LIGHTS IN A FLYING DISC

Mark R. Kutnyak, 3276A S. 7th St., Milwaukee, Wis. 53215, assignor to Mark R. Kutnyak, Milwaukee, Wis.
Filed Sep. 30, 1982, Ser. No. 429,784
Int. Cl.³ A63B 65/08; A63H 27/00
U.S. Cl. 273—424

11 Claims



1. In an illumination kit for installation of discrete light sources in a flying disc, a kit component comprising:

- a transparent membrane of insulating material having a central base and a plurality of arms extending radially outward from the base;
- a plurality of discrete, electrically powered light sources each mounted on a distal portion of a respective membrane arm;
- a set of conductive strips secured to the underside of the membrane, a pair of the strips extending from the base to a radially distal portion of each respective arm where the strips are connected to a respective one of the light sources, two of the conductive strips having termination portions positioned under the base of the membrane;
- power source retaining means attached to the top side of the membrane base to house a power source and provide electrical connections between the power source and the termination portions of the conductive strips;
- a layer of double-faced adhesive tape secured to the underside of the base, the conductive strips and the portion of each arm radially adjacent the base, the tape having radially distal portions that are separated from radially distal portions of the arms;
- a segmented liner releasably attached to the underside of the tape; and

liner strips releasably attached to the top side of the radially distal portions of the tape opposite the membrane, these liner strips each including means opposite a respective light source on the distal portion of a respective membrane arm for indicating the position of the respective light source, so that a hole can be punched in the disc at the indicated position, the liner strip removed, and the light source secured in position within the hole.

- 6. A method of installing discrete light sources on board a flying disc together with a supporting structure having a base for carrying a power source and arms extending radially from the base to carry light sources and the circuitry for connecting the light sources to the power source, the method comprising: exposing adhesive on the underside of double-faced adhesive tape that is secured on its top side to the base and to the radially adjacent portions of the arms extending from the base; adhesively attaching the base to the center of the flying disc;

adhesively attaching the radially adjacent portions of the arms to the flying disc; adhesively attaching radially distal portions of the underside of the tape to the flying disc; punching holes in the disc through the radially distal portions of the tape at locations opposite the locations of the light sources on the underside of the arms; exposing the adhesive on the top side of the radially distal portions of the tape; and securing the radially distal portions of the arms to the adhesive on the radially distal portions of the tape while inserting the light sources into position within the holes punched in the disc.

10. An illuminated flying disc which comprises:

- a disc-shaped upper deck terminating in a downwardly curving leading edge and having a plurality of holes for locating a corresponding plurality of discrete light sources;
- a rim depending from the outer periphery of the leading edge, and together with the leading edge defining a downwardly opening cavity along the underside of the upper deck;
- power source retaining means generally centrally located on the underside of the upper deck for supporting, and providing electrical connection to, a power source;
- a plurality of discrete light sources located in the holes in the upper deck, these holes and the light sources being spaced inwardly from the rim by the thickness of a human fingertip, the light sources projecting from the holes to be visible from above and from points radially outward from the upper deck;
- a plurality of flat conductive strips electrically connecting the light sources to the power source retaining means; and
- a transparent membrane of insulating material secured to the underside of the upper deck to provide a protective covering for the conductive strips and the light sources that is substantially flush with the underside of the deck, while permitting observation of the light sources from underneath the disc.

4,431,197

O-RING GASKETS AND METHOD OF MANUFACTURING SAME

Peter A. Kirkwood, Natal, South Africa, assignor to Fibre-Wound (PTY) Limited, South Africa
Filed May 14, 1981, Ser. No. 263,483
Claims priority, application South Africa, May 19, 1980, 80/2968

Int. Cl.³ F16J 15/10, 15/14

U.S. Cl. 277—1

4 Claims



- 1. A gasket including an O-ring of an elastomeric material and an annulus formed from a substantially continuous filamentary material, which is wound to form the annulus, the fibre being incorporated in a resinous material and the O-ring being attached to the inner periphery of the annulus.

4,431,198

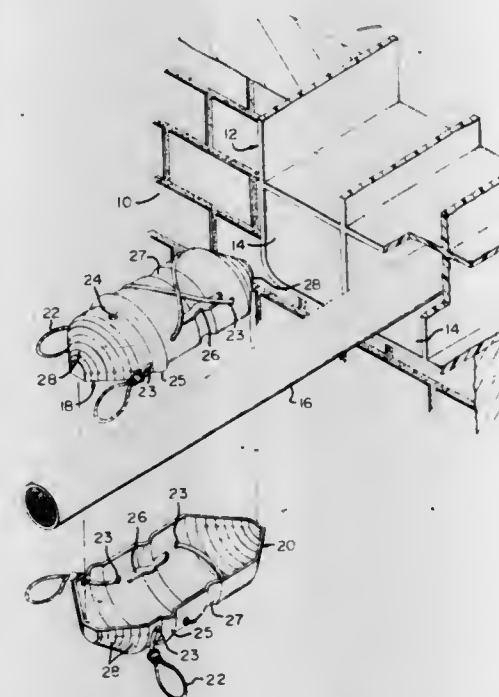
DEVICE FOR CONDUIT SEAL AND REPAIR

Ernest L. Beinbaur, Harrisburg, and Marshall S. Mountz, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1982, Ser. No. 439,518
Int. Cl.³ E04F 17/08; F04B 5/48

U.S. Cl. 277—1

22 Claims



1. A device for sealing conduit passing through an opening in a bulkhead, comprising:

- a bulkhead having at least one aperture therein;
- conduit means passing through said aperture in said bulkhead;
- conduit sealing means disposed at a point wherein said conduit passes through said bulkhead aperture, said sealing means being comprised of a first and a second collar member, each member substantially the mirror image of the other and surrounding said conduit means, said collar members of sufficient dimension so as to form a cavity therein;
- said collar means further having conduit sizing rings disposed at each end of said collars for permitting the passage of said conduit therethrough;
- expandable foam entry opening contained in said first or said second collar member for permitting the introduction of an expandable foam means into said cavity; and
- expandable foam means which when introduced into said foam entry opening in said cavity, expands thereby filling substantially all voids contained in said cavity thereby urging one or both of said collar members in substantially diametrically opposite directions, said foam means further exiting through that junction wherein said first and said second collar members meet, and substantially expanding and filling all voids between the exterior of said conduit sealing means and the bulkhead opening.

4,431,199

SELF-HYDRAULIC PRESSURE GENERATING AND MAINTAINING DEVICE FOR SHAFT-SEAL MECHANISM

Tomoichiro Iwane, No. 52, Okazaki-Tenno-Cho, Sakyo-ku, Kyoto, Kyoto Prefecture, Japan

Filed Dec. 2, 1982, Ser. No. 447,001

Claims priority, application Japan, Dec. 7, 1981, 56-197422
Int. Cl.³ F16J 15/40, 15/54

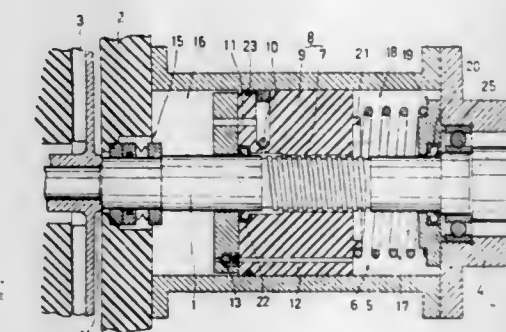
U.S. Cl. 277—3

12 Claims

- 1. A shaft sealing pressurizing device positioned adjacent a casing through which a rotary shaft extends through a mechanical shaft seal mounted in an opening in the casing for

applying and maintaining pressurized liquid externally of the mechanical shaft seal and adjacent the casing at a level exceeding the pressures generated internally of the casing, said pressurizing device comprising:

- a cylindrical shell concentrically positioned around a portion of said shaft extending externally from said casing and the mechanical shaft seal;
- a piston positioned in said cylindrical shell for reciprocation relative to the shell and said shaft, said piston dividing the interior of said cylindrical shell into a high pressure chamber and a low pressure chamber with the high pressure chamber communicating with the casing and the mechanical shaft seal;



a body of liquid filling said high pressure chamber and said low pressure chamber;

pump means driven by said shaft for forcing liquid in the low pressure chamber to the high pressure chamber so as to cause pressure in the high pressure chamber to urge said piston toward the low pressure chamber;

spring means engageable with said piston for resisting movement of said piston toward said low pressure chamber so that energy is stored in said spring means in response to movement of said piston toward the low pressure chamber whereby said spring means acts to maintain high pressure in said high pressure chamber during periods when said pump is not operating as a result of non-rotation of said shaft.

4,431,200

BACK-UP RING WITH SLITTED, FOLDED PORTION FOR PACKING OF HYDRAULIC APPARATUS

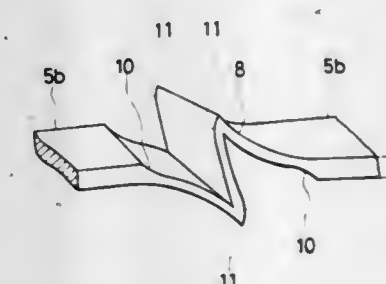
Nobuyuki Sugimura, 308 Mabase, Shimizu-Shi Shizuoka-ken, Japan

Filed May 16, 1983, Ser. No. 494,999

Claims priority, application Japan, Jun. 26, 1982, 57-96139[U]
Int. Cl.³ F16J 9/00

U.S. Cl. 277—215

4 Claims



1. In an endless back-up ring having axially spaced faces and having a folded portion which defines a zig-zag shape, the improvement comprising:

- said folded portion has a smooth concave surface defined by a first slit extending from one face toward the other face, said slit having a first circumferentially extending portion spaced from said other face and a concave portion extending from said first circumferential portion to said one face; and

said folded portion further includes a convex surface defined by a second slit extending from said other face toward said one face, said second slit having a second circumferentially extending portion intermediate said first circumferential portion and said one face and a convex portion extending from said second circumferential portion to said other face whereby said folded portion may be unfolded to expand the ring, said concave and convex surfaces preventing damage to said folded portion.

4,431,201.

CHUCK WITH CENTRIFUGAL COMPENSATION DEVICE

Eiichi Morisaki, Nagoya, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

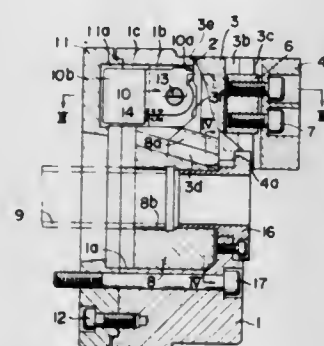
Filed Mar. 16, 1981, Ser. No. 244,325

Claims priority, application Japan, Mar. 31, 1980, 55-42467

Int. Cl.³ B23B 31/14

U.S. Cl. 279-1 C

5 Claims



1. A rotary chuck comprising:
 - a chuck body having an axis of rotation; and
 - a plurality of jaw mechanisms, each jaw mechanism including:
 - a master jaw slidably supported by said chuck body for sliding in a radial direction relative to said axis and having a planar back face extending substantially radially relative to said axis near the radially outer periphery of said chuck body,
 - a top jaw secured to said master jaw axially forward thereof and movable therewith in said axial direction,
 - a balance weight supported in and rotatable with said body, for providing compensation for centrifugal force acting on said master jaw and top jaw during rotation of said chuck about said axis, and
 - force transmitting means for transmitting the centrifugal force acting on said balance weight during rotation of said chuck body, in a forward direction substantially parallel to said axis to said back face near said radially outer periphery, said force transmitting means having an axially forward end in radial sliding contact with said back face near said radially outer periphery, said centrifugal force being transmitted to said back face through said forward end to press said master jaw and said top jaw only in an axially forward direction and thereby to impart a moment thereto urging said top jaw to rotate inward toward said axis.

4,431,202

PIVOTED JAW MEMBERS

Henry F. Swenson, Roseland, N.J., assignor to J. & S. Tool Company, Livingston, N.J.

Filed Apr. 5, 1982, Ser. No. 365,799

Int. Cl.³ B23B 31/18

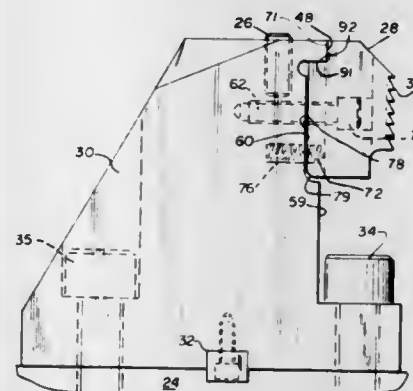
U.S. Cl. 279-106

21 Claims

1. An auxiliary jaw adapted to be affixed to a reciprocally movable member and providing mounting means for said jaw which is advanced toward and from a workpiece to grip said workpiece and as this jaw is advanced provides a gripping action combined with a hold-down actuation, this auxiliary

jaw arranged to act with an opposed abutting member to grip the workpiece, the auxiliary jaw carried by said movable member in a chuck, worktable and the like, this auxiliary jaw including:

- (a) a support member provided with securing means by which said support member is fastened at its bottom surface to the reciprocally movable member and including a positioning means formed in both support member and the movable member;
- (b) at least one receiving and retaining means formed in an upper portion of the support member including a fixed lip portion provided with a shoulder generally parallel to the bottom surface of the support member and with at least one guide portion disposed below the lip portion and adjacent thereto;
- (c) a pivoted jaw member having a face portion adapted to engage a surface portion of a workpiece, said jaw carried by retaining means formed in and provided by the support member and guided by said guide portion to move in a plane generally parallel to the bottom surface of the support member, this jaw member having a pivot configura-



- tion which includes at least one portion adapted to slidably engage a compatibly formed portion on the support member to provide said guide portion, the jaw member having a recess formed by transverse surfaces at the corner adjacent the support member lip and positioned to receive the lip portion on the support so that in operating condition the lip and jaw member engage each other to provide actuation while the recess and the shoulder are engaged to prevent upward displacement of the jaw member as it is mounted and used with the support member, and
- (d) securing means retained in the support member and engaging the jaw so as to hold the jaw member with limited movement relative to said support member at a selected position while permitting the pivoted movement of the lower end of the jaw member toward the support member, the fulcrum of the pivoted movement of the assembled auxiliary jaw being provided at the lip of the support member so that the lower jaw member portion has a determined clearance from the adjacent support member surface and may be pivoted around the fulcrum at said lip to provide the desired hold-down actuation.

4,431,203

STEERING ARRANGEMENT FOR RECUMBENT BICYCLE OR THE LIKE

Larry A. DeMoss, 970 Joppa Rd., Mooresville, Ind. 47158, assignor to Larry A. DeMoss and Stephen A. Edwards, both of Mooresville, Ind.

Filed Jan. 11, 1982, Ser. No. 338,226

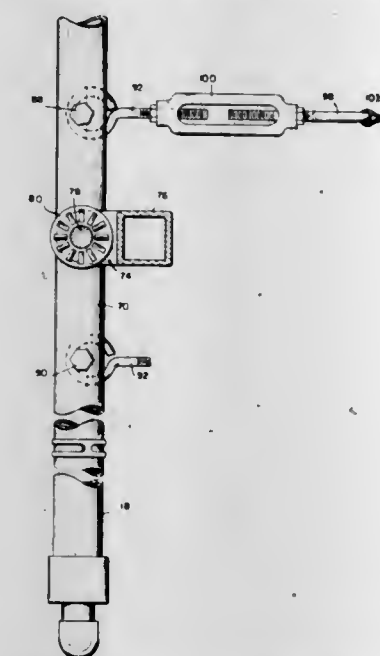
Int. Cl.³ B62K 21/00

U.S. Cl. 280-270

6 Claims

1. A steering mechanism for a cycle having a frame, the steering mechanism comprising a fork for supporting a steerable wheel, means for pivotally mounting the fork on the frame, means providing a pair of generally oppositely project-

ing steering arms on the fork, a handlebar steering control providing a pair of generally oppositely projecting steering arms, means for mounting the steering control pivotally from the frame, and cables coupling respective fork steering arms to respective steering control steering arms whereby manipulation of the steering control effects steering of the steerable wheel, the means for pivotally mounting the steering control including means providing two facing, load-bearing surfaces



on the frame, a block for insertion between the facing surfaces, a thrust bearing for insertion between each of the load-bearing surfaces and a respective adjacent surface of the block, means providing aligned openings in the load-bearing surface-providing means, the block and the thrust bearings, a pivot pin for insertion into the aligned openings to mount the block pivotally upon the frame, and means for mounting the handlebar steering control to project from the block.

4,431,204

FRONT WHEEL SUSPENSION SYSTEM FOR MOTORCYCLES

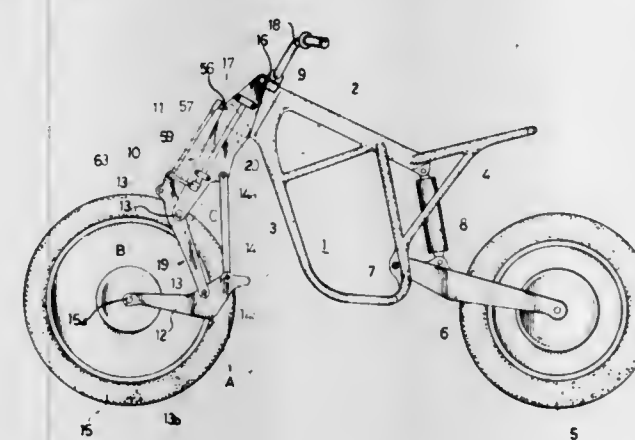
Shinichi Miyakoshi, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,948

Int. Cl.³ B62K 21/02

U.S. Cl. 280-277

1 Claim



1. A front wheel suspension system for motorcycles comprising:
 - a motorcycle frame;
 - an upper fork rotatably supported in said frame and comprising a pair of side members;
 - a lower fork supporting a front wheel at one end and coupled at the other end to said upper fork;
 - said lower fork being capable of swinging up and down to

allow vertical displacement of said front wheel following irregular road surfaces;

- said upper and lower forks defining a front wheel suspension;
- a rotary lever type damper cooperating with said front wheel suspension and operatively coupled to said lower fork;
- said rotary lever type damper being disposed between said pair of side members;
- said rotary lever type damper including a case;
- said case defining a bottom bridge connecting said pair of side members of said upper fork; and
- said rotary lever type damper being housed within said case defining said bottom bridge.

4,431,205

GOLF CART

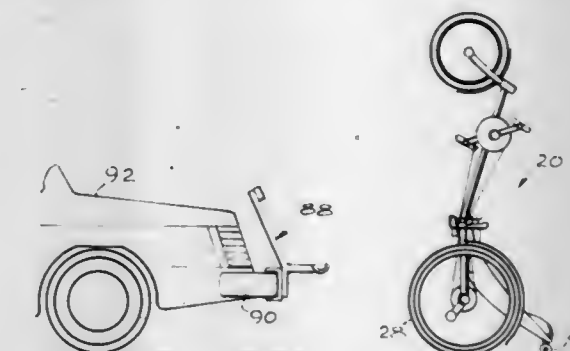
John M. Speicher, Santa Ana, and Allan A. Voigt, Anaheim, both of Calif., assignors to An-Penn, Inc., Punta Gorda, Fla.

Filed Feb. 11, 1982, Ser. No. 347,991

Int. Cl.³ B62K 5/04

U.S. Cl. 280-282

12 Claims



1. An improved golf cart, comprising, in combination:
 - a frame;
 - a seat having a back disposed on said frame;
 - a pair of rotatable rear wheels disposed on opposite sides of said seat, mounted to said frame;
 - a third rotatable wheel connected to said frame in front of said pair of wheels;
 - a set of foot cranks and drive sprocket connected to said frame;
 - drive means including a chain interconnecting said foot cranks and drive sprocket with a driven sprocket coupled to at least one wheel for driving said cart;
 - steering means connected to said frame and said front wheel;
 - golf bag support means secured to at least one of said frame and seat; and
 - support means including rotatable means connected to said cart for movement and storage of said cart with the frame of said cart in a generally vertical attitude.

4,431,206

WHEELCHAIR MEDICAL ACCESSORY CARRIER

John W. Pryor, 420 N. Cedros, Solana Beach, Calif. 92075

Filed Jul. 27, 1981, Ser. No. 287,264

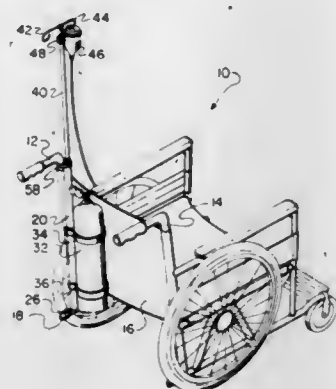
Int. Cl.³ A47C 7/62

U.S. Cl. 280-289 WC

8 Claims

1. A medical accessory carrier for a wheelchair, said carrier comprising:
 - an elongated lower post for detachably mounting in a vertical position to the back support tube of a wheelchair, said post including a tubular slip bracket at the lower end thereof extending at approximately 90 degrees to the axis of said lower post for extending over and mounting on the backward extending kick tube of a wheelchair;
 - a sleeve clamp for mounting on the kick tube of a wheelchair outward of said slip bracket for retaining said slip bracket in position on said kick tube,

a bottle support tab secured to and extending outward at an angle of about 45 degrees from said tubular slip bracket from the lower end of said lower post for supporting an oxygen bottle, and



clamp means disposed along said lower post for detachably clamping an oxygen bottle in a vertical position to said lower post.

4,431,207

AUTOMATIC HITCH DEVICE

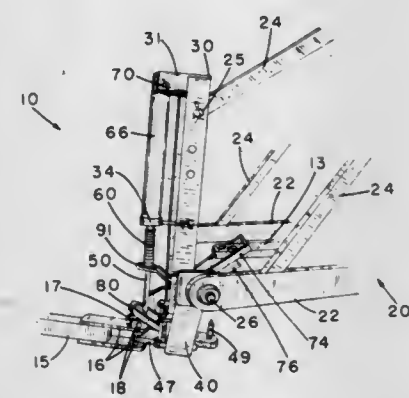
Joseph W. Langenfeld, and Neal W. Westendorf, both of Onawa, Iowa, assignors to Westendorf Manufacturing Company, Inc., Onawa, Iowa

Filed Dec. 30, 1981, Ser. No. 335,860

Int. Cl.³ B60D 1/04

U.S. Cl. 280—415 A

11 Claims



1. An automatic hitch device for use on a prime mover with a three-point hitch and drawbar comprising:

- (a) a transverse member;
- (b) tongue accepting means for accepting the tongue of a tow vehicle operably mounted on said transverse member;
- (c) tower means mounted on said transverse member;
- (d) hitch pin driving means operably mounted on said tower;
- (e) hitch pin means operably mounted on said hitch pin driving means for pinning the tongue of a tow vehicle to said tongue accepting means;
- (f) drawbar attachment means mounted on said transverse member for attaching said automatic hitch device to the drawbar of a prime mover; and
- (g) control means for operating said hitch pin driving means;
- (h) said transverse member comprising transverse member attachment means for pivotally attaching said transverse member to two points of a three-point hitch;
- (i) said tower means comprising tower attachment means for pivotally attaching said tower to the third point of a three-point hitch;
- (j) a tongue safety device for retaining the tongue of the tow vehicle on the tongue accepting means;
- (k) the tongue safety device comprising a clevis pivotally mounted above said tongue engagement means and a clevis engagement piece fixedly mounted on the tow vehicle tongue, and

(l) said tongue safety device comprising a first trip means for disengaging said clevis from said clevis engagement piece.

4,431,208

TRAILER WALKER

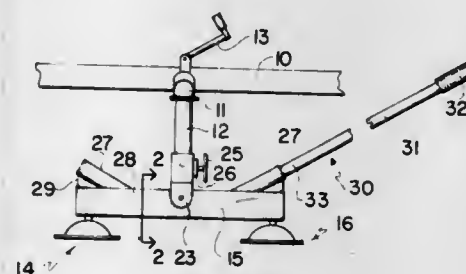
Jack Geeves, Weyburn, Canada, assignor to Allan G. Messer, Weyburn, Canada

Filed Jul. 12, 1982, Ser. No. 397,578

Int. Cl.³ B60D 1/00

U.S. Cl. 280—475

19 Claims



1. A trailer walking device for use with the cylindrical stem of a trailer hitch assembly; comprising in combination a main beam, a foot pad secured adjacent each end thereof and upon the underside of said main beam, a stem receiving socket mounted upon the upper side of said main beam and substantially centrally between the ends thereof, a detachable manipulating handle; and a manipulating handle socket adjacent each end of said main beam selectively engageable by said handle.

4,431,209

SKI

Franz Völkl, and Heinz Müller, both of Straubing, Fed. Rep. of Germany, assignors to Franz Völkl OHG, Straubing, Fed. Rep. of Germany

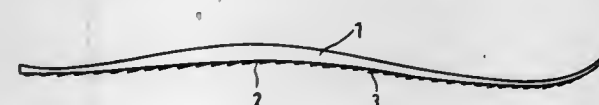
Filed Feb. 2, 1981, Ser. No. 230,592

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005171

Int. Cl.³ A63C 7/06

U.S. Cl. 280—604

19 Claims



1. A ski, comprising an elongated body part having a predetermined supporting length and a rear end; a high-molecular polyethylene bottom layer arranged on said body part; and a roughening provided on said layer and having a thickness substantially equal to 10^{-1} mm, said roughening including a plurality of elongated narrowing bendable projections inclined in their entirety toward the rear end of the body part, each formed as a cutting edge-like tooth from the high-molecular polyethylene of said layer, having a length considerably greater than their thickness, arranged with a density of more than 1000 projections per cm^2 and overlapping one another to avoid sliding of the ski on free surface regions between said teeth, so that climbing with the ski is facilitated and at the same time sliding capacity thereof is only insignificantly reduced.

4,431,210

SKI BINDING JAW, IN PARTICULAR A FRONT JAW

Theodor Nitschko, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

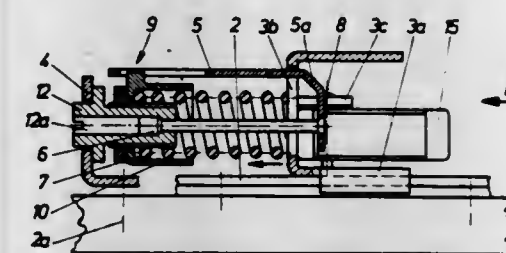
Filed Jul. 20, 1981, Ser. No. 285,195

Claims priority, application Austria, Aug. 6, 1980, 4048/80

Int. Cl.³ A63C 9/085

U.S. Cl. 280—625

8 Claims



1. A safety ski binding jaw adapted to be mounted on a ski, comprising a first member having two bolts thereon which are arranged symmetrically with respect to the longitudinal center plane of the ski and are substantially perpendicular to the upper side of the ski, each said bolt pivotally supporting a respective sole holder, said sole holders each having a first arm which can engage the sole of a ski shoe and a second arm which can engage a second member which is supported for movement relative to said first member longitudinally of the ski, and a release spring having one end supported on said first member and its other end supported on an abutment on said second member which can be positionally-adjusted longitudinally of the ski relative to said second member by means of an adjusting screw, said first member being supported for movement longitudinally of the ski on a guide rail which can be secured to the ski and has in a front region thereof a support part which said adjusting screw for said abutment for said spring can engage to limit forward movement of said second member relative to said guide rail.

4,431,211

LUGGAGE CARRIER

Richard M. Carrigan, 3538 W. Lyons, Evanston, Ill. 60203

Continuation of Ser. No. 127,798, Mar. 6, 1980, abandoned. This application May 26, 1982, Ser. No. 382,174

Int. Cl.³ B62B 1/06

U.S. Cl. 280—655

13 Claims



1. A carrier for luggage and the like, comprising an elongated base member adapted for movement over a support surface, elongated upright frame means carried by and extending generally vertically upwardly from said base member and defining a handle for manipulating said carrier, support means including laterally spaced support frame members pivotally carried by said base member and movable between inoperative positions adjacent to one of said base member and frame means and operative positions extending generally horizontally outwardly from said base member for supporting one or more

items to be transported on said carrier, and elongated resilient retaining means having an intermediate portion and opposite ends, said opposite ends being non-removably connected to respective ones of said support frame members and being freely shiftable along the lengths thereof, and at least one hook mounted on said intermediate portion of said resilient retaining means so as to be freely slidable thereon, said support frame members and said resilient retaining means coacting to support and retain one or more items to be transported on said carrier when said support frame members are in their operative positions with said item or items resting thereon and with said hook engaged with said upright frame means so that said intermediate portion of said resilient retaining means engages said item or items, the non-removable connection of said opposite ends of said resilient retaining means with said support frame members and the freely slidable mounting of said hook on said intermediate portion contributing to the safety of use of said carrier by causing said intermediate portion and hook to snap harmlessly away from a user if said intermediate portion is accidentally released while said resilient retaining means is in tension.

4. In a carrier for luggage and the like, including an elongated base member adapted for movement over a support surface, elongated, upright frame means connected to said base member and extending generally vertically upwardly therefrom, said upright frame means including a pair of elongated, laterally spaced, upwardly extending portions, support means carried by said base member for supporting one or more items to be transported on said carrier, and an auxiliary frame member carried by said elongated, laterally spaced, upwardly extending portions of said upright frame means and movable between an operative position wherein a portion of said auxiliary frame member engages and is retained by the upwardly extending portions of said upright frame means and an inoperative position disengaged from said upright portions, said auxiliary frame member having a horizontal section about which said auxiliary frame is adapted to pivot, the improvement of at least one bearing member for pivotally connecting said auxiliary frame member to said upright frame means, said bearing member having at least one vertical bore therethrough for receiving a part of one of the laterally spaced, upwardly extending portions of said upright frame means, and said bearing member having a horizontally extending recess therein for receiving, retaining, and pivotally supporting at least a portion of the horizontal section of said auxiliary frame member, said auxiliary frame member providing additional support for one or more items on said carrier when said auxiliary frame member is in its operative position.

4,431,212

JACKING POINT STRUCTURE

Hirokazu Hirabayashi, Tokyo; Hirokazu Tomioka, and Shuji Yamagata, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 28, 1981, Ser. No. 267,781

Claims priority, application Japan, May 29, 1980, 55-72049

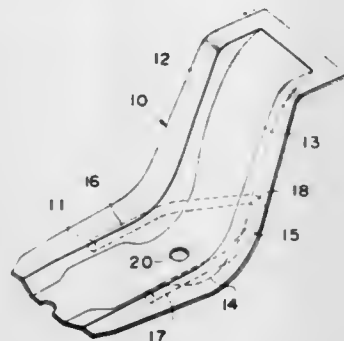
Int. Cl.³ B60D 1/04, 1/16

U.S. Cl. 280—762

10 Claims

1. A jacking point structure attached to a lower portion of a trunk compartment in an automotive vehicle, comprising: a bracket having opposite ends affixed to the underside of the lower portion, said bracket having a jacking point at a central portion thereof; and a hook having a pair of legs affixed to the bracket and a curved portion positioned between the legs, each leg having an end portion respectively secured to opposite sides of the bracket and extending longitudinally at the point of contact with the bracket, with the curved portion located intermediate said hook ends and projecting rear-

wardly from the automotive vehicle, said curved portion being engageable with a towing hook to thereby transmit



towing forces to the bracket through both hook ends and to the housing through the bracket ends as shear force.

4,431,213

PRESSURE-SENSITIVE RECORDING MATERIAL

Arnold Hofer, René Graf, both of Muttens, Switzerland, and James H. Astbury, Stockport, England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 22, 1980, Ser. No. 218,745

Claims priority, application Switzerland, Dec. 20, 1979, 11318/79

Int. Cl.³ B41M 5/16, 5/22

U.S. Cl. 282—27.5

12 Claims

1. A pressure-sensitive recording material which contains, on at least one support, at least one colour former and one inorganic developer therefor applied in the form of coatings, said inorganic developer coating or coatings additionally containing a urea-formaldehyde condensate with a BET specific surface area of 6.5 to 20 m²/g.

4,431,214

DATA GUIDE DEVICE

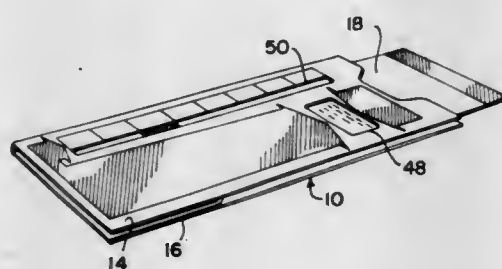
Veronica A. Buffington, Irvington, N.J., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Sep. 15, 1980, Ser. No. 187,569

Int. Cl.³ B42D 15/00; G09F 11/00

U.S. Cl. 283—65

6 Claims



1. A hand held device for computing or comparing values or related information which is adapted to be formed on a sheet of paperboard or like material, and which comprises an envelope having a rectangular pocket and a card member disposed in said pocket, said card member being initially attached along one longitudinal edge thereof to a folded marginal portion on one of the panels forming a wall of the envelope pocket, the envelope pocket being closed on three sides with the fourth side open and providing access to grip the card member for moving the same, the card member being directly attached to a longitudinal edge of one of said panels such that said card member is carried within the confines of said pocket formed thereby prior to separation therefrom by means which are readily breakable by grasping the accessible end of the card member and exerting a pulling force in the direction of movement of said card member so as to permit the card member to be freed to slide in the pocket, said longitudinal edge of said panel to which said card member is directly attached contact-

ing said card upon the separation of said card member therefrom for guiding the movement of said card member in and out of the envelope pocket when said card member has been freed to slide therein, said wall forming panel having spaced apertures therein which render visible spaced portions of the surface of the card member and said card member having thereon a line of information data which will register with one of the wall apertures upon selected movement of said card member, and having an indicator which is located thereon so as to move, upon movement of said card member, to different positions in registry in the associated wall aperture.

4,431,215

RISER CONNECTOR

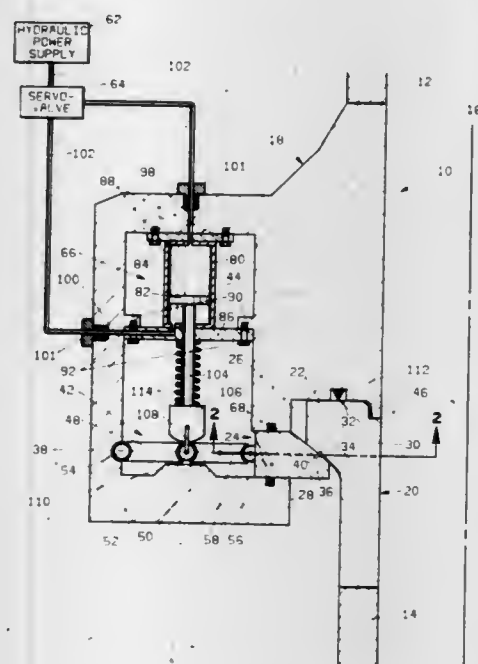
Mark C. Moyer, Stafford, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Apr. 20, 1981, Ser. No. 255,934

Int. Cl.³ F16L 35/00

U.S. Cl. 285—18

10 Claims



1. A riser connector for connecting a first riser pipe and a second riser pipe, said first riser pipe and said second riser pipe being placed so that they have substantially a common central longitudinal axis, said riser connector comprising:

- a connector box adapted to be attached to one end of the first riser pipe, said box having an abutment surface and said box defining a channel adjacent to the abutment surface, said channel having an axis oriented at a selected angle to the common axis of the pipes when the box is attached to the first pipe;
- a locking dog adapted to fit slidably into the channel of the box, said dog having a tapered surface at a wedge angle to the axis of the channel greater than 0° but less than 45°, said surface facing the abutment surface of the box when the dog is in the channel;
- a toggle connected directly to the box and the locking dog in such manner that expansion of the toggle urges the dog towards the locking position and contraction of the toggle tends to withdraw the dog from the locking position;
- a hollow cylinder;
- a piston adapted to fit sealingly and slidably in the space within the hollow cylinder, said piston being connected to the toggle so that movement of the piston in the cylinder in a first direction will expand the toggle and movement of the piston in a second direction opposite said first direction will contract the toggle;
- restraining means for preventing movement of said piston in said first direction which would contract the toggle;
- hydraulic means for moving the piston in said first direction

in the cylinder and in said second direction in the cylinder; and a connector pin adapted to be attached to one end of the second riser pipe, said pin having a hub for engaging the box and the dog, so that when the toggle applies a force to the dog in the channel of the box pushing the dog towards the hub into a locking position, the hub is held between the abutment surface of the box and the tapered surface of the dog, and the connections between the box, the pin, and the dog are preloaded by forces greater in magnitude than the force applied to the dog by the toggle, and when the toggle applies a force to withdraw the dog from the locking position, the hub is released from the box.

4,431,216

INSTANT FITTINGS FOR PIPES AND TUBES

Andre Legris, Saint Maur, France, assignor to Legris, France

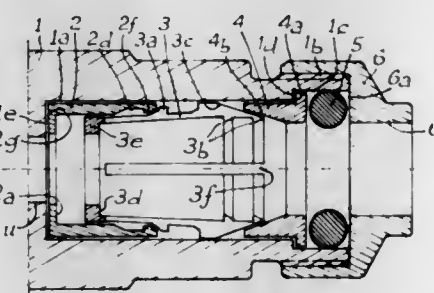
Filed Mar. 17, 1981, Ser. No. 244,719

Claims priority, application France, Mar. 28, 1980, 80 07092

Int. Cl.³ F16L 21/08

U.S. Cl. 285—104

17 Claims



1. A fitting for a smooth, plain-end tube comprising:

- (a) a hollow body defining a first bore opening through one end of the hollow body and a second bore opening through the other end of said body and communicating with the first bore, the diameter of the first bore being larger than the outside diameter of the tube such that the tube may be inserted therein;
- (b) a locking member disposed within the first bore;
- (c) a retaining member disposed in the first bore such that it receives the plain end of the tube therein and is capable of movement in a direction generally parallel to the longitudinal axis of the first bore, at least a portion of the retaining member being radially deformable to engage the outer surface of the tube;
- (d) clicking means on the retaining member engageable with the locking member to give a tactile indication to the user of the locking of the tube in the hollow body, the clicking means contacting a first portion of the locking member when the tube is inserted into the retaining member and the housing a predetermined distance to act as an initial stop against movement of the retaining member, such that, upon application of additional force to the tube by the user, the initial stop is overcome and the retaining member snaps into engagement with the locking member thereby deforming the retaining member into engagement with the outer surface of the tube; and
- (e) obturating means surrounding the tube and attached to the hollow body to prevent withdrawal of the retaining member and locking members from the first bore.

4,431,217

FIRE-SAFE SEAL FOR SWIVEL JOINT

Robert L. Witt, Conroe, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 10, 1981, Ser. No. 329,492

Int. Cl.³ F16L 27/00, 21/02, 17/00

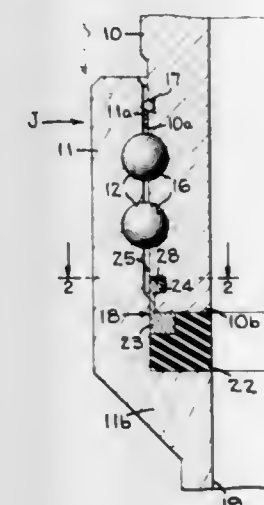
U.S. Cl. 285—276

3 Claims

1. A fire-safe seal for a swivel joint having an annular inner element, an annular outer element surrounding said inner element, said outer element having a radially inward extending

flange at one end thereof, and bearing means mounted between said outer element and said inner element, said fire-safe seal comprising:

- a resilient annular seal mounted between said flange on said outer element and an end of said inner element to provide a fluid-tight seal between said inner and said outer elements;
- an anti-extrusion ring mounted between said resilient seal and a junction of said outer element and said end of said inner element;



an annular groove in said inner element adjacent said end of said inner element; and

a ring retainer for biasing said anti-extrusion ring against said junction of said outer element and said end of said inner element to retain said anti-extrusion ring in position if said resilient seal should be destroyed, said ring retainer including gripping means connected between said anti-extrusion ring and said annular groove.

4,431,218

FLUID COUPLING AND METHOD OF MAKING SAME

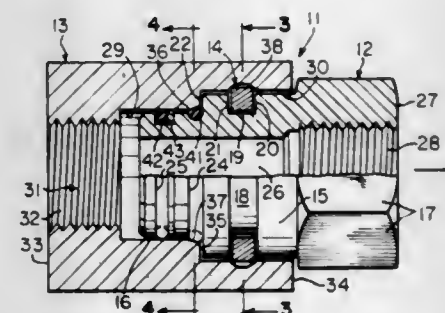
Vernon Paul, Jr., Ocala, Fla., and James D. Fox, Westchester, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 5, 1982, Ser. No. 346,350

Int. Cl.³ F16L 37/14

U.S. Cl. 285—305

13 Claims



1. In a quick connect-disconnect coupling for a conduit, comprising first and second coupling members and retaining means for interlocking said members: said first coupling member having a generally cylindrical configuration comprising a main body portion, a reduced diameter body portion having a peripheral surface, and a first wall extending radially of and intersecting said portions, said main body portion having a peripheral groove therein; said second coupling member positioned over said first coupling member and having a principal cylindrical bore generally contiguous with said reduced diameter body portion, an enlarged diameter bore generally contiguous with said main body portion, and a second wall contiguous with said first wall and extending radially of and intersecting said bores, the intersection of said second wall and said principal bore forming a beveled shoulder, said enlarged diameter bore having a peripheral groove opposite the peripheral

groove in said first coupling member; said retaining means comprising a U-shaped member having legs, said legs inserted into the peripheral grooves of said first and second coupling members to interlock said members; said reduced diameter body portion of said first coupling member having a plurality of spaced peripheral grooves therein, and resilient sealing members positioned within said grooves and contacting said second coupling member to create a fluid-tight seal, the improvement wherein one of said peripheral grooves is located at the intersection of said first wall and said reduced diameter body portion and interrupts said peripheral surface immediately adjacent said first wall, said beveled shoulder being located radially contiguous to said one peripheral groove and engaging and compressing said sealing member in said one groove in such a manner that said sealing member in said one groove is placed under compression and applies axial and radial compressive forces between said first and second coupling members.

4,431,219

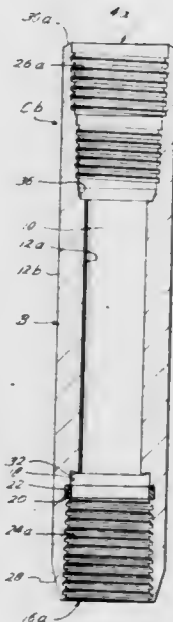
REPLACEABLE TUBULAR CONNECTOR

Jimmy D. Brewer, Houma; Albert W. Gunther, Jr., New Orleans, and Albert W. Gunther, Sr., Gretna, all of La., assignors to Pressure Associated Tool Company, Inc., Houma, La.
Filed Mar. 11, 1982, Ser. No. 357,332

Int. Cl.³ F16L 25/00, 19/00

U.S. Cl. 285—333

1 Claim



1. A replaceable tubular threaded connector particularly adapted for threadably interconnecting two tubular sections of a drill string, the tubular sections being of constant outside diameter and each having an axial bore of constant diameter throughout its unthreaded length, the replaceable threaded connector for protecting exposed threaded connections of the tubular sections, comprising:

an elongate tubular body formed having throughout its substantial length an outer diameter equivalent to the outer diameter of the drill string tubular sections and an axial inner bore equivalent to the inner bore of the drill string;

said tubular body having an upper threaded connection and a lower threaded box connection;

said tubular body adapted to be threadably mounted between adjacent tubular sections and aligned with an axial bore of the tubular sections;

said tubular body having a length substantially less than the length of the tubular section in the drill string; and including:

an annular surface formed between said lower threaded box connection and said axial inner bore;

an annular detent formed in said annular surface;

a deformable seal ring mounted within said annular detent for sealing fluid passage between the tubular section and

lower threaded box connection of said elongated tubular body; and,
a conical lip formed with said annular surface at an acute angle between substantially 2° and substantially 10° from a plane perpendicular to said axial inner bore, said conical lip extending radially outwardly and upwardly from said axial inner bore to said annular surface.

4,431,220

SAFETY RELEASE FOR BAR LOCK

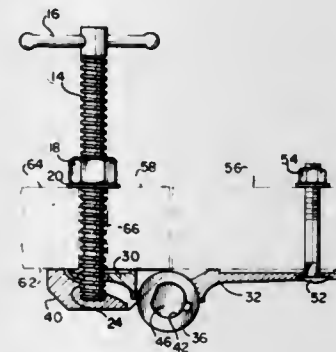
Robert W. Loughlin, 1261 Rahway Rd., Scotch Plains, N.J. 07076

Filed Jul. 2, 1981, Ser. No. 279,858

Int. Cl.³ E05C 15/02

U.S. Cl. 292—340

5 Claims



1. A secondary safety release means releasably coupling a locking bar assembly to a section element having at least one strike plate with at least one opening comprising:

(a) a strike plate cover mounting over said strike plate on a first side of a section element, said cover having a concealed opening; and

(b) a rotatable safety release shaft that passes through said opening in said strike plate from a second side of said section to removably engage with and couple to said concealed opening for releasing said cover from said locking bar assembly.

4,431,221

BUMPER BEAM FOR AN AUTOMOBILE

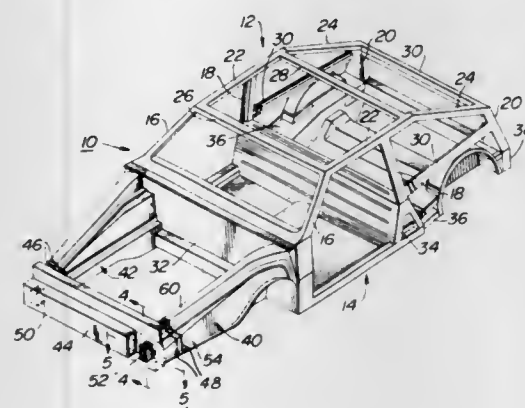
Herbert A. Jahnle, Havertown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Feb. 26, 1982, Ser. No. 352,770

Int. Cl.³ B60R 19/02

U.S. Cl. 293—122

5 Claims



1. A main frame for a vehicle comprising:

(a) a firewall;

(b) a pair of side rails connected to and extending forwardly from said side wall;

(c) a front bumper beam secured to the ends of said side frames;

(d) said bumper beam comprising an elongated open box structure;

(e) a pair of tubular elements disposed inside of said bumper beam in alignment with said pair of side rails; and
(f) said pair of tubular elements including indentations around their peripheries to control the areas of collapse upon impact.

4,431,222

DISPOSABLE HAND OPERABLE COLLECTOR FOR ANIMAL EXCREMENT

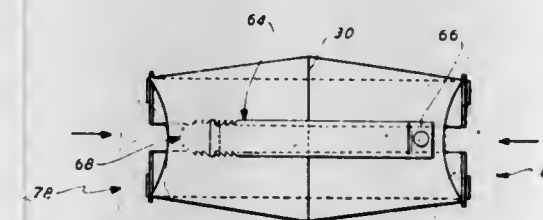
Thomas B. Rotella, 22 E. 7th St., Clifton, N.J. 07011

Filed Nov. 27, 1981, Ser. No. 325,320

Int. Cl.³ A47L 13/52

U.S. Cl. 294—1 B

2 Claims



1. A waste collector, said collector formed from a flat, generally rectangular paperboard form or the like along predetermined fold lines, a first one of said fold lines disposed halfway between the longitudinal edges of said blank, said first fold line extending longitudinally and centrally on said blank on either side of the midpoint between the end edges of said blank, others of said fold lines including lines forming first and second cooperating jaw members, said collector purposely creased inwardly at said first fold line towards the volume enclosed by said cooperating jaw members, whereby pressure applied transversely to the opposing longitudinally disposed edges, causes said first and second cooperating jaw members to close towards each other and a release of said applied pressure causing said jaw members to move away from each other, said paperboard form further includes a centrally disposed, longitudinally oriented slot inward from one of said longitudinal edges, said collector further comprising a locking strap having serrations along at least one edge thereof fixedly connected at one end to said form and bridging said inwardly directed crease and retentively engaging said slot through cooperative action between a respective serration and one of the edges defining the slot, whereby said cooperating jaw members are locked together and remain so after said pressure is released.

4,431,223

ENGINE LIFT TOOL

Harold R. Miller, Hazel Green, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jul. 1, 1982, Ser. No. 394,228

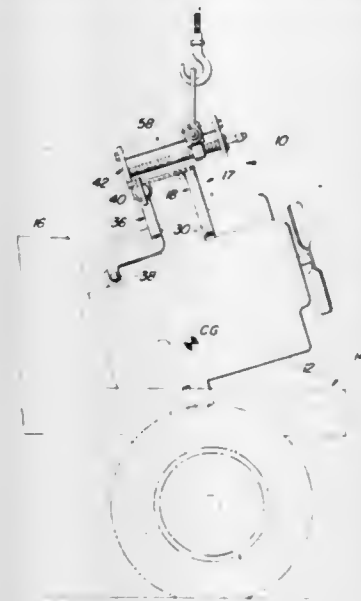
Int. Cl.³ B66C 1/66

U.S. Cl. 294—67 AA

5 Claims

1. In an engine lift tool including a hangar defining an elongate guide surface, a slide member mounted for movement along said guide surface and a screw shaft coupled to the slide member for selectively adjusting its position along the guide surface, the improvement comprising: said hangar including a base member underlying said guide surface; a tube fixed to and extending crosswise to the base member and defining a transverse opening; a mounting bar fixed to the base member in parallel relationship to the tube and defining a receptacle opening in a direction away from said tube; a bracket having a

plurality of spaced legs and having a cross member releasably received in said receptacle and having an opening aligned with



said tube; and a pin releasably received in said opening and tube.

4,431,224

ARRANGEMENT FOR DISPLACING PIECE GOODS

Reinhold Mnilk, Dortmund-Wambel; Manfred Keil, Dortmund, and Lothar Schulte, Dortmund-Asseln, all of Fed. Rep. of Germany, assignors to Holstein and Kappert GmbH, Dortmund, Fed. Rep. of Germany

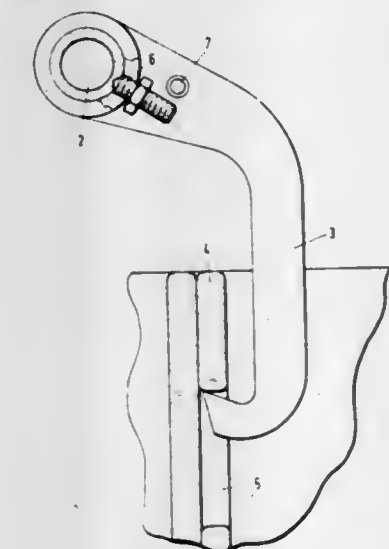
Filed Jul. 15, 1981, Ser. No. 283,679

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 8025903[U]

Int. Cl.³ B66C 1/10

U.S. Cl. 294—87 R

3 Claims



1. An arrangement for displacing piece goods provided in a plurality of rows and having a plurality of gripping openings arranged in accordance with different patterns, comprising a plurality of supporting shafts arranged in a plurality of rows; and a plurality of grippers mounted on said supporting shafts, said grippers being mounted on said supporting shafts so that when one of said grippers comes into contact with the piece goods at locations whereat no openings are provided, all other of said grippers can unobjectionably engage in the openings of the piece goods arranged in a plurality of rows and in accordance with any of the different patterns, said grippers being provided in such a number that they can engage in the openings arranged in a plurality of rows and in accordance with any of the different patterns, wherein said grippers are movable between a self-holding position and a releasing position, said shafts being rotatable to an opening position; and further com-

prising means for moving said grippers from said self-holding position to said releasing position upon rotation of a respective one of said supporting shaft to said opening position; wherein said moving means included a stop provided on each of said supporting shafts, and a follower pin provided on each of said gripper and cooperating with said stop of a respective one of said supporting shafts is rotated to said opening position its stop lifts a respective one of said grippers to the releasing position in engagement with its follower pin, whereas when said one shaft is rotated in an opposite direction its stop releases the respective gripper because of disengagement from said follower pin and the respective gripper falls to the self-holding position under the action of gravity.

4,431,225

RELEASING DEVICE IN CORE BARREL GRAPPLERS
Sune W. Eriksson, Spånga, and Gunnar K. Egnelöv, Johanne-
shov, both of Sweden, assignors to Craelius AB, Bromma,
Sweden

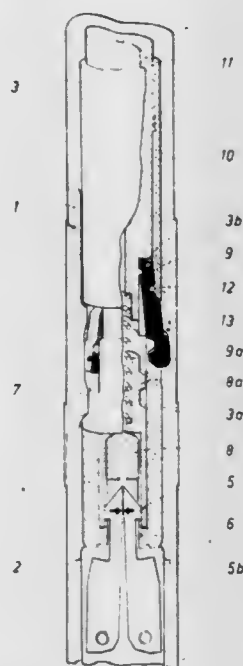
Filed Oct. 5, 1981, Ser. No. 308,529

Claims priority, application Sweden, Oct. 8, 1980, 8007045

Int. Cl.³ E21B 31/12

U.S. Cl. 294—86.19

8 Claims



1. Device for disengaging a grappling means from a core barrel, the means and the barrel in a connected state being lowered into a hollow drill rod string, characterized in that the grappling means is adapted for actuation by at least one recess made in the drill rod bore when the core barrel is at a predetermined distance from, and assumes a working position in the bottom end of the drill rod string, thereby disengaging connecting means connecting the grappling means and the core barrel.

4,431,226

LARGE MATTRESS CARRYING DEVICE

John K. Weilert, 903 Colborn Rd., Lee's Summit, Mo. 64063

Filed Nov. 18, 1981, Ser. No. 322,468

Int. Cl.³ B65D 71/00

U.S. Cl. 294—150

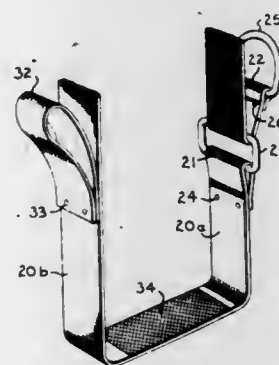
24 Claims

1. A device for carrying a large work object or mattress of basically two sided rectangular construction with two substantially parallel, opposed end edges and two substantially parallel, opposed side edges, the end and side edges extending substantially normal to one another, the end edges equal to or lesser in length than the side edges, the work object or mattress to be normally carried in substantially vertical orientation with one side edge down in substantially horizontal orientation (when the object is being carried across a substantially horizontal surface) and the end edges in substantially vertical orientation, with one carrier typically positioned at each end

edge of the work object utilizing one of the subject devices to lift, carry and handle his/her end and adjacent work object portions thereto,

said device comprising, in combination:

- (1) an elongate, substantially rectangular band having opposed, substantially parallel side and end edges at substantial right angles to one another, an inside and an outside face with respect to the work object or mattress and two free ends,
- (2) ring means fixed to said band and positioned closely adjacent one first free end thereof and primary handle means fixed to said band and positioned closely adjacent the other, second free end thereof, the primary handle means and second free end, as well as at least some length of the band next to said primary handle, able to pass through said ring means, whereby to provide a continuous loop of said band normally positioned vertically around a portion of said work object or mattress somewhat adjacent one vertical end edge thereof and extending substantially parallel thereto with the ring means positioned substantially below center height of said vertical mattress on one side thereof with the primary handle means and a portion of said band next thereto engaging and extending through said ring means in reversed, upward grasping orientation and



- (3) at least one secondary handle means fixed to the outer face of said band on the opposite side of said mattress from said ring means and primary handle means also in an upward grasping orientation, as well as being spaced upwardly from the lower side edge of the object a substantially equal distance to the position of said primary handle means whereby, when the carrier at that end of the work object or mattress grasps (with separate hands) the primary handle means and the secondary handle means and exerts lifting force upon both thereof, the said handles being substantially symmetrically spaced both apart from one another and from the lower side edge of the said object, the said lifting force exerted by the separate hands of the carrier simultaneously constricts the band on and around the engaged portion of the object and exerts lifting force upwardly thereon through the lowermost portion of said band while permitting the additional engagement of the opposed sides of the work object or mattress with the user's hands, wrists, forearms and upper arms and, as well, enables the carrier to lean his/her chest or shoulder against the adjacent vertical end edge of the work object or mattress for handling, moving and stabilizing purposes.

4,431,227

RAILWAY FRICTION WHEEL

William B. Howell, 14652 W Valdon Rd., Mundelein, Ill. 60060

Filed Mar. 24, 1982, Ser. No. 361,400

Int. Cl.³ B60B 17/00, 39/00; B61C 15/08

U.S. Cl. 295—33

11 Claims

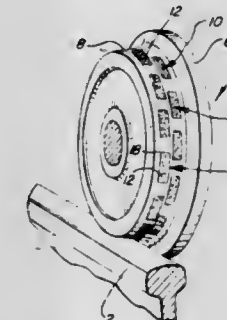
1. A device for enhancing frictional contact between a wheel and a supporting surface comprising:

a wheel having a surface contacting periphery, said wheel having a plurality of cavities opening in said periphery, a plurality of friction enhancing members mounted for limited movement along a bearing surface provided within respective ones of said plurality of cavities between a retracted position and an extended position relative to said periphery;

each of said friction enhancing members having an exposed frictional surface adapted to engage the supporting surface and a sliding surface mounted adjacent said bearing surface;

means mounting said friction enhancing members within said cavities for movement to said extended position in response to slippage of said frictional surface on said supporting surface, said slippage between said frictional surface and the supporting surface acting to cause outward movement of said sliding surface along said bearing surface to said extended position, said frictional surface increasing frictional contact between said frictional surface and the supporting surface in said extended position, and said members being arranged for movement back into retracted position when said slippage is generally arrested.

7. A device for enhancing the frictional characteristics of a peripheral surface of a wheel comprising:
an approximate wedge member having a pair of intersecting surface adapted to be in operative contact with walls forming an exposed cavity in the wheel;
one of said surfaces of said wedge member arranged to move along one of said walls between a retracted and extended position;



said wedge having an arcuate third surface formed with a friction enhancing material to contact a support surface on which said peripheral wheel surface is adapted to travel, said arcuate surface acting to apply a force to said wedge in response to slippage between the arcuate surface and the support surface; and means for mounting said wedge member in said cavity for said movement along said one of said intersecting surfaces so as to be urged to said extended position in automatic response to the force applied to said wedge during said slippage of the wheel, said movement to said extended position causing said arcuate friction enhancing surface to increase engagement with the support surface, said wedge being caused to assume said retracted position in absence of slippage.

10. A method of enhancing the coefficient of adhesion of a vehicle wheel comprising the steps of providing at least one approximate wedge member in a cavity exposed in the peripheral surface of the wheel;

exposing a frictional material on the exterior surface of said member adjacent the peripheral surface of said wheel, causing said member to move into a retracted position within the cavity upon contact of said exterior surface with a support surface in absence of slippage of the wheel therewith,

applying a reactive force to said member by the frictional material of said wheel slipping on the support surface, arranging an internal surface to define a part of said cavity to apply a resultant force on said member to cause movement along said internal surface in response to application of said reactive force, and

causing said member to move in response to said resultant force from said retracted position along said internal surface in said cavity and apply increased frictional contact

between said exterior surface and said support surface in response to the forces generated by slippage of the wheel.

4,431,228

VEHICLE CAP CONSTRUCTION

Richard L. Grise, Bristol, Ind., assignor to R. & T. Frames, Inc., Elkhart, Ind.

Filed Nov. 24, 1980, Ser. No. 209,590

Int. Cl.³ B60P 3/42

U.S. Cl. 296—100

17 Claims



1. In a vehicle cap construction and the like, the improvement comprising:

a rigid framework having interconnected front, rear and opposing side frame sections; one of said frame sections defining both at least one closure frame and at least a major skeletal support for said vehicle cap;

said opposing side frame sections including base rails which are adapted for direct connection with a support bed of a vehicle;

a closure received wholly within the closure frame portion of said one frame section; and

means for mounting said closure directly in said closure frame without any intermediate framing; said mounting means comprising a ledge formed integrally in said closure frame, and extending about the interior perimeter of said closure frame to receive said closure therein, a channel formed integrally in said closure frame, and positioned exterior of said ledge, and an elongated bead having a base portion thereof mounted in said channel and a resilient free edge abutting said closure to securely retain said closure in said closure frame.

4,431,229

WEBBING TENSIONING ASSEMBLY

Goetz W. Unger, East Greenville, Pa., assignor to Knoll International, Inc., New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 330,948

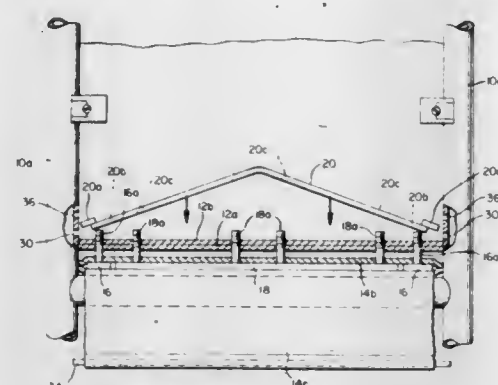
Int. Cl.³ A47C 7/00

U.S. Cl. 297—441

8 Claims

1. An assembly for stretching and securing upholstery fabric or the like in place on a framework comprising a pair of bars contained by pockets along opposite edges of the fabric and both secured at corresponding ends thereof to spaced portions of a framework, said bars having free opposite ends, and a bendable rod engaging said free opposite ends, said rod causing said free opposite ends to move away from each other when

said rod is straightened from a bent condition, thereby to stretch said fabric when said rod is straightened, said straight-



ened rod being anchored to said fabric and spaced portions of said framework and said bar ends.

4,431,230

PORTABLE SEAT DEVICE

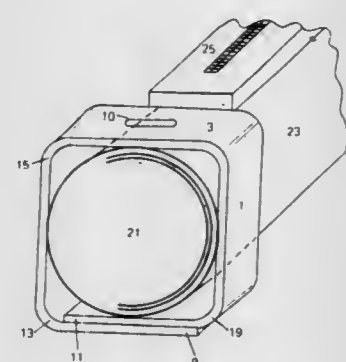
Robert J. Sutton, 6400 63rd Pl., Riverdale, Md. 20737

Filed Jun. 24, 1981, Ser. No. 276,888

Int. Cl.³ A47C 31/00

U.S. Cl. 297-217

2 Claims



1. A portable seat device comprising a wide band of resilient material having 4 sides 4 corners and overlapping ends, in combination with a bag having attached means of transportation such as a golf bag, said sides having sufficient length and width to encompass said bag when the corners adjacent to said ends are separated to enlarge the interior circumference of said device, said device returning to normal shape and closely fitting about the periphery of said bag when said corners are released, said close fit providing means of transporting said device when said bag is being transported and said band being wide enough to provide means for supporting a user seated on said device when said combination is placed on a reasonably level surface.

4,431,231

RECLINABLE-SEAT AND FOLDABLE-TABLE ASSEMBLY

Amos Elazari, Tiberias, and Moshe Levin, Ramat Hagolan, both of Israel, assignors to Golan Industries Ltd., Ramat Hagolan, Israel

Filed Oct. 16, 1981, Ser. No. 312,316

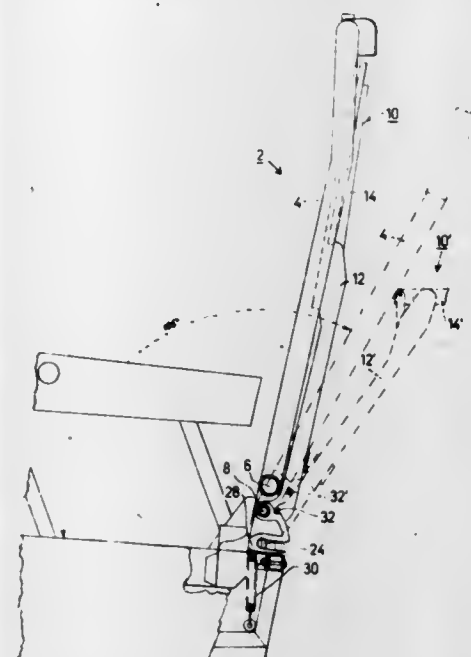
Int. Cl.³ A47B 39/00

U.S. Cl. 297-163

11 Claims

1. A reclinable-seat and foldable-table assembly, comprising: a seat having a backrest pivotable about a horizontal axis from an upright position to a reclining position; a table pivotable with said backrest from said upright position to said reclining position; said table being further movable from a folded non-operative position against the rear side of the backrest to an open

operative position for use by the occupier of the seat to the rear of said backrest; and



blocking means effective, when the table is moved to its open operative position, to block the backrest from being pivoted to said reclining position.

4,431,232

BACK CUSHION

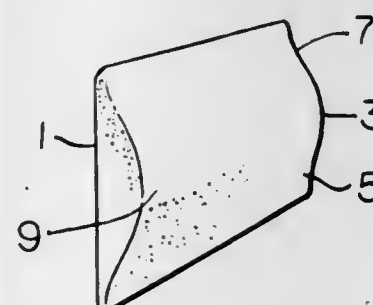
Nabil Hannouche, 403 Andalusian Trail, Simpsonville, S.C. 29681

Filed Sep. 18, 1980, Ser. No. 188,336

Int. Cl.³ A47C 7/02

U.S. Cl. 297-460

3 Claims



1. A cushion adapted to engage the small of the back of a human being when in the sitting position comprising: a generally planar base portion; a generally arc-shaped small of the back engaging portion merging with said base portion, said arc-shaped back engaging portion having an arc with a substantially constant radius of curvature of from 11 to 17 centimeters within its central section of up to 75 percent of the length of the base portion for lumbar engagement, said back engaging portion having a sacral engaging section between said central portion and said base portion which tapers from said arc of a substantially constant radius toward said base portion at a radius greater than said substantially constant radius, and a dorsal engaging section between said central portion and said base portion, said dorsal engaging section varying from a radius at said central portion which is less than said substantially constant radius to a radius which is greater than said substantially constant radius at the point of merging with said base portion, and wherein said sacral engaging section does not extend to the buttock area during use; and wherein said dorsal engaging section and said sacral engaging section are substantially of equal length and comprise

from twelve (12) to twenty (20) percent each of the length of the base portion.

4,431,233

SAFETY SEAT FOR MOTOR VEHICLES

Hans-Hellmut Ernst, Sülzfeld, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

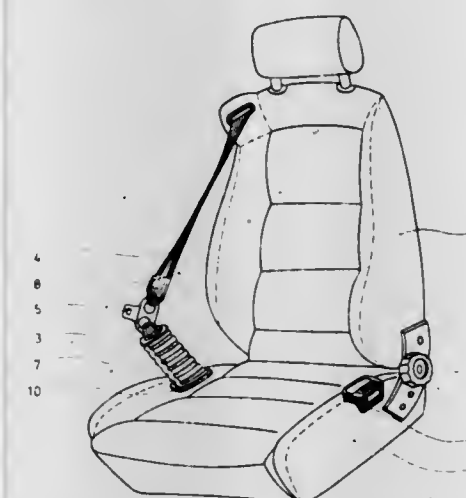
Filed Mar. 2, 1981, Ser. No. 239,591

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007745

Int. Cl.³ A47C 00/00

U.S. Cl. 297-468

30 Claims



1. A belt-strap guide for a safety seat for motor vehicles, said safety seat including a safety belt of at least one belt strap connected to one side of said seat, an automatic belt roll-up device connected to said seat for storing said at least one belt strap, a lock tongue connected to one end of each of said belt straps, and a belt lock connected to said seat on the opposite side thereof to said belt strap connection for receiving said lock tongue to place said safety belt in a closed condition, said belt-strap guide being a flexible, restorable belt-strap guide having one end free, with the other end being connected to at least one of said seat and said belt roll-up device, said belt-strap guide having a limited length and being hollow to form a passage for a respective belt strap which is movable in said guide in the longitudinal direction thereof, said free end of said belt-strap guide forming an outlet opening for the respective belt strap contained therein, said free end also extending essentially straight with said safety belt in the open condition, and forming furthermore shoulder means for at least partially receiving said lock tongue reachable in the region of said outlet opening, said belt-strap guide, with said safety belt in the closed condition, bending elastically, under the effect of belt-strap forces, in the direction of the path of the respective belt strap contained therein.

4,431,234

VEHICLE PASSENGER RESTRAINT

Charles W. Lacey, 561 Hudson St., New York, N.Y. 10014

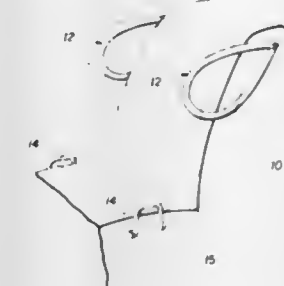
Filed Jun. 30, 1981, Ser. No. 279,233

Int. Cl.³ B60R 21/00

U.S. Cl. 297-484

9 Claims

1. A vehicle passenger safety restraint comprising in combination with a passenger seat back having spaced substantially vertical side walls, a pair of separated unconnected independently operable restraint loops formed of stiff but somewhat yielding and conformable material, said loops tapering toward one of their corresponding ends, means pivotally anchoring the tapering corresponding ends of said loops to said vehicle seat back vertical side walls near the tops of the latter, whereby the loops are independently swingable in substantially vertical planes forwardly and rearwardly across said side walls in planes substantially parallel thereto on the axis of said means,



restrain the passenger, the restraint loops being disposed at least in part forwardly of the seat back when in the operative restraint position and being independently self-adjusting pivotally on the axis of said means to accommodate individual passenger shoulder anatomy variations.

4,431,235

DECELERATION-CONTROLLED BRAKING COMPENSATOR FOR A MOTOR VEHICLE

Jean-Marc Cheron, Longperrier, and Jean-Jacques Carre, Le Raincy, both of France, assignors to Societe Anonyme DBA, Paris, France

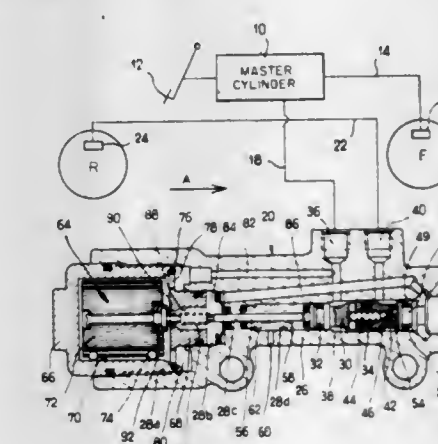
Filed Mar. 8, 1982, Ser. No. 355,988

Claims priority, application France, Mar. 18, 1981, 81 05399

Int. Cl.³ B60T 8/14, 8/26, 11/34

U.S. Cl. 303-24 C

5 Claims



1. A braking compensator for a motor vehicle, of the deceleration-responsive type, comprising a housing in which there are defined an inlet chamber, an outlet chamber and a pilot chamber, a compensator piston extending in the inlet chamber and the outlet chamber and urged in the direction towards the outlet chamber by a compensator spring, a first fluid flow passage between the inlet chamber and the outlet chamber, provided with a compensator valve controlled by said compensator piston, a pilot piston extending in the outlet chamber and the pilot chamber and also controlling said compensator valve, a second fluid flow passage between the inlet chamber and the pilot chamber, provided with a pilot valve controlled by a decelerometer device, said decelerometer device comprising a weight which is responsive to deceleration of the vehicle and which is biased by resilient means towards a position corresponding to the open condition of said pilot valve, and means responsive to the applied braking pressure for modifying the calibration of said resilient means in dependence on said pressure, characterized in that said resilient means are operatively interposed between said compensator piston and said deceleration-responsive weight, whereby the calibration of

said resilient means is varied in direct response to the operation of said compensator piston.

4,431,236

BALL BEARING AND APPLICATIONS THEREOF IN PARTICULAR IN A VEHICLE WHEEL HUB

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenger Spicer, Poissy, France

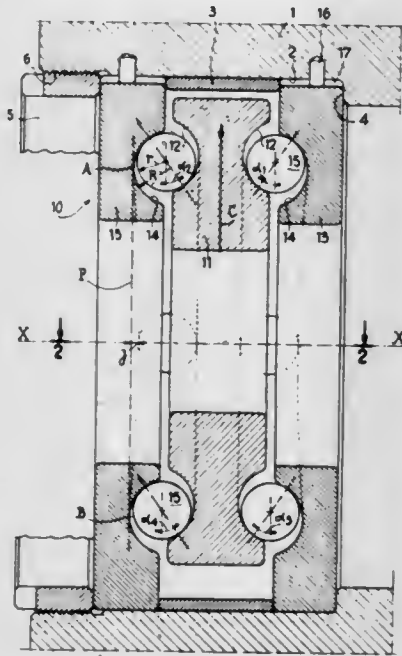
Filed Mar. 23, 1982, Ser. No. 361,065

Claims priority, application France, Mar. 25, 1981, 81 05975

Int. Cl.³ F16C 19/18, 33/58

U.S. Cl. 308—190

12 Claims



1. In an angular-contact radial ball bearing capable of taking loads in variable directions comprising an axis of rotation, two lateral rings, a center ring between the lateral rings, each ring having grooves defining raceways, at least two rows of spherical balls which are disposed to circulate between pairs of said raceways defined in confronting radial sides of the center ring and the two lateral rings, said grooves having a circular cross-sectional shape having a radius which is slightly greater than a radius of the balls; the improvement wherein at least one of the grooves constituting a raceway has a progressively variable contour in that said one groove has a bottom which is spaced at a distance from a reference plane perpendicular to the axis of rotation of the bearing, which distance progressively increases from two minimum values at two diametrically opposed points located substantially in a first diametral plane which contains said axis of rotation and is intended to be parallel to the direction of a radial load on the bearing, to two maximum values at two points located substantially in a second diametral plane which contains said axis of rotation and is perpendicular to said first diametral plane.

4,431,237

TAPE CASSETTE STORAGE BOX

Shoichi Saito, and Hideo Shirako, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,036

Claims priority, application Japan, Nov. 11, 1980, 55-160966[U]

Int. Cl.³ A47B 81/06; B65D 85/67

U.S. Cl. 312—9

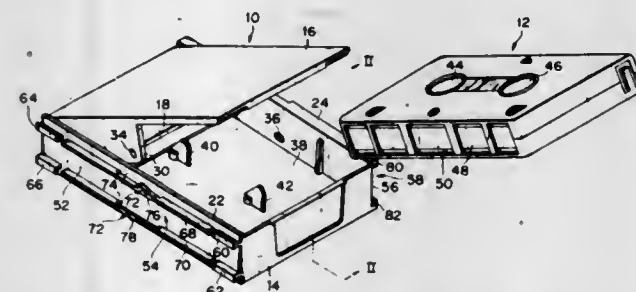
15 Claims

1. A tape cassette storage box comprising a storage box body for holding a micro cassette, a cover coupled with said storage box body and being rotatable between a first position in which said cover houses, in cooperation with said storage box body, the micro cassette held in said storage box body and a second position in which said cover allows said micro cassette to be removed from said storage box body, a first engaging means formed on a first lateral face out of two rectangular lateral

faces of said storage box body intersecting the axis of rotation of said cover, and a second engaging means formed on a second lateral face of said storage box body, the improvement wherein:

said first engaging means includes a first click-type engaging means disposed in a first corner region of said first lateral face, a second click-type engaging means disposed isolatedly from said first click-type engaging means in a second corner region of said first lateral face located in a direction substantially at right angles to the direction for engagement of said first click-type engaging means and having the same length and the same direction of engagement as those of said first click-type engaging means, a third click-type engaging means disposed isolatedly from said first click-type engaging means in a third corner region of said first lateral face located in the direction for engagement of said first click-type engaging means and having the same length and the same direction for engagement as those of said first click-type engaging means, and a fourth click-type engaging means disposed isolatedly from said third and second click-type engaging means in a fourth corner region of said first lateral face located in a direction substantially at right angles to the direction for engagement of said third click-type engaging means and in the direction for engagement of said second click-type engaging means and having the same length and the same direction for engagement as those of said first click-type engaging means; and

said second engaging means includes a first click-type engaged means disposed in a first corner region of said second lateral face, a second click-type engaged means



disposed isolatedly from said first click-type engaged means in a second corner region of said second lateral face located in a direction substantially at right angles to the direction for engagement of said first click-type engaged means and having the same length and the same direction for engagement as those of said first click-type engaged means, a third click-type engaged means disposed isolatedly from said first click-type engaged means in a third corner region of said second lateral face located in the direction for engagement of said first click-type engaged means and having the same length and the same direction for engagement as those of said first click-type engaged means, and a fourth click-type engaged means disposed isolatedly from said third and second click-type engaged means in a fourth corner region of said second lateral face located in a direction substantially at right angles to the direction for engagement of said third click-type engaged means and in the direction for engagement of said second click-type engaged means and having the same length and the same direction for engagement as those of said first click-type engaged means,

said first and third click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto with their projected ends bent away from said second and fourth click-type engaging means to extend substantially in parallel with said first lateral face;

said second and fourth click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto with their projected

4,431,239

PIVOT MEANS

Matti Vainikka, 41800 Vaajakoski, Finland

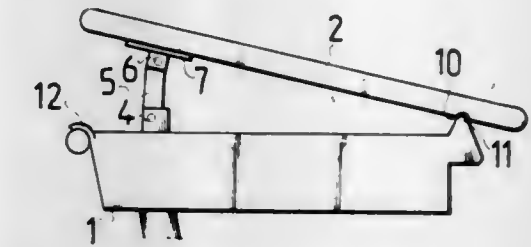
Filed Mar. 12, 1981, Ser. No. 243,074

Claims priority, application Finland, Oct. 1, 1980, 803120

Int. Cl.³ A47B 27/02

U.S. Cl. 312—231

3 Claims



ends bent away from said first and third click-type engaging means to extend substantially in parallel with said first lateral face;

said first and third click-type engaged means of said second engaging means protruding from said second lateral face substantially at right angles thereto with their projected ends bent toward said second and fourth click-type engaged means to extend substantially in parallel with said second lateral face; and

said second and fourth click-type engaged means of said second engaging means protruding from said second lateral face substantially at right angles thereto with their projected ends bent toward said first and third click-type engaged means to extend substantially in parallel with said second lateral face,

whereby said first to fourth click-type engaging means of said first engaging means of a first tape cassette storage box engages said first to fourth click-type engaged means of said second engaging means of a second tape cassette storage box when said first engaging means of said first tape cassette storage box is coupled with said second engaging means of said second tape cassette storage box.

4,431,238

CABINET FOR STORING AND SELECTIVELY DISPENSING A VARIETY OF PAPER SUPPLIES

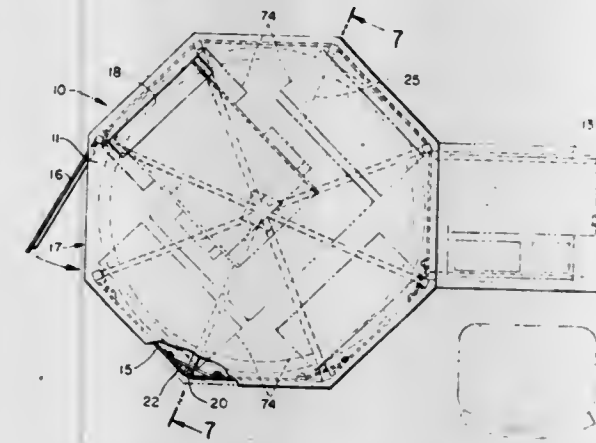
Gary L. Evans, La Palma, Calif., assignor to Keyrack Company, Inc., Paramount, Calif.

Filed Oct. 7, 1981, Ser. No. 309,237

Int. Cl.³ E21B 49/00

U.S. Cl. 312—184

3 Claims



1. A cabinet for storing and selectively dispensing a variety of paper supplies comprising an enclosure presenting a horizontal top adapted to support the printer of a computer system and vertical side enclosure means including an access opening, a turntable structure within said enclosure comprising a horizontal deck rotatably mounted centrally of the interior of said enclosure and presenting a plurality of spaced stations for holding boxes of webbed forms; said horizontal top having a slot opening therein positioned overlying said deck adjacent its outer edge, whereby any of a variety of paper supplies carried on said deck may be positioned beneath said slot, manually retrieved through said slot and fed through said slot to a printer supported on said horizontal top, and means for supporting the free end of each of a plurality of webs of forms adjacent the under side of said top in radial congruity with said slot comprising a frame having a horizontal member and clip means carried by said member for retaining the free ends of said webs.

4,431,240

ELECTRICAL IGNITION PROBE MEANS, ELECTRODE THEREFOR AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 6, 1981, Ser. No. 241,202

Int. Cl.³ H01T 13/04; F23Q 3/00, 3/70

U.S. Cl. 313—135

24 Claims



1. In an electrical ignition probe means having an electrode provided with a sparking end and an opposed end interconnected to an end of an ignition wire, said probe means having a rigid electrically insulating one-piece body provided with opposed ends interrupted by a bore means passing through said body, said body being telescoped on part of said electrode and part of said ignition wire so that said ignition wire extends from one of said ends of said body and said sparking end of said electrode extends from the other of said ends of said body whereby said interconnected ends of said electrode and said ignition wire are disposed in said bore means of said body intermediate said ends of said body, the improvement wherein said bore means in said body is substantially uniform in its cross-sectional configuration and size throughout the entire length of said body and is substantially filled by said parts of said ignition wire and said electrode.

wire entry passage, and a perforate opposite said wire entry passage to form a wire exit passage having a wire cutting edge; and a cap member rotatably associated with said cylindrical member and channeled in line with said passages for receiving a wire and forcing said wire into said contact element and against said wire cutting edge.

4,431,248

FLAT CABLE CONNECTOR

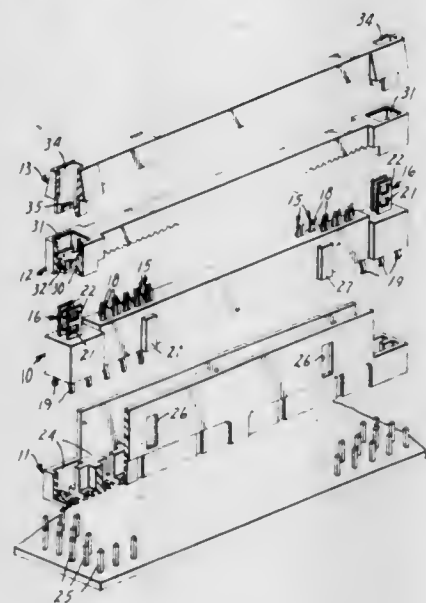
Ted R. Huntley, Lake Elmo, and Ralph E. Huntosh, Jr., New Scandia Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 228,756, Jan. 27, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,443

Int. Cl.³ H01R 13/39

U.S. Cl. 339—99 R

5 Claims



1. A flat cable connector comprising:
 - a molded plastic contact carrier,
 - a multiplicity of electrical contact elements molded into said contact carrier in two parallel rows, each said contact element having a slotted insulation displacement wire connection end protruding from one surface of said carrier and a wiping blade protruding from the opposite surface of said carrier, the wire connection ends of said contacts being staggered to receive the parallel conductors of a flat cable alternately in a contact in one row and then a contact in the other row and the wiping blade of a contact in one row being aligned with the wiping blade of a contact in the other row, said wiping blades being progressively further spaced from the center of said carrier than their associated wire connection ends progressing from the center toward both ends of said carrier,
 - a pair of latching members extending from said one surface of said carrier, one at each end of the rows of said protruding wire connection ends of said contact elements, said latching members being at least partially in transverse planes through said carrier that also pass through the end wiping blades extending from the opposite surface of said carrier and extending longitudinally of said carrier toward the ends thereof no further than the end wiping blades,
 - a plastic cover slotted on one surface to receive said wire connection ends of said contact elements and being formed at its ends with portions complementary to said latching members for latching said cover to said contact carrier.

4,431,249

MALE/FEMALE CABLE CONNECTOR

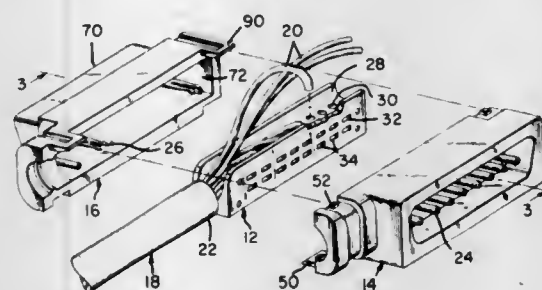
Robert H. Frantz, Carlisle, and Gary W. Hawk, Halifax, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,123

Int. Cl.³ H01R 13/506, 13/58

U.S. Cl. 339—107

14 Claims



1. A connector assembly for terminating a cable providing two oppositely directed interfaces, said connector comprising:
 - a lacing block adapted to receive and position conductors of a cable;
 - first and second mating housing members each having oppositely directed mating faces and defining therebetween a lacing block receiving cavity;
 - each said housing carrying a plurality of terminals in a like spaced array, one terminal of each said housing electrically and mechanically engaging a respective conductor in said lacing block.

4,431,250

TEMPORARY POWER TAP WITH SLIDE MOUNTING

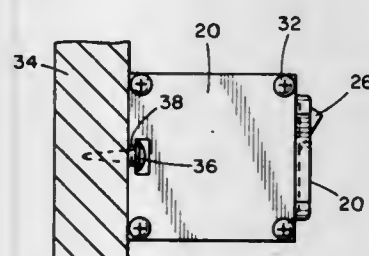
Leon W. Prusow, Scottsdale, Ariz., assignor to Antronic Corporation, Scottsdale, Ariz.

Filed Apr. 23, 1982, Ser. No. 371,278

Int. Cl.³ H02B 1/06

U.S. Cl. 339—125 R

5 Claims



1. A power tap which can be temporarily secured to a work surface by a common fastening device, such as a screw, comprising:
 - an enclosure formed in two sections, a first section adapted to mount a plurality of electrical receptacles thereon, a second section adapted to mate with said first section to enclose said receptacles,
 - a pair of end plates disposed and secured at opposite ends of said enclosure,
 - a plurality of receptacles mounted to said first section and electrically connected to a power cord for energizing said receptacles,
 - said second section having a portion thereof configured to form a T-shaped channel extending from one end plate to the other, said channel including a base portion and a head portion, the base portion dimensioned to receive the shaft of a fastening device therein, the base portion of said channel terminating in said head portion, the head portion dimensioned to receive the head of said fastening device, the base portion of said channel bearing against the underside of the head of said fastening device thereby to capture the fastening device in the channel and secure the power tap to the work surface,

one of said end plates having a T-shaped opening therein substantially identical in dimension to said T-shaped channel and located at one end of said channel adapted to permit fasteners to enter said channel for mounting purposes and be withdrawn from said channel to de-mount the power tap,

the other of said end plates having no opening therein and serving to close off the other end of the channel.

4,431,251

ELECTRICAL CONNECTOR WITH A BUILT IN CIRCUIT PROTECTION DEVICE

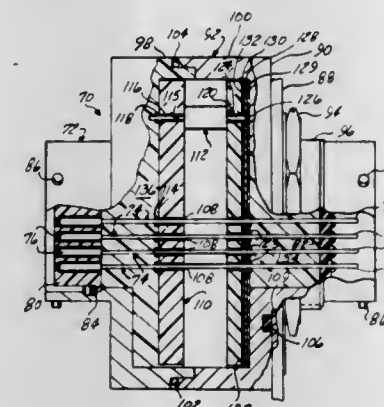
Leonard A. Krantz, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 13, 1981, Ser. No. 310,692

Int. Cl.³ H01R 13/66

U.S. Cl. 339—143 R

7 Claims



1. An electrical connector with a built in circuit protection device said connector of the type having a conductive connector shell and at least one contact mounted within such shell for mating with a corresponding electrical connector, a circuit protection device mounted within said connector shell, means electrically connecting said protection device to said contact and to a ground plate connected to said shell to thereby provide a grounding of said contact upon development of a predetermined voltage on said contact, said contact extending through said ground plate and an insulating spacer providing electrical insulation of said contact from said grounding plate, said circuit protection device having one and another side; a pair of connections electrically connected to said one and the other side of said circuit protection device, one side of said circuit protection device electrically connected to said ground plate by a soldered connection; one of said connections further including an insert disc mounted in said shell axially spaced from said ground plate, and wherein said contact extends through said insert disc with an electrical connection comprised of a soldered joint to connect said contact to said other side of said circuit protection device; characterized by said ground plate being positioned against and soldered to said connector shell to thereby minimize the self inductance impedance thereof, and to enhance the heat sink capacity of said ground plate.

4,431,252

PRINTED CIRCUIT BOARD EDGE CONNECTOR

Thomas M. Cairns, Birmingham, and David G. Connors, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 153,650, May 27, 1980, Pat. No. 4,357,066. This application Feb. 26, 1982, Ser. No. 352,823

Int. Cl.³ H01R 4/48

U.S. Cl. 339—176 MP

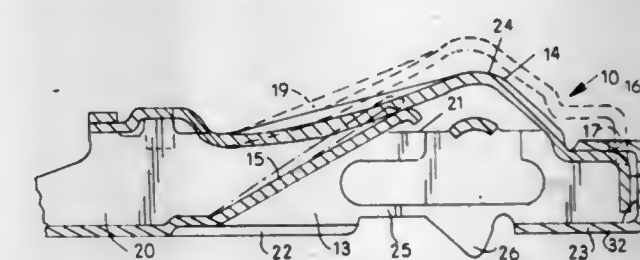
7 Claims

1. A printed circuit board edge coupling means for contacting a conductive portion of a printed circuit board, said coupling means including a terminal comprising:

a pair of spaced, generally parallel elongated side members having a front end and back end;

a floor member extending between said side members adjacent said front end;

first spring means coupled to the back end of one of said side members adjacent a pivot point, said first spring means having an outside portion for contacting a conductive portion on the printed circuit board, so that contact to the conductive portion is forward of said pivot point, said first spring means further including a front foot at the forward end of said first spring means for engaging said floor member when said first spring means is deflected so as to increase contact force by resisting deflection of said first spring means;



- a second spring means coupled to the back end of said side members for contacting said first spring means on a side opposite from said outside portion contacting the conductive portion, so that the combination of said first and second spring means produces a higher constant force with improved reliability; and
- said terminal including a nose clamp means for preloading said first spring means to a deflected and stressed position so that said first spring means is in a partially compressed state thus providing a higher initial contact pressure between said terminal and the conductive portion, said front foot being spaced from said floor member when said first spring means is in the deflected and stressed position.

4,431,253

COAXIAL PLUG CONNECTOR

Gerhard Hochgesang, Bad Neustadt, and Berthold Stürmer, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

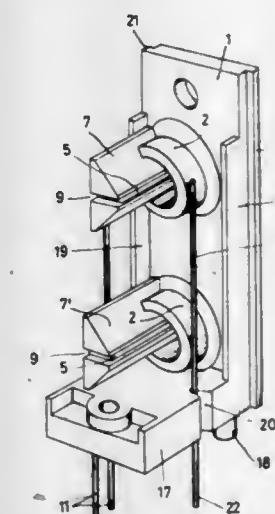
Filed Oct. 28, 1981, Ser. No. 315,752

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1980, 3041495

Int. Cl.³ H01R 17/18

U.S. Cl. 339—177 R

11 Claims



1. A coaxial plug connector comprising a supporting body made of a plastic material in which there is retained, as an outer contact, a contact sleeve made of metal and provided with a

embedding a portion of an optical fiber in the liquid epoxy resin and allowing the resin to harden, thereby affixing the fiber to the form along the curved side thereof;
repeating the first, second and third steps with a second solid form and a second optical fiber;
mounting the two sections thus formed in a lapping and polishing fixture;
lapping the epoxy and portions of the fibers embedded therein to develop essentially planar surfaces along the epoxy resin and fibers extending to a predetermined depth into the core of each fiber such that each fiber protrudes slightly above the planar surface of the adjacent epoxy;
polishing the lapped surfaces;
joining the two lapped and polished sections together at their planar surfaces along a common plane with optically transmitting epoxy;
preliminarily aligning the fibers by initially moving the two sections parallel to each other along their planar surfaces to detect the protruding fibers contacting each other;
finally aligning the two sections and the preliminarily aligned fibers thereof by focusing laser light into one of the fiber ends and monitoring the intensity of the light coupled into the other fiber while gradually adjusting the relative positions of the fibers; and
curing the epoxy joining the two planar surfaces together while maintaining the established alignment thereof.

4,431,261

FIBER OPTIC SPLITTER

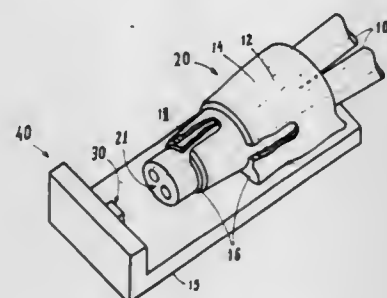
Carrie L. Kozikowski, Bedford, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 6, 1981, Ser. No. 260,856

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20

5 Claims



1. An improved electro-optical device to multiple fiber splitter coupling arrangement comprising:
an electro-optical device having a light emitting region,
a multiple fiber splitter comprising a plurality of optical fibers each having a core and a cladding, said fibers being connected together with their claddings adjacent each other and having a tapered region so that the core diameter in the tapered region is less than the core diameter in the untapered region, said tapered region having a generally planar end face, the area of which is larger than the area of said light emitting device, said electro-optical device being positioned adjacent to said multiple fiber splitter with said light emitting region being directly adjacent to and separated from said generally planar end face so that light from said light emitting region is transmitted directly to said generally planar end face where it impinges on said cores for transmission along said fibers.

4,431,262

CONFORMABLE OPTICAL COUPLERS

Walter E. Tolles, Lee Highway, Fairfield, Va. 24435

Filed Oct. 6, 1981, Ser. No. 309,035

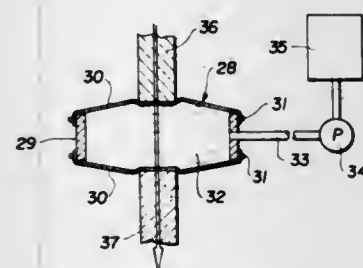
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.15

4 Claims

2. A conformable optical coupler for spaced optical elements in an optical measuring system or the like, said coupler comprising a clear light transmitting compliant body portion inter-

posed between said elements and having a predetermined compatible index of refraction, means to force the opposite faces of said compliant body portion into firm conforming contact with said elements to establish an optical path through the elements with minimized background light caused by re-



flexion, refraction and scattering, said compliant body portion comprising means defining a chamber for a light transmitting pressurized fluid, and light transmitting flexible membranes spanning and covering opposite sides of said chamber and being forced by said fluid into conforming contact with said spaced optical elements.

4,431,263

NOVEL NONLINEAR OPTICAL MATERIALS AND PROCESSES EMPLOYING DIACETYLENES

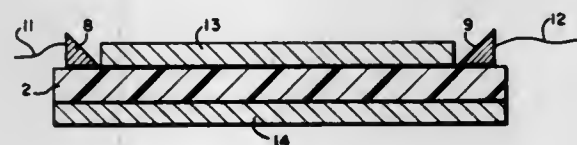
Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 52,007, Jun. 25, 1979, abandoned. This application Mar. 12, 1980, Ser. No. 129,560

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.34

17 Claims



9. An optical waveguide comprising at least one diacetylenic layer comprising at least one substantially polymerized diacetylene, at least one boundary layer on either side of said diacetylenic layer, said boundary layers having an index of refraction lower than said diacetylenic layer, and input means for coupling light into said diacetylenic layer.

4,431,264

FLUOROSILOXANE OPTICAL CLADDING

Raymond Clarke, Mt. View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 82,780, Oct. 9, 1979, Pat. No. 4,317,616. This application Sep. 14, 1981, Ser. No. 302,058. The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.34

1 Claim

1. A waveguide comprising a silica core and an optically clear polymeric cladding disposed on, around, and in contact with the exterior surface of the core, the cladding having a refractive index lower than the refractive index of the core and having an elastic modulus of less than about 10^7 N/m², wherein the cladding has a sufficiently low refractive index that the waveguide has a numerical aperture of at least 0.45.

4,431,265

APPARATUS FOR VIEWING STEREOSCOPIC IMAGES

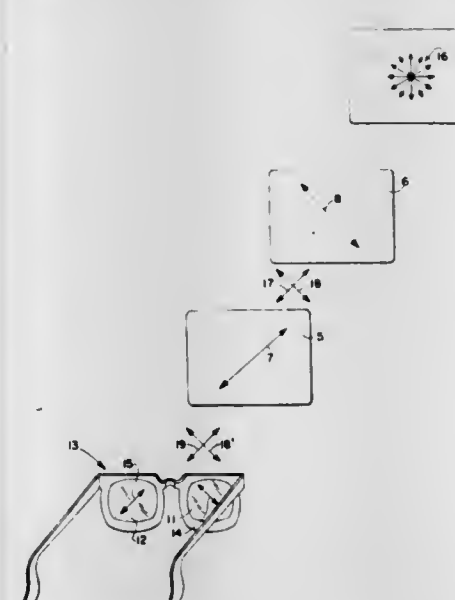
Stephen A. Benton, Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1980, Ser. No. 221,846

Int. Cl.³ G02B 27/26; H04N 9/60

U.S. Cl. 350—132

6 Claims



1. Apparatus for viewing a television image comprising superposed stereographic views of a scene in two colors, one for each view, displayed on a television screen, comprising: a dual dichroic polarizing filter comprising superposed orthogonally oriented dichroic layers, said filter being adapted to be placed over said screen for dissecting said image into orthogonally polarized components, each component comprising light from said superposed images in a different one of said colors, said filter being shaped to conform to the dimensions of said screen; means for detachably securing said filter over said screen; and a pair of spectacles having orthogonally polarized lenses oriented to present the correct one of said stereoscopic views to the eyes of an observer wearing said spectacles and viewing said screen through said lenses and said filter.

4,431,266

OPTICAL REFRACTOR FOR DIFFUSING LIGHT

Leo Mori, Yokohama; Takashi Aoba, Ageo, and Mamoru Tominaga, Yokohama; all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

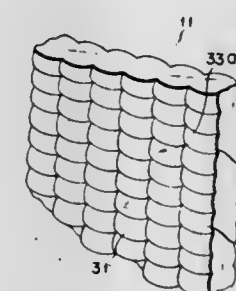
Filed Nov. 5, 1981, Ser. No. 318,367

Claims priority, application Japan, Nov. 10, 1980, 55-157892

Int. Cl.³ G02B 27/00; G03B 21/60

U.S. Cl. 350—167

12 Claims



1. An optical refractor comprising:
a plate of transparent material having a first and a second surface;
a plurality of first segment lens elements of the same size and the same shape, integrally formed with the plate and arranged on the first surface of the plate;
and
a plurality of second segment lens elements of the same size and the same shape, integrally formed with the plate and arranged on the second surface of the plate in face-to-face

relation with the first segment lens element, respectively, thereby forming a plurality of segment lenses, wherein the first and second segment lens elements of each pair have a common optical axis and a convex surface of revolution and have a substantially equal focal distance so that the focal point of the first segment lens element lies on the convex surface of the second segment lens element and that of the second segment lens element lies on the convex surface of the first segment lens element.

4,431,267

OPTICAL SYSTEM WHICH PROVIDES A COLLIMATED LIGHT BEAM

Johan C. J. Finck, and Henricus M. M. Kessels, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

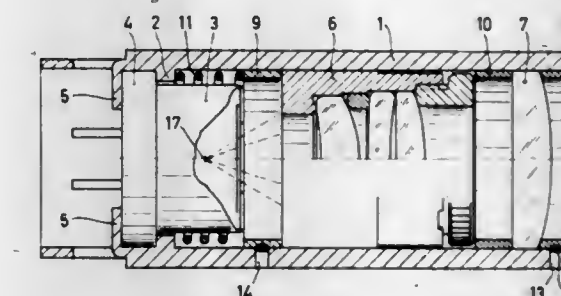
Filed Oct. 28, 1981, Ser. No. 315,690

Claims priority, application Netherlands, Nov. 6, 1980, 8006061

Int. Cl.³ G02B 7/02

U.S. Cl. 350—237

6 Claims



1. An optical system which provides a collimated light beam, comprising a tubular holder, a semiconductor laser and a system of lenses in the holder, the focus of said system of lenses being adjustable to coincide with a laser element incorporated in the semiconductor laser, characterized in that in the axial direction of the holder the semiconductor laser is positioned against an abutment, that a resilient element and an annular element are provided between the system of lenses and the abutment, said resilient element being located between said annular element and said abutment, and that on the side of the system of lenses remote from the resilient element a locking element is provided, after the axial focusing adjustment in the holder, said locking element and said annular element being secured to said holder such that the system of lenses, after moving in the axial direction in said holder against the pressure of the resilient element, is fixedly located in the position at which its focus coincides with the laser element in the semiconductor laser.

4,431,268

REFLECTOR AND METHOD FOR MANUFACTURING THE SAME

Akira Ohno; Hajime Shimabukuro, and Shitomi Katayama, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 22, 1981, Ser. No. 333,283

Claims priority, application Japan, Jun. 26, 1980, 55-87147

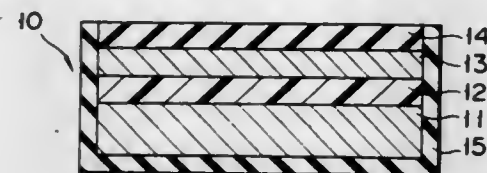
Int. Cl.³ G02B 5/08

U.S. Cl. 350—288

25 Claims

1. A reflector comprising: a base body made of a metallic material having an ionization potential substantially higher than that of aluminum; an aluminum reflecting layer vacuum deposited on one surface of said base body directly or through a smoothing layer formed on the base body; a light-transmitting water-insoluble inorganic oxide layer vacuum deposited on said reflecting layer; an insulating layer covering at least the

other surface and peripheral sides of said base body; and a sealing agent comprising H₂O or a carboxylate of an iron



family element of low valence and sealing micropores of said inorganic oxide layer.

4,431,269

LOW DISTORTION COOLED MIRROR

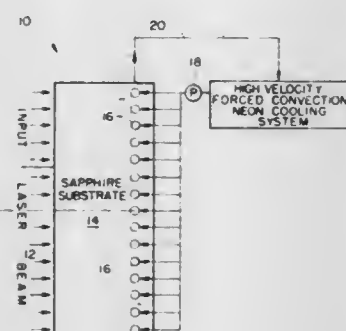
William P. Barnes, Jr., Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Nov. 6, 1981, Ser. No. 318,709

Int. Cl.³ G02B 5/08

U.S. Cl. 350—310

4 Claims



1. A cooled mirror assembly comprising:

- a mirror substrate supporting a reflective surface, said substrate being formed of a material having a minimum ratio, below 10^{-10} , of its coefficient of thermal expansion α to its thermal conductivity k , within the cryogenic range of temperature from ten to one hundred degrees Kelvin; and
- means for cryogenically cooling said substrate to less than one hundred degrees Kelvin such that said substrate operates at or near said minimum of α/k .

4,431,270

ELECTRODE TERMINAL ASSEMBLY ON A MULTI-LAYER TYPE LIQUID CRYSTAL PANEL

Fumiaki Funada, Yamatokoriyama; Toshiaki Takamatsu, Tenri; Shuhei Yasuda, Tenri, and Masataka Matsuura, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

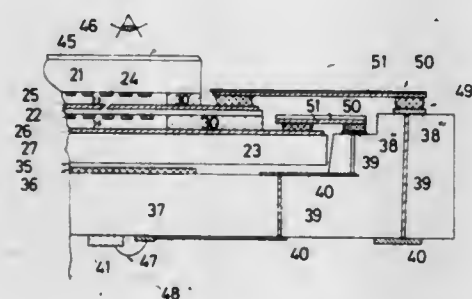
Filed Sep. 18, 1980, Ser. No. 188,562

Claims priority, application Japan, Sep. 19, 1979, 54-121276; Feb. 28, 1980, 55-24931

Int. Cl.³ G02F 1/13

U.S. Cl. 350—332

7 Claims



7. A display device comprising:

- a predetermined number of supports stacked sequentially on top of each other;

liquid crystal material between said supports defining a liquid crystal cell between each two adjacent supports; said supports having a first dimension which is progressively larger in said sequentially stacked supports and a second dimension, in a direction perpendicular to said first dimension, which is progressively smaller in said sequentially stacked supports, whereby said supports define upper and lower surfaces extending outwardly from said liquid crystal cells;

a matrix electrode pattern in each of said cells comprising electrodes having terminal portions extending outwardly from said cells onto said outwardly extending upper and lower surfaces;

a circuit board means having terminals thereon positioned to one side of said stack of supports; and flexible elastomeric means for electrically connecting said terminal portions on said outwardly extending upper and lower surfaces to said terminals on said circuit board; wherein said circuit board has a stepped configuration and at least some of said terminals on said circuit board are on different portions of said stepped configuration and at positions corresponding substantially to the positions of said respective upper surfaces, wherein said flexible elastomeric means extend between said respective upper surfaces and said stepped portions in substantially parallel planes.

4,431,271

DISPLAY DEVICE WITH A THIN FILM TRANSISTOR AND STORAGE CONDENSER

Yukitoshi Okubo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

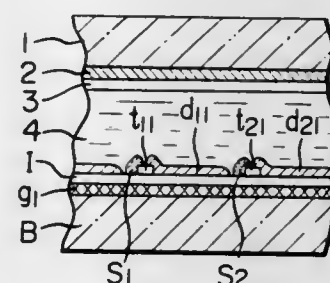
Filed Aug. 28, 1980, Ser. No. 182,089

Claims priority, application Japan, Sep. 6, 1979, 54-114423; Oct. 23, 1979, 54-136725; Oct. 31, 1979, 54-141869

Int. Cl.³ G02F 1/133

U.S. Cl. 350—334

21 Claims



7. A display device comprising a first substrate provided with a drive switching element array, including a plurality of gate lines mutually separated and mutually insulated, a plurality of semi-conductor layers, a first insulating layer interposed between said gate lines and said semi-conductor layers, a plurality of drains constituting display segments each in contact with one of said semi-conductor layers, and a plurality of source lines also insulated from said gate lines by said first insulating layer, positioned to cross said gate lines, and each in contact with at least one semi-conductor layer; a conductive film interposed between said first substrate and said drains and opposed to said drains; a second insulating layer interposed between said conductive film and said gate lines and between said conductive film and said drains; and a second substrate mounted in opposition to said array on said first substrate and provided with a counter electrode whereby display by an electro-optical change generated between said substrates may be performed, and whereby a capacitance is formed between said conductive film and said drains.

4,431,272

LIQUID CRYSTAL DISPLAY DEVICE

Satoru Yazawa; Shunji Banda, and Kenichi Endo, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

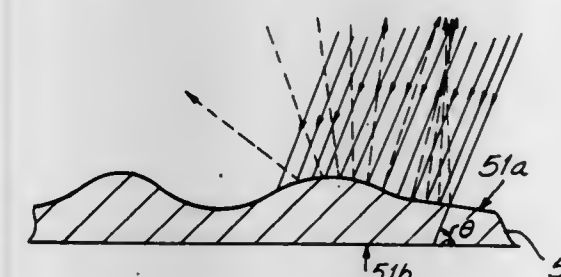
Filed May 5, 1981, Ser. No. 260,612

Claims priority, application Japan, May 8, 1980, 55-60951; Dec. 18, 1980, 55-179521

Int. Cl.³ G02F 1/13

U.S. Cl. 350—336

26 Claims



1. A liquid crystal display device comprising an upper transparent plate and an opposed lower plate, both plates having electrodes disposed thereon and a liquid crystal material in the space between the plates, the electrode provided on the lower plate being an opaque material having a rugged surface wherein the average angle of inclination (ϕ) of an inclined plane tangent to the rugged regions of the surface is about $\frac{1}{2} \sin^{-1} [1/(n_{\perp} + n_{\parallel})]$ degrees or less with respect to the lower plate, wherein n_{\perp} is the refractive index in the direction perpendicular to the long molecular axis of the liquid crystal molecule and n_{\parallel} is the refractive index in the direction parallel to the long molecular axis of the liquid crystal molecule.

15. A liquid crystal display device comprising an upper transparent plate and an opposed lower plate, both plates having electrodes disposed thereon and a liquid crystal material in the space between the plates, the electrode provided on the lower plate being an opaque material having a rugged surface wherein the average angle of inclination (ϕ) of an inclined plane tangent to the rugged regions of the surface is about 30° or less with respect to the lower plate and the area of the surface wherein ϕ is over 40° occupies 30% or less of the whole area of the electrode surface.

4,431,273

INVERTED TELEPHOTO TYPE WIDE ANGLE LENS SYSTEM

Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Machi, Japan

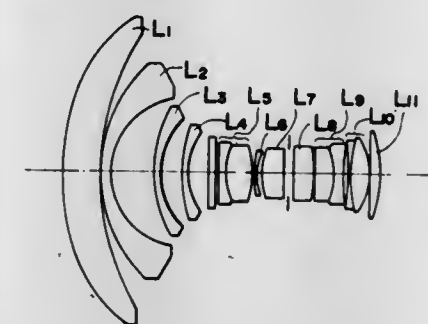
Filed Sep. 22, 1980, Ser. No. 189,212

Claims priority, application Japan, Oct. 3, 1979, 54-128156

Int. Cl.³ G02B 13/04, 13/18

U.S. Cl. 350—432

15 Claims



1. An inverted telephoto type wide angle lens system comprising from the object to the image side:

a front lens group of an overall negative refractive power having a first positive meniscus lens convex to the object side and second to fourth negative meniscus lenses each

convex to the object side, at least one of the refractive surfaces in the front lens group being aspheric; and a rear lens group of an overall positive refractive power having a pair of positive lenses sandwiching a negative meniscus lens convex to the object side, an aperture stop, and fourth to seventh lenses, wherein the lens system fulfills the following conditions:

$$1.0f < |f_F| < 1.4f$$

$$4.5f < R_1 < 6.4f$$

$$1.2f < R_2 < 1.7f$$

$$1.2f < R_3 < 1.5f$$

wherein:

f represents the focal length of the whole lens system;

f_F represents the focal length of the front lens group;

R_1 represents the radius of curvature of the image side surface of the first positive meniscus lens in the front lens group;

R_2 represents the radius of curvature of the image side surface of the second negative meniscus lens in the front lens group; and

R_3 represents the radius of curvature of the image side surface of the third negative meniscus lens in the front lens group.

4,431,274

MACROLENS

Yuko Kobayashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

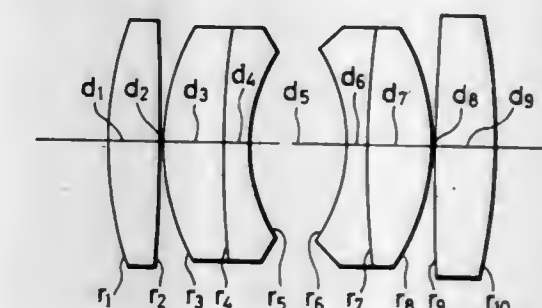
Filed Feb. 26, 1982, Ser. No. 352,565

Claims priority, application Japan, Feb. 27, 1981, 56-26864

Int. Cl.³ G02B 9/36, 11/26

U.S. Cl. 350—471

1 Claim



1. A macrolens comprising a first biconvex lens component, a second lens component consisting of a first positive lens element having the convex surface on the object side and a first negative lens element cemented to said first positive lens element, a third lens component consisting of a second negative lens element having the convex surface on the image side and a second positive lens element cemented to said second negative lens element and a fourth biconvex lens component, and said macrolens having numerical data as given below:

$$f = 100$$

$r_1 = 68.8393$	$n_1 = 1.7725$	$v_1 = 49.66$
$d_1 = 9.5$		
$r_2 = -1227.853$		
$d_2 = 0.65$		
$r_3 = 36.8254$	$n_2 = 1.72916$	$v_2 = 54.68$
$d_3 = 11.89$		
$r_4 = 331.6319$	$n_3 = 1.72825$	$v_3 = 28.46$
$d_4 = 3.75$		
$r_5 = 26.4199$		
$d_5 = 19.55$		
$r_6 = -28.9329$	$n_4 = 1.7725$	$v_4 = 49.66$
$d_6 = 3.855$		
$r_7 = 248.9722$		

-continued

$f = 100$		
$d_7 = 11.675$	$n_5 = 1.6228$	$v_5 = 57.06$
$r_8 = -39.9277$		
$d_8 = 0.545$		
$r_9 = 1133.0637$		
$d_9 = 11.4$	$n_6 = 1.7432$	$v_6 = 49.31$
$r_{10} = -102.2767$		

wherein reference symbol f represents the total focal length of the entire lens system, reference symbols r_1 through r_{10} represent radii of curvature on the surfaces of the respective lens components, reference symbols d_1 through d_9 represent thicknesses of the respective lens components and airspaces reserved therebetween, reference symbols n_1 through n_6 represent refractive indices of the respective lens components, and reference symbols v_1 through v_6 represent Abbe's numbers of the respective lens components.

4,431,275

OPTICAL RECORDING AND READ-OUT LENS SYSTEM FOR OPTICAL RECORDING TYPE DISKS

Juro Kikuchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

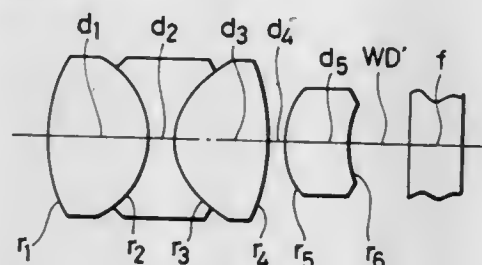
Filed Oct. 8, 1982, Ser. No. 433,442

Claims priority, application Japan, Oct. 26, 1981, 56-170159

Int. Cl.³ G02B 9/06

U.S. Cl. 350-480

8 Claims



1. An optical recording and read-out lens system for optical recording type disks characterized in that said optical recording and read-out lens system for optical recording type disks comprises a first and second lens component, said first lens component being a cemented lens consisting of three lens elements, i.e., a first, second and third lens elements, said first lens element being a biconvex lens, said second lens element being a biconcave lens, said third lens element being a biconvex lens, said second lens component being a positive meniscus lens arranged to be concave toward the disk side, said optical recording and read-out lens system for optical recording type disks being arranged to fulfill the following conditions:

$$0.8 < f^2 / |r_2 \cdot r_3| < 1.4 \quad (1)$$

$$1.2 < f_4 / f < 1.6 \quad (2)$$

$$(n_1 - 1)v_1 + (n_3 - 1)v_3 \geq 50 \quad (3)$$

wherein reference symbol f represents the focal length of the lens system as a whole, reference symbol f_4 represents the focal length of the second lens component, reference symbols r_2 and r_3 respectively represent radii of curvature of cemented surfaces of the first lens component, reference symbols n_1 and n_3 respectively represent refractive indices of the first and third lens elements constituting the first lens component, and reference symbols v_1 and v_3 respectively represent Abbe's numbers of the first and third lens elements constituting the first lens component.

4,431,276 SPECIMEN-HOLDER SYSTEM FOR UPRIGHT MICROSCOPES

Klaus Weber, Königsbrunn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

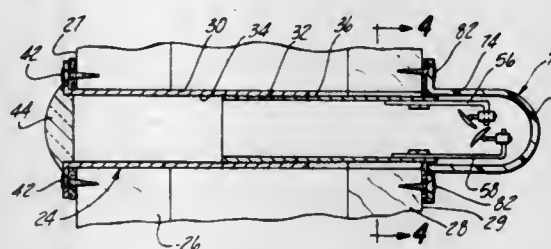
Filed Nov. 12, 1980, Ser. No. 206,083

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946544

Int. Cl.³ G02B 21/26

U.S. Cl. 350-529

11 Claims



1. A specimen holder system for upright microscopes for locating the object plane of specimens of substantially different thicknesses and having different lateral dimensions in the focal plane of the microscope by means of a receiver disposed in the microscope stage, said specimens having specimen surfaces to be observed, said receiver including an object receiving surface positioned a predetermined distance from the focal plane of the microscope, a plurality of specimen holders having different inner dimensions corresponding to the respective lateral dimensions of said specimens and being provided with an edge, said edge of said holders being constructed and arranged to be disposed against said object receiving surface, the distance from specimen surfaces to said edge of said holders being the same for each holder and being the same as said predetermined distance between said object receiving surface of said receiver and the focal plane of the microscope, and an insertion frame displaceable along said object receiving surface, the edge of said object holders extending above said insertion frame, said insertion frame including biasing means urging said insertion frame towards said receiver upon insertion, so that the upper surface of the edge of said holders rests against said object receiving surface.

4,431,277

VIEWING DEVICE

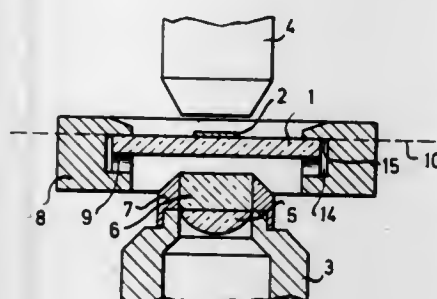
Marion H. Lewandowski, 10500 Whitehill, Detroit, Mich. 48224

Filed Nov. 4, 1981, Ser. No. 318,058

Int. Cl.³ G02B 23/02

U.S. Cl. 350-574

9 Claims



1. A viewing device comprising: an elongated tubular housing; a first reflector and a second reflector; means for independently, adjustably securing each of said first and second reflectors adjacent one axial end of said tube so that said first reflector extends axially outward from said tubular housing at a first predetermined angle with respect to the axis of said housing and said second reflector extends axially outward from said tubular housing at a second predetermined angle with respect to the

axis of said housing, whereby each first and second predetermined angle can be independently varied; lens means for closing the other end of said tubular housing; and a transparent housing means for defining a chamber in which said first and second reflectors are disposed and enclosing said one end of said tubular housing.

4,431,278

EYE EXAMINING APPARATUS

Masao Nohda, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

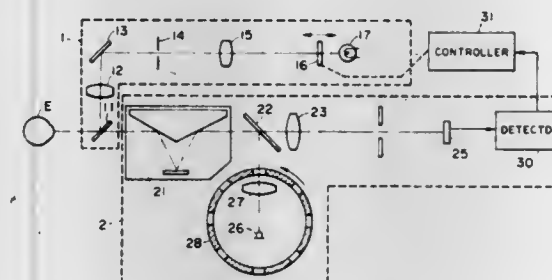
Filed Mar. 3, 1981, Ser. No. 240,139

Claims priority, application Japan, Mar. 7, 1980, 55-28030

Int. Cl.³ A61B 3/10

U.S. Cl. 351-211

6 Claims



1. An eye examining apparatus comprising fixation mark means for forming an image of an eye fixation mark which an eye to be examined looks at, means for measuring the refractive power of said examined eye, and control means for moving said fixation mark image in a direction so as to relax or strain the sight regulation power acting on said examined eye in accordance with an output signal from said measuring means, characterized in that said control means comprises position detector means for detecting the position of said fixation mark image and for providing a position signal representative of the position and difference detector means for detecting a difference in level between the position signal from said position detector means and the output signal from said measuring means and for causing the control means to move said fixation mark image a predetermined amount when said difference falls within a predetermined range of values.

4,431,279

EYE PERIPHERY PORTION ILLUMINATING DEVICE IN AN OPHTHALMOLOGIC INSTRUMENT

Kazuo Morohashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

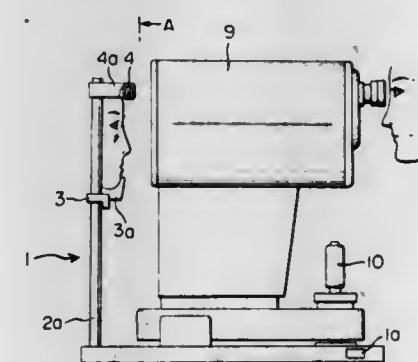
Filed Sep. 4, 1981, Ser. No. 299,386

Claims priority, application Japan, Sep. 22, 1980, 55-133686[U]

Int. Cl.³ A61B 3/00

U.S. Cl. 351-245

6 Claims



1. An eye periphery portion illuminating device in an ophthalmologic instrument having a chin supporting member and

a forehead engaging means for fixing a patient's face to the ophthalmologic instrument body, comprising:

- (a) beam means supporting said forehead engaging means; and
- (b) illuminating means for illuminating eye periphery portions of the patient's eyes, the illuminating means being disposed on said beam means so as to be positioned above the patient's face fixed as aforesaid and illuminating the periphery portions of the patient's eyes from slightly ahead of the patient's forehead so that, due to the interception effect of the patient's eyelids, little or no light will directly enter into the patient's eyeballs.

4,431,280

PLANAR ROTATIONAL AUTOSTEREOSCOPIC DISPLAY

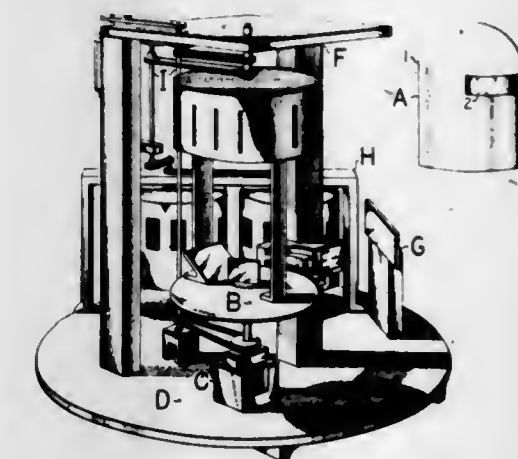
Lenard B. Carvelo, 481-E Kawaiola Rd., Kailua, HI. 96734

Filed Nov. 24, 1981, Ser. No. 324,600

Int. Cl.³ G03B 35/00

U.S. Cl. 352-58

1 Claim



1. The synchronized autostereoscopic display apparatus comprising:

- (a) first and second image means, said first image means comprising a left eye image means surrounded by a first rotatable bar grid barrier means and second second image means comprising a right eye image means surrounded by a second rotatable bar grid barrier means;
- (b) a rotatable drum assembly;
- (c) a first rotatable mirror located substantially on the rotational axis of said axis of said drum assembly; said drum assembly comprising a second mirror for receiving the image reflected from said first rotatable mirror and reflecting said image in a direction parallel to the axis of said drum assembly, and a third mirror for receiving the image from said second mirror and directing said image in a direction toward the axis of said drum assembly;
- (d) a screen means mounted substantially on the axis of said drum assembly for receiving said image reflected from said third mirror; said screen means comprising a part of said drum assembly;
- (e) optical means for projecting the images from said first image means and said second image means onto said first rotatable mirror;
- (f) third rotatable bar grid means surrounding said drum assembly at a level corresponding with the level of said screen means; and
- (g) drive means for driving said first rotatable mirror at a speed sufficient to maintain persistence of vision between successive rotations and for driving said drum assembly and said first, second, and third rotatable bar grid means at twice the speed of said first rotatable mirror.

4,431,281

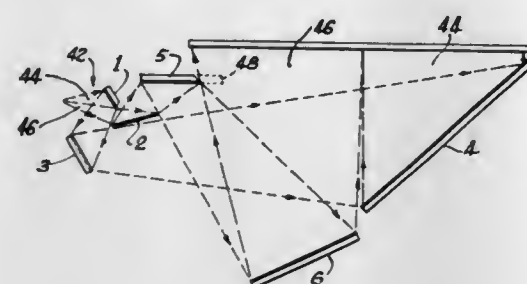
SPLIT BEAM MICROFICHE READER

Prativadi I. Sampath, 2596 Carmel Valley Rd., Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 333,087, Dec. 21, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 433,632
Int. Cl.³ G03B 23/08

U.S. Cl. 353—78

6 Claims



1. An imaging system having a screen and a source of light producing an expanding beam directed through a film-holding area and means for focusing said beam on said screen, and wherein the expanding beam is split into at least two beam components which are separately folded prior to focusing it on said screen, comprising:

- a plurality of initially illuminated mirrors which together span the entire cross-section of said beam downstream of said film, each splitting off a beam component from said beam;
- for each of said initially illuminated mirrors, a downstream mirror system for same, said downstream mirror systems each cooperating with respective initially illuminated mirrors to fold the respective beam components onto said screen;
- said system being disposed within a microfiche reader, said screen being generally horizontally extended and said downstream mirror systems each including a plurality of mirrors;
- there being two initially illuminated mirrors, comprising the first and second mirrors, and said downstream mirror systems comprise respectively a third and fourth mirror for said first mirror, and a fifth and sixth mirror for said second mirror, and said beam components comprise a first and second component split off said beam by said first and second mirror, respectively; and
- the first beam component being folded by said third mirror and passing beneath said second mirror.

4,431,282

DEVICE FOR MOUNTING DIAPOSITIVES IN A STRIP AND AN APPARATUS FOR PROJECTING THE STRIP-MOUNTED DIAPOSITIVES

Liesel Martin geb. Böser, Markschiedsweg 27, 6336 Solms/OT Oberblel, Fed. Rep. of Germany

Division of Ser. No. 270,333, Jun. 4, 1981. This application Sep. 13, 1982, Ser. No. 417,620

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021138

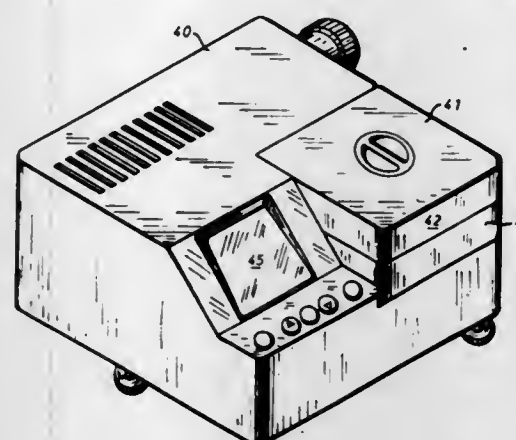
Int. Cl.³ G03B 21/00, 1/56; G02B 27/02

U.S. Cl. 353—120

13 Claims

1. In an apparatus for the projection of diapositives mounted in a strip which successively introduces the diapositives into the apparatus for projection, a first cassette adapted to contain a first strip having a plurality of diapositives successively mounted therein, a second cassette adapted to contain a second strip in which no diapositives are mounted, means on the ends of said first and second strips for self-connecting an end of one strip to the adjacent end of the other strip such that said ends are securely fastened together during the time said first strip with its diapositives is moved from said first cassette through the apparatus for successive projection of the diapositives mounted therein, said self-connecting means comprises spring

wire hooks on said adjacent ends of said strips, an inclined guide surface within an opening in at least one of said cassettes through which said strip passes into and out of said cassette,



said guide surface acting against one of said hooks when said strip ends pass through said opening to engage said hooks to interconnect the adjacent ends of said strips.

4,431,283

FILM CARTRIDGES, FILMS AND CAMERAS ADAPTED FOR USE THEREWITH

Takeo Hoda, Sakai; Nobuyuki Taniguchi, Tondabayashi, and Kiyoshi Seigenji, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

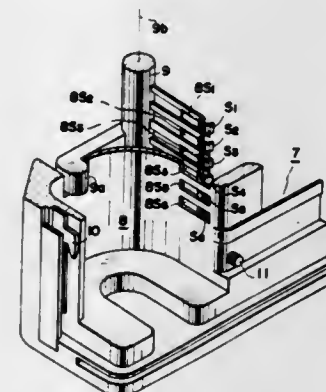
Filed Jun. 4, 1982, Ser. No. 385,311

Claims priority, application Japan, Jun. 8, 1981, 56-88625

Int. Cl.³ G03B 7/00

U.S. Cl. 354—21

19 Claims



1. In a camera adapted for use with a film cartridge having information of a film contained therein, a code detection device comprising:

- a cartridge chamber;
- information detecting means movable between an operating position capable of detecting the information on the film cartridge loaded in said cartridge chamber and a non-operating position incapable of information detection;
- film cartridge detecting means for detecting the film cartridge loaded in said cartridge chamber;
- operating means interlocked with said film cartridge detecting means for shifting said information detecting means to said operating position upon the detection of the film cartridge by said film cartridge detecting means; and
- a read-out circuit for reading out the information detected by said information detecting means.

4,431,284

LIGHT MEASURING DEVICE FOR CAMERA

Kazuo Fujibayashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

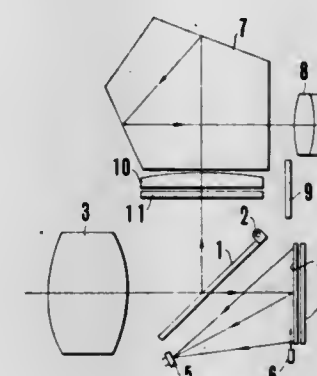
Filed Mar. 9, 1982, Ser. No. 356,513

Claims priority, application Japan, Mar. 20, 1981, 56-41125

Int. Cl.³ G03B 7/08

U.S. Cl. 354—413

3 Claims



1. A light measuring device for camera comprising:
a photographing optical system;
a shutter curtain arranged in the neighborhood of the image plane of the photographing optical system;
a light sensing means for sensing the light from the shutter curtain; and
a light shading member for covering at least a part of the shutter curtain, said member freely inserted or withdrawn.

4,431,285

MOVABLE MIRROR ARRANGEMENT FOR USE IN SINGLE LENS REFLEX CAMERA

Hideo Kajita; Takeshi Egawa, and Yukio Miki, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

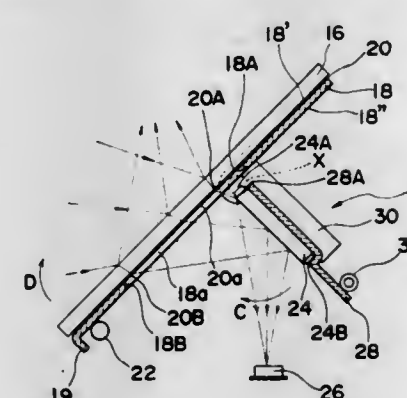
Filed Jun. 21, 1982, Ser. No. 390,621

Claims priority, application Japan, Jun. 22, 1981, 56-92787[U]

Int. Cl.³ G03B 7/099, 19/12

U.S. Cl. 354—405

11 Claims



1. In a single lens reflex camera comprising a photographic lens, a view finder optical system, photoelectric means, and a movable mirror arrangement having a main mirror, at least a part thereof constituting a light-transmitting portion, and an auxiliary mirror interconnected pivotably with said main mirror, said movable mirror arrangement being so arranged that, when in a finder observation state, light transmitted through said photographic lens is divided into a first portion led to said view finder optical system and a second lens, a view finder system and photoelectric means for receiving light transmitted through said photographic lens, said movable mirror arrangement including a main mirror, which is a half mirror or has a light-transmitting portion, and an auxiliary mirror, and being so arranged that, when in a finder observation state, light transmitted through said photographic lens is divided by said main mirror into a first portion led to said view finder system

and a second portion led to said photoelectric means, and that, when in a photographing state, said auxiliary mirror is overlapped with said main mirror on a position out of an optical path region between said photographic lens and a photographic film located to be exposed, the improvement of said movable mirror arrangement comprising:

- a main mirror holder formed with an opening, which is secured to said main mirror so as to hold said main mirror; and
- a masking plate which is disposed in a space formed between said main mirror and said main mirror holder; whereby said masking plate is capable of shielding, when in the photographing state, a clearance formed adjacent to a pivotal axis of said auxiliary mirror between said auxiliary mirror and said opening so as to prevent incident light which has entered reversely through said view finder optical system from passing through said clearance into said optical path region.

4,431,286

PHOTOGRAPHIC EXPOSURE CONTROL SYSTEM HAVING SELECTABLE AMBIENT AND FLASH MODES

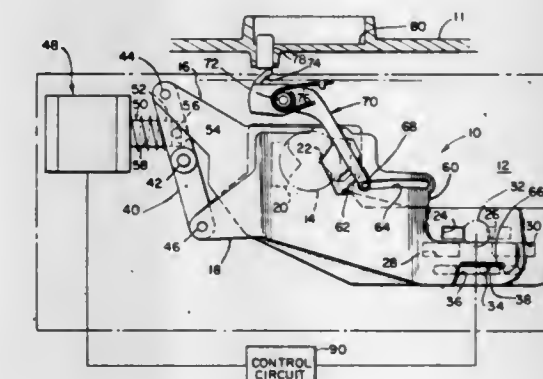
Norman D. Staller, Beverly, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 13, 1981, Ser. No. 311,075

Int. Cl.³ G03B 7/00

U.S. Cl. 354—435

16 Claims



1. A photographic camera apparatus for use in either an ambient scene-lighted mode or an artificially scene-lighted mode wherein the camera includes means for mounting photographic film material at a given focal plane, said camera comprising:

- a blade mechanism;
- means for mounting said blade mechanism for displacement between a first arrangement wherein it precludes scene light from reaching the film plane and a second arrangement wherein it defines a maximum size aperture, said blade mechanism serving to define a first range of progressively increasing sized apertures as it moves from its said first arrangement to its said second arrangement;
- control means cooperatively associated with said blade mechanism and said mounting means and responsive to camera operation in the ambient scene-lighted mode for limiting displacement of said blade mechanism along said predetermined path to an intermediate arrangement wherein it defines an aperture size less than said maximum aperture size while simultaneously detecting scene light in a manner maintaining a first select corresponding relationship between the detected scene light and the scene light admitted to the focal plane by said blade mechanism as it moves through said range of apertures between said first and intermediate arrangements and responsive to camera operation in the artificially scene-lighted mode for allowing displacement of said blade mechanism along said predetermined path between its said first and second arrangements while simultaneously detecting scene light in a manner maintaining a second select

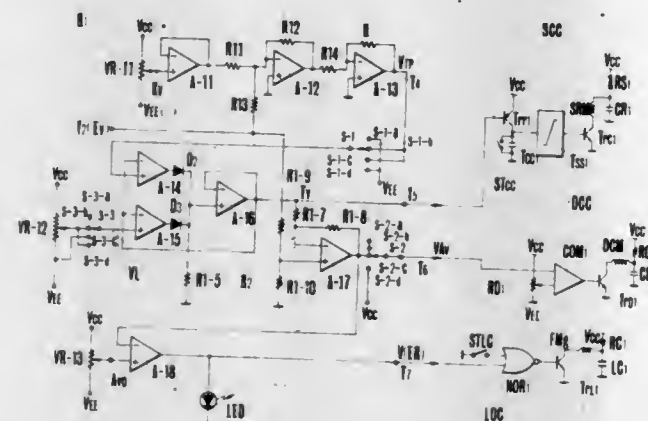
corresponding relationship between the detected scene light and the scene light admitted to the focal plane independent of said first select corresponding relationship by said blade mechanism as it moves through said range of apertures between said first and second arrangements; and selectively actuatable drive means for initially displacing said blade mechanism from its said first arrangement toward its said second arrangement, and for thereafter displacing said blade mechanism back toward its said first arrangement in response to said detected scene light to define an exposure cycle.

4,431,287 CAMERA

Shinji Sakai; Masayuki Suzuki; Nobuhiko Shinoda, all of Tokyo; Masanori Uchidoi, Kanagawa; Hiroyasu Murakami, Tokyo, and Tadashi Ito, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 185,609, Sep. 9, 1980, abandoned. This application May 26, 1981, Ser. No. 267,045
Claims priority, application Japan, Sep. 10, 1979, 54-115992
Int. Cl.³ G03B 7/087

U.S. Cl. 354-441

5 Claims



1. A camera comprising:

- shutter time presetting means for presetting a selected shutter time value;
- a light metering circuit for producing an output corresponding to object brightness;
- a computing circuit connected to said light metering circuit and coupled with said shutter time presetting means, said computing circuit having a shutter priority mode of operation in which an aperture value is computed based on the output of said light metering circuit and the selected shutter time value, and a program mode of operation in which a combination of shutter time and aperture values are computed based on the output of the light metering circuit, said computing circuit including a detecting circuit which is rendered operative when said computing circuit is in said program mode for detecting the selected value of shutter time and the value of shutter time computed by said computing circuit, and for causing one of a first time signal corresponding to the shutter time value computed by said computing circuit to be produced from said computing circuit when the selected shutter time value is greater than the computed shutter time value, and a second time signal corresponding to said selected shutter time value to be produced from said computing circuit when the selected shutter time value is less than the computed shutter time value;
- a shutter control circuit coupled to said computing circuit for controlling shutter time on the basis of said selected shutter time value when said computing circuit is in said shutter priority mode, and for controlling the shutter time on the basis of one of the first and second time signals produced from said computing circuit when said computing circuit is in said program mode;
- a diaphragm control circuit for controlling an aperture

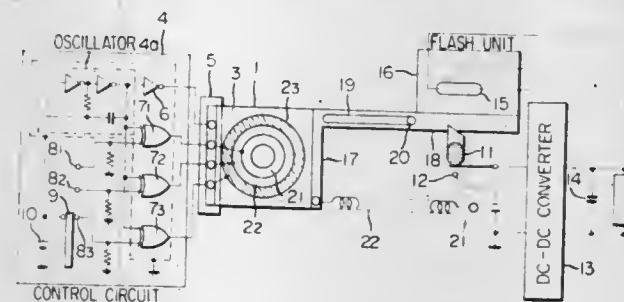
on the basis of the computed aperture value from said computing circuit; and
(f) mode selecting means coupled to said computing circuit for selecting one of said shutter priority and program modes.

4,431,288 CAMERA WITH LIQUID CRYSTAL APERTURE CONTROL MEANS

Hiroshi Iwata, and Tsunemi Yoshino, both of Nara, Japan, assignors to West Electric Co., Ltd., Osaka, Japan
Filed May 14, 1982, Ser. No. 378,421
Claims priority, application Japan, May 14, 1981, 56-73049
Int. Cl.³ G03B 3/00, 7/087

U.S. Cl. 354-446

6 Claims



1. A camera with a liquid crystal aperture stop means characterized by

- a bias means which is adapted to maintain said liquid crystal aperture stop means normally at a first position,
- an arresting means which is adapted to retain said liquid crystal aperture stop means at a second position against said bias means, and
- a control means which is adapted to control said arresting means, whereby said crystal liquid aperture stop means can be selectively retracted away from the photographic optical system.

4,431,289 PANORAMIC CAMERA

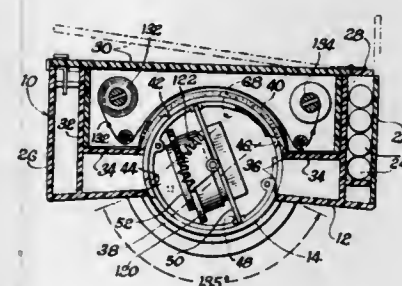
Kurt A. Reinhardt, 971 Monserate Ave., Chula Vista, Calif. 92011

Filed Jun. 10, 1981, Ser. No. 272,135

Int. Cl.³ G03B 37/02

U.S. Cl. 354-96

8 Claims



1. A panoramic camera comprising:

- a housing defining a cylindrical chamber;
- said chamber having a frontal wide angle aperture and an angularly wide rear opening;
- means for holding a film strip shaped as a portion of a cylinder across said opening;
- a rotating drum coaxially mounted in said cylinder;
- an upright lens mounted in said drum;
- a front slit and a rear slit defined in said drum parallel to the drum axis, to the front and rear of, respectively, and spanning the axis of, said lens;
- means for rotating said drum in said chamber to sweep a band of light across a film strip held at said opening; and,
- said drum having a starting position and a fully swept

limit position, and said means to rotate said drum comprising an electric motor and including an automatic control means for said motor so that same first rotates said drum in an exposure sweep from said starting position to said limit position, and then returns said drum to the starting position during a return sweep.

4,431,290 PORTABLE PHOTOGRAMMETRY SYSTEM

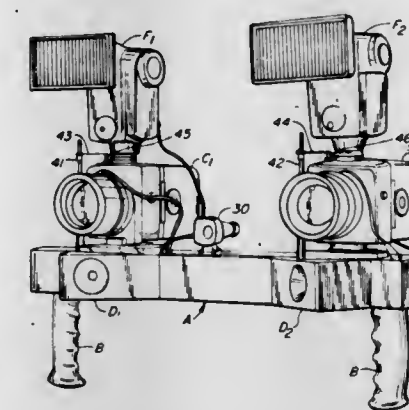
John H. Kennedy, Frederick, Md., assignor to Bechtel Power Corporation, San Francisco, Calif.

Filed Apr. 12, 1982, Ser. No. 367,508

Int. Cl.³ G03B 35/08, 15/03

U.S. Cl. 354-113

10 Claims



1. A portable photogrammetric camera apparatus comprising in combination: a rigid bar; paired cameras with respective normally closed shutters, each said shutter having a flash circuit with a normally open electrical switch attached thereto, said switch operatively connected to said shutter to close upon opening of said shutters; means for simultaneously opening the shutters of both said cameras; at least one flash having an actuating circuit series connected successively through said normally opened switches attached to each of said shutters whereby said flash is actuated by said actuating circuit only when both said flash circuits are closed and therefore both said shutters are open to freeze with the light of said flash images on both said cameras.

4,431,291 INDICATING DEVICE FOR A CAMERA

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 265,951, May 21, 1981, abandoned.

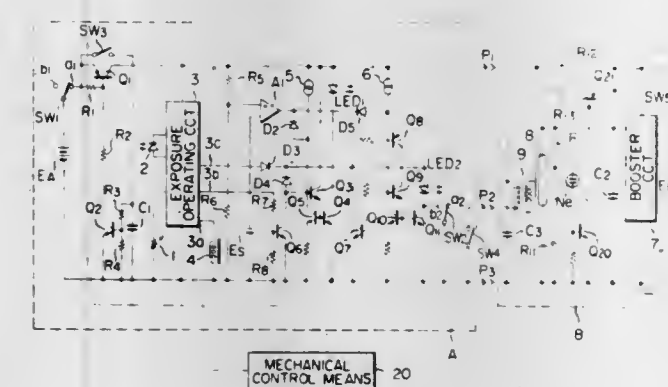
This application Sep. 27, 1982, Ser. No. 424,337

Claims priority, application Japan, Jun. 3, 1980, 55-74537

Int. Cl.³ G03B 15/02

U.S. Cl. 354-127.12

9 Claims



1. In a camera usable with an electronic flash device, said camera including:

- an indicating element adapted to be operated when said

electronic flash device has become capable of emitting flashlight;

- an electric control means for electrically adjusting at least one of a shutter time and a diaphragm aperture;
 - a voltage detecting circuit for detecting the voltage of a battery for driving said electric control means;
- the improvement comprising:
a control circuit for rendering said indicating element inoperative in response to the output of said detecting circuit when the voltage of said battery is below a predetermined value, independently of whether or not said electronic flash device is in flashlight emission capable condition.

4,431,292 FILM FEEDING CIRCUIT

Akira Takahashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

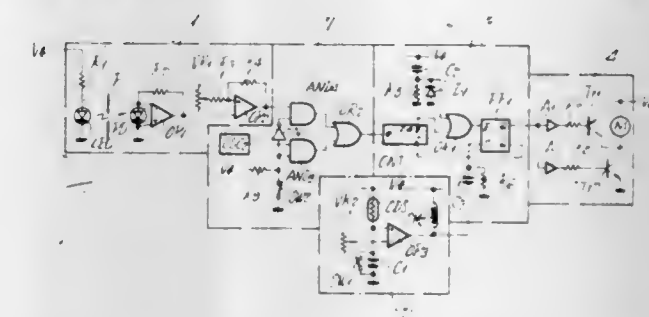
Filed Nov. 13, 1981, Ser. No. 320,930

Claims priority, application Japan, Nov. 18, 1980, 55-162136; Nov. 18, 1980, 55-162137; Nov. 18, 1980, 55-162138; Nov. 18, 1980, 55-162139; Nov. 18, 1980, 55-162140

Int. Cl.³ G03B 1/12, 1/66

U.S. Cl. 354-173.11

14 Claims



1. Film feeding circuit comprising a motor for feeding a film in a camera by a distance corresponding to one frame thereof at the termination of a shutter operation, a perforation detecting circuit operative to detect a perforation in the film being fed at a given location and to produce a perforation signal, a counter for counting the perforation signal, first means responsive to the termination of a shutter operation for driving the motor until a count in the counter reaches a first predetermined value, and control means for controlling the film feeding operation which control means causes the speed of the motor to be reduced after the count in the counter reaches a second predetermined value which is less than said first predetermined value.

4,431,293 FILM DEVELOPING APPARATUS INCLUDING A SERIES OF PROCESSING TANKS AND MEANS FOR INDICATING AND CONTROLLING LOCATION OF FILM THEREIN

Martti O. Riekkinen, SF-70870 Hiltulanlahti, Finland

Filed May 15, 1981, Ser. No. 264,039

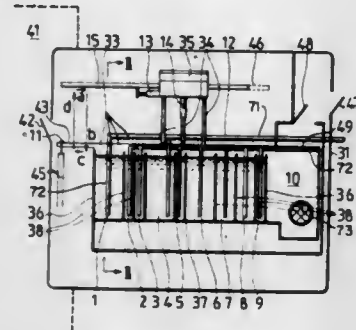
Int. Cl.³ G03D 3/04, 3/10

U.S. Cl. 354-322

5 Claims

1. An apparatus for developing films, comprising a series of developing tanks, a drying area located adjacent said tanks, a film suspension frame disposed adjacent said tanks, a plurality of hangers for suspending films from the frame, transporting means for transporting the hangers into registry with said tanks, and, respectively, the drying area, a control unit including timing means, said control unit being operably connected to the transporting means for controlling movement of said transporting means and operable to step move the transporting means a given length for each actuation of said control unit, said plurality of developing tanks being constructed of different lengths in the direction of movement of said transporting means whereby the films are processed in different tanks for different total times, separate switch means associated with

each of said tanks, said switches being arranged to be actuated by hangers located at the respective tanks, and a display unit operably connected with said switch means and arranged to



indicate those hangers that are disposed in the respective tanks, said timing means being adjustable so that the residence time of the hangers in the tanks can be controlled.

4,431,294

ROTATION FAILURE SENSOR FOR FILM DISC PROCESSOR

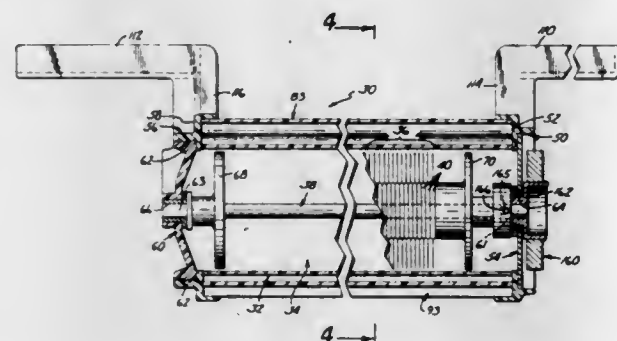
Richard W. Baker, Anoka, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Oct. 5, 1982, Ser. No. 432,816

Int. Cl.³ G03B 3/04, 3/08

U.S. Cl. 354—322

12 Claims



1. A processor for processing undeveloped photographic film discs, the processor comprising:

a rotatable spindle for carrying film discs;
a follower magnet connected to the spindle adjacent one end thereof;

conveyor means for conveying the spindle intermittently from a first to a second end of the processor along a generally horizontal conveyor path to each of a plurality of stations so that the spindle has an axial direction which is generally horizontal and perpendicular to the conveyor path;

a drive magnet rotatably mounted adjacent selected stations in spaced axial alignment with the follower magnet of the spindle when the spindle is positioned at one of the selected stations;

drive magnet rotation means for rotating the drive magnet to cause the follower magnet, spindle and film discs mounted thereon to be rotated due to magnetic coupling of the drive magnet and the follower magnet; and

rotation sensing means at each of the selected stations for sensing a failure of the follower magnet to be rotated by the drive magnet.

4,431,295

PHOTOCOMPOSING MACHINE AND METHOD

Louis M. Moyroud, Delray Beach, Fla.; Michel Bongard, Saint Sulpice, Switzerland; Paul A. Vernez, Chavannes, Switzerland, and Michel Moulin, Lausanne, Switzerland, assignors to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

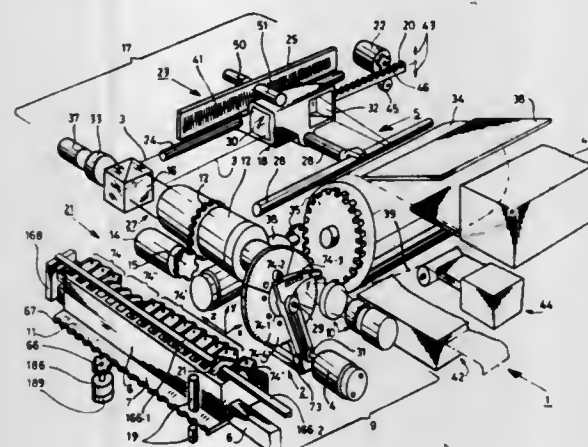
Division of Ser. No. 198,284, Oct. 17, 1980, Pat. No. 4,329,027.

This application May 3, 1982, Ser. No. 374,172

Int. Cl.³ B41B 13/00; G03B 17/06

U.S. Cl. 354—5

17 Claims



5. In a photocomposing machine having a movable character matrix, a flash lamp for exposing characters on said matrix and projecting images thereof towards a recording surface, and moving means for moving said matrix to bring selected characters thereon to a projection position, said moving means being adapted to move said matrix at a relatively high speed when a selected character is relatively remote from said projection position and at a relatively low speed when said character is at said projection position, and operating means for operating said flash lamp when said character is located at said projection position.

4,431,296

DEVELOPING METHOD AND APPARATUS THEREFOR

Satoshi Haneda; Masahiko Itaya, both of Hachioji, and Makoto Tomono, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

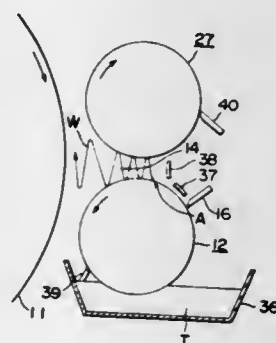
Filed Apr. 21, 1982, Ser. No. 370,535

Claims priority, application Japan, Apr. 27, 1981, 56-62526; Apr. 30, 1981, 56-63967

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 DD

10 Claims



1. A developing method characterized in that a developing agent is introduced into a developing agent cloud forming space, in which an alternating electric field is to be established, so that said developing agent may be made to fly therein by the action of said alternating electric field thereby to form the cloud of said developing agent; and in that the cloud of said developing agent is guided to a developing region thereby to develop a latent image.

4,431,297

COPYING MACHINE FOR ELECTROPHOTOGRAPHY

Isao Ikemoto, and Akihiko Tamura, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

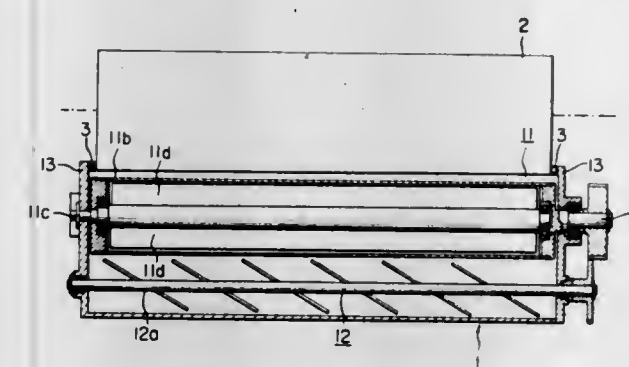
Filed Dec. 1, 1981, Ser. No. 326,263

Claims priority, application Japan, Dec. 17, 1980, 55-180155[U]

Int. Cl.³ G03G 15/08

U.S. Cl. 355—3 DD

6 Claims



1. A copying machine for an electrophotography, which comprises;

a photosensitive drum,
a developing device comprising side walls of said developing device, and
a sealing member made of an elastic material being equipped between said side walls and the end face of the side of said photosensitive drum for filling the clearance between the both items.

4,431,298

APPARATUS FOR BRUSH DEVELOPMENT INCLUDING MEANS FOR DETECTING TONER IN THE TONER BATH AND MEANS FOR SUPPLYING TONER TO THE TONER BATH

Minoru Arai, Kumagaya, and Keitaro Yamashita, Saitama, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

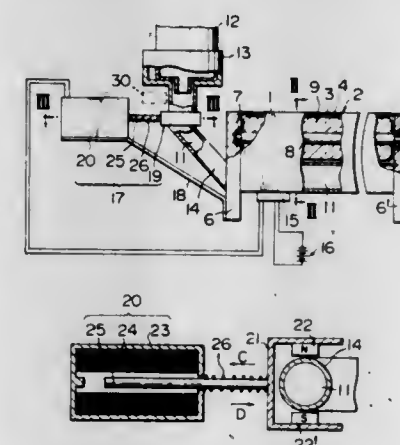
Filed Dec. 31, 1981, Ser. No. 336,066

Claims priority, application Japan, Jan. 23, 1981, 56-8669

Int. Cl.³ G03G 15/09

U.S. Cl. 355—3 DD

8 Claims



1. A developing apparatus with a magnetic toner comprising:

a developing roll having a cylindrical sleeve of nonmagnetic material and a permanent magnet member with a plurality of magnetic poles on its surface, said magnetic member being provided in said sleeve, said developing roll being provided close to an image carrying substance having an electrostatic latent image held on its surface so that a developing gap is formed between said image carrying substance and said developing roll, said sleeve and said permanent magnet member being relatively rotated to

carry a magnetic toner on the surface of said sleeve toward the developing gap;

a toner bath adapted to have the magnetic toner supplied thereto through an opening thereof;

a toner supply bath provided to communicate with said toner bath through a supply path provided below the toner supply bath, thereby supplying the magnetic toner to said toner bath;

a detector member provided at said toner bath for detecting the presence or absence of the magnetic toner within said toner bath and for generating a signal when a predetermined amount of the magnetic toner is absent therein;

magnetic field generating means provided around said supply path for transversely generating a magnetic flux relative to the axis of said supply path to magnetically shut off said supply path, wherein said magnetic field generating means comprises magnetic circuit means including a pair of permanent magnets straddling the supply path and a supporting member for fixing the permanent magnets thereon and arranging the permanent magnets to interpose the supply path; and

drive means for moving said magnetic field generating means relative to said supply path in response to said signal so that when said signal is not generated from said detector member, said supply path is magnetically shut off, and when the signal is generated therefrom, said supply path is magnetically released from the closed state.

4,431,299

PROJECTION APPARATUS

Yoshiya Matsui; Setsuo Minami, and Noritaka Mochizuki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 889,404, Mar. 23, 1978, abandoned.

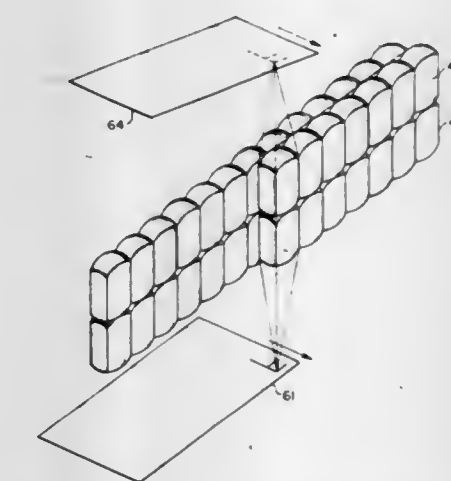
This application Mar. 26, 1980, Ser. No. 134,222

Claims priority, application Japan, Mar. 31, 1977, 52-37315; Jul. 8, 1977, 52-81571; Aug. 3, 1977, 52-93497

Int. Cl.³ G03G 15/28; G03B 27/48

U.S. Cl. 355—8

26 Claims



1. A projection apparatus for projecting an image of an original from an object plane to a plane of projection comprising:

a plurality of projection optical systems disposed between the object plane and the plane of projection and along a predetermined direction, wherein said two planes are at least partially opposed and are fixed relative to each other, and wherein each projection optical system comprises a first and a second lens arranged coaxially with the optical axis of said optical system so that the first lens forms an intermediate image of a portion of said object plane between the first and second lenses and said second lens reforms said intermediate image on a portion of said projection plane, the length of each lens measured along the optical axis being larger than the effective diameter

thereof, wherein the first lens is an exit side telecentric lens and the second lens is an incident side telecentric lens;
 a driving apparatus for producing a relative movement between said projection optical system and said object and projection planes;
 a member for supporting the original on said object plane; and
 a member for supporting a photosensitive member on said projection plane.

4,431,300

AUTOMATIC DEVELOPABILITY SENSING IN ELECTROPHOTOGRAPHIC PRINTING

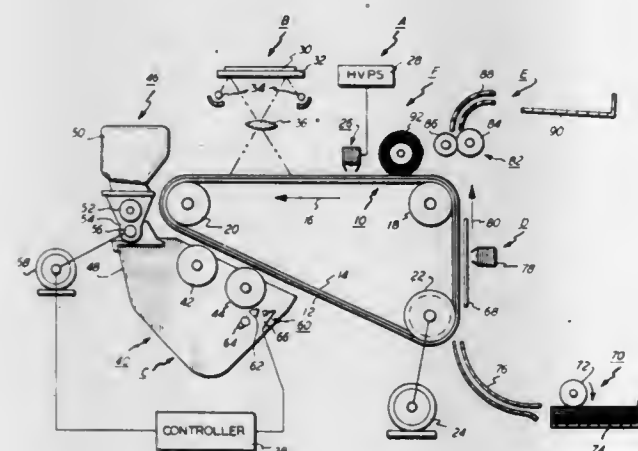
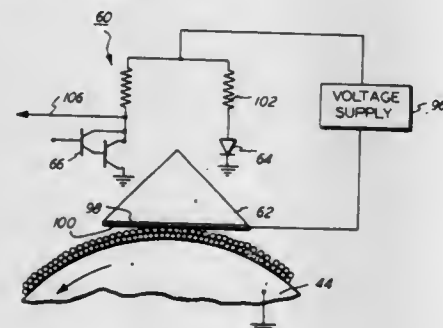
Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 16, 1982, Ser. No. 349,107

Int. Cl.³ G03G 15/08

U.S. Cl. 355—14 D

26 Claims



1. An apparatus for sensing electrostatically charged particles, including:
 a member adapted to attract at least a portion of the charged particles to at least one surface thereof;
 means for transmitting a beam of energy through said member onto the charged particles attracted to the surface thereof with the internal angle of incidence of the beam of energy being greater than the critical angle of incidence of said member; and
 means for detecting the intensity of the beam of energy internally reflected through said member, said detecting means generating a signal indicative of the quantity of charged particles attracted to the surface of said member.

4,431,301 ELECTROSTATIC COPYING APPARATUS WITH MEANS FOR PREVENTING CONTAMINATION OF REVERSE SIDE OF COPYING MEDIUM

Shinichi Hashimoto, Fujisawa, and Kunihiro Miura, Hiratsuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

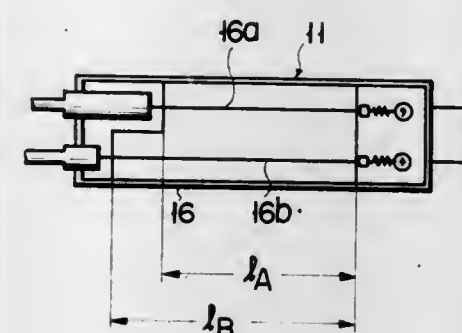
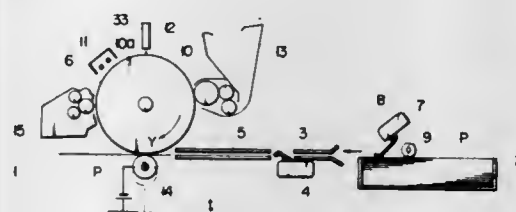
Filed Mar. 4, 1981, Ser. No. 240,307

Claims priority, application Japan, Mar. 12, 1980, 55-31282; Mar. 12, 1980, 55-31283; Mar. 12, 1980, 55-31284; Mar. 12, 1980, 55-31285

Int. Cl.³ G03G 15/00

U.S. Cl. 355—14 CH

1 Claim



1. An electrostatic copying apparatus which comprises:
 an image forming body forming a toner image on the surface thereof;
 a transfer device for transferring electrostatically the toner image formed on the surface of the image forming body to a copying medium; and
 image forming means for forming an actual image on the surface of said image forming body over a length corresponding to the width of said copying medium which extends in a direction orthogonal to a direction of the supply of said copying medium,
 said transfer device includes a rotatable transfer roller which faces said surface of the image forming body for selectively transferring at least two different sizes of said copying medium, a drive means for moving said transfer roller to contact with the image forming body for such a period as to feed the copying medium for a distance equal to the length thereof in the feeding direction while keeping the copying medium in contact with said image forming body, and detecting means for detecting the length extending in the width direction of said copying medium supplied to produce a signal representative of the detected width,
 said image forming means includes a charger disposed facing the surface of said image forming body on which an image is formed, in said width direction, which responds to the detection signal from said detecting means to charge said image forming body over the length corresponding to the width of said copying medium,
 said charger is provided with at least two charging wires with the lengths corresponding to the widths of said copying mediums supplied and said charging wires selectively effect corona discharge in response to the output signal from said detecting means.

4,431,302 CHARGE LEVEL CONTROL FOR AN ELECTROCHARGEABLE MEDIUM

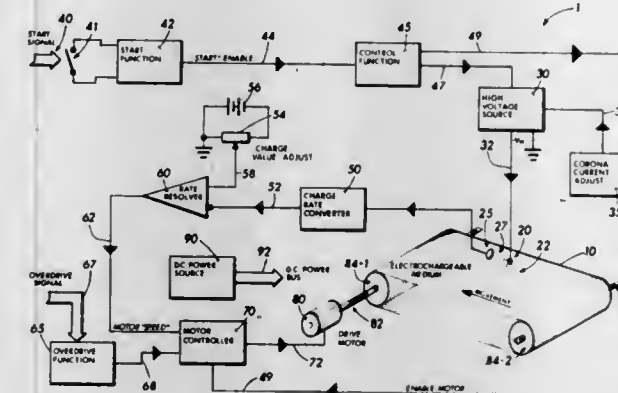
Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 26, 1982, Ser. No. 352,595

Int. Cl.³ G03G 15/00

U.S. Cl. 355—14 CH

37 Claims



1. Charge control method for producing substantially constant charge accumulation in the effective charge supporting mechanism of an electrochargeable medium, as provided by:
 (a) exposing said medium to a corona charging field;
 (b) measuring at least a portion of said field's effective intensity;
 (c) moving said medium relative with said field at various instant rates which are proportional to the measured value of said effective intensity.

4,431,303

SHEET HANDLING APPARATUS FOR USE WITH A VERY HIGH SPEED DUPLICATOR

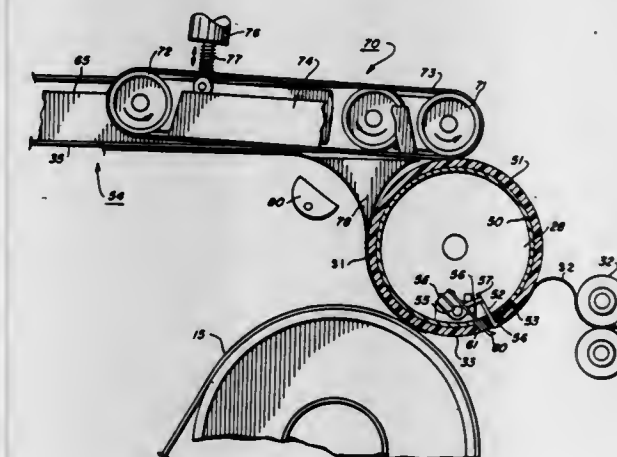
Daniel S. Hoffman, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 4, 1981, Ser. No. 318,096

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 SH

5 Claims



1. Copy sheet handling system for use to produce duplex copy sheets in a copying machine having copy sheet supply and feed means, a transfer station at which a developed toner image on a photoreceptor is transferred to a copy sheet, and a fusing apparatus for fixing toner images on copy sheets, the improvement comprising:
 a transfer roller positioned at the transfer station adjacent the photoreceptor and arranged to direct a copy sheet received from the sheet feed means to the photoreceptor with the sheet therebetween to receive a toner image thereon, said roller including means for holding the copy sheet thereon for directing the same through the transfer station, and
 transport means positioned to receive the copy sheet after the same has received an image on one side thereof and to

convey the sheet from said roller, and selectively to direct the sheet to the fusing apparatus for fixing the image and out of the copying means, or before the sheet is directed to the fusing apparatus to return the sheet to said roller to be held thereon by said holding means for a second pass to the transfer station to receive a second image on the second side thereof.

4,431,304 APPARATUS FOR THE PROJECTION COPYING OF MASK PATTERNS ON A WORKPIECE

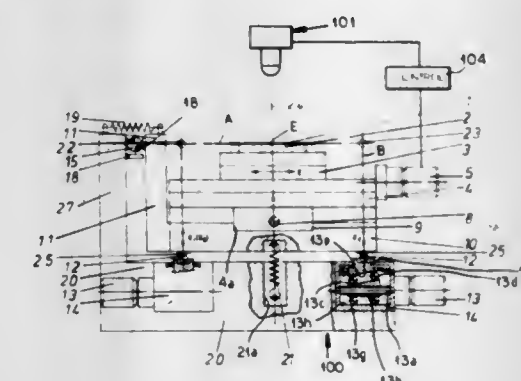
Herbert E. Mayer, Fallschasse 486, FL-9492 Eschen, Austria

Filed Nov. 25, 1981, Ser. No. 324,976

Int. Cl.³ G03B 27/44

U.S. Cl. 355—54

10 Claims



1. In an apparatus for the copying of patterns of a mask by projection of an image thereof along an optical axis upon a workpiece adapted to be displaced to dispose successive imaging regions in line with said axis, the improvement which comprises a workpiece stage having in combination:
 a workpiece holder adapted to removably receive said workpiece and disposed generally along said optical axis;
 a cross-feed table carrying said holder and operable for displacement thereof along X- and Y-axes for successively positioning said regions in alignment with said optical axis;
 a base plate carrying said table;
 a support below said table;
 three extensible and contractible spaced-apart posts between said support and said base plate for differential adjustment generally parallel to a Z-axis for vertical displacement of said base plate and tilting thereof; and
 guide surfaces and lines between said posts and said base plate and constraining said base plate, said surfaces and lines having normals at least some of which intersect in a plane of said workpiece whereby variation in extension of posts tilts said workpiece about a pivot axis substantially in said plane to level the region aligned with said optical axis.

4,431,305

HIGH DENSITY DC STABLE MEMORY CELL

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,573

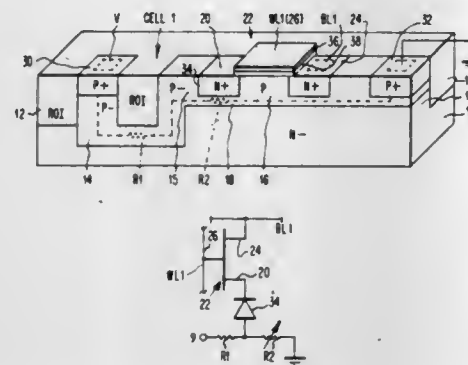
Int. Cl.³ G11C 11/40

U.S. Cl. 365—174

11 Claims

1. A DC-stable memory cell comprising:
 an integrated junction field effect transistor, having a controlled electrode and first and second controlling electrodes, said controlled electrode being the gate electrode of said junction field effect transistor;
 a resistor having a fixed value of resistance coupled to said controlled electrode of said transistor;
 at least one word line and at least one bit line connected to said memory cell;
 said controlled electrode being held at one of two DC stable potential levels, indicative of one of two binary states, as

a function of voltage levels applied by means of the word line and the bit line; and
a variable impedance means integrated in a channel adjacent to said controlled electrode, the impedance of said variable impedance means being altered by the controlled electrode, which is operable to pinch off said channel



responsive to a set of voltage levels applied by means of the word line and the bit line, such that when said variable impedance is at a low impedance the memory cell is sustained in a first binary state, and when said variable impedance is at a high impedance the memory cell is sustained in a second binary state.

4,431,306

METHOD AND APPARATUS FOR PRECISION CONTROL OF RADIOMETER

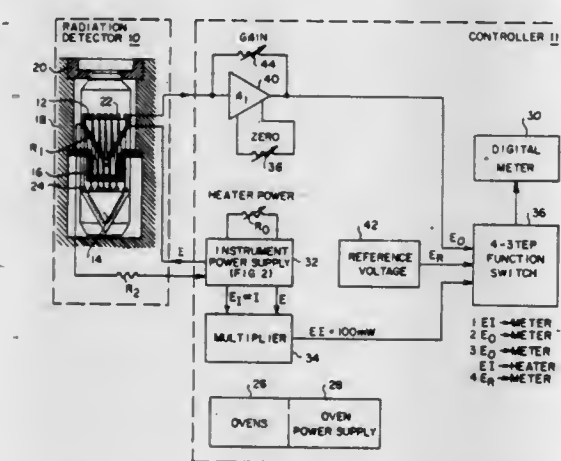
Roger S. Estey, Santa Barbara, and Michael F. Hanna, Covina, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 259,212

Int. Cl.³ G01J 1/10

U.S. Cl. 356—216

10 Claims



1. A method of making radiation measurements in the field using an instrument having a radiation detector and controller, said radiation detector containing a heatsink, a radiation receiving cavity and a compensating element, both said cavity and compensating element being thermally coupled to said heatsink, and said controller having precision means including a source of power having one terminal connected to circuit ground for heating said cavity electrically, means for measuring the electrical power supplied to heat said cavity, means for amplifying an electrical signal from said radiation detector which is proportional to the difference in temperature between said cavity and compensating element, and means for displaying the amplified signal, said method comprising the steps of: heating said cavity with a predetermined amount of electrical power and displaying the amount of said heating power on said display means;

with said radiation receiving cavity covered, said heater de-energized, and said display means connected to display

the output of said amplifying means, adjusting said amplifying means to display a zero output from said receiving cavity;

with said display means connected to the output of said amplifying means, with said receiving cavity covered, and with said predetermined heater power connected to said cavity, adjusting the gain of said amplifying means to the same scale of said display means as used for display of said heating power; and

with the receiving cavity uncovered and said heater power disconnected, amplifying the electrical signal from said radiation detector with said amplifying means and displaying the amplified signal on said meter.

4,431,307

SET OF CUVETTES

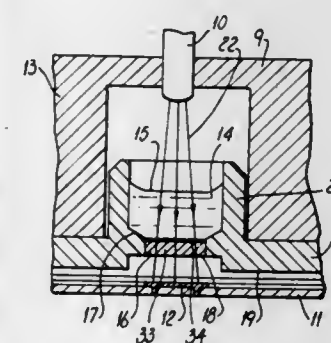
Osmo A. Suovaniemi, Helsinki, Finland, assignor to Labsystems Oy, Finland

Filed Nov. 19, 1981, Ser. No. 323,108

Int. Cl.³ G01N 1/10

U.S. Cl. 356—246

1 Claim



1. A set of cuvettes intended for use in a vertical measurement photometer, said cuvette set comprising a plurality of cuvettes wherein each cuvette comprises (a) side walls which are provided with a layer of material that prevents measurement radiation and/or light directed at said walls from passing through said walls, and (b) a bottom measurement window for optical reading, wherein said measurement window is coated with a layer of the same material which is contained in said side walls, said layer being sufficiently thin to allow the passage of a majority of said radiation through said window.

4,431,308

LASER ANGULAR SPEED DETECTOR EMPLOYING NON-OPTICAL OUTPUT

Yoshinobu Mitsuhashi; Junichi Shimada; Kenjiro Sakurai, all of Sakurai, and Yukinobu Nakamura, Asaka, all of Japan, assignors to Seichi Ishizaka, President of Kogyo Gijutsuin and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

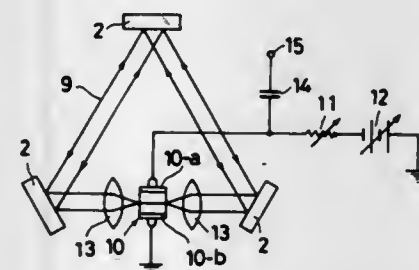
Filed Aug. 13, 1981, Ser. No. 292,419

Claims priority, application Japan, Aug. 13, 1980, 55-110420

Int. Cl.³ G01C 19/64

U.S. Cl. 356—350

5 Claims



1. A semiconductor ring laser apparatus for detecting angular rotation comprising:

- (a) a semiconductor laser element having electrical terminals and optical terminals;
- (b) electrical power supply means coupled to said electrical terminals for applying a direct current voltage thereto;
- (c) optical means, optically coupled to said optical terminals of said semiconductor laser element, said optical means forming resonant ring optical paths in clockwise and counterclockwise directions for the light emitted by said semiconductor; and
- (d) detector means coupled to said electrical terminals for detecting only alternating current voltage variations thereon representative of the beat frequency caused by the rotation of said apparatus.

4,431,309

MONITORING APPARATUS

Erwin Sick, Icking; Dieter Röss, Planegg, and Siegfried Mankel, Geretsried, all of Fed. Rep. of Germany, assignors to Erwin Sick GmbH/Optik-Elektronik, Fed. Rep. of Germany

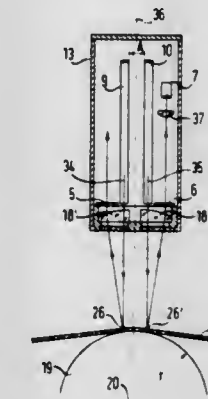
Filed Jan. 7, 1981, Ser. No. 223,067

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1980, 300352

Int. Cl.³ G01D 21/04

U.S. Cl. 356—431

7 Claims



1. Compact monitoring apparatus, in particular for monitoring for holes or surface defects in webs or the like, the apparatus comprising a light transmitting device including a laser light source for projecting a light curtain towards a surface under investigation; light receiving means for receiving light reflected from said surface and for directing the received light to photoelectric detection means; a housing having a central plane of symmetry, said housing containing said light transmitting device and said light receiving means; and an electronic processing circuit for evaluating signals from said photoelectric detection means to signify the presence and/or nature of a defect in said surface; said light transmitting device comprising a plurality of inclined strip-like dividing mirrors arranged one behind the other in first and second rows in an alternating sequence, wherein the end regions of adjacent dividing mirrors of the sequence overlap in the direction of the rows and said first and second rows are disposed on respective sides of said central plane of symmetry, and means for scanning light from said laser light source to form first and second scanning light beams which are incident on respective ones of said rows in the directions of these rows and which are deflected through substantially 90° by said dividing mirrors to form said light curtain; said light receiving means comprising a plurality of light gathering devices associated one with each of said dividing mirrors and arranged in first and second rows parallel to said first and second rows of dividing mirrors on either side of said central plane of symmetry of the apparatus wherein the light gathering devices are positioned closely adjacent the associated dividing mirrors, said light gathering devices and said dividing mirrors are located within said housing, said photoelectric detection means comprises at least one photoelectric detector in respect of each light gathering device; wherein cylindrical lens means are positioned in said light

curtain with first portions on either side of said central plane of symmetry to direct said light curtain onto said surface and with second portions extending to either side of said central plane of symmetry beyond said dividing mirrors to direct light reflected from said surface to said light gathering devices, the apparatus further comprising a guide drum for guiding a web or the like under investigation past said housing, said guide drum having an axis lying parallel to said rows and lying in said central plane of symmetry and having a predetermined radius such that light passing through said first portions of said cylindrical lens means, impinging upon the surface of said web or the like under investigation at said guide drum, and being specularly reflected thereby will impinge upon said second portions of said cylindrical lens means to be directed to said light gathering devices.

4,431,310

METHOD OF PREPARING KNEADED COMPOSITIONS

Yasuro Ito, 38-16, Numabukuro 4-chome, Nakano-ku, Tokyo, Japan; Yoshiro Higuchi, Tokyo, Japan; Masanori Tsuji, Osaka, Japan; Hideharu Kaga, Tokyo, Japan; Yasuhiro Yamamoto, Kawasaki, Japan; Kenji Kuroba, Tokyo, Japan; Norio Marushima, Ichikawa, Japan; Mitsutaka Hayakawa, Kamakura, Japan; Eiichi Tazawa, Tokyo, Japan; Yasunori Matsuoka, Yokohama, Japan, and Seiji Kaneko, Kamakura, Japan, assignors to Yasuro Ito and Taisei Corporation, both of Tokyo, Japan

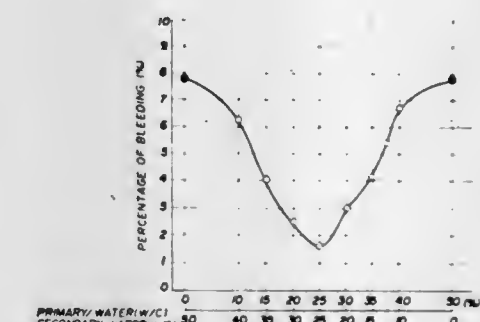
Filed Nov. 30, 1981, Ser. No. 326,056

Claims priority, application Japan, Sep. 30, 1981, 56-153974; Oct. 23, 1981, 56-168531; Oct. 23, 1981, 56-168532

Int. Cl.³ B01F 3/12

U.S. Cl. 366—8

16 Claims



1. A method of preparing a kneaded composition comprising the steps of:

- incorporating a primary water to a powder of a hydraulic substance such as cement in a quantity sufficient to form a funicular state, capillary state or slurry condition close to the capillary state;
 - subjecting the resulting mixture to a first kneading operation so as to decrease coagulated lumps of said powder;
 - adding a secondary water to said kneaded mixture in a quantity necessary to form a predetermined water to cement ratio of said composition; and
 - subjecting the resulting mixture to a second kneading operation;
- said quantity of primary water being selected to correspond to said predetermined water to cement ratio of said composition and the quantity of said secondary water being selected to correspond to a forecasted quantity of bleeding water.

4,431,311

EXTRUSION APPARATUS FOR THE PRODUCTION OF FOAMED SYNTHETIC MATERIAL

Klaus-Dieter Kolosow, Hamburen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover, Fed. Rep. of Germany

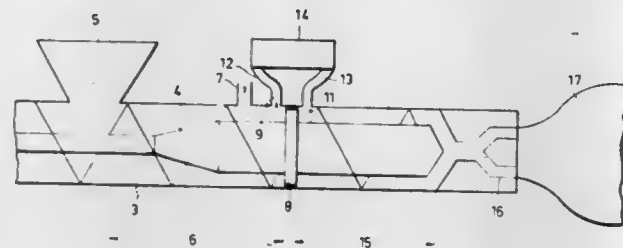
Filed Sep. 30, 1981, Ser. No. 307,173

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038306

Int. Cl.³ B01F 1/00

U.S. Cl. 366-79

3 Claims



1. An extrusion apparatus for producing foamed thermoplastic synthetic material, comprising:
 - a screw extruder having a melting region for producing molten synthetic material, and a cooling and ejecting region downstream of the melting region;
 - means positioned near a downstream end of the melting region for injecting a propellant into the molten material;
 - a flow obstruction means positioned downstream of the injecting means and between the melting region and the cooling and ejecting region; and
 - a passage for by-passing the flow obstruction means and having disposed therein a static mixing means for mixing said propellant and molten material.

4,431,312

RADIO ALARM CONVERTER

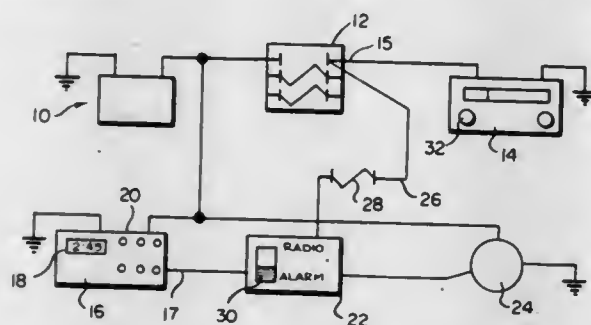
Worthy L. Chambers, 1035 Nottingham La., Hoffman Estates, Ill. 60195, and Michael Krueser, Evanston, Ill., assignors to Worthy L. Chambers, Hoffman Estates, Ill.

Filed Dec. 28, 1981, Ser. No. 332,148

Int. Cl.³ G04B 47/00

U.S. Cl. 368-110

14 Claims



1. A radio alarm converter for energizing a radio in response to an alarm signal from a clock normally not operatively coupled to said radio, said clock normally providing an alarm signal not usable for energizing said radio, and a current source being provided for normally energizing said radio, said radio alarm converter comprising: switching means coupled intermediate said radio and said current source and actuatable for delivering energizing current from said current source to said radio, and control circuit means coupled to receive said alarm signal and responsive thereto for actuating said switching means, thereby energizing said radio in response to said alarm signal; wherein said control circuit means includes input circuit means responsive to said alarm signal for producing a control signal of predetermined polarity and output circuit means responsive to said control signal for actuating said switching means; wherein said input circuit means produces a control signal which has a predetermined DC level and both active

and inactive states, the state thereof being determined by the DC level of said alarm signal; and wherein said output circuit means includes timing means responsive to both a substantially constant DC level control signal and to a DC pulse control signal at a rate of between substantially 1 Hz and substantially 2 KHz for maintaining said switching means continuously actuated, thereby energizing said radio in response to both a constant DC level alarm signal and a DC pulsed alarm signal at a rate of between substantially 1 Hz and substantially 2 KHz.

4,431,313

GAME TIMER

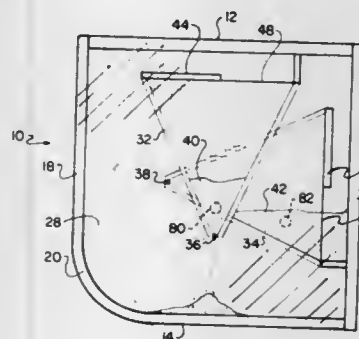
Richard E. Hemperly, 2544 Unicornio St., Carlsbad, Calif. 92008

Filed Jun. 24, 1981, Ser. No. 276,966

Int. Cl.³ G04F 1/04, 3/00; G04B 37/00

U.S. Cl. 368-93

8 Claims



1. A game timer apparatus comprising in combination:
 - a housing adapted to rest in a selected one of multiple positions;
 - a pair of separate timing units mounted within said housing; each timing unit having an axis defining an active orientation at a right angle to the other corresponding to a separate one of said selected positions to activate its timing cycle, and each responsive to an orientation other than its active orientation to inactivate its timing cycle;
 - said timing units are defined by reservoirs having a pyramid configuration and a metered opening at the apex thereof for discharging a granular medium when said housing is oriented in a selected active orientation; and
 - a predetermined quantity of granular medium in each of said reservoirs wherein said reservoirs are each disposed within a separate enclosed chamber in said housing and each are arranged to be reloaded with said granular medium upon rotation of said housing in one direction.

4,431,314

PRESETTABLE DIGITAL TIME-PIECE DISPLAY SYSTEM

Hubert Portmann, Rothenburg, Switzerland, assignor to Ebauches S.A., Switzerland

Continuation of Ser. No. 139,445, Apr. 11, 1980. This application Apr. 26, 1982, Ser. No. 372,067

Claims priority, application Switzerland, Apr. 17, 1979, 3581/79

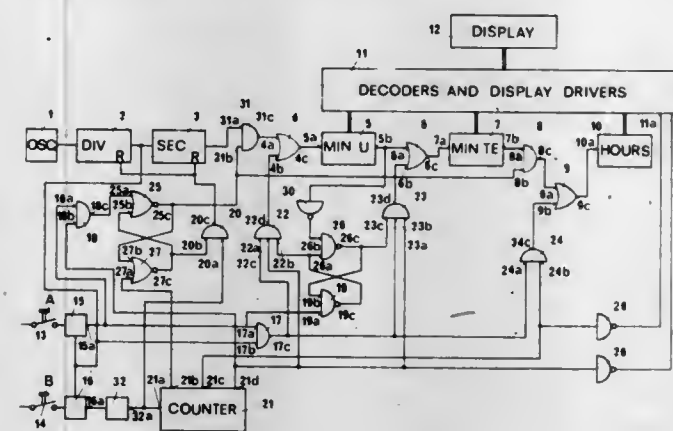
Int. Cl.³ G04C 9/00

U.S. Cl. 368-188

4 Claims

1. An electronic time-piece comprising:
 - means for producing time-base pulses;
 - means for counting said time-base pulses comprising a first counter and a second counter, said first and second counter being serially coupled;
 - means coupled to said counting means for displaying indicia representing the count of said first and second counters;
 - means for producing a manual control signal;
 - means for producing setting pulses;

means responsive to said manual control signal for applying said setting pulses to said first counter; and



means responsive to a predetermined count of said first counter for disabling counting of setting pulses by said first counter and enabling counting of said setting pulses by said second counter.

4,431,315

DETERMINATION OF HEAT TRANSFER FROM A SURFACE

Donald B. Utton, and Mark A. Sheppard, both of Leicestershire, England, assignors to National Nuclear Corporation Limited, London, England

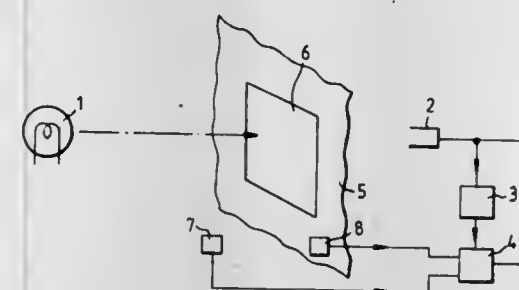
Filed May 27, 1982, Ser. No. 382,427

Claims priority, application United Kingdom, Jun. 3, 1981, 8117043

Int. Cl.³ G01K 17/00

U.S. Cl. 374-29

9 Claims



1. A method of determining the rate of heat transfer from a surface due to convection of a fluid, comprising attaching to said surface a sheet of liquid absorbent material, whose transmissive or reflective properties for certain radiations vary with the liquid content of the material, wetting the sheet of material with a liquid which will evaporate on passage of the convecting fluid adjacent said surface, exposing the sheet to said radiation and to the convecting fluid, and detecting the change in the amount of radiation transmitted through or reflected from the sheet to determine the rate of heat transfer from said surface.

4,431,316

METAL FIBER-CONTAINING TEXTILE MATERIALS AND THEIR USE IN CONTAINERS TO PREVENT VOLTAGE BUILD UP

Frederick Massey, South Humberside, England, assignor to Tioxide Group PLC, Stockton-on-Tees, England

Filed Apr. 15, 1983, Ser. No. 485,337

Claims priority, application United Kingdom, Jul. 1, 1982, 8218974

Int. Cl.³ B32B 27/02, 27/12, 27/18; B65D 29/02

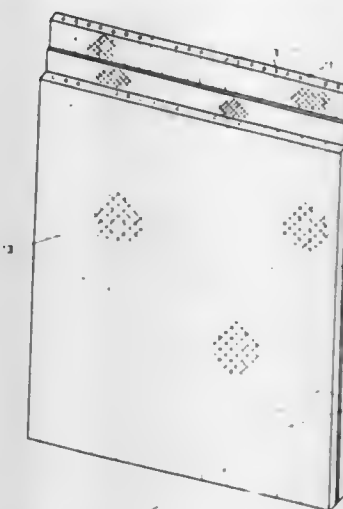
U.S. Cl. 383-113

10 Claims

1. A fabric comprising a laminate of a first layer of woven polymeric fabric, a second layer of woven polymeric fabric containing spaced threads of staple metal fibres and an inter-

mediate layer positioned between the first and second layers and adhering thereto and comprising a film of polymeric material providing a moisture barrier between the first and second layers.

8. A container suitable for the transportation of powder or granular material which comprises a flexible wall, base and cover and having means for filling with and discharging said material, with said wall, base and cover being formed from a



4,431,317

DEVICE FOR ADJUSTING THE CLEARANCE BETWEEN THE END SURFACE OF A ROTATIONALLY MOUNTED COMPONENT PART WITH RESPECT TO A MOUNTING STRUCTURE

Wilhelm Gradler, Ergolding; Karl E. Kloke, and Karlheinz Linner, both of Landshut, all of Fed. Rep. of Germany, assignors to International Standard Electric Corp., New York, N.Y.

Continuation of Ser. No. 164,890, Jun. 30, 1980, abandoned.

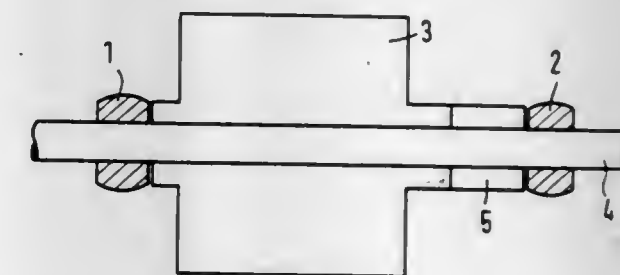
This application Jun. 2, 1982, Ser. No. 384,227

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926707

Int. Cl.³ F16C 25/04

U.S. Cl. 384-192

2 Claims



a structure supporting said bearings with axial spacing between said first and second bearings exceeding the axial dimension between first and second axial ends of said rotor member;

a sleeve-like spacer of a material subject to heat deformation, substantially filling the axial space between said first bear-

ing and a corresponding first end of said rotor about said shaft, to produce optimum end-play between said rotor first end and said first bearing when said rotor second end substantially abuts said second bearing; and including a disc of heat resistant material in the shape of a cup washer located between said spacer and said first bearing, said disc having a central cup portion the inside of which faces toward and receives an end of said spacer and the outer periphery of which comprises a flange flared outward in the general direction of said first bearing.

4,431,318

BEARING ASSEMBLIES

David R. Paterson, Unit 82, 6767 Thorold Stone Rd., Niagara Falls, Ontario, Canada

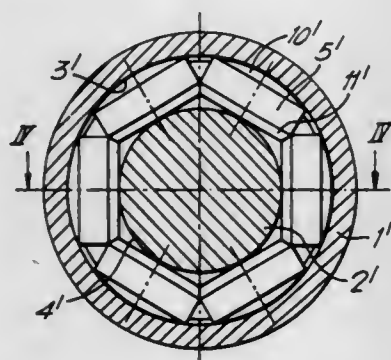
Filed Dec. 29, 1981, Ser. No. 335,568

Claims priority, application Canada, Dec. 30, 1980, 367681

Int. Cl.³ F16C 17/04, 19/30

U.S. Cl. 384—302

10 Claims



1. A lubricated bearing assembly comprising radially inner and outer members rotatable with respect to each other and having respective radially outer and inner surfaces defining therebetween an annular space and a plurality of generally cylindrical rollers disposed in the annular space, with their axes extending radially with respect to the inner and outer members, and each having an axially outer end which is part spherical over the whole thereof, the overall radius of curvature of the axially outer end of each roller substantially matching the radius of the curvature of the radially inner surface of the outer member, each roller being in continuous line contact with the radially inner surface of the outer member along the arc subtended by the roller thereby to provide a relatively quiescent quantity of lubricant at the center of said part-spherical outer end of the roller.

4,431,319

METHOD AND APPARATUS FOR SERIAL DOT PRINTING

Nobuo Karaki, and Teruyuki Nakaya, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano, Japan

Filed Aug. 17, 1981, Ser. No. 293,438

Claims priority, application Japan, Aug. 18, 1980, 55-113193

Int. Cl.³ B41J 3/12

U.S. Cl. 400—124

8 Claims

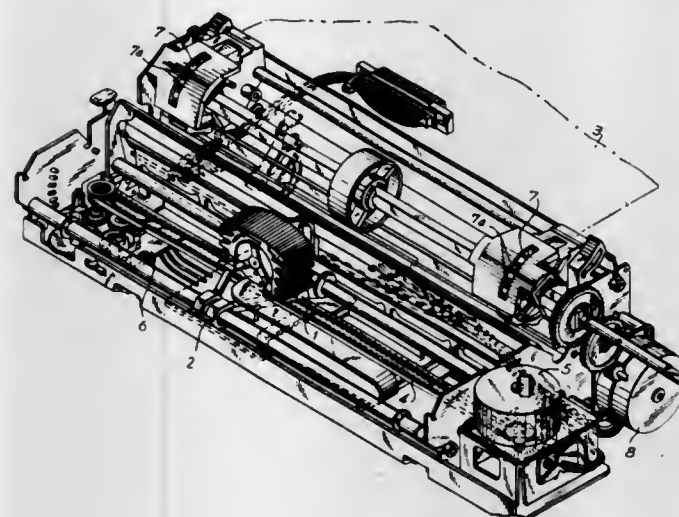
1. A method of printing high quality alphanumeric characters and symbols on a recording sheet using a printer head, said printed indicia being formed by a plurality of dots, said print head including a plurality of means for producing individual dots aligned in at least one column, said aligned dots and plurality of means for producing individual dots having a fixed pitch distance between them, said printer head responding to control means and operating on stored data contained in data storage means for a line of print; comprising the steps:

- (a) monitoring a double print command supplied from said control means;
- (b) driving selected ones of said plurality of means for producing dots in at least one column in a pattern determined by said stored data to produce at least a portion of a se-

lected symbol or character with printed dots on said recording sheet;

(c) laterally translating said head partially across said recording sheet in a direction transverse to said at least one column;

(d) performing steps (b) and (c) repetitively until a line of printed characters or symbols is completed on said recording sheet;



- (e) feeding said recording sheet in a direction parallel to said at least one column by a distance corresponding to about half of said pitch distance, said feeding of said recording sheet being in response to said double print command; and
- (f) repeating steps (b) through (d) using the same stored data read out of the same locations of said data storage means and driving the same selected ones of said plurality of means for producing dots for the same lateral positions of said head and printed dots, the identical dot pattern being printed a second time.

4,431,320

SYSTEM FOR APPLYING INDICIA TO CONTAINER CLOSURE STOCK

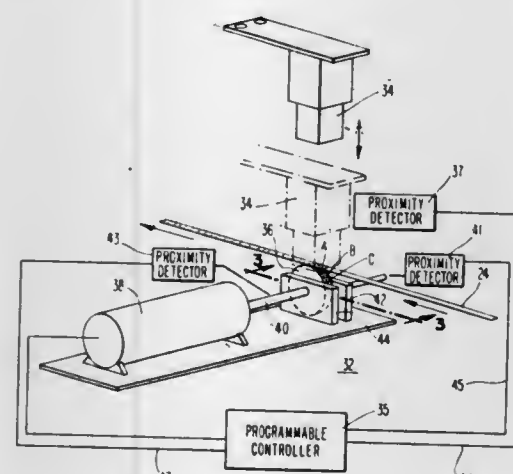
Lawrence E. Aliff, Haddonfield, N.J., and Edward E. Scheswohl, Philadelphia, Pa., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jun. 16, 1982, Ser. No. 388,910

Int. Cl.³ B41J 3/40

U.S. Cl. 400—130

11 Claims



1. A system for applying indicia to container closure stock comprising:
- a press having
 - a reciprocating anvil, and
 - a die holder having a plurality of different dies mounted thereon, any of which may be selectively moved to a

position in the path of said anvil during each stroke thereof and each of which represents a different indicia; a sensor for detecting each stroke of said anvil; motive means for locating a selected one of said dies at said position for each stroke of said anvil; means, responsive to said sensor means, for counting said strokes and for controlling said motive means such that for each stroke of said anvil the selected die is varied but for every N strokes of said anvil, N being greater than said plurality of dies, each of said plurality of dies is selected a predetermined number of times whereby the odds for the application of all of said indicia over N strokes may be accurately controlled.

4,431,321

COMPUTER CONTROLLED MARKING APPARATUS

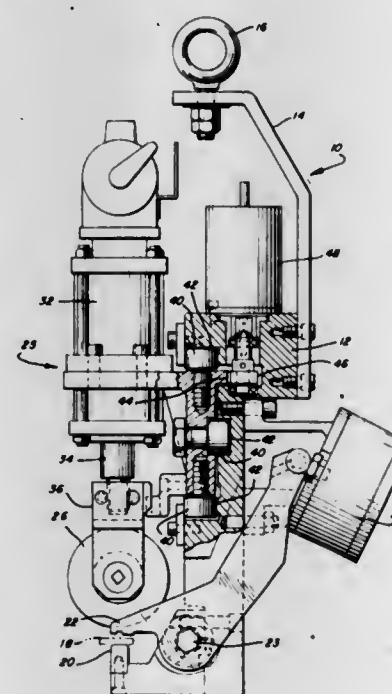
Roy L. Trimble, Theodosia, Mo., assignor to Product Identification Corporation, Chicago, Ill.

Filed Jan. 29, 1982, Ser. No. 343,972

Int. Cl.³ B41J 3/40

U.S. Cl. 400—130

6 Claims



1. A computer controlled marking apparatus of the type adapted to be moved to a position to mark a workpiece maintained in a stationary position relative thereto comprising:
- a frame structure;
 - means for clamping a workpiece to be marked in a fixed position relative to said frame structure including clamping arms pivotally secured to said frame structure and clamping cylinder means secured to said frame structure for operating said clamping arms to retain said workpiece in said fixed position relative to said frame structure;
 - a unitary assembly supported on said frame structure for lateral movement relative thereto;
 - means for laterally moving said unitary assembly relative to said frame structure and to a workpiece clamped in a fixed position relative to said frame structure to position said unitary assembly at successive marking positions;
 - a marking assembly supported by said unitary assembly for reciprocal movement toward and away from said clamped workpiece to affect marking thereof at said marking positions with selected ones of a plurality of characters;
 - said marking assembly including a marking dial having a plurality of marking characters thereon and moveable to a plurality of selected character positions in which a selected character may be marked on said workpiece upon reciprocal movement of said marking assemblies, and a character orienting motor secured to said marking assembly and moveable therewith and selectively energizable to

move said marking dial to selected ones of said character positions; and means affixed to said unitary assembly for reciprocally moving said marking assembly to effect marking of the workpiece by said marking dial at selected ones of said marking positions with a character on said character dial located at said character position.

4,431,322

MULTIPLE PATH RECORDING MEANS

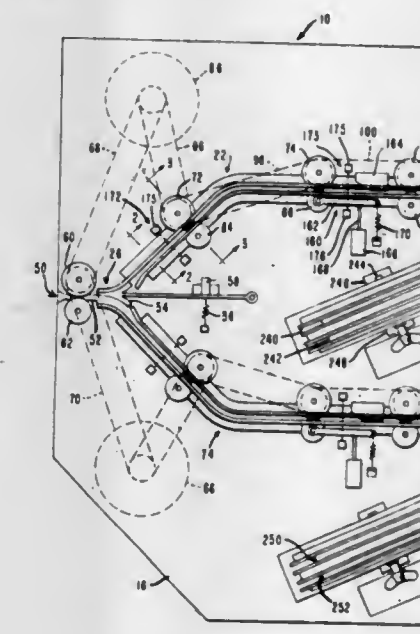
Robert B. Nally, Waterloo; Edward R. Evans, St. Clements; Lawrence R. Williamson, and Trevor A. Calnek, both of Waterloo, all of Canada, assignors to NCR Canada Ltd - NCR Canada LTEE, Mississauga, Canada

Filed Sep. 20, 1982, Ser. No. 420,539

Int. Cl.³ B41J 11/50

U.S. Cl. 400—605

8 Claims



1. Apparatus for recording data on documents comprising:
- a plurality of document feed paths;
 - a corresponding plurality of drive means for driving documents along said plurality of feed paths;
 - recording means associated with each of said feed paths for recording on said documents;
 - selection means for selecting a desired one of said feed paths for a given document which is introduced to the apparatus;
 - movement control means operatively associated with each of said drive means for controlling the movement of documents passing along said feed paths;
 - detector means operatively associated with each of said feed paths for determining the presence and location of documents therein; and
 - controller means responsive to said detector means for controlling the selection means, the movement control means for each path and the recording means for each path, to enable the commencement of recording on a document in one feed path before recording of a document in another feed path has been completed.

4,431,323

ENVELOPE FEEDER METHOD AND APPARATUS

Howard H. Kulow, Berea, Ohio, assignor to Kulow Products, Inc., Cleveland, Ohio

Filed Aug. 5, 1981, Ser. No. 290,180

Int. Cl.³ B41J 13/10

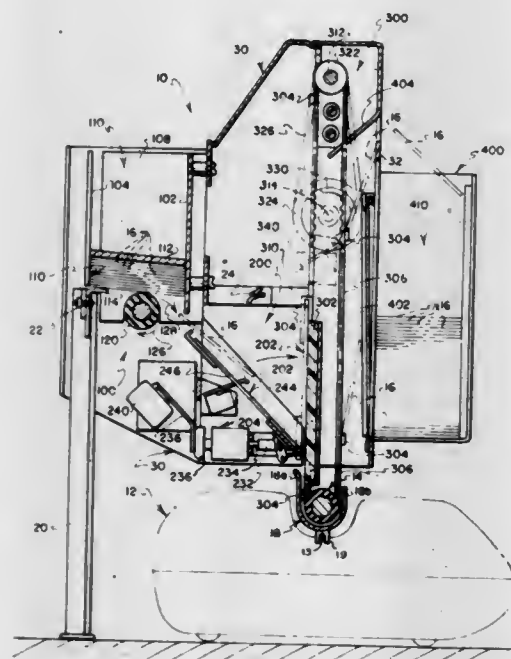
U.S. Cl. 400—625

28 Claims

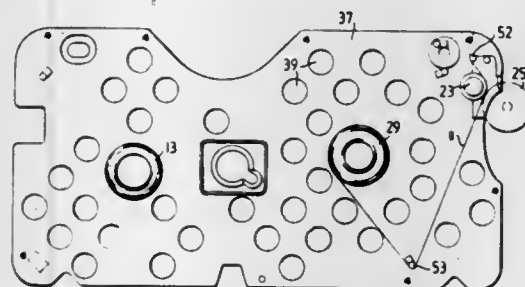
1. A stationery feeder for serially transporting discrete pieces of stationery such as envelopes to and from the printing station on a platen-roll-type printer comprising:

- (a) a transport mechanism including:

- (i) platen roll means for replacing a platen roll normally used by a printer;
- (ii) transport belt means reeved around the platen roll means and defining a path of travel along which pieces of stationery may be serially fed to and from a printing station defined by the printer;
- (iii) formation means carried on the transport belt means for engaging the trailing edges of pieces of stationery and for pushing the pieces of stationery along the travel path to and from the printing station;
- (b) a positioning mechanism including:
- (i) platform means movable between a receiving position for receiving thereon in substantially unconfined supported relation one face of a piece of stationery to be fed to the printer, said platform means supporting the piece of stationery by engaging with one face thereof and configured to provide a substantially unobstructed face of said stationery opposite from said supported face adjacent said platform means, and a delivery position wherein said platform means positions said piece of

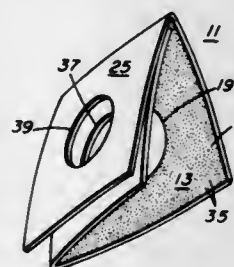


4,431,324
SOUND DAMPING RIBBON CARTRIDGE FOR A TYPEWRITER OR SIMILAR OFFICE MACHINE
 Alfred Keiter, and Bernd Tappehorn, both of Wilhelmshaven, Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany
 Filed Dec. 11, 1981, Ser. No. 329,985
 Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3046997; Dec. 13, 1980, 3046998
 Int. Cl.³ B41J 29/02
 U.S. Cl. 400—689 17 Claims



1. In a ribbon cartridge for an office writing machine, which cartridge includes a housing having a base plate, a supply reel and a take-up reel mounted in the housing, a carbon ribbon wound around the reels and mounted to be conducted from the supply reel to the take-up reel while traveling over a guidance path having a first portion located outside of the housing and a second portion located inside the housing and extending between the first portion and the take-up reel, the housing being provided with an entrance opening located between the first and second portions of the guidance path for the passage of the ribbon into the housing, and the cartridge further including guide elements located for guiding the ribbon along the second path portion and a transport roller located along the second path portion for transporting the ribbon to the take-up reel, the improvement comprising, in combination: means including recesses in said base plate for damping noise generated during operation of the machine; and means for preventing particles which are detached from said ribbon over the second portion of said guidance path from falling out of said housing.

4,431,325
REINFORCEMENT FOR CORNER MOUNTING HOLES
 James Colby, 8 Eddy St., Sudbury, Mass. 01776
 Filed Feb. 24, 1982, Ser. No. 352,039
 Int. Cl.³ B42F 13/00
 U.S. Cl. 402—79 9 Claims



1. A reinforcement for a corner mounting hole in a sheet of paper, said sheet of paper having a front surface and a back surface, the reinforcement comprising:

a. a main panel having a front surface, a back surface, a top edge, a side edge at right angles to said top edge and a hole,

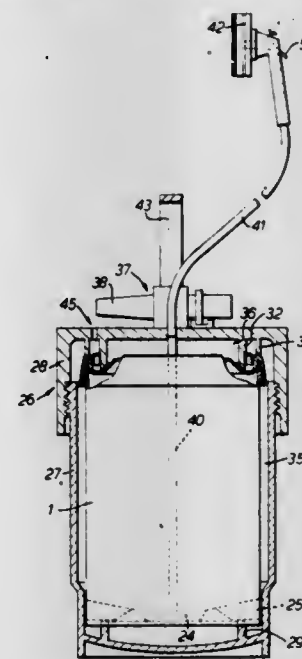
b. a top panel hingedly connected at a bottom edge to the top edge of the main panel, said top panel including a front surface, a back surface and a hole,

c. a side panel hingedly connected at a side edge to the side

- stationery in substantially planar relation in said travel path with said unobstructed stationery face confronting said transport belt means for engagement by the formation means;
- (ii) foot means cooperatively associated with said platform means to engage an edge of a piece of stationery delivered to said platform means when said platform means is in said receiving position to retain the stationery piece thereon, and to be retracted from proximity to said platform means when said platform means is in said delivery position thereby to permit ready removal of the stationery piece from the platform means by said transport belt means;
- (iii) first power-operated means for moving the platform means between its receiving and delivery positions; and
- (c) a dispensing mechanism including:
- (i) feeding means for dispensing pieces of stationery one at a time to the platform means; and
- (ii) second power-operated means for selectively operating the feeding means.

- edge of the main panel, said side panel including a front surface, a back surface and a hole,
- d. means for securing said back surface of said top panel to said front surface of said side panel in overlying relationship, said main panel, said top panel and said side panel defining a corner shaped pocket when said top panel is secured to said side panel with said holes in each panel being in registration with each other and,
- e. adhesive means inside said corner pocket for securing said reinforcement to the sheet of paper when said pocket is slid over the corner of said sheet of paper, said holes in said panels being in registration with the corner mounting hole in said paper when said reinforcement is mounted thereon.

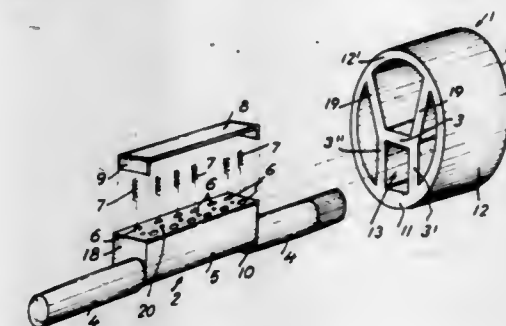
4,431,326
PAINT APPLICATOR AND CONTAINER
 John D. Braithwaite; Derrick O. King, both of Berkshire; Sidney J. Williams, Surrey, and James Prior, Berkshire, all of England, assignors to Black & Decker Inc. and Berger, Jensen & Nicholson, Ltd., both of Newark, Del.
 Filed Oct. 8, 1981, Ser. No. 309,600
 Claims priority, application United Kingdom, Oct. 8, 1980, 8032485
 Int. Cl.³ B05C 17/00, 21/00
 U.S. Cl. 401—188 R 8 Claims



1. An apparatus for feeding liquid to an applicator, comprising:
- an outer vessel having a body and a lid;
- a liquid container housed in the outer vessel and having a cover, a base, and a central axis;
- a liquid conduit extending into the outer vessel and through the container cover to the bottom of said container, said conduit being connected, in use, to the applicator;
- means for applying pressure inside the liquid container to feed liquid to the applicator;
- a radially outwardly facing wall extending downwardly inside said vessel from said vessel lid, said outwardly facing wall being spaced radially inwardly from said vessel body;
- a circular seal member mounted around the outside of said outwardly facing wall;
- said cover having a recess in the top thereof, the outer periphery of said recess being defined by a radially inwardly facing sealing wall on the exterior of said cover and extending in a complete circle around said central axis;
- said outwardly facing wall being spaced radially inwardly of said sealing wall and locating said circular seal member in sealing engagement with said sealing wall;
- said inwardly facing sealing wall having a depth of at least 4 mm, and said recess extending at least 4 mm radially

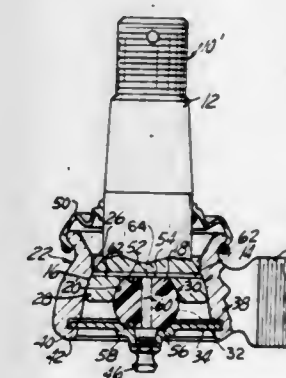
- inwardly of the sealing wall and extending completely around the inside of said sealing wall to accommodate said circular seal member;
- said liquid conduit extending through said container cover inside said sealing wall;
- said cover having an upwardly extending rim radially outwardly of said inwardly facing sealing wall; and
- said vessel lid having a second downwardly extending wall spaced radially outwardly of and surrounding said outwardly facing wall, said second downwardly extending wall engaging on the top of said rim to clamp said container in said outer vessel.

4,431,327
FAST SELF-ADJUSTING ASSEMBLING ARRANGEMENT FOR SHAFTS AND ROTARY MEMBERS
 Concezio Mazzagatti, Santa Fe 3786,4° A, Buenos Aires, Argentina
 Filed Jan. 20, 1982, Ser. No. 341,127
 Claims priority, application Argentina, Feb. 9, 1981, 284246
 Int. Cl.³ B25G 3/00; F16D 1/00; F16G 11/00
 U.S. Cl. 403—11 7 Claims



1. A fast, self-adjusting assembling arrangement for resiliently and fully coupling a rotary body member to a shaft, said body member being generally cylindrical and defining a lengthwise oriented non-circular bore, having a roof and a bottom, said shaft including a non-circular intermediate portion, lengthwise slidably housable into said bore, said intermediate portion having a face spaced apart from said roof, resilient means located between said face and said roof and urging said intermediate portion of said shaft towards said bottom, and complementary blocking means which longitudinally immobilizes said shaft with regard to said rotary body member.

4,431,328
HEMISPHERICAL BALL AND SOCKET JOINT
 Joseph E. Smith, Birmingham, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.
 Continuation-in-part of Ser. No. 61,644, Jul. 30, 1979. This application May 14, 1981, Ser. No. 263,778
 Int. Cl.³ F16C 11/06
 U.S. Cl. 403—36 21 Claims



1: A ball joint structure comprising a stud and a half-ball

member integrally formed at one end of said stud, a peripheral convex spherical surface on said half-ball member, a recess in the end of said half-ball member opposite to said stud, a socket member having a concave spherical surface engaged with the peripheral convex spherical surface of said half-ball member, said stud projecting through one end of said socket member, a generally disk-shaped retainer cap closing the other end of said socket member, and a biasing insert member disposed between said half-ball member and said retainer cap member, said biasing insert member having an end engaged in said recess in said half-ball member and another end engaged with said retainer cap, said biasing insert member being adapted to apply a biasing pre-load force on said half-ball member urging said engaged spherical surfaces in mutual swivelling sliding engagement, wherein said biasing insert member is made of elastomeric material compressibly deformed between said half-ball member and said retainer cap and said elastomeric biasing insert has a substantially ellipsoidal spherical surface compressed to a substantially spherical surface when engaged in said recess in the end of said half-ball and between said half-ball and said retainer cap.

4,431,329

ARTICULATED SUPPORT STAND

Carlo Batella, Ohmstrasse 26/28, 8050 Zurich, Switzerland

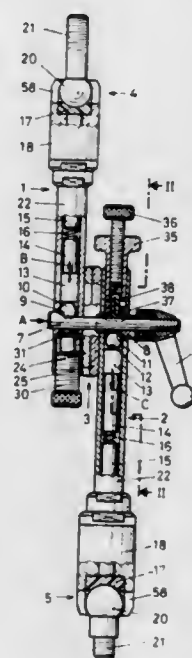
Filed Feb. 17, 1981, Ser. No. 234,746

Claims priority, application Switzerland, Feb. 15, 1980, 1255/80; Jul. 18, 1980, 5530/80

Int. Cl.³ F16C 11/06

U.S. Cl. 403—55

14 Claims



1. An articulated support stand having two arms, a fixable central joint pivotally interconnecting the arms, ball joints at the end of the arms, and means for concurrently locking the central joint and the ball joints, said stand comprising:

- (a) first and second support arms, each of said arms having a ball joint at first ends thereof, said ball joints being locked by first and second reciprocal push rods mounted for reciprocation in said first and second support arms,
- (b) a central joint for securing the second ends of said first and second support arms in a pivotal relationship, said central joint defining a pivot axis between said arms for pivotally positioning said first and second arms, said joint also including first and second friction members for restraining movement about said pivot axis when said friction members are clamped together,
- (c) an axial bolt traversing said joint and aligned with said pivot axis, said axial bolt defining a first groove being a spherical ramp cross-section aligned with the reciprocal axis of the push rod mounted in said first support arm,
- (d) a sleeve mounted for reciprocation on said axial bolt, said sleeve defining a second groove having a spherical ramp

cross-section aligned with the reciprocal axis of the push rod mounted in said second support arm,

- (e) first and second balls connecting said first and second push rods with said first and second spherical grooves, wherein reciprocal movement between said bolt and said sleeve will displace the balls outwardly from said pivotal axis along the spherical ramps,
- (f) clamp means for reciprocating said sleeve along the axial bolt to simultaneously exert a clamping force on said first and second friction members and a reciprocating force on said first and second push rods to lock said ball joints.

4,431,330

BALL JOINT IMPROVEMENT AND METHOD

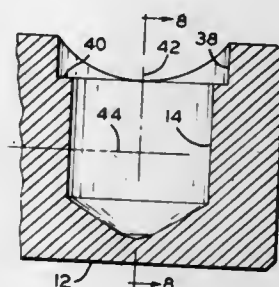
Raymond E. Darnell, Fort Wayne, Ind., assignor to Tuthill Corporation, Oak Brook, Ill.

Filed Apr. 12, 1982, Ser. No. 367,688

Int. Cl.³ F16C 11/06

U.S. Cl. 403—122

5 Claims



1. For use in a ball joint assembly, a body having a generally cylindrical socket which opens through one side thereof, said body further having a radially inset shoulder surrounding the perimeter of said socket, said shoulder intersecting the wall of said socket and thereby defining a socket opening for receiving the ball of a ball stud, said body being at least of part cylindrical shape, said socket having at least a portion thereof which opens through a cylindrical portion of said body, said shoulder lying in a plane that intersects the surface of said cylindrical portion, said plane intersecting the axis of said socket substantially at right angles, said shoulder being the bottom of a counterbore in the outer portion of said socket.

4,431,331

FRAME CONNECTOR STRUCTURE

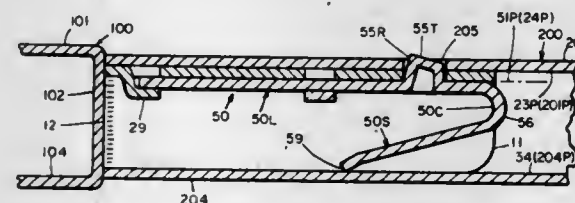
Charles Brody, Highland Park, Ill., assignor to Paul Alpers, Omaha, Nebr.

Filed Feb. 16, 1983, Ser. No. 466,787

Int. Cl.³ F16B 7/00

U.S. Cl. 403—189

7 Claims



1. A frame connector structure adapted to be closely telescopically received within, and forming a rigid joint with, a longitudinally extending tubular frame member including a frame bottom-panel lying along a bottom-plane and a frame apertured top-panel, said frame connector structure comprising:

- A. a longitudinally extending rigid body of inverted U-shape configuration having two upright body-ends including a fore-end and a rear-end, said body component comprising a forwardly apertured horizontal wall extending longitudinally between the body-ends and including horizontal

outer and inner surfaces, said apertured wall between the apertured portion and the body rear-end being provided with transversely extending spring member mounting means located a small finite-distance below said wall inner surface and between the aperture and the body rear-end, said body component also comprising a pair of parallel and transversely separated flanking-walls, the flanking-walls having longitudinally extending horizontal co-elevation bottom-edges defining a horizontal bottom-plane for the body component; and

B. a spring member in elevation having a generally J-shaped configuration and including longerleg, shorterleg therebelow, and curvilinear juncture portions together provided by a single length of permanently bent springy metallic material,

Bi. the spring member longerleg portion extending longitudinally horizontally from rearward-end to a forward-end merging at said curvilinear juncture portion, said longerleg having generally planar parallel upper and lower surfaces with a vertical separation of substantially said finite-distance, said longerleg being held by said body component spring member mounting means in a condition whereby the major longitudinal length thereof is immediately alongside the apertured wall inner surface, said spring member longerleg immediately rearwardly its forward-end being provided with an upwardly extending locking projection surrounded by said body wall aperture, and

Bii. at least a portion of the spring member shorterleg lying in elevation below said body component bottom-plane, whereby: when the frame connector structure is telescopically received within a said tubular frame member, the frame member bottom-panel forces the spring member shorterleg wholly above said bottom-plane and induces unrelieved stress along the entire spring member which stress increases the broad frictional contact between the apertured connector wall and the frame top-panel and also assists in maintaining the longerleg locking projection within the top-panel aperture.

4,431,332

MOUNTING STRUCTURE

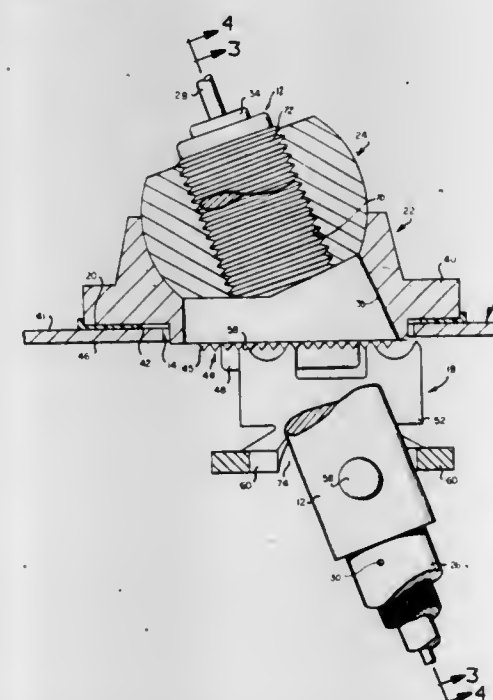
Paul B. Dieges, Perris, Calif., assignor to Autotenna, Santa Fe Springs, Calif.

Filed Sep. 30, 1982, Ser. No. 428,946

Int. Cl.³ F16B 2/02

U.S. Cl. 403—252

14 Claims



1. A mounting structure for mounting a device securely in a

selected attitude, within a hole in a support surface, from one side of the surface, comprising:

- a base disposed adjacent the upper side of the support surface, said base being adapted to partially pass through said hole and having an arcuate bearing surface on the upper side thereof and a central aperture therein;
- bushing means fitting through the central aperture of said base and coupled to support said device therein and including engagement means extending therefrom in the lower region thereof;
- clamping means threadedly coupled to the upper end of said bushing and including a lower bearing surface mating with the arcuate surface of said base through a range of positions;
- retainer means disposed about said bushing below said support surface and contacting the engagement means;
- said base including a toothed lower surface extending below the bottom of said support surface; and
- said retainer means having a toothed upper surface facing the toothed lower surface of said base, and including spaced apart wing means engaging the bottom of said support surface outside the perimeter of said hole, the retainer means deforming when the clamping means is tightened on the bushing means such that the facing teeth come into engagement.

4,431,333

APPARATUS FOR RELEASABLY CONNECTING FIRST AND SECOND OBJECTS IN PREDETERMINED SPACE RELATIONSHIP

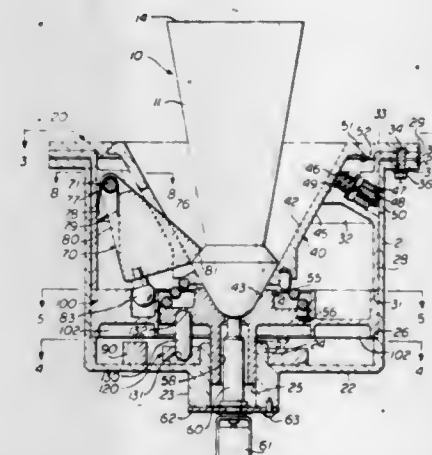
Joseph A. Chandler, Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,189

Int. Cl.³ B25G 3/18; F16B 21/00; F16D 1/00

U.S. Cl. 403—322

20 Claims



1. Apparatus for releasably connecting first and second objects in predetermined space relationship including at least one probe member mounted on said first object having an elongated shank portion at the distal end of which is provided a target nose portion, said tapered nose and shank portion being connected by an annular shoulder facing toward the proximal end of said shank portion, and at least one drogue assembly mounted on said second object for releasably capturing said probe member upon said first and second objects being brought into close proximity with each other, said drogue assembly comprising:

- housing means attached to said second object;
- cone means, having inwardly tapered conical surfaces, carried by said housing means which receives said probe member upon said bringing of said first and second objects into said close proximity;
- latch means carried by said housing means including a plurality of latch members radially movable, relative to a

central axis of said drogue assembly, between retracted positions, in which said latch members do not project inwardly of said tapered conical surfaces, and extended positions, in which said latch members project inwardly of said tapered conical surfaces which engages with said probe member; and

operator means carried by said housing means and operable, when said probe means has been fully received by said cone means, which locks said latch members in said extended positions engaging said annular shoulder of said probe member and releasably connecting said probe member and said drogue assembly in a substantially fixed axial relationship.

4,431,334

POWER TAKEOFF YOKE SHIELDING AND ENGAGING MEANS

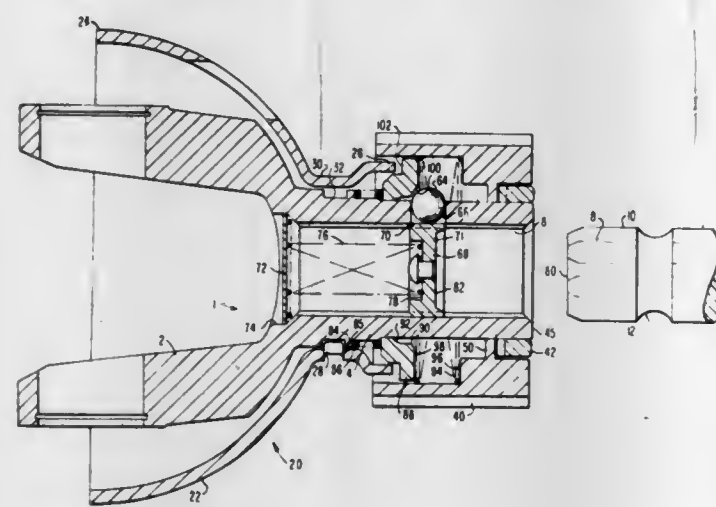
Donald C. Cleveland, and Paul R. Dallas, both of Rochester, Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1982, Ser. No. 372,595

Int. Cl.³ B25G 3/18; F16B 21/00; F16D 1/00

U.S. Cl. 403—322

8 Claims



1. Power takeoff shaft coupling apparatus comprising sleeve having internal splines for receiving external splines of a power takeoff stub shaft, the sleeve having a radial opening therein, detent means positioned in the radial opening for moving radially inward through the opening to engage a groove in a power takeoff stub shaft, detent locking means mounted on the sleeve adjacent the detent means and slidable on the sleeve from a position radially aligned with the detent means for locking the detent means to an inward position longitudinally displaced from the detent means for releasing the detent means to a radially outward position, an outer collar rotatably and slidably mounted on the sleeve, the outer collar having abutment means opposed to the detent means for pushing the detent means to its second, disengaged position, an inner collar mounted on the sleeve within the outer collar and secured to the sleeve, the inner collar and the outer collar having complementary teeth for permitting relative turning of the collars in a first direction and for preventing relative turning of the collars in a second opposite direction, whereby when the complementary teeth are operatively engaged, the outer collar turns the sleeve via the inner collar in a first direction to align internal splines in the sleeve with external splines on a power takeoff stub shaft.

4,431,335 METHOD OF REPAIRING POTHOLES IN ROAD SURFACES BY FILLING THEM WITH FLY ASH HARDENED IN WATER

Thomas W. Evans, 133 E. 64th St., New York, N.Y. 10021

Filed Feb. 4, 1981, Ser. No. 231,396

Int. Cl.³ E01C 7/10

U.S. Cl. 404—75

11 Claims

9. A method for repairing a pothole in a road surface comprising:

(a) collecting fly ash in a container, wherein the fly ash is drawn into the container by vacuum means associated with the container, and wherein the container also has means associated therewith for exhausting the fly ash from the container; and

(b) exhausting fly ash from the container and into a pothole, the pothole being partially filled with water and having a jagged interior structure of crevices which extend beneath the road's surface, and wherein the fly ash upon being exhausted into the pothole flows through the water present in the pothole and into the internal crevices of the pothole, the fly ash and water comprising a mixture which hardens into a compact mass partially filling the pothole; and

(c) applying a road surfacing material to the partially filled pothole to complete the filling of the pothole to a level which equals the outermost surface of the road.

4,431,336

CONCRETE PREFINISHING TOOL

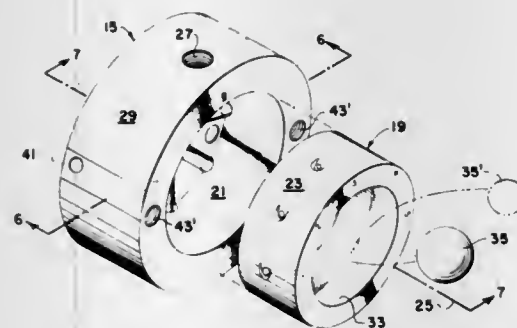
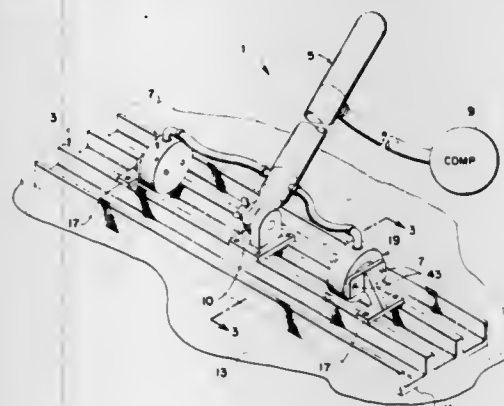
Stanley A. Nightengale, 35297 Weld County Rd. 41, Eaton, Colo. 80615, and Harvey P. Burrows, 1633 26th Ave. Ct., Greeley, Colo. 80631

Filed Feb. 8, 1982, Ser. No. 346,210

Int. Cl.³ E01C 19/38

U.S. Cl. 404—97

10 Claims



6. A pneumatically driven vibrator having (i) a housing member with inner and outer surfaces extending about a first axis, said inner surface being substantially cylindrical and extending about said first axis at a first radius, said housing member having at least one hole extending therethrough from the outer to the inner surfaces thereof, (ii) an open-ended,

substantially cylindrical collar member with inner and outer surfaces extending about a second axis, said outer surface being substantially cylindrical and having a radius substantially equal to the radius of the inner cylindrical surface of said housing member and being concentrically receivable therein with said first and second axes coincident to form a common axis, said collar member having at least two holes of different sizes extending therethrough from the outer to the inner surfaces thereof, said holes being spaced from each other radially about said common axis and entering said inner surface along axes inclined to the radius of said inner surface, said collar member being rotatable about said common axis relative to said housing member at least between a first radial position with the hole in the housing member and one of the holes in said collar member in fluid communication with each other and a second radial position with the hole in the housing member and the other of the holes in said collar member in fluid communication with each other, (iii) a ball member receivable within said collar member against the inner surface thereof, (iv) means for substantially closing the open ends of said collar member to confine said ball member therein, (v) means for supplying air under a first pressure to said hole in said housing member, (vi) conduit means for placing the holes in said collar member in fluid communication with ambient air wherein air under the first pressure of said air supply flows through the interior of said collar member when said collar member is in either of said first and second positions to propel the ball member about said common axis against the inner surface of said collar member and produce vibrations, and (vii) means for selectively maintaining said collar member in said first and second positions wherein the differing air flow rates of the first and second positions due to the differently sized holes through the collar member produce at least two different vibrational patterns which can be selected as desired.

4,431,337

WAVE DISSIPATION CAISSON

Nobuhiko Iwasa, 12-21, Motobuto 1-Chome, Urawa-shi 336, Japan

PCT No. PCT/JP81/00098, § 371 Date Dec. 23, 1981, § 102(e)

Date Dec. 23, 1981, PCT Pub. No. WO81/03190, PCT Pub.

Date Nov. 12, 1981

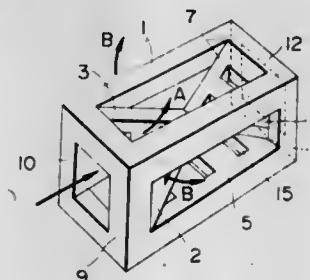
PCT Filed Apr. 24, 1981, Ser. No. 336,344

Claims priority, application Japan, May 9, 1980, 55-62460[U]

Int. Cl.³ E02B 3/06

U.S. Cl. 405—30

5 Claims



1. A wave dissipation caisson comprising:
a frame having a bottom wall adapted to rest on the floor of a body of water, said bottom wall having a plurality of openings therethrough, said frame including a plurality of vertical frame members extending upwardly from said bottom wall and a plurality of horizontal frame members connected to said vertical frame members to form open sides and an open top of said frame;
a first pair of trapezoidal wing pieces each having a large edge and a small edge, said first pair of trapezoidal wing pieces connected to each other at said small edges thereof and diverging outwardly toward said large edges thereof; and
a second pair of trapezoidal wing pieces each having a large edge and small edge, said second pair of trapezoidal wing

pieces connected to each other at said small edges thereof and diverging outwardly toward said large edges thereof; each of said wing pieces having a plurality of openings therein with said first and second pair of trapezoidal pieces connected to each other at said connected small edges thereof with said first pair of trapezoidal wing pieces rotated by 90° with respect to said second pair of trapezoidal wing pieces;

said connected first and second pair of trapezoidal wing pieces connected into said frame with each large edge of said first pair of trapezoidal wing pieces connected to and extending along one of said vertical frame members on one side of said bottom wall, one of said large edges of said second pair of trapezoidal wing pieces connected to and extending along one of said horizontal frame members on an opposite side of said bottom wall, and the other of said large edges of said second pair of trapezoidal wing pieces connected to and extending along an edge of said bottom wall at said opposite side of said bottom wall.

4,431,338

IRRIGATION MONITORING SYSTEM

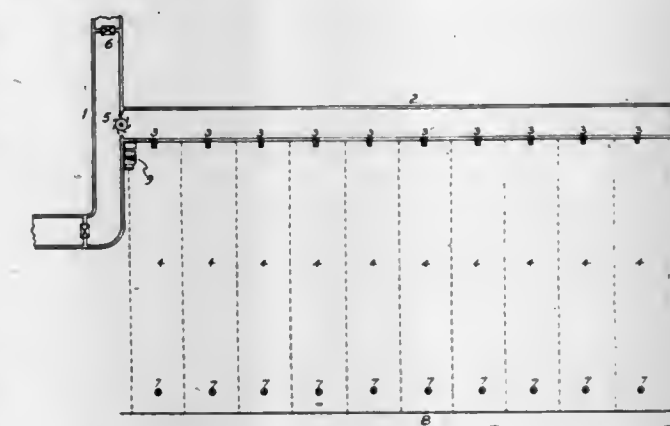
Graham A. Hornabrook, 30 Hazelwood Dr., Dubbo, New South Wales, 2830, Australia

Filed Feb. 26, 1981, Ser. No. 238,415

Int. Cl.³ E02B 13/00, 11/00

U.S. Cl. 405—37

2 Claims



1. An irrigation system for irrigating a plurality of irrigation bays, said system including a main channel having a supply of water, a separate distribution channel connecting each bay to the main channel, flow control means for each distribution channel operative to initiate and cease the flow of water to its irrigation bay, sensing means in each bay for sensing a pre-determined moisture content at a pre-selected location in each bay and central control means operative to activate each flow control means in sequence so as to initiate flow of water to each bay in sequence and operative to de-activate each flow control means in response to a signal received from the sensing means indicating that the pre-determined moisture content in that bay has been reached, each said sensing means including a radio transmitter transmitting a signal which is characterized as being uniquely associated with the sensor from which it is related, said characterization comprising amplitude, frequency or pulse modulation whereby each point at which a sensor is located is identifiable by the particular radio signal transmitted therefrom.

4,431,339

UNDER ICE OIL BARRIER

Kenneth L. Bickham, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 118,938, Feb. 6, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 336,110

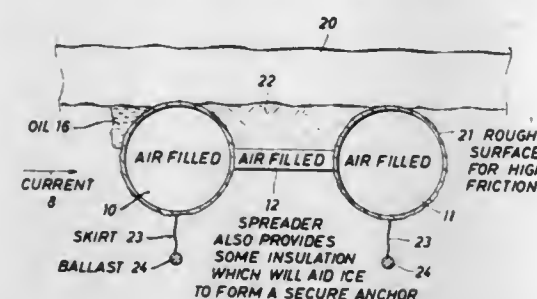
Int. Cl.³ E02B 15/04

U.S. Cl. 405—68

9 Claims

4. A boom for containment of oil spilled under ice over

water having a current comprising at least two buoyant tubes connected by a buoyant spreader which holds the tubes in a



spread-apart relationship, the tubes and spreader forming an ice anchor therebetween which is attached to the ice and operative to prevent movement of the boom by the current.

4,431,340

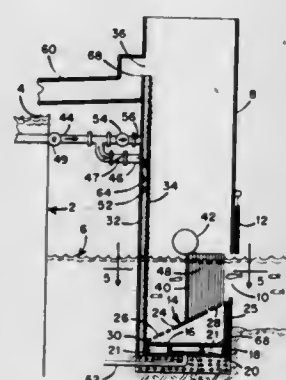
FISH ELEVATOR AND METHOD OF ELEVATING FISH
Jonathan Truebe, Mirror Lake, and Michael S. Drooker, Sanbornville, both of N.H., assignors to Lakeside Engineering, Mirror Lake, N.H.

Filed Aug. 12, 1981, Ser. No. 292,334

Int. Cl.³ E02B 8/08

U.S. Cl. 405—82

10 Claims



1. A fish elevator for raising fish from a lower body of water to an upper body of water, said elevator comprising a lock having its lower end below the surface of a lower body of water and having an upper discharge passage substantially above the surface of an upper body of water, a gate in said lock which when open will provide an entrance from said lower body of water into said lock, a vertically movable crowder in said lock which when in down position will be below said entrance whereby when said gate is open fish may swim from said lower body of water through said entrance into said lock above said crowder, means for closing said gate when fish are in said lock above said crowder, means for admitting water from said upper body of water into said lock when said gate is closed, means for filling said lock to the level of said discharge passage, means for causing continuous flow of water from said lock into said discharge passage and, first and second means for moving said crowder above which said fish are located from its lowermost position to a position at least to the level of the water at said discharge passage, whereby fish above said crowder will be directed into said discharge passage.

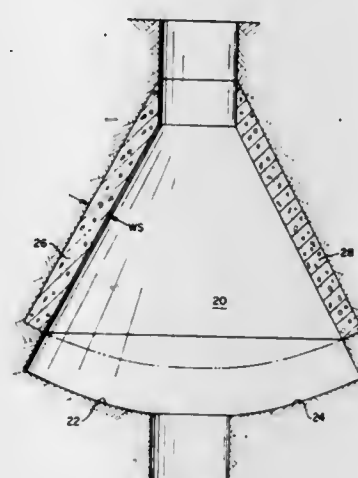
4,431,341
CONSTRUCTION OF A CONCRETE LINED CHAMBER
Hans Nilberg, Apple Valley, Calif., assignor to Santa Fe International Corporation, Calif.

Filed Apr. 27, 1982, Ser. No. 372,302

Int. Cl.³ E21D 1/00

U.S. Cl. 405—133

30 Claims



1. Method of forming a lined underground chamber comprising the steps of:
(a) drilling a bore hole in the earth to a predetermined depth;
(b) performing a first bell-shaped chamber at a location along the drilled hole;
(c) covering a substantial portion of the floor of the first bell-shaped chamber with a gravel material with such gravel material forming a mound;
(d) filling the remainder of the first bell-shaped chamber with concrete;
(e) redrilling the bore hole through the concrete and the gravel in the first bell-shaped chamber with such redrilled hole extending below the bottom of the first bell-shaped chamber;
(f) performing a second bell-shaped operation at a distance spaced below the location where the first bell-shaped operation was performed so that a second bell-shaped chamber partially overlapping with the first bell-shaped chamber is formed; and
(g) during the second bell-shaped operation removing the concrete and gravel within the first bell-shaped chamber except for the concrete in the space between the side walls of the first bell-shaped chamber and the second bell-shaped chamber so that a resulting concrete lined bell-shaped chamber is formed.

4,431,342

PIVOTING PIPE LAYER

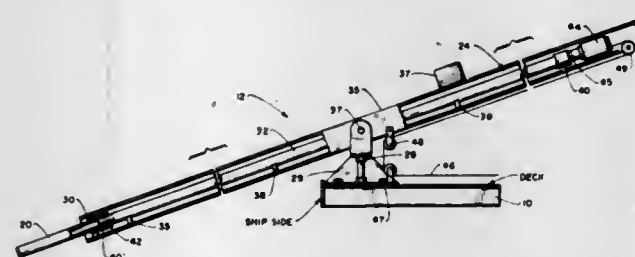
John L. Torresen, and Charles E. Warner, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1982, Ser. No. 446,107

Int. Cl.³ F16L 1/00

U.S. Cl. 405—169

10 Claims



1. A pipe layer/assembler operable for use on the deck of a ship for the assembly of a string of pipe and for laying of the pipe string as a pipeline on the ocean bottom, comprising;

a. an elongated tubular cradle having forward and aft ends and an open side through which sections of pipe to be assembled into a pipeline are introduced; each of the sections of pipe introduced to said elongated tubular cradle having a male threaded connection at the forward end and a female threaded connection at the aft end; each said section of pipe being introduced to said elongated tubular cradle having its forward end toward the forward end of said elongated tubular cradle;
b. said elongated tubular cradle being mounted on a two-axis pivot which allows said elongated tubular cradle to be free to pivot and adjust to any angle of entry required for a string of said pipe sections to enter the ocean as a pipeline;
c. A clamp means mounted at the forward end of said elongated tubular cradle for securely holding the aft end of each previously deployed section of pipe while the forward end of a successive section of pipe is attached to the aft end of a said previously deployed section;
d. A torque means mounted on a carriage means within said elongated tubular cradle and operable to be moved along the length thereof;
e. said torque means also being operable to connect to the aft end and longitudinally rotate each successive section of pipe as it is introduced to said elongated tubular cradle for threadably connecting the forward end of each successive pipe section to the aft end of each previous section;
f. said torque means, while connected to the aft end of a successive section of pipe, also being operable to move on said carriage means toward the forward end of said elongated tubular cradle to lower and deploy each section of pipe, successively, from the forward end of said elongated tubular cradle upon release by said clamp means of the aft end of the previously deployed section of pipe as the pipe sections are connected together in a string; as each successive section of pipe is deployed, said clamp means being operable to grip and securely hold the aft end of the previously deployed pipe section while said torque means is disconnected therefrom and continue to securely hold the end of the pipe string while the next section of pipe is connected thereto;
g. means for returning said torque means to the aft end of said elongated tubular cradle to allow the procedure to be repeated to connect additional sections of pipe to the pipe string.

4,431,343

LEG CLAMPING DEVICE FOR JACK UP PLATFORM

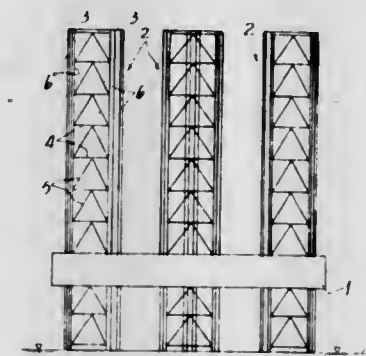
Tomoyoshi Uchiyama, Osaka; Youichi Hattori, Suita; Kouki Koyanagi, Asukamura; Toshio Ohkoshi, Izumi; Takaaki Ishihama, Nara, and Kouji Toda, Iyo Mishima, all of Japan, assignors to Hitachi Shipbuilding & Engineering Limited, Osaka, Japan

Continuation of Ser. No. 184,250, Sep. 5, 1980, abandoned. This application Dec. 29, 1982, Ser. No. 454,148

Int. Cl.³ E02B 17/06

U.S. Cl. 405—198

10 Claims



1. A leg clamping device for a jack up platform having legs extending through the platform and at least one rack attached

to each of the legs therealong and meshing with a drive pinion mounted on the platform, comprising:

a bearing body mounted on the platform for each rack, a plurality of engaging teeth supported in the bearing body adapted to separately move linearly toward and away from the rack and having tapered heads to engage in and disengage from corresponding furrows of the rack, and locking means provided for each tooth individually for releasably locking the tooth with its head in engagement with a corresponding rack furrow, the independent movability and the taper of the heads of said teeth enabling the heads of all said teeth to engage properly in said furrows despite possible pitch errors in said furrows.

4,431,344

SLIDING LEG TOWER WITH PILE BASE

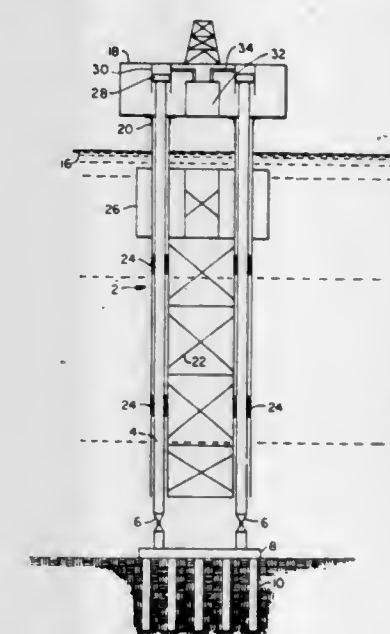
Barry J. Abbott, Contra Costa, and William H. Silcox, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 19, 1981, Ser. No. 275,542

Int. Cl.³ E02B 17/00

U.S. Cl. 405—202

7 Claims



1. An offshore drilling and producing structure, which comprises:

a rigid platform;
a plurality of open-ended sleeves affixed to the platform and extending downwardly therefrom for a substantial distance below a water surface, in a substantially vertical orientation;
an equal plurality of axial piles secured by articulated joints to a pile base on the sea floor, which axial piles extend upwardly into said open-ended sleeves to at least a position near the surface of the water;
buoyant means affixed to said sleeves below the water surface for supporting most of the platform and sleeve weight and for providing righting stability; and
means for supporting the remaining platform weight from the plurality of axial piles, said means permitting simultaneous vertical movement of each of said sleeves with respect to each of said piles to permit a desired degree of compliancy of rotation about the sea floor.

4,431,345

METHOD OF ASSEMBLING AND TESTING IN DOCK VERTICALLY MOVABLE MARINE WORKING PLATFORM STRUCTURE HAVING GROUNDABLE SUPPORT FRAMES

Takehisa Inoue, Tamano, Japan, assignor to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

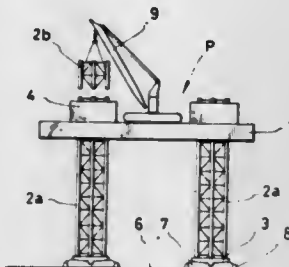
Filed Dec. 30, 1980, Ser. No. 221,287

Claims priority, application Japan, Feb. 22, 1980, 55-22112

Int. Cl.³ E02D 23/02

U.S. Cl. 405—204

2 Claims



1. A method of assembling a vertically movable, marine working platform structure having groundable support frames, comprising the steps of:

- placing a plurality of enclosure means in a dry dock, forming a support layer of pressure resistant granular material of a predetermined thickness in an area of the dock lying within each of the enclosure means,
- disposing spud cans on the layers of the pressure resistant granular material,
- mounting support frames on the spud cans, and
- securing a vertically movable working platform to the support frames.

4,431,346

METHOD OF PRODUCING LARGE BODIES OF ICE

Eystein Husebye, Grimelundshaugen 12, Oslo 3, Norway

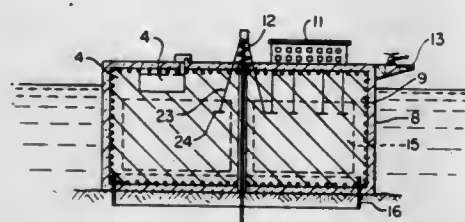
Filed Dec. 10, 1980, Ser. No. 215,008

Claims priority, application Norway, Feb. 28, 1980, 800570

Int. Cl.³ E02B 17/00; E02D 23/08

U.S. Cl. 405—217

8 Claims



1. A method of providing a large body of ice for use in constructing a drilling platform, production platform, breakwater, quay, large fill and the like, comprising introducing an insulated floating mold into the sea near land, producing pieces of ice from fresh water by use of an ice-freezing machine, transferring said pieces of ice to said floating mold and freezing said pieces therein to form from said pieces a large body of ice in said floating mold, moving said floating mold with said body of ice therein to an erection site in the sea, increasing the draft of said floating mold and said body of ice therein until they are submerged sufficiently to rest stably by gravity on the sea bottom, and using the submerged mold and said body of ice therein in constructing said drilling platform, production platform, breakwater, quay, large fill and the like.

4,431,347

COMPOSITE TIMBER PILE SYSTEM

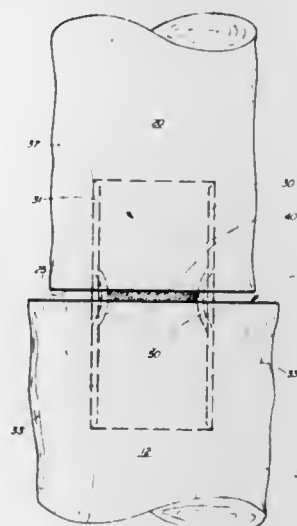
Gerard J. Gillen, Jr., 4512 Ithaca St., Metairie, La. 70002

Filed Dec. 18, 1981, Ser. No. 332,085

Int. Cl.³ E02D 5/22, 5/52

U.S. Cl. 405—251

21 Claims



1. A method of driving a composite timber pile section of a pair of connected timber pile sections having corresponding transverse mating faces comprising the steps of:

- driving a first, lowermost pile section into the earth a distance, leaving one of the mating faces exposed;
- partially embedding a bottom portion of a splice element into one of the pile sections so that the splice element cuts into the pile;
- adding displaceable leveling material to one of the pile section mating faces;
- laterally confining the displaceable leveling material with the splice element;
- axially aligning the two pile sections;
- partially embedding the top portion of the splice element into the second upper pile section; and
- driving the composite pile section into the earth.

4,431,348

FORCE TRANSMISSION DEVICE

Franz Powondra, Beethovenstrasse 4, A-1090 Vienna, Austria

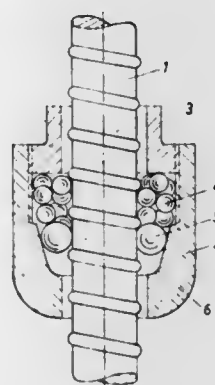
Filed Jul. 30, 1981, Ser. No. 288,515

Claims priority, application Austria, Jul. 31, 1980, 3970/80

Int. Cl.³ E21D 20/00, 21/00

U.S. Cl. 405—259

10 Claims



1. Force transmission device of a type designed to resistively yield to mechanical overloads with a dissipation of energy by conversion thereof into deformation work, comprising:

- a bush having a converging interior;
- a closure for closing one end of the bush;
- a particulate filling material disposed in the bush; and
- a ribbed rod passing through the bush and the closure, the particulate filling material being present in at least two different sizes with the larger bodies of the filling material

being substantially accommodated at the converging end of the interior of said bush and wherein the larger bodies have diameters that are at least one and a half times larger than the magnitude by which the ribs of the rod project.

4,431,349

ICE-FILLED STRUCTURE AND TUNNELING METHOD FOR THE EGRESS AND LAUNCHING OF DEEP-BASED MISSILES

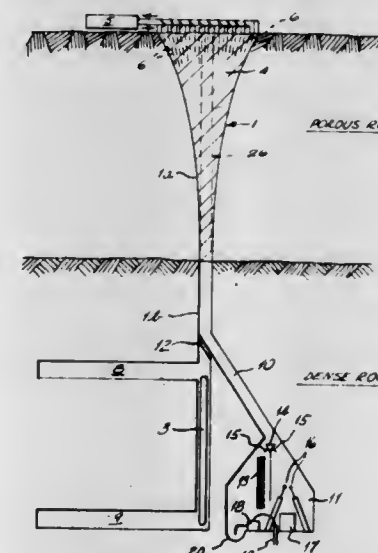
David L. Coursen, Mercersburg, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 14, 1982, Ser. No. 368,125

Int. Cl.³ E21D 5/12

U.S. Cl. 405—303

28 Claims



1. A structure comprising (a) a solid mass of ice filling a portion of a shaft or tunnel in the earth, said mass of ice (1) being coaxial with a deeper portion of said shaft or tunnel adapted to contain one or more missiles, and (2) including a straight path between said deeper portion and the earth's surface whereby said ice is adapted to be bored so as to provide a passageway for said missile(s); said ice-filled portion of said shaft or tunnel and the periphery of said mass of ice adjacent thereto having a diameter at the earth's surface that is substantially larger than the diameter of the passageway required for passage of said missile(s) and is nowhere smaller than the diameter required for such a passageway; and (b) a means of boring outward through said mass of ice along said straight path so as to form an ice-supported passageway extending to the earth's surface for the egress of said missile(s) from the deeper portion of said shaft or tunnel.

4,431,350

DISARMING APPARATUS

Carl-Hugo Abrahamson, Båtsmanskroken 5, S-126 57 Hägerssten, Sweden

Filed Jul. 2, 1981, Ser. No. 279,815

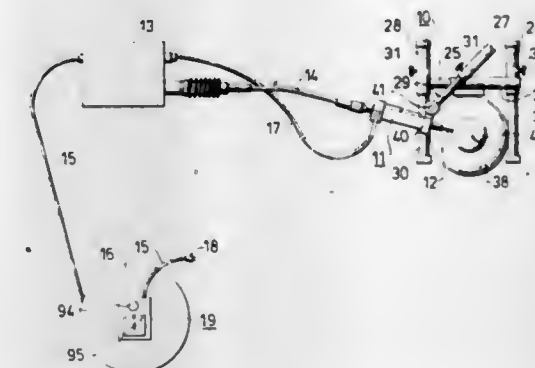
Int. Cl.³ B23B 47/18

U.S. Cl. 408—11

16 Claims

1. Apparatus for penetrating a casing wall, particularly a casing wall of a detonating or firing mechanism when disarming an undetonated explosive object, said apparatus including a drill unit driven by an electric motor having a motor housing and a motor shaft which is connected to said drill unit; carrier means for carrying the drill unit in substantially any selected position relative to said explosive object; feed means for moving in a controllable fashion at least a part of the drill unit holding the drill in the axial direction of said drill; and means for detecting a decrease in the drill torque responsive to penetration of the drill through said wall, wherein said motor housing is rotatable about the motor shaft and is co-ordinated with a spring means biasing the motor housing in a direction coinciding with the direction of rotation of the motor shaft when drilling, with a force so restricted that it is able to prevent the

motor housing from rotating in the direction opposite to said direction of rotation only when the drill does not carry out



work with the motor running, said detecting means including means for detecting the position of rotation of the motor housing.

4,431,351

SHAPE GENERATION BY ORBITING A ROTATING SHAPING CUTTER

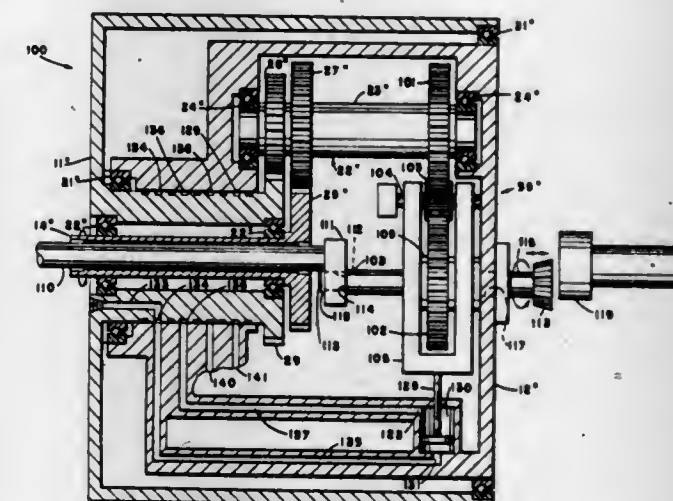
George E. Fransson; Stuart J. Johnson, and Edward W. Haug, all of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Continuation of Ser. No. 41,680, May 23, 1979, abandoned. This application Aug. 13, 1982, Ser. No. 407,769

Int. Cl.³ B23F 5/16

U.S. Cl. 409—35

8 Claims



1. Apparatus for generating a plurality of teeth of gears, splines or the like spaced about the periphery of a non-rotating workpiece having an axis, said apparatus comprising a head rotatable about an axis which is aligned axially with the axis of said workpiece, a shaping cutter, means on said head for supporting said cutter for rotation about an axis extending substantially parallel to and laterally displaced from the axis of said head and the axis of said workpiece, means for rotating said head about its axis while rotating said cutter about its axis in timed relation with rotation of the head whereby the cutter orbits around said workpiece, means for reciprocating said cutter along its axis through an active cutting stroke and an inactive return stroke, means mounting said cutter on said head for movement of the axis of the cutter laterally toward and away from the axis of the workpiece thereby to enable the lateral displacement between the cutter and workpiece axes to be varied, means for moving the axis of the cutter laterally toward and away from the axis of the workpiece in timed relation with the cutting and return strokes of the cutter so as to cause the cutter to engage the workpiece during said cutting stroke and to clear the workpiece during said return stroke, and means for infedding the axis of the cutter laterally toward

the axis of the workpiece to increase the depth of cut of the cutter into the workpiece.

4,431,352

FASTENING DEVICE

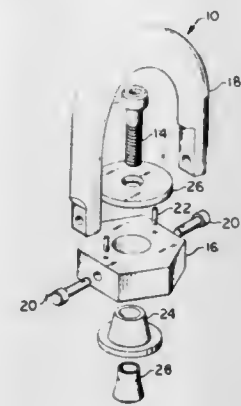
Gary E. Andrews, 5199 Priorybrook, Florissant, Mo. 63033

Filed Sep. 28, 1981, Ser. No. 306,139

Int. Cl.³ B23B 43/00

U.S. Cl. 410—101

11 Claims



1. A fastening device for anchoring a load to a threaded base, the fastening device comprising:
 - (a) a stud including a head and a shank, said shank having a lower threaded portion adapted to be fastened to the base and an adjacent, upper threaded portion,
 - (b) a retainer member including an inner surface having a threaded portion, adapted to be received by the stud upper threaded portion, and an outer surface having a bearing portion,
 - (c) a bushing member including an inner surface having a bearing portion operatively engageable with the outer bearing portion of the retainer member and an end bearing portion operatively engageable with the base, and
 - (d) load attaching means operatively connected to the bushing member in swivel relation for transferring applied load to the bushing member and the stud.

4,431,353

FASTENER ASSEMBLY

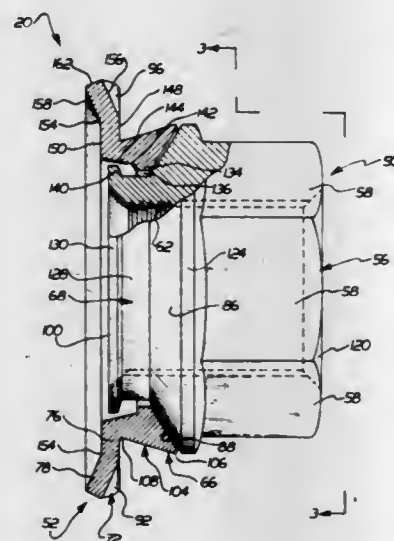
Terry D. Capuano, Hinckley, Ohio, assignor to Russell Burdall & Ward Corporation, Mentor, Ohio

Filed May 28, 1981, Ser. No. 268,124

Int. Cl.³ F16B 37/00, 39/04

U.S. Cl. 411—11

37 Claims



1. A fastener assembly for applying a preload force against a member and indicating when the preload force against the member is reduced, said fastener assembly comprising a fastener element, said fastener element including a body, a thread convolution connected to said body and having a central axis which is coincident with a central axis of said body, a retainer

section extending from a first axial end portion of said body, and an annular load transmitting surface area disposed on said first axial end portion of said body and flaring radially and axially outwardly from said retainer section in a direction away from said first axial end portion of said body, an annular washer element rotatably secured to said fastener element by said retainer section, said washer element and fastener element being rotatable relative to each other to enable said fastener element to be rotated relative to said washer element to apply a preload force to said washer element while said washer element is in stationary abutting engagement with the member, said washer element including an annular axially projecting collar circumscribing said retainer section of said fastener element, said collar including an annular load transmitting surface area which flares radially and axially outwardly from a location within the collar to a first axial end portion of said collar, said load transmitting surface area of said collar being abuttingly engageable with said annular load transmitting surface area on said body of said fastener element to transmit the predetermined preload force between said fastener element and said washer element, said collar having a circular side surface which flares radially and axially outwardly from a second axial end portion of said collar to the first axial end portion of said collar, said second axial end portion of said collar being disposed opposite from said first axial end portion of said collar, said washer element further including a load transmitting and indicating section connected with the second axial end portion of said collar, said load transmitting and indicating section including a bearing section having annular top and bottom surface areas which extend radially outwardly of said second end portion of said collar, said bottom surface area of said bearing section being adapted to abuttingly engage a side surface area of the member upon application of the preload force to said collar by said fastener element, said load transmitting and indicating section further including an annular spring section circumscribing said bearing section and disposed in a coaxial relationship with said collar, said annular spring section having top and bottom surface areas which flare radially and axially outwardly from said bearing section, said bottom surface area of said spring section being adapted to abuttingly engage the side surface area of the member upon application of the preload force to said collar by said fastener element, said spring section being resiliently deflectable from a first position to a second position upon application of the predetermined preload force to said washer element by said fastener element, said bottom surface area of said spring section being disposed in a plane which extends at an acute angle relative to said bottom surface area of said bearing section when said spring section is in the first position, said bottom surface area of said spring section being resiliently deflected toward alignment with said bottom surface area of said bearing section upon application of the predetermined preload force to said washer element to resiliently flatten said load transmitting and indicating section and provide a visible indication that the predetermined preload force has been applied to said washer element and to enable the preload force to be transmitted from said washer element to the side surface of said member at areas of abutting engagement between the side surface of the member and the bottom surface areas of said spring and bearing sections, said spring section being resiliently movable from the second position toward the first position upon a reduction of the predetermined preload force, said retainer section having an axial end surface area which is disposed in a plane extending between the top and bottom surface areas of said bearing section and between the top and bottom surface areas of said spring section when said load transmitting and indicating section has been flattened and said spring section is in the second position.

4,431,354

LEAD SCREW ASSEMBLY

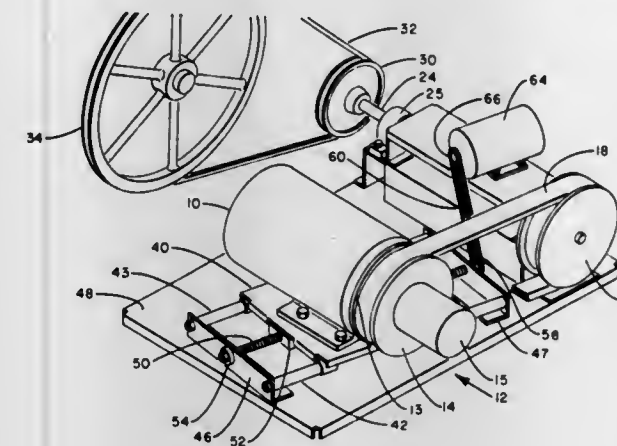
Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 3, 1981, Ser. No. 298,847

Int. Cl.³ F16B 39/00

U.S. Cl. 411—301

2 Claims



1. A lead screw assembly for use in a humid environment under conditions of continuous unidirectional loading comprising:
 - a lead screw;
 - a solid polymeric coating on said lead screw which is impervious to humidity and which provides a low friction surface for said screw; and
 - a deformable nut threadably engaging said coating on said screw and deforming under load so as to spread the load over all of the threads of said nut and thereby avoid peeling said coating from said screw.

4,431,355

FASTENER FOR LINING PANELS

Dietrich Jünemann, Lorrach, Fed. Rep. of Germany, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

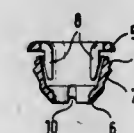
Filed Sep. 1, 1981, Ser. No. 298,370

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034729

Int. Cl.³ F16B 19/00

U.S. Cl. 411—360

8 Claims



1. A fastener for detachably securing an element having a

first aperture to a support member having a second aperture comprising:

- a bushing, with a leading edge inserted into the second aperture, said bushing including a flexible constriction located on the interior sidewall of the bushing proximate to the leading edge, an exterior flange opposite said leading edge, an exterior bushing sidewall forming at least two recesses, and at least two resilient legs which cooperate with said flange and fix the bushing to the support member, each of said resilient legs being fixed to said leading edge in an elastic manner and projecting upward from said leading edge and outward from a corresponding one of said recesses in said bushing and terminating below said flange; and
- a plug, a portion of which is insertable through the first aperture, said plug having a head that is larger in diameter than at least a portion of the first aperture, rests on the rim of the first aperture and cooperates with said flange of said bushing, axially fixing said plug relative to the element, a neck integral with said head, and a conically tapered bulge integral with said neck and positioned opposite said head, said bulge having a maximum diameter greater than that of said construction in its unstressed condition, said bulge being forcibly inserted through said constriction.

4,431,356

HERMETIC REFRIGERATION ROTARY MOTOR-COMPRESSOR

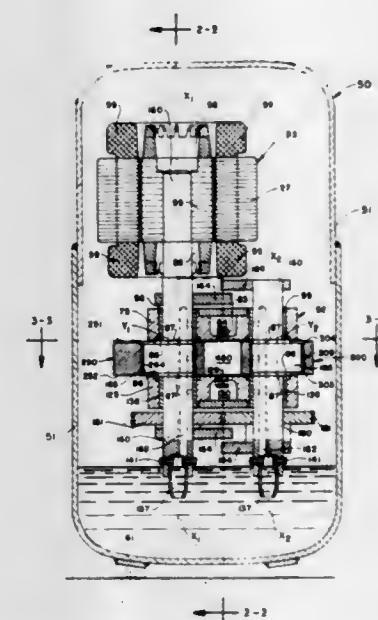
Marek J. Lassota, 8657 W. Foster Ave., Chicago, Ill. 60656

Continuation-in-part of Ser. No. 5,670, Jan. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 791,423, Apr. 27, 1977, Pat. No. 4,135,864, which is a continuation-in-part of Ser. No. 659,430, Feb. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,159, Sep. 4, 1975, Pat. No. 4,010,675, which is a continuation of Ser. No. 523,958, Nov. 14, 1974, abandoned. This application Ju. 29, 1981, Ser. No. 278,455

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ F01C 1/24, 21/12; F04C 17/16; F16J 1/24
U.S. Cl. 418—1

15 Claims



1. A hermetic refrigeration rotary motor-compressor comprising:
 - a compressor unit operatively positioned inside said hermetically sealed pressure tight housing can, said compressor unit comprising:
 - a cylinder-piston comprising a body and spaced arms extending from one end of said body, said spaced arms having opposing parallel surfaces and forming with said body of said cylinder-piston a U-shaped opening;
 - said cylinder-piston further comprising bearing means

located in said body of said cylinder-piston and having two side faces;
 a piston positioned within said U-shaped opening of said cylinder-piston and having spaced faces adjoining said opposing parallel surfaces of said spaced arms of said cylinder-piston;
 said piston further comprising bearing means and having two spaced side faces;
 two walls;
 spacing means axially spacing said two walls to said axially spaced walls adjoin said side faces of said cylinder-piston and said spaced side faces of said piston;
 a rotatable cylinder-piston shaft comprising an eccentric portion journaled in said bearing means located in said body of said cylinder-piston;
 a rotatable piston shaft comprising an eccentric portion journaled in said bearing means located in said piston;
 said two axially spaced walls further comprising bearing means for journaling of said rotatable cylinder-piston and said piston shafts;
 gearing means interconnecting said cylinder-piston shaft and said piston shaft so said shafts follow coordinated rotations in opposite directions and said cylinder-piston and said piston follow coordinated planetary rotations in opposite directions with and around said eccentric portions of said shafts;
 said cylinder-piston and said piston forming moveable surfaces, and said axially spaced walls forming stationary surfaces of a compression chamber located between said body of said cylinder-piston and said piston and varying in volume upon said coordinated planetary rotations in opposite directions of said cylinder-piston and said piston;
 intake means comprising an intake port leading to said compression chamber;
 discharge means comprising a discharge valve and leading from said compression chamber;
 balancing means;
 lubricating means;
 a hermetically sealed pressure tight housing can;
 a support for supporting said compressor unit in operative position inside said hermetically sealed pressure tight housing can; and,
 a motor unit for driving said compressor unit, comprising:
 a rotor operatively attached to one of said cylinder-piston or said piston shafts;
 a stator; and,
 a supporting means for supporting said stator of said motor unit in operative relation to said rotor of said motor unit and to said compressor unit.

4,431,357

TAILGATE CONTROL SYSTEM FOR ROUND BALE WAGON

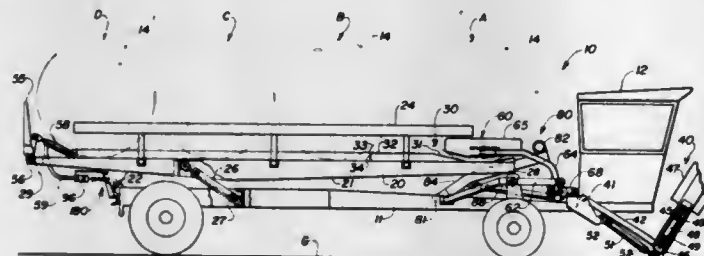
L. Dennis Butler, Kingsburg, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Jun. 23, 1981, Ser. No. 276,592

Int. Cl.³ B60P 1/26; A01D 87/12

U.S. Cl. 414-24.5

13 Claims



1. In a bale wagon for picking up bales of crop material from the field, accumulating a plurality of bales and transporting the accumulated bales to a preselected storage location to be unloaded from the bale wagon, the bale wagon having a mobile

frame adapted for movement across the field; a bale pickup means mounted on said frame for individually engaging bales of crop material on the ground and elevating said bales onto the bale wagon; a load bed pivotally supported by a pivot on said frame for accumulating a plurality of said bales, said load bed including a forward end, a rearwardly spaced rearward end and a receiving portion at said forward end on which said bale pickup means deposits bales picked up on the field; means for arranging and positioning bales deposited on said load bed by said bale pickup means; and power means for arranging and positioning said bales on said bale wagon and for selectively rotating said load bed about said pivot relative to said mobile frame to raise said forward end and unload bales accumulated thereon over said rearward end, the improvement comprising:
 a tailgate pivotally connected to said load bed at said rearward end and movable between an upright position, generally perpendicular to said load bed to prevent said accumulated bales from moving off said rearward end of said load bed, and an extended position, wherein said accumulated bales are permitted to move off said rearward end;
 tailgate power means for pivotally moving said tailgate from said extended position to said upright position, said tailgate power means being operable to releasably maintain said tailgate in said upright position and including a hydraulic cylinder having a ram slidably extendable therefrom between a retracted state when said tailgate is in said upright position and an extended state when said tailgate is in said extended position, said hydraulic cylinder interconnecting said load bed and said tailgate and being in operative communication with a primary source of power for powering the movement of said tailgate, said hydraulic cylinder being connected to a control valve having a spool that permits hydraulic fluid to flow to said hydraulic cylinder for retraction of said ram, said control valve spool also being operable to permit hydraulic fluid to escape from said hydraulic cylinder when said ram is extending due to the weight of the accumulated bale being exerted against the tailgate after said load bed has been rotated to raise said forward end of said mobile frame; and
 actuating means operatively connected with said tailgate power means to cause said tailgate power means to permit said tailgate to move to said extended position, said actuating means being operable when said forward end of said load bed has been raised a predetermined distance above said mobile frame to impart sufficient energy to said accumulated bales to permit them to move easily off said rearward end of said load bed.

4,431,358

APPARATUS FOR BREAKING UP STACKS OF BOARDS IN POWER SAWS OR THE LIKE

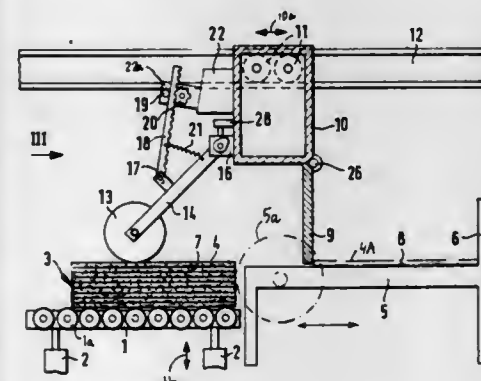
Erwin Jenkner, Lindenstrasse 13, D-7261 Gechingen (BRD), Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,741

Int. Cl.³ B65G 59/02

U.S. Cl. 414-114

16 Claims



1. Apparatus for breaking up stacks of panels in a power saw

or the like into groups containing predetermined numbers of panels, comprising a lifting device arranged to support a stack of panels; a table adjacent said device and having an upper side disposed at a predetermined level; first prime mover means operable to move said device upwardly so that the number of those panels of the stack on said device which extend above said level depends on the extent of upward movement of said device; transfer means operable to shift the panels above said level onto said upper side; sensor means arranged to rest on the topmost panel of the stack during upward movement of said device so as to assume a plurality of different positions at different levels each corresponding to a different number of panels above said level; means for movably securing said sensor means to said transfer means so that said sensor means is movable between said different levels with reference to said transfer means; means for arresting said prime mover means in a predetermined position of said sensor means; and second prime mover means for moving said transfer means with said sensor means in a predetermined direction to thereby transfer panels from the stack onto said upper side and counter to such direction, said sensor means being located behind said transfer means, as considered in said direction.

4,431,359

ELEVATOR FOR THE HANDLING OF CONTAINERS, PARTICULARLY IN HARBORS

Alberto Toniolo, Venezia San Polo, 2466, Italy

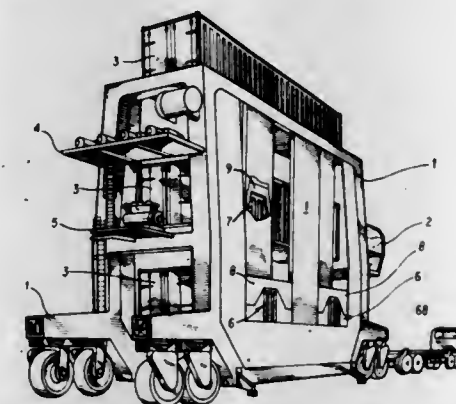
Filed Jul. 28, 1980, Ser. No. 172,648

Claims priority, application Italy, Aug. 2, 1979, 40093 A/79; Jul. 11, 1980, 40057 A/80

Int. Cl.³ B65G 63/00

U.S. Cl. 414-139

18 Claims



1. An elevator for handling containers, particularly in harbours, comprising a self-propelled framework means having a lower part for receiving a carrier of a number of said containers, characterized in that said framework means defines a passageway therein for vertical transfer of containers in either vertical direction;

said passageway having a top portion and a bottom portion and being open at said top and bottom portions;
 said passageway further having a longitudinal section having a length corresponding to that of at least one container aligned therein;
 said framework means being equipped with a low path means for the vertical transfer of the containers from the carrier thereof to an intermediate position in said passageway, and vice versa, from the intermediate position in said passageway to the carrier of the containers;
 said framework means being further equipped with a high-path means for the vertical transfer of the containers from said intermediate position to a top segment of the framework means and vice versa, from the top segment of the framework means to said intermediate position;
 said framework means further having first means to support the container in said intermediate position and second means to support the container at the top segment of the framework means.

4,431,360

CONTAINER FOR THE LOADING AND TRANSPORTING OF GOODS

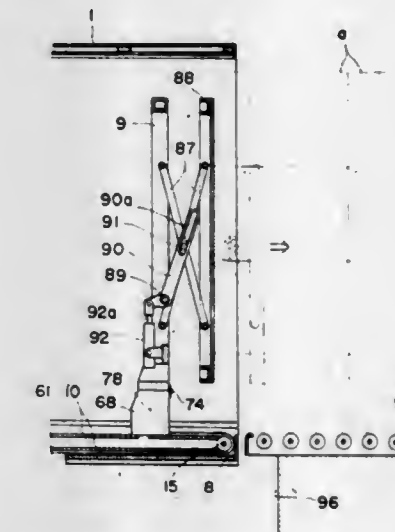
Mamoru Maeno, Toko Mansion, 19-705-go, 2-banchi, 2-chome, Nisinakajima, Yodogawa-ku, Osaka-shi, Osaka Pref., Japan

Filed Jul. 22, 1981, Ser. No. 285,836

Int. Cl.³ B65G 65/42; B60P 1/00

U.S. Cl. 414-294

17 Claims



1. A container for the loading and transporting of goods comprising a conveyor belt arranged on the floor of the body of the container, said conveyor belt being slidably engageable with the floor surface as it is loaded with goods, a partition gate back and forth movably provided in the container body, load chains and said conveyor belt being connected to said partition gate, a transmission shaft provided in the container body for driving the conveyor belt through said load chains so that the conveyor belt within the container body can be driven when driving force is supplied to said transmission shaft, wherein said partition gate includes pusher gate means movable with respect to the partition gate in a generally parallel direction for slidably pushing a load carried on said conveyor belt away from said partition gate.

4,431,361

METHODS OF AND APPARATUS FOR TRANSFERRING ARTICLES BETWEEN CARRIER MEMBERS

Christopher J. Bayne, Lightwater, England, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,632

Claims priority, application United Kingdom, Sep. 2, 1980, 8028248; Jul. 27, 1981, 8123122

Int. Cl.³ B65G 65/04, 65/30

U.S. Cl. 414-405

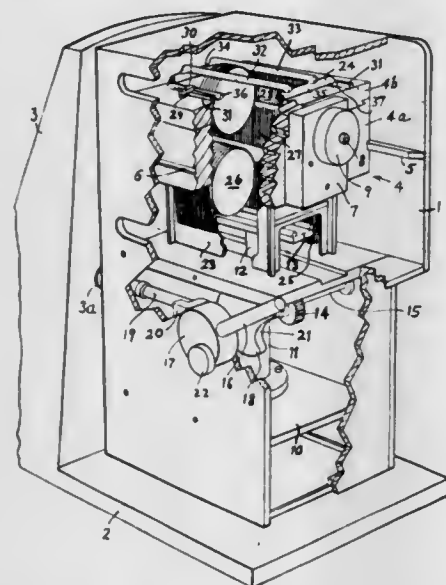
19 Claims

1. Method of gently transferring fragile disk-like semiconductor wafers or substrates between a wafer carrier and a magazine carrier, wherein said carriers have a bottom with an aperture formed therein, and side elements formed with slits to retain and receive said semiconductor wafers in stacked, spaced alignment, comprising the steps of
 aligning the slits in one of the carriers to retain wafers with the slits in the other of the carriers to receive wafers;
 pushing the wafer in one carrier by engagement with a plunger element against the force of gravity into the other carrier to pass nearly, but not quite wholly, into the other carrier by introducing the plunger element through the apertured bottom of one carrier and pushing the wafers from the slits in the said one carrier into the slits of the other carrier;
 retaining said plunger element against the wafers to thereby essentially remove said wafers from said first carrier member;
 and inverting the second carrier together with the plunger

element to permit the wafers to drop the final distance for complete reception in the other carrier.

4. The combination of a first carrier and a second carrier, each of which has an apertured bottom wall which is essentially unobstructed

with
an apparatus for transferring disk-like semiconductor wafers or substrates between the first and a second carrier, said apparatus comprising
a displaceable housing;
means for receiving said first carrier with the apertured bottom wall on the bottom;
a plunger element fitting through said essentially unobstructed apertured bottom wall, and operable against the force of gravity;



means for locating the second carrier in the housing; operating means engageable with the plunger element and controlling projecting movement of the plunger along a distance shorter than that represented by a final desired position of the wafers in the second carrier to lift the wafers out of the first carrier and place the wafers nearly, but not quite wholly, into the second carrier; and means for inverting the housing together with both said carriers and with said plunger element, while in a projected position to permit completion of travel of the wafers into the second carrier by gravity and for the difference of the distance through which the wafers were lifted by said plunger element, and the final desired position.

4,431,362 LOG LIFTER

Malcolm H. Wech, Jr., Box 429, Wyalusing, Pa. 18853, and Lockwood L. Smiley, Wysox, Pa., assignors to Malcolm H. Wech, Jr., Wyalusing, Pa.

Filed Aug. 24, 1981, Ser. No. 295,596

Int. Cl.³ B27L 7/00

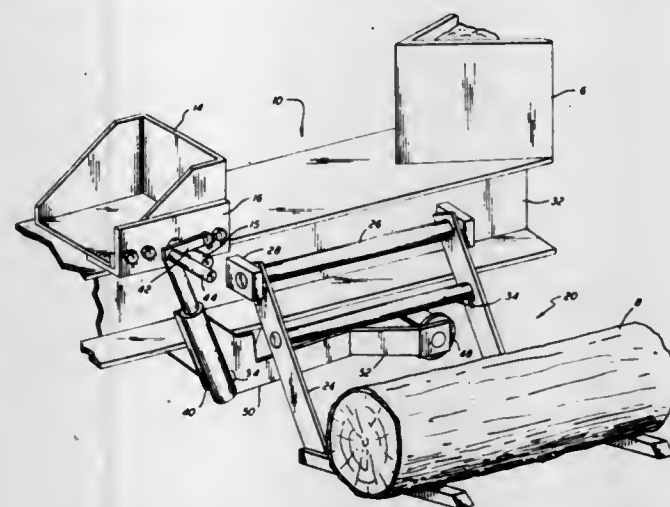
U.S. Cl. 414—685

4 Claims

1. Apparatus for attachment to and operation with a power-operated log splitter having a bed for longitudinal placement of a log between a splitting wedge and a sled reciprocally movable along said bed by a hydraulic cylinder in forward and return strokes, said apparatus comprising:

- a loading rack pivotally connected to one side of said log splitter for rotation about an axis adjacent said bed and parallel to the direction of movement of said sled between a first position, wherein a portion of said rack is substantially at ground level to receive a log, and a second position, wherein said portion is elevated above said bed to deposit the log thereon;
- a pin fixedly connected to said sled and extending outwardly therefrom on said one side of said log splitter; and
- motion transmission means having a first part selectively engageable with said pin and movable with said sled when

so engaged, and a second part contacting said loading rack to effect rotation thereof from said first position to said



second position in response to movement of said sled upon said return stroke.

4,431,363

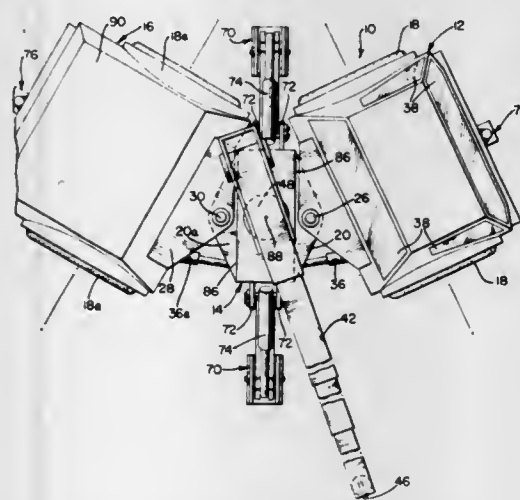
ARTICULATED MATERIAL HANDLING MACHINE
Jerry A. Waite, Racine, Wis., assignor to J.I. Case Company, Racine, Wis.

Filed Mar. 12, 1982, Ser. No. 357,537

Int. Cl.³ B66C 23/74

U.S. Cl. 414—687

3 Claims



1. An articulated material handling machine including a front module, a central module, and a rear module with the front and rear modules being supported by ground engaging wheels mounted on front and rear axles, said front module pivotally connected to said central module for pivotal movement about a first vertical axis and said rear module pivotally connected to said central module for pivotal movement about a second vertical axis, and said front axle being rigidly attached to said front module, said central module being generally rectangular in plan view, fluid steering rams pivotally mounted at one end adjacent the corners of said central module in symmetrical relation to the longitudinal axis of said machine and on opposed sides thereof, the opposite ends of a pair of said steering rams being connected to said front module and the opposite ends of another pair of said steering rams being connected to said rear module, an operator's station mounted on said front module and a rotatable working tool having a cantilevered boom arm mounted to said central module and said boom arm operating along a work radius laterally spaced from one side of said machine, a pair of retractable and extensible stabilizers pivotally attached to said central module, said machine being adapted for offset steering by retracting a pair of diagonally opposite steering rams on said central module and extending another pair of diagonally opposite steering rams on said cen-

tral module for locking said central module in an extreme position against said front and rear modules thereby offsetting said rear module relative to said front module so that the rear ground engaging wheels do not track the front ground engaging wheels, and said machine being placed in a working position by extending the fluid steering rams on one side of said machine while retracting the steering rams on the opposite side of the machine whereby said machine is articulated such that its longitudinal axis generally parallel to the work radius of said boom arm and said front and rear modules being positioned as counterweights against any load applied to the end of said boom arm, and said stabilizers being extended and locked in place to provide further stability to said central module.

4,431,364

SELF-LEVELING LINKAGE ASSEMBLY FOR MATERIAL HANDLING EQUIPMENT

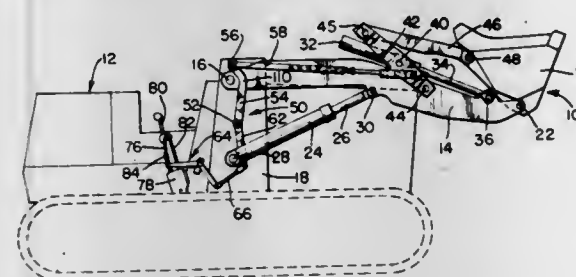
Philip D. Redenbarger, Centerpoint, and Robert A. Fowler, Danville, both of Ind., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 21, 1982, Ser. No. 390,158

Int. Cl.³ B66C 23/00

U.S. Cl. 414—697

3 Claims



1. In a material handling mechanism including at least one lift arm, pivot means securing said lift arm to a frame, a bucket pivotally supported on said lift arm, a lift cylinder for raising and lowering said lift arm, and a bucket cylinder for rolling said bucket forwardly or rearwardly relative to said lift arm, the improvement comprising:

a self-leveling linkage assembly for maintaining the bucket in a level condition and for preventing the bucket from being rolled rearwardly beyond a predetermined maximum rollback position as the lift arm is moved to an extreme raised position, said self-leveling linkage assembly including a control arm rotatably mounted to said frame at a location forwardly of said lift arm pivot means, a position link connected between said control arm and said bucket, a control valve for actuating said bucket cylinder and said control valve including a linkage connected to a manually operable control handle, means for connecting said rotatable control arm to said control valve linkage, and said rotatable control arm including an anti-rollback portion which is engageable with said lift arm pivot means to act as a mechanical stop against bucket rollback beyond a predetermined maximum rollback position for preventing damage to said self-leveling linkage assembly.

4,431,365

PRESSURE CONTROL MECHANISM FOR A GRAPPLE SKIDDER

Charles R. Sturtz, Jr., Romulus, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Continuation of Ser. No. 961,344, Nov. 16, 1978, abandoned, which is a continuation of Ser. No. 815,326, Jul. 13, 1977, abandoned. This application Jan. 27, 1981, Ser. No. 228,857

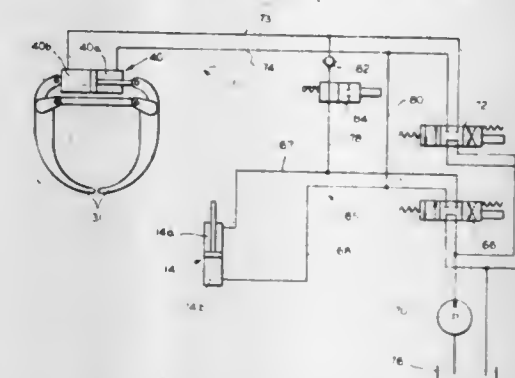
Int. Cl.³ B66C 3/16

U.S. Cl. 414—730

3 Claims

1. A hydraulic control system for a self propelled log grapple skidder having a boom arm operated by a first double acting hydraulic cylinder, a grapple operated by a second

double acting hydraulic cylinder, and a hydraulic pump for operating both hydraulic cylinders, the system comprising a first three position valve having neutral, extend and retract positions, first conduit means interconnecting said first valve with said first hydraulic cylinder for selectively operating the first hydraulic cylinder independently of said second hydraulic cylinder, a second three position valve having neutral, extend and retract positions, second conduit means interconnecting said second valve



with said second hydraulic cylinder for selectively operating the second hydraulic cylinder independently of said first hydraulic cylinder, first interconnecting means between a rod end of said first cylinder and a base end of said second cylinder, operable when said first and second valves are in neutral, for selectively causing said second cylinder to maintain a hydraulic pressure in the base end of the second cylinder not less than the pressure in the rod end of the first cylinder, and second interconnecting means which is open at all times comprising a hydraulic conduit joining the rod end of said second cylinder and the base end of first boom cylinder.

4,431,366

INDUSTRIAL ROBOT

Hajimu Inabe; Seiichiro Nakashima, both of Hino; Shigemi Inagaki, Musashino, and Susumu Ito, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

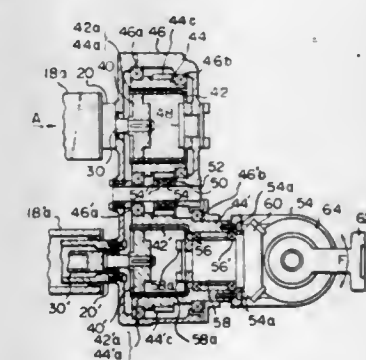
Filed Sep. 30, 1981, Ser. No. 307,329

Claims priority, application Japan, Sep. 30, 1980, 55-135260

Int. Cl.³ B25J 17/02

U.S. Cl. 414—735

3 Claims



1. An industrial robot having a robot casing, an arm extensible from and contractable into said casing, and a wrist mechanism arranged on said arm and having a hand attached thereto, said wrist mechanism comprising:

- a first high speed rotational driving source;
- a first harmonic drive connected to said first high speed rotational driving source;
- a first transmitting means connected between said first harmonic drive and said hand, for causing rotational movement of said hand;
- a second high speed rotational driving source;

a second harmonic drive connected to said second high speed rotational driving source;
 a second transmitting means connected between said second harmonic drive and said hand for causing swinging movement of said hand;
 each of said first and second harmonic drives being comprised of a driving wheel driven by its respective high speed rotational driving source, a flexible inner wheel having an inner peripheral surface slidably engaged with said driving wheel and a toothed outer peripheral surface, and an outer wheel having a toothed inner peripheral surface engaged with said toothed outer peripheral surface of said inner wheel and a toothed outer peripheral surface, whereby a highly reduced rotation is transmitted through said flexible inner wheel to said outer wheel;
 said first transmitting means comprising a pinion engaged between said toothed outer peripheral surface of said outer wheel of said first harmonic drive and said toothed outer peripheral surface of said outer wheel of said second harmonic drive to transmit rotational movement to said hand.

4,431,367

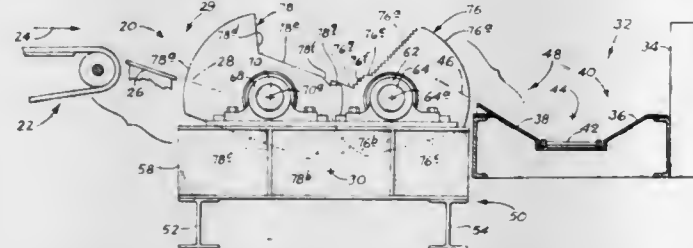
LOG-SEPARATING LATERAL TRANSFER APPARATUS
 Ronald D. Pousette, Vancouver, and John L. Sanders, North Vancouver, both of Canada, assignors to Brunette Machine Works, Ltd., New Westminster, Canada

Filed Jul. 19, 1982, Ser. No. 399,243

Int. Cl.³ B65G 37/00

U.S. Cl. 414-748

11 Claims



1. Apparatus for transferring successive logs, and the like, laterally, and one at a time, between an intake station and a discharge station, said apparatus having a long axis, and comprising

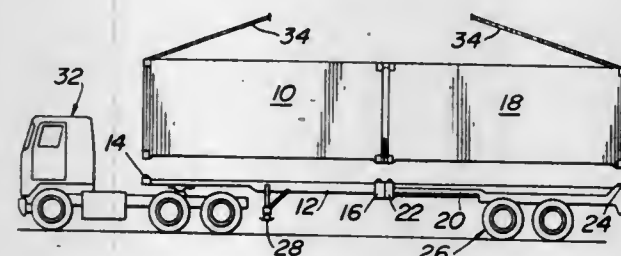
at least two longitudinally displaced pairs of adjacent, operatively interconnected, reversibly and cyclically counter-rotative discs, with the two discs in each pair having radially overlapping peripheries, and being mounted for rotation about side-by-side displaced, substantially parallel rotation axes, which axes are substantially parallel both to said long axis, and to the axes of successive logs which are to be transferred by the apparatus,

one disc in each pair being disposed adjacent said intake station, and the other being disposed adjacent said discharge station, said one disc in each pair having a perimeter portion defined by plural chord stretches including first, second, third and fourth stretches extending, respectively, in all rotated positions for the disc, generally from adjacent said intake station toward said other disc in the pair, said first and second stretches and said third and fourth stretches, respectively, joining one another at outwardly facing obtuse angles, and said second and third stretches joining one another at an outwardly facing reflex angle.

4,431,368
METHOD FOR COUPLING CONTAINERS END TO END
 Sol Katz, New Hope, and Andrew Abolins, Langhorne, both of Pa., assignors to Strick Corporation, Fort Washington, Pa.
 Filed Jun. 12, 1981, Ser. No. 272,876
 Int. Cl.³ B60P 7/13

U.S. Cl. 414-786

5 Claims



1. A method of joining two containers end to end for subsequent movement as a unit comprising:
 (a) providing first and second telescoping chassis sections movable between an extended position and a retracted position;
 (b) positioning a discrete container on each chassis section while the chassis sections are in an extended position;
 (c) providing each container with mating coupler structure as juxtaposed lower corners, providing at least one of said containers with a spacer member between the juxtaposed upper ends of said containers;
 (d) moving the first chassis section to a retracted position so that the container thereon moves toward the other container on the second chassis section until the upper ends of each of the containers are in engagement with the spacer member and the mating structure at the lower corners engage the coupler members, moving the spacer member from an inoperative position to an operative position before the container on the first section is moved toward the container on the second chassis section, said step of moving the spacer member includes pivoting the spacer about a vertical axis from its inoperative position to its operative position, and rigidly joining the lower corners of said containers by said mating coupler structures so that the containers may be moved as a unit.

4,431,369
GOVERNOR CONTROL LINKAGE ASSEMBLY FOR OVERSPEED PROTECTION OF TURBINES DURING RESTARTING

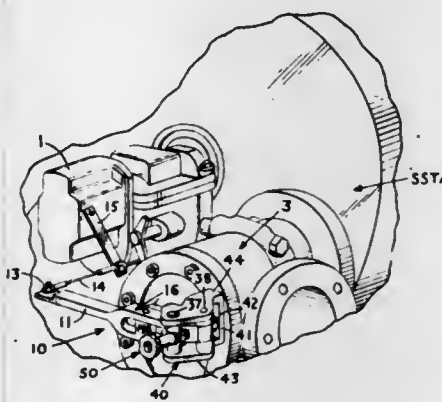
George M. Lucas, Wellsville, N.Y., assignor to Edison International, Rolling Meadows, Ill.

Filed Oct. 22, 1981, Ser. No. 313,689

Int. Cl.³ F01D 17/06, 21/02; F16K 31/44

U.S. Cl. 415-36

18 Claims



11. The combination with a turbine having, a governor, a governor valve, and a safety trip valve downstream of the governor valve of a governor control linkage assembly for

connecting the governor to the valve stem for the governor valve to be controlled by the governor and to enable manual closing of said governor valve after the safety trip valve has been tripped and for incremental opening of said governor valve for restarting the turbine from the shut down and stopped operating conditions, comprising:

- bracket means connected to said turbine,
- an articulated linkage including a main lever member connected at one end to said governor and a pivot arm member pivotally connected to the opposite end of said main lever means and pivotally connected to the bracket to accommodate rotational movement of the linkage about the pivotal connection between the pivot arm and the bracket,
- said valve stem being operatively connected for swiveling movement to one of the members of said articulated linkage in a fashion accommodating relative rotational and lateral movement between said member and the valve stem, and
- operating means connected to the pivot arm at a point spaced from the pivotal connection between the pivot arm and the bracket for moving the pivot arm member relative to the main lever member to cause the valve being controlled by the governor to be moved incrementally from open to closed position and vice versa.

4,431,370

MULTISTAGE HYDRAULIC MACHINES HAVING AIR EXHAUSTING DEVICES

Kentaro Ichikawa, Chigasaki; Ichiro Yamagata, and Sachio Tsunoda, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

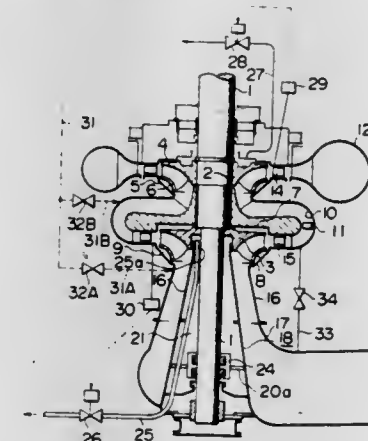
Filed Oct. 29, 1981, Ser. No. 316,357

Claims priority, application Japan, Nov. 7, 1980, 55-156812

Int. Cl.³ F03B 15/04

U.S. Cl. 415-112

5 Claims



1. In a multistage hydraulic machine comprising a number of pressure stages each including a runner, a main shaft supporting the runners ranging from a highest pressure stage to a lowest pressure stage, a number of return passages each interconnecting an adjacent pair of the pressure stages, at least one set of adjustable wicket gates provided for the highest pressure stage runner, a draft tube connected beneath the lowest pressure stage, and means for supplying and exhausting compressed air into and out of the pressure stages upon closure of the adjustable wicket gates: the improvement comprising an air exhausting device which includes a draft cone provided internally of said draft tube for encircling said main shaft, and an air exhaust pipe provided internally of said draft cone to extend upwardly through a space between said draft cone and said main shaft, an uppermost end of said air exhausting pipe opening in an air exhausting region formed in a runner-cone portion of the lowest pressure stage runner, and another end portion of said air exhaust pipe extending to outside said machine through a lower portion of said draft cone.

4,431,371
GAS TURBINE WITH BLADE TEMPERATURE CONTROL

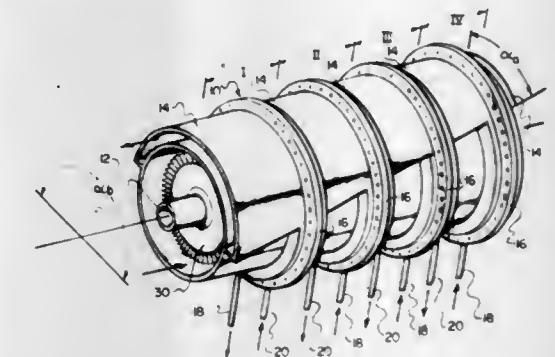
Wallace B. Thomson, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 14, 1982, Ser. No. 387,736

Int. Cl.³ F04D 31/00

U.S. Cl. 415-116

15 Claims



1. In a gas turbine including a housing having a hot gas inlet and a hot gas outlet, a rotatable shaft mounted within said housing, at least one turbine stage comprising a turbine rotor, said rotor including a disc member affixed to said shaft and a plurality of turbine blades located about the periphery of said disc, each of said blades having a root section affixed to the disc, and a radially outwardly extending surface terminating in a tip section, the improvement comprising:
 nozzle means for directing a hot gas over only a portion of said blades;
 a shroud member enveloping another portion of said blades, said shroud member including an inlet and an outlet for a cooling gas;
 compressor means for providing a flow of pressurized cooling gas to said shroud;
 guide means for directing said cooling gas radially over the surface of said blades; and
 deflection means for directing cooling gas from said blades to the cooling gas outlet of said shroud.

4,431,372
METHOD AND APPARATUS FOR LUBRICATING TURBINE BEARINGS

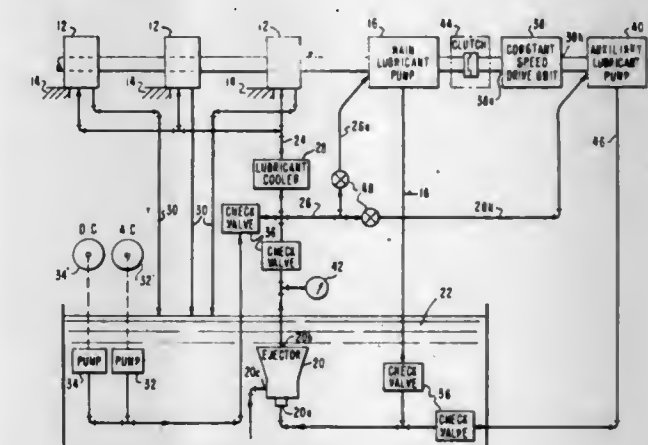
Ghanshyam M. Dadhich, Nether Providence, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1980, Ser. No. 164,858

Int. Cl.³ F01D 25/20

U.S. Cl. 415-175

6 Claims



1. A turbine lubrication system comprising:
 a turbine apparatus having a rotor, a casing, and means for rotatably supporting said rotor in said casing;
 a main lubricant pump coupled to the turbine rotor, said main pump having a discharge side and a suction side;

a lubricant reservoir;
an ejector apparatus having an inlet port in fluid communication with said main pump's discharge side, a suction port in fluid communication with said lubricant reservoir for withdrawing lubricant therefrom, and a discharge port in fluid communication with said rotatable support means and said main pump suction side for discharging the mixture of lubricant drawn from the reservoir and lubricant supplied to the inlet port at a supply pressure;
means having an input linkage and an output linkage driven by said input linkage for providing a substantially constant speed to said output linkage for varying speeds of said input linkage;
means for selectively coupling said rotor and said input linkage when said supply pressure is less than a predetermined value; and
means coupled to said output linkage for transmitting lubricant to said rotatable support means.

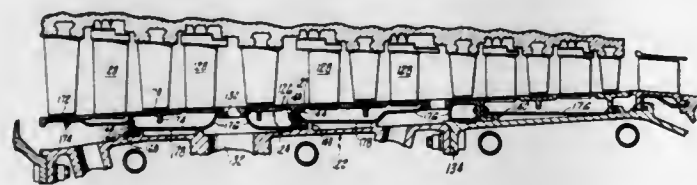
4,431,373

FLOW DIRECTING ASSEMBLY FOR A GAS TURBINE ENGINE

William G. Monsarrat, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed May 16, 1980, Ser. No. 150,490
Int. Cl.³ F04D 29/54

U.S. Cl. 415—189

11 Claims



1. A method for fabricating a flow directing device formed of a stator assembly and a rotor assembly of the type which includes a rotor having a longitudinal axis of symmetry and arrays of rotor blades extending outwardly from the rotor, each array being spaced axially from an adjacent array leaving an axial space therebetween, comprising the steps of:
forming an inner case which includes at least two arcuate segments extending longitudinally, each arcuate segment engaging a portion of two or more arrays of stator vanes, the stator vanes of each arcuate segment extending inwardly from the arcuate segment, the arrays of stator vanes being spaced axially one from another leaving an axial space therebetween;

positioning each arcuate segment of the inner case radially outwardly of the rotor assembly such that the arcuate segments are circumferentially spaced one from another, the arrays of stator vanes are each aligned in opposing relationship to a corresponding gap between the arrays of rotor blades, and the arrays of rotor blades are each aligned in opposing relationship to a corresponding space between the arrays of stator vanes;

assembling the inner case to the rotor assembly by moving the arcuate segments of the inner case inwardly toward the longitudinal axis of the rotor assembly such that the arrays of rotor blades and stator vanes are interdigitated and the arcuate segments of the inner case are circumferentially spaced one from another by a predetermined distance;

forming an annular sleeve having a longitudinal axis of symmetry;

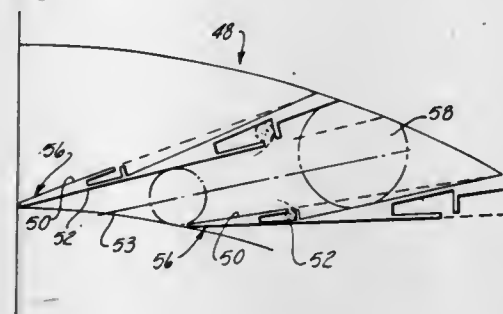
assembling the annular sleeve to the inner case and rotor assembly by aligning the axis of symmetry of the rotor assembly with the axis of symmetry of the annular sleeve and causing relative movement between the annular sleeve and the inner case such that annular sleeve slidably engages each segment of the inner case and holds the segments in circumferential alignment.

4,431,374
VORTEX CONTROLLED RADIAL DIFFUSER FOR CENTRIFUGAL COMPRESSOR

Eli H. Benstein, Toledo; Gerald D. Stringham, Sylvania, both of Ohio, and Michael R. Holbrook, Lambertville, Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Feb. 23, 1981, Ser. No. 236,649
Int. Cl.³ F04D 29/44

U.S. Cl. 415—211

7 Claims



1. In combination with a turbine engine having a centrifugal compressor and a radial diffuser disposed in the flow path of the output from the centrifugal compressor, the improvement comprising:

at least one wall defining at least a portion of a flow path through said diffuser, said wall having a first portion defining one side of a flow passage having a first cross-sectional area, and a second portion defining one side of a flow passage having a larger, second cross-sectional area, said second portion being spaced apart from said first portion so as to define a bleed aperture intermediate said first and second portion, and wherein the leading edge of said second portion includes a third wall portion extending outwardly from said second portion.

4,431,375

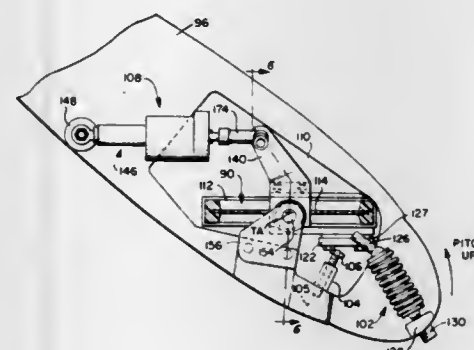
WIND-DRIVEN GENERATOR APPARATUS

J. Warne Carter, Jr., Burkburnett, and J. Warne Carter, Sr., Wichita Falls, both of Tex., assignors to Carter Wind Power, Wichita Falls, Tex.

Continuation-in-part of Ser. No. 37,774, May 10, 1979, Pat. No. 4,366,387. This application Jul. 30, 1980, Ser. No. 173,700
Int. Cl.³ F03D 7/04

U.S. Cl. 416—132 B

15 Claims



1. In wind-driven generator apparatus having a rotor blade adapted to change pitch from a given pitch configuration in response to an increase in rotational speed of the blade, said blade tending to return to the given configuration in response to a reduction in the rotational speed of the blade, the improvement comprising extendable and retractable damper means for damping the return of the blade to said given configuration, said damper means being fully retracted when said blade is in said given pitch configuration and constituting pitch stop means for arresting said blade in said given pitch configuration.

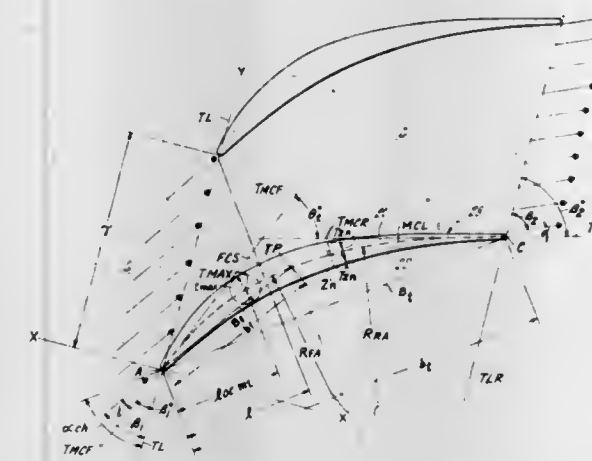
4,431,376

AIRFOIL SHAPE FOR ARRAYS OF AIRFOILS

Joseph H. Lubenstein, West Hartford; Brian A. Robideau, Glastonbury, and Alan K. Ross, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 27, 1980, Ser. No. 200,800
Int. Cl.³ B63H 1/26

U.S. Cl. 416—223 A

8 Claims



1. In a gas turbine engine of the type having an array of airfoils the array being formed of arrays of conical airfoil sections each array of conical airfoil sections having a plurality of airfoil sections spaced circumferentially from a circumferentially adjacent airfoil section a distance τ leaving a gap therebetween, said airfoil section having a leading edge, a trailing edge, a front camber angle (θ_f^*), a total camber angle θ_t^* , an inlet metal angle (β_1^*), an exit metal angle (β_2^*), a maximum thickness t_{max} , a length to the location of maximum thickness (loc mt), a cambered double circular arc meanline terminating at the leading edge and the trailing edge, and having a conical chord B_i extending between the leading edge and the trailing edge having a length b_i , an alpha chord angle (α_{ch}) between B_i and a tangent line TL passing through the leading edge, a front chord having a length b_f , and a gap to chord ratio (τ/b_i), the improvement which comprises:

a plurality of conical airfoil sections in each airfoil, each of said sections having

a convex surface;

a concave surface joined to the convex surface at the leading edge and the trailing edge;

wherein the ratio of the front camber angle θ_f^* to the total camber angle θ_t^* is related to both the alpha chord angle α_{ch} and the gap to chord ratio τ/b_i by a curve θ_f^*/θ_t^* ;

wherein the ratio of the length b_f of the front chord B_f to the length b_i of the conical B_i is related to both the alpha chord angle α_{ch} and the gap to chord ratio τ/b_i by a curve b_f/b_i ;

wherein the ratio between the length loc mt to the location of maximum thickness and the length b_i of the conical chord B_i is related to both the alpha chord angle α_{ch} and the gap to chord ratio τ/b_i by a loc mt/ b_i ;

wherein the concave surface of the airfoil section and the convex surface of the airfoil section are each spaced a distance T_{zn} from any point zn' perpendicular to the cambered meanline; and

wherein the distance T_{zn} is defined by a thickness distribution TD formed of two parts generated about the conical chord line B_i , each part at any point zn having a line spaced the distance T_{zn} from the conical chord line B_i as measured along a line Zn perpendicular to the conical chord line B_i passing through the point zn' and a point zn , the point zn being spaced a distance Lan from a point A on the leading edge along the conical chord line B_i , the line of the first part being TD_1 and the line of the second part being TD_2 such that

A. the line TD_1 of the first part

- A1. intersects the leading edge at the point A,
 - A2. is tangent at the point A to a circle passing through the point A the circle having a center on the conical chord line B_i , and a radius R_{ler} , the radius R_{ler} being equal to the quantity eighteen hundred and fifty-two thousandths (0.1852) multiplied by the maximum thickness t_{max} of the airfoil ($R_{ler}=0.1852.t_{max}$),
 - A3. is tangent to a circle having a center at the location of maximum thickness TMAX on B_i a distance loc mt from the point A ($Lan=loc\ mt$) and having a radius R_{imax} equal to one half of the maximum thickness t_{max} of the airfoil section ($R_{imax}=t_{max}/2$),
 - A4. is coincident with a line F at a point fe, the line F being tangent to the circle having a radius R_{ler} at a point fl, being tangent to the circle T_{max} and having a radius of curvature R_f , the point fe being spaced from point A as measured along the conical chord line B_i a distance equal to the quantity thirty-five thousandths multiplied by the distance b_i ($Lan=0.035.b_i$),
 - A5. terminates at a point fq, the point fq being the point of intersection between the line of the first part TD_1 and a line Q, the line Q being perpendicular to the conical chord line B_i at a point which is a distance b_i ($Lan=b_i$) from the leading edge, and
 - A6. has a radius of curvature R_f between the point fe and the point fq; and
- B. the line TD_2 of the second part
- B1. is tangent to the line of the first part at the point fq,
 - B2. extends from the point fq having a radius of curvature R_g ,
 - B3. is tangent at a point gt to a circle passing through a point C on the trailing edge the circle having a center on the conical chord line B_i and a radius R_{ter} , the radius R_{ter} being equal to the quantity TERG multiplied by four hundred and sixty-three thousandths and multiplied by the maximum thickness of the airfoil t_{max} ($R_{ter}=TERG.0.463.t_{max}$),
 - B4. is coincident with the circle having the radius R_{ter} between the point gt and the point C.

4,431,377

COMPRESSOR WITH PUMP RECYCLING FOR ISOTOPIC SEPARATION THROUGH GASEOUS SCATTERING

Joseph Plotkowiak, Carrieres sur Seine, and Herve A. Quillevre, Issy les Moulineaux, both of France, assignors to Hispano-Suiza, Saint Cloud and Societe Nationale d'Etude et de Construction Moteurs d'Aviation SNECMA, Paris, both of, France

Filed Mar. 5, 1981, Ser. No. 240,936

Claims priority, application France, Mar. 6, 1980, 80 04998
Int. Cl.³ F04B 39/10

U.S. Cl. 417—89

4 Claims

1. A compressor having a scatterer to deliver in said scatterer an outlet flow at a given pressure from a principal flow at a first pressure and a secondary flow at a second pressure, said second pressure being greater than said first pressure, said outlet pressure being greater than said first and second pressures, said compressor comprising:

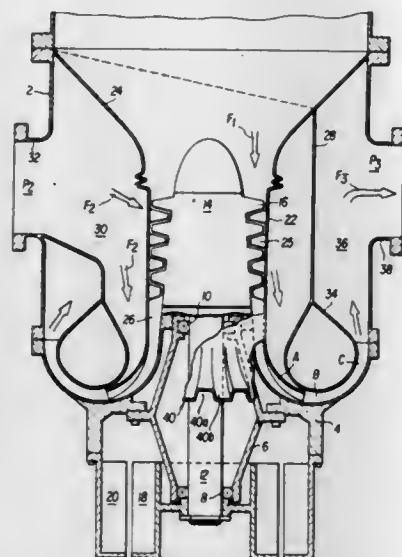
a principal flow inlet;

a plurality of mobile compression devices for raising the pressure of the principal flow to a value greater than said outlet pressure and to deliver flow to said scatterer of the compressor;

a plurality of static devices forming an induction nozzle housed in said scatterer;

a plurality of devices for introducing said secondary flow in said devices forming said induction nozzle, said principal flow upon exiting from the mobile compression devices constituting the drive flow of the secondary flow; and
a rotor having an outlet so as to form the mobile compres-

sion device and a corrugated plate positioned at an inlet portion of the scatterer defining at least one first passage



fed by the principal flow upon exiting from the rotor and at least one second passage fed by the secondary flow.

4,431,378

SWASH PLATE TYPE COMPRESSOR

Mitsubishi Hattori, Kenji Takenaka, and Hayato Ikeda, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

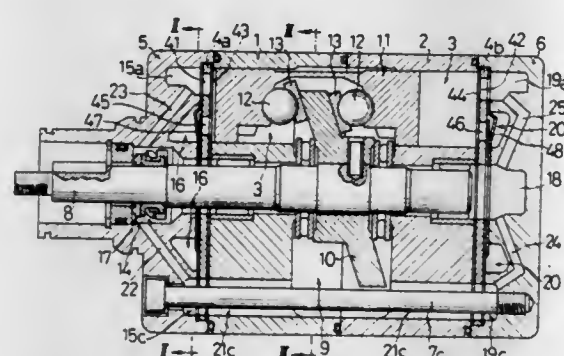
Continuation of Ser. No. 118,636, Feb. 4, 1980, abandoned. This application May 24, 1982, Ser. No. 381,503

Claims priority, application Japan, Feb. 16, 1979, 54-17432

Int. Cl.³ F04B 1/16, 1/18

U.S. Cl. 417-269

8 Claims



1. A swash plate type compressor comprising:

- a pair of horizontal axially aligned cylinder blocks forming a combined block having at least one inlet port for introducing a refrigerant gas containing lubricating oil from an outer refrigeration cycle into said combined block and at least one outlet port for discharging a compressed gas into said outer refrigeration cycle;
- a swash plate chamber formed in the axially central portion of said combined block;
- a plurality of cylinder bores formed in said combined block in the axial direction thereof;
- a plurality of pistons, one of said plurality of pistons being slidably inserted within a respective one of said plurality of cylinder bores;
- a drive shaft disposed through said swash plate chamber and rotatably supported therein;
- a swash plate disposed within said swash plate chamber and fixed to said drive shaft so as to be rotated therewith, said swash plate being operatively connected to said pistons so as to reciprocate said pistons within said cylinder bores as said swash plate rotates;
- a pair of cylindrical housings respectively fixed to opposite ends of said combined block, one of said pair of cylindrical housings having a shaft seal chamber in the axial portion

thereof for accommodating a shaft seal member which is disposed around said drive shaft;

- at least one suction chamber and at least one exhaust chamber concentrically formed in each of said pair of cylindrical housings, said suction chamber and said exhaust chamber being communicated with each of said cylinder bores through valve means;
- at least one sub-suction chamber formed in said cylindrical housing having said shaft seal chamber so as to be separated from said suction chamber;
- a plurality of suction passages formed in said combined block so as to extend axially thereof between and adjacent said cylinder bores,
- said suction passages being communicated with said swash plate chamber, at least one of said suction passages being positioned in the bottom portion of said combined block and connected to said at least one sub-suction chamber while the other ones of said suction passages are directly connected with said at least one sub-suction chamber; and
- a plurality of channels formed in said cylindrical housing having said shaft seal chamber, said channels connecting said at least one sub-suction chamber with said at least one suction chamber through said shaft seal chamber.

4,431,379

VALVE PISTON FOR CONSTANT DISPLACEMENT PUMP

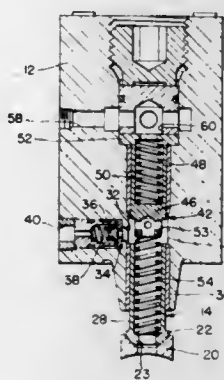
John E. Langdon, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 21, 1981, Ser. No. 332,438

Int. Cl.³ F04B 49/00

U.S. Cl. 417-274

1 Claim



1. A variable volume pump for satisfying the fluid flow requirements of a hydraulic system while limiting fluid flow when the full volume of fluid displacement from the pump is not required by the hydraulic system, said pump including at least one reciprocable pumping piston, said pumping piston including a tube portion which is movable within a pumping chamber, means for filling the pumping piston tube portion with fluid during a suction stroke by said pumping piston, said pumping piston being slidably mounted by a free riding slipper member on a rotatable substantially hollow crankpin having an aperture, said pumping piston including an enlarged spherical head with an axial drilling therethrough, and fluid being fed through said aperture and axial drilling into said pumping piston for filling said piston tube portion, means for discharging the fluid filling said pumping piston tube portion through a discharge port to said hydraulic system when the fluid pressure in said hydraulic system is less than the fluid pressure in said pumping piston tube portion,

a reciprocable valve piston mounted within said pumping chamber in spaced apart aligned opposing relationship to said pumping piston, said valve piston including a tube portion which is normally seated against a cover when the pressure level in said hydraulic system is below that necessary to reduce fluid flow, a spring mounted within said valve piston tube portion in abutting engagement against said cover for biasing said valve piston towards said pumping piston, spring means mounted within said pump-

ing piston tube portion and said spring means engaging one end of said valve piston, means for communicating compensating fluid pressure through an opening in said cover and into said valve piston tube portion for unseating said valve piston when the pressure in said hydraulic system reaches a predetermined level, and said valve piston being movable towards said pumping piston for engaging and following said pumping piston during its suction stroke when the pressure in said hydraulic system reaches said predetermined level whereby said valve piston limits or blocks fluid flow out of said discharge port.

4,431,380

SCROLL COMPRESSOR WITH CONTROLLED SUCTION UNLOADING USING COUPLING MEANS

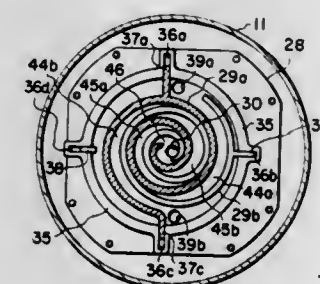
Robert E. Utter, Genoa, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jun. 7, 1982, Ser. No. 385,618

Int. Cl.³ F04B 49/02, 39/08; F04C 18/02, 29/08

U.S. Cl. 417-286

10 Claims



1. In a positive displacement fluid compressor of the scroll type, including two plates with intermeshed wrap elements of similar spiral shape about an axis, means both for maintaining relative orbital motion of the two plates in fixed angular relationship, and for separating two or more fluid inlet chambers disposed between the plates, to prevent fluid communication between the inlet chambers comprising

- a coupling ring slidably disposed between the two plates in sealing relationship therewith, said coupling ring including a plurality of radially oriented slots, extending fully between the plates and generally aligned at right angles to each other; and
- a plurality of segments protruding outward from the radially outer surface of the wrap elements, each segment aligned with one of the slots in the coupling ring and slidably engaging said slot in sealing relationship, said segments sliding back and forth within the slots to constrain the plates to orbit relative to each other in a fixed angular relationship, said segments being further operative to sealingly separate the fluid inlet chambers from each other.

4,431,381

VARIABLE VOLUME HYDRAULIC PUMP

Eugene L. Falendysz, and Eldon M. Brumbaugh, both of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Nov. 27, 1981, Ser. No. 325,527

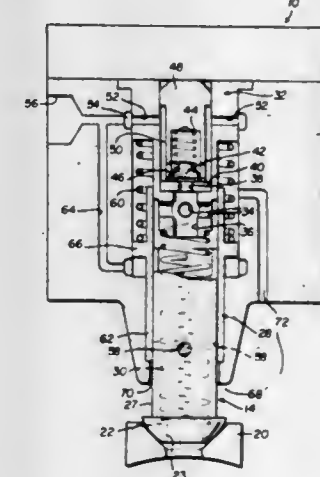
Int. Cl.³ F04B 47/08, 7/04

U.S. Cl. 417-289

1 Claim

1. A variable volume pump for satisfying the fluid flow requirements of a hydraulic system while absorbing excess fluid volume when the full volume of fluid displacement from the pump is not required by the hydraulic system, said pump including at least one piston vertically movable within a housing and said piston including a tube portion, said piston being slidably mounted by a free riding slipper member on a rotatable substantially hollow crankpin having an aperture, said piston including an enlarged spherical head with an axial drilling therethrough, and fluid being fed through said aperture and

axial drilling into said piston for filling said piston tube portion, and fluid communication between said aperture and piston tube portion being broken during rotation of said crankpin and corresponding vertical movement of said piston, said piston tube portion being movable within a metering sleeve, said tube portion having a plurality of metering ports around its periphery, said metering sleeve being preloaded by spring means towards a position where a throttling land on said metering sleeve covers said metering ports, said metering sleeve being slidably mounted on a support member having an opening therethrough, a return spring mounted within said piston tube portion in abutting engagement against one end of said support member for holding said piston in position on said crankpin, the fluid filling said piston tube portion being delivered into said support member opening and directed against a check valve, said check valve being spring biased against a seat, said check valve being forced off said seat when the fluid pressure



4,431,382

APPARATUS FOR OIL BURNERS

Hans Edman, Vällingby, and Arne Lönnebring, Älvsjö, both of Sweden, assignors to IMO AB, Stockholm, Sweden

Filed Dec. 14, 1981, Ser. No. 330,410

Claims priority, application Sweden, Jan. 21, 1981, 8100336

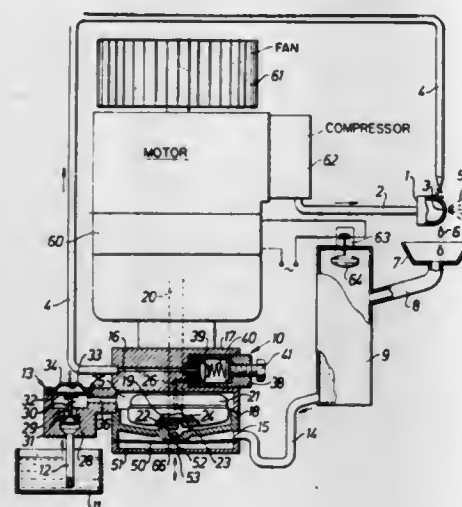
Int. Cl.³ F04B 49/00

U.S. Cl. 417-302

3 Claims

1. An oil burner pumping station comprising:
a collection tank for collecting excess oil delivered to an oil burner;
a main supply tank;
pumping means having an outlet for delivering oil to the burner and having a first inlet connected to the main supply tank and a second inlet, communicating with the first inlet, and connected to the collection tank;
first valve means connected between the first inlet and the

supply tank for supplying oil therebetween when the pressure at the first inlet drops below a preselected level; second valve means connected between the second inlet and



the collection tank for transferring excess oil therebetween when the head of oil in the collection tank exceeds a preselected level, independent of oil supply occurring from the main supply tank.

4,431,383

MOTOR COMPRESSOR FOR REFRIGERATORS

Kurt Boehmler, Bamberg; Lothar Benzing, Giengen; Andreas Schneider, Nuremberg, and Gerhard Rettinger, Bolheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 44,552, Jun. 1, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 298,024

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825129

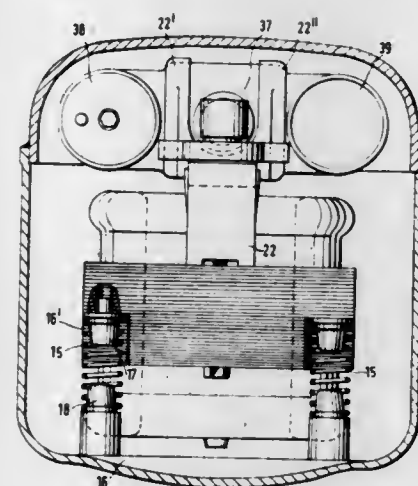
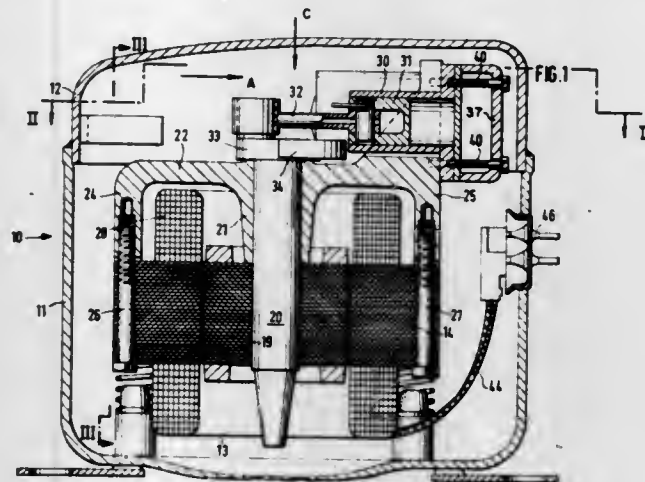
Int. Cl.³ F04B 39/00

U.S. Cl. 417—312

15 Claims

1. A motor-drive compressor having an electric motor having a rotor, a stator, a winding and a shaft rotatable about an axis, the compressor comprising a cylinder-and-piston unit having a cylinder, and a piston arranged to be driven from the rotatable shaft of the electric motor and movable in said cylinder; means forming sound-damping chambers which communicate with said cylinder of said cylinder-and-piston unit; a bearing element arranged to be mounted on the stator of the electric motor and to support the rotatable shaft of the electric motor, said cylinder-and-piston unit and said sound-damping chambers, said bearing element having a bridge-like portion with a dimension, in a first direction transverse to said axis, which is smaller than that of the winding of the electric motor so as to cover only a part of the winding in said first transverse direction, said bearing element having a central portion connected with said bridge-like portion in the region of the axis and forming a bearing for the shaft of the electric motor, said bearing element also having two leg portions connected with said bridge-like portion and extending in a direction parallel to said axis, said leg portions being spaced from one another in a second direction which is transverse to said first transverse direction and to said axis and located at opposite sides of said central portion in spaced relationship therewith, said leg por-

tion being arranged to be supported on and connected with the stator of the electric motor; and means for connecting said

4,431,384
FOOD PUMP

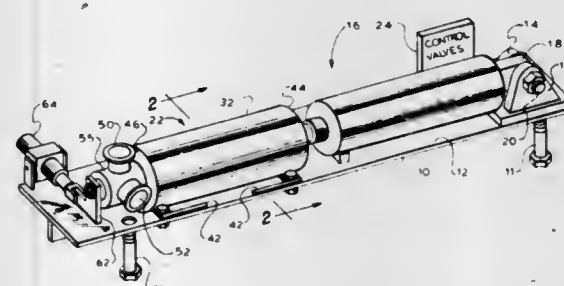
Glenn E. Walser, Lubbock, Tex., assignor to Automated Food Systems, Inc., Duncanville, Tex.

Filed Jun. 1, 1982, Ser. No. 383,482

Int. Cl.³ F04B 49/00

U.S. Cl. 417—360

10 Claims



1. The process of pumping a viscous edible product involving

- a pump cylinder having two ends,
 - a pump piston in the cylinder,
 - a piston rod on the piston,
 - a valve on one end of the cylinder, and
 - motor means on the rod at the other end of the cylinder for reciprocating the rod in the cylinder;
- wherein the improved method comprises;
- unclamping the cylinder from a base plate
 - pivoting the motor means relative to the base plate so that

the piston rod is moved in a direction away from the base plate, thus

- moving the cylinder away from the base plate, then
- pulling the cylinder from the pump piston, then
- thoroughly cleaning the pump piston and cylinder while disassembled, thereafter
- placing the pump cylinder again over the pump piston,
- rotating the motor means so that the cylinder is against the base plate, and
- clamping the cylinder to the base plate.

4,431,385

SOLAR DISPLACEMENT PUMP

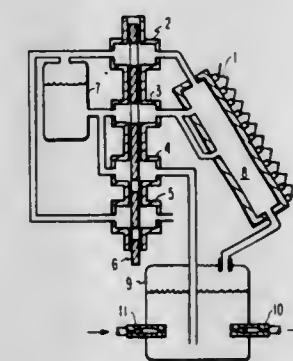
Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526

Filed Nov. 16, 1981, Ser. No. 322,027

Int. Cl.³ F04B 49/00, 19/24

U.S. Cl. 417—379

12 Claims



1. A thermal energy, steam driven water pump comprising: an alternating steam pressurization and vacuum production means comprising a cavity of multiple chambers of which one, first chamber is a steam generation chamber and is capable of being alternately first strongly heated and then cooled in a repeated sequence such that during the heated part of the sequence the heated chamber is capable of receiving by means of valving a small flow of water to be converted to steam by the heat of the chamber, and of which multiple chambers of the cavity there is a second chamber which is a water impeller chamber in fluid flow communication with said first chamber by interconnecting ducting capable of transmitting alternately pressurized steam from the first to the second chamber and then a vacuum from the second to the first chamber, with said second chamber having inlet and exit check valves and being capable of having water impelled from it by pressurized steam from said first chamber and also being capable of producing a vacuum by steam condensation during a second period and of receiving water during that second part of the sequence and, an internal water delivery means in the form of a water column capable of receiving periodic pressurization from the steam production and vacuum production means through ducting attached to valving capable of periodically admitting pressurized water from the water column to said steam generating chamber and,

an internal water delivery control means capable of sequencing the opening and closing of the valving of the internal water delivery means that is used for steam generating, said internal water delivery control means being capable of opening valving for water flow to the steam generation chamber when high steam generation temperature is reached and of closing off valving and water flow when temperature declines in the steam generation chamber and,

a heating means capable of strongly heating said steam pressurization means.

4,431,386

CONCRETE-PUMP ASSEMBLY

Jürgen O. Fehler, Waldbronn, and Rolf Griesbach, Dortmund, both of Fed. Rep. of Germany, assignors to Elba-Werk Maschinen-Gesellschaft mbH & Co., Ettlingen, Fed. Rep. of Germany

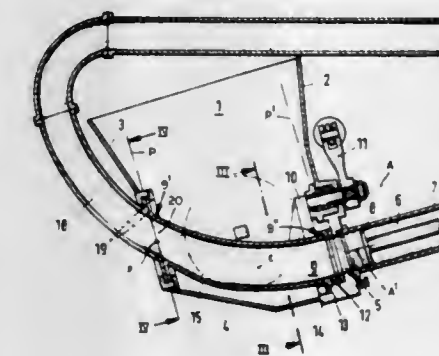
Filed Dec. 2, 1981, Ser. No. 326,893

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045885; May 13, 1981, 3118937

Int. Cl.³ F04B 15/02

U.S. Cl. 417—517

10 Claims



1. A pump assembly for concrete-like masses, said assembly comprising:

- a hopper adapted to hold said mass and having a front wall formed with a front port centered on a front axis perpendicular to said front wall at said front port and a rear wall formed with two rear ports centered on respective rear axes perpendicular to said rear wall at said rear ports and generally parallel to said front axis;
- means including respective piston and cylinder units secured to said rear wall outside said hopper over said rear ports for drawing portions of said mass out of said hopper and expelling the drawn-out portions back into said hopper through the respective rear ports;
- an outlet conduit connected to said front wall outside said hopper over said front port;
- a nonstraight distributor pipe in said hopper having a front end engaged over and aligned with said front port, a rear end engageable over and alignable with either of said rear ports, and a nonstraight centerline crossing said front axis at said front port and extending parallel to said rear axes at said rear wall; and
- means for pivoting said distributor pipe about said front axis between a position with said rear end aligned with and engaged over one of said rear ports and the other rear port exposed in said hopper and another position with said rear end aligned with and engaged over said other rear port and said one rear port exposed in said hopper.

4,431,387

HERMETIC REFRIGERATION ROTARY MOTOR-COMPRESSOR

Marek J. Lassota, 8657 W. Foster Ave., Chicago, Ill. 60656

Continuation-in-part of Ser. No. 93,599, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 821,729, Aug. 4, 1977, Pat. No. 4,174,195, which is a continuation-in-part of Ser. No. 692,199, Jun. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 659,430, Feb. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,159, Sep. 4, 1975, Pat. No. 4,010,675, which is a continuation of Ser. No. 523,958, Nov. 14, 1974, abandoned. This application Nov. 6, 1981, Ser. No. 318,876

The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.

Int. Cl.³ F01C 1/24, 21/12; F04C 17/16; F16J 1/24

U.S. Cl. 418—1

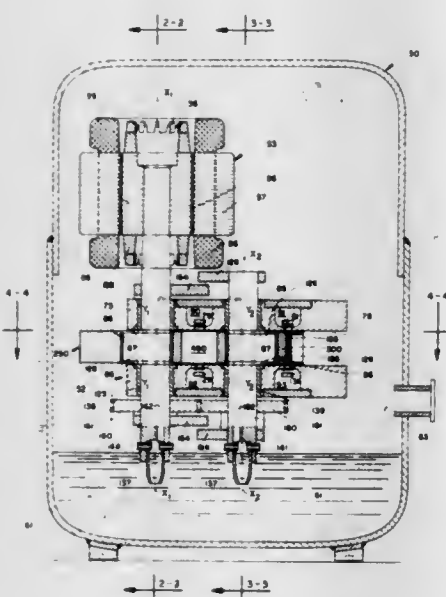
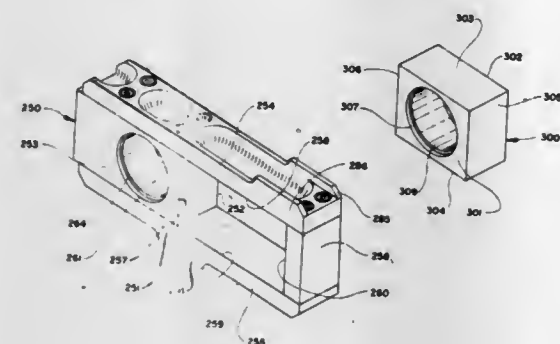
16 Claims

1. A hermetic refrigeration rotary motor-compressor comprising:

- a multiple compression chamber compressor unit opera-

tively positioned inside a hermetically sealed pressure tight housing can comprising:
one or more two compression chamber modules, each comprising:

- A. a cylinder-piston comprising a body, two spaced walls extending from said body and having opposing parallel surfaces, and a wall interconnecting said two spaced walls at their ends remote from said body to form an opening in said cylinder-piston, said cylinder-piston further having two side faces and bearing means located in said body;
- B. a piston positioned within said opening of said cylinder-piston and having spaced faces adjoining said opposing parallel surfaces of said spaced walls of said cylinder-piston, said piston further having two spaced side faces and bearing means in said piston;
- C. two fixed spaced housing walls adjoining said side faces of said cylinder-piston and said spaced side faces of said piston;



D. said cylinder-piston and said piston forming movable surfaces, and said fixed spaced housing walls forming stationary surfaces of two compression chambers located between said body of said cylinder-piston and said piston and between said piston and said wall interconnecting said two spaced walls of said cylinder-piston and varying in volumes upon coordinated planetary rotations in opposite directions of said cylinder-piston and said piston;

intake means comprising intake ports leading to said compression chambers;
discharge means leading from said compression chambers;
a rotatable cylinder-piston shaft comprising an eccentric portion journaled in said body of each said cylinder-piston;
a rotatable piston shaft comprising an eccentric portion journaled in each said piston;
gearing means interconnecting said cylinder-piston shaft and said piston shaft so said shafts follow coordinated rotations in opposite directions and each said cylinder-piston

and each said piston follow coordinated planetary rotations in opposite directions with and around said eccentric portions of said shafts;
balancing means;
lubricating means;
a hermetically sealed pressure tight housing can;
support means supporting said compressor unit in operative position inside said hermetically sealed pressure tight housing can; and
prime mover means for driving said multiple compression chamber compressor unit.

4,431,388

CONTROLLED SUCTION UNLOADING IN A SCROLL COMPRESSOR

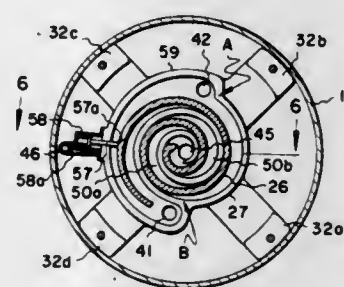
David H. Eber, La Crosse, and Robert E. Utter, Genoa, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Mar. 5, 1982, Ser. No. 354,989

Int. Cl.³ F04C 18/02, 29/08; F04B 49/02

U.S. Cl. 418—55

20 Claims



1. In a fluid compressor of the positive fluid displacement scroll type, apparatus for modulating the compressor's capacity comprising

- a. two generally parallel plates, the facing surface of each having an involute wrap element attached thereon in fixed angular, intermeshed relationship with the wrap element of the other, said wrap elements each defining a radially inner and a radially outer flank surface of similar spiral shape about an axis, contacting flank surfaces of the intermeshed wrap elements and plates defining pockets of fluid as said plates are caused to move relative to each other, one of the wrap elements being extended to enclose the radially outer end of the other wrap element in circumvallate, sealing relationship;
- b. a first and a second fluid inlet, each in fluid communication with the volume enclosed by said one wrap element and disposed adjacent the periphery thereof;
- c. a compliant sealing member operative to interrupt fluid communication between said first and second fluid inlets along the inner flank surface of the extended portion of said one wrap element; and
- d. a first valve operatively connected to control fluid flow into one of said first and second fluid inlets to modulate the capacity of the compressor.

4,431,389

POWER TRANSMISSION

Harry T. Johnson, Troy, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Jun. 22, 1981, Ser. No. 275,948

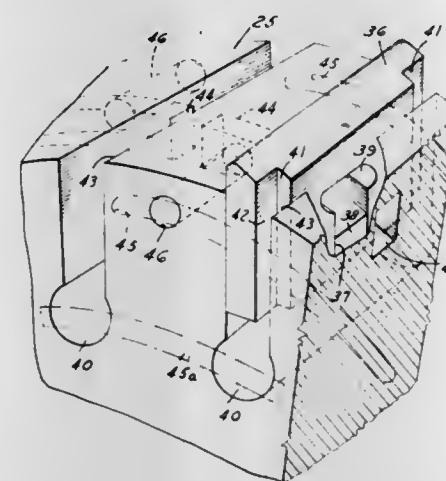
Int. Cl.³ F04C 15/00

U.S. Cl. 418—82

10 Claims

1. A fluid pressure energy translating device of the sliding vane type comprising
- a cam body including an internal contour,
 - a rotor, a plurality of vanes rotatable with said rotor and slidable relative thereto in slots in the rotor, one end of each vane engaging said internal contour, said rotor and internal contour cooperating to define one or more pumping chambers between the periphery of the rotor and the

cam contour through which the vanes pass carrying fluid from an inlet port to an outlet port,
at least one cheek plate associated with said body and rotor and having a delivery port opening,
means forming two pressure chambers for each vane, each vane having two surfaces, one in each chamber, both being effective under pressure in said respective chambers to urge the vanes into engagement with the internal contour,
a generally annular internal feed passage formed entirely within said rotor communicating with one set of said pressure chambers,
each of said vane having inner and outer ends and sides, the inner end of each said vane defining the surface of one of said pressure chambers,
a radial passage along at least one side of each said vane extending from the inner to the outer ends thereof, said passage being defined by surfaces of the vane, rotor and a cheek plate,



an arcuate valving groove formed in a cheek plate in an outlet fall zone or high pressure zone alongside said rotor and in communication with said radial passage and isolated from said delivery port opening,
axial openings in said rotor extending from a side of said rotor to said annular passage and adapted to register with said arcuate valving groove as the rotor rotates relative to said cam body such that as the rotor rotates, said radial passages of said vanes communicate through said arcuate valving groove with said axial openings, and, in turn, said annular feed passage, and as said vanes are moved radially inward in said outlet fall zone, said vanes displace fluid in the chamber associated with the inner end of each said vane through the restriction provided by the associated radial passage transmitting fluid at an elevated fluid pressure to said one set of pressure chambers through said annular feed passage, said axial openings associated with said groove and said annular internal feed passage.

4,431,390

CONDENSATION CONTROL APPARATUS FOR OIL-FLOODED COMPRESSORS

John E. Hart, Mooreville, N.C., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 23, 1981, Ser. No. 314,154

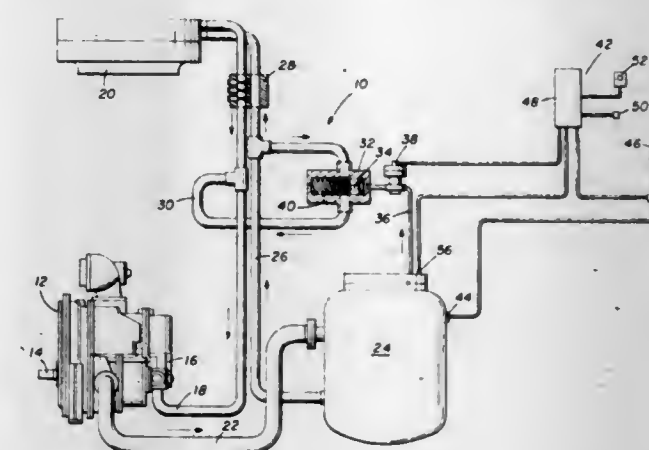
Int. Cl.³ F04C 29/02, 29/04

U.S. Cl. 418—84

2 Claims

1. In an oil-flooded compressor system including a compressor, an oil pump, a receiver, a heat exchanger and a compressor discharge conduit extending from the compressor to receiver, condensation control apparatus comprising:
- a first oil conduit extending from said compressor to said heat exchanger;
 - a second oil conduit extending from said receiver to said heat exchanger;

a by-pass conduit extending from said first oil conduit to said second oil conduit;
a normally closed valve located in said by-pass conduit for permitting the flow of oil therethrough when open;
temperature transducer means operably connected in the system for transmitting a signal indicative of the system temperature;
valve control means connected with said valve and with said transducer means for receiving said signal, said control means including means for determining the saturation temperature in said system, producing a signal indicative of said saturation temperature and comparing said saturation temperature signal with said system temperature signal, and transmitting a control signal to said valve when



said saturation temperature is higher than the temperature in said system, said control signal causing said valve to open permitting oil flow through said by-pass conduit, raising the temperature of said oil to elevate the temperature in said system above said saturation temperature and thereby preventing condensation in the compressor system;

said means for determining the saturation temperature includes a relative humidity transducer for transmitting a signal indicative of ambient relative humidity to said control means; and,
said means for determining the saturation temperature also includes a pressure transducer connected to said system for transmitting a signal indicative of the system pressure to said control means.

4,431,391

ROTARY PUMP

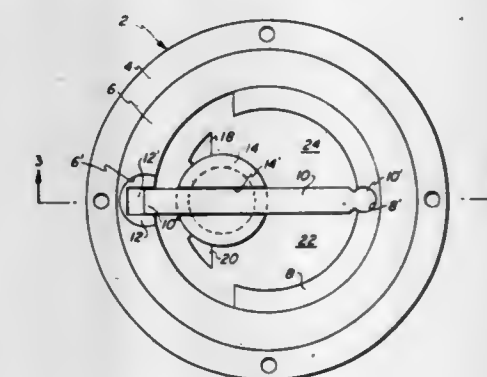
David J. Wacksman, Barkley Dr. West Apt. A, West Palm Beach, Fla. 33406

Filed Jun. 21, 1982, Ser. No. 390,690

Int. Cl.³ F04C 2/00

U.S. Cl. 418—173

5 Claims



1. A rotary fluid pump comprising:
a case, said case having a planar, generally circular side

portion and a circular ring portion around the perimeter on one side of said circular side portion;
 a cover, said cover matably mountable onto said circular ring portion of said case;
 an outer circular ring matably to the inner surface of said circular ring portion;
 said outer ring having a first pocket, said first pocket opening inwardly toward the center of said outer ring;
 said outer ring sized for rotation within said case;
 an inner circular ring having a segment removed;
 said inner ring having a second pocket, said second pocket opening inwardly toward the center of said inner ring;
 said inner ring sized for relative rotation within said outer ring;
 said case, said outer ring and said inner ring having a common concentric axis;
 an elongated blade having a first end and a second end;
 said first end of said blade pivotally connected to said first pocket in said outer ring;
 said second end of said blade pivotally connected to said second pocket in said inner ring;
 said pivotal connection between said blade first end and said first pocket including means for allowing relative linear movement between said blade first end and said first pocket;
 means for intaking fluid into said pump;
 means for exhausting fluid from said pump;
 drive means slidably connected to said blade;
 said drive means for rotating said blade within the plane of said case;
 the rotational axis of said drive means perpendicular to said plane of said case;
 said drive means axis positioned from said concentric axis.

4,431,392

APPARATUS FOR EXTRUDING CONCRETE

Volker Kretzschmann, Gaggenau, and Peter Traub, Gernsbach, both of Fed. Rep. of Germany, assignors to Roth-Technick GmbH, Gaggenau, Fed. Rep. of Germany

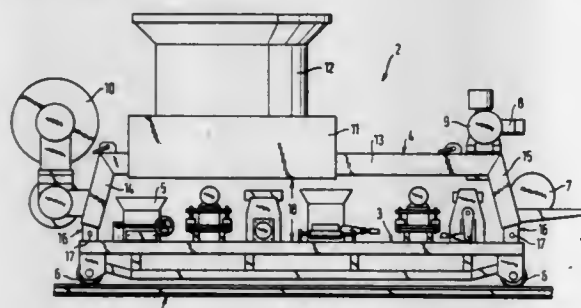
Filed Jun. 28, 1982, Ser. No. 392,799

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1981, 3126951

Int. Cl.³ B28B 1/08

U.S. Cl. 425-64

7 Claims



1. An apparatus for extruding concrete upon a work surface which comprises:

- a first frame, including translation means adapted to be translationally moved over the work surface, said frame having connected thereto means for feeding and condensing concrete, means for shaping the extruded concrete upon the work surface, and support means; and
- a second frame adapted to be positioned above said first frame by resting upon said support means of said first frame, having connected thereto a motor, hydraulically powered cables, and a drum for the electrical supply cables; and
- a hopper connected to said second frame.

4,431,393 METHOD AND MACHINE FOR MOLDING ELONGATED WORKPIECES

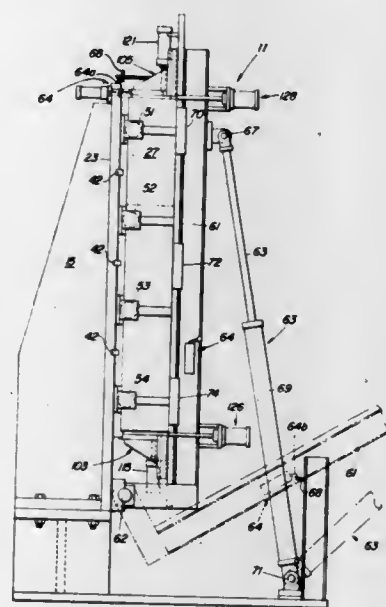
Patrick M. Luchsinger, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 22, 1981, Ser. No. 304,510

Int. Cl.³ B29C 1/00

U.S. Cl. 425-129 R

9 Claims



1. A machine for molding an elongated workpiece comprising:

- a first elongated generally vertically oriented quadrant,
- a second elongated, generally vertically oriented quadrant movable toward and away from said first quadrant between a closed and an open position, respectively;
- a third elongated generally vertically oriented quadrant opposed to said second quadrant and movable toward and away from said first quadrant between a closed and an open position, respectively;
- a fourth elongated quadrant pivotally mounted at one end relative to said first quadrant and movable toward and away from said first quadrant between a generally vertically oriented closed position and an inclined open position for receiving a workpiece thereon for loading into and unloading from a mold cavity, respectively, said first, second, third, and fourth quadrants together defining said mold cavity for said workpiece when said second, third and fourth quadrants are in said closed positions; and
- locking means fixed to said second and third quadrants for locking said fourth quadrant in a closed position when said second and third quadrants are in a closed position.

4,431,394

MARSHMALLOW MOLD

Lee W. Collett, and Janet Collett, both of 23608 NE, 10th Ave., Ridgefield, Wash. 98642

Filed Jul. 6, 1981, Ser. No. 280,867

Int. Cl.³ B29C 1/00; A23G 3/12

U.S. Cl. 425-177

16 Claims



1. Apparatus for use in making decorative marshmallows, comprising:

- (a) powdered material prepared by packing it to a suitable depth in a pan;
- (b) a body forming a positive male punch mold having an exterior bottom surface of decorative shape and operable to press into the powdered material to form a substantially smooth impression therein;
- (c) handle means attached to and upstanding from the body; and
- (d) a lip extending outwardly around the upper edge of the body for packing the powdered material around the edge of the formed impression, the lip extending to a distance spaced apart from the edge of the pan.

4,431,395

GINGERBREAD HOUSE APPARATUS

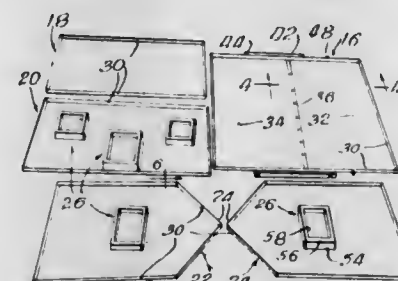
George B. Babos, 264 Azure Rd., Venice, Fla. 33595

Filed Apr. 7, 1980, Ser. No. 137,598

Int. Cl.³ A21C 11/10

U.S. Cl. 425-298

3 Claims



1. Apparatus for making a gingerbread house comprising, a group of individual molds each including a bottom element and a surrounding upturned rim, the molds being adapted to have dough placed therein, and themselves with the dough therein to be placed in an oven for baking the dough, the dough thus baked forming panels in the respective molds, and the molds being so relatively dimensioned and proportioned that the panels are consequently correspondingly dimensioned and proportioned to form respective bounding surfaces of a house, the molds including one for each of such bounding surfaces, the panels being capable of being fitted together to form such house, one of the molds being a roof mold, and including a pair of rigidly connected parts disposed at an angle to each other corresponding to a gable and the upturned rim being deeper at the ridge of the gable and diminishing toward the edges remote from the ridge,
- a plurality of cookie cutters each having a surrounding skirt with a lower cutting edge and surrounding an open space, and each cookie cutter having a generally open top, the cookie cutters being capable of being inserted into the dough so placed in the molds with the cutting edges penetrating therinto and therethrough to the bottom element of the mold, and enabling baking of those portions of the dough within the cookie cutters, and upon removal of the cookie cutters pursuant to baking, the pieces formed by the dough within the cookie cutters are capable of being removed by the removal of the cookie cutters, leaving holes in the panels formed by the molds, the holes forming windows and doors in the house,
- the cookie cutters being separate and apart from the molds and independent in number thereof from the molds, whereby they can be placed at any selected locations within the outline confines of the molds, and form windows and doors in correspondingly selected locations in the bounding surfaces of the house,
- the pieces formed in the cookie cutters being of such size as to form chimney construction.

4,431,396

FORTUNE COOKIE MACHINE

Yongsik Lee, 162 Winter St., Weston, Mass. 02193

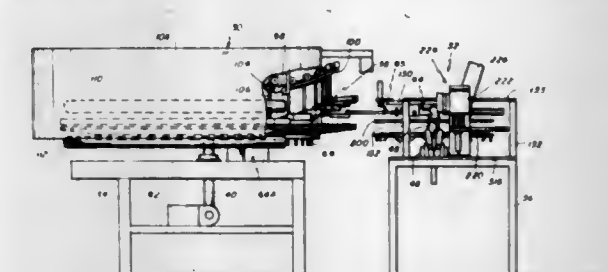
Division of Ser. No. 141,371, Apr. 18, 1980, Pat. No. 4,339,933.

This application Jul. 6, 1982, Ser. No. 395,733

Int. Cl.³ B29D 3/00; B29C 17/02

U.S. Cl. 425-383

16 Claims



1. A machine for folding cookie blanks comprising: a platform and a plate for receiving the blanks mounted on the platform, means including a folding blade mounted above the plate, a slot in the plate aligned with the blade, and means for moving the blade translationally and pivotally from a first position above the slot to a second position through the slot for causing the cookie blank to pass through the slot and fold upwardly on the sides of the blade.

4,431,397

APPARATUS FOR PRODUCING MOLDED PLASTIC ARTICLES

Robert P. Fried, Hollow Rd., Staatsburg, N.Y. 12580; Bernard Rottman, Hyde Park Estates, Hyde Park, N.Y. 12538, and Thomas W. Stark, Jr., Schultz Hill Rd., Rhinebeck, N.Y. 12572

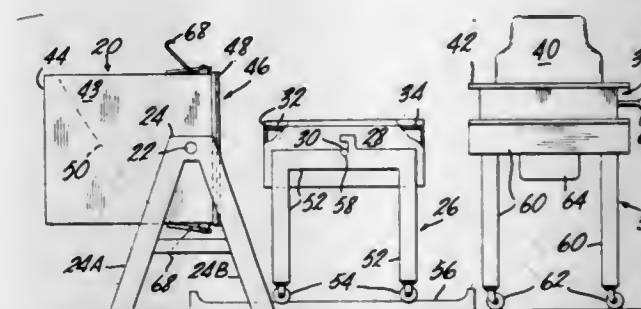
Filed Oct. 23, 1978, Ser. No. 953,707

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ A01J 25/12

U.S. Cl. 425-384

16 Claims



1. Apparatus for use in forming molded articles from particulate plastic material by (a) surrounding a hollow, heat-conductive male mold with particulate plastic material;
- (b) applying heat to the interior of the mold until the temperature of the outer surface of the mold is above the fusion temperature and below the melting temperature of the particulate plastic material;
- (c) applying heat to the interior of the mold so as to maintain the temperature of the outer surface of the mold above the fusion temperature of the particulate plastic material, thereby to form a molded article on the outer surface of the mold;
- (d) removing loose particulate material from the molded article;
- (e) applying heat to the interior of the mold so as to cause the outer surface of the molded article to become smoother;
- (f) cooling the molded article to substantially room temperature or until it become fairly solid; and
- (g) removing the molded article from the mold, said apparatus comprising: an open container formed by side walls

and a rear wall and having a front opening including face edges whereby particulate material may be introduced into and removed from said container through said front opening,
 pivot means attached to opposite sides of said container for rotatably holding said container;
 drive means for rotating said container about said pivot means;
 means for clamping both a male mold and a means for removably heating said mold to the front opening of said container, whereby said male mold and said means for heating said mold are adapted to rotate with said container,
 means for imparting vibrational energy to particulate material within said container to cause said particulate material to surround said mold, and
 means for removing a formed molded article from said male mold.

4,431,398

APPARATUS FOR ADJUSTING THE TEMPERATURE OF A PARISON FOR STRETCH BLOW MOLDING

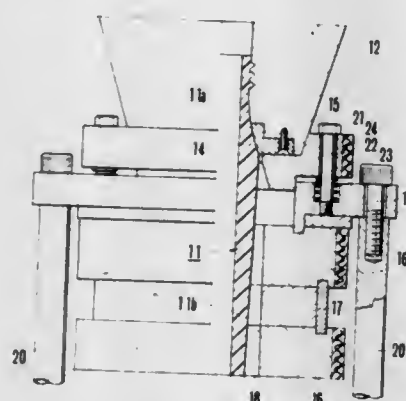
Katashi Aoki, 6037 Ohazaminamijo, Sakakimachi, Hanishinagun, Nagano-ken, Japan

Continuation of Ser. No. 214,453, Dec. 8, 1980, abandoned. This application Aug. 30, 1982, Ser. No. 412,393

Int. Cl.³ B29C 25/00, 17/07

U.S. Cl. 425-446

6 Claims



1. An apparatus for adjusting the temperature of a parison for stretch blow molding, which apparatus is used in the case wherein an injection molded synthetic resin parison is adjusted in temperature while holding the parison neck by a neck mold for molding the parison neck, after which the parison is stretched and expanded to form a container such as a bottle, the apparatus comprising a plurality of stacked heating and heat-insulating elements arranged alternately with a heating element at the top, said elements containing aligned holes which collectively define a vertically-elongate, parison-receiving hole, a frame member mounted on the top one of the heating elements, said frame member containing an opening concentric with the parison-receiving hole, support pins fixed to the frame member with their axis perpendicular to the frame member, spring members positioned about the support pins with their lower ends resting on the frame member and their upper ends extending above the frame member, an annular parison neck mold heating body defining an opening concentric with the opening in the frame member supported by the support pins on the upper ends of the spring members for vertical movement relative to the frame member and an adjustable heating element positioned about and in heat-transmitting engagement with the annular parison neck mold heating member.

4,431,399 CONTINUOUS INJECTION MOLDING APPARATUS

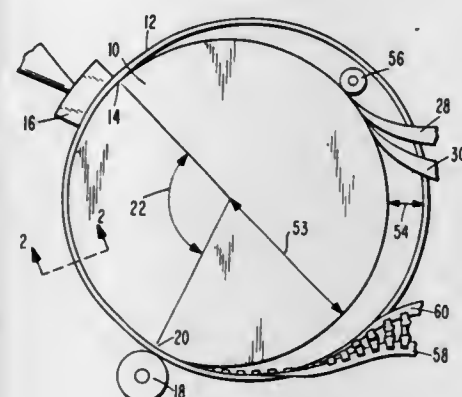
George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Division of Ser. No. 107,759, Dec. 27, 1979, Pat. No. 4,268,474, which is a continuation of Ser. No. 826,542, Aug. 22, 1977, abandoned. This application Sep. 26, 1980, Ser. No. 191,479

Int. Cl.³ B29C 1/00; B29F 1/022

U.S. Cl. 425-545

3 Claims



1. A molding apparatus comprising a cylindrical molding wheel rotatable about its axis, a continuous flexible metal band surrounding the molding wheel and rotatable therewith, said flexible metal band continuously engaging the periphery of the molding wheel only through an arcuate portion of the circumference of the molding wheel from an engaging point to a disengaging point and having a substantial inward radius of curvature throughout every point thereof,

molten polymer injection means positioned adjacent the engaging point,

said molding wheel and metal band having a plurality of mold cavity means and molten polymer input means formed therein so as to permit successive injection molding of elements in said plurality of cavity means as said plurality of cavity means pass from the engaging point to the disengaging point and so as to permit molded articles to be removed from said plurality of cavity means as said plurality of cavity means pass from the disengaging point back to the engaging point,

at least a portion of each of said plurality of mold cavity means being formed on the inside surface of said metal band,

said flexible metal band being made of steel and having a thickness greater than 0.002 times the diameter of the molding wheel,

said flexible metal band has a length less which is within the range from 5% to 25% greater than the circumference of the molding wheel,

said flexible metal band maintaining said inward radius of curvature so as to be equal to or greater than the wheel radius throughout every point of the band,

said flexible metal band maintaining its radius of curvature so as to prevent the band from becoming straight at any point thereof and from having an outward radius of curvature at any point thereof, and

said arcuate portion of the circumference of the molding wheel where the metal band engages the molding wheel periphery being at all times substantially less than a 160° arcuate portion of the circumference of the molding wheel with the band being spaced from the remaining portion of the wheel.

4,431,400 IGNITION SYSTEM FOR POST-MIXED BURNER

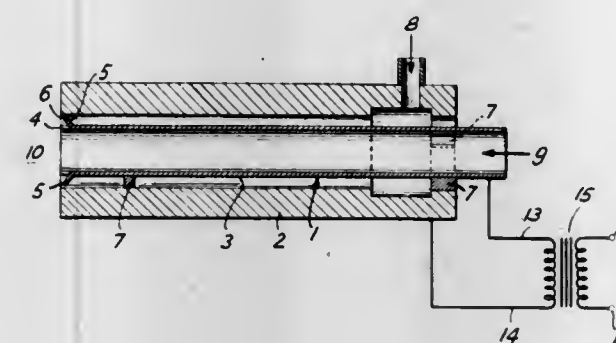
Hisashi Kobayashi, Tarrytown; Raymond H. Miller, Hopewell Junction, and John E. Anderson, Katonah, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 4, 1981, Ser. No. 289,885

Int. Cl.³ F23Q 3/00

U.S. Cl. 431-6

15 Claims



1. A post-mixed burner apparatus capable of igniting a combustible gas mixture of fuel and oxidant discharged from the burner comprising:

a first passage means for supplying fuel gas and a second passage means for supplying oxidant gas, both of said passage means terminating at the discharge end of said apparatus, characterized by an ignition system consisting of:

- (1) said first passage means being electrically conductive;
- (2) said second passage means being electrically conductive and means spacing said second passage means from said first passage means such that the breakdown voltage between said first and second passage means is lowest at the discharge end of said apparatus; and
- (3) means for applying an electrical potential across said first and second passage means,

whereby, when an electrical potential greater than said lowest breakdown voltage is applied across said first and second passage means, an electrical discharge occurs, in an essentially straight line, only across the space between said first and second passage means at the discharge end.

10. A process for igniting a combustible gaseous mixture discharged from a burner comprising:

- (A) causing a stream of fuel gas and a stream of oxidant gas to flow in the same direction through first and second passages which are electrically conductive, insulated from each other and terminate at the discharge end of the burner;
- (B) maintaining said flowing streams separated from each other by said first passage;
- (C) mixing said gas streams upon discharge from said passages at the discharge end of the burner;
- (D) spacing said second passage from said first passage such that the breakdown voltage between said first and second passages is lowest at the discharge end of the burner; and
- (E) applying an electrical potential greater than said lowest breakdown voltage across said first and second passages such that an electrical discharge occurs, in an essentially straight line, only across the space between said first and second passage at the discharge end of the burner, which space contains essentially only one of the gases.

4,431,401 CONTROL MECHANISM FOR VAPORIZING APPARATUS

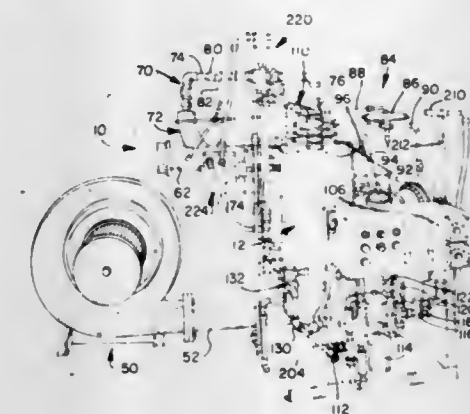
Theodore F. Kunst, Homewood, and Michael N. Koelling, Orland Park, both of Ill., assignors to Vapofier Corporation, East Hazelcrest, Ill.

Filed Jun. 29, 1981, Ser. No. 278,582

Int. Cl.³ F23D 11/44

U.S. Cl. 431-11

19 Claims



1. In a vaporizing apparatus for vaporizing liquid hydrocarbon fuels comprising a vaporizing chamber having an opening and a pool of fuel therein, a mixing chamber, a vapor conduit leading from said vaporizing chamber to said mixing chamber and having an electrically-operated vapor valve therein, a return conduit having an electrically-operated return valve for returning a mixture of vapor and air to said vaporizing chamber, said return conduit terminating spaced from said opening to produce an open flame adjacent said opening, the improvement of electric control means including flame sensing means for sensing the presence of said flame, temperature sensing means for sensing the temperature in said vaporizing chamber, and electronic means for closing said valves when (1) the temperature exceeds a certain level, or (2) the flame is absent.

4,431,402 WASTE GAS FLARE IGNITER

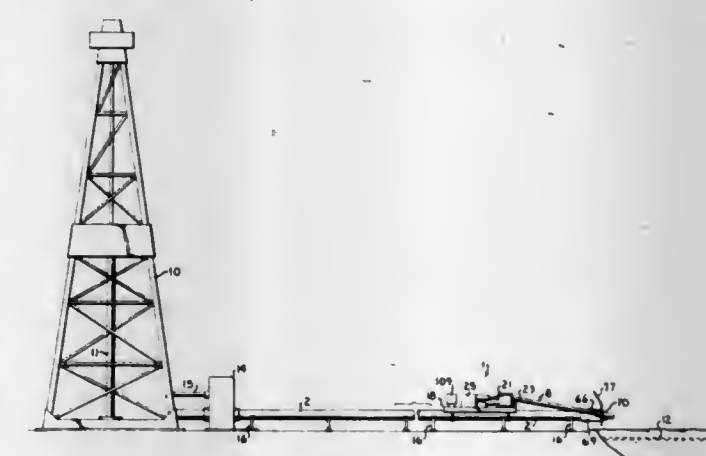
Louis F. Hamilton, Rte. 5 - Box 192, S. Airport Rd., Weatherford, Okla. 73906

Filed Apr. 19, 1982, Ser. No. 369,972

Int. Cl.³ F23D 13/20

U.S. Cl. 431-23

17 Claims



1. A waste gas flare ignition arrangement for use to ignite combustible waste gas issuing from a flare pipe and comprising:

- (a) fuel delivery means including a source of fuel for ignition of said waste gas and terminating in a fuel nozzle;
- (b) spark generating means including electrode means defining a spark gap spaced from said nozzle;
- (c) translatable support means supporting said fuel nozzle and said electrode means in one of a first extended position for directing a flaming mixture of fuel from said nozzle

toward waste gas issuing from an outlet end of a waste gas flare pipe and a second retracted position spaced along said flare pipe from said outlet end;

(d) motor means mechanically connected to said support means and operable to translate said support means between said positions; and

(e) control means connected to said fuel delivery means, said spark generating means, and said motor means and selectively operable to effect the translation of said support means, the delivery of said fuel through said nozzle, and the generation of a spark across said spark gap to ignite said fuel to ignite said waste gas.

4,431,403

BURNER AND METHOD

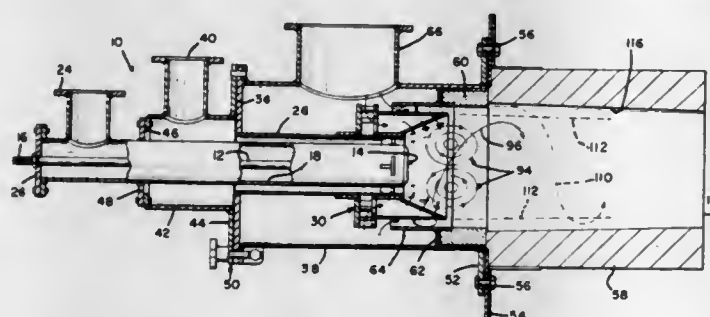
Leonard G. Nowak, Palmyra, and Raymond J. Wojcieszon, Annville, both of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.

Filed Apr. 23, 1981, Ser. No. 256,851

Int. Cl.³ F23M 9/00; F23D 15/02

U.S. Cl. 431-183

9 Claims



1. An industrial heating burner including a fuel discharge device, an axial fuel supply pipe extending upstream from the fuel discharge device, a flame retention cone surrounding the fuel discharge device and extending downstream from and radially outwardly of the device, a first combustion air swirl generator having an inlet for receiving a supply of combustion air and an outlet, an outer collar surrounding the fuel supply pipe, said outer collar having a downstream end joined to the flame retention cone and an upstream end joined to the swirl generator outlet, and a plurality of secondary air flow holes formed through said flame retention cone within said outer collar, said holes being essentially uniformly spaced on the surface of the cone whereby combustion air swirled by said generator flows inside said outer collar, is thrown radially outwardly against said outer collar and is partially dammed by the cone to provide an essentially uniform swirling flow of combustion air through the openings in the cone and around the interior of the cone;

wherein said first air swirl generator surrounds the fuel supply pipe and the burner includes a second combustion air swirl generator surrounding the flame retention cone and the outer collar and having an inlet for receiving a supply of combustion air and an annular outlet surrounding the downstream end of the cone and the outer collar, said second swirl generator swirling combustion air in a direction opposite to the direction of swirl of said first combustion air swirl generator; and

wherein said first air swirl generator includes a plurality of radial swirl vanes and said second swirl generator includes a plurality of circumferential air swirl vanes.

4,431,404 METHOD AND APPARATUS FOR HEATING PLASTIC SHEET MATERIAL

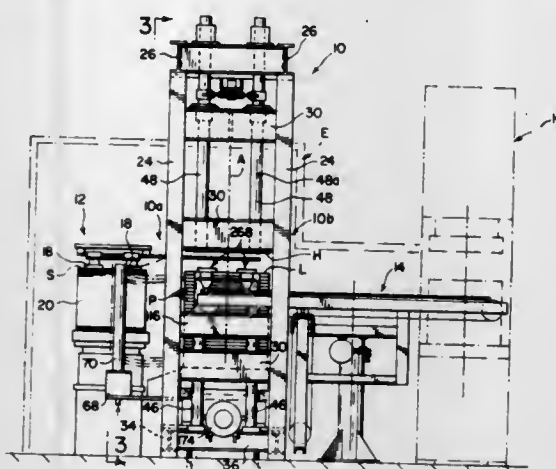
John F. Cobb, Van Buren, Ark., and John W. Martin, Drexel Hill, Pa., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 26, 1982, Ser. No. 411,532

Int. Cl.³ F27D 3/00, 3/04; F26B 9/04

U.S. Cl. 432-11

35 Claims



29. A method of heating a plurality of sheets of plastic material between adjacent ones of a plurality of juxtaposed platens comprising:

heating said platens;

opening and closing the platens of a plurality of pairs of adjacent platens in said stack in a first sequence with respect to said pairs while maintaining the remaining platens in said stack juxtaposed during each said opening and closing;

introducing a sheet of plastic material between each said pairs of platens while open;

reopening and reclosing said pairs of platens in a second sequence and maintaining the remaining platens in said stack juxtaposed during each reopening and reclosing; and removing the sheet of plastic material from between each said pairs of platens while reopened.

4,431,405

GAS POLLUTION CONTROL APPARATUS AND METHOD AND WOOD DRYING SYSTEM EMPLOYING SAME

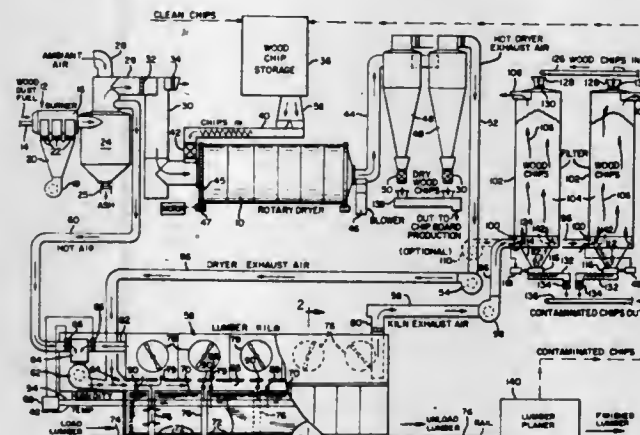
J. Roger Eatherton, Sacramento, Calif., assignor to Down River International, Inc., Sacramento, Calif.

Filed Feb. 23, 1982, Ser. No. 351,496

Int. Cl.³ F27B 1/08; B01D 43/00, 39/02; F23K 3/00

U.S. Cl. 432-72

34 Claims



1. Method of treating polluted air to remove pollution, comprising the steps of:
supplying a stream of polluted air containing hydrocarbon pollutants;

transmitting said polluted air through a container containing a plurality of wood members;
filtering said hydrocarbon pollutants from said polluted air by contact with said wood members to produce contaminated wood members;
moving said wood members through said container to cause said wood members to act as filter elements in different positions within said container; and
removing said contaminated wood members from said container.

4,431,406

ROTARY HEARTH FURNACE PLANT

Hans J. Weiss, Frankfurt am Main, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

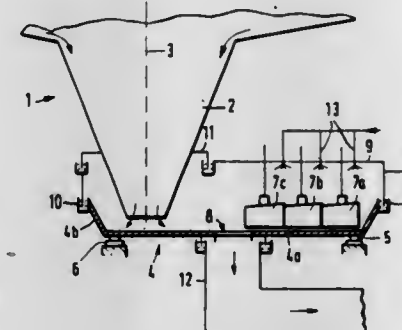
Filed Feb. 1, 1982, Ser. No. 344,661

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105073

Int. Cl.³ F27D 15/02; F27B 9/16

U.S. Cl. 432-85

4 Claims



1. A rotary hearth furnace plant for heating granular high-carbon solids comprising a substantially funnel-shaped hearth, mounted for rotation about a vertical axis, said hearth having a central outlet, disposed over a rotary table, said rotary table attached to means for rotating the same about a vertical axis, at least one stationary blade disposed over said table to direct the heated solids from the outlet of the hearth toward an exit of said rotary table disposed at the center of the rotary table, a stationary chute disposed under the exit of the rotary table and gas tightly sealed against the rotary table, the outlet of the rotary hearth furnace being disposed over the radially outer portion of the rotary table, which rotary table has a raised rim and a stationary hood is disposed over the table between the rim of the rotary table and the rotary hearth, and means for feeding cooling medium to the heated solids on the table.

4,431,407

PROCESS FOR BURNING LIMESTONE, DOLOMITE OR THE LIKE AND ANNULAR SHAFT FURNACE FOR PERFORMING THE SAME

Ulrich Beckenbach, Fontanestr. 13, and Helmuth Beckenbach, An den Linden 47, both of D-4005 Meerbusch 1, Fed. Rep. of Germany

Filed Dec. 24, 1981, Ser. No. 334,428

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3140582

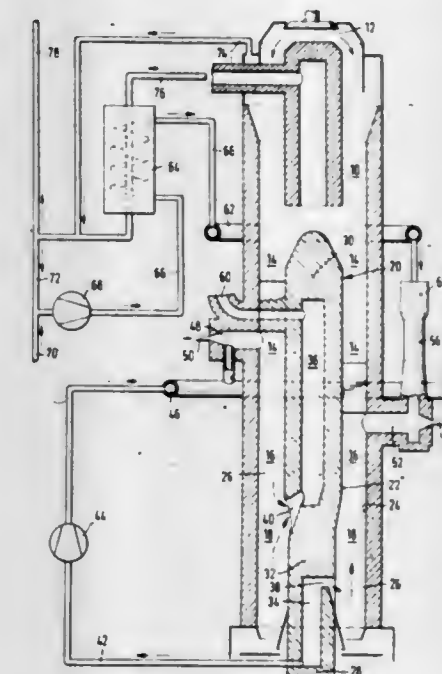
Int. Cl.³ F27D 1/08, 15/02; F27B 15/00

U.S. Cl. 432-99

7 Claims

1. In an annular shaft furnace for burning and sintering material in lump form, which material is selected from a group consisting of limestone, dolomite and the like, said furnace from top to bottom having a preheating zone, an upper burning zone, a lower burning zone and a cooling zone having a supply of cooling air at its base for flowing upward toward the lower burning zone, each of said upper and lower burning zones having combustion chambers with burners lying in a plane with the planes being spaced apart along the axis of the furnace, said furnace containing a substantially hollow shaft insert

being closed at an upper end and coacting with the walls of the furnace to form an annular shaft at least in the area of the burning zones and cooling zones, said shaft insert being subdivided by a partition into an upper chamber and a lower chamber, said lower end of said shaft insert being located in the cooling zone while the upper end is positioned in the burning zone and terminates above the plane of the burners for said upper burning zone, said upper chamber of the shaft insert having circulating gas openings adjacent the upper end of the cooling zone with suction means for applying a suction to the chamber to draw a mixture of cooling air flowing upward in the cooling zone and fuel gases flowing downward from the lower burning zone into the gas openings to form a mixture of cooling air and fuel air flowing upward in said upper chamber, said furnace including means for introducing said mixture into the combustion chambers of the lower burner plane with the



improvements comprising the lower chamber of the shaft insert being sealed at its lower end from the inner area of the furnace, said lower chamber having cooling air openings positioned below the circulating gas openings for receiving cooling air prior to reaching the upper end of the cooling zone, means including a suction blower for drawing cooling air through said cooling air openings downward in said lower chamber and then discharging said withdrawn cooling air into the combustion chambers at the upper burning zone; and said suction means including injectors discharging into the combustion chambers at the lower burning zone and means for supplying an expansion agent to said injectors including means for providing a compressed preheated mixture of a controllable composition of furnace flue gases from the upper end of the shaft furnace and primary air, said means for supplying being adjusted to cause a substoichiometrical burning of the fuel in the lower burner zone to create a reducing atmosphere.

4,431,408

STACKABLE DISTORTION RESISTANT FURNACE BASKET

Salvester Postich, Simpsonville, S.C., assignor to Carolina Commercial Heat Treating, Inc., Fountain Inn, S.C.

Filed Feb. 22, 1982, Ser. No. 351,183

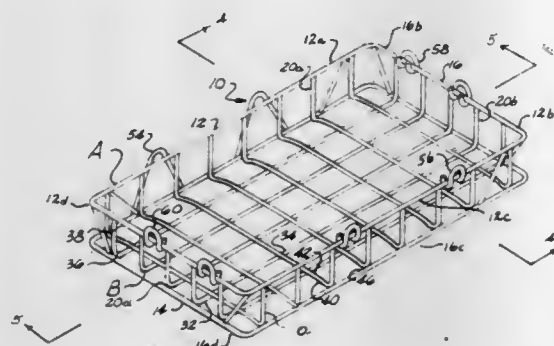
Int. Cl.³ B65D 21/00; F27B 14/10

U.S. Cl. 432-261

10 Claims

1. A stackable distortion-resistant furnace basket comprising:
an open top;
a closed bottom having an open grid floor;
a top rim member extending around the perimeter of said top;
a bottom rim member extending around the perimeter of said bottom;

vertical frame means including opposing sides and ends integrally connecting said first and second rim members; said top rim member having a continuous closed uninterrupted load bearing rim surface around the entire perimeter of said sides and ends; said bottom rim member having a continuous closed uninterrupted contacting rim surface around the entire perimeter of said sides and ends; said top and bottom rim members co-extending in vertical alignment with one another permitting normal stacking of a bottom rim surface of one basket upon a top rim surface of another basket and inverted stacking of a top rim surface upon a top rim surface of another basket; and said rim surfaces contacting one another in said normal and



inverted stacked configurations around the total perimeter of said sides and ends of said baskets thereby distributing loads evenly and reducing basket distortion;

a plurality of elongated bottom runner elements including a horizontal run extending across said basket bottom, a generally ninety-degree bend formed in said element, and a vertical run extending from said bend terminating at said top rim member, said bottom runner element having a bottom surface lying in the same general plane as said bottom rim surface, said bend portion curving upwardly out of said plane and contacting said bottom rim member being affixed thereto at said contact point before terminating in said vertical run;

a plurality of elongated cross runner elements extending transversely across said bottom runner elements being integral with said side frame means.

4,431,409

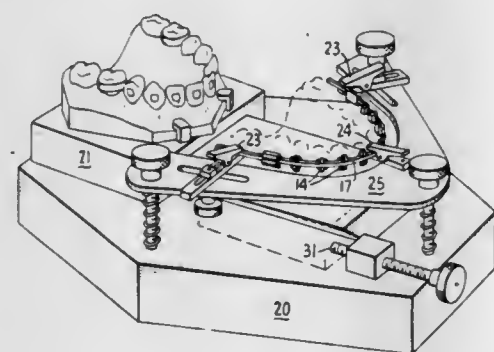
ORTHODONTIC APPARATUS

Peter J. Picard, 1804 San Miguel Dr., Walnut Creek, Calif. 94596

Filed Jan. 15, 1982, Ser. No. 339,499
Int. Cl.³ A61C 3/00

U.S. Cl. 433-2

1 Claim



1. An orthodontic apparatus comprising, in combination: a cast matrix of teeth in which each cast tooth to be repositioned has a cast of a locating platelet rigidly attached thereto, and in which each of said cast teeth to be repositioned

has been repositioned in said matrix to its desired position;

a pair of first and second supports mounted relative to each other for rectilinear sliding movement relative to each other;

a plurality of grippers mounted on said first support and supporting an arch wire in a plane substantially parallel with the direction of rectilinear movement, said arch wire carrying a plurality of brackets;

means for positioning said cast matrix of teeth on said second support;

means for adjustably mounting said grippers to adjust the spacing therebetween and to position the grippers along with said arch wire and brackets relative to said matrix of teeth; and

interface filler means for each cast tooth with a locating platelet, said interface filler means rigidly bonding to each of said brackets and taking on an imprint of a cast locating platelet, whereby each of said brackets with an interface filler may be thereafter mounted in a patient's mouth directly on a corresponding locating platelet.

4,431,410

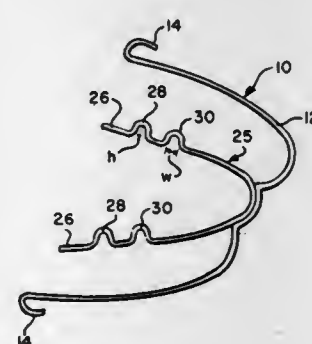
UNIVERSAL FACEBOW

Howard J. Ruderman, 86 Shrub Hollow Rd., Roslyn, L.I., N.Y. 11576

Filed Jan. 7, 1982, Ser. No. 337,580
Int. Cl.³ A61C 7/00

U.S. Cl. 433-5

10 Claims



1. An orthodontic facebow permitting the orthodontic practitioner to stock a single size of facebow for use on patients having a wide variety of different mouth sizes, said facebow comprising:

an outer bow contoured to extend over the cheeks of the patient;

attaching means on the free ends of said outer bow adapted for securement to a cervical strap or head gear;

an inner bow of relatively non-spring material secured to said outer bow at a point approximating the centers of said inner and outer bows, said inner bow contoured to approximate the dental arch of the patient; and

a plurality of loops, at least one on each side of the inner bow, said loops lying in a plane parallel to the faces of the teeth along which the inner bow is arranged, and not impinging on any soft tissue in the mouth of the patient, said loops being selectively compressible or expandable to increase or decrease the length of the inner bow to a length approximating the dental arch of the patient with at least one of said loops lying at least one-half the length of the inner bow from its front, and one or more of the loops on one side of the bow being wider spaced than those on the other side of the bow whereby the bow is shifted to one side to effect unilateral correction.

4,431,411

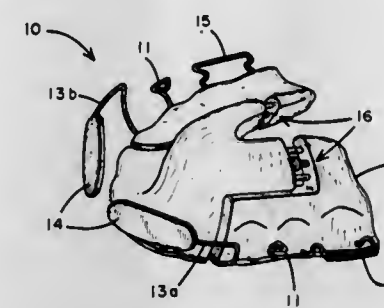
SEGMENTED LABIAL BOW WITH LIP PADS FOR AID IN THE CORRECTION OF CLASS III MALOCCLUSIONS AND MALOCCLUSIONS WITH UNDERDEVELOPED MAXILLAS

John W. Witzig, 2040 Douglas Dr., N., Golden Valley, Minn. 55422, and James A. Evans, 1602 W. Blvd., Rapid City, S. Dak. 57701

Filed Nov. 30, 1981, Ser. No. 325,640
Int. Cl.³ A61C 7/00

U.S. Cl. 433-6

13 Claims



1. An orthopedic appliance for removing lip pressure from the premaxillary gum tissue for aiding in the correction of Class III type malocclusions comprising:

a. a palatal appliance;

b. a segmented bow consisting of two segments, each segment attached to opposite sides of a palatal appliance and extending along without contacting the premaxillary gum tissue of a patient between the premaxillary gum tissue and the upper lip to a point of juncture of the two segments at the extreme anterior of the premaxillary gum tissue; and

c. two pads, each attached at the respective ends of the two segments at the extreme anterior of the premaxillary gum tissue and in contact with the inner surface of the upper lip.

4,431,412

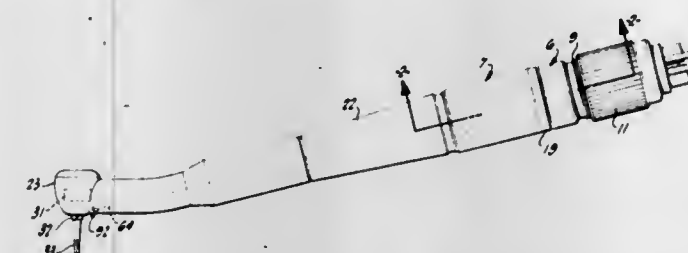
DENTAL HANDPIECE

Joseph P. Lares, Redwood City, and Albert J. Lares, San Carlos, both of Calif., assignors to Lares Mfg. Co., Inc., San Carlos, Calif.

Filed Mar. 30, 1981, Ser. No. 248,866
Int. Cl.³ A61C 1/00, 1/08

U.S. Cl. 433-29

2 Claims



2. A dental handpiece comprising a first sleeve substantially symmetrical about an axis, a second sleeve substantially symmetrical about said axis and in part surrounding a part of said first sleeve, means on said second sleeve for receiving a burr, means for interconnecting said surrounding part of said second sleeve and said first sleeve for relative rotation of said sleeves about said axis and against ready separation by translation along said axis, a junction tube disposed in one end of said first sleeve and projecting along said axis into said second sleeve, a fiber glass light conductor in part disposed in and extending eccentrically of said first sleeve and in part extending coaxially into said junction tube and rotatable relative thereto with said second sleeve, and fiber glass light leads in part emerging from said junction tube along said axis and in part diverging from each other and from said axis and extending within said second sleeve and emerging near said burr receiving means.

4,431,413

COMBINATION APPLIANCE FOR HOLDING AND FIXING A TRANSFER BOW

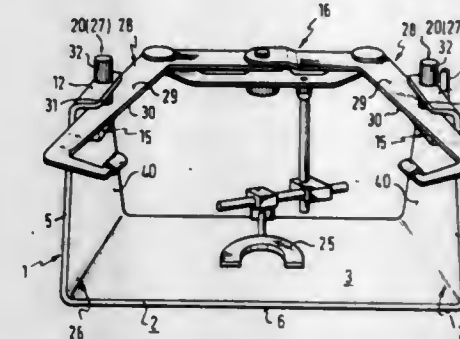
Heinz Mack, Südl. Aufahrtssallee 64, 8000 München 19, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,991
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049057

Int. Cl.³ A61C 19/04

U.S. Cl. 433-73

9 Claims



1. Combination appliance for holding and fixing a transfer bow, for pivotably holding and setting the desired angle of inclination of a frame part of an articulator, and for fixing superimposed jaw casts while mounting the cast of the opposite jaw in the articulator, by means of plaster of Paris, said appliance comprising:

(a) a cradle, of U-shaped cross-section, the sidewalls of said cradle being arranged perpendicularly to the base surface and being arranged so that they converge towards one another, with, on the one hand, the angle of approach corresponding to the angle between the outer edges of the side arms of a transfer bow attached to the upper frame part of the dental articulator, and, on the other hand, the distance between the sidewalls, on the converging side, being small enough to allow articulator frame parts to be hung therein;

(b) supports located near the upper ends of the vertical sidewalls of said cradle, and locking devices, located on portions of the upper ends of the vertical sidewalls, for holding and fixing the transfer bow and for pivotably holding and setting the desired angle of inclination of a frame part of an articulator, two pintles located on the inner sides of the vertical sidewalls near those points of the upper ends of the vertical sidewalls which are closest to each other as a result of the approach angle, said pintles being located at right angles to the sidewalls and at least one of the pintles being capable of longitudinal axial movement, and both of said pintles being adapted to project into recesses located in the frame part of the articulator, and

(c) a support column, including a carrier block which is adjustable in position along said column and which carries a resilient extension arm, for fixing superimposed jaw casts while the cast of the opposite jaw is being mounted in the articulator by means of plaster of Paris.

4,431,414

DENTAL SYRINGE FOR FILLING CAVITIES IN TEETH

John S. Lawrence, Rte. 896 & Peacedale Rd., Kemblesville, Pa. 19347

Filed Jan. 25, 1982, Ser. No. 342,505

Int. Cl.³ A61C 5/04

U.S. Cl. 433-90

10 Claims

1. A dental syringe for filling cavities in teeth with dental filling materials, comprising:

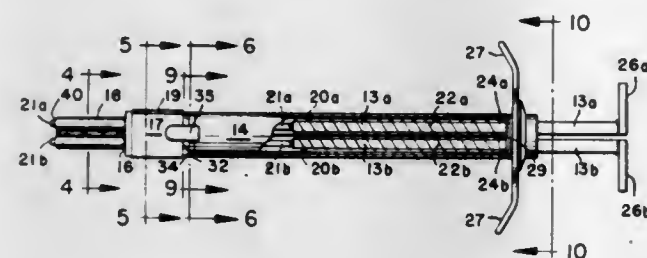
an elongated barrel having at least one shaft extending axially therethrough;

replaceable chamber having an open wall through which dental filling material may be inserted, said chamber being

removably attached to one end of the barrel just prior to use of the syringe and having at least one shaft extending axially therethrough which is in axial alignment with and in cross-section of substantially equal dimensions to the minimum cross-sectional dimensions of the shaft in the barrel;

a cover attachable to said chamber so as selectively to close the open wall and thereby retain therein a charge of dental filling material placed in the chamber immediately prior to use of the syringe and until the charge is expressed therefrom;

a nozzle extending from said chamber in the opposite direc-



tion from the barrel, said nozzle having at least one shaft which is essentially continuous with and in cross section of substantially equal dimensions to the shaft in the chamber;

a collar interfitting between said barrel and chamber for supporting and securely anchoring the chamber and its attached nozzle in relation to said barrel so that the shafts in the barrel and chamber are in axial alignment with each other throughout use of the syringe; and

at least one plunger located in and axially movable throughout the shafts in the barrel, chamber and nozzle so as selectively to force dental filling material out of the chamber and out through the nozzle.

4,431,415

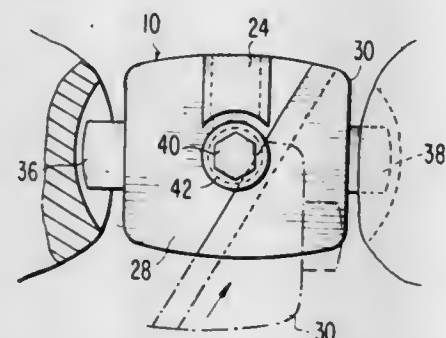
DEVICE FOR REPLACING MISSING TEETH IN HUMAN DENTITION

Pasquale Tigani, 5219 Ridgely Rd., Washington, D.C. 20016
Filed Apr. 8, 1982, Ser. No. 366,618

Int. Cl.³ A61C 13/22

U.S. Cl. 433-172

4 Claims



1. An artificial denture device comprising a backing member comprised of two complementary parts, means for connecting said two parts to each other against lateral separation while permitting sliding movement relative to each other, each of said parts having a projection extending in opposite directions relative to each other and securing means for securing said two parts to each other to prevent sliding movement, said two parts defining a flat upper surface having a substantially rectilinear outline, while being separated along a substantially diagonal line to define two mating surfaces, tongue and groove means formed on said mating surface to allow sliding movement of one part relative to the other along said diagonal line and said securing means being comprised of a threaded member having an enlarged head, a corresponding threaded aperture in one of said members adjacent to the diagonal line whereby said enlarged head overlaps said diagonal line to secure said two parts

against movement relative to each other upon tightening of said threaded member in said threaded aperture.

4,431,416

ENDOSSEOUS DENTAL IMPLANT SYSTEM FOR OVERDENTURE RETENTION, CROWN AND BRIDGE SUPPORT

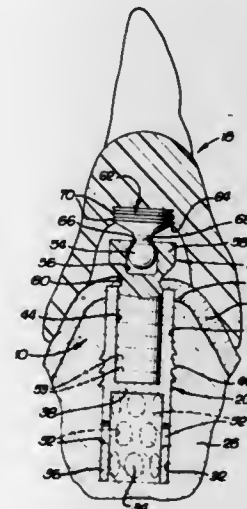
Gerald A. Niznick, Encino, Calif., assignor to A & L Investment Company, Encino, Calif.

Filed Apr. 29, 1982, Ser. No. 372,945

Int. Cl.³ A61C 8/00

U.S. Cl. 433-174

24 Claims



1. A two part endosseous implant designed to be secured at a recess prepared in the cancellous bone tissue of a subject, said recess having an outer part substantially in the form of a cylindrical hole, and having an inner part substantially in the form of a cylindrical kerf forming a bone core:

- one of said implant parts comprising an anchor having an inverted core open at its lower end; and peripherally perforated, said inverted core being adapted to encompass a said bone core;
- said anchor having a plurality of turns of self-tapping screw threads adapted to engage the wall of said bone recess;
- said anchor having a cylindrical neck portion above said screw threads having a diameter approximating the inside diameter of said screw threads and of a length sufficient to project just above the bone crest;
- said anchor neck having a non-circular socket cooperable with a tool by the aid of which said anchor is threaded into said bone recess;
- the other of said parts comprising a pillar fitted into said anchor recess;
- said pillar projecting just above the top of said anchor to form or to support a dental restoration or the like.

4,431,417

VARIABLE CONNECTOR FOR FIXED AND REMOVABLE DENTAL PROSTHESES

Bernard Weissman, 225 East 48th St., New York, N.Y. 10017
Continuation-in-part of Ser. No. 188,356, Sep. 18, 1980, Pat. No. 4,355,979, which is a continuation-in-part of Ser. No. 70,247,

Aug. 27, 1979, Pat. No. 4,260,383. This application Sep. 29, 1982, Ser. No. 427,767

Int. Cl.³ A61C 13/22

U.S. Cl. 433-182

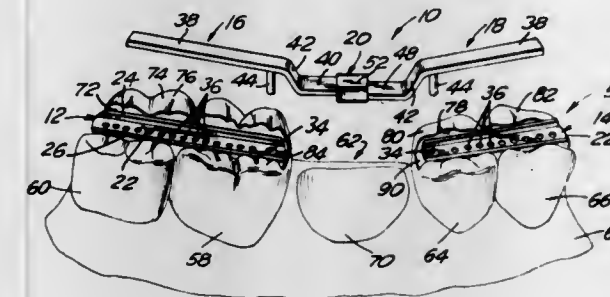
14 Claims

1. A variable connector for supporting a dental prosthesis between opposing spaced apart supporting teeth, said connector comprising:

- a pair of elongated bar-like body members, each of said body members being disposable in its own respective channel in at least one supporting tooth on opposite sides of the prosthesis being supported;

at least one tubular member depending from each body member for being received in a respective bore provided in the respective supporting tooth, each bore extending through a bottom wall of its respective channel, each tubular member including an axial opening extending therethrough;

a pair of elongated straps each having at least one depending pin extending from a body portion of each strap, each of



said straps being disposable over a respective body member with said pins extending into a respective axial opening of said tubular member of said respective body member, said straps terminating in arms which are disposed outwardly from their respective body portion and supporting tooth for supporting the dental prosthesis; and securing means on said arms located in the space between said supporting teeth for providing securement of said arms.

4,431,418

DENTAL PROSTHESIS

Rolf Kienhöfer, Schubartstrasse 4, D-7326 Heiningen, Fed. Rep. of Germany

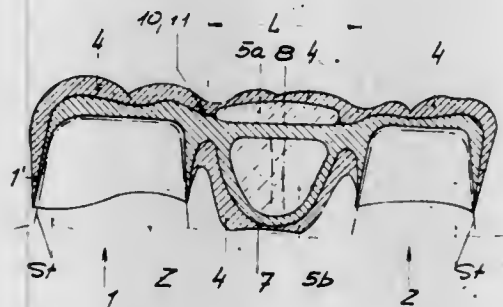
Filed Apr. 5, 1982, Ser. No. 365,463

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1981, 3113817

Int. Cl.³ A61C 13/22

U.S. Cl. 433-183

7 Claims



1. A dental prosthesis in the form of a bridge comprising: a metal foundation including at least two pillars and an intermediate support portion; an intermediate member supported by said intermediate support portion of said metal foundation and a ceramic cover layer covering said prosthesis; said intermediate member comprising a core member consisting of a material lighter in weight than the material of said metal foundation and having a shape and size corresponding approximately to the shape and size of a gap to be filled between said pillars; said intermediate support portion of said metal foundation being formed to comprise a plurality of individual filaments defining a basket-like configuration within which said core member is engaged and supported, said core member including recess means within which said individual filaments are engaged to firmly support said core member.

4,431,419

DENTURE MAGNETIC RETENTION UNIT

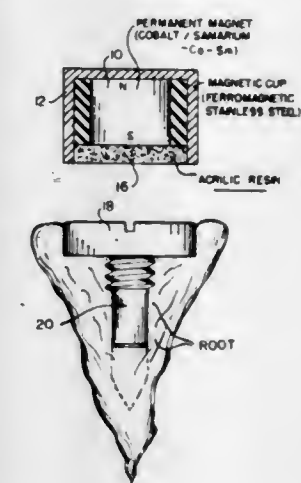
Leonard L. Portnoy, 8820 Wilshire Blvd., Ste. 303, Beverly Hills, Calif. 90211

Filed Mar. 1, 1983, Ser. No. 471,057

Int. Cl.³ A61C 13/22

U.S. Cl. 433-189

7 Claims



1. A denture magnetic retention unit comprising: a first component in the form of a cup-shaped member of low coercivity magnetic material having an open top, and a disc-shaped permanent magnet with magnetic poles on the opposite sides thereof retained within said cup-shaped member with one side of said disc-shaped permanent magnet contacting the bottom of the cup-shaped member; and a second component in the form of a keeper of low coercivity magnetic material positioned to extend across the open top of said cup-shaped member completely to enclose said permanent magnet within said cup-shaped member, said cup-shaped member and said keeper forming a low reluctance magnetic path for the magnetic field of the permanent magnet and serving to close the magnetic field of the permanent magnet when the denture is in place.

4,431,420

GLASS-CERAMIC DENTAL PRODUCTS

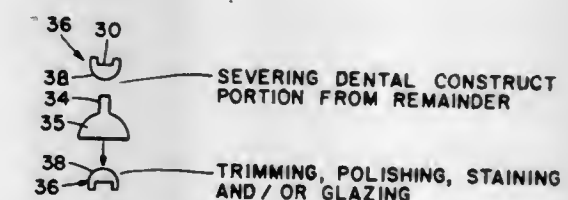
Peter J. Adair, Brookline, Mass., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 227,810, Jan. 27, 1981, abandoned, which is a continuation of Ser. No. 57,399, Jul. 13, 1979, abandoned. This application Apr. 30, 1982, Ser. No. 373,617

Int. Cl.³ A61K 6/08

U.S. Cl. 433-199

1 Claim



1. A glass-ceramic dental construct containing tetrasilicic fluormica as the predominant crystal phase and having surfaces that conform to and are in contact with living dental tissue, a modulus of rupture greater than 8000 psi and consisting, in weight percent on the oxide basis, of

K₂: 10-18
MgO: 14-19
SiO₂: 55-65
Al₂O₃: 0-2
ZrO₂: 0-7
F: 4-9

said dental construct having a coefficient of thermal expansion

and a thermal conductivity approximating those of tooth enamel, a visual appearance similar to that of tooth enamel, as evidenced by a level of translucency between 0.4-0.8 determined by reflectance measurements and resistance to food staining and chemical attack in an oral environment as evaluated by a level of K_2O extracted not exceeding 10 micrograms/cm² after exposure for four hours to water at 95° C.

4,431,421

DENTAL RESTORATIVE COMPOSITION

Haruyuki Kawahara, Moriguchi; Teruo Makita, Kobe; Shozo Kudo, Minoo, and Takashi Funakoshi, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,811

Int. Cl.³ A61K 6/08

U.S. Cl. 433-228

10 Claims

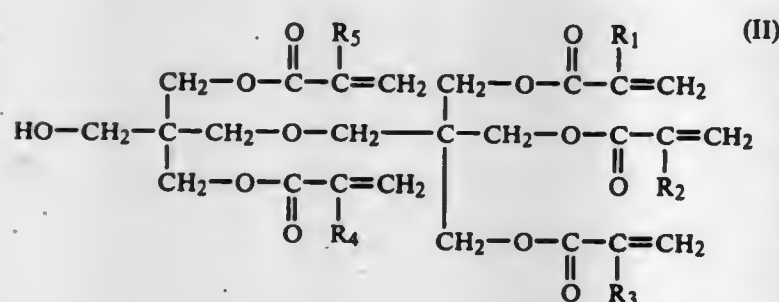
1. A dental restorative composition comprising

(I) 30 to 95% by weight of finely divided, inorganic filler which is effective for use in a dental restorative material, has a Mohs' hardness of at least 5 and has a particle diameter of from 0.01 to 50 microns

and

(II) 5 to 70% by weight of a resin-forming material for dental use, said resin-forming material comprising a blend of

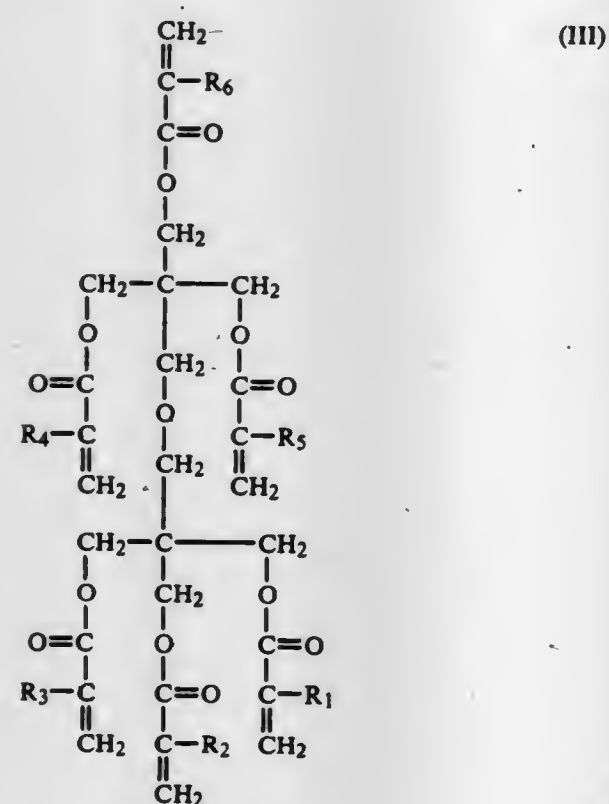
(1) 30 to 95% by weight of at least one monomer having the formula (II):



wherein R_1, R_2, R_3, R_4 and R_5 represent hydrogen or methyl,

and

(2) 70 to 5% by weight of at least one monomer having the formula (III):



wherein R_1, R_2, R_3, R_4 and R_5 have the same meanings

as defined in the formula (II), and R_6 represents hydrogen or methyl.

4. A dental restorative composition comprising

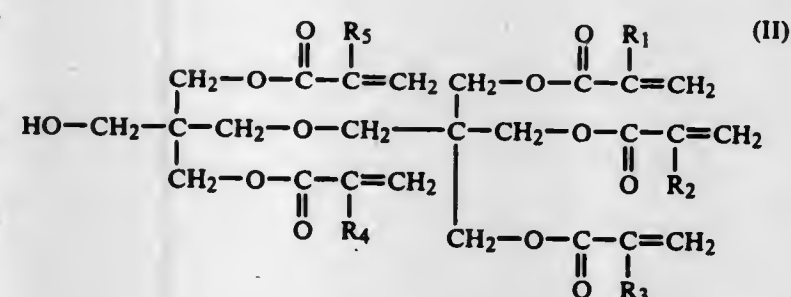
(I) 30 to 95% by weight of finely divided, inorganic filler which is effective for use in a dental restorative material, has a Mohs' hardness of at least 5 and has a particle diameter of from 0.01 to 50 microns

and

(II) 5 to 70% by weight of a resin-forming material for dental use, said resin-forming material comprising

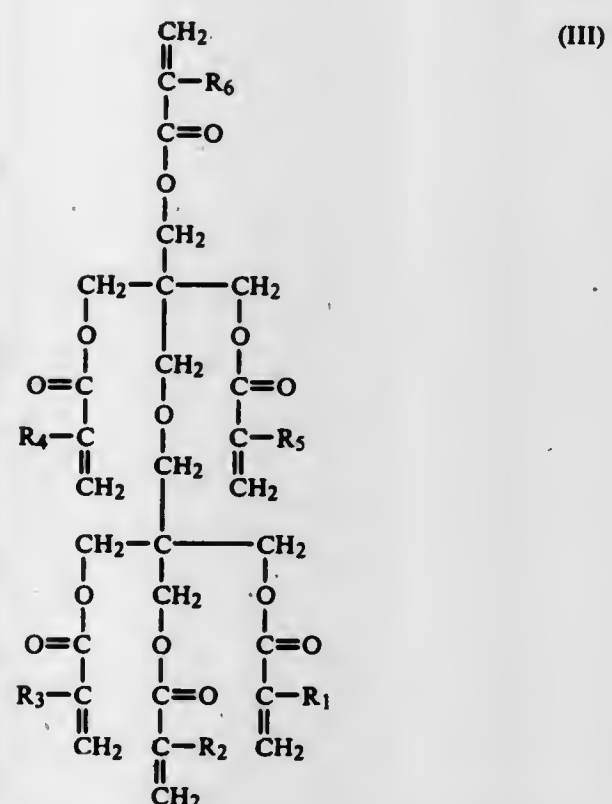
(A) 40 to 10% by weight of a blend of monomers comprising

(1) 30 to 95% by weight of at least one compound having the formula (II):



wherein R_1, R_2, R_3, R_4 and R_5 represent hydrogen or methyl,

(2) 70 to 5% by weight of at least one compound having the formula (III):



wherein R_1, R_2, R_3, R_4 and R_5 have the same meanings as defined in the formula (II), and R_6 represents hydrogen or methyl,

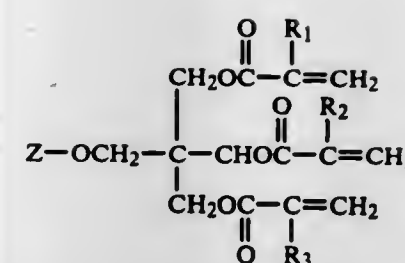
and

(B) 60 to 90% by weight of at least one compound having the formula (IV):

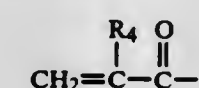
4,431,423
CELL WASHING APPARATUS HAVING RADIALLY INWARDLY DIRECTED RETAINING ARMS
Oakley L. Weyant, Jr., Southbury, Conn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Filed Mar. 10, 1982, Ser. No. 356,714
Int. Cl.³ B04B 9/12

U.S. Cl. 494-20

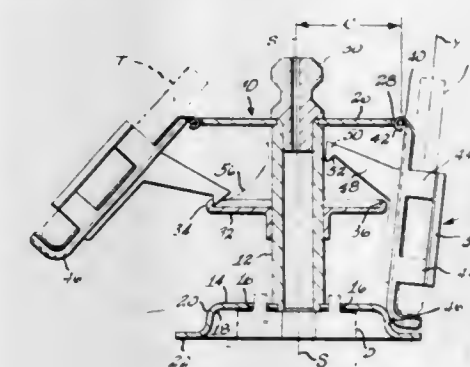
8 Claims



wherein Z is hydrogen or



and R_1, R_2, R_3 and R_4 , which are the same or different, have the same meanings as defined in the formula (II).



1. A rotor for a cell washing apparatus comprising:
a spindle having an axis of rotation extending therethrough;
a holding plate attached to the spindle;
a sample tube holder pivotally mounted to the holding plate at a pivot point disposed a predetermined radial distance from the axis, the tube being pivotally movable from a first, rest, position to a second, extended, position;
a radially inwardly depending arm disposed on the sample tube holder, the arm terminating in a grasping hook; and
a retaining disk mounted to the spindle, the retaining disk having a retaining surface thereon, the retaining surface being disposed on the rotor at a position radially inwardly of the pivot point, the grasping hook being arranged to engage the retaining surface when the sample tube holder pivots to the second, extended, position.

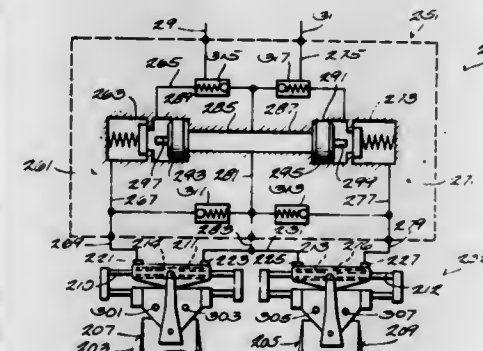
4,431,422
MARINE HYDRAULIC STEERING SYSTEM CONTROL
Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 29, 1981, Ser. No. 258,874

Int. Cl.³ B63H 25/22

U.S. Cl. 440-61

75 Claims



1. A hydraulic control unit for a marine installation comprising a helm station including a pump comprising first and second pump discharge ports, and means for selectively and alternatively delivery fluid under pressure from the pump to the first and second pump discharge ports, first and second steerable marine propulsion units, first and second hydraulic steering cylinders respectively connected to the first and second propulsion units and including respective first ports which, when subject to fluid under pressure, tend to steer the propulsion units in one direction and including respective second ports which, when subject to fluid under pressure, tend to steer the propulsion units in the opposite direction, and a hydraulic tie line connecting the second port of the first steering cylinder with the first port of the second steering cylinder, said hydraulic control unit including a first hydraulic fluid line adapted for communication between the first pump discharge port and the first steering cylinder first port, a second hydraulic fluid supply line adapted for communication between the second pump discharge port and the second steering cylinder second port, and means adapted for communication with the tie line and operably connected to each of said first and second fluid lines for preventing steering movement of one of the first and second propulsion units in response to the absence of fluid under pressure in the tie line and during the presence in the other of said first and second fluid lines of fluid pressurized by the pump.

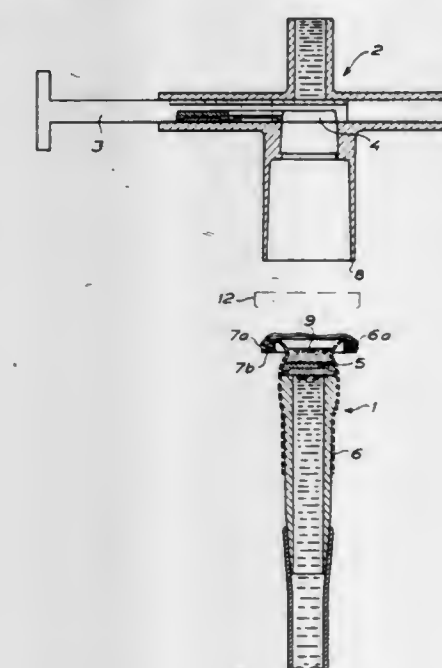
4,431,424
ARRANGEMENT IN A STERILIZING COUPLING
Jan A. Svensson, Solhemsgatan 12, S-561 35 Huskvarna, Sweden
PCT No. PCT/SE80/00202, § 371 Date Apr. 9, 1982, § 102(e)
Date Apr. 9, 1982, PCT Pub. No. WO82/00698, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 12, 1980, Ser. No. 369,014

Int. Cl.³ A61M 5/00

U.S. Cl. 604-33

3 Claims



1. A coupling comprising a coupling element and a coupling housing to be connected with said coupling element said cou-

pling housing including a socket for receiving one end of the coupling element therein, said coupling element having a valve for closing the coupling element at one end thereof, a thin flexible casing which surrounds at least a part of the coupling element and projects axially from said one end thereof, said casing defining together with said coupling element and said coupling housing a cavity for accommodating a disinfection agent therein, and means at the projecting end of said casing for substantially fluid-tight connection of the casing to one end of said coupling housing, said casing allowing said coupling element to be introduced into said socket while passing through the disinfecting fluid.

4,431,425

FLOW FAULT SENSING SYSTEM

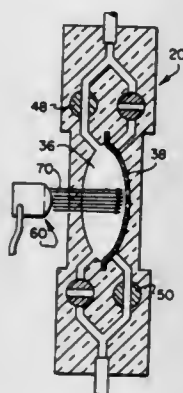
Thomas C. Thompson, McKinney; Martyn S. Abbott, Garland, and Robert L. Easley, Plano, all of Tex., assignors to Quest Medical, Inc., Carrollton, Tex.

Filed Apr. 28, 1981, Ser. No. 258,362

Int. Cl.³ A61M 5/00

U.S. Cl. 604—246

8 Claims



1. A volumetric metering device for controlling the flow of fluid in a fluid path extending from a fluid supply to a patient which automatically and non-invasively senses flow faults comprising:

- a metering chamber of predetermined volume much smaller than the volume of fluid to be delivered to the patient, divided into first and second compartments by a membrane, said first and second compartments each having an inlet and an outlet;
- valve means settable into a first state in which the inlet to the first compartment and the outlet from the second compartment are open and the outlet from the first compartment and the inlet from the second compartment are closed; and a second state in which the inlet to the second compartment and the outlet from the first compartment are open and the inlet to the first compartment and the outlet from the second compartment are closed, whereby a small discrete volume of fluid equal to the volume of the chamber is delivered upon each alternate switching into the first or second state of the valve means;
- control means for cycling the valve means by setting the time lapse between each successive setting of the valve means into such states; and
- non-invasive flow fault sensing means external to the metering chamber for generating discrete signals the magnitude of which is directly determined by the position of the membrane during preselected portions of the cycling established by the control means, and for comparing such signals with each other to determine movement of the membrane.

4,431,426

METHODS AND APPARATUS FOR INTRAVENOUS THERAPY AND HYPERALIMENTATION

Leroy E. Groshong, 6446 SW. Raab Rd., and Ronald J. Brawn, 5712 SW. 52nd, both of Portland, Oreg. 97221

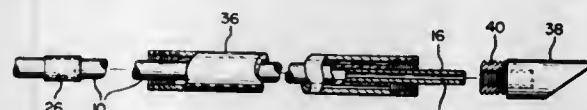
Division of Ser. No. 67,753, Aug. 20, 1979, Pat. No. 4,327,722.

This application Oct. 3, 1980, Ser. No. 193,629

Int. Cl.³ A61M 25/00

U.S. Cl. 604—280

3 Claims



1. An apparatus for performing intravascular therapy including hyperalimentation comprising: a flexible catheter having a length sufficient to extend from a vessel in a patient having a suitably large flow of blood therethrough and through an exit site in the skin of the patient, the catheter having a valve adjacent its proximal end; a male coupler secured to the open distal end of the catheter; and a passer for threading the catheter subcutaneously, the passer including an elongate tube adapted to slide over the male coupler and the distal end of the catheter, a tip adapted to be releasably connected to the forward end of the tube, and means releasably to attach the distal end of the catheter to the tip.

4,431,427

TAMPONS AND THEIR MANUFACTURE

Karl E. Lefren, Yorklyn, and Seymour Yolles, Newark, both of Del., assignors to University of Delaware, Newark, Del.

Filed Oct. 5, 1981, Ser. No. 308,291

Int. Cl.³ A61F 13/20

U.S. Cl. 604—285

5 Claims

1. A tampon having incorporated therein one or more organic acids selected from the group consisting of citric, glycolic, malic, tartaric and lactic acids, in combination with at least one of the group consisting of oligomer and polymer derivatives of said acids, said acids, and derivatives being present in an amount sufficient to maintain a pH of about 4.5 or less in the fluids absorbed during use of the tampon, whereby to inhibit the growth of pathogenic bacteria.

4,431,428

BIO-ARTIFICIAL ORGAN USING MICROENCAPSULATED ENZYMES

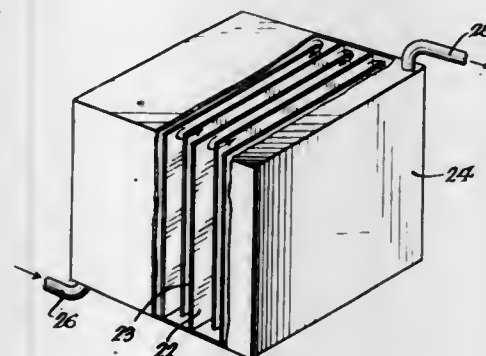
Gottfried Schmer, Seattle, Wash., assignor to Trimedyn, Inc., Arlington Heights, Ill.

Filed Sep. 30, 1981, Ser. No. 306,910

Int. Cl.³ A61M 7/00

U.S. Cl. 604—897

12 Claims



1. A biochemically active matrix suitable for use in bio-artificial organ comprising at least one biochemically active enzyme disposed within a plurality of semi-permeable microcapsules which are entrapped within a gel matrix, the gel matrix and microcapsule each having a permeability such that the substrate and enzyme-substrate reaction products pass to and from the microencapsulated enzyme.

CHEMICAL

4,431,429

CARPET DYEING SYSTEM

Barry R. Booth, Dalton, Ga., assignor to RBI International Carpet Consultants, Dalton, Ga.

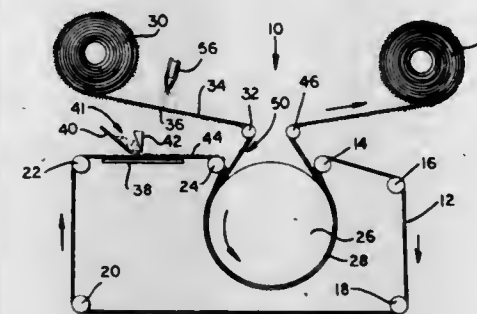
Continuation of Ser. No. 334,301, Dec. 24, 1981, abandoned.

This application Jan. 7, 1983, Ser. No. 456,194

Int. Cl.³ B08B 3/00; B21N 3/02

U.S. Cl. 8—477

9 Claims



1. A method of dyeing a textile material, comprising the steps of: foaming a dye liquor which is suitable for dyeing said textile material and being fixed to said textile material with steam; wetting said textile material with water; applying said foamed dye liquor to one side of said wetted textile material; bringing the other side of said wetted textile material into heat transfer contact with a heated surface; applying a web substantially non-permeable to steam to the foam coated surface of said textile material while said other side of said textile material is in contact with said heated surface; allowing said textile material to remain in contact with said heated surface for a period of time sufficient to convert at least a portion of said water on said textile material to steam and for said steam to fix said dye liquor on said textile material; and removing said textile material from between said web and said heated surface.

4,431,430

COMPOSITION CONTAINING A WATER SOLUBLE ALCOHOL AND A CORROSION INHIBITING ADDITIVE

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,815

Int. Cl.³ C10L 1/18

U.S. Cl. 44—53

15 Claims

1. A composition comprising: (i) a water-soluble alcohol; and (ii) an effective corrosion-inhibiting amount, 0.0001–0.01 w% of, as corrosion inhibiting agent, an alkenyl-substituted aliphatic dicarboxylic acid, said alkenyl group having a molecular weight M_n of at least about 300.

4,431,431

CARBIDE COATED SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Actor, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,384

Int. Cl.³ B24D 11/00

U.S. Cl. 51—295

13 Claims

1. A coated ceramic cutting tool comprising a densified silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of silicon dioxide,

aluminum oxide, magnesium oxide, yttrium oxide, hafnium oxide, zirconium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of a refractory metal carbide.

4,431,432

PROCESS AND APPARATUS FOR SEPARATING A MIXED GAS SUCH AS AIR

Tatsuo Amitani; Masayoshi Kubo; Kenichi Maehara; Jun Izumi, and Hiroyuki Tsutaya, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

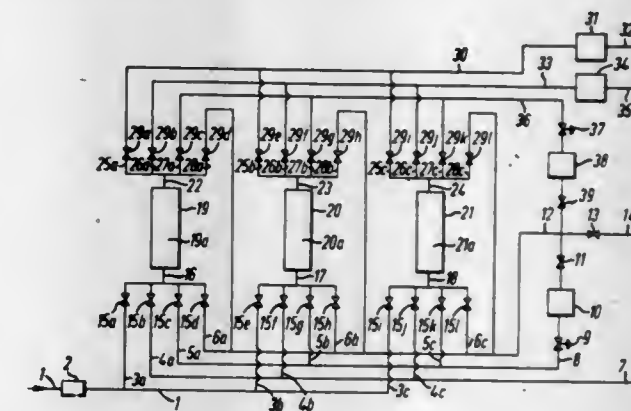
Filed Dec. 8, 1981, Ser. No. 328,700

Claims priority, application Japan, Dec. 26, 1980, 55-183819; Dec. 26, 1980, 55-183821

Int. Cl.³ B01D 53/04

U.S. Cl. 55—26

9 Claims



1. A process for separating air into oxygen and nitrogen by adsorption, which comprises an adsorption step of feeding air into an adsorption tower filled with an oxygen adsorbent to make said adsorbent adsorb oxygen gas and extracting an unadsorbate gas mainly comprising nitrogen from said adsorption tower, and a desorption step of reducing the pressure in said adsorption tower to make said adsorbent desorb the oxygen adsorbed thereby and recovering the oxygen gas, said steps being repeatedly carried out in a plurality of adsorption towers with staggered timing; and wherein upon commencement of the desorption step, mixed gas having a low oxygen concentration is delivered in the initial part of a pressure-reducing period in an adsorption tower which has completed adsorption, is fed into an adsorption tower which has completed pressure-reduction to scavenge and desorb the oxygen gas adsorbed by an adsorbent, whereby enhancement of the yield of the unadsorbate gas can be achieved as compared to scavenging desorption making use of a part of an unadsorbate gas delivered during an adsorption step and wherein a void space gas existing amid the adsorbent of the adsorbent bed at the completion of the adsorption step is released from the two ends of said bed until the pressure of said gas reaches a predetermined pressure at the start of the desorption step, whereby the oxygen concentration of the desorbed gas that is to be recovered in the subsequent desorption step of oxygen gas, is raised.

4,431,433

SINGLE STAGE LIQUID MOTOR AND PUMP

Charles R. Gerlach, 639 W. Rhapsody, San Antonio, Tex. 78216, and Rodney T. Heath, 4901 E. Main, Farmington, N. Mex. 87401

Filed Sep. 14, 1982, Ser. No. 417,903

Int. Cl.³ B01D 53/26

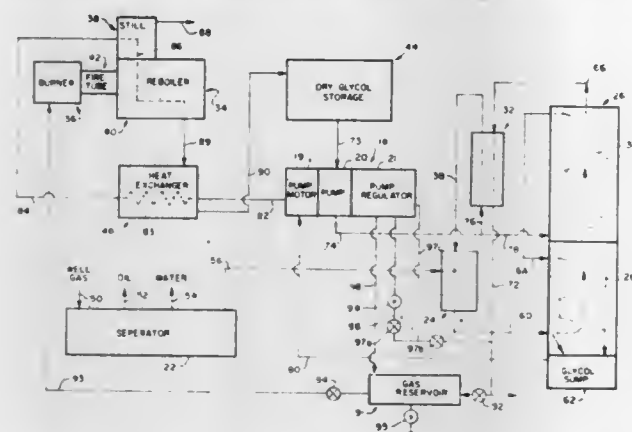
U.S. Cl. 55—29

15 Claims

1. A fluid pumping system for use with a natural gas dehydrating system or the like having an absorber apparatus for removing water from wet natural gas to produce dry natural gas by use of a dessicant agent such as glycol, a glycol reboiler means for producing a source of dry glycol from wet glycol

received from the absorber apparatus by heat obtained from burning of the natural gas, the system comprising:

- a single stage reciprocable fluid pump means operatively connected between dry glycol source and the absorber means for pumping dry glycol from the dry glycol source to the absorber means said fluid pump means comprising a piston means and a cylinder means defining a second variable volume fluid chamber means for receiving dry glycol during an intake stroke in one direction and for discharging dry glycol during a discharge stroke in the opposite direction;
- a single stage reciprocable fluid operable primary motor means operatively connected to said pump means for actuating said pump means during said discharge stroke and having fluid inlet passage means for receiving wet glycol from said absorber during said intake stroke and fluid outlet passage means for delivering wet glycol to said glycol reboiler means during said discharge stroke whereby energy derived from the wet glycol provides the primary motivating force for driving said motor means and said pump means during the discharge stroke; and



a speed control means being operable by the dry natural gas and operatively associated with said pump means and said motor means for automatically regulating the speed thereof; and

said speed control means being a fluid operable device operatively connected to and operable by the pressure of the natural gas which is constructed and arranged to provide a secondary motor means for actuating said primary motor means and said fluid pump means during the exhaust stroke.

13. A method of pumping dry glycol from a dry glycol source to a dehydration device of a natural gas dehydrating system comprising the steps of:

- utilizing the energy of wet glycol from the dehydrator device to operate a pump means for pumping the dry glycol from the dry glycol source to the dehydrator device;
- utilizing dry gas from the dehydrator device to control the rate of reciprocation of the pump means; and
- utilizing dry gas from the dehydrator device to control the intake and exhaust of wet glycol to and from the pump means.

4,431,434

ELECTROSTATIC PRECIPITATOR USING A TEMPERATURE CONTROLLED ELECTRODE COLLECTOR

George A. Rinard, Denver, and Michael D. Durham, Englewood, both of Colo., assignors to University of Denver, Colorado Seminary, Denver, Colo.

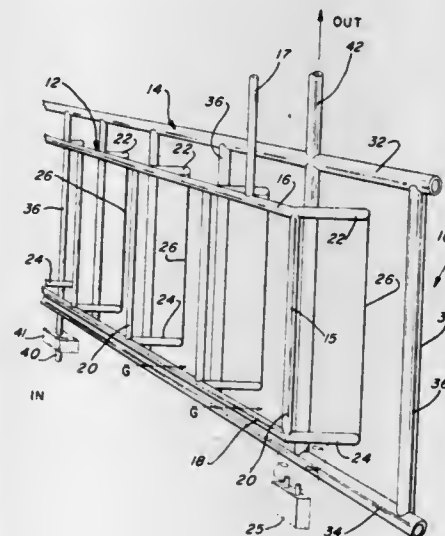
Filed Mar. 6, 1981, Ser. No. 241,074
Int. Cl.³ B03C 3/01

U.S. Cl. 55-135

1 Claim

1. An improved electrostatic precipitator for use in a gas stream containing high resistivity particles, said precipitator being arranged within a duct through which said gas stream is flowing, the precipitator comprising:

- A. a charging means which contains one or more corona electrodes and one or more collector electrodes,
 - 1. said corona electrodes being mounted on a support frame means which is suitably arranged within said duct,
 - 2. said collector electrodes being mounted on a separate support frame means which is suitably arranged within said duct and is electrically insulated from said corona electrodes, said corona and collector electrodes being arranged parallel and in an alternating equidistant pattern, said electrodes being further arranged in a single plane which is positioned transverse to the gas stream,
 - 3. a high voltage, high current, power means connected between said corona electrodes and said collector electrodes to produce a high current electrical field between said electrodes so that the high resistivity particles will be charged and collected on the surface of the collector electrodes,
 - 4. said collector electrodes being formed from hollow tubes through which a temperature control fluid can pass to vary the temperature of the particles collected on said electrodes, the temperature control fluid being controlled by a control means whereby the temperature of the collected particles are maintained within a re-



quired range to prevent back ionization and loss of efficiency within the charging means; and

B. a plate collector means formed from a plurality of parallel collector plates which are arranged parallel to the gas stream flow and spaced downstream from said charging means,

- 1. said parallel collector plates being arranged with alternating plates forming a first set and the remaining plates forming a second set, said first and second set of plates being electrically isolated from each other,
- 2. a high voltage, low current power means suitably connected between said first and second set of collector plates so that a high voltage electric field is established between the plates so that they attract the particles which have passed through the charging means so that the particles be collected on the collector plates to greatly improve the particle removing efficiency of the electrostatic precipitator, and
- 3. said collector plates being arranged equidistant from each other and spaced the same as said corona and collector electrodes, said first set of plates being positioned directly downstream of said corona electrodes and having a high voltage potential equal to or greater than said corona electrodes.

4,431,435

SCRUBBER APPARATUS INCLUDING IMPROVED SPRAY APPARATUS FOR FLUID DISPERSION

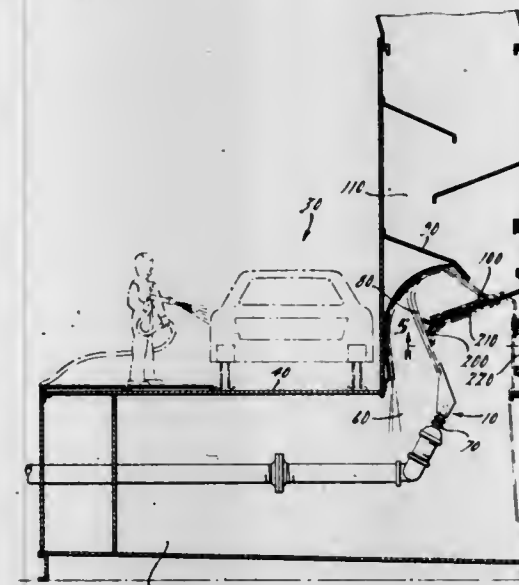
Robert Dorsch, Warren, and Arnold J. Matusz, West Bloomfield, both of Mich., assignors to Alpha-Debon Industries, Inc., Madison Heights, Mich.

Filed Jun. 18, 1982, Ser. No. 389,924

Int. Cl.³ B01D 47/06; F23J 11/00

U.S. Cl. 55-241

6 Claims



1. An apparatus for removing particulate matter from contaminated air, said apparatus having means for producing a fluid spray, conduit means for passing said contaminated air through said fluid spray, wherein the improvement comprises diverter means for diverting a portion of said fluid spray and for directing said diverted portion of said fluid spray toward a predetermined surface of said conduit means to prevent accumulation of said particulate matter on said conduit surface, said apparatus further including baffle means for mixing said contaminated air with said fluid spray, said baffle means including a baffle member protruding from said conduit surface, said diverter means including a vane member attached to said baffle member, said vane member being curved generally toward said fluid spray means so that at least some of said diverted portion also flows along at least a portion of said surface of said conduit and said baffle member.

4,431,436

GLASSWARE REJECTION APPARATUS

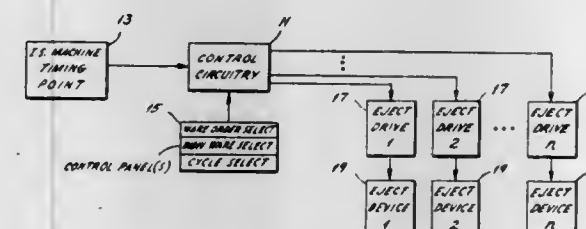
Donald A. Lulejian, Cornwells Heights, Pa., assignor to CSS International Corporation, Philadelphia, Pa.

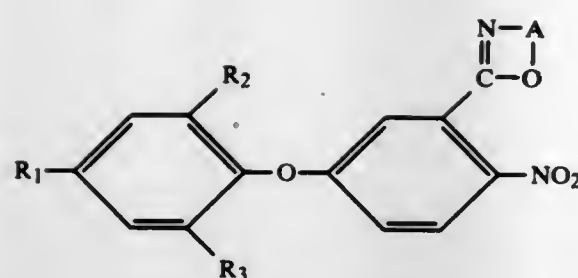
Filed Jul. 21, 1982, Ser. No. 400,562

Int. Cl.³ C03B 9/44

U.S. Cl. 65-159

10 Claims





wherein A is propylene or propenylene optionally substituted by C₁-C₄ alkyl or C₁-C₄ haloalkyl, and each of R₁, R₂, and R₃ is hydrogen, halogen, trifluoromethyl, nitro or cyano.

6. A method of controlling undesired plant growth at a locus, which comprises applying to said locus a herbicidally effective amount of a compound according to claim 1.

4,431,440

METHOD TO ALTER OR CONTROL THE DEVELOPMENT AND/OR THE LIFE CYCLE OF VARIOUS PLANT SPECIES

Prithvi R. Bhalla, Hightstown, and Bryant L. Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 236,471, Feb. 20, 1981, abandoned. This application Dec. 21, 1981, Ser. No. 333,233 Int. Cl.³ A01N 43/54

U.S. Cl. 71-92

3 Claims

1. A method to increase the grain yield of cereal crops comprising: applying to the foliage of said plants or to the soil in which said plants or seeds germinate and propagate, an effective amount of a compound 2-(4-methylphenyl)-4(3H)quinazolinone.

4,431,441

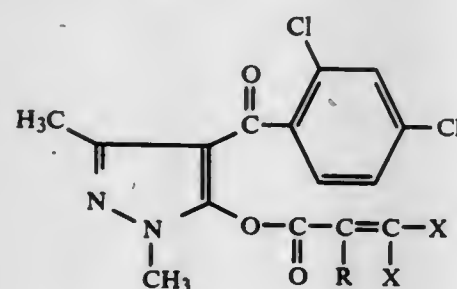
PYRAZOLYL ACRYLATES AND HERBICIDAL USE Masahiro Aya, Kodaira; Junichi Saito, Mitaka; Atsumi Kamachi, Hino, and Koichi Moriya, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,750
Claims priority, application Japan, Jun. 10, 1981, 56-88062
Int. Cl.³ A01N 43/56; C07D 231/14

U.S. Cl. 71-92

13 Claims

1. A pyrazole derivative of the formula



in which

X each independently is a halogen atom, and R is a halogen atom or a phenyl or naphthyl group optionally substituted by halogen or C₁ to C₆ alkyl.

12. A method of combating weeds comprising applying to the weeds, or to a habitat thereof, a herbicidally effective amount of a compound according to claim 1.

4,431,442 2-METHYLENESUCCINAMIC ACID COMPOUNDS AS PLANT GROWTH REGULANTS

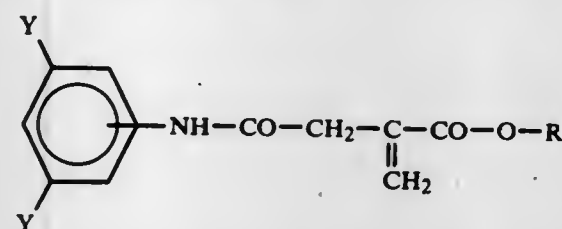
Andre Disdier, Villeurbanne; Guy Borrod, Lyons, and Stephane Trinh, Champagne au Mont d'Or, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Feb. 5, 1981, Ser. No. 231,721
Claims priority, application France, Feb. 18, 1980, 80 03876
Int. Cl.³ A01N 37/44; C07C 101/453

U.S. Cl. 71-111

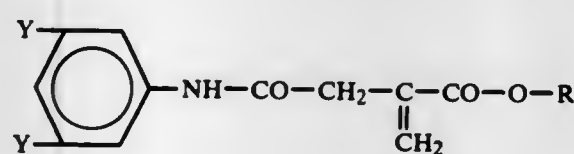
27 Claims

1. A method for improving soya crop plant growth, which comprises applying to a soya crop plant locus, a soya crop plant growth regulating amount of at least one compound having the structural formula:



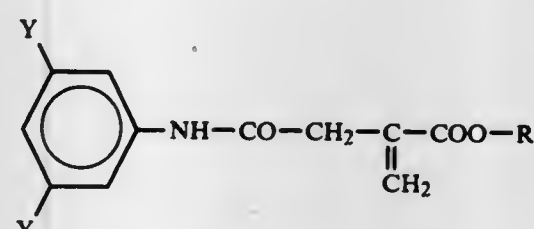
wherein R is hydrogen, an alkyl radical containing from 1 to 16 carbon atoms, an alkenyl radical containing from 3 to 15 carbon atoms or an alkynyl radical containing from 3 to 5 carbon atoms, and Y is a halogen atom, or a salt of such compound wherein R is hydrogen.

11. A composition of matter for use in improving soya crop plant growth comprising (i) a non-herbicidal, soya crop plant growth regulating amount of at least one compound having the structural formula:



wherein R is an alkyl radical containing from 1 to 16 carbon atoms, an alkenyl radical containing from 3 to 15 carbon atoms or an alkynyl radical containing from 3 to 5 carbon atoms, and Y is a halogen atom, (ii) an agronomically acceptable inert carrier and (iii) a surface-active agent.

20. A 2-methylenesuccinamic acid derivative having the structural formula:



wherein R is an alkyl radical containing from 1 to 16 carbon atoms, an alkenyl radical containing from 3 to 15 carbon atoms or an alkynyl radical containing from 3 to 5 carbon atoms, and Y is a halogen atom.

4,431,443

METHODS OF VACUUM ARC MELTING

Joseph M. Wentzell, Ty Careg, Remsen, N.Y. 13438
Filed Dec. 17, 1982, Ser. No. 450,515

Int. Cl.³ C22B 4/00; C21C 7/10

U.S. Cl. 75-102

10 Claims

1. The method of eliminating metal condensate on the walls of a closed melting vessel above a non-ferrous superalloy molten metal pool during metal melting comprising the steps of evacuating the vessel and thereafter providing an atmosphere of a non-condensable gas in the vessel above the molten pool

during the melting operation sufficient to suppress the formation and condensation above the molten pool of metal gases from the pool.

4,431,444

PROCESS FOR REDUCING THE IRON CONTENT OF CAO-RICH SLAGS FORMED DURING THE DESULPHURIZATION OF CRUDE IRON

Rudolf Hammer, Dinslaken; Walter Meichsner, Krefeld, and Heinrich Rellermeyer, Duisburg, all of Fed. Rep. of Germany, assignors to SKW Trostberg AG, Trostberg, Fed. Rep. of Germany

Filed Jul. 23, 1982, Ser. No. 401,209
Claims priority, application European Pat. Off., Jul. 27, 1981, 81105910

Int. Cl.³ C21C 1/00, 1/02

U.S. Cl. 75-53

7 Claims

1. A process for reducing the iron content of a CaO-rich slag formed during the desulphurization of a crude iron melt, which comprises adding finely-ground fluorspar to the melt, in a ladle in which the crude iron is transported to a steel making unit, or adding it to the ladle prior to adding the crude iron thereto, in an amount such that the slag remains solid.

4,431,445

STEEL FOR MACHINE CONSTRUCTION HAVING EXCELLENT COLD FORGEABILITY AND MACHINABILITY

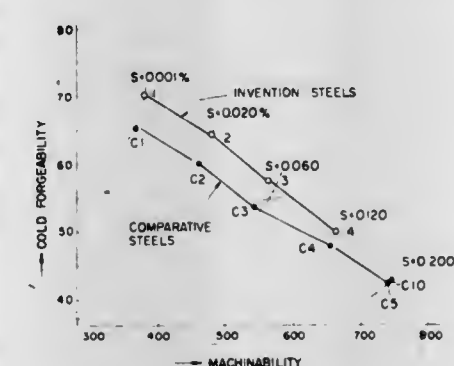
Sadayoshi Furusawa; Hideo Takeshita; Tsuyoshi Kohoka; Jiro Koarai, and Shuji Iwata, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 9, 1981, Ser. No. 281,675
Claims priority, application Japan, Jul. 9, 1980, 55-93499; Jul. 9, 1980, 55-93500; Jul. 9, 1980, 55-93501

Int. Cl.³ C22C 38/00, 38/18, 38/40

U.S. Cl. 75-123 R

1 Claim



1. A steel for machine construction having excellent cold forgeability and machinability which has a composition of less than 0.6% C, less than 0.35% Si, less than 1.65% Mn, less than 3.5% Ni, less than 3.5% Cr, less than 0.35% Mo, 0.010-0.10% Al, and less than 0.002% B, the remainder being Fe and impurities with limited contents of Pb and/or Bi within the range of 0.02-0.12%, Ca in the range of greater of 0.001% and less than or equal to 0.05%, S of less than 0.005%, Al₂O₃ inclusion of less than 0.0005% and inclusions substantially composed of CaO, CaS, (Ca, Mn)S and MnS, wherein the area percentage of the CaO, CaS and (Ca, Mn)S inclusions based on all the inclusions except the Pb- or Bi-based inclusion is over 70%.

4,431,446

HIGH CAVITATION EROSION RESISTANCE STAINLESS STEEL AND HYDRAULIC MACHINES BEING MADE OF THE SAME

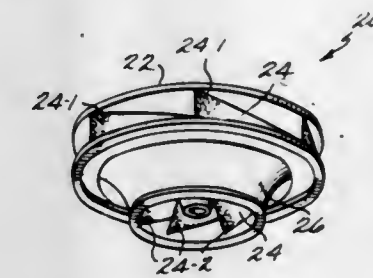
Masao Yamamoto, Tokyo; Takashi Yebisuya, Kawasaki; Mituo Kawai, and Kei Honma, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 17, 1981, Ser. No. 274,481
Claims priority, application Japan, Jun. 17, 1980, 55-80861; Jul. 21, 1980, 55-98684; Sep. 11, 1980, 55-125306; Dec. 8, 1980, 55-1702015

Int. Cl.³ C22C 38/58

U.S. Cl. 75-128 A

18 Claims



1. A high cavitation erosion resistance stainless steel for use in hydraulic machine of which surfaces are damaged by cavitation erosion comprising at least either carbon of no more than about 0.2 weight percent or nitrogen in an amount ranging from about 0.02 to about 0.3 weight percent together with silicon of no more than about 2.0 weight percent, chromium in an amount ranging from about 11.0 to about 15.0 weight percent, nickel of over 3.0 to about 10.0 weight percent and manganese in an amount varying from about 2.0 to about 20.0 weight percent, with the remainder of said steel being comprised essentially of iron, and in which the ferrite phase has not been formed so that the microstructure of the stainless steel is ferrite free but where at least either the epsilon phase or the austenite phase has been essentially formed.

4,431,447

CORROSION RESISTANT WELD OVERLAY CLADDING ALLOY AND WELD DEPOSIT

Wilbur R. Schick, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 27, 1982, Ser. No. 372,320

Int. Cl.³ C22C 38/12

U.S. Cl. 75-128 W

4 Claims

1. A corrosion resistant welding alloy for overlay cladding containing sufficient molybdenum to give a weld deposit containing for about 4 to 6 weight percent of molybdenum wherein the alloy consists essentially of, in weight percent:

Silicon: from 0.0 to 0.6%,
Manganese: from 0.05 to 2.0%,
Carbon: from 0.01 to 0.1%,
Nickel: from 10 to 15%,
Chromium: from 17 to 23%,
Molybdenum: from 5 to 7.5%, and
the balance iron and incidental impurities and residual elements.

4,431,448

TUNGSTEN-FREE HARD ALLOY AND PROCESS FOR PRODUCING SAME

Alexandr G. Merzhanov; Inna P. Borovinskaya, both of Chernogolovka, ulitsa 3-ia, 3, kv. 2; Lidia V. Kustova, Chernogolovka, ulitsa 1-ya, 23, kv. 35, all of, Moskovskaya oblast, Noginsky raion, and Fedor I. Dubovitsky, Vorobievskoe shosse, 2 "B", kv. 12, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00133, § 371 Date Oct. 9, 1981, § 102(e) Date Oct. 9, 1981, PCT Pub. No. WO81/02431, PCT Pub. Date Sep. 3, 1981

PCT Filed Jul. 31, 1980, Ser. No. 314,074

Claims priority, application U.S.S.R., Feb. 20, 1980, 2880101 Int. Cl.³ B22F 3/16; C22F 29/00

U.S. Cl. 75—238 18 Claims

1. A process for producing a tungsten-free hard alloy having porosity below 1% and containing the following components, percent by mass:

- (a) titanium diboride 40 to 60,
- (b) a binder which contains an alloy of copper, nickel and aluminum based on at least one metal of subgroup 1B of the periodic system inactive relative to boron and a powder of the final alloy such as bronze powder or powders of copper, nickel and aluminum 3 to 30, and
- (c) titanium carbide the balance; and comprising preparation of a starting charge by intermixing powders of titanium, boron and carbon, compression of the charge, local ignition thereof for initiation of the exothermal reaction of titanium with boron and carbon which further proceeds spontaneously under burning conditions while propagating within the charge due to the heat transfer from a heated layer of the charge to a cold one, and at the stage of the charge preparation a powder of at least one metal of subgroup 1B of the periodic system is incorporated into the charge and a powder of an alloy based on one of said metals of subgroup 1B, or powders of metals forming such alloy under the conditions of said exothermal reaction are incorporated into the charge and on completion of the exothermal reaction the resulting solid-liquid reaction mass is subjected to compression until a porosity of below 1% is obtained.

4,431,449

INFILTRATED MOLDED ARTICLES OF SPHERICAL NON-REFRACTORY METAL POWDERS

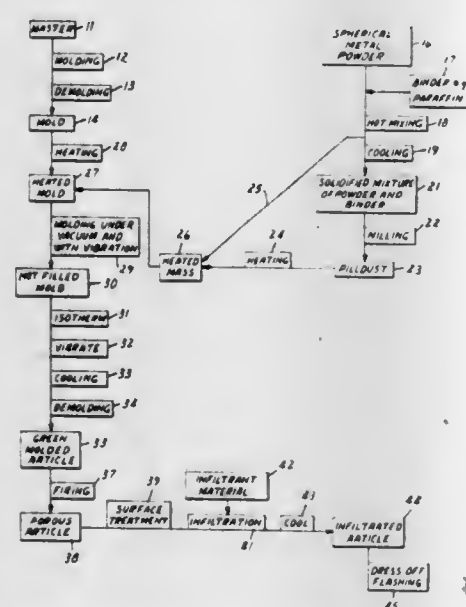
Kenneth R. Dillon, and Richard L. Terchek, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 836,782, Sep. 26, 1977. This application Jun. 1, 1983, Ser. No. 499,412

Int. Cl.³ B22F 3/00

U.S. Cl. 75—246

29 Claims



1. A shaped, homogeneous, monolithic, metal article comprising at least 60 percent by volume of a first continuous phase and then comminuting the frit, forming it into a dental porcelain article and firing it.

of spherical non-refractory metal particles comprising cobalt or cobalt alloy, which particles are metallurgically integral at their contiguous points of contact in the form of a skeleton with perceptible necking, when viewed by a light microscope, between the largest contiguous particles thereof, and as a minor portion a second continuous phase of metal which has a melting point of at least 25° Kelvin lower than the melting point of the lowest melting of said spherical non-refractory particles and which occupies the volume of said article not occupied by said skeleton, said article thereby comprising two intermeshed matrices and being substantially void free.

4,431,450

DESENSITIZING INK FOR PRESSURE SENSITIVE COPYING SHEETS

Akira Hasegawa, and Mamoru Suzuki, both of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,309

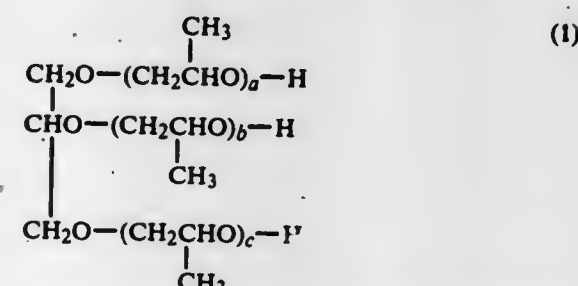
Claims priority, application Japan, Feb. 23, 1981, 56/24330; Apr. 15, 1981, 56/55604

Int. Cl.³ C09D 11/00

U.S. Cl. 106—21

2 Claims

1. A desensitizing ink for pressure sensitive copying sheets using at least a desensitizing agent, pigment and binder, wherein said desensitizing agent comprises propylene oxide addition compound of following formula:



wherein a, b and c represent identical or different integers greater than 1.

4,431,451

DENTAL MATERIAL

Curtis P. Mabie, Thurmont, and Daniel L. Menis, Gaithersburg, both of Md., assignors to American Dental Association Health Foundation, Chicago, Ill.

Continuation-in-part of Ser. No. 237,746, Feb. 24, 1981, abandoned, which is a continuation-in-part of Ser. No. 120,823, Feb. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 32,934, Apr. 22, 1979, abandoned. This application Jan. 22, 1982, Ser. No. 341,682

Int. Cl.³ C09K 3/00

U.S. Cl. 106—35

28 Claims

1. A method of preparing a dental porcelain article which comprises preparing a dental porcelain frit by the process comprising:

- (a) preparing a sol comprising in weight percent based on total solids content, 55-80% silica, 5-20% alumina, 12-40% flux constituents, and 0-7% additives, the 12-40% flux constituents comprising the solubilized oxides of boron, sodium, potassium, and lithium, the 0-7% additives comprising the solubilized oxides of calcium, magnesium, barium, strontium, zinc, tin, phosphorus, cesium, rubidium, yttrium, ytterbium, samarium, lanthanum, titanium, zirconium, terbium, thulium, cerium, europium and scandium with no single additive being present in an amount greater than 4%,
- (b) gelling the sol, and
- (c) calcining the gelled sol by heating it to calcination temperature to form a calcined frit, the frit being characterized by minimal microporosity and by a fusion temperature of 960° C. or less,

and then comminuting the frit, forming it into a dental porcelain article and firing it.

4,431,452

TIRE CURING BLADDER COATING COMPOSITION

Louis F. Comper, and Robert F. Scheiderich, both of Danville, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 208,727, Nov. 20, 1980, abandoned.

This application Oct. 7, 1982, Ser. No. 433,293

Int. Cl.³ B28B 7/36

U.S. Cl. 106—38.22

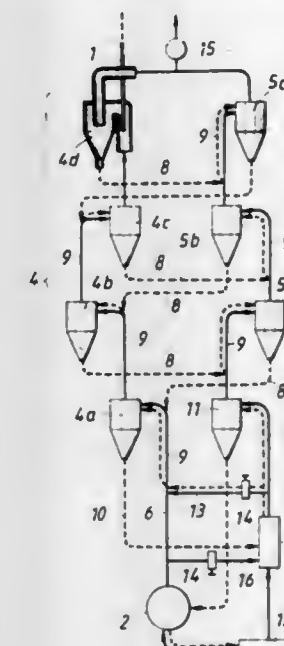
7 Claims

1. An aqueous emulsion of a lubricant composition consisting essentially of:

- (A) about 10 to about 40 parts by weight bentonite clay having a mesh size in the range from about 100 to about 500 U.S. Standard Sieve Size;
- (B) about 15 to about 45 parts by weight polydimethylsiloxane characterized by having a viscosity in the range of about 15 million to about 25 million centistokes at 25° C.;
- (C) about 15 to about 45 parts by weight polydimethylsiloxane having a viscosity in the range of about 40,000 to about 120,000 centistokes at 25° C.;
- (D) about 12 to about 31 parts by weight of a polyalkylene glycol having a molecular weight in the range of about 1500 to about 2500 and selected from the group consisting of polyethylene glycol, polypropylene glycol and mixtures thereof;
- (E) about 10 to about 25 parts by weight surfactants for said polydimethylsiloxanes and polyalkylene glycol;
- (F) optionally about 4 to about 12 parts by weight stabilizer, and
- (G) about 500 to about 1500 parts by weight water; where said emulsion is prepared by the sequential steps of

- (i) mixing under high shear mixing conditions said clay and water, said water having a temperature in the range of about 50° C. to about 95° C., until the mixture thickens and
- (ii) mixing therewith under high shear mixing conditions said polydimethylsiloxanes, surfactant and polyalkylene glycol.

said first partial stream of calcinator exhaust gas is conducted through said second series of heat exchange stages, said second partial stream of calcinator exhaust gas is admixed to said kiln exhaust gas to produce mixed exhaust gases and



said mixed exhaust gases are conducted through at least part of said final heat exchange stage in heat transfer relation with said ground raw material.

4,431,454

PROCESS AND APPARATUS FOR PRODUCING CEMENT

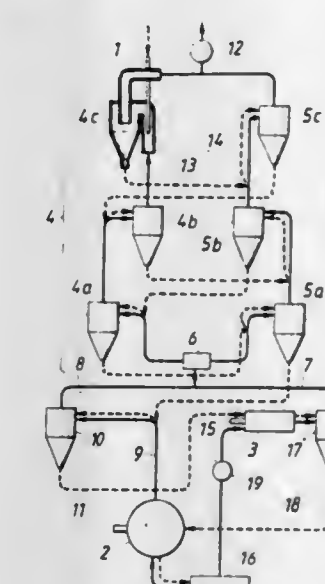
Franz Krennbauer, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria and VEB Schwermaschinenbau-Kombinat "Ernst Thälmann", Magdeburg, German Democratic Rep.

Filed Oct. 18, 1982, Ser. No. 434,890

Claims priority, application Austria, Nov. 3, 1981, 4693/81 Int. Cl.³ C04B 7/44

U.S. Cl. 106—100

5 Claims



1. In a process of producing cement, comprising de-acidifying ground raw material in a calcinator to obtain de-acidified ground material and calcinator exhaust gas; burning said de-acidified ground material in a kiln to obtain cement clinker and kiln exhaust gas; and subjecting ground raw material to be de-acidified in said calcinator to a heat exchange with said calcinator exhaust gas and said kiln exhaust gas in a plurality of heat exchange stages arranged in two series, which are flown

4,431,453

PROCESS AND APPARATUS FOR PRODUCING HYDRAULIC CEMENT

Fritz Feige, Dessau, German Democratic Rep., and Franz Krennbauer, Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 15, 1982, Ser. No. 434,501

Claims priority, application German Democratic Rep., Oct. 27, 1981, 234385; Austria, Nov. 13, 1981, 4882/81

Int. Cl.³ C04B 7/44

U.S. Cl. 106—100

11 Claims

1. In a process of producing hydraulic cement, comprising de-acidifying ground raw material in a calcinator to produce de-acidified ground material and calcinator exhaust gas, burning said de-acidified ground material in a kiln to produce cement clinker and kiln exhaust gas, causing kiln exhaust gas to flow from said kiln through a first series of heat exchange stages, causing calcinator exhaust gas to flow from said calcinator through a second series of heat exchange stages, causing said ground raw material to flow through said heat exchange stages of said first and second series in heat exchange relation to said kiln exhaust gas and calcinator exhaust gas, whereby said ground raw material is pre-heated delivering said ground raw material from a final heat exchange stage of said first series to said calcinator, and conducting kiln exhaust gas from said kiln through said final heat exchange stage and then through the remaining heat exchange stages of said second series, the improvement residing in that said calcinator exhaust gas is divided into first and second partial streams of calcinator exhaust gas,

through in parallel by said calcinator exhaust gas and said kiln exhaust gas, said ground raw material being delivered from said heat exchange stages of each of said stages to respective heat exchange stages of the other of said series, whereby said ground raw material is preheated, the improvement residing in that said ground raw material which has passed through said heat exchange stages of said two series is subjected in an additional heat exchange stage to a further heat exchange with said kiln exhaust gas before the latter is supplied to said heat exchange stages of said two series, whereby said ground raw material is further preheated; said ground raw material is supplied from said additional heat exchange stage to said calcinator; said kiln exhaust gas from said additional heat exchange stage is mixed with said calcinator exhaust gas before the latter is supplied to said heat exchange stages of said two series, whereby mixed exhaust gases are formed; and said mixed exhaust gases are supplied in two equal partial streams to said two series of heat exchange stages, respectively.

4,431,455

WAX DISPERSIONS AND THEIR USE IN THE MANUFACTURE OF SHEETS OR MOULDED BODIES
James P. Brown, Manchester; Robert S. Hampson, and Frederick T. Kelly, both of Oldham, all of England, assignors to Imperial Chemical Industries PLC, London, England
Filed Jan. 20, 1982, Ser. No. 341,177

Claims priority, application United Kingdom, Feb. 4, 1981, 8103439

Int. Cl.³ C08L 91/00

U.S. Cl. 106—245

6 Claims

1. A dispersible organic polyisocyanate composition comprising, on a weight basis, from 99 to 60 parts of an emulsifiable liquid organic polyisocyanate and from 1 to 40 parts of a mixture of (a) a wax selected from the group consisting of a vegetable wax having a melting point of at least 70° C., a modified vegetable oil having a melting point of at least 70° C., a microcrystalline wax having a melting point of at least 70° C., an animal wax having a melting point of at least 60° C., a synthetic wax having a melting point of at least 60° C., a modified animal wax having a melting point of at least 60° C. and mixtures thereof and (b) a liquid ester having a molecular weight of at least 250 derived from a monohydric alkyl alcohol containing from 3 to 30 carbon atoms and a saturated or unsaturated monocarboxylic fatty acid containing from 10 to 25 carbon atoms, wherein the wax and the liquid ester are present in the proportions of from 90:10 to 10:90, the composition having mold release properties when used in the form of an aqueous dispersion as binder in the manufacture of sheets or molded bodies by the hot pressing of lignocellulosic material.

4,431,456

TECHNIQUE TO REDUCE THE ZEOLITE MOLECULAR SIEVE SOLUBILITY IN AN AQUEOUS SYSTEM
Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 171,864, Jul. 24, 1980, abandoned, which is a division of Ser. No. 048,955, Jun. 15, 1979 now U.S. Pat. No. 4,248,737. This application Jun. 11, 1982, Ser. No. 387,381

Int. Cl.³ C13D 3/12

U.S. Cl. 127—46.3

17 Claims

1. A process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components, which process comprises

(1) contacting said solution to selectively adsorb said component from said mixture, with an adsorbent comprising a zeolite having impregnated therein a water permeable organic polymer, the adsorbent exhibiting an adsorptive selectivity towards said component, where the adsorbent is prepared by the steps of:

- (a) mixing together a powder of said zeolite, a powder of said water permeable organic polymer and a liquid organic solvent to form a malleable mixture;
 - (b) forming said malleable mixture into discrete formations;
 - (c) removing said solvent from said formation to obtain hard dry formations; and,
 - (d) breaking said hard dry formations into particles of desired size to obtain said zeolite impregnated with a water permeable organic polymer binder;
- (2) separating said solution from contact with said adsorbent and
- (3) recovering said adsorbed component by desorption of the adsorbed component from the adsorbent.

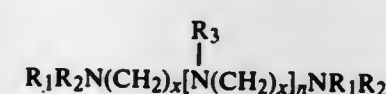
4,431,457

PROCESS FOR CLEANING METAL SURFACES OF POLY(ARYLENE SULFIDE) DEPOSITS
Jerry O. Reed, and Guy Senatore, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jun. 29, 1982, Ser. No. 393,240
Int. Cl.³ C23G 5/02

U.S. Cl. 134—2

9 Claims

1. A process for removing deposits on metal surfaces derived from poly(arylene sulfide) compound consisting essentially of contacting said metal surface with at least one polyamine compound represented by the general formula



wherein R₁ and R₂ can be hydrogen or any alkyl radical having from 1 to 10 carbon atoms; R₃ can be hydrogen or any alkyl radical having 1 to 6 carbon atoms; x can be 1, 2, or 3, and n can be any integer from 1 to 4, at a temperature and for a time sufficient to remove said deposits from the surface of said metal.

4,431,458

METHOD FOR REMOVING POLYVINYL COATINGS FROM METAL WITH TETRAHYDROFURAN
Harold Rosen, 5 Creek Side La., St. Louis County, Mo. 63141
Filed Apr. 8, 1982, Ser. No. 366,485
Int. Cl.³ B08B 3/08, 7/00

U.S. Cl. 134—38

3 Claims

1. A method for recovery of copper having a polyvinyl chloride coating thereon consisting essentially of providing a closable vessel having a perforated support disposed therein spacedly above the bottom thereof, placing the polyvinyl chloride coated copper to be treated upon said perforated support, then charging tetrahydrofuran to the vessel in such quantity as to immerse the said coated copper to be treated, then closing the vessel, permitting the vessel to remain in such closed state for a period of time commensurate with that required to render the coating flowable for passage through the perforated support to the bottom of said vessel, such being determinable by the thickness of the coating to be removed, then opening the vessel and then withdrawing the now denuded copper from the perforated support, said method being practiced under ambient conditions.

4,431,459

FABRICATION OF MOSFETS BY LASER ANNEALING THROUGH ANTI-REFLECTIVE COATING
Tzu-Chan Teng, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 17, 1981, Ser. No. 284,298

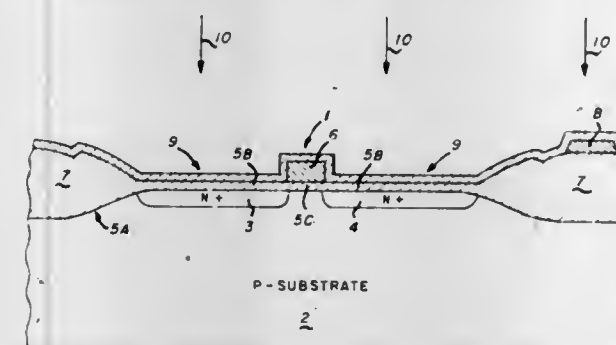
Int. Cl.³ H01L 21/263, 21/265

U.S. Cl. 148—1.5

13 Claims

1. A method of annealing a semiconductor MOSFET device

in which ions are implanted in the source and drain regions to create localized pn junctions comprising the steps of: depositing an antireflective dielectric coating on said MOS-FET device; and



irradiating said device with photons at a power level below that at which said junctions will be damaged.

4,431,460

METHOD OF PRODUCING SHALLOW, NARROW BASE BIPOLAR TRANSISTOR STRUCTURES VIA DUAL IMPLANTATIONS OF SELECTED POLYCRYSTALLINE LAYER

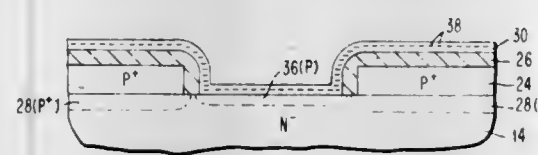
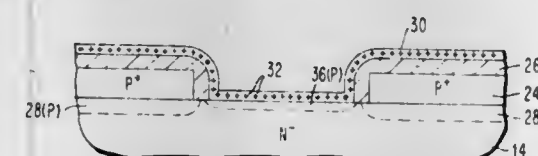
Fred Barson, Wappingers Falls, and Bernard M. Kemlage, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,633

Int. Cl.³ H01L 21/425, 21/265, 21/74

U.S. Cl. 148—1.5

20 Claims



1. The method of forming the emitter and base regions of an NPN bipolar transistor comprising: depositing a polycrystalline silicon layer over a monocrystalline silicon surface in which the base and emitter regions of said transistor are to be formed; ion implanting boron ions into the said polycrystalline silicon layer near the interface of said polycrystalline silicon layer with said monocrystalline silicon; first annealing the layered structure to partially drive the said boron ions into said monocrystalline silicon; ion implanting arsenic ions into said polycrystalline silicon layer; and second annealing the layered structure to fully drive in the said boron and arsenic to form said base and emitter regions of said transistor.

4,431,461

METHOD FOR PRODUCING AL-BASE ALLOY SUBSTRATES FOR MAGNETIC RECORDING MEDIA
Kohzoh Hoshino; Munee Mizuno; Hiroshi Murakado, and Yoshinobu Kitao, all of Mooka, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 28, 1981, Ser. No. 229,141

Claims priority, application Japan, Jan. 28, 1980, 55-9107

Int. Cl.³ C22F 1/04

U.S. Cl. 148—2

7 Claims

1. A method for manufacturing magnetic memory discs, comprising:

- (a) continuously casting into a strip of a thickness of 4 to 15 mm a molten alloy composition containing alloy components consisting essentially of 2-6 wt% of Mg, less than 1 wt% of Mn, less than 0.3 wt% of Fe, less than 0.25 wt% of Zn and less than 0.35 wt% of Cr and at least one element selected from the group consisting of less than 0.08wt% of Ti and less than 0.01 wt% of B, the balance being aluminum and the inevitable impurities, the alloying components being present in sufficient numbers and amounts to give an alloy disc-substrate of sufficient strength by virtue of the intermetallic compounds which form in the alloy, and allowing said alloy to solidify at a rate rapid enough so that the size of the intermetallic compounds which precipitate does not exceed 3 microns;
- (b) rolling the resulting cast strip;
- (c) cutting the magnetic disc substrates from said strip, and;
- (d) coating the disc substrates with a magnetic layer to a reduced thickness made possible by the smooth surface characteristics of the underlying substrate.

4,431,462

METHOD OF MAKING MULTI-BONDED SILVER-CADMIUM OXIDE MATERIAL
Lawrence J. Gould, Wellesley, and Yuan-Shou Shen, Reading, both of Mass., assignors to Engelhard Corporation, Iselin, N.J.

Filed Jun. 7, 1982, Ser. No. 386,124

Int. Cl.³ C22F 1/14

U.S. Cl. 148—11.5 Q

14 Claims

1. A method of manufacturing a silver-cadmium oxide product comprises:

- (a) superimposing one over another at least two layers of a silver-cadmium oxide strip material which has an internal cadmium oxide-depleted zone;
- (b) bonding the superimposed layers by hot rolling them under pressure to reduce the thickness of the combined layers and form a strip of bonded material;
- (c) superimposing one over another at least two layers of the bonded material;
- (d) bonding the superimposed layers of bonded material from step (c) by hot rolling them under pressure to reduce the thickness of the combined layers and form a bonded material;
- (e) repeating steps (c) and (d) with the resultant layers of bonded material for a number of times as required to obtain said product having throughout a substantially uniform distribution of cadmium oxide.

4,431,463

ALLOY AND PROCESS FOR MANUFACTURING ROLLED STRIP FROM AN ALUMINUM ALLOY ESPECIALLY FOR USE IN THE MANUFACTURE OF TWO-PIECE CANS

Heinz J. Althoff, Oberursel, Fed. Rep. of Germany, assignor to
Vereinigte Deutsche Metallwerke AG, Frankfurt am Main,
Fed. Rep. of Germany

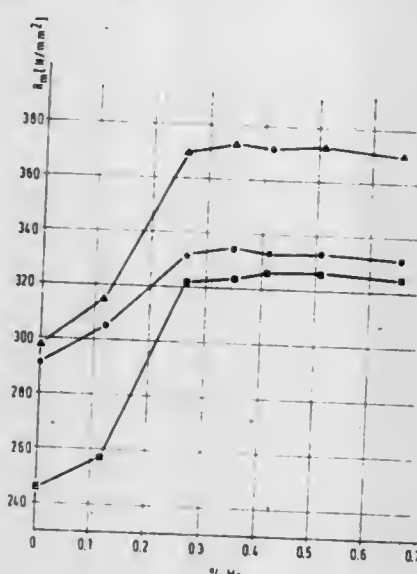
Filed Jan. 22, 1982, Ser. No. 341,944

Claims priority, application Fed. Rep. of Germany, Feb. 6,
1981, 3104079; Mar. 17, 1981, 3110227

Int. Cl.³ C21D 8/02

U.S. Cl. 148—11.5 A

15 Claims



1. A process of manufacturing rolled strip from an alloy comprising hot or cold rolling an ingot of an alloy consisting essentially of 1.15 to 2.0 percent manganese, more than 1.0 and up to 2.0 percent silicon, 0.25 to 0.65 percent magnesium, 0.2 to 1.0 percent iron, not in excess of 0.2 percent copper, not in excess of 0.2 percent zinc, not in excess of 0.1 percent zirconium, not in excess of 0.1 percent titanium, balance aluminum and other impurities not in excess of a total of 0.2 percent to an intermediate thickness D_2 and process annealing the resulting intermediate strip at 450° to 590° C. and subsequently cooling the same at a controlled rate of at least $V(^{\circ}\text{K./s})$ and then rolling it to a final thickness D_e with a controlled reduction of at least ϕ (%).

4,431,464

SALT BATH QUENCHING METHOD AND APPARATUS

Joseph A. Lincoln, Milford, and William A. Keough, Bloomfield Hills, both of Mich., assignors to Atmosphere Furnace Company, Wixom, Mich.

Filed Sep. 21, 1981, Ser. No. 304,190

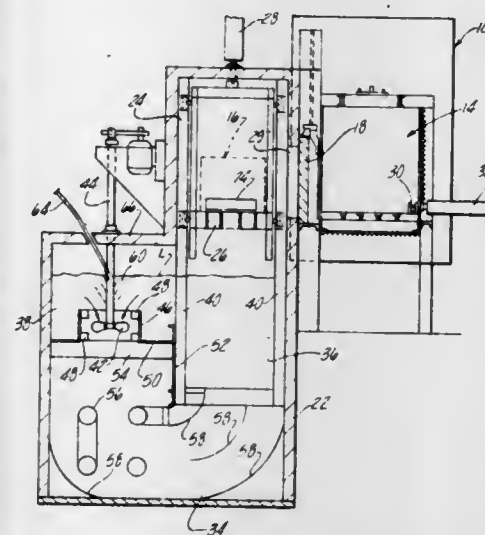
Int. Cl.³ C21D 1/48

U.S. Cl. 148—15

5 Claims

1. The method of hardening a workpiece by quenching it in a molten salt bath which is divided into a quench zone and an agitation zone by a generally vertically extending wall having its lower edge spaced above the bottom of the bath and its upper edge spaced below the top of the bath which comprises adding water to the bath in an amount to maintain a water content in the bath of at least 3% by weight and a bath temperature of between 350° F. and 700° F.; preventing boiling of the bath and excessive vaporization of the water while simultaneously causing the surface of the bath at the quench zone to assume a quiescent condition by rapidly recirculating the molten salt between said zones around the upper and lower edges of said wall, said recirculation being effected by vigorously agitating the salt in the agitation zone by means of two impellers in the agitation zone rotated to produce in said agitation zone two vertically opposite, high velocity paths of molten salt, said impellers being rotated at a speed to produce a velocity of molten salt at the surface of a workpiece in the quench zone of between about 1½ to 3 feet per second, said water being

added to said agitation zone as a downwardly directed stream aligned generally vertically with the downwardly directed,



high velocity flow path in said agitation zone and simultaneously quenching the workpiece in the quench zone.

4,431,465

BRAZING ALLOY PASTE

Howard Mizuhara, Hillsborough, and Surya Pattanaik, San Jose, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 270,661, Jun. 4, 1981,
abandoned. This application Aug. 2, 1982, Ser. No. 404,111

Int. Cl.³ B23K 35/34

U.S. Cl. 148—24

5 Claims

1. A brazing alloy paste for joining cemented carbide and steel objects comprising a mixture of a brazing alloy powder having a nickel-copper-manganese composition and a gel consisting of a water soluble resin and a plurality of iron spheres consisting essentially of 1-8% by weight of the metal components of the paste, said spheres having a diameter in the range of 177-500 microns.

4,431,466

METHOD FOR MAKING ARMOR PLATE

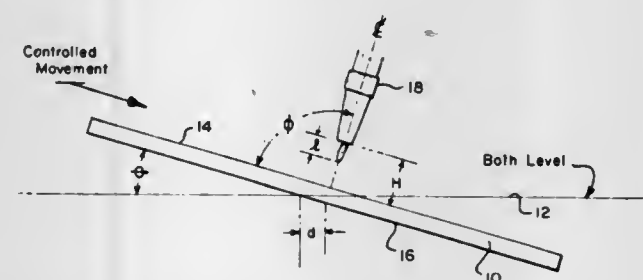
Donald F. McLampy, Box 331 - R.D. 7, Gibsonia, Pa. 15044

Filed Mar. 16, 1981, Ser. No. 244,004

Int. Cl.³ C21D 1/78

U.S. Cl. 148—143

8 Claims



1. A method for making armor plate comprising:

- providing a metal plate which has been hardened and tempered throughout and having a top side and a bottom side;
- then heating the top side to further temper the top side; and
- simultaneously preventing the bottom side from further tempering by moving the plate progressively into a liquid bath at an angle while applying the heat to the top side of the plate approximately adjacent to the intersection of the plate and the bath resulting in a top side having softer, tougher characteristics than the bottom side which has maintained its original hardness.

4,431,467

AGING PROCESS FOR 7000 SERIES ALUMINUM BASE ALLOYS

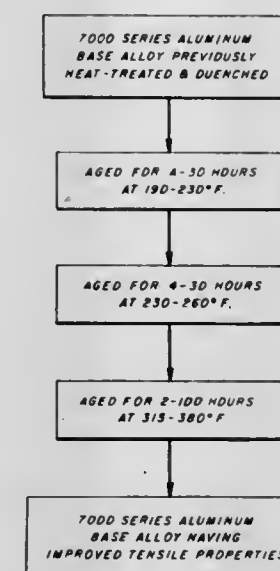
James T. Staley, Murrysville, and Ralph R. Sawtell, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 13, 1982, Ser. No. 407,761

Int. Cl.³ C22F 1/04

U.S. Cl. 148—159

11 Claims



1. An improved aging process for an aluminum base alloy containing alloying amounts of zinc, magnesium and copper which has been heat treated and quenched which consists essentially of:

- heating the alloy to a temperature of from 190° to 230° F. and maintaining the alloy at this temperature for a period of at least 4 hours in a first aging step;
- raising the temperature of said aged alloy of step a to from over 230° to 260° F. and maintaining the alloy at this temperature for a period of at least 4 hours in a second aging step; and
- raising the temperature of said aged alloy of step b to from 315° to 380° F. and maintaining the alloy at this temperature for at least 2 hours in a third aging step.

4,431,468

TL-170 BLASTING AGENT

Donald W. Edwards, Provo, Utah, and Ronald D. Thomas, Arlington Heights, Ill., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 152,074, May 21, 1980,
abandoned. This application Feb. 9, 1983, Ser. No. 465,241

Int. Cl.³ C06B 45/02

U.S. Cl. 149—21

20 Claims

1. A blasting agent composition comprising ammonium nitrate, a nitroalkane having of from 2 to 3 carbon atoms, or mixtures thereof, a density improver selected from the group consisting of wheat flour and bentonite and polyoxyethylene ether as thickening agent for the nitroalkane in an amount sufficient to prevent migration of the nitroalkane from the ammonium nitrate.

4,431,469

ELECTRICAL CONNECTION INSULATOR AND METHOD OF COVERING AN ELECTRICAL CONNECTION THEREWITH

Rocco Falcomato, Brooklyn, N.Y., assignor to Niemand Bros., Elmhurst, N.Y.

Filed Sep. 28, 1982, Ser. No. 425,613

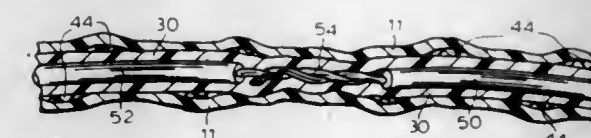
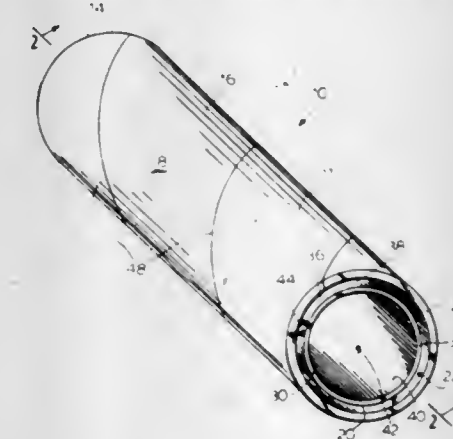
Int. Cl.³ H01R 4/70; B32B 1/08; B29C 27/20

U.S. Cl. 156—86

5 Claims

1. An electrical connection insulator, which comprises:
A. a first tube having

- a first end;
 - a second end;
 - a tubular body between and joining the first and second ends, having an inner surface and an outer surface; and
 - an open passage defined by the body inner surface, providing open communication between the first and second ends, the space of said passage being in direct contact with the inner surface; said tube being formed from a mono-layered film of a non-adhesive, heat stable, dielectric, synthetic, polymeric resin; and
- B. a second tube having
- a first end;
 - a second end;
 - a tubular body between and joining the first and second ends, having an inner surface and an outer surface; and
 - an open passage defined by the body inner surface, providing open communication between the first and second ends; said second tube being formed from a mono-layered film of a non-adhesive, heat shrinkable, dielectric, synthetic, polymeric resin; said second tube being positioned within the open passage of the first tube; and
- C. a connector secured to a selected minor portion of the outer surface of the tubular body (c) of the second tube and to a selected minor portion of the inner surface of the tubular



body (c) of the first tube, whereby the second tube is connected to the first tube, the non-selected major portions of the outer surface of the second tube and the non-selected major portions of the inner surface of the first tube being spaced apart and free of connection to each other.

5. A method of protecting an electrical connection, which comprises:

providing an insulator, which comprises:

- a first tube having
- a first end;
- a second end;
- a tubular body between and joining the first and second ends, having an inner surface and an outer surface; and
- an open passage defined by the body inner surface, providing open communication between the first and second ends, the space of said passage being in direct contact with the inner surface; said tube being formed from a mono-layered film of a non-adhesive, heat stable, dielectric, synthetic, polymeric resin; and

B. a second tube having

- a first end;
- a second end;

(c) a tubular body between and joining the first and second ends, having an inner surface and an outer surface; (d) an open passage defined by the body inner surface, providing open communication between the first and second ends; said second tube being formed from a mono-layered film of a non-adhesive, heat shrinkable, dielectric, synthetic, polymeric resin; said second tube being positioned within the open passage of the first tube; and

C. a connector secured to a selected minor portion of the outer surface of the tubular body (c) of the second tube and to a selected minor portion of the inner surface of the tubular body (c) of the first tube, whereby the second tube is connected to the first tube, the non-selected major portions of the outer surface of the second tube and the non-selected major portions of the inner surface of the first tube being spaced apart and free of connection to each other, inserting the connection into the open passage of the second tube; heat-shrinking the second tube about the connection; and sealing the first tube about the heat-shrunk second tube, under heat and pressure.

4,431,470

METHOD FOR PRODUCTION OF ALBUM LEAVES

Bernhard A. Schubert, Neu-Bornsen, Fed. Rep. of Germany, assignor to Leuchtturm Albenverlag Paul Koch KG, Geesthacht, Fed. Rep. of Germany

Continuation of Ser. No. 295,823, Aug. 24, 1981, abandoned.

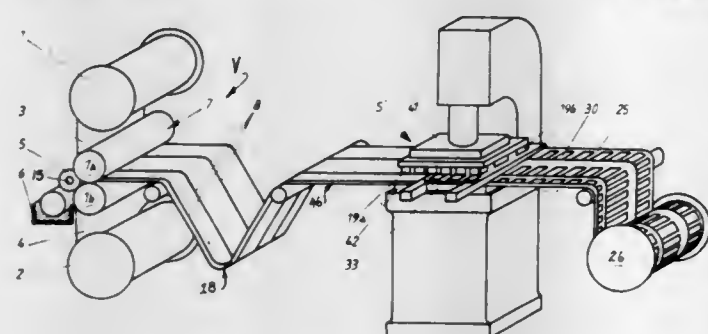
This application Jun. 6, 1983, Ser. No. 499,678

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 3032016

Int. Cl.³ B32B 31/10, 31/12, 31/18, 31/20

U.S. Cl. 156—265

6 Claims



1. Process for the automatic production of album leaves having a plurality of double-layered, slip-in pockets of thin plastic film glued thereto in a predetermined spaced arrangement, comprising the steps of:

(a) bonding two superimposed continuous webs of thin plastic film along a plurality of preselected longitudinal lines into a double-sheet continuous web having several longitudinal linear bonds corresponding to preselected transverse spaced arrangement of the pockets on the album leaf;

(b) simultaneously stamping out from said linearly bonded, double-sheet continuous web a plurality of double-layered, slip-in pockets, said pockets being spaced apart both transversely and longitudinally as required for the predetermined arrangement on the album leaf, wherein each of said pockets includes at least one margin formed by one of said longitudinal linear bonds, and the remaining waste-web contains spaced stamping holes;

(c) retaining during and after said stamping operation all the stamped-out, slip-in pockets in their transverse and longitudinal spaced-apart positions corresponding to the predetermined spaced arrangement in which they are to be secured on the album leaf;

(d) simultaneously applying adhesive to the album leaf in a plurality of selected spaced-apart areas each corresponding to a zone onto which a pocket is to be glued; and

(e) bringing the album leaf with its preselected spaced-apart adhesive areas into aligned contact with the corresponding retained spaced-apart pockets to simultaneously secure all

retained double-layered, slip-in pockets to said album leaf in the proper predetermined transverse and longitudinal relationship.

4,431,471

LAMINATED PANELS

Guy Mertens, Namur, and Pierre Laroche, Ham-sur-Heure, both of Belgium, assignors to Glaverbel, Brussels, Belgium

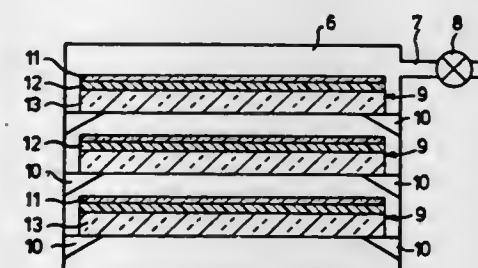
Filed Apr. 21, 1982, Ser. No. 370,522

Claims priority, application United Kingdom, Apr. 24, 1981, 8112722

Int. Cl.³ B32B 17/00, 31/00

U.S. Cl. 156—103

18 Claims



1. A method of bonding a first, vitreous sheet to a second sheet via an intervening body of adhesive material, characterized by the steps of forming an assembly of said two sheets with a said intervening body of adhesive material which is at most 250 μ m thick and has a viscosity in the range of 15 to 300 poises, the adhesive being such that it is settable by evaporation of solvent or by hot or cold curing, placing the assembly in a chamber in a manner such that the assembly is directly exposed to the environment of the chamber, degassing the assembly by subjecting it to subatmospheric environmental pressure in the chamber at a temperature such as to maintain the adhesive viscosity within said range, and then exposing the assembly to atmospheric environmental pressure in the chamber and causing or allowing the adhesive to set.

4,431,472

METHOD FOR IMPROVING THE ADHESION OF ORGANOPOLYSILOXANE ELASTOMERS

Horst Höhl, and Peter Kochs, both of Munich, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,660

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209755

Int. Cl.³ C09J 5/02

U.S. Cl. 156—307.3

8 Claims

1. A method for improving the adhesion of organopolysiloxane elastomers which crosslink at room temperature to a substrate which comprises

(1) coating the substrate with a primer selected from the group consisting of:

(a) a mixture consisting of a silane having an SiC-bonded aliphatic multiple bond and a silane having SiC-bonded epoxy group; and

(b) a stratum consisting of (i) at least a partially crosslinked organopolysiloxane containing $\text{SiO}_{4/2}$ units, trimethylsiloxane units and vinyltrimethylsiloxane units and (ii) at least a partially crosslinked organopolysiloxane elastomeric coating over said stratum, in which the organopolysiloxane elastomer is obtained from an organopolysiloxane composition which is stable under anhydrous conditions, but crosslinks when exposed to moisture at room temperature; and thereafter

(2) applying a crosslinkable organopolysiloxane composition over said primer in which the crosslinkable organopolysiloxane composition contains a diorganopolysiloxane, a crosslinking agent, a catalyst and at least one

additional component, in which the component is selected from the group consisting of (c) a material which is flowable after the organopolysiloxane composition is crosslinked, (d) a rod-shaped copolymer obtained from the copolymerization of styrene and n-butylacrylate in the presence of a diorganopolysiloxane by means of free radicals and (e) mixtures thereof.

4,431,473

RIE APPARATUS UTILIZING A SHIELDED MAGNETRON TO ENHANCE ETCHING

Haruo Okano, Yokohama, and Yasuhiro Horiike, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

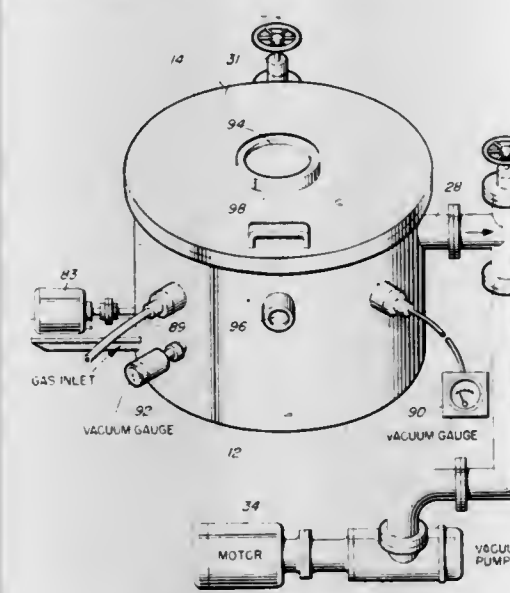
Continuation-in-part of Ser. No. 324,663, Nov. 24, 1981, abandoned, and Ser. No. 373,162, Apr. 29, 1982. This application Jul. 7, 1982, Ser. No. 396,123

Claims priority, application Japan, Jul. 17, 1981, 56-110904

Int. Cl.³ C23C 15/00

U.S. Cl. 156—345

12 Claims



1. An apparatus for etching a sample by generating a discharge in a reactive gas, said apparatus comprising:

a decompression vessel;

separating means within said decompression vessel for hermetically dividing the interior of said vessel into a shield room and a discharge room;

a pair of spaced electrodes within said discharge room including an anode and a cathode, said cathode supporting the sample;

electrical power supply means connected to said electrodes for generating an electric field between said electrodes; a magnet in the shield room positioned to produce a magnetic flux perpendicular to the electric field;

gas supply means communicating with said discharge room for introducing the reactive gas into said discharge room; and

exhaust means communicating with said shield room and said discharge room for reducing the pressure in said discharge room to a first value at which a discharge occurs and reducing the pressure in said shield room to a second value at which a discharge does not occur.

8. An apparatus for etching a sample by generating a discharge in a reactive gas, said apparatus comprising:

a decompression vessel;

a wall within said decompression vessel to separate the interior of said vessel into a shield room and a discharge room, said wall having an opening;

a pair of spaced electrodes within said discharge room including an anode and a cathode, said cathode supporting the sample and being movable to hermetically seal said opening;

electrical power supply means connected to said electrodes for generating an electric field between said electrodes; a magnet in the shield room positioned to produce a magnetic flux perpendicular to the electric field;

gas supply means communicating with said discharge room for introducing the reactive gas into said discharge room; and

exhaust means communicating with said shield room and said discharge room for reducing the pressure in said discharge room to a first value at which a discharge occurs and reducing the pressure in said shield room to a second value at which a discharge does not occur.

4,431,474

THERMOCOMPRESSION BONDING APPARATUS

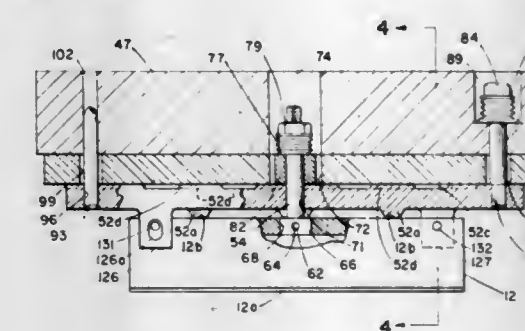
Fred J. Gronek, North Riverside; Raymond M. Taradejna, Bolingbrook, and Ray A. Watkins, Aurora, all of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,968

Int. Cl.³ B30B 5/02, 15/34; B23K 27/00; B02C 11/08

U.S. Cl. 156—583.1

18 Claims



1. A thermocompression bonding apparatus, which comprises:

a thermode having a main body portion with a longitudinal length greater than the width thereof, and formed with at least one centrally located, and longitudinally extending bore for mounting an elongated heating element there-within, said thermode further including a portion along the central region of the upper surface thereof adapted to be pin-coupled to the lower end of a support rod, and said thermode additionally having a lower face portion formed with at least one longitudinally disposed bonding rail;

a composite thermode support assembly, including a multi-plate die set, with at least two of said plates providing different types of heat shielding from the radiant heat generated by said thermode, wherein said die set of said thermode support assembly includes an upper metal plate adapted for internal cooling, an intermediate insulative heat-shielding plate and a lower metal plate, with all of said plates being resiliently secured together by a plurality of fastening and alignment means in a manner that allows the upper and lower plates to expand and contract independently of the intermediate plate, and a resiliently mounted, and downwardly extending support rod, the lower end of the latter being pin-coupled to said upper, central portion of said thermode, with an upper end portion of said support rod extending into a central, oversized bore of said multi-plate die set, with the latter further including biasing means coaxially mounted on the upper end portion of said support rod, and maintained under a predetermined amount of compressive force between an adjustable upper stop member, mounted on said support rod, and a portion of said die set so as to continuously urge upper surface areas of said support rod-coupled thermode against lower protruding reference alignment areas of said die set, said thermode thus being allowed to thermally expand in all directions while being heated and, thereby, minimize any tendency of the thermode bonding rail, in particular, to acquire a detrimental non-linear profile along the length dimension thereof, and

means for supporting and reciprocally displacing said sup-

port assembly, together with said thermode, such that the bonding rail of the latter may be brought into bonding engagement with two articles to be joined together when supported and aligned therebeneath.

11. A thermocompression bonding assembly particularly adapted for use in simultaneously effecting a plurality of reliable bonds between two articles having overlying/underlying arrays of bonding sites, said bonding assembly comprising:

a thermode having a main body portion with a longitudinal length greater than the width thereof, and formed with at least one centrally located, and longitudinally extending bore for mounting an elongated heating element there-within, said thermode further including a portion along the central region of the upper surface thereof adapted to be pin-coupled to the lower end of a support rod, and said thermode additionally having a lower face portion formed with at least one longitudinally disposed bounding rail, and

a composite thermode support assembly adapted for securement assembly including a multi-plate die set, with at least two of said plates providing different types of heat shielding from the radiant heat generated by said thermode, wherein said die set of said thermode support assembly includes an upper metal plate adapted for internal cooling, an intermediate insulative heat-shielding plate and a lower metal plate, with all of said plates being resiliently secured together by a plurality of fastening and alignment means in a manner that allows the upper and lower plates to expand and contract independently of the intermediate plate, and a resiliently mounted, and downwardly extending support rod, the lower end of the latter being pin-coupled to said upper, central portion of said thermode, with an upper end portion of said support rod extending into a central, oversized bore of said multi-plate die set, with the latter further including biasing means coaxially mounted on the upper end portion of said support rod, and maintained under a predetermined amount of compressive force between an adjustable upper stop member, mounted on said support rod, and a portion of said die set so as to continuously urge upper surface areas of said support rod-coupled thermode against lower protruding reference alignment areas of said die set, said thermode thus being allowed to thermally expand in all directions while being heated and, thereby, minimize any tendency of the thermode bonding rail, in particular to acquire a detrimental non-linear profile along the length dimension thereof.

4,431,475

PROCESS FOR MAKING DOPED SEMICONDUCTORS
Claus Holm, Teising, and Erhard Sirtl, Markt, both of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany
Filed Mar. 18, 1982, Ser. No. 359,281

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117072

Int. Cl.³ C30B 23/06, 27/00, 31/08, 31/12

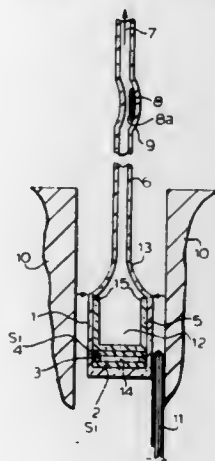
U.S. Cl. 156—606

6 Claims

1. In a process for making doped semiconductor bodies in a closed system by epitaxial growth of a doped monocrystalline semiconductor layer on a monocrystalline semiconductor body A by a transfer reaction from a semiconductor body B serving as a source for semiconductor material, in the presence of doping material in a gaseous state, the improvement comprising the steps of:

arranging the two semiconductor bodies A and B within said closed system in a contact-free manner, with the surfaces capable of exchange of material facing one another and providing a free space between said surfaces for the reaction to take place; and

maintaining within said space a temperature gradient, in the direction of material transfer, of maximally 1° C./mm,



thus producing a doped, monocrystalline semiconductor layer of a thickness of at least 100 μm.

4,431,476

METHOD FOR MANUFACTURING GALLIUM PHOSPHIDE SINGLE CRYSTALS

Masayuki Watanabe, Jisaburo Ushizawa, and Tsuguo Fukuda, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

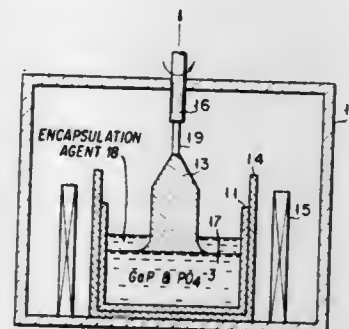
Filed Jan. 4, 1982, Ser. No. 336,701

Claims priority, application Japan, Jan. 17, 1981, 56-4592; Sep. 8, 1981, 56-141296

Int. Cl.³ C30B 27/02

U.S. Cl. 156—607

6 Claims



1. A method for manufacturing gallium phosphide single crystals comprising the steps of:

compressing a polycrystalline gallium phosphide powder into a green compact, said green compact having a bulk density of not less than about 2.0 g/cc, the polycrystalline gallium phosphide powder being prepared by hydrogen reduction of gallium phosphate and containing residual phosphate radicals in an amount of 0.03 to 0.5% by weight;

placing the green compact in a crucible and placing an encapsulating agent thereover;

heating the green compact in a crucible and the encapsulating agent placed in the crucible to provide a gallium phosphide liquid and an encapsulating agent liquid covering thereover; and

bringing a seed crystal into contact with the gallium phosphide liquid and pulling the seed crystal.

4,431,477

PLASMA ETCHING WITH NITROUS OXIDE AND FLUORO COMPOUND GAS MIXTURE

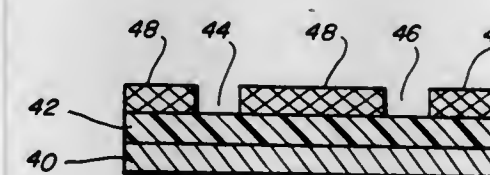
John Zajac, San Jose, Calif., assignor to Matheson Gas Products, Inc., Valley Forge, Pa.

Filed Jul. 5, 1983, Ser. No. 510,052

Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—643

19 Claims



1. A process for use in the manufacture of multi-layer thin film integrated circuits for selective removal of specific layers, comprising the step of:

exposing the multi-layer thin film integrated circuit to a plasma formed from a gaseous mixture of nitrous oxide and a fluoro compound, exclusive of any diluents.

4,431,478

ETCHING AGENT FOR POLYIMIDE TYPE RESINS AND PROCESS FOR ETCHING POLYIMIDE TYPE RESINS WITH THE SAME

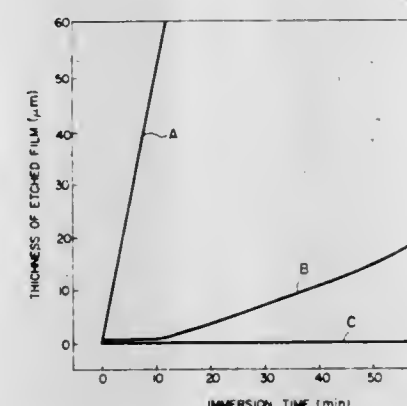
Shigénori Yamaoka, Yokohama; Kenmatsu Isozaki, Toride; Kyotaro Nishi, Tokyo; Yukihiro Okabe, Yokohama; Mitsutaka Waki, Yokohama, and Masuo Mizuno, Yokohama, all of Japan, assignors to Sumitomo Bakelite Co. Ltd., Japan
Filed Nov. 30, 1982, Ser. No. 445,408

Claims priority, application Japan, Dec. 2, 1981, 56-192959

Int. Cl.³ B29C 17/08; B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—668

21 Claims



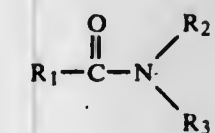
11. A process for etching a polyimide type resin which comprises contacting an etching agent consisting essentially of (1) tetramethylammonium hydroxide or an aqueous solution of tetramethylammonium hydroxide and

(2) an etching assistant consisting of (a) at least one amine compound represented by the formula,



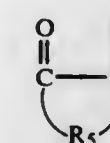
wherein R_6 is an alkyl group having one or more carbon atoms, and

(b) at least one amide compound selected from the group consisting of compound represented by the formula



wherein R_1 is a hydrogen atom or an alkyl group having

one or more carbon atoms and R_2 and R_3 are alkyl groups having one or more carbon atoms, and the formula



wherein R_4 and R_5 represent alkyl groups having one or more carbon atoms, with a coating or film of the polyimide type resin to etch a part of said coating or film of the polyimide type resin.

4,431,479

PROCESS FOR IMPROVING AND RETAINING PULP PROPERTIES

Michel Barbe, Candiac; Rajinder S. Seth, and Derek H. Page, both of Pointe Claire, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada
Filed May 11, 1982, Ser. No. 377,111

Int. Cl.³ D21D 1/00

U.S. Cl. 162—9

19 Claims

1. A method for treating high yield or mechanical pulps that have already been curled by a high consistency action in order to improve at least some of the following physical properties: drainage, wet-web stretch, wet-wet work-to-rupture, and dry-sheet tear strength and stretch, which method comprises: subjecting said curled pulp fibres to a heat treatment at a temperature of 100° C.-170° C. for a time varying between 60 minutes and 2 minutes, while said pulp is at a high consistency of 15% to 35% in the form of nodules or entangled mass, said heat treatment being sufficient to render said curl permanent to subsequent mechanical action.

4,431,480

METHOD AND APPARATUS FOR CONTROLLED ADDITION OF ALKALINE CHEMICALS TO AN OXYGEN DELIGNIFICATION REACTION

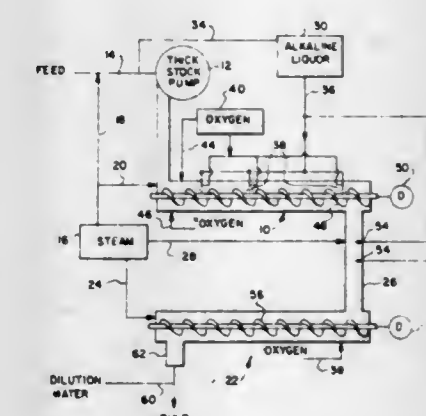
Larry D. Markham, Middletown, Ohio, and Vincent L. Magnotta, Coopersburg, Pa., assignors to The Black Clawson Company, Middletown, Ohio

Filed Oct. 27, 1981, Ser. No. 315,672

Int. Cl.³ D21C 3/02, 9/00

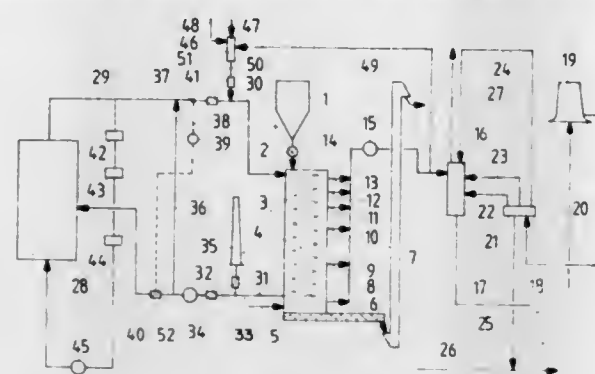
U.S. Cl. 162—19

11 Claims



1. Apparatus for the continuous oxygen delignification of pulp comprising in combination: a substantially horizontal tubular reaction vessel having an inlet and an outlet, means for supplying pulp to said inlet while maintaining a gas space at the top of said vessel above the level of said pulp, means for agitating and transporting said pulp through said reaction vessel to the outlet thereof, means for withdrawing delignified pulp from said reaction vessel, and means in said reaction vessel located above the level of pulp contained in said vessel for creating a fine spray of alkaline chemicals by injection of oxygen gas and alkaline chemicals to said gas space above the

ing in the direction of its coal feed, as well as a plurality of drain connections at different levels on a side lying opposite



said side displaying vapor or hot gas entry, said connections being for the discharge of exhaust gas-containing vapors released from the coal during pre-heating.

4,431,486

AZEOTROPIC DISTILLATION OF HYDROXYACETIC ACID

Jean L. Balmat, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 12, 1982, Ser. No. 367,753

Int. Cl.³ B01D 3/36

U.S. Cl. 203—69

3 Claims

1. In a process for the production of hydroxyacetic acid from formaldehyde, water and carbon monoxide in the presence of a sulfuric acid catalyst using crude, recycled hydroxyacetic acid as a reaction medium the improvement comprising an azeotropic distillation with essentially a single aromatic hydrocarbon of the crude hydroxyacetic acid to be recycled as reaction medium in amounts sufficient to cause an azeotrope with said hydroxyacetic acid.

3. In a process for the production of hydroxyacetic acid from formaldehyde, water and carbon monoxide in the presence of a sulfuric acid catalyst using crude hydroxyacetic acid as a reaction medium the improvement comprising an azeotropic distillation with an aromatic hydrocarbon consisting essentially of toluene of the crude hydroxyacetic acid to be recycled as reaction medium in amounts sufficient to cause an azeotrope with said hydroxyacetic acid and a molar ratio of water to formaldehyde feed mix is 1.3 to 1 to 1.5 to 1.

4,431,487

MATRIXING APPARATUS AND METHOD FOR USE IN THE MANUFACTURE OF MOLDED RECORDS

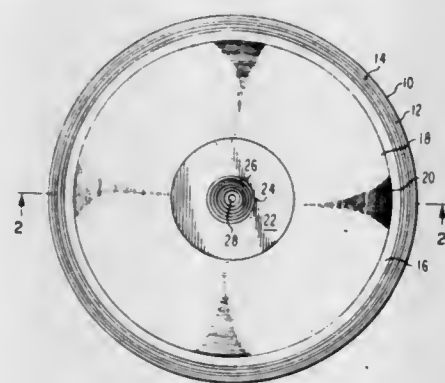
Charles A. Weaver, Indianapolis; Donald J. Wierschke, Brownburg, and Gunter John, Indianapolis, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,595

Int. Cl.³ C25D 11/10, 17/12

U.S. Cl. 204—5

9 Claims



1. In a record matrix for use in the electroforming of a replica on a recorded surface of the matrix in which the re-

corded surface of the matrix has an unrecorded center portion; a radially extending circumferential recorded portion which is contiguous with and surrounding the unrecorded center portion and an unrecorded circumferential zone contiguous with and extending radially outward from the recorded zone, the improvement which comprises; forming a circumferential seal zone contiguous with the unrecorded circumferential zone, said seal zone being of a predetermined width and having defined therein a substantially rectangular spiral groove of a given groove width, a given groove depth and a given groove pitch chosen so as to form an electrolyte tight seal of the replica to the surface of the matrix.

4,431,488

HEAT ABSORBER STRUCTURE, PARTICULARLY A PLASMA BEAM ABSORBER AND METHOD OF MANUFACTURING THE STRUCTURE

Johann Hemmerich; Peter Kupschus, both of Juelich, and Helmut Fraenkle, Unterhaching, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow Blohm GmbH; Kernforschungsanlage Jülich GmbH, Fed. Rep. of Germany

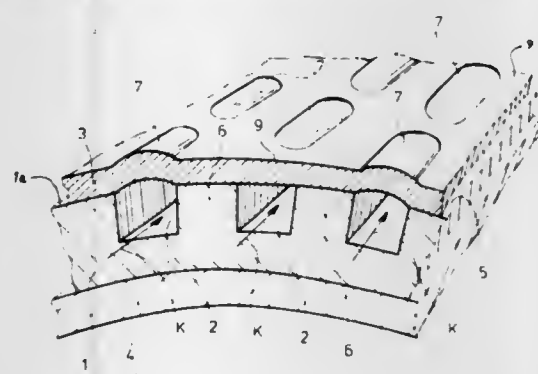
Division of Ser. No. 243,763, Mar. 16, 1981. This application Sep. 29, 1982, Ser. No. 427,275

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011282

Int. Cl.³ C25D 1/02, 5/02

U.S. Cl. 204—9

7 Claims



1. A method of forming a heat absorber structure comprising forming a first wall with good heat conducting material at spaced apart web portions leaving cooling channels between said web portions, filling the cooling channels with an electrically conductive wax, forming a second wall by electroplating it over the first wall and bonding it to the first wall at least at some the said web portions, and heating the wax to remove the channels while constraining a part of the exterior of the second wall to form bulges in the second wall overlying the cooling channels between the constrained parts.

4,431,489

COLORING PROCESS FOR ANODIZED ALUMINUM PRODUCTS

Bernard R. Baker; Richard L. Smith, both of Pleasanton, and Perce W. Bolmer, San Ramon, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 31, 1983, Ser. No. 480,965

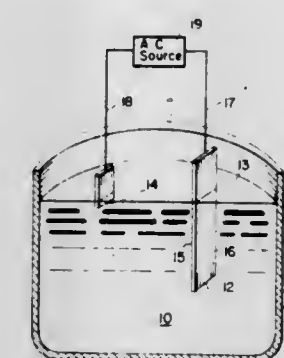
Int. Cl.³ C25D 11/22

U.S. Cl. 204—35 N

12 Claims

1. A method of electrolytically coloring an anodic oxide coating which has been previously formed on an aluminum workpiece comprising subjecting the anodized workpiece to

an AC voltage of about 5 to 40 volts in an acidic aqueous solution of nickel sulfamate which has a nickel concentration



of 50 to 150 grams per liter and which is maintained at a temperature of at least 35° C.

4,431,490

PREPARATION OF CYCLOPENTADECANOLIDE

Dieter Degner, Dannstadt-Schauernheim; Werner Hoffmann, Neuhausen, and Frank Thoemel, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,541

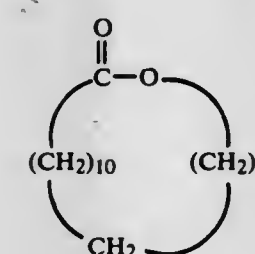
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127242

Int. Cl.³ C25B 3/04

U.S. Cl. 204—59 R

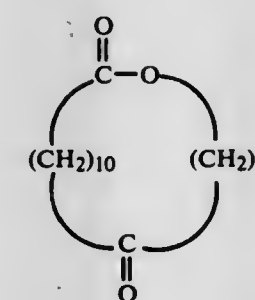
12 Claims

1. A process for the preparation of cyclopentadecanolide of the formula



which comprises:

electrochemically reducing 12-oxocyclopentadecanolide of the formula



in an electrolytic cell at a current density of from 1 to 50 A/dm² and at a temperature of from -20° to +95° C.

4,431,491

PROCESS AND APPARATUS FOR ACCURATELY CONTROLLING THE RATE OF INTRODUCTION AND THE CONTENT OF ALUMINA IN AN IGNEOUS ELECTROLYSIS TANK IN THE PRODUCTION OF ALUMINIUM

Paul Bonny; Jean-Louis Gerphagnon, both of St. Jean de Maurienne; Gerard Laboure, Albertville; Maurice Keinborg, St. Jean de Maurienne, all of France; Pierre Homs, Sydney, Australia, and Bernard Langon, St. Jean de Maurienne, France, assignors to Pechiney, France

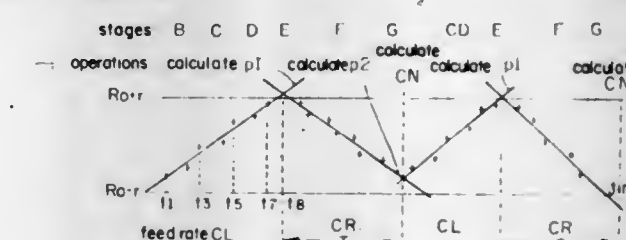
Filed Jul. 20, 1981, Ser. No. 284,812

Claims priority, application France, Jul. 23, 1980, 80 16406

Int. Cl.³ C25C 3/06, 3/14, 3/20

U.S. Cl. 204—67

17 Claims



1. A process for accurately controlling the rate of introduction and the content of alumina in a tank in the production of aluminum by the electrolysis of dissolved alumina in a molten cryolite-base bath, the upper part of which forms a solidified crust, and wherein the alumina content is maintained in the range between 1% and 3.5% comprising continuously introducing the alumina into the molten cryolite bath through at least one opening which is kept open in the solidified crust, and controlling the rate of introduction of the alumina relative to variations in the internal resistance of the tank measured at equal time intervals, with alternate cycles, of equal and constant duration, of introducing alumina at a slower rate and at a faster rate than the normal feed rate corresponding to the consumption of the tank, said slower rate being 15 to 50% less than said normal rate and said faster being 20 to 100% greater than said normal feed rate.

4,431,492

ALUMINUM ELECTROLYTIC CELL ARRAYS AND METHOD OF SUPPLYING ELECTRIC POWER TO THE SAME

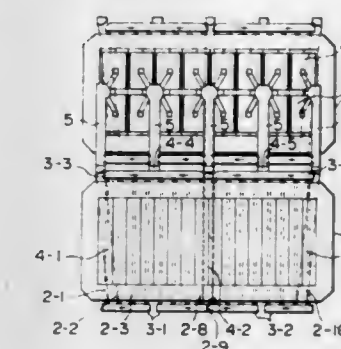
Yoji Arita, and Yuzo Seo, both of Yokohama, Japan, assignors to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,142

Int. Cl.³ C25C 3/16, 3/20

U.S. Cl. 204—67

7 Claims



1. A method of supplying electric power to an array of a plurality of rectangular aluminum electrolytic cells which are arranged side by side, each cell being provided with a plurality of anode electrodes, a plurality of current collecting cathode bars parallel with shorter side walls thereof and located at a bottom of said cell, and a plurality of current collecting cath-

ode bus bars disposed along longer side walls of said cell, said method comprising the steps of:

- dividing current collecting cathode bars into a plurality of groups each consisting of adjacent current collecting cathode bars along said longer side walls of respective cells;
- collecting current flowing through respective of said groups of current collecting cathode bars at their centers on one sides of respective cells;
- collecting current flowing through respective current collecting cathode bar groups at their opposite ends on the other sides of respective cells; and
- supplying current to said anode electrodes of a next cell from respective current collecting points through connecting bus bars extending above the longer side wall on an upstream side of said next cell, connecting bus bars from respective current collecting points on the upstream side of said respective cells extending beneath said cells.

4,431,493

ELECTROCHEMICAL PREPARATION OF ETHER KETONES FROM (POLY)PROPYLENE GLYCOL MONOETHERS

Karel A. J. Snoble, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 27, 1982, Ser. No. 423,876
Int. Cl.³ C25B 3/02

U.S. Cl. 204—79

13 Claims

1. A method for preparing an ether ketone comprising electrolyzing a solution containing a (poly)propylene glycol monoether, hydroxyl ions and optionally water in an electrolytic cell having an anode at least partially coated with nickel peroxide, silver peroxide, cobalt peroxide or copper peroxide.

4,431,494

METHOD FOR ELECTROLYTIC PRODUCTION OF ALKALINE PEROXIDE SOLUTIONS

James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 3, 1982, Ser. No. 404,689
Int. Cl.³ C25B 1/30

U.S. Cl. 204—83

7 Claims

1. A process for the production of peroxides comprising: electrolyzing an aqueous alkaline solution containing an impurity catalytically active for the decomposition of peroxides and a stabilizing agent selected from the group consisting of complexing agents and chelating agents, said stabilizing agent being present at a concentration sufficient to render at least a portion of the catalyst inactive.

4,431,495

LOCATION OF A STRUCTURALLY DAMAGED MEMBRANE

David L. Fair, Chattanooga; Kenneth E. Woodard, Jr., and David A. Helmstetter, both of Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 29, 1983, Ser. No. 489,968
Int. Cl.³ C25B 1/08, 1/46

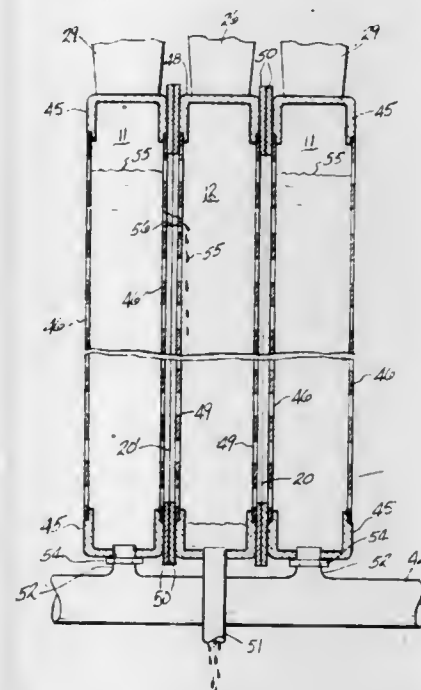
U.S. Cl. 204—98

17 Claims

1. A method of locating a structurally damaged membrane in a filter press membrane electrolytic cell filled with electrolyte having an anolyte infeed manifold, a catholyte infeed manifold, deionized water infeed, brine infeed, a product caustic outlet, a product chlorine outlet, and a plurality of anodes and cathodes, each pair of anodes and cathodes being sandwiched about a membrane, comprising:

- a. electrically disconnecting the electrolytic cell from the electrical power source;
- b. disconnecting and sealing the brine and deionized water infeed;
- c. draining the electrolyte from the electrolytic cell;

- d. removing the anolyte infeed manifold from the electrolytic cell;
- e. filling the cathodes with a test liquid;



- f. having the test liquid pass through a structurally damaged membrane into the adjacent anodes; and
- g. observing the test liquid in the anode adjacent the structurally damaged membrane.

4,431,496

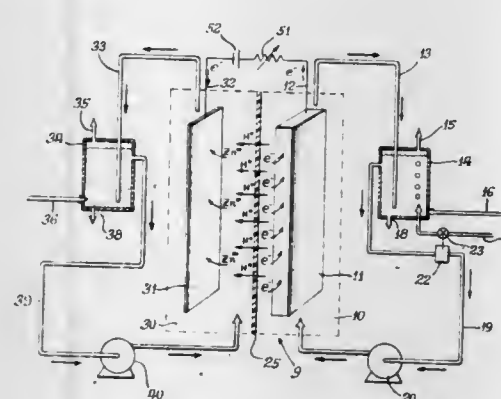
DEPOLARIZED ELECTROWINNING OF ZINC

Robert J. Remick, Naperville, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Sep. 7, 1982, Ser. No. 415,162
Int. Cl.³ C25C 1/16

U.S. Cl. 204—119

45 Claims



1. A process for depolarized electrowinning of zinc comprising: maintaining an electrical potential of about 1.8 to about 2.5 volts across a carbon based anode in an anode zone and an aluminum cathode in a cathode zone of a separated electrolytic cell; passing a circulating aqueous anolyte comprising sulfuric acid, hydrogen ions, and iodide ions in contact with said anode causing oxidation of said iodide ions to iodine and producing electrons; transporting said hydrogen ions through a cation passing membrane to said cathode zone; passing a circulating aqueous catholyte comprising sulfuric acid and zinc ions in contact with said cathode causing reduction of said zinc ions to metallic zinc on said cathode; and circulating said anolyte through an extra cellular anolyte regenerator chemically reacting sulfur dioxide, iodine, and water to form iodide ions, hydrogen ions and sulfuric acid for recycle to said anode zone.

4,431,497

RADIATION-STABLE POLYOLEFIN COMPOSITIONS

John W. Rekers, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

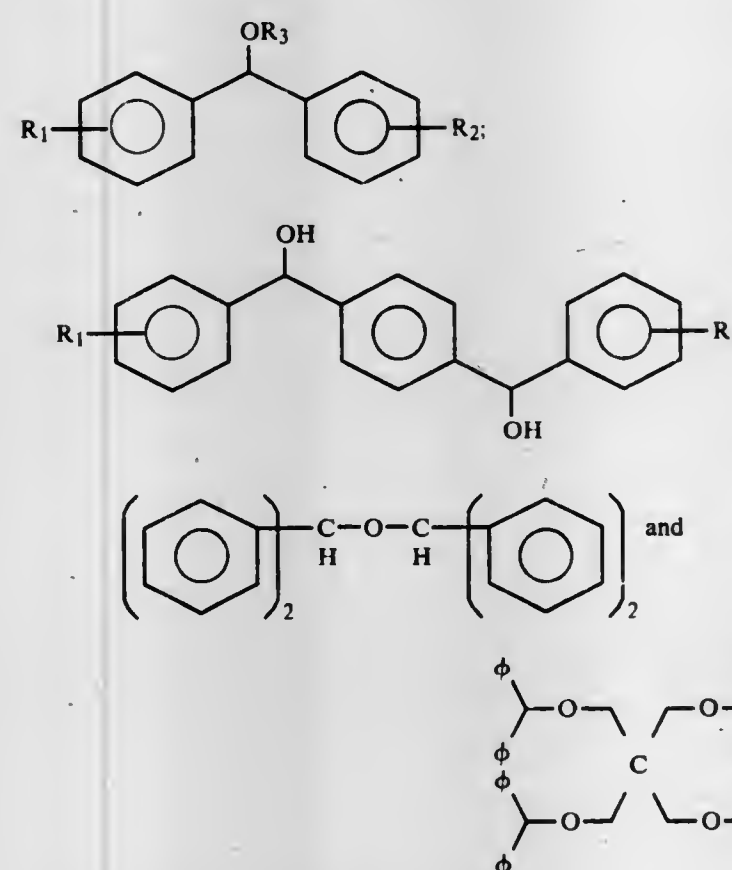
Filed Oct. 30, 1981, Ser. No. 316,457

Int. Cl.³ C08K 5/10, 5/06, 5/05; C08F 8/00

U.S. Cl. 204—159.2

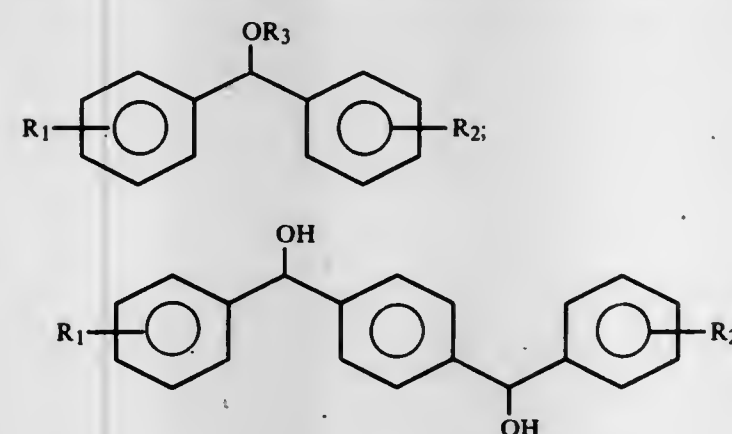
9 Claims

1. An olefinic polymer composition resistant to discoloration or degradation in physical properties when subjected to sterilizing amounts of radiation which consists essentially of an olefinic polymer selected from homopolymers and copolymers made from aliphatic, ethylenically unsaturated monomers containing from 2 to about 10 carbon atoms and from about 100 to about 10,000 ppm based upon the weight of the total composition of a stabilizer selected from:

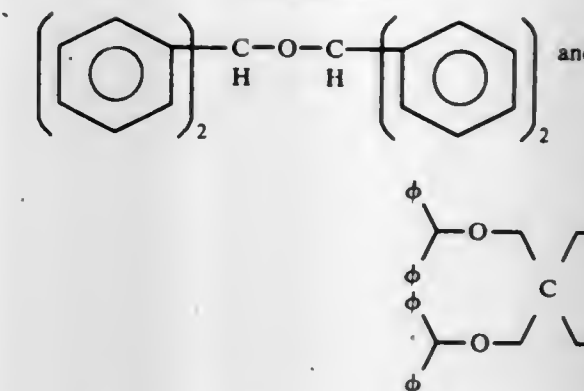


wherein R₁ and R₂ are independently selected from H or an alkyl group of the formula C_nH_{2n+1} where n is from 1 to about 20; and R₃ is selected from hydrogen, an alkyl group having from 1 to about 20 carbon atoms, or an acyl group having from 2 to about 20 carbon atoms.

8. A method for sterilizing a shaped article made from an olefinic polymer composition which comprises subjecting said shaped article to high energy radiation in an amount sufficient to sterilize said shaped article; said olefinic polymer composition comprising an olefinic polymer selected from homopolymers and copolymers made from aliphatic, ethylenically unsaturated monomers containing from 2 to about 10 carbon atoms and from about 100 to about 10,000 ppm based upon the weight of the total composition of a stabilizer selected from:



-continued



wherein R₁ and R₂ are independently selected from H or an alkyl group of the formula C_nH_{2n+1} where n is from 1 to about 20; and R₃ is selected from hydrogen, an alkyl group having from 1 to about 20 carbon atoms, or an acyl group having from 2 to about 20 carbon atoms.

4,431,498

RADIATION CURABLE WATER-MISCIBLE COMPOSITIONS OF VINYL ESTER RESINS

Richard A. Hickner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1980, Ser. No. 195,287

Int. Cl.³ C08F 2/50

U.S. Cl. 204—159.23

8 Claims

1. A radiation curable, water-miscible resin composition comprising (1) a nonionic water-miscible diacrylate of a diglycidyl ether of an aliphatic diol, said diol being a lower molecular weight alkanediol or a polyalkylene glycol, said glycol having a molecular weight of less than 1,000, said diacrylate containing no free carboxyl groups or salts thereof and (2) water in an amount to significantly reduce the viscosity of said composition.

4,431,499

METHOD OF SPUTTER ETCHING A SURFACE

Charles H. Henager, Jr., Seattle, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,738

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 E

7 Claims

1. A method of preparing a surface with desired reflectance properties comprising providing a chamber with a target, a seed material adjacent to the target, a means for heating the target, and a source of high-energy ions, evacuating the chamber, heating the target to a pre-selected temperature, and bombarding the target and seed material with the high-energy ions to sputter etch the surface of the target, the pre-selected temperature of the target being determinative of the reflectance properties of the etched target.

4,431,500

SELECTIVE ELECTROPLATING APPARATUS

Gilbert S. Messing, Palm Beach, Fla.; Grennady Volkov, Westfield, N.J.; Thomas R. Stanford, Monmouth Beach, N.J., and Jean A. Lochet, Metuchen, N.J., assignors to Vanguard Research Associates, Inc., South Plainfield, N.J.

Continuation of Ser. No. 330,870, Dec. 15, 1981, abandoned, which is a continuation of Ser. No. 255,295, Apr. 17, 1981, abandoned, which is a continuation of Ser. No. 160,029, Jun. 16, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 502,537

Int. Cl.³ C25D 17/00, 17/28, 5/02

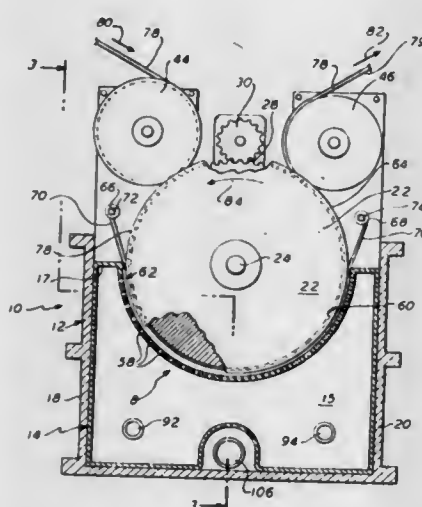
U.S. Cl. 204—206

12 Claims

1. Apparatus for selectively electroplating continuous longi-

tionally extending stripes onto a continuous metal base strip, comprising in combination:

- an electroplating station, including a rotatable wheel and means for driving said wheel;
- means for passing said metal strip through said electroplating station by passing said strip about said wheel and moving said strip commonly with said wheel during travel through said station;
- a stationary flexible electrically insulating mask provided with one or more aligned series of discrete spaced perforate openings, being tensioned against the circumference of said wheel in an arced zone at said electroplating station;



said strip passing through said arced zone with the side thereof nonadjacent the wheel being in sliding face-to-face fluid-tight contact with said tensioned stationary mask; means for rendering said base strip cathodic with respect to a spaced anode; and means for supplying electroplating solution to the side of said mask nonadjacent said base strip as said strip continues to slide in contact with said mask, whereby said solution passes through said mask openings to effect contact and electroplating at stripes extending longitudinally along said base strip, said stripes having a width corresponding to said mask openings.

4,431,501

APPARATUS FOR ELECTROLYTIC POLISHING

Yrjö T. J. Leppänen, Pori, Finland, assignor to Outokumpu Oy, Helsinki, Finland

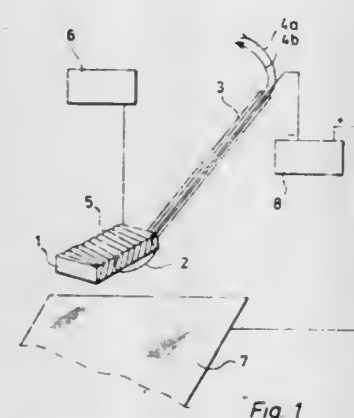
Filed Jul. 22, 1981, Ser. No. 286,037

Claims priority, application Finland, Aug. 5, 1980, 8024444

Int. Cl.³ C25F 7/00, 3/16; C25D 17/14

U.S. Cl. 204—224 R

3 Claims



1. A movable apparatus for local electrolytic polishing of metal surfaces, the apparatus comprising: an arm, a supported soft surface which is attached to the arm and intended to be brought against the metal surface to be polished, the supported soft surface being of an absorbent material, which is connected to an electrolyte container in order to cause electrolyte to be

absorbed into the absorbent material, as electrolyte is transferred to the polished surface when the apparatus is moved; and members for conducting cathodic current to this soft surface and for conducting anodic current to the metal surface to be polished, and in which the absorbent material surrounds a box, which box contains a coil to which cathodic current is conducted and including cooling water pipes running through the arm for cooling the coil.

4,431,502

SEALING MEANS FOR FILTER PRESS CELLS

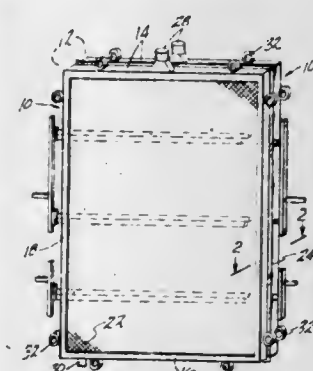
James M. Ford, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 204,127, Nov. 5, 1980. This application Dec. 9, 1981, Ser. No. 329,092

Int. Cl.³ C25B 9/00, 11/10, 13/08

U.S. Cl. 204—252

9 Claims



1. An electrolytic cell which comprises:
 - a. a first frame member housing an electrode,
 - b. a second frame member housing an electrode,
 - c. a separator positioned between said first frame member and said second frame member,
 - d. a first sealing means contacting a generally planar side of said first frame member and one side of said separator, said first sealing means being an elastomeric solid having a substantially rectangular cross-sectional area,
 - e. a second sealing means contacting a generally planar side of said second frame member and contacting the other side of said separator, the second sealing means being an elastomeric solid having a substantially rectangular cross-sectional area, the initial width of said first sealing means being from about 1.1 to about 3 times the initial width of said second sealing means, and where the expanded width (W) of said second sealing means is defined by the formula:

$$W = w / (1 - c)$$

where w is the initial width, and c is from about 0.05 to about 0.55, and

- f. pressing means for pressing the frames together against the sealing means and the separator so as to form a substantially fluid-tight seal.

4,431,503

ENERGY REDUCTION IN THE MANUFACTURE OF PRE-BAKED CARBON CONTAINING ELECTRODES FOR ELECTROLYTIC PRODUCTION OF METALS SUCH AS ALUMINUM

James C. Withers, Tucson, Ariz., and Gary V. Upperman, North Olmsted, Ohio, assignors to Metallurgical, Inc., Edgewater, Ohio

Filed Jun. 22, 1981, Ser. No. 275,940

Int. Cl.³ C25B 11/02; C10L 5/22; B28B 17/00

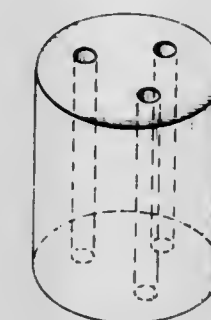
U.S. Cl. 204—294

9 Claims

1. The energy efficient process of manufacturing high density carbon containing coked electrodes having a high ratio of metal oxide of the type used in electrolytic production of aluminum at about 800° C. to withstand thermal shock and electromagnetic field stresses without cracking in service and avoiding change in critical shape during manufacturing from evolving gases comprising the steps of:

mixing the carbon containing metal oxide electrode raw materials together with a liquid thermosetting resin binder,

shaping and curing the binder at a low temperature while under pressure to form a hardened self supporting stable green electrode shape having at least one slot to reduce



the exit path length of the volatiles from the resin binder released in the coking step, and coking the hardened green electrode for a period of less than 48 hours at a high temperature to produce a dense strong electrode of a precise shape defined by the green electrode and devoid of cracks.

4,431,504

CATION-EXCHANGE MEMBRANE FOR ELECTROLYZING ALKALI METAL HALIDE

Toru Selta; Takao Satoh, and Mitsuo Kikuchi, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Continuation-in-part of Ser. No. 197,066, Oct. 15, 1980,

abandoned. This application Apr. 30, 1982, Ser. No. 373,717

Claims priority, application Japan, Nov. 20, 1979, 54-149584

Int. Cl.³ C25B 13/08

U.S. Cl. 204—296

5 Claims

1. A cation-exchange membrane for electrolyzing an alkali metal halide having a thickness between 0.05 mm and 1.5 mm and being made from a polymer having 1 equivalent of exchange group to 500 to 2800 g, said membrane comprising a first layer which has carboxylic acid groups and occupies 5 to 30% of the total thickness of the membrane; a second layer which has sulfonic acid groups and weakly acidic groups and occupies 5 to 30% of the total membrane thickness, said weakly acidic groups occupying 10 to 60% of the total exchange group capacity of said second layer; and an intermediate layer which has sulfonic acid groups.

4,431,505

HIGH RATE MAGNETRON SPUTTERING OF HIGH PERMEABILITY MATERIALS

Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 408,233, Aug. 16, 1982, Pat. No. 4,391,697. This application Jun. 29, 1983, Ser. No. 508,927

Claims priority, application France, May 3, 1983, 83 07339

Int. Cl.³ C23C 15/00

U.S. Cl. 204—298

48 Claims

1. Sputtering apparatus comprising a target of material to be sputtered; an anode; means for generating an electric field between the anode and target; and a magnetic field source for generating a magnetic field to confine plasma adjacent the target, the source including a solid, oriented crystal magnet having a flux density adjacent a pole thereof of at least about 1000 gauss.

4,431,506

APPARATUS FOR GEL ELECTROPHORESIS

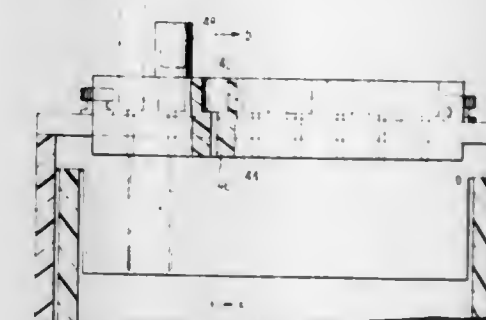
William W. Gorman, Jr., and Esther M. Gorman, both of St. Petersburg Beach, Fla., assignors to E-C Apparatus Corporation, St. Petersburg, Fla.

Filed Sep. 7, 1982, Ser. No. 415,379

Int. Cl.³ B01D 13/02; C25B 7/00

U.S. Cl. 204—299 R

4 Claims



1. A vertical gel electrophoresis apparatus of the type including a lower buffer solution chamber capable of holding liquid buffer solution, an upper buffer solution chamber capable of holding liquid buffer solution, a wall of each buffer solution chamber defining a gel passageway, the gel passageway being in fluid communication with the liquid buffer solution and the buffer solution chambers, and when the passage is filled with impermeable gel free flow of buffer solution from the upper chamber to the lower chamber is prevented by the gel, an electrode in each buffer solution chamber positioned below the normal level of buffer solution therein, each electrode including means for connection to a source of direct current, the upper and lower solution chambers and the gel passageways being constructed of a material having electrically insulating properties at least on the surface thereof, means holding the upper and lower buffer solution chambers in rigid assembled relationship, and an overhanging top wall which functions on an edge for a tray for casting the gel in the gel passageways when the assembled apparatus is in a horizontal position, with the improvements comprising: means for removably securing the overhanging of a top wall in fluid tight relationship to allow removal of the top wall after casting the gel so that the sample may be introduced vertically into the gel from above, and a removable syringe holder, the syringe holder being of a shape to be attached to the electrophoresis apparatus in the position of the removable top wall with syringes to be carried thereby having their needles directed vertically into the gel for the insertion of sample into the gel electrophoresis.

4,431,507

ENZYME ELECTRODE

Shiro Nankai, Yawata; Akihiro Imai, Ikoma, and Takashi Iijima, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1982, Ser. No. 338,957

Claims priority, application Japan, Jan. 14, 1981, 56-4211

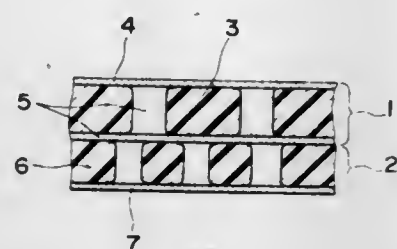
Int. Cl.³ G01N 27/54; C12Q 1/00, 1/54

U.S. Cl. 204—403

7 Claims

6. An electrode assembly comprising a first electrode including at least one enzyme immobilized thereon for electrochemically detecting a substance to be produced in association with a reaction based on said enzyme, said enzyme electrode being made of a porous membrane having a thin layer of a metal or metal oxide layer on one surface and at least one enzyme immobilized on its opposite surface and a second electrode for electrochemically removing materials which interfere with said detection by said first electrode, said second electrode being also composed of a porous membrane with a thin layer of a metal or metal oxide on one side of the porous membrane;

said first and second electrodes being laminated such that the immobilized enzyme(s) is sandwiched between between



the two porous membranes and the metal or metal-oxide layers are located on the outer portions of the laminated structure.

4,431,508

SOLID STATE GRAPHITE ELECTRODE

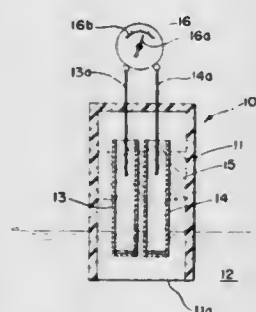
Harold M. Brown, Jr., 1125 Alpine Pl., Salt Lake City, Utah 84105, and Jeffrey D. Owen, 136 U St., Salt Lake City, Utah 84103

Filed Dec. 10, 1982, Ser. No. 432,651

Int. Cl.³ G01M 27/26

U.S. Cl. 204—418

31 Claims



1. An electrode for use in making potentiometric measurements comprising:
a graphite conductor;
means supporting said graphite conductor;
means for electrically connecting said graphite conductor to a means for sensing a difference in electrical potential between the electrode and a reference source; and
an organic liquid coating said graphite surface and chemically bonding therewith so as to render that surface hydrophobic.

4,431,509

HYDROCARBON PRODUCTION BY FREE FALL COUNTERCURRENT FLOW HYDROCONVERSION

Paul B. Tarman, Elmhurst, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jun. 9, 1982, Ser. No. 386,721

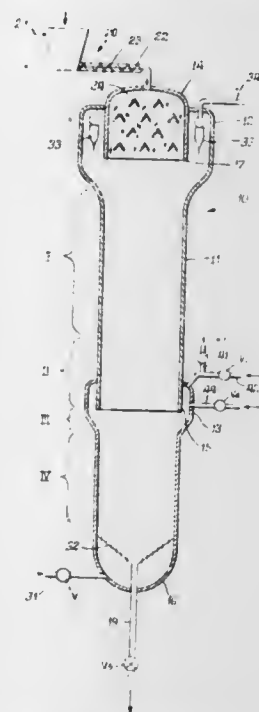
Int. Cl.³ C10G 1/06; C10B 53/06; C10J 3/46

U.S. Cl. 208—8 R

17 Claims

1. A process for production of liquid and gaseous hydrocarbon products comprising:
introducing solid organic carbonaceous material into the upper portion of a vertical reactor vessel;
introducing hydrogen containing gas into the lower portion of said reactor vessel;
passing said carbonaceous material of a size and sufficiently high density to free fall in a lean solids stream in counter-current flow relation to said hydrogen containing gas from said upper portion to said lower portion and passing said hydrogen containing gas from said lower portion to said upper portion, said carbonaceous material passing sequentially and said hydrogen containing gas passing in reverse sequence through a solids preheat and pretreatment zone, a reaction zone, a heat addition zone, and a hydrogen containing gas preheat zone, introducing hydro-

gen containing gas to said reaction zone in an amount of about 10 to about 30 Standard Cubic Feet hydrogen per pound of said carbonaceous material, said solid carbonaceous material moving downwardly about 0.5 to about 2 feet per second and said hydrogen containing gas moving upwardly at a higher flow rate than said solid material is moving downwardly and about 1 to about 5 feet per second providing solids residence time in said reaction



zone of about 20 to about 400 seconds at temperatures of about 800° to about 2000° F. forming predominantly said liquid and gaseous hydrocarbon products, the amount of heat added in said heat addition zone being sufficient to maintain said temperatures in said reaction zone; and removing said products and excess hydrogen containing gas from the upper portion and spent carbonaceous material from the lower portion of said reactor vessel.

4,431,510

PROCESS FOR PRODUCING HYDROGEN-ENRICHED HYDROCARBONACEOUS PRODUCTS FROM COAL

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 1, 1982, Ser. No. 364,365

Int. Cl.³ C10G 1/06

U.S. Cl. 208—10

26 Claims

1. A process for producing hydrogen-enriched hydrocarbonaceous products from coal which comprises:
(a) contacting said coal in a solvent extraction zone at solvent extraction conditions with a coal solvent, hydrogen and in addition to said solvent a first residual oil containing asphaltenes and at least one finely divided, unsupported metal sulfide to provide a liquid effluent slurry which includes a low boiling hydrocarbon soluble fraction;
(b) contacting at least a portion of said liquid effluent slurry from the solvent extraction zone of step (a) with a low boiling hydrocarbon solvent in a solvent separation zone at solvent separation conditions to separate said low boiling hydrocarbon soluble fraction from a low boiling hydrocarbon insoluble fraction which comprises ash, unconverted asphaltenes and finely divided, unsupported metal sulfide;
(c) contacting the low boiling hydrocarbon soluble fraction from step (b) with hydrogen and a second residual oil containing asphaltenes and at least one finely divided, unsupported metal sulfide in a hydrocarbon reaction zone at hydrocarbon conversion conditions; and
(d) recovering hydrogen-enriched hydrocarbonaceous products from the effluent of the hydrocarbon reaction zone of step (c).

4,431,511

ENHANCED REMOVAL OF NITROGEN AND SULFUR FROM OIL-SHALE

William N. Olmstead, New York, N.Y., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

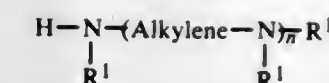
Filed Dec. 27, 1982, Ser. No. 453,706

Int. Cl.³ C10G 1/00

U.S. Cl. 208—11 R

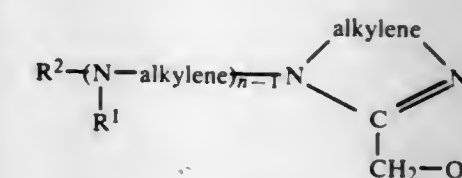
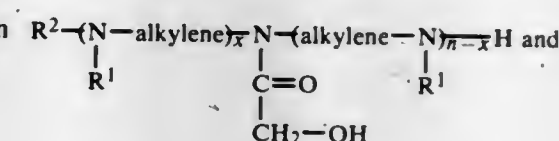
8 Claims

1. A process for enhancing the removal of nitrogen from an oil-shale which process comprises:
(a) providing an oil-shale having sufficient porosity to allow sufficient contact with steam;
(b) contacting the oil-shale with a medium consisting essentially of steam at a temperature from about 250° C. to about 350° C. thereby removing nitrogen from the oil-shale; and
(c) withdrawing the resulting effluents having nitrogen moieties from the oil-shale.



wherein n is an integer of at least 1 and less than 10 and each R¹ independently represents hydrogen or a substantially saturated hydrocarbon radical.

9. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising a mixture of amides and imidazolines of the formula:



wherein R¹ represents hydrogen, methyl, or ethyl;

n is an integer from 1 to 9

R² is a polyalkylene group and

x is an integer from 0 to n-1.

4,431,512

AROMATIC PITCH FROM ASPHALTENE-FREE STEAM CRACKER TAR FRACTIONS

Ghazi Dickakian, Greenville, S.C., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 8, 1982, Ser. No. 346,623

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.³ C10C 1/00, 3/00, 1/20

U.S. Cl. 208—44

20 Claims

1. A pitch suitable for carbon artifact manufacture, comprising by weight content between 80 and 100 percent toluene insolubles, said pitch having been derived, by heat soaking followed by vacuum stripping, from a deasphaltened middle fraction of a steam cracker tar feedstock which is rich in 2, 3, 4 and 5 polycondensed aromatic rings, and wherein said pitch is further characterized as being relatively free of impurities and ash.

4,431,513

METHODS FOR PRODUCING MESOPHASE PITCH AND BINDER PITCH

Irwin C. Lewis, Strongsville, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1982, Ser. No. 363,558

Int. Cl.³ C10C 1/00; C07C 2/02, 13/28

U.S. Cl. 208—44

16 Claims

1. A method of producing a pitch or a coke, comprising reacting a polynuclear aromatic hydrocarbon containing at least 1 condensed ring with anhydrous AlCl₃ and an acid salt of an organic amine which acid salt reduces the activity of the AlCl₃, and is miscible with the AlCl₃ to form a molten eutectic salt mixture reactive with the aromatic hydrocarbon.

4,431,514

HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 29, 1982, Ser. No. 344,139

Int. Cl.³ C10G 9/16

U.S. Cl. 208—48 AA

9 Claims

1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising the reaction product of a polyalkylene amine and a hydroxy fatty acid, said polyalkylene amine being of the formula:

**4,431,515
CARBOMETALLIC OIL CONVERSION WITH HYDROGEN IN A RISER USING A HIGH METALS CONTAINING CATALYST**

George D. Myers, deceased, late of Ashland, Ky. (by Virginia K. Myers, administratrix), and Lloyd E. Busch, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 94,227, Nov. 14, 1979, Pat. No. 4,354,923. This application Jun. 24, 1982, Ser. No. 392,503

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.³ C10G 47/16, 47/06, 47/30

U.S. Cl. 208—108

56 Claims

1. A process for economically converting carbometallic oils to lighter products, comprising:

- providing a converter feed containing 650° F. + (343° C.) material, said 650° F. + (343° C.) material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million Nickel Equivalents of heavy metal;
- simultaneously contacting said converter feed with H₂ and a hot cracking catalyst bearing substantially more than 600 parts per million of heavy metals contaminants which are capable of activating hydrogen to form a stream comprising a suspension of said catalyst and said H₂ in said feed and causing the resulting stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° F. (482° C.) to about 1400° F. (760° C.) and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6% to about 14% by weight based upon fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3% to about 3% by weight to produce cracking products and coked catalyst;
- separating said coked catalyst from said cracking product;

- (ii) separating bulk water and solid contaminants from said oil;
- (iii) separating fine particulates and remaining suspended water from said oil;
- (iv) vacuum drying said oil at a temperature in the range of about 250° F. to about 400° F. and a pressure in the range of about 2 to about 50 torr to remove dissolved water and light hydrocarbons from said oil;
- (v) vacuum distilling said oil at a temperature in the range of about 40° F. and about 350° F. and a pressure in the range of about 0.001 to about 0.1 torr to separate substantially all remaining non-metallic contaminants from said oil;
- (vi) contacting said oil with (A) from about 0.1 to about 3% by weight based on the weight of said oil of a polyfunctional mineral acid or the anhydride of said acid and (B) from about 0.1 to about 5% by weight based on the weight of said oil of a polyhydroxy compound, with the proviso that component (B) is in excess of component (A), until substantially all metallic contaminants in said oil have reacted with component (A) or (B) to form reaction products;
- (vii) separating the reaction products formed in step (vi) and any unreacted components (A) or (B) from said oil;
- (viii) hydrotreating said oil in the presence of hydrogen and a hydrogenation catalyst at a temperature in the range of about 500° F. to about 800° F. to remove residual polar materials and unsaturated compounds; and
- (ix) stripping said oil to remove light hydrocarbons with boiling point below about 600° F.

4,431,525

THREE-CATALYST PROCESS FOR THE HYDROTREATING OF HEAVY HYDROCARBON STREAMS

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 26, 1982, Ser. No. 371,815
Int. Cl.³ C10G 45/08, 65/04

U.S. Cl. 208—210

24 Claims

1. A process for hydrotreating a heavy hydrocarbon stream containing metals, asphaltene, nitrogen compounds, and sulfur compounds to reduce the contents of metals, asphaltene, nitrogen compounds, and sulfur compounds in said stream, which process comprises contacting said stream in a first reaction zone in the presence of hydrogen and under suitable hydrotreating conditions with a first catalyst comprising a hydrogenating component selected from the group consisting of a metal of Group VIB of the Periodic Table of Elements, a metal of Group VIII, and a mixture thereof deposited upon a porous inorganic oxide support, said hydrogenating component being present in the elemental form, as the oxide, as the sulfide, or mixtures thereof and said first catalyst having a surface area of about 120 m²/gm to about 400 m²/gm, a pore volume of about 0.7 cc/gm to about 1.5 cc/gm, and an average pore diameter within the range of about 12.5 nm (125 Å) to about 35 nm (350 Å) to provide an effluent from said first reaction zone; contacting said effluent from said first reaction zone in a second reaction zone in the presence of hydrogen and under suitable hydrotreating conditions with a second catalyst consisting essentially of at least one active original hydrogenation metal selected from Group VIB of the Periodic Table of Elements deposited on a catalytically-active support comprising alumina, said metal of Group VIB being in the elemental form, as the oxide, as the sulfide, or a mixture thereof, and said second catalyst having a surface area within the range of about 150 m²/gm to about 300 m²/gm, a majority of its pore volume in pore diameters within the range of about 8 nm (80 Å) to about 13 nm (130 Å), and a pore volume within the range of about 0.4 cc/gm to about 0.9 cc/gm to provide an effluent from said second reaction zone; and contacting said effluent from said second reaction zone in the presence of hydrogen and under suitable hydrotreating conditions with a third catalyst comprising (1) the metals of molybdenum, chromium, and cobalt, (2)

their oxides, (3) their sulfides, or (4) mixtures thereof deposited on a large-pore, catalytically-active alumina, said third catalyst having a pore volume within the range of about 0.4 cc/gm to about 0.8 cc/gm, a surface area within the range of about 150 m²/gm to about 300 m²/gm, and an average pore diameter within the range of about 10 nm (100 Å) to about 20 nm (200 Å).

4,431,526

MULTIPLE-STAGE HYDROPROCESSING OF HYDROCARBON OIL

Howard D. Simpson, Irvine, and Dennis P. McArthur, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jul. 6, 1982, Ser. No. 395,832
Int. Cl.³ C10G 45/00, 45/04

U.S. Cl. 208—211

36 Claims

1. A process for the catalytic hydroprocessing of a hydrocarbon oil comprising successively contacting said oil in the presence of hydrogen under hydroprocessing conditions with a first hydroprocessing catalyst in a first reaction zone and, subsequently, a second hydroprocessing catalyst in a second reaction zone, said first catalyst and said second catalyst comprising one or more hydrogenation metal components on a porous refractory oxide support material with essentially all the pores having diameters greater than about 100 angstroms, and with less than 10 percent of the total pore volume being in pores of diameter greater than 300 angstroms, and with at least about 35 percent of the total pore volume being in pores of diameter about 150 to about 200 angstroms, said first hydroprocessing catalyst having an average pore diameter at least about 30 angstroms larger than the average pore diameter of said second hydroprocessing catalyst.

4,431,527

PROCESS FOR HYDROGEN TREATING HIGH NITROGEN CONTENT HYDROCARBON FEEDS

Jeffrey T. Miller, Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1981, Ser. No. 320,863
Int. Cl.³ C10G 45/08, 45/12

U.S. Cl. 208—254 H

11 Claims

1. A process for denitrogenation of high nitrogen content hydrocarbon feeds comprising contacting the feed with hydrogen under denitrogenation conditions in the presence of a catalyst comprising an active metallic component comprising at least one metal having hydrogenation activity and at least one oxygenated phosphorus component, and a support component consisting essentially of at least one nonzeolitic, porous refractory inorganic oxide matrix component selected from the group consisting of alumina, silica, zirconia, titania, magnesia and combinations thereof and at least one crystalline molecular sieve zeolite component, wherein the high nitrogen content feed is a whole petroleum or synthetic crude oil, coal, shale or biomass liquid, or a fraction thereof containing at least about 0.4 wt % nitrogen.

4,431,528

PROCESS FOR THE HYDROGENATION OF HYDROCARBONS

Bernhard Schleppinghoff, Dormagen; Horst Reinhardt, Bergheim, and Herbert Tschorn, Dormagen, all of Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,035
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127751

Int. Cl.³ C10G 45/00, 25/02

U.S. Cl. 208—255

20 Claims

1. In a process for the hydrogenation of an unsaturated

hydrocarbon by contacting the same with hydrogen in the presence of a catalyst, the improvement wherein prior to said contacting with hydrogen the unsaturated hydrocarbon is contacted at 0° to 120° C. with an anion exchanger whereby to prolong the life of the catalyst.

10. A process according to claim 1, wherein the contacting with anion exchanger is conducted at 1 to 100 bars.

4,431,529

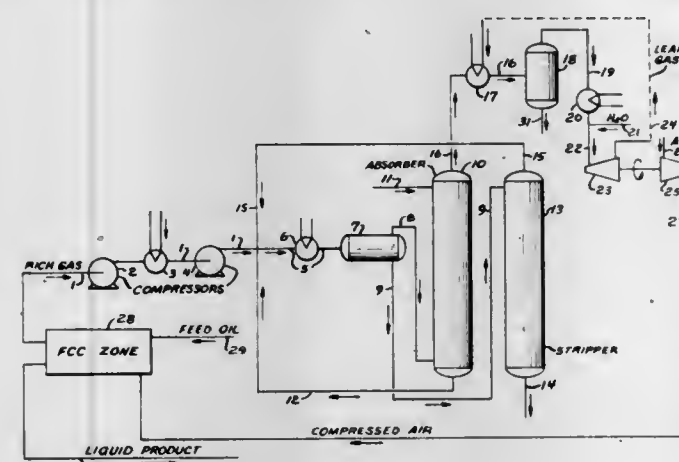
POWER RECOVERY IN GAS CONCENTRATION UNITS

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 30, 1982, Ser. No. 429,885
Int. Cl.³ C10G 5/04

U.S. Cl. 208—343

11 Claims



1. A process for the recovery of normally liquid hydrocarbons from a gas stream produced in a fluidized hydrocarbon conversion process which comprises the steps of:

- (a) compressing a feed gas stream produced in a fluidized hydrocarbon conversion process and which comprises a mixture of normally liquid hydrocarbons and normally gaseous hydrocarbons having less than four carbon atoms per molecule to a pressure above about 200 psig;
- (b) contacting the feed gas stream with an absorbent liquid under absorption-promoting conditions and transferring normally liquid hydrocarbons from the feed gas stream to the absorbent liquid and thereby forming a lean gas stream;
- (c) depressurizing the lean gas stream to a pressure below about 60 psig through a power recovery turbine and recovering useful energy from the lean gas stream; and,
- (d) compressing air used within the fluidized hydrocarbon conversion process through the use of the recovered energy.

4,431,530

APPARATUS FOR EXTRACTING FOREIGN BODIES AND HEAVY PARTS FROM FIBER MATERIAL

Walter Syben, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,507
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045899

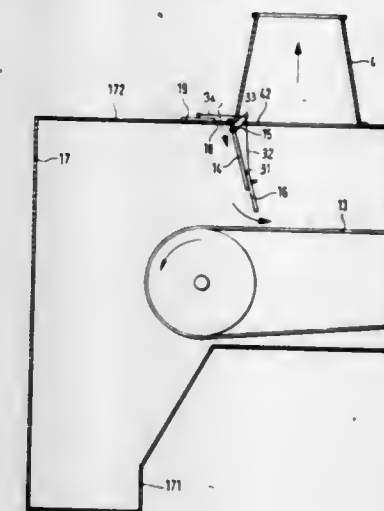
Int. Cl.³ B07B 4/08, 7/01

U.S. Cl. 209—138

9 Claims

1. An apparatus for separating a desired essentially fibrous fraction from a heterogeneous mixture of the desired fraction with relatively heavier foreign bodies, such as sheaths, metal parts, plastic parts and the like, and heavier parts such as stems, rind remnants, leaf parts and the like, comprising: a conveyor for conveying the mixture; suction means, including a suction conduit disposed adjacent and overlying a medial portion of said conveyor with its lower end directed at the mixture on said conveyor, for creating suction for removing the desired fibrous fraction from the mixture on said conveyor by elevating the desired fibrous fraction in an upward flow of air

through said conduit; a receptacle into which said conveyor discharges; an enclosure connecting said conduit and said receptacle and enclosing said receptacle; a partition means interposed between said receptacle and said conduit within said enclosure and depending toward the upper surface of said



conveyor; and means for introducing air into said enclosure adjacent said receptacle for flow between said partition means and said conveyor in a direction counter to the direction of travel of the mixture on said conveyor, and toward said conduit.

4,431,531

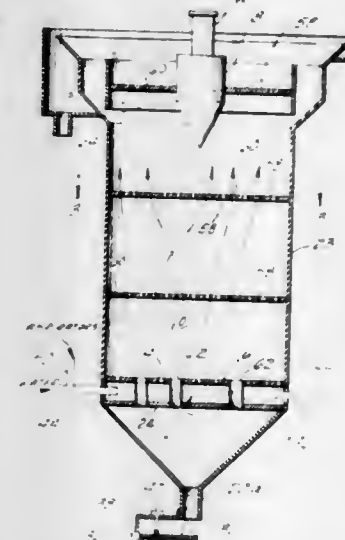
CONCENTRATION OF MINERALS BY FLOTATION APPARATUS

Clinton A. Hollingsworth, Lakeland, Fla., assignor to The Deister Concentrator Company, Inc., Ft. Wayne, Ind.

Continuation-in-part of Ser. No. 271,422, Jun. 8, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,351
Int. Cl.³ B03D 1/24

U.S. Cl. 209—170

11 Claims



1. Apparatus for separation of minerals from an aqueous pulp containing a mixture of mineral and gangue particles by froth flotation comprising:

- an upstanding flotation compartment adapted to contain a relatively quiescent body of aqueous pulp,
- means for introducing aqueous pulp into said flotation compartment,
- means disposed adjacent to the upper end of said flotation compartment for collecting a float fraction of said aqueous pulp, first means for supplying air and water to said flotation compartment near the bottom whereby bubbles of air

are introduced throughout substantially the entire cross-section thereof,
retardation plate means extending across the full cross-section of said flotation compartment intermediate the upper and lower ends thereof for retarding the descent of said pulp, said plate means having a plurality of spaced apertures throughout the area thereof to receive rising bubbles and descending particles of said pulp therethrough, said plate means between said apertures being impermeable and serving as an obstruction in the descent paths of some of the descending particles which are thereby altered in the course of descent to transverse paths leading through the apertures, the size, number and spacing of said apertures further being such as to:

- (a) receive the descending non-float fraction therethrough without collecting on said plate means and at a rate less than would be the case in the absence of said plate means, and
 - (b) receive ascending bubbles from below said plate means which increases in velocity as they rise therethrough, and
- means for discharging a non-float fraction of unfloat particles of said aqueous pulp past said first means and from the lower end of said flotation compartment.

4,431,532

TRANSDUCER AND METHOD FOR PRODUCING WAVE ENERGY

Paul R. Wyke, 1819 Kent Des Moines Rd., Des Moines, Wash. 98188

Filed Jun. 1, 1982, Ser. No. 384,073

Int. Cl.³ B03B 5/12, 5/24

U.S. Cl. 209—457

18 Claims

14. A method of generating wave energy, comprising: expanding an expansible chamber and in so doing reducing the pressure within said chamber; following expansion of said expansible chamber a predetermined amount, delivering a burst of fluid pressure, attended by fluid flow and an acoustical wave, into said expansible chamber; and substantially simultaneously with the introduction of the burst of fluid pressure into the expansible chamber, forcibly contracting the expansible chamber, with said expansible chamber in open communication with an adjoining region.

4,431,533

FILTER FOR LIQUIDS, PARTICULARLY FOR PURIFYING DRINKING WATER

Franz J. Wrede, Werl, Fed. Rep. of Germany, assignor to Standard Messgerätfabrik GmbH, Fed. Rep. of Germany
Filed Feb. 9, 1982, Ser. No. 347,330

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105677

Int. Cl.³ B01D 35/02

U.S. Cl. 210—87

9 Claims

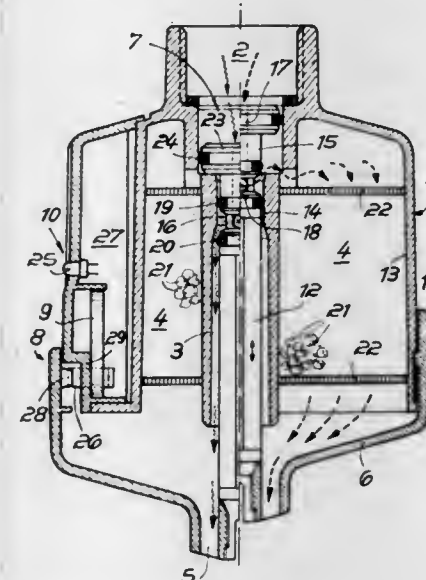
1. A filter for liquids, particularly drinking water, comprising:
 - a housing having an inlet, a central flow channel communicating with said inlet, and an outlet communicating with said channel, said housing defining a filter space around said channel and having an upper portion communicating with said channel, said space also communicating with said outlet;
 - a filter insert in said filter space and around said channel for filtering liquid passing from said upper portion of said space to said outlet;
 - a control device movable in operative association with said channel, from a free-flow position for allowing liquid to flow from said inlet through said channel to said outlet, and a filtering position for allowing liquid to flow from said inlet to said upper portion of said space, through said

filter insert and to said outlet while bypassing said channel;

said housing including a top part with a guide sleeve and a bottom part movable with respect to said top part on said guide sleeve, said bottom part connected to said control device for moving said control device between its free flow and filtering position with movement of said bottom part;

an indicator connected to said housing and activatable to generate a perceivable indication;

electrical energy storage means for activating said indicator having an amount of storage energy for activating said



indicator for a period of time corresponding to a predetermined amount of liquid flow through said filter insert; and switch means connected to said top and bottom parts of said housing, and connected between said electrical energy storage means and said indicator, for connecting said storage means to said indicator to activate said indicator when said bottom part is moved to move said control device into said filtering position where said electrical energy storage means is depleted of energy and can no longer activate said indicator upon the passage of the predetermined amount of liquid flow through said filter insert.

4,431,534

LIQUID-LIQUID SEPARATION APPARATUS

Michael P. Gordon, Metairie, La., assignor to Exxon Production Research Co., Houston, Tex.

Filed Jul. 23, 1982, Ser. No. 401,183

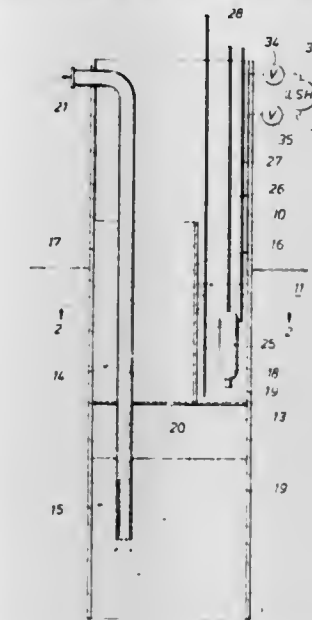
Int. Cl.³ B01D 21/00

U.S. Cl. 210—110

5 Claims

1. Apparatus for separating a multi-phase liquid mixture of lighter and heavier liquids comprising:
 - an upright, open-ended cylindrical vessel positioned in a body of water;
 - a surge plate extending horizontally across the interior of said vessel dividing said vessel into upper and lower sections;
 - said lower section forming a reservoir for said liquids;
 - a weir plate extending vertically from said surge plate forming in said upper section a reservoir and a bucket chamber for said lighter liquid; the upper edge of said weir plate being located above the expected high mean water level of said body of water;
 - said surge plate having a small opening therethrough communicating said lower and said upper section reservoirs;
 - inlet means for supplying said liquids to said lower section

reservoir extending from the upper end of said cylindrical vessel through said surge plate into said lower section; and



pump means in said bucket chamber for removing said lighter liquid from said bucket chamber.

4,431,535

CENTRIFUGAL SEPARATOR SYSTEM

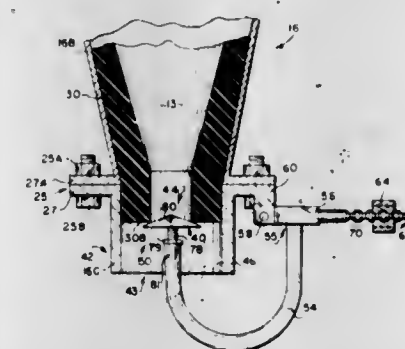
Walter L. Spruiell, P.O. Box 403, Iowa Park, Tex. 76367

Filed Jun. 17, 1982, Ser. No. 389,485

Int. Cl.³ B01D 23/20

U.S. Cl. 210—113

2 Claims



1. A mechanism for regulating the discharge of solids from a centrifuge having a substantially upright conical housing, the walls of the housing extending downwardly and tapering inwardly forming a discharge opening, said regulating mechanism comprising:

- a counterweighted arm means pivotally coupled to said housing;
- a generally conically shaped valve means secured to an end of said arm means for closing said discharge opening in said centrifuge when in a closed position; said valve means having a base having a predetermined diameter greater than 1.5 inches and said valve having a height between one fourth and one half of its predetermined diameter, the valve means cone angle being approximately thirty-three degrees;
- a single, self cleansing elongated slot means extending from the top of said valve means to said base for constantly venting said centrifuge whereby to prevent jamming thereof, the width of said slot means being between one thirtieth to one sixteenth of said valve means diameter, and said slot means having a length between 0.3 and 0.6 of said valve means base diameter.

4,431,536

SKIMMER FOR FLOATING ROOF STORAGE TANKS

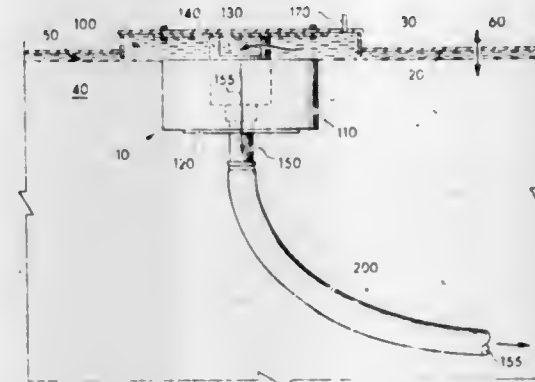
Timothy J. Thompson, Detroit, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 15, 1982, Ser. No. 449,951

Int. Cl.³ B03B 5/28

U.S. Cl. 210—123

7 Claims



1. A hydrocarbon skimmer (10) for a floating roof tank (300), said floating roof tank (300) holding a liquid mixture of sour water (40) and hydrocarbons (50) with the aforesaid roof (30) floating on said mixture, said hydrocarbon skimmer comprising:

- a formed cavity (100) on the underside (20) of said floating roof (30) above said liquid mixture (40, 50), said formed cavity (100) extending above the surface of said floating roof (30) and being capable of collecting said hydrocarbons (50) from said liquid mixture;
- a funnel (140) attached to said underside (20) of said roof (30), said funnel (140) extending downwardly in said cavity (100) and into said liquid mixture (40, 50), said funnel (140) having formed perforations (130) near said attachment to said underside (20);
- a float (110) operatively connected to said funnel (140) closing over said perforations (130) in a closed position when said float (110) is in said sour water (40) and opening said perforations (130) in an open position when said float (110) is in said hydrocarbons (50), and
- means (155) engaging said funnel (140) for delivering said hydrocarbons (50) from said formed cavity (100) when float (110) is in said open position.

4,431,537

REVOLVING CONTACTORS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER

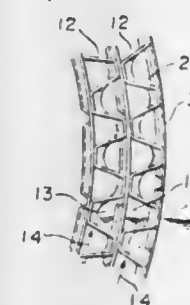
Tetsuji Hirota, 3-10, Fukumura, Komono-cho, Mie-gun, Mie-ken, Japan

Filed Dec. 27, 1982, Ser. No. 452,900

Int. Cl.³ C02F 1/74

U.S. Cl. 210—150

10 Claims



10. A waste water biological treatment system comprising a rotatable shaft and a plurality of rotating contactors mounted on the shaft in closely spaced relation to each other, each rotating contactor comprising the first and second elongate sheets of an equal width spirally wound in multiple turns on the rotatable shaft in a superimposed relation to each other to form

a convolute, the first sheet being corrugated with transversely alternately arranged longitudinal rows of deep and shallow corrugations having an equal longitudinal pitch whereby the apexes of the deep corrugations are transversely in alignment with the apexes of the shallow corrugations, with the apexes of the shallow corrugations constituting transversely spaced valleys between the respective adjacent apexes of the deep corrugations, the second sheet being generally flat and provided with embossed longitudinal ridges which fit in the valleys of the first sheet.

4,431,538

POOL CLEANING DEVICE FOR ROLLING OPERATION UNDER POOL COVER

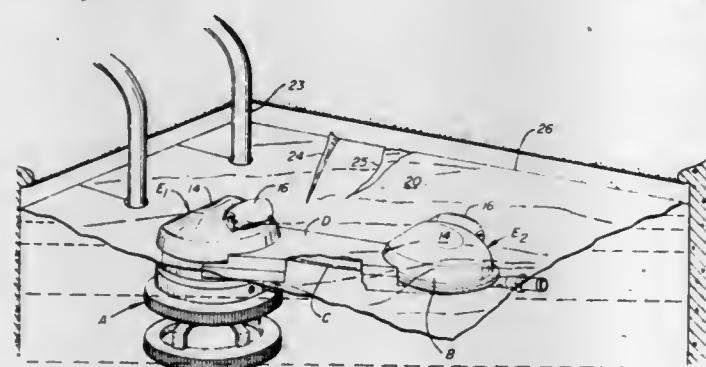
Walter T. Selsted, Cupertino, Calif., assignor to Arneson Products, Inc., Corte Madera, Calif.

Continuation-in-part of Ser. No. 362,008, Mar. 25, 1982. This application Nov. 1, 1982, Ser. No. 437,995

Int. Cl.³ E04H 3/20

U.S. Cl. 210—169

2 Claims



1. In a pool cleaning apparatus having first and second floats with positive buoyancy and propelled motion when positioned in a swimming pool, apparatus for permitting unimpeded motion under a floating pool cover, comprising:

first and second inverted casters, in overlying arrangement to said pool cleaning apparatus, each of said casters having a substantially vertical axis for pivotal movement of said caster around said axis, one of said casters including a ramp to permit said caster to move under obstructions said cover,

and a roller mounted to said caster to permit said pool cleaning apparatus to move under and in contact with said cover;

a housing connecting said first caster to said second caster and

first and second free-moving wheels around said first and second floats respectively, for permitting said apparatus to deflect off of vertical obstructions in said pool without movement of said caster.

4,431,539

SEMI-PERMEABLE MEMBRANE MASS TRANSFER APPARATUS AND METHOD FOR MAKING SAME

Alexander S. Borsanyi, Corona Del Mar, Calif., assignor to American Hospital Supply Corp., Irvine, Calif.

Continuation of Ser. No. 779,575, Mar. 21, 1977, abandoned.

This application Feb. 5, 1979, Ser. No. 9,444

Int. Cl.³ B01D 31/00

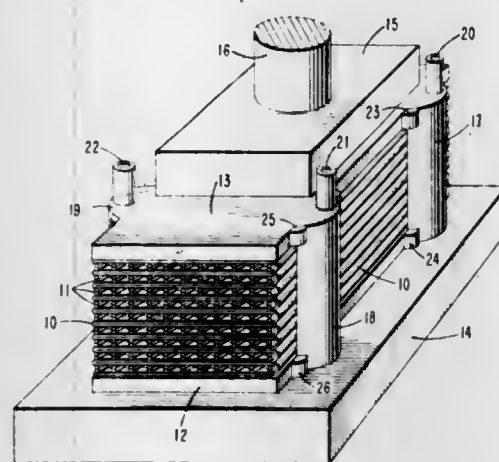
U.S. Cl. 210—232

9 Claims

3. A method of manufacturing a mass transfer apparatus comprising two rigid and essentially rectangular plates having flat parallel opposing surfaces; a semipermeable membrane disposed between said plates; said membrane being folded to form a stack of accordion pleats over substantially the whole internal surface of said plates, a support member being disposed within each pleat on one side only of said membrane; connecting means bonded to opposite side edges of said plates for keeping said two plates in parallel positions while maintaining said stack under a compressive load of predetermined value;

at least three ports for the flow of fluids with at least one port on each side of the membrane stack; a housing enclosing said membrane stack, said plates, and said connecting means, with openings for said ports being exposed; and means for embedding imperviously the edges of the membrane over its whole length, comprising:

(a) making up an assembly by folding a semipermeable membrane in accordion-like manner into a stack of several closely-spaced pleats around support members disposed within the pleats on one side of said membrane, and plac-



ing the accordion-folded stack containing said support members between a pair of rigid plates each having flat, parallel surfaces;

(b) Applying a predetermined and uniformly-distributed compressive load on said assembly while maintaining said plates in parallel relationship; and

(c) Bonding a plurality of rigid vertically extending connecting members to opposite side edges of said upper and lower plates while said assembly is maintained under said predetermined and uniformly-distributed load.

4,431,540

CENTRIFUGAL FILTER SEPARATOR

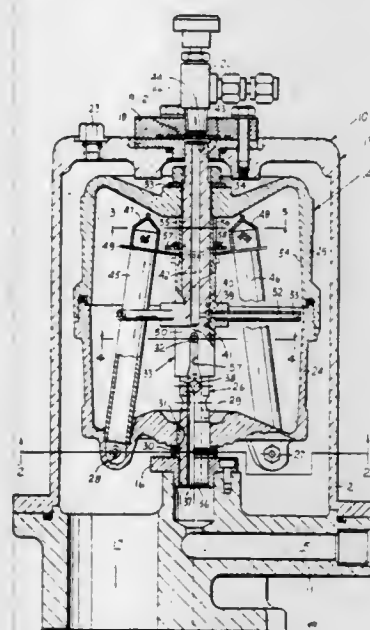
Tadeusz Budzich, 80 Murwood Drive, Moreland Hills, Ohio 44022

Filed Sep. 24, 1982, Ser. No. 421,355

Int. Cl.³ B01D 21/26

U.S. Cl. 210—360.1

6 Claims



1. A centrifugal filter separator assembly comprising a stationary housing having a pressurized oil inlet port, a clean oil outlet port, and a centrifuged water port, a rotatable drum journaled in said housing for rotation on an upright axis, means interconnecting said oil inlet port with internal space

enclosed by said drum, at least one reaction jet nozzle carried by said drum and connected with said internal space, and means for removing water from said drum including means to slide radially outwardly in response to centrifugal force, sufficient to provide automatic alignment and balancing during operation, and to manually slide inwardly during rest to provide easy removal thereof from the solid contaminants.

4,431,541

CIRCULAR FILTER DEVICE

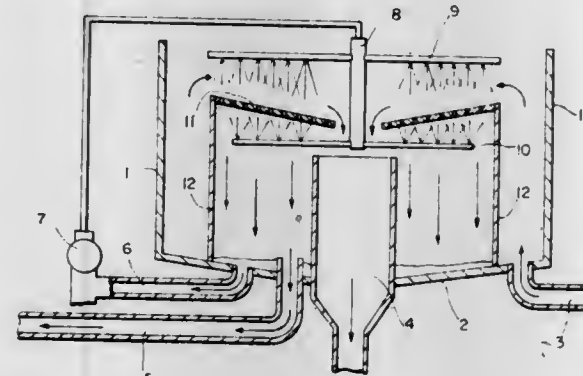
Arleigh Lee, 201 Fish House Rd., Broadalbin, N.Y. 12025

Filed Aug. 25, 1982, Ser. No. 411,432

Int. Cl.³ B01D 35/22

U.S. Cl. 210—393

16 Claims



1. A fluid filtering device comprising elements designed, dimensioned and arranged for treating high bulk slurries such as cheese whey including a housing having a bottom wall, an upstanding wall disposed therearound, and a centrally disposed passageway; a sloping screen disposed between said passageway and said upstanding wall; a fluid inlet means disposed adjacent to said screen and causing said fluid to move thereover; at least two discharge outlets disposed in said bottom wall; shower means including a rotatable shower manifold disposed above said screen and directing fluid thereagainst; and a second rotatable shower manifold positioned beneath said screen and directing fluid upwardly thereagainst; and means for rotating said shower manifold whereby solid laden fluid is introduced into said inlet and caused to pass over said screen causing the heavier solids to move toward the central passageway for discharge, with the lighter solids being carried by the fluid through said discharge outlets.

4,431,542

FILTER AND METHOD OF PRODUCING THE SAME

Kent Dingfors, Upplands Väsby, and Christer Heinegard, Karl-skoga, both of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Jun. 4, 1982, Ser. No. 384,830

Claims priority, application Sweden, Jun. 4, 1981, 81035164

Int. Cl.³ B01D 39/18

U.S. Cl. 210—502.1

15 Claims

1. A method for producing a filter for gas or liquid separations wherein said filter is easy to reactivate and is a continuous fiber tissue containing greater than 50% by weight of cellulose fibers which bears an activated particle formed material capable of physically absorbing or chemically binding predetermined gas or liquid components and which comprises forming said fiber tissue on the wire section of a paper forming machine employing a multi-sectioned inlet box, and mainly, adding the particle formed material to said wire section via the center section or sections of said inlet box to thereby form a multi-layered pulp tissue wherein the main part of the particle formed material is concentrated in the center layer or layers thereof; and wherein said particle formed material is a macroporous polymer of a crosslinked homopolymer or copolymer having a specific surface greater than 50 m²/g.

4,431,543

METHOD OF REMOVING PHOSPHORUS FROM ORGANIC WASTE LIQUIDS

Yoshitaka Matsuo, Chigasaki; Toshihiro Tanaka, and Akiko Miya, both of Fujisawa, all of Japan, assignors to Ebara Inflico Kabushiki Kaisha, Japan

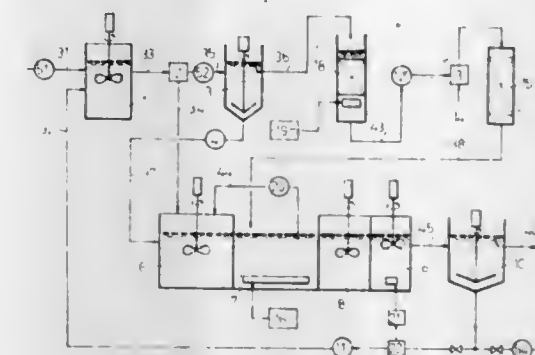
Filed Apr. 7, 1982, Ser. No. 366,302

Claims priority, application Japan, Apr. 13, 1981, 56-54281

Int. Cl.³ C02F 3/12, 3/30

U.S. Cl. 210—605

10 Claims



1. Method of removing phosphorus and BOD from waste water containing the same, which comprises:

in a first stage mixing under anaerobic conditions said waste water with a recycled activated sludge which is formed in a subsequent stages of said method, said recycled activated sludge being substantially free of dissolved oxygen, nitric acid and nitrous acid to form a mixture of liquid rich in soluble phosphorus and an activated sludge low in phosphorus;

in a second stage dividing said mixture from said first stage into a major first portion and a minor second portion;

in a third stage subjecting said second portion from the second stage to separation into a solids portion constituting a first concentrated activated sludge and a liquid portion which is rich in soluble phosphorus;

in a fourth stage subjecting said first portion from said second stage and said first concentrated sludge from said third stage to aerobic oxidation at a pH of about 6.0-9.0, to biologically oxidize the organic substances contained therein and remove said BOD, the soluble phosphorus contained therein being absorbed by said first concentrated activated sludge, thus forming a further mixture;

in a fifth stage separating the further mixture from the fourth stage into a liquid portion and a second concentrated activated sludge portion and recycling a portion of said second concentrated activated sludge to said first stage to form said mixture; and

in a sixth stage subjecting said liquid portion from said third stage to chemical dephosphorization to remove at least a portion of the phosphorus therefrom and thus form a liquid having a reduced phosphorus content.

4,431,544

HIGH PRESSURE LIQUID AFFINITY CHROMATOGRAPHY

Anthony Atkinson, Salisbury; Christopher R. Lowe, Eastleigh, all of England; Klaus Mosbach, Lund, Sweden, and David A. P. Small, Winterslow, England, assignors to The Public Health Laboratory Service Board, London, England

Filed Apr. 26, 1982, Ser. No. 372,020

Claims priority, application United Kingdom, Apr. 27, 1981, 8112897

Int. Cl.³ B01D 15/08

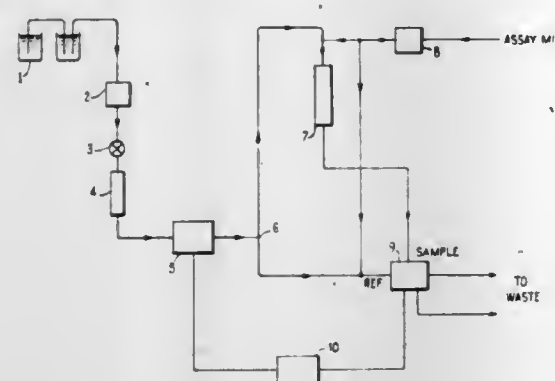
U.S. Cl. 210—635

13 Claims

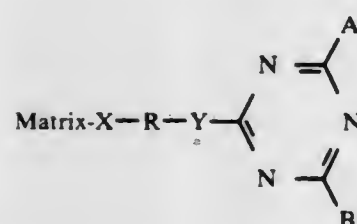
1. A process for the high pressure liquid affinity chromatographic separation of at least one biological substance from a mixture containing same comprising the steps of

(a) contacting the mixture containing the at least one biological substance with a binding material retained on a chro-

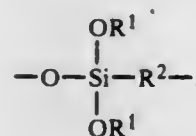
matographic column to bind the biological substance to the binding material,
(b) passing a washing solution through the binding material to remove non-binding species from the column, and



(c) passing an eluting solution through the binding material to recover the at least one biological substance from the column, the improvement which comprises performing at least the steps (a) and (b) at a pressure of between 10 and 5000 psi on a binding material of general formula



wherein the matrix is an affinity chromatographic support, compatible with a pressure of between 10 and 5000 psi, selected from alumina, titania, zirconia, silica and glass beads, X—Y—R is a spacer arm wherein X is



R¹ is selected from H and alkyl, R² is at least one group selected from alkyl, substituted alkyl, diol, ether, amido and amino, R is at least one group selected from alkyl, alkene, aminoalkyl, -oxyalkyl, -thioalkyl, alkyl alcohol, diol, carboxylate, ether, thioether, amido, amino, amidino, imino carboxylate, isourea, carbamate, guanidino, hydrazino, aromatic and heterocyclic groups, Y is selected from alkyl, ether, thioether, amido, amino, —NH—, —O— and —S—, A is an organic substituent containing a group selected from anthraquinone, aromatic azo and phthalocyanine and B is selected from an organic substituent, a halogen atom, an amino group and a substituted amino group said binding material being so constructed that the at least one biological substance is retained on the binding material during steps (a) and (b) of the process.

4,431,545

MICROPOROUS FILTER SYSTEM AND PROCESS
David B. Pall, Roslyn Estates, and Abraham Krasnoff, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed May 7, 1982, Ser. No. 376,259

Int. Cl.³ B01D 13/00, 31/00

U.S. Cl. 210—641

19 Claims

1. A process for the filtration of a contaminated fluid comprising ultrafine particulate material with particle sizes in the range of from about 0.001 to about 10 micrometers said process comprising:

(a) passing said fluid through a first filter medium comprised

of a surface modified, hydrophilic, microporous member, said first filter medium further characterized by (i) an absolute pore rating in the range of from about 0.05 to about 1.0 micrometer and (ii) a positive zeta potential, to remove electronegatively charged particulate matter from said fluid; and

(b) then passing said fluid through a second filter medium comprised of a hydrophilic, microporous member, said second filter medium further characterized by (1) an absolute pore rating finer than that of said first filter membrane and in the range of from about 0.01 to about 0.1 micrometer and (ii) a negative zeta potential, to form a filtrate substantially free of (1) both electronegatively and electropositively charged particulate matter, (2) bacteria and endotoxins, and (3) particulate matter greater in size than the absolute pore rating of said second filter medium.

4,431,546

AFFINITY CHROMATOGRAPHY USING METAL IONS
Peter Hughes, Salisbury; Christopher R. Lowe, Eastleigh, and Roger F. Sherwood, Salisbury, all of England, assignors to The Public Health Laboratory Services Board, London, England

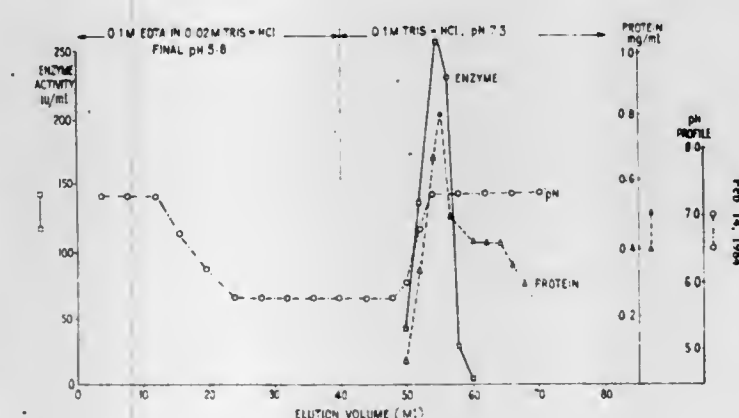
Filed Apr. 26, 1982, Ser. No. 372,021

Claims priority, application United Kingdom, Apr. 27, 1981, 8112925

Int. Cl.³ B01D 15/08

U.S. Cl. 210—656

32 Claims



1. A process for the affinity chromatographic separation of at least one biological substance from a mixture containing same comprising the steps of:

- contacting a contact solution, comprising the mixture containing the at least one biological substance, with a binding material, having a matrix bound either directly or through a spacer arm to a ligand containing at least one group selected from the group consisting of anthraquinone, phthalocyanine and aromatic azo, to bind the at least one biological substance to the binding material;
- passing a washing solution through the binding material to remove non-binding species therefrom; and
- passing an eluting solution through the binding material to recover the at least one biological substance therefrom, wherein the improvement comprises binding the at least one biological substance to the binding material in the presence of at least one metal ion selected from the group consisting of Ca²⁺, Sr²⁺, Ba²⁺, Al³⁺, Co²⁺, Ni²⁺, Cu²⁺ and Zn²⁺.

4,431,547

USE OF ACRYLAMIDE/ACRYLIC ACID COPOLYMERS FOR PREVENTION OF FOULING BY Ca₃(PO₄)₂

Leonard Dubin, Skokie, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 295,425, Aug. 24, 1981, abandoned.

This application Dec. 8, 1982, Ser. No. 447,922

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C02F 5/10

U.S. Cl. 210—701

1 Claim

1. A method of preventing the fouling of heat transfer surfaces in contact with industrial cooling waters which contain the fouling producing chemical calcium phosphate, which comprises treating such waters with from 1–50 ppm of acrylamide/acrylic acid copolymer having weight ratio of 3:1 and a molecular weight between 7,000–11,000, to stabilize and inhibit the formation of calcium phosphate, and to disperse particulate calcium phosphate.

4,431,548

USE OF AN AMPHOTERIC WATER-IN-OIL SELF-INVERTING POLYMER EMULSION AS A FLOCCULANT

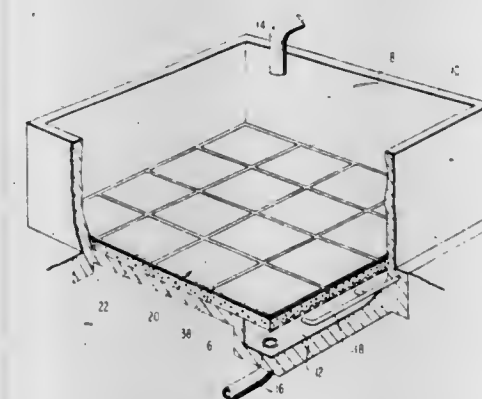
Stanley A. Lipowski, Livingston, and John J. Miskel, Jr., Mendham, both of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 308,175, Oct. 5, 1981, Pat. No. 4,392,917, which is a division of Ser. No. 84,986, Oct. 15, 1979, Pat. No. 4,330,450. This application Apr. 6, 1983, Ser. No. 482,407

Int. Cl.³ C02F 1/56

U.S. Cl. 210—732

10 Claims



1. In treatment of aqueous waste selected from the group consisting of sewage and industrial waste by flocculation of suspended solids in the aqueous waste, the improvement which comprises adding to the aqueous waste an effective amount of an amphoteric water-in-oil self-inverting polymer emulsion having

- from about 10 to about 50 parts by weight of a polymer selected from the group consisting of
 - a copolymer having from about 30 to about 99 parts by weight of a water soluble nonionic vinyl monomer and from about 1 to about 70 parts by weight of a water soluble amphoteric vinyl monomer, and
 - a terpolymer having from about 30 to 98 parts by weight of a water soluble nonionic vinyl monomer, from about 1 to about 35 parts by weight of a water soluble anionic vinyl monomer and from about 1 to about 35 parts by weight of a water soluble cationic vinyl monomer,
- from about 10 to about 50 parts by weight of water,
- from about 5 to about 50 parts by weight of a hydrophobic liquid,
- from about 2 to about 25 parts by weight of a water-in-oil emulsifying agent, and
- from about 1 to about 15 parts by weight of an inverting surfactant

wherein the polymer is in the aqueous phase to improve flocculation of suspended solids from the aqueous waste.

4,431,549

FILTER ELEMENTS, APPARATUS AND METHODS
Edward J. Highstreet, Lake Wylie, S.C.; Forrest B. Stannard, Ft. Lauderdale, Fla.; Louis H. Piper, and Michael A. Dimitriou, both of Richmond, Va., assignors to DeHydro Corporation, Charlotte, N.C. and Inflico Degremont Inc., Richmond, Va.

Filed Sep. 20, 1982, Ser. No. 420,609

Int. Cl.³ B01D 39/20

U.S. Cl. 210—791

10 Claims

1. A module for use in forming a rigid filter bed comprising a porous, polyhedral element having a continuous top surface, a continuous bottom surface approximately coterminous to said upper surface, and a plurality of sides normal to said surfaces of substantially equal depth much shorter than their length, said element being formed of a plurality of laminated layers, each layer comprising particulate material of substantially uniform size rigidly fixed together in a matrix of solid binder, the particulate material of each layer being substantially different in size from that of the adjacent layer, said top surface being flat and said bottom surface being channelled, the layer comprising said top surface being formed of particles smaller in size than the particles of which the layer comprising said bottom surface is formed.

7. A module for use in forming a rigid filter bed by laying a plurality of the modules side-by-side upon a flat base comprising a porous, planar element having a continuous, rectangular top surface, a continuous bottom surface approximately coterminous to said upper surface, and four sides normal to said surfaces of substantially equal depth much shorter than their length, said element being formed of two laminated layers, each layer being formed of particulate material of substantially uniform size particles rigidly fixed together by a binder forming a matrix, the particles of the top layer being substantially smaller in size than the particles of the bottom layer, said top layer being substantially flat and said bottom surface having therein a plurality of substantially semi-circular channels.

4,431,550

DRILLING FLUID VISCOSIFIER

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,979

Int. Cl.³ C09K 7/02; B01J 13/00

U.S. Cl. 252—8.5 A

32 Claims

1. A method of retarding tri-hydrate formation and reducing boehmite crystallization when an aqueous aluminum hydroxide mixture is formed by reacting an acid reactant and a base reactant wherein at least one of the acid or base reactants contains aluminum comprising reacting said aluminum hydroxide forming acid and base reactants which further contain aluminum in the presence of a hydroxy carboxylic acid or salt of a hydroxy carboxylic acid.

4,431,551

OXAZOLINES OF 2-(ALKYLTHIO)SUCCHINIC ACIDS AS AN ADDITIVE FOR DRILLING MUDS

Antonio Gutierrez, Mercerville; Darrell W. Brownawell, Scotch Plains, both of N.J.; Robert C. Portnoy, Houston, Tex., and Stanley J. Brois, Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 428,827

Int. Cl.³ C09K 7/00, 3/00; E21B 3/00; C07D 261/00

U.S. Cl. 252—8.5 C

8 Claims

1. An alkaline drilling mud comprising particles of clayey material suspended in sufficient water to render it circulatory and from 0.1 to 10 pounds per barrel of drilling mud of an oxazoline compound formed by the reaction of: (a) a 2-(alkylthio)succinic acid or anhydride or mixtures thereof wherein

the 2-alkyl group contains a total of from 6 to 50 carbon atoms; with (b) 1 to 2 moles, per mole of the 2-(alkylthio)succinic acid or anhydride of a 2,2-disubstituted-2-amino-1-alkanol containing a total of 4 to 8 carbon atoms.

8. In a process for drilling a well with well drilling tools wherein there is circulated in the well an aqueous alkaline drilling mud containing particles of clayey material suspended in sufficient water to render the same circutable, the method of reducing the drilling torque of the drilling mud comprising adding to each barrel of said mud from 0.1 to 10 pounds of an oxazoline compound formed by the reaction of: (a) a 2-(alkylthio) succinic acid or anhydride or mixtures thereof wherein the 2-alkyl group contains a total of from 6 to 50 carbon atoms; with (b) 1 to 2 moles, per mole of the thio-succinic acid or anhydride of a 2,2-disubstituted-2-amino-1-alkanol containing a total of 4 to 8 carbon atoms.

4,431,552

LUBRICANT COMPOSITION CONTAINING AN ALKALI-METAL BORATE AND A MIXTURE OF PHOSPHATES, MONOTHIOPHOSPHATES AND DITHIOPHOSPHATES IN A CRITICAL RATIO

Christopher G. Salentine, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 26, 1982, Ser. No. 444,751

Int. Cl.³ C10M 1/48

U.S. Cl. 252—32.7 E

7 Claims

1. A lubricating composition comprising an oil of lubricating viscosity having dispersed therein a hydrated alkali-metal borate extreme pressure agent and an effective amount of a mixture of: (a) a non-sulfur-containing phosphate, (b) a monothio-phosphate and (c) a dithiophosphate to improve the wear properties of the lubricant, said mixture of phosphate, monothio-phosphate, and dithiophosphate being in the ratio of 0.90–1.10:0.90–1.10:0.47–0.67.

4,431,553

LUBRICANT COMPOSITION CONTAINING METAL OXYQUINOLINATE

Jozsef Fodor; György Kolimar, both of Budapest; Gizella M. Szilasi, Erd, and Margit B. Balog, Budapest, all of Hungary, assignors to Autóipari Kutató Intézet, Budapest, Hungary

Filed Dec. 22, 1981, Ser. No. 333,417

Claims priority, application Hungary, Dec. 30, 1980, 3152

Int. Cl.³ C10M 1/54

U.S. Cl. 252—42.7

7 Claims

1. A lubricant which comprises natural grease, synthetic grease, mixtures of natural and synthetic grease, lubricating oil, hydraulic oil or cutting oil and from 0.1 to 10% by weight of copper, tin, lead or mixtures thereof in the form of copper oxyquinolate, tin oxyquinolate lead oxyquinolate or mixtures thereof.

4,431,554

OIL-IN-WATER EMULSION FOR COLD ROLLING LIGHT-METALS

Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 8, 1980, Ser. No. 213,848

Claims priority, application Switzerland, Sep. 12, 1980, 6864/80

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.³ C10M 3/26

U.S. Cl. 252—49.5

10 Claims

1. Oil-in-water emulsion for cold rolling light metals, in particular aluminum and aluminum alloys, containing a reaction layer former, polyethoxylated sorbitanoleates as emulsifier, unsaturated long chain monocarboxylic acids to inhibit hydrogen embrittlement and resting, hexamethylenetetramine as stabilizer, fungicide and bactericide and the balance deion-

ized water, wherein the emulsion contains from 1–7% palm kernel oil as reaction layer former.

4,431,555

OXIDATION STABLE POLYFLUOROALKYLETHER GREASE COMPOSITIONS

John B. Christian, Yellow Springs, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 418,106

Int. Cl.³ C10M 3/24

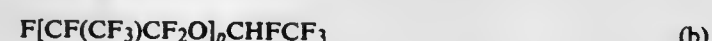
U.S. Cl. 252—49.9

10 Claims

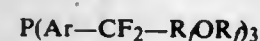
1. A grease composition comprising a major amount of a polyfluoroalkylether base fluid having the general formula



wherein n is an integer having a value in the range of 5 to 50, or



wherein p is an integer having a value of 1 to 17, a minor amount of a thickener and an oxidation inhibiting amount of a perfluoroalkylether-phenylphosphine of the general formula



wherein Ar is a phenylene group and $-R_fOR_f$ is a perfluoroalkylether group containing at least one ether linkage.

4,431,556

OXIDATION STABLE POLYFLUOROALKYLETHER GREASE COMPOSITIONS

John B. Christian, Yellow Springs, and Christ Tamborski, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

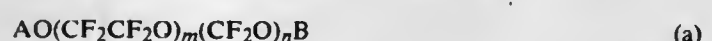
Filed Sep. 14, 1982, Ser. No. 418,114

Int. Cl.³ C10M 3/24

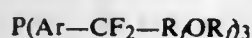
U.S. Cl. 252—49.9

8 Claims

1. A grease composition comprising a major amount of a polyfluoroalkylether base fluid of the general formula



wherein A and B are $-CF_3$ or $-C_2F_5$, and m and n are integers and the sum of m and n is between 2 and 200 and the ratio n/m is in the range of 0.1:1 to 10:1, a minor amount of a thickener and an oxidation inhibiting amount of a perfluoroalkylether phenylphosphine of the general formula



wherein Ar is a phenylene group and $-R_fOR_f$ is a perfluoroalkylether group containing at least one ether linkage.

4,431,557

REFRIGERATOR OIL COMPOSITION(S)

Isao Shimizu; Yasuo Kondo, both of Yokohama, and Koji Beppu, Kawasaki, all of Japan, assignors to Mitsubishi Oil Company, Ltd., Tokyo, Japan

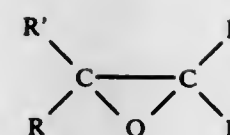
Filed Dec. 21, 1981, Ser. No. 332,779

Int. Cl.³ C10M 3/14

U.S. Cl. 252—52 A

9 Claims

1. A refrigerator oil composition, comprising: at least one oil selected from the group consisting of mineral oils and synthetic oils; and an alkylene oxide additive compound represented by the general formula (I):



wherein R is hydrogen or a lower alkyl group, and R' is an alkyl group, wherein R and R' contain 6 or more carbon atoms.

4,431,558

HEAT ACCUMULATING MATERIAL

Takahiro Wada, Katano, and Ryoichi Yamamoto, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,450

Claims priority, application Japan, Jul. 21, 1981, 56-114811

Int. Cl.³ C09K 5/06

U.S. Cl. 252—70

4 Claims

1. A heat accumulating material characterized in that $CaCl_2$, $CO(NH_2)_2$ and H_2O are present in a composition of 40–57.5% by weight of $CaCl_2$, 30% by weight or less (excluding 0%) of $CO(NH_2)_2$ and 30–52.5% by weight of H_2O .

4,431,559

DISHWASHING COMPOSITION AND METHOD

Robert J. Ulrich, Taylors, S.C., assignor to Texize, Division of MortonThiokol, Greenville, S.C.

Filed Oct. 6, 1981, Ser. No. 309,016

Int. Cl.³ C11D 7/12, 7/54

U.S. Cl. 252—99

11 Claims

1. A process for dispensing a dishwashing detergent composition, comprising the steps of:

providing a thixotropic dishwashing composition which comprises;

an aqueous solvent present in an amount of about 45 to 60% by weight of said composition,

a thickening agent, having functional electrolytes in an amount sufficient to render said composition thixotropic,

a chlorine source present in amount of from about 0.05 to about 5% (percent) by weight of said composition,

a buffer system to stabilize said chlorine source within said composition and to maintain a pH within the range of about 10 to 13,

an anionic surfactant present in an amount equivalent to about at least 0.5% (percent) by weight of said composition when added as a 30% (percent) aqueous solution,

a builder salt present in an amount of from about 2 to about 40 percent by weight of said composition,

said composition being formulated to be thixotropic and to have sufficient chlorine stability to be efficacious in an automatic dishwasher after one year storage at 77° F., said composition being in the form of a gel when at rest;

shearing said composition to form a sol with generally liquid-like properties; and

dispensing said sol with generally liquid-like properties into an automatic dishwasher whereby said thixotropic composition regels within said dishwasher.

4,431,560

WASHING AND STORAGE SOLUTION FOR SEPARATION DEVICES

William Lake, Skokie, and William J. Schnell, Wheeling, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 27, 1982, Ser. No. 453,080

Int. Cl.³ C11D 7/08

U.S. Cl. 252—142

15 Claims

1. A cleaning and storage solution for separation devices in contact with blood which comprises an acidic aqueous solution having an effective concentration of monocarboxylic, mono-

amine acid to provide the desired removal of protein residue from the device, in combination with an amount of fatty acid having from 3 to 12 carbon atoms in sufficient concentration to permit bacteriocidal storage of the separation device filled with such solution.

8. A cleaning and storage solution for separation devices in contact with blood which comprises an aqueous solution containing glycine in a concentration of 0.5 to 2 M, to provide the desired removal of protein residue from the device, in combination with an amount of dissolved fatty acid having from 3 to 12 carbon atoms in a concentration of 0.03 to 1 weight percent, to permit bacteriocidal storage of the separation device filled with such solution, the pH of said solution being from 2 to 3.5.

4,431,561

HYDROGEN STORAGE MATERIALS AND METHOD OF MAKING SAME

Stanford R. Ovshinsky, Bloomfield Hills; Krishna Sapru, Troy; Krystyna Dec, Troy, and Kuochih Hong, Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Apr. 28, 1982, Ser. No. 372,665

Int. Cl.³ C01B 3/02; F17C 11/00

U.S. Cl. 252—184

23 Claims

1. A multicomponent compositionally disordered material for reversibly storing hydrogen, comprising:

a first element comprising at least one solid lightweight element forming a host matrix; and

said host matrix having incorporated therein at least one modifier element, said modifier element structurally modifying said host matrix to provide said disorder which enhances the hydrogen storage characteristics.

15. A method of making an improved hydrogen storage material, comprising:

forming a host matrix from a solid lightweight element, and structurally modifying said host matrix by incorporating therein at least one modifier element to provide a disordered material which enhances the hydrogen storage characteristics.

4,431,562

HYDROGEN-CONTAINING SILICIC SUBSTANCE, PROCESS FOR PRODUCING THE SAME AND USE THEREOF

Akio Hiraki, Hyogo; Takeshi Imura, and Wako Kanmura, both of Osaka, all of Japan, assignors to Meidensha Electric Mfg., Co., Ltd., Tokyo, Japan

Filed May 12, 1982, Ser. No. 377,530

Claims priority, application Japan, May 12, 1981, 56-70200

Int. Cl.³ B01J 8/00; C01B 3/02

U.S. Cl. 252—188.25

9 Claims

1. A hydrogen-containing silicic substance, comprising:

a four-coordinate crystalline Si lattice surrounded by a shell comprised of at least one compound selected from the group consisting of SiH_2 and SiH_3 ; and

hydrogen physically bound in the lattice.

4,431,563

INHIBITORS FOR ACID GAS CONDITIONING SOLUTIONS

Leroy S. Krawczyk; Charles W. Martin, and Roscoe L. Pearce, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 21, 1982, Ser. No. 400,340

Int. Cl.³ C23F 11/14, 11/16, 11/18

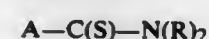
U.S. Cl. 252—189

25 Claims

1. A corrosion inhibited composition useful to inhibit corrosion in acid gas removal equipment using aqueous gas conditioning solutions which comprises

(A) a recirculated aqueous gas conditioning solution containing trace amounts of nickel, chromium or mixtures thereof and

(B) an effective amount of a thionitrogen compound wherein the thionitrogen compound is a water soluble thiocyanate or a water soluble thioamide having the formula



where

A is a hydrogen group of 1-6 carbons, and

R is a hydrogen atom or an alkyl group of 1-4 carbons.

4,431,564

LIQUID-CRYSTALLINE BIPHENYL OR TERPHENYL DERIVATIVES

Masahiro Fukui; Hiromichi Inoue; Yasuyuki Goto; Hideo Sato, and Takashi Inukai, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

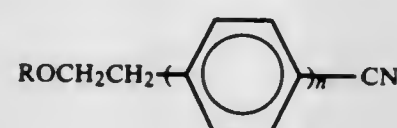
Filed Apr. 16, 1982, Ser. No. 369,111

Claims priority, application Japan, May 1, 1981, 56-66253; Sep. 8, 1981, 56-141376

Int. Cl.³ C09K 3/34; C07C 121/75

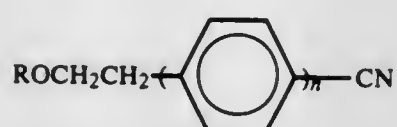
U.S. Cl. 252-299.66

1. A compound expressed by the formula



wherein R represents an alkyl group of 1 to 9 carbon atoms and n represents 2 or 3.

6. A liquid crystal composition comprising a mixture of compounds, at least one of which is a compound expressed by the formula



wherein R represents an alkyl group of 1 to 9 carbon atoms and n represents 2 or 3.

4,431,565

SURFACE-ACTIVE COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Siegfried Billenstein; Hildegard Freundl, both of Burgkirchen; Ignaz Wimmer, Unterau; Fritz J. Gohlke, and Johannes Macenka, both of Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,329

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142955

Int. Cl.³ B01D 17/04; C08L 61/14

U.S. Cl. 252-331

13 Claims

1. A surface-active compound which has been prepared by reacting

(a) a block polymer of propylene oxide and ethylene oxide, having an average molecular weight of 1,650 to 7,000 and containing 10 to 50% by weight of ethylene oxide units and 50 to 90% by weight of propylene oxide units, the percentages by weight being relative to the block polymer, and

(b) an oxyalkyleneated alkylphenol/aldehyde resin which has been prepared by reaction of para-alkylphenols and/or ortho-alkylphenols having 1 to 18 carbon atoms in the alkyl group, with an aliphatic aldehyde having 1 to 4 carbon atoms, in the molar ratio 1:0.5 to 2, and oxyethyleneation and/or oxypropyleneation of the reaction

product with 1 to 40 moles of epoxide per phenolic hydroxyl group, with

(c) formaldehyde,

component (a) being used in an amount of 1 to 100 parts by weight, relative to one part by weight of component (b), and the formaldehyde being used in a 0.5-fold to 2-fold stoichiometric amount, relative to the amount of hydroxyl groups in (a) and (b), and the reaction being carried out in the presence of acid catalysts, at a temperature of 50° to 180° C.

4,431,566

CONVERSION OF METHANOL INTO HYDROGEN AND CARBON MONOXIDE

Masaomi Suzuki, and Koichi Mizuno, both of Sakura, Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,106

Claims priority, application Japan, Mar. 4, 1981, 56-30710

Int. Cl.³ C01B 3/22

U.S. Cl. 252-373

7 Claims

1. A process of decomposing methanol for the production of hydrogen and carbon monoxide, comprising contacting a gas stream containing methanol with a catalyst comprising a carrier material of alumina, and nickel and potassium supported on said carrier, wherein the content of the nickel is in the range of about 1 to 12 mg-atom per one gram of said carrier material and the content of the potassium is in the range of about 1 to 12 mg-atom per one gram of said carrier material.

4,431,567

PROCESS FOR PREPARING ELECTRODES USING PRECIOUS METAL-CATALYST CONTAINING PARTIALLY FLUORINATED ACTIVE CARBON

Lawrence J. Gestaut, Painesville, Ohio, and Frank Solomon, Great Neck, N.Y., assignors to Diamond Shamrock Corporation, Dallas, Tex.

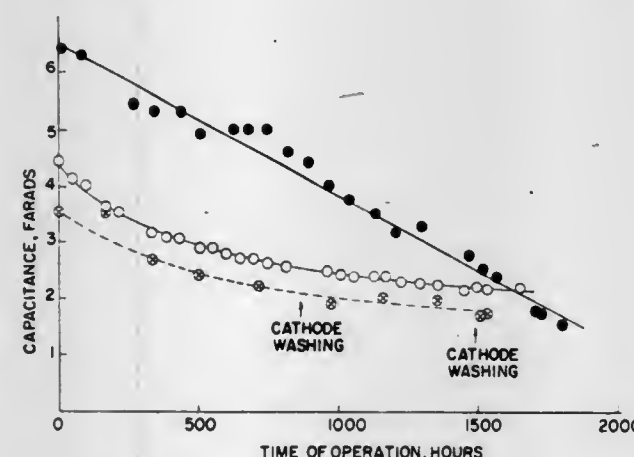
Division of Ser. No. 202,581, Oct. 31, 1980, Pat. No. 4,337,139.

This application Feb. 22, 1982, Ser. No. 351,265

Int. Cl.³ H01M 4/92; C25B 11/03, 11/04; R01J 31/28

U.S. Cl. 502-101

12 Claims



1. A method of preparing active carbon catalyst particles comprising depositing precious metal catalyst on partially fluorinated active carbon particles of the formula CF_x , where $x=0.1$ to about 0.18, and having an ash content of less than about 4 weight percent and a B.E.T. surface area of at least 600 m^2/g and discontinuously coating said partially fluorinated active carbon particles with smaller adherent polytetrafluoroethylene particles.

4. A method for preparing an electrode active layer comprising depositing a precious metal catalyst on partially fluorinated active carbon particles of the formula CF_x , where $x=0.1$ to about 0.18 and having an ash content of less than about 4 weight percent and a B.E.T. surface area of at least 600 m^2/g , discontinuously coating said particles with smaller adherent polytetrafluoroethylene particles, and combining said discon-

tinuously coated particles with an intimate mix of carbon black particles and polytetrafluoroethylene particles and particulate pore-forming agent, and forming said mix into a sheet.

7. A process as in claim 4 wherein said active carbon particles have a particle size ranging from about 5 to about 20 microns.

4,431,568

CATALYST FOR POLYMERIZATION OF OLEFINS AND POLYMERIZATION PROCESS EMPLOYING SUCH CATALYST

Masayoshi Miya; Hisaya Sakurai, and Tadashi Ikegami, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1981, Ser. No. 331,103

Claims priority, application Japan, Dec. 25, 1980, 55-182736

Int. Cl.³ C08F 4/64, 4/68

U.S. Cl. 502-154

14 Claims

1. A catalyst useful for polymerizing olefins which comprises a solid catalyst component [A] and an organometallic component [B], the solid catalyst component [A] being obtained by reacting (1) a solid inorganic oxide, (2) a hydrocarbon-soluble organomagnesium component of the general formula



wherein

α, p, q, r and s each independently is 0 or a number greater than 0,

β is a number greater than 0,

$p+q+r+s=m\alpha+2\beta$,

m is the valence of M ,

M is a metal of the 1st to 3rd groups of the Periodic Table, R^1 and R^2 each independently is a hydrocarbon group having 1 to 20 carbon atoms,

X and Y each independently is an OR^3 , $OSiR^4R^5R^6$, NR^7R^8 or SR^9 group wherein R^3 , R^4 , R^5 , R^6 , R^7 and R^8 each independently is a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms and R^9 is a hydrocarbon group having 1 to 20 carbon atoms,

or of the reaction product of $M_aMg_bR_pR_q^2X_rY_s$ with at least one electron donor selected from the group consisting of ethers, thioethers, ketones, aldehydes, hydrocarbyl carboxylic acids or derivatives thereof, alcohols, thioalcohols and amines and (3) a chlorosilane compound having a Si-H bond and the formula



wherein

R^{10} is a hydrocarbon group having 1 to 20 carbon atoms,

$0 < a \leq 2$

$b > 0$ and

$a+b \leq 4$,

separating a reaction product from the reaction mixture and washing the separated reaction product with an inert hydrocarbon and reacting the washed reaction product with (4) a titanium compound having at least one halogen atom and/or a vanadium compound having at least one halogen atom.

4,431,569

TITANIUM TRICHLORIDE CATALYST COMPONENT AND THE PROCESS FOR THE PRODUCTION THEREOF

Harry J. Wristers, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 102,676, Dec. 12, 1979, abandoned.

This application May 12, 1982, Ser. No. 377,290

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.³ C08F 4/64

U.S. Cl. 502-154

6 Claims

1. An essentially non-friable, prepolymerized, beta-type

$TiCl_3$ catalyst component composition capable of being crystal converted to a highly active catalyst component obtained by:

(a) reducing $TiCl_4$ in an inert diluent to a beta-type $TiCl_3$ reduced solid product in the presence of an organoaluminum compound at a temperature in the range of about $-50^\circ C.$ to about $+30^\circ C.$, and

(b) contacting the $TiCl_3$ reduced solid product with one or more α -olefins having from 3 to 8 carbon atoms in an amount sufficient to obtain a reduced $TiCl_3$ solid product prepolymerized with about 1 to about 1000 wt.% of said α -olefin based on the weight of $TiCl_3$.

4,431,570

RETREATING COMMUNUTED OLEFIN POLYMERIZATION CATALYST WITH A TITANIUM (IV) COMPOUND AND AN ESTER

Bryce V. Johnson, Elburn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,121

Int. Cl.³ C08F 4/64

U.S. Cl. 502-151

39 Claims

1. A polymerization catalyst for alpha-olefins comprising (A) an organoaluminum compound and (B) a solid, titanium-containing component formed by:

(1) comminuting a solid reaction product comprising:

(a) at least one halogen-containing compound of titanium (IV);

(b) at least one electron donor containing at least one atom of oxygen, nitrogen, sulfur, or phosphorus; and

(c) at least one hydrocarbon-insoluble, magnesium-containing compound; and

(2) retreating such comminuted product with

(a) at least one halogen-containing compound of titanium (IV); and

(b) at least one carboxylic organic acid ester.

4,431,571

RETREATING COMMUNUTED OLEFIN POLYMERIZATION CATALYST WITH A TITANIUM (IV) COMPOUND, A HALOALKYLCHLOROSILANE AND AN ESTER

Nicholas M. Karayannis, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,404

Int. Cl.³ C08F 4/64

U.S. Cl. 502-151

43 Claims

1. A polymerization catalyst for alpha-olefins comprising (A) an organoaluminum compound and (B) a solid, titanium-containing component formed by

(1) comminuting a solid reaction product comprising

(a) at least one halogen-containing compound of titanium (IV);

(b) at least one electron donor containing at least one atom of oxygen, nitrogen, sulfur, and phosphorus; and

(c) at least one hydrocarbon-insoluble, magnesium-containing compound; and

(2) retreating such comminuted product with

(a) at least one halogen-containing compound of titanium (IV);

(b) at least one haloalkylchlorosilane and

(c) at least one organic acid ester.

4,431,572

RETREATING COMMUNITED OLEFIN POLYMERIZATION CATALYST WITH A TITANIUM (IV) COMPOUND, A CHLOROCARBON AND AN ESTER
Nicholas M. Karayannis, Naperville, and Bryce V. Johnson, Elburn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1982, Ser. No. 378,406
Int. Cl.³ C08F 4/64

U.S. Cl. 502—151

43 Claims

1. A polymerization catalyst for alpha-olefins comprising (A) an organoaluminum compound and (B) a solid, titanium-containing component formed by

- (1) comminuting a solid reaction product comprising
 - (a) at least one halogen-containing compound of titanium (IV);
 - (b) at least one electron donor containing at least one atom of oxygen, nitrogen, sulfur, or phosphorus; and
 - (c) at least one hydrocarbon-insoluble, magnesium-containing compound; and
- (2) retreating such comminuted product with
 - (a) at least one halogen-containing compound of titanium (IV);
 - (b) at least one chlorocarbon; and
 - (c) at least one carboxylic organic acid ester.

4,431,573

METHOD OF PRODUCING AN ALKALI SULFATE CATALYST V₂O₅

Wolfgang Fennemann, Karben; Ulrich Sander, Friedrichsdorf, and Manfred Bick, Oberursel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,563

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033319

Int. Cl.³ B01J 27/02

U.S. Cl. 502—218

10 Claims

1. A method of producing a catalyst for the contact catalysis conversion of SO₂ to SO₃ which comprises the steps of:

- (a) providing prefabricated catalyst-support bodies;
- (b) impregnating a mass of said prefabricated catalyst-support bodies with an aqueous impregnating solution consisting essentially of 600 to 1100 grams per liter of free H₂SO₄ and 140 to 830 grams per liter V₂O₅ and an alkali sulfate, the V₂O₅ being a molar ratio to said alkali sulfate of less than 1, at an impregnation temperature between 60° C. and the boiling point of the impregnating solution; and
- (c) drying the impregnated mass while moving the support bodies.

4,431,574

SUPPORTED GROUP VIII NOBLE METAL CATALYST AND PROCESS FOR MAKING IT

Jean-Paul Bournonville, Chatou; Jean Cosyns, Maule, and Strinivasan Vasudevan, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 5, 1982, Ser. No. 375,068

Claims priority, application France, May 5, 1981, 81 09055

Int. Cl.³ B01J 23/42, 23/46

U.S. Cl. 502—261

20 Claims

1. A process for manufacturing a supported group VIII noble metal catalyst, comprising the steps of:

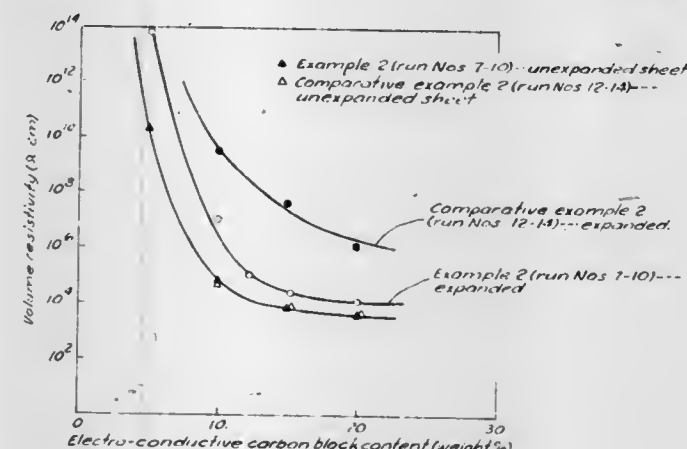
- (a) contacting a catalyst carrier with a solution of at least one acetylacetonate of a group VIII noble metal in a solvent, said solvent being a hydrocarbon, an alcohol, a ketone or a halogenated hydrocarbon, so as to introduce said metal into said carrier; and
- (b) heating the metal impregnated carrier from step (a) to 100°–400° C. in the presence of a molecular oxygen containing gas, so as to remove the solvent and activate the impregnated carrier.

4,431,575

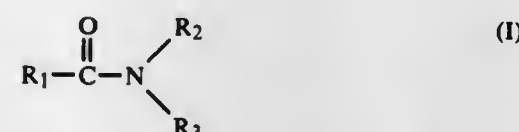
FOAMABLE POLYOLEFIN RESIN COMPOSITION
Akira Fujie, and Minoru Hisamatsu, both of Suzuka, Japan, assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 8, 1982, Ser. No. 439,666
Int. Cl.³ C08J 9/14

U.S. Cl. 252—502

12 Claims



1. An electroconductive olefin polymer foam article which comprises 100 parts by weight of an olefin polymer resin, from 5 to 30 weight percent, based upon said olefin polymer resin, of an electroconductive carbon black and from 0.1 to 10 weight percent, based upon said olefin polymer resin, of a saturated amide compound of the following formula:



wherein R₁ represents an alkyl group having from 8 to 22 carbon atoms and wherein R₂ and R₃ individually represent a hydrogen atom or an alkyl group having from 1 to 22 carbon atoms.

4,431,576

PERFUMANT CYCLOPROPANE-CARBOXYLIC ACID DERIVATIVES

Jacques Martel, Bondy; Jean Buendia, Le Perreux-sur-Marne, and Francois Nezot, Thiais, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 27, 1982, Ser. No. 343,348

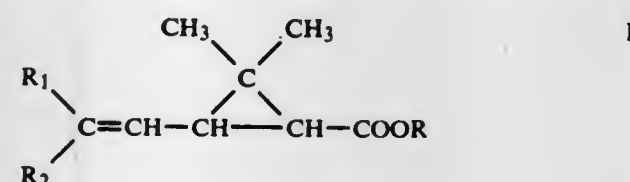
Claims priority, application France, Feb. 5, 1981, 81 02236

Int. Cl.³ A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R

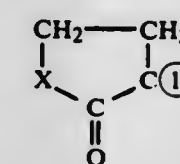
16 Claims

1. A perfumant composition containing as a perfumery agent an odorantly effective amount of at least one compound in all its possible isomeric forms and mixtures thereof of the formula

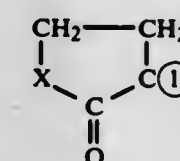


wherein R is selected from the group consisting of (a) alkyl of 1 to 12 carbon atoms optionally substituted with cycloalkyl or cycloalkenyl of 3 to 6 carbon atoms or a hydrocarbon chain of 2 to 8 carbon atoms optionally interrupted by an oxygen or ketone, (b) alkenyl and alkynyl of 3 to 8 carbon atoms, (c) cycloalkyl of 3 to 12 carbon atoms optionally containing at least one double bond and substituted with at least one alkyl and (d) aralkyl of 7 to 12 carbon atoms optionally substituted

with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and —CF₃ and R₁ and R₂ are individually selected from the group consisting of hydrogen, —CHO, —COAlK₁, —COOAlK₂ and CN, with only one being hydrogen, AlK₁ and AlK₂ are alkyl of 1 to 8 carbon atoms and R₁ and R₂ taken together with the carbon atom to which they are attached form the group

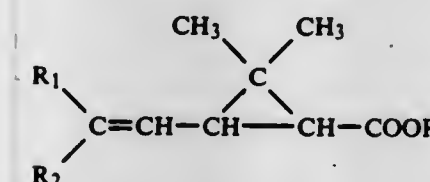


and X is selected from the group consisting of sulfur, oxygen and imino joined to the 1-carbon atom with a double bond with the proviso that the double bond has the E geometry when R₁ or R₂ are —CHO, —COAlK₁, —COOAlK₂ or

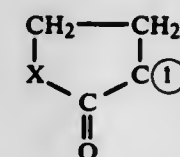


and at least one member of the group consisting of support vehicles, modifiers, fixing agents, preservatives, stabilizers, supports, solvents, dispersants and emulsifiers.

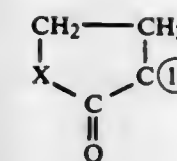
9. A method of imparting a pleasant odor to a composition comprising incorporating into the composition an odorantly effective amount of at least one compound



wherein R is selected from the group consisting of (a) alkyl of 1 to 12 carbon atoms optionally substituted with cycloalkyl or cycloalkenyl of 3 to 6 carbon atoms or a hydrocarbon chain of 2 to 8 carbon atoms optionally interrupted by an oxygen or ketone, (b) alkenyl and alkynyl of 3 to 8 carbon atoms, (c) cycloalkyl of 3 to 12 carbon atoms optionally containing at least one double bond and substituted with at least one alkyl and (d) aralkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and —CF₃ and R₁ and R₂ are individually selected from the group consisting of hydrogen, —CHO, —COAlK₁, —COOAlK₂ and —CN, only one being hydrogen, AlK₁ and AlK₂ are alkyl of 1 to 8 carbon atoms and R₁ and R₂ taken together with the carbon atom to which they are attached form the group



and X is selected from the group consisting of sulfur, oxygen and imino joined to the 1-carbon atom with a double bond with the proviso that the double bond has the E geometry when R₁ or R₂ are —CHO, —COAlK₁, —COOAlK₂ or



4,431,577

CARBOMETHOXY METHYL NORBORNANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 284,107, Jul. 16, 1981, Pat. No. 4,350,823, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application May 20, 1982, Ser. No. 380,424

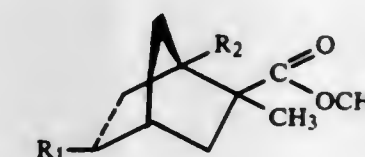
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R

4 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one norbornyl compound defined according to the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and one of R₁ or R₂ is methyl and the other of R₁ or R₂ is hydrogen.

4,431,578

SILICONE COMPOSITIONS FOR BURIED ELECTRICAL SPlice CLOSURES

Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 27, 1981, Ser. No. 325,261

Int. Cl.³ H01B 3/46; H01F 27/12; H01G 4/04

U.S. Cl. 252—573

16 Claims

1. In an insulated electrical cable splice employing a dielectric fluid to encapsulate and insulate the splice, the improvement comprising using as the dielectric fluid a composition having a specific gravity of at least 1.02 and consisting essentially of a silicone fluid and an additive, soluble in said silicone fluid, selected from the group consisting of trimethylsilyl treated (CH₃)₃SiO₄/SiO₂ resin copolymer, dipropylene glycol-dibenzoate, dicyclopentadiene, phenylxylethane, and a mixture of [(CH₃)₃Si]₂O treated silica and a silica aerogel.

4,431,579

METHOD OF IMPROVING ANTI-INFLAMMABILITY OF DIMETHYL SILICONE OIL FOR USE IN STATIC ELECTRIC APPARATUS

Sachio Yasufuku, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 30, 1982, Ser. No. 373,677

Claims priority, application Japan, May 11, 1981, 56-70494

Int. Cl.³ H01B 3/46

U.S. Cl. 252—573

3 Claims

1. A method of improving the anti-inflammability of di-

methyl silicone oil which is used in the manufacture of static electric apparatus, comprising:

reacting dimethyl silicone oil normally used as a fire retardant dielectric liquid in static electric devices and having a kinematic viscosity ranging from 47.5 to 52.5 centistokes at 25° C. with a cerium chelate compound selected from the group consisting of Ce(II) acetylacetonate, Ce(IV) acetylacetonate and Ce(IV) basic acetylacetonate; and chemically combining the cerium chelate compound with the dimethyl silicone oil in an amount of 55 to 75 ppm, calculated in terms of cerium, which is an amount sufficient to prevent the generation of cyclic oligomer components in said oil which form upon decomposition of the dimethyl silicone oil, whereby the flashpoint of the dimethyl silicone oil is elevated without impairing the electrical insulating performance of said oil.

4,431,580

METHOD FOR PURIFYING A NITRIC-ACID U/PU SOLUTION

Volker Schneider, Heusenstamm; Gerhard Margraf, Glauburg, and Wolf-Günther Druckenbrodt, Rodenbach, all of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,247

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003088

Int. Cl.³ C09K 11/04

U.S. Cl. 252—631

11 Claims

1. Method for treating a nitric acid solution containing uranium and plutonium ions and contaminated by metal impurities to effect retention of a major part of both the uranium and plutonium in the solution while effecting substantial removal of the metal impurities, which comprises subjecting said nitric-acid solution with at least one of the uranium and plutonium in the solution below hexavalent form contaminated by heavy metal impurities to oxidation to oxidize the plutonium and uranium below hexavalent form to the hexavalent form, passing the nitric-acid solution containing the uranium and plutonium ions after oxidation in contact with a cation exchanger to effect substantial removal of the heavy metal impurities from the nitric-acid solution while retaining a major part of both the uranium and plutonium in the solution, and recovering the purified nitric-acid solution.

4,431,581

HEME CONCENTRATE AND METHOD FOR THE PREPARATION THEREOF

Paul G. S. Lindroos, Eriksgatan 37, 20100 Åbo 10, Finland
PCT No. PCT/FI81/00026, § 371 Date Nov. 16, 1981, § 102(e)
Date Nov. 16, 1981, PCT Pub. No. WO81/02834, PCT Pub.
Date Oct. 15, 1981

PCT Filed Apr. 1, 1981, Ser. No. 324,395

Claims priority, application Sweden, Apr. 3, 1980, 8002591

Int. Cl.³ A23J 1/06; C07G 7/00; C07C 103/52

U.S. Cl. 260—112 B

17 Claims

1. A method for the preparation of a heme concentrate from a mixture comprising heme and blood protein obtained by cleaving hemoglobin, said method comprising the steps of treating said mixture with a liquid comprising a dehydrating agent and having a pH of at least 8.0 to provide a supernatant and a residue; separating the residue from the supernatant; and recovering heme concentrate from the supernatant.

4,431,582 PROTEIN, COMPOSITION AND METHOD FOR ENHANCING EPITHELIAL CELL MOVEMENT

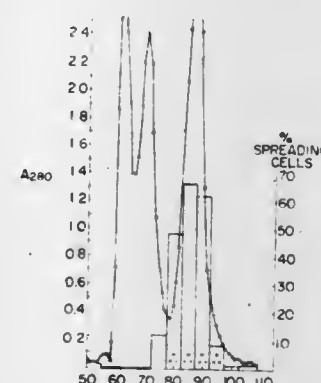
Kurt S. Stenn, Guilford, Conn., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 330,396, Dec. 14, 1981, abandoned. This application Dec. 17, 1982, Ser. No. 450,789, which is a continuation of Ser. No. 244,963 Mar. 18, 1981, now abandoned, which is a continuation of Ser. No. 135,631, Mar. 31, 1980, now abandoned.

Int. Cl.³ C07G 7/00

U.S. Cl. 260—112 B

5 Claims



1. A trypsin digestible single-chained, glycosylated protein which enhances epithelial cell movement in vivo having the following properties:

- a molecular weight of about 62,000 daltons;
- resistant to serine protease inhibitors, diisopropyl fluorophosphate and phenyl methyl sulfonyl fluoride;
- isoelectric point between 5.1 and 5.2;
- extinction coefficient of about 1.0 at 280 nm ultraviolet light, and
- an amino acid composition including but not limited to:

Amino Acid	No. of amino acids per protein molecule 62,752 daltons	No. of amino acid molecules per 1000 amino acids
Asp	62	111
Thr	40	72
Ser	46	81
Glu	67	119
Pro	19	35
Gly	26	46
Ala	43	77
Val	33	59
Met	15	26
Ile	24	44
Leu	69	123
Tyr	12	22
Phe	31	56
His	12	21
Lys	34	60
Arg	21	37
Trp	4	7
Cys	2	4

(f) the N-terminal amino acid is asparagine and the N-terminal amino acid sequence is

NH₂-Asparagine-serine-proline-leucine-aspartic-glutamic;

(g) immunoelectrophoresis properties of a serum α₂ globulin;

(h) antibody to the protein blocks all the epidermal cell spreading activity of human serum;

(i) antibody to the protein does not react with other known human serum proteins.

2. A method of preparing the protein of claim 1 comprising:

(1) diluting mammalian plasma or serum with water and dissolving therein sufficient ammonium sulfate to produce an approximately 33.3% saturated solution and removing the thus formed precipitate;

(2) dissolving in the solution remaining from step (1) sufficient ammonium sulfate to produce an approximately 66.7% saturated solution;

- (3) removing the precipitate from the solution produced by step (2), suspending it in water and dialyzing the suspension against a buffered solution having a pH of about 6.0;
- (4) placing the dialyzed fraction in a buffered solution having a pH of about 6.0 and subjecting the solution to anionic chromatographic separation, including washing the chromatographically adhered fraction with said buffered solution;
- (5) eluting the chromatographically adhered fraction with a buffered solution having a pH of about 6.0 and an anionic strength of about 12 mmhos;
- (6) dialyzing the eluted fraction against a buffered solution having a pH of about 6.0; and
- (7) subjecting the dialysate to isoelectric precipitation at a pH of between 4.6 and 5.0 to produce the protein.

4,431,583

PHENYL- OR NAPHTHYL-AZO-(8-HYDROXYQUINOLINE) 1:2-COBALT COMPLEX DYES FOR LEATHER

Gerhard Back, Lörrach, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 2,274, Jan. 10, 1979, abandoned, which is a continuation of Ser. No. 815,890, Jul. 15, 1977, abandoned, which is a continuation of Ser. No. 604,412, Aug. 13, 1975, abandoned. This application Sep. 4, 1980, Ser. No. 183,892

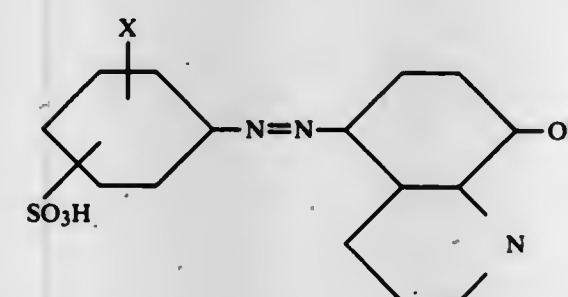
Claims priority, application Switzerland, Sep. 13, 1974, 12522/74

Int. Cl.³ C09B 29/44, 45/20; D06P 3/24, 3/32

U.S. Cl. 260—146 R

2 Claims

1. A 1:2 cobalt complex dye of an azo compound of the formula



wherein X is hydrogen, chloro or methyl.

4,431,584

TRIAZINYL REACTIVE DYES CONTAINING A 1-NAPHTOL-4,8-DISULFONIC ACID COMPONENT

Hermann Kaack, and Hans Baumann, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,160

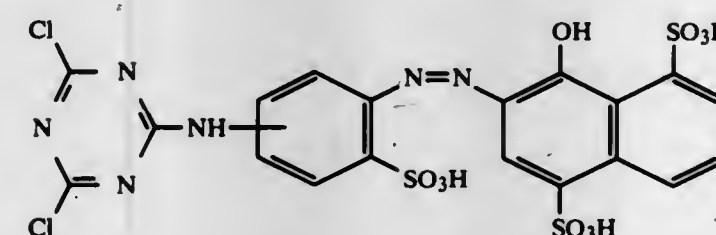
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846201

Int. Cl.³ C09B 62/085; D06P 1/382, 3/10, 3/66

U.S. Cl. 260—153

1 Claim

1. A reactive dye which in the form of the free acid has the formula:



4,431,585 WATER-INSOLUBLE AZO DYESTUFFS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE FOR DYEING AND PRINTING SYNTHETIC HYDROPHOBIC FIBER MATERIAL

Horst Tappe, Dietzenbach; Ulrich Bühler, Schöneck; Kurt Roth, Hofheim; Hans-J. Weyer, Frankfurt am Main, and Uwe Kosubek, Büttelborn, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,628

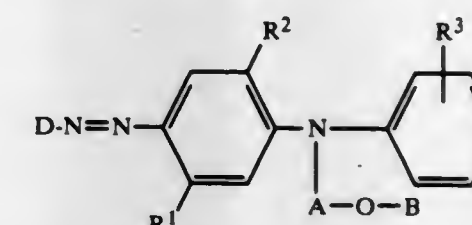
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007518

Int. Cl.³ C09B 29/06, 29/00

U.S. Cl. 260—158

8 Claims

1. Water-insoluble azo dyestuffs of the formula



wherein

D is a thiophene or thiazole moiety which is unsubstituted or substituted by —NO₂;

A is an alkylene chain having 2 to 6 carbon atoms which is unsubstituted or substituted by hydroxyl;

B is hydrogen, alkyl having 1 to 4 carbon atoms, hydroxyalkyl having 2 to 4 carbon atoms, C₁ to C₄ alkoxy- or C₁ to C₄ alkanoyloxyalkyl having 3 to 8 carbon atoms, hydroxypolyoxyalkylene having 4 to 12 carbon atoms, C₁ to C₄ alkoxy- or C₁ to C₄ alkanoyloxyalkylene having 5 to 16 carbon atoms, alkanoyl having 2 to 6 carbon atoms or benzoyl;

R¹ is hydrogen, methyl and chloro;

R² is hydrogen, halogen, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, and

R³ is hydrogen and alkoxy having 1 to 8 carbon atoms.

4,431,586

MONOCYCLIC TELLUROPYRONES

Michael R. Detty; Bruce J. Murray, and Jerome H. Perlstein, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

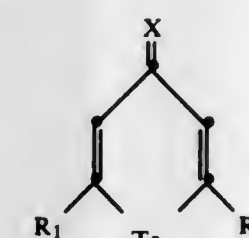
Filed Jul. 1, 1981, Ser. No. 279,361

Int. Cl.³ C07D 345/00

U.S. Cl. 260—239 R

4 Claims

2. A monocyclic telluropyrone compound having the structure:



R₁ and R₂ each independently represents aryl, alkyl, hydrogen, alkoxy, amino, trialkylsilyl, triarylsilyl, alkylamino, dialkylamino or halogen;

X represents O, S or Se.

4,431,587

BETA-LACTAM ANTIBACTERIAL AGENTS

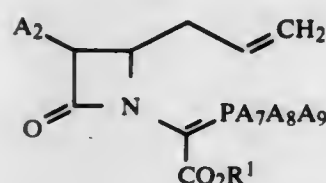
Kay H. Dickinson nee Berryman, Reading; Terence C. Smale, Epsom Downs, and Robert Southgate, Warnham, all of England, assignors to Beecham Group Limited, England
Division of Ser. No. 82,427, Oct. 5, 1979, abandoned, which is a division of Ser. No. 887,844, Mar. 17, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,656

Claims priority, application United Kingdom, Mar. 19, 1977, 11747/77

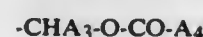
Int. Cl.³ C07D 205/08, 487/04; A61K 31/40; C07D 403/12
U.S. Cl. 260—239 A

1 Claim

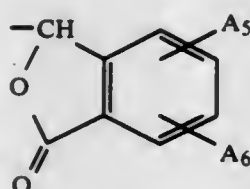
1. A compound of the formula (IX):



wherein R₁ is alkyl of up to 12 carbon atoms, alkenyl of up to 8 carbon atoms, alkynyl of up to 8 carbon atoms, phenyl, benzyl or said alkyl, alkenyl, alkynyl, phenyl or benzyl monosubstituted by lower alkoxy, lower alkanoyloxy, halogen or nitro, or R₁ is of the formula (a) or (b):



(a)



(b)

wherein A₃ is hydrogen or methyl; A₄ is lower alkyl, lower alkoxy, phenyl, phenoxy, benzyl or benzyloxy, except as R₁ is covered above; A₅ is hydrogen, methyl or methoxy; and A₆ is hydrogen, methyl or methoxy; A₂ is hydrogen or a group CR₂R₃R₄ wherein R₂ is hydrogen or hydroxyl; R₃ is hydrogen or lower alkyl; R₄ is hydrogen, lower alkyl, benzyl or phenyl, or is joined to R₃ to form part of a carbocyclic ring of 5 to 7 carbon atoms, or A₂ is a group of the formula CH(OH)R₅ or CHX wherein R₅ is hydrogen or lower alkyl, X is oxygen or CR₆R₇ wherein R₆ is hydrogen, lower alkyl, phenyl, CN, CO₂R₈ or COR₈ wherein R₈ is lower alkyl, phenyl or benzyl and R₇ is hydrogen or lower alkyl or is joined to R₆ to form part of a carbocyclic ring of 5 to 7 carbon atoms; A₇ is lower alkyl, phenyl or methoxyphenyl; A₈ is lower alkyl, phenyl or methoxyphenyl.

4,431,588

3-SUBSTITUTED BICYCLIC AQETIDINONE DERIVATIVES

Hans-Rudolf Pfandler, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

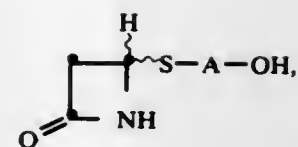
Division of Ser. No. 327,380, Dec. 4, 1981, which is a continuation-in-part of Ser. No. 171,521, Jul. 23, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 430,080
Claims priority, application Switzerland, Aug. 1, 1979, 7077/79; Jul. 1, 1980, 5083/80

Int. Cl.³ C07D 205/08, 515/04; A61K 31/425

U.S. Cl. 260—239 A

5 Claims

1. Compounds of the formula



(II)

wherein

A represents a lower alkylene radical having 2 or 3 carbon atoms between the two hetero atoms, the stereoisomers of compounds of the formula II and mixtures of these stereoisomers.

4,431,589

BENZODIAZEPINE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Jiban K. Chakrabarti, Camberley; Terrence M. Hotten, Farnborough, and David J. Steggle, Bracknell, all of England, assignors to Lilly House, London, England

Filed Dec. 3, 1981, Ser. No. 327,143

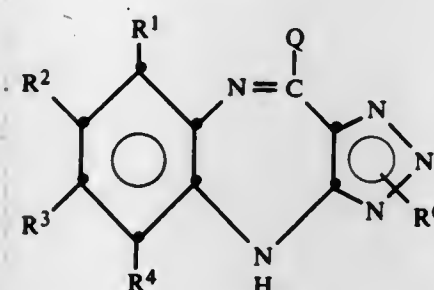
Claims priority, application United Kingdom, Dec. 11, 1980, 8039659

Int. Cl.³ C07D 487/04; A61K 31/55

U.S. Cl. 260—239.3 T

2 Claims

1. A compound of the formula



in which R¹, R², R³, R⁴ independently represent hydrogen, C₁₋₄alkyl, C₂₋₄alkenyl, halogen, C₁₋₄haloalkyl, nitro, C₁₋₄alkoxy, C₁₋₄haloalkoxy, C₁₋₄alkylthio, or phenylsulfonyl; and in which R₆ is attached to the 1,2 or 3 position of the triazole ring and is hydrogen, C₁₋₁₀alkyl, C₃₋₇cycloalkyl, C₃₋₇cycloalkyl-C₁₋₄alkyl, phenyl, benzyl, or acyl and Q is amino or a salt thereof, hydroxyl or thiol.

4,431,590

1-CHLOROSULFONYL-2,3,4,10-TETRAHYDRO-1H-CHROMENO[3,4-c]AZET-2-ONE

Kraft Hohenlohe-Oehringen, Innsbruck, Austria, and Anton Fliri, Cambridge, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 324,327, Nov. 23, 1981, abandoned, which is a division of Ser. No. 135,796, Mar. 31, 1980, U.S. Pat. No. 4,284,788, which is a division of Ser. No. 246,839, Mar. 23, 1981, U.S. Pat. No. 4,322,360. This application Jul. 16, 1982, Ser. No. 399,072

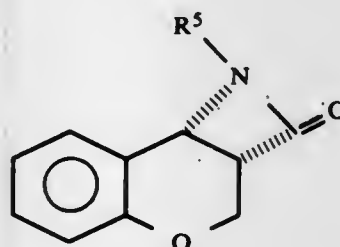
Claims priority, application Switzerland, Apr. 6, 1979, 3293/79

Int. Cl.³ C07D 491/052

U.S. Cl. 260—330.9

1 Claim

1. A compound of the formula



VII

wherein R⁵ is —SO₂Cl.

4,431,591

24-NOR-1,4-CHOLADIENE-3,22-DIONE

John C. Knight, 4233 N. 8th St., Kalamazoo, Mich. 49007, and Merle G. Wovcha, 145 S. Prairie Ave., Kalamazoo, Mich. 49009

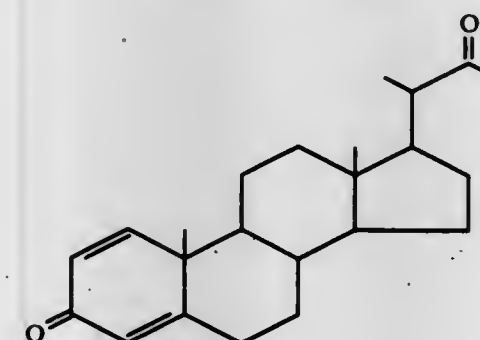
Division of Ser. No. 291,725, Aug. 10, 1981. This application Sep. 27, 1982, Ser. No. 424,708

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.3

1 Claim

1. A novel compound of the formula



4,431,592

UNSATURATED ESTERS AND METHOD OF PREPARATION

Michael J. Mullins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 26, 1982, Ser. No. 371,767

Int. Cl.³ C07C 67/343, 69/24, 69/28, 69/74

U.S. Cl. 260—410.6

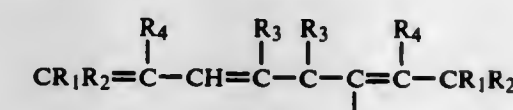
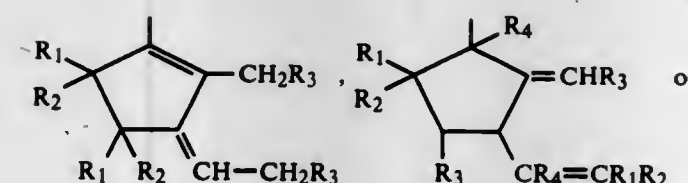
13 Claims

1. An unsaturated ester corresponding to the formula:



wherein:

X is:



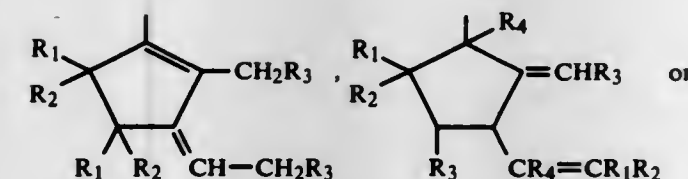
where R₁—R₄ independently each occurrence are selected from the group consisting of hydrogen, halogen, and C₁₋₂₀ hydrocarbyl; and R' is C₁₋₆ alkyl, —CH₂CHR₅OH or —CH₂CHR₅OC(O)X where R₅ is hydrogen, halogen or C₁₋₂₀ hydrocarbyl, and X is as previously defined.

6. A process for preparing unsaturated esters corresponding to the formula:

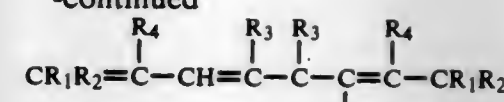


wherein:

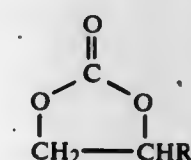
X is:



-continued



where R₁—R₄ independently each occurrence are selected from the group consisting of hydrogen, halogen, and C₁₋₂₀ hydrocarbyl; and R' is —CH₂CHR₅OH where R₅ is hydrogen, halogen or C₁₋₂₀ hydrocarbyl, comprising contacting a diene corresponding to the formula: CR₁R₂=CR₄—CH=CHR₃ with a cyclic alkylene carbonate corresponding to the formula:



wherein R₁—R₅ are as previously defined, in the presence of a catalyst comprising a zero valent nickel-phosphine complex at a temperature from about 100° C. to about 150° C. for a time sufficient to prepare substantial quantities of the unsaturated ester.

4,431,593

ESTER PREPARATION BY CARBONYLATION OF MONOOLEFINS

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Sep. 21, 1981, Ser. No. 303,947

Claims priority, application France, Oct. 3, 1980, 80 21542

Int. Cl.³ C07C 67/38

U.S. Cl. 260—410.9 R

18 Claims

1. A process for the preparation of an organic ester comprising carbonylating a monoolefin with carbon monoxide and an alcohol having the structural formula ROH, wherein R is an alkyl radical having up to 12 carbon atoms, a mono- or dihydroxy substituted alkyl radical having up to 12 carbon atoms, a cycloalkyl radical having from 5 to 7 carbon atoms, an aralkyl radical having from 7 to 12 carbon atoms, or a phenyl radical, in the presence of a catalytically effective amount of a catalyst comprising cobalt, ruthenium and a tertiary amine base, said tertiary amine base being a heterocycle having 5 to 6 ring members only one of which is a tertiary nitrogen atom, said heterocycle comprising 2 or 3 double bonds and being unsubstituted or substituted by one or two alkyl or alkoxy substituents having up to 4 carbon atoms, or hydroxyl or halogen substituents, or said heterocycle being fused to a benzene ring, with the proviso that the links adjacent to the nitrogen atom are neither substituted nor common to two rings, the organic ester produced by said process being the major product of said process, said ester being a saturated ester containing one hydrogen atom more than the monoolefin starting material and bearing a carboxylate group —COOR wherein R is defined as above, said ester comprising predominantly linear ester in which the carboxylate group —COOR is located in the position corresponding to the terminal position on the main chain of the monoolefin starting material.

4,431,594

METHOD FOR PREPARATION OF SALTS OF N-PHOSPHONOMETHYLGLYCINE

Michael D. Broadhurst, Fairfield, Conn., and James B. Heather, Hercules, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

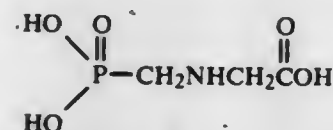
Filed Jan. 13, 1983, Ser. No. 457,812
Int. Cl.³ C07F 9/38

U.S. Cl. 260—502.5 F

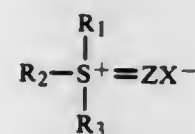
9 Claims

1. A process for the preparation of organic salts of N-phosphonomethylglycine which comprises:

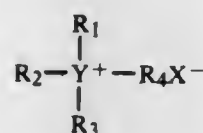
(1) reacting N-phosphonomethylglycine, a compound of the formula



with a compound selected from the group consisting of those having the formula



wherein R₁, R₂ and R₃ are the same or different and are alkyl groups having from 1 to 4 carbon atoms or aromatic alkyl groups, X is chloride, bromide or iodide and Z is an electron pair or oxygen, or



wherein R₁, R₂ and R₃ are the same or different and are alkyl groups having from 1 to 4 carbon atoms and are the same as in (a) above, R₄ is an alkyl group having from 1 to 12 carbon atoms, aromatic or aromatic alkyl groups, X is chloride, bromide or iodide, and Y is nitrogen or phosphorus, said reaction being conducted in the presence of a trialkylamine of the formula



wherein each R is the same or different and is an alkyl group ranging from 4 to 13 carbon atoms, all in the presence of water and a polar functional organic solvent which is immiscible in water, said reaction being conducted at a temperature and for a sufficient period of time to cause completion of the reaction, and

(2) isolating the end product by phase separation.

4,431,595

FLUORINE-CONTAINING AMINOSULFONATE

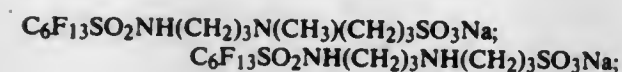
Yutaka Hashimoto; Masayuki Kamei, both of Urawa; Toshihiko Umaba, Takaishi, and Tadashi Ito, Osaka, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of Japan

Filed Sep. 11, 1981, Ser. No. 301,413
Claims priority, application Japan, Mar. 14, 1980, 55-31639
Int. Cl.³ C07C 143/02

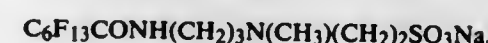
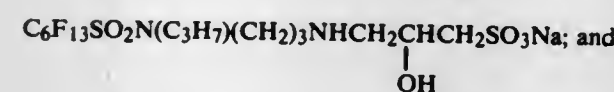
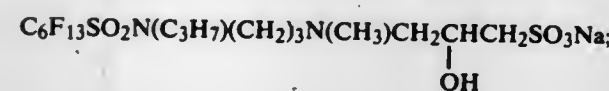
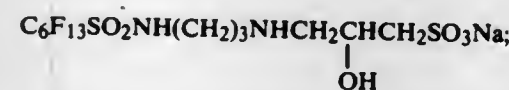
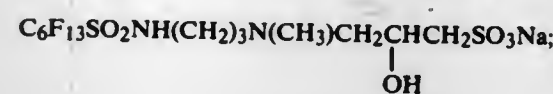
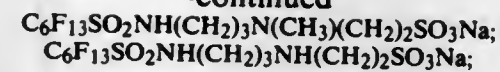
U.S. Cl. 260—513 F

3 Claims

1. A fluorine-containing aminosulfonate selected from the group consisting of



-continued



4,431,596

2-HYDROXY-2-PHOSPHINYL ETHANALS AND 1,2-DIHYDROXY-1,2-BISPHOSPHINYL ETHANES

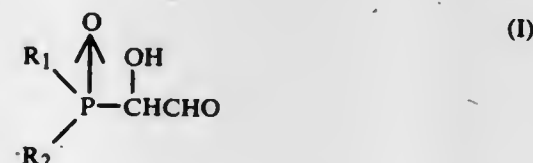
Alexandros K. Tsolis, 171 Old National Rd., Arachovitika, and Ioannis A. Mikroyannidis, Navmahias Elis 48-52, Patra, both of Greece

Filed Jul. 30, 1981, Ser. No. 288,607
Int. Cl.³ C07F 9/40

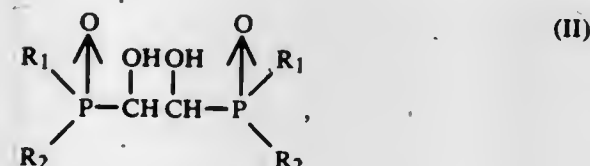
U.S. Cl. 260—970

5 Claims

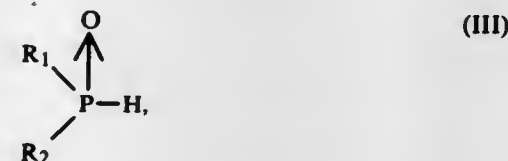
1. A method of making a compound selected from the group consisting of a 2-hydroxy-2-phosphinyl ethanal of the formula:



and a 1,2-dihydroxy-1,2-bisphosphinyl ethane of the formula:



wherein R₁ and R₂ are each selected from the group consisting of alkoxy having from 1 to 4 carbon atoms, cyclohexyloxy, phenoxy, benzyloxy, alkoxy substituted by chlorine or bromine, and hydroxy, which comprises reacting glyoxal or an oligomeric or polymeric composition which releases glyoxal, with a hydrogen phosphorus compound of the formula:



in a molar ratio of from about 1 to 0.5 moles of glyoxal per mole of said hydrogen phosphorus compound; and carrying out the reaction at a temperature within the range of from 30° to 135° C. and at a pH of from 2 to 6.

4,431,597

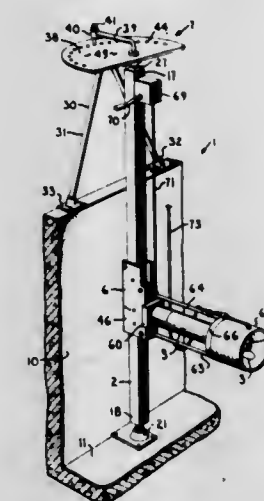
HORIZONTAL MIXING AERATOR

Barry G. Cramer, and Roy A. Cramer, both of Kansas City, Mo., assignors to Air-O-Lator Corporation, Kansas City, Mo.

Filed Sep. 29, 1982, Ser. No. 427,144
Int. Cl.³ B01F 13/02

U.S. Cl. 261—93

9 Claims

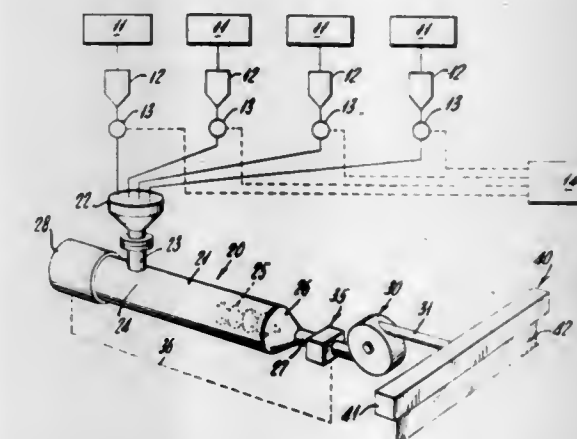


1. A liquid circulating apparatus comprising:
 - (a) an upright beam member for extending into a body of liquid;
 - (b) upper and lower support means for holding said beam member in said body;
 - (c) a U-shaped bracket mounted on said beam member and including spaced sidewalls and an endwall;
 - (d) a submersible motor mounted on said bracket and extending outwardly of said endwall;
 - (e) a propulsion means operably connected to and rotatably powered by said motor to effect an outwardly directed flow in said body of liquid; and
 - (f) means selectively swingably mounting said bracket to said beam member including sets of front and rear guides extending between said bracket sidewalls and capturing said beam member therebetween, said sets of front and rear guides each including upper and lower guides with said lower rear guide being selectively removable and replaceable whereby said bracket swings upwardly against said upper front guide and said lower rear guide engages said beam member for controlling upward tilt and direction of flow of said liquid.

component by heating said screw and the walls of said extruder,

(2) thoroughly mixing and melting the mixture in the extruder barrel to cause it to become homogeneous, said extruder barrel being maintained at temperatures up to about 400° F. and having a varying rotative speed screw to prevent surging,

(3) delivering the melted homogeneous mixture from the extruder to the inlet of a positive displacement gear pump under a pressure maintained substantially constant by the varying rotative speed of the extruder screw within the barrel, said screw speed responding to a control system comprising a sensor mounted at the inlet of the pump operably associated via a loop relay to a variable speed motor driving the extruder screw, and



- (4) pumping the melted mixture under steady-state pressure conditions through an elongated extrusion die to form a uniform, thin adhesive film; wherein in said process, the high molecular weight thermoplastic elastomer particle is selected from the group consisting of:
 - (a) a linear or radial A-B-A block copolymer wherein the A blocks are derived from an alkenylarene and the B block is derived from a conjugated diene or from ethylene and butylene,
 - (b) an A-B block copolymer wherein the A block is derived from alkenylarene and the B block is derived from a conjugated diene or from ethylene and butylene,
 - (c) an ethylene vinyl acetate copolymer, and
 - (d) a mixture of copolymers from two or more of the categories (a), (b), or (c) above.

4,431,598

PROCESS FOR EXTRUDING ADHESIVE FILMS AND TAPES

Ralf Korpman, Bridgewater, N.J., assignor to Permacel, New Brunswick, N.J.

Continuation of Ser. No. 124,392, Feb. 25, 1980, abandoned.

This application Dec. 21, 1981, Ser. No. 333,203

Int. Cl.³ B29D 7/00; B29F 3/08

U.S. Cl. 264—40.7

2 Claims

1. An extrusion process for obtaining a highly uniform, thin adhesive film of thickness no greater than 20 mils, from a dry mixture of particles comprising relatively high molecular weight thermoplastic elastomer particles having a number average molecular weight of at least 75,000 and relatively low molecular weight tackifier resin particles having a number average molecular weight not above about 3,000 which comprises:

- (1) feeding the mixture into an extruder including a cooled inlet conduit, feed section and a rotating screw within a barrel, said mixture passing through the cooled inlet conduit into the feed section where said mixture advances into rotative and axial driving contact with said rotating extruder screw, said feed section maintained at a temperature above the melting point of the low molecular weight

4,431,599

METHOD FOR THE MELTING AND SOLIDIFICATION OF SILICON

Joseph Lindmayer, Bethesda, Md., assignor to Semix Incorporated, Gaithersburg, Md.

Continuation of Ser. No. 916,544, Jun. 19, 1978, abandoned.

This application Dec. 24, 1981, Ser. No. 334,184

The portion of the term of this patent subsequent to May 17, 1998, has been disclaimed.

Int. Cl.³ C04B 35/60

U.S. Cl. 264—85

10 Claims

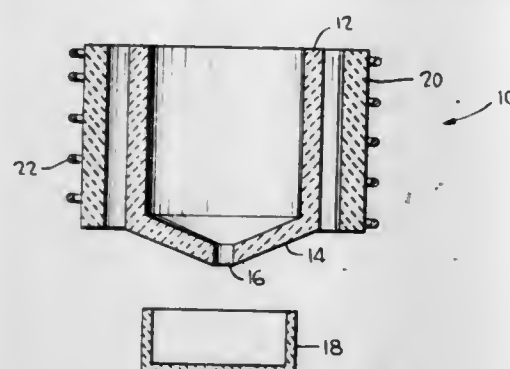
1. A method for melting and solidifying silicon suitable for use as a host material for photovoltaic cells, comprising

- (a) charging solid silicon into a melting vessel having an open drain therein,
- (b) applying heat to the solid silicon charge in the vessel so that initial portions thereof will be heated to a temperature above the melting point of silicon and become molten while other portions of the silicon charge remain in a solid state,
- (c) allowing the molten silicon to pass through the drain out of the melting vessel without substantial obstruction at a temperature just above the melting point of the silicon,
- (d) collecting the molten silicon in a receiving vessel at about

said temperature so that the temperature of the collected silicon will be just above the melting point of silicon and the retention time of molten silicon in the melting vessel will be minimized,

(e) gradually cooling the molten silicon mass in the receiving vessel to a temperature at its solidification point, such cooling taking place over a period of time such that the silicon forms crystal centers at generally random locations throughout the molten silicon mass,

(f) maintaining the silicon mass at its solidification temperature for a period of time sufficient to enlarge the crystal-



lites formed at said crystal centers until they have an average mean diameter of at least about one mm. and are generally randomly distributed in substantially non-columnar, non-linear fashion throughout the silicon mass, and

(g) thereafter completing cooling of the silicon mass to ambient temperature to form a substantially homogeneous semicrystalline silicon body having randomly arranged silicon grains of a mean diameter of at least about one mm. at a surface thereof and adapted for use as the host material is photovoltaic cells.

4,431,600

EXTRUSION MOLDING OF POLYAMIDOIMIDE RESINS

Kunisuke Sakamoto, Kamakura; Junichi Yoshimura, and Isamu Shiga, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

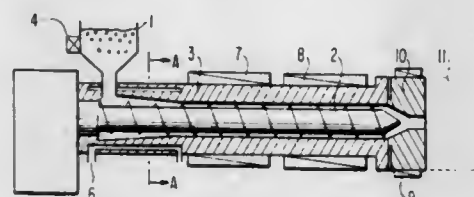
Filed Jan. 19, 1982, Ser. No. 340,665

Claims priority, application Japan, Aug. 5, 1981, 56-122632

Int. Cl.³ B29F 3/00

U.S. Cl. 264—176 R

4 Claims



1. A process for extrusion molding a polyamidoimide resin comprising:

- (1) feeding a polyamidoimide molding material in a granular solid or powder form into an extruder;
- (2) compressing the polyamidoimide molding material under a pressure of about 300 kg/cm² or more in the extruder and simultaneously melting the material by heating it to a temperature between the melting point and the decomposition temperature of the polyamidoimide resin; and
- (3) introducing the molten polyamidoimide molding material maintained at the same temperature and pressure as in (2) into a die, and extruding therefrom such that the molten material is shaped to a desired form and solidified in the die, and is extruded from the die in solidified form.

4,431,601

PROCESS FOR THE PRODUCTION OF CHITIN FIBERS

Koji Kifune, Nara; Katsuhiko Inoue, and Shigeru Mori, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

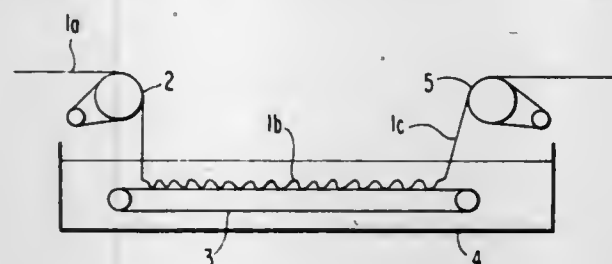
Filed Oct. 29, 1981, Ser. No. 316,384

Claims priority, application Japan, Oct. 29, 1980, 55-152558; Nov. 20, 1980, 55-164268

Int. Cl.³ D01F 9/00

U.S. Cl. 264—186

6 Claims



1. A process for producing a fiber, comprising the steps of: preparing a dope solution comprised of chitin and a solvent; wet-spinning said dope solution by extruding said dope solution through a nozzle in order to form a filament; coagulating said filament in a coagulating solution; and treating said filament with a coagulating solution wherein said filament is in a state in which substantially no tension is exerted on said filament.

4,431,602

PROCESS AND APPARATUS FOR CONDUCTING THE HOT GAS IN THE DRY SPINNING PROCESS

Hans-Josef Behrens, Dormagen; Heiko Herold, Neuss; Edgar Muschelkautz, and Roland Vogelsang, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

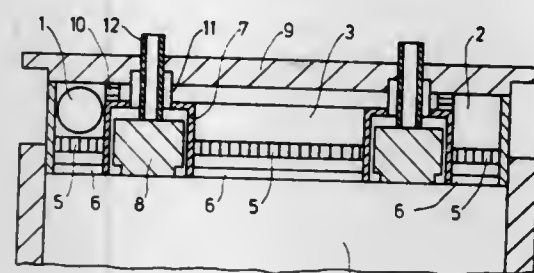
Filed Sep. 29, 1982, Ser. No. 426,307

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1981, 3141490

Int. Cl.³ B29F 3/08

U.S. Cl. 264—205

6 Claims



1. In a process for conducting hot gas in the manufacture of filaments by the dry spinning process with a ring spinning nozzle, wherein the hot gas is set into a rotational flow above the ring spinning nozzle, the improvement comprising the steps of: subdividing the hot gas into two quantitatively adjustable partial streams, one disposed outside and one disposed inside of the ring spinning nozzle; deflecting the streams parallel to the direction of draw-off of the filaments; and subsequently stabilizing the streams.

4,431,603

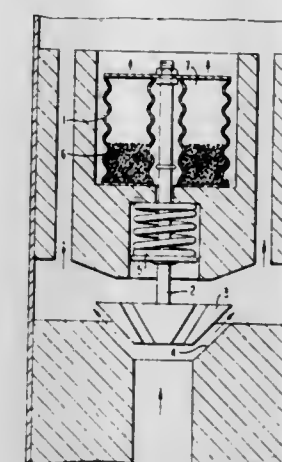
SELF-ACTUATED DEVICE

Samuel L. Hecht, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 6, 1981, Ser. No. 260,864

Int. Cl.³ G21C 15/00

U.S. Cl. 376—352



1. In a nuclear reactor having a nuclear fuel assembly therein with coolant flowing therethrough, said coolant flow passing through an orifice, the improvement comprising neutron flux responsive, self-actuated flow control valve for the orificing of coolant flow through said nuclear fuel assembly which valve comprises:

- (a) a shaft;
- (b) plug means for controlling the coolant flow through said orifice, said plug means connected to said shaft for actuation thereby;
- (c) spring means for biasing said plug means to a predetermined position;
- (d) a gas-tight bellows connected to said shaft such that expansion of said bellows moves said shaft thereby actuating said plug means;
- (e) a mass containing a material chosen from the group boron, lithium, or beryllium, said mass located within said bellows such that gas released by a nuclear reaction of said material with neutrons accumulates in said bellows, said mass chosen in quantity so as to match the actuation of said valve with a chosen neutron flux.

4,431,604

PROCESS FOR PRODUCING HARD MAGNETIC MATERIAL

Takeo Sata; Masayuki Takamura, and Toshiharu Hoshi, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 21, 1981, Ser. No. 226,923

Claims priority, application Japan, Jan. 24, 1980, 55-6369

Int. Cl.³ B22F 1/02

U.S. Cl. 419—23

4 Claims

1. A process for producing hard magnetic material comprising plating powder particles of highly magnetic substance selected from the group consisting of Fe, Co, Ni and alloys thereof with nonmagnetic substance selected from the group consisting of Cu, Al, Sn, Pb, Zn and combination of these metals to form plated particles, said powder particles having a diameter from about 1 to about 1000 microns; compacting the plated particles; sintering the resulting compact; and subjecting the sintered compact to plastic deformation in a prescribed direction, thereby dispersing and orienting in said prescribed direction fine grains of said highly magnetic substance within a base of said nonmagnetic substance, each fine grain corresponding in size to the unit magnetic domain.

4,431,605

METALLURGICAL PROCESS

Roy C. Lueth, 6748 Rattle Run Rd., St. Clair, Mich. 48079, assignor to Roy C. Lueth, St. Clair, Mich.

Filed May 6, 1982, Ser. No. 375,681

Int. Cl.³ B22F 3/00, 3/24

U.S. Cl. 419—26

6 Claims

1 Claim

1. A method for densifying previously sintered parts constructed from powdered metals, ceramics or the like comprising the steps of:

heating said parts above the liquid phase temperature of the parts,

applying a pressure in the range of 50–1,000 psi to said parts for a predetermined period of time while maintaining said parts above said liquid phase temperature.

6. A method for densifying previously sintered parts constructed from powdered tungsten and cobalt comprising the steps of:

heating said parts above the liquid phase temperature of the parts,

applying a pressure in the range of 50–1,000 psi to said parts for a predetermined period of time while maintaining said parts above said liquid phase temperature.

4,431,606

MULTICUVETTE ROTOR FOR ANALYZER

Georges Revillet, Onex, and Michel Thevoz, Neuchatel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

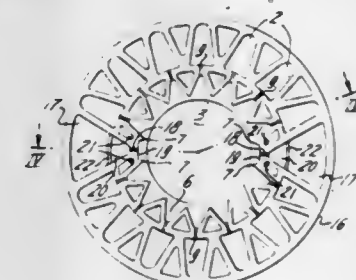
Filed May 1, 1981, Ser. No. 259,346

Claims priority, application Switzerland, May 5, 1980, 3485/80; Mar. 13, 1981, 1735/81

Int. Cl.³ G01N 21/07, 9/30

U.S. Cl. 422—102

15 Claims



1. An analytical centrifugal rotor adapted to receive a liquid comprising

- (a) rotor means;
- (b) a concentric array of analytical cells disposed at the periphery of the rotor, each cell having only one aperture which is normally open and is the inlet of the cell;
- (c) a single central distribution chamber means in said rotor means and having a single inlet for receiving the liquid to be distributed to all analytical cells of said array;
- (d) a concentric array of portioning cavities, each portioning cavity being adjacent to the central distribution chamber means and being disposed between the outer periphery of that distribution chamber means and one of the analytical cells, each portioning cavity having an inlet which is the centripetal open end thereof which directly communicates with the central distribution chamber means over the entire cross-section of said open end without any intervening passageway and an outlet, said open end of each cavity having a cross-section greater than said outlet, the projections of the inlets of all the portioning cavities on a plane perpendicular to the rotation axis of the rotor lying on a circumference the center of which is on the rotation axis of the rotor means;
- (e) a plurality of ducts, each duct communicating the outlet of the portioning cavity with the inlet of one of the analytical cells, each duct being formed in a wall which separates the portioning cavity from the corresponding analytical cell.

ical cell, and each duct being configured and dimensioned so as to produce capillary forces in the liquid in order to produce a cohesive meniscus at the centrifugal end of the duct; and

- (f) at least one overflow reservoir in communication with the central distribution chamber means by passageway means that is not connected to the ducts communicating the analytical cell and the portioning cavities, the projection of the centripetal end of the passageway means on said plane which is perpendicular to the rotation axis of the rotor means falling also on said circumference.

4,431,607

FEEDSTOCK NOZZLE FOR LOW TINT RESIDUAL CARBON BLACK

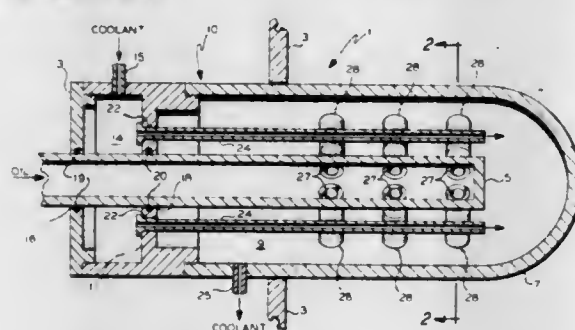
John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 16, 1981, Ser. No. 274,093

Int. Cl.³ C09C 1/48; B01J 10/00

U.S. Cl. 422-150

8 Claims



1. A jacketed pipe adapted for concentric, longitudinal, axial alignment as a carbon black reactor feedstock nozzle in a carbon black reactor, said jacketed pipe comprising:

- a first pipe closed at the downstream end and containing a multiplicity of ports spaced longitudinally along said pipe,
- a second pipe, jacketing said first pipe, closed at the downstream end and of sufficiently greater diameter than said first pipe to provide an annular space therebetween and having spray ports thereon aligned with said spray ports on said first pipe with
- conduits extending radially through said annular space from said first pipe to said second pipe connecting each port on said first pipe with a port on said second pipe and
- inlet and outlet means for passing coolant through said annular space around said conduits so that said coolant directly contacts substantially the entire outer surface of each conduit.

4,431,608

GAS PURIFICATION SYSTEM

Katsuo Katagiri, Nara, and Kiyotaka Shimazu, Higashiosaka, both of Japan, assignors to Osaka Gas Company, Osaka, Japan

Division of Ser. No. 254,558, Apr. 15, 1981, Pat. No. 4,375,450.

This application Dec. 9, 1982, Ser. No. 448,104

Int. Cl.³ B01D 50/00

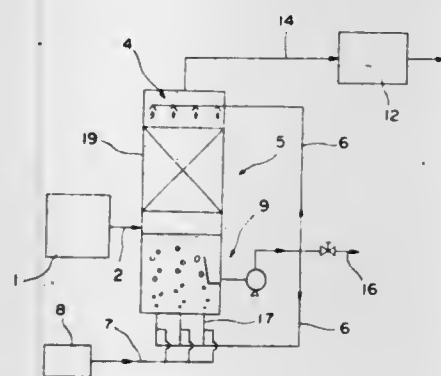
U.S. Cl. 422-170

1 Claim

1. A system for purifying coal carbonization product gas containing NCN gas, H₂S gas and NH₃ gas comprising a closed chamber,

- a first treatment means secured in an upper portion of said closed chamber,
- an absorbent liquid resuscitation means secured in a lower portion of said closed chamber and spaced from said first treatment means,
- means for feeding a coal carbonization product gas into said closed chamber in an area between said first treatment means and said absorbent liquid resuscitation means,

a plurality of premix nozzles secured to said closed chamber at its bottom, a compressor connected to said premix nozzles to supply oxygen to said resuscitation means, spray means mounted in an upper portion of said closed chamber above said first treatment means, pump means connected via a supply line to a side of said closed chamber in an area including said resuscitation means, means connecting said spray means to said pump supply line which feeds an absorbent liquid resuscitated in said resuscitation means to said spray means, circulation pipe means secured to said pump supply line and to said premix nozzles which mixes an absorbent liquid with the oxygen from said air compressor before admission into said resuscitation means via said premix nozzles,



a second treatment means connected to a top portion of said closed chamber above said first treatment means through a supply conduit means, said second treatment means being adapted to remove NH₃ gas remaining in the coal carbonization gas directed from said first treatment means, said premix nozzle means is in a form of a nozzle including therein a resuscitation gas passage joining an absorbent liquid passage, whereby the resuscitation gas is mixed into the absorbent liquid in fine bubbles prior to entry into said resuscitation means, and whereby the resuscitation gas discharged from said resuscitation means disposed below said first treatment means mixes with the coal carbonization gas and is delivered via said first treatment means with the coal carbonization product gas discharged therefrom through said supply conduit means to said second treatment means.

4,431,609

REMOVAL OF RADIUM FROM ACIDIC SOLUTIONS CONTAINING SAME BY ADSORPTION ON COAL FLY ASH

Frank M. Scheitlin, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1983, Ser. No. 461,301

Int. Cl.³ C01F 13/00; G21F 9/12

U.S. Cl. 423-2

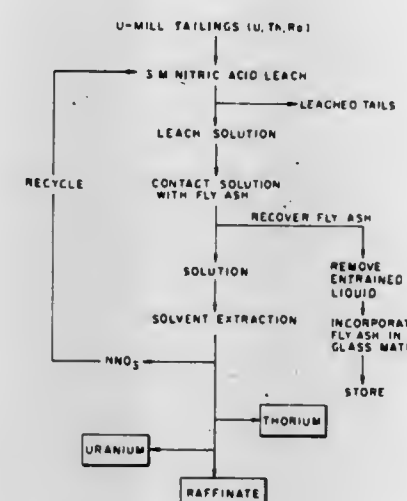
16 Claims

1. A process for recovering radium from an acidic solution containing the same, comprising:

- contacting said solution with coal fly ash for a time sufficient to effect adsorption of said radium on said ash; and separating the resulting radium-carrying ash from said solution.
- A process for the recovery of radium which is dissolved in an acidic aqueous solution, comprising: contacting said solution with coal fly ash to effect adsorption of said radium on said ash; separating the resulting radium-carrying ash from said solution; incorporating the separated ash in a refractory matrix material;

storing said ash-containing matrix material.

13. A process for the recovery of radium from an inorganic acid solution containing radium, uranium, and thorium, comprising:



contacting said solution with coal fly ash to effect adsorption of said radium on said ash, and separating the resulting mixture into a radium-carrying ash fraction and a liquid fraction containing uranium and thorium.

4,431,610

METHOD OF RECOVERING URANIUM FROM WET PROCESS PHOSPHORIC ACID

Soichi Asagao; Shinsuke Nakagawa; Naoki Okada, all of Ube, and Seizi Yoshikawa, Yamaguchi, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

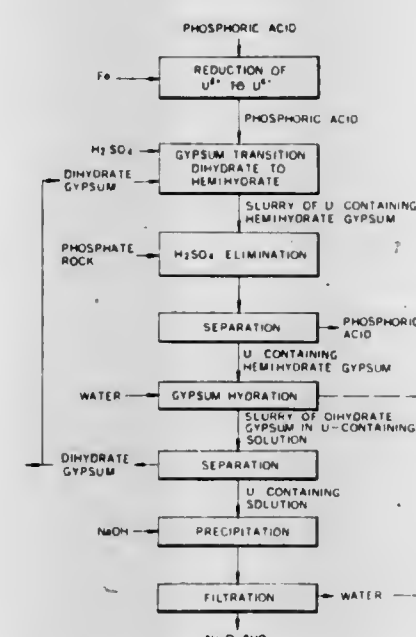
Filed Feb. 22, 1982, Ser. No. 351,171

Claims priority, application Japan, Feb. 23, 1981, 56-24242; Oct. 13, 1981, 56-162077

Int. Cl.³ C01G 56/00

U.S. Cl. 423-12

20 Claims



1. A method of recovering uranium from a wet process phosphoric acid solution, comprising the steps of:

- adding hemihydrate gypsum to the wet process phosphoric acid solution at a temperature high enough to prevent hydration of the hemihydrate gypsum;
- separating the hemihydrate gypsum from the phosphoric acid solution;
- washing the separated hemihydrate gypsum to remove substantially all of the phosphoric acid solution therefrom;
- dispersing the separated hemihydrate gypsum in water thereby hydrating the hemihydrate gypsum to dihydrate

gypsum accompanied by the transfer of uranium from the gypsum under hydration into the water;

- separating a uranium-containing aqueous solution obtained at the step (d) from the dihydrate system; and
- adding a precipitant to the separated uranium-containing solution to form a precipitate which comprises a water insoluble uranium compound.

4,431,611

MIXTURES OF ORGANIC PHOSPHONATES AND ANIONIC POLYMERS TO IMPROVE ACID EXTRACTION OF URANIUM

Jack L. Gilron, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 23, 1981, Ser. No. 334,028

Int. Cl.³ C22B 60/02

U.S. Cl. 423-20

2 Claims

1. A method of improving the acid leaching of uranium ores which comprises adding to such ores while they are being leached between 0.01-2 lb. per ton of a composition comprising:

- aminotris methylene phosphonic acid, and
- a water-soluble copolymer of vinyl sulphonic acid and acrylic acid combined in a weight ratio of from 2:1 to 1:2 and having a molecular weight within the range of from 500 to 100,000, with the weight ratio of a:b being within the range of 1:2 to 2:1.

4,431,612

APPARATUS FOR THE DECOMPOSITION OF HAZARDOUS MATERIALS AND THE LIKE

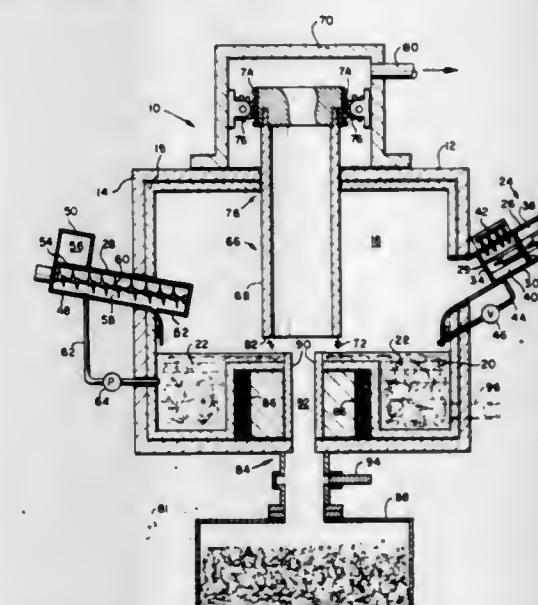
Christy W. Bell, Berwyn; Charles H. Titus, Newtown Square, and John K. Wittle, Berwyn, all of Pa., assignors to Electro-Petroleum, Inc., Wayne, Pa.

Filed Jun. 3, 1982, Ser. No. 384,613

Int. Cl.³ C01B 13/11

U.S. Cl. 422-186.21

20 Claims



1. An apparatus for the decomposition of hazardous material utilizing a DC arc, comprising:

- a gas-tight chamber including a sump which contains a molten bath;
- inlet means for introducing the hazardous material into the chamber and the molten bath for initial decomposition of the hazardous material into a product within the molten bath and a gaseous product within the chamber;
- electrode means for maintaining a DC arc within the chamber, the arc having a current level sufficient to promote the decomposition of the hazardous material, wherein the electrode means includes an elongated tubular electrode having a hollow interior and a first end maintained at a predetermined distance above the surface of the molten

bath, the arc from the electrode being maintained to extend from the first end of the electrode across the predetermined distance to the molten bath;
 means for moving the arc around the surface of the first end of the electrode at a predetermined rate including a first ferrous member within the hollow interior of the electrode adjacent the first end thereof; and a second tubular ferrous member surrounding the electrode adjacent the first end thereof, whereby the arc current interacts with the first and second ferrous members to generate a magnetic field having flux lines extending generally perpendicular to the arc, and
 exhaust means within the chamber proximate to the DC arc for the removal of gases from the chamber, whereby the gaseous product passes in the proximity of the arc for undergoing decomposition prior to removal thereof through the exhaust means.

4,431,613

LEACHING OF SULPHIDIC MATES CONTAINING NON-FERROUS METALS AND IRON

Bernard Verbaan, Randburg, South Africa, assignor to National Institute for Metallurgy, Transvaal, South Africa
 Continuation of Ser. No. 235,426, Feb. 17, 1981, abandoned.

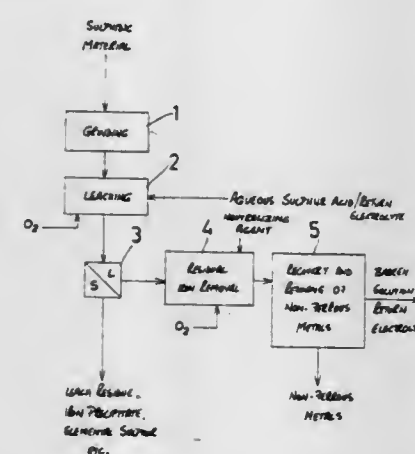
This application Oct. 12, 1982, Ser. No. 433,640

Claims priority, application South Africa, Feb. 18, 1980, 80/0904

Int. Cl.³ C01G 55/00, 3/10, 51/10, 53/10

U.S. Cl. 423—22

10 Claims



1. A method of treating sulphidic mattes containing between 5% and 60% iron, between 15% and 40% sulphur together with soluble non-ferrous metals or metal compounds selected from the group consisting of copper, cobalt, nickel and zinc, said method comprising contacting and leaching finely ground sulphidic matte with a leach solution having at least the stoichiometric quantity of available sulphate present therein which is required for dissolving all soluble non-ferrous metals in the matte as sulphates, the leaching being carried out at a temperature of between 70° to 120° C. and with an oxygen partial pressure from 50 kPa to 1,000 kPa, the leaching being continued for a time sufficient to enable iron, which initially dissolves in the leach liquor, to precipitate out as a filterable iron precipitate and be displaced by soluble non-ferrous metals until such time as substantially all soluble sulphur is liberated in the form of elemental sulphur.

6. A method as claimed in claim 1 in which the sulphidic material contains platinum group metals, gold and silver which are insoluble and thus remain in the leach residue.

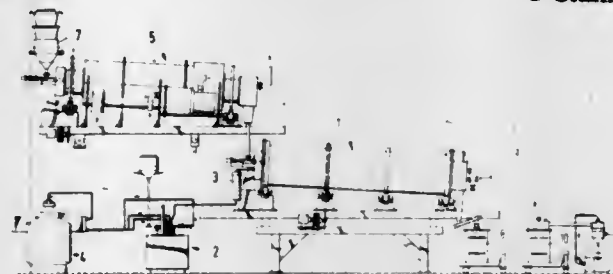
4,431,614 PROCESS FOR THE SEPARATION OF GOLD AND SILVER FROM COMPLEX SULFIDE ORES AND CONCENTRATES

Simo A. I. Mäkipirtti, Nakkila; Veikko M. Polvi, Pori; Kaarlo M. J. Saari, Vanha-Ulvila, and Pekka T. Setälä, Nakkila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland
 Filed Jul. 22, 1981, Ser. No. 286,036

Claims priority, application Finland, Aug. 6, 1980, 802471
 Int. Cl.³ C01G 5/00, 7/00

U.S. Cl. 423—29

1 Claim



1. A process for the separation of gold and silver from complex sulfide ores and concentrates which, in addition to the primary metals, contain constituents detrimental to the separation of noble metals, comprising heating the sulfide ore or concentrate at a temperature of 600°–900° C. and at a sulfur pressure of 0.2–1 atm in order to bring the complex metal compounds into a form suitable for subsequent alkaline cyanide leaching; alkali cyanide leaching the heat-treated ore or concentrate to produce a gold- and silver-bearing cyanide solution and an undissolved residue; and separating the gold- and silver-bearing cyanide solution from the undissolved residue, and including cooling the hot sulfide ore or concentrate within the stability range of pyrite so that a pyrite coating is formed on the particles.

4,431,615

PROCESS FOR THE RECOVERY OF MAGNESIUM AND/OR NICKEL BY LIQUID-LIQUID EXTRACTION

Georges Gabra, Cap-Rouge, Canada, assignor to Gouvernement du Quebec, Ste-Foy, Canada
 Filed Sep. 29, 1982, Ser. No. 428,056

Claims priority, application Canada, Sep. 29, 1981, 386906

Int. Cl.³ C01F 5/42, 11/48; C01G 53/00, 49/00

U.S. Cl. 423—139

12 Claims

1. Process which comprises treating a starting material containing magnesium and impurities comprising iron, calcium and nickel, with gaseous SO₂ in water to produce an aqueous solution containing Ni, Fe²⁺, Ca and Mg, subjecting the solution obtained to a liquid-liquid extraction by carrying out three contact stages between the aqueous phase and an organic phase, thereby removing iron, calcium and nickel from the aqueous phase and allowing said iron, calcium and nickel to pass into said organic phase, and recovering magnesium from said aqueous phase.

4,431,616

METHOD OF REMOVING HYDROGEN SULFIDE FROM GASES

Charles C. Chou, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 337,209, Jan. 6, 1982, abandoned. This application Dec. 22, 1982, Ser. No. 452,342

Int. Cl.³ B01D 53/34

U.S. Cl. 423—226

12 Claims

1. A process for the removal of H₂S from a sour gaseous stream comprising

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the reaction solution compris-

ing an effective amount of an oxidizing reactant selected from the group consisting of oxidizing polyvalent metal chelates of nitrilotriacetic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing sulfur, reduced reactant, and decomposition products of said reactant;

(b) removing aqueous admixture from the contacting zone, and removing solid sulfur containing residual aqueous admixture from said aqueous admixture;

(c) regenerating said aqueous admixture, producing a regenerated oxidizing reactant solution, and returning regenerated oxidizing reactant solution to the contacting zone;

(d) concomitantly washing solid sulfur from step (b) with an aqueous washing liquid and producing improved sulfur and an aqueous solution containing a polyvalent metal chelate of nitrilotriacetic acid, or mixtures thereof;

(e) contacting aqueous solution produced in step (d) with sufficient acid selected from the group consisting of HCl, H₂SO₄, H₃PO₄, and mixtures thereof, to dissociate at least the bulk of the polyvalent metal chelate or chelates in solution and under conditions to precipitate a solid containing nitrilotriacetic acid, and precipitating and recovering said solid.

4,431,617

METHODS FOR REMOVING MALODOROUS SULFUR COMPOUNDS FROM PULP MILL FLUE GASES AND THE LIKE BY USING GREEN LIQUOR

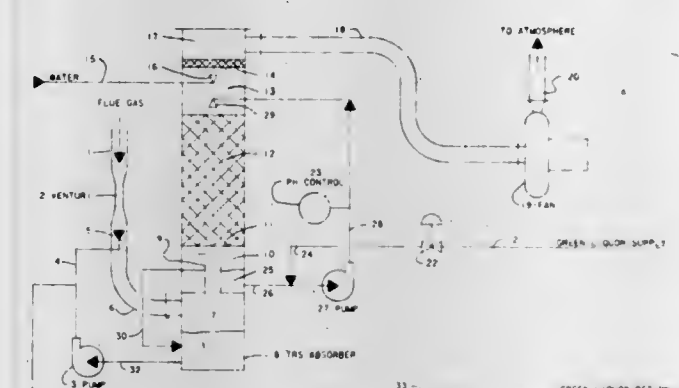
William G. Farin, 707 Elm St., Neenah, Wis. 54956

Filed Jul. 9, 1982, Ser. No. 396,743

Int. Cl.³ B01D 53/34

U.S. Cl. 423—232

12 Claims



1. An improved method of removing malodorous organic sulfur compounds and hydrogen sulfide from flue gases containing carbon dioxide by scrubbing said flue gases with an aqueous scrubbing solution containing sodium sulfide and sodium carbonate, wherein said flue gases are counterflowed through and contacted with said scrubbing solution at a velocity of at least 250 feet per minute, wherein said the scrubbing temperature is maintained in the 60° C. to 100° C. range, and wherein the pH of said scrubbing solution is maintained in the 10.7 to 13 range, whereby carbon dioxide absorption and the resulting formation of sodium bicarbonate in the said scrubbing solution is minimized.

10. An improved method of removing malodorous organic sulfur compounds and hydrogen sulfide from flue gases containing carbon dioxide by utilizing an aqueous scrubbing solution containing sodium sulfide and sodium carbonate wherein said scrubbing solution is counterflowed through said flue gases at a rate that provides a contact passage time of said scrubbing solution from about 10 seconds to 120 seconds, wherein the scrubbing temperature is maintained in the 60° C. to 100° C. range, and the pH of said scrubbing solution is maintained in the 10.7 to 13 range, whereby carbon dioxide absorption and the resulting formation of sodium bicarbonate in said scrubbing solution is minimized.

4,431,618 PROCESS CONTROL OF CONTINUOUS SODIUM-LIMESTONE FLUE GAS DESULFURIZATION SYSTEM

Willard L. Boward, Jr., Hoffman Estates, and Kuei H. Wang, Arlington Heights, both of Ill., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 12, 1982, Ser. No. 433,578

Int. Cl.³ C01B 17/00

U.S. Cl. 423—242

8 Claims

1. In a sodium-limestone double alkali process for the continuous desulfurization of flue gas, having the steps of absorbing sulfur dioxide from a SO₂-containing gas stream in an absorber with an aqueous solution of sodium sulfite and sodium bisulfite, diverting at least a portion of the absorber effluent solution for regeneration with limestone, introducing limestone into the diverted absorber effluent solution to convert bisulfite to sulfite, separating byproduct solids from the limestone-treated solution, and returning regenerated solution to the absorber, the improvement for controlling the continuous, integrated operation of the absorption and regeneration which comprises

(a) diverting absorber effluent solution for limestone regeneration, such absorber effluent solution having a pH in the range of from 5.5–6.7;

(b) introducing into the diverted absorber effluent solution less than a stoichiometric amount of ground limestone, based on the theoretical calcium carbonate required to completely neutralize the bisulfite content of such absorber solution to sulfite, to maintain the pH of the regenerated solution at a higher pH value within the range of 6.2–7.0 and to convert from 20–70% of the solution bisulfite content to sulfite;

(c) controlling the limestone addition primarily via either (i) feed forward pH measurements of the diverted absorber effluent solution, the flow of diverted absorber solution being maintained at a relatively constant rate, or

(ii) feed forward flow measurements of the diverted absorber effluent solution, the flow of diverted absorber effluent solution being adjusted automatically to provide a relatively constant absorber effluent solution, pH, with feedback pH measurements of the limestone-treated solution being used to provide trimming control of the limestone addition; and

(d) compensating for process losses of sodium values by adding soda ash or sodium hydroxide at a rate sufficient to maintain the system solution active sodium content at a value within the range of 0.2–2 M, measured as the sum of the bisulfite molar concentration plus twice the sulfite molar concentration of the absorber effluent solution.

4,431,619

PROCESS FOR THE THERMAL POLYMERIZATION OF PHOSPHAZENE POLYMERS

Joachim Behnke, Amorbach, and Dieter Huff, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Fed. Rep. of Germany

Continuation of Ser. No. 337,242, Jan. 4, 1982, abandoned, which is a continuation of Ser. No. 127,401, Mar. 5, 1980, abandoned. This application Oct. 8, 1982, Ser. No. 433,803

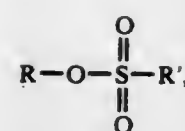
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910794

Int. Cl.³ C01B 25/10

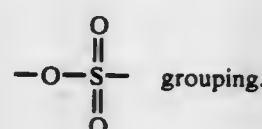
U.S. Cl. 423—300

8 Claims

1. Process for the production of phosphazo polymers by thermal polymerization of a cyclic compound of the formula (NPCl₂)_n in which n is an integer from 3 to 10, or a mixture of such cyclic compounds, in the presence of a catalyst, wherein said catalyst is of the formula



R and R' are the same or different and are halogen atoms, aliphatic, alkyl groups with 1 to 12 C-atoms, cycloaliphatic groups with 1 to 12 C-atoms, with or without substitution, or aryl or heterocyclic groups, with or without substitution and forming a ring together with the



4,431,620

PRODUCTION OF SODIUM TRIPOLYPHOSPHATE
Raban v. Schenck, Hürth, Fed. Rep. of Germany, and Cent M. Eegdeman, Middelburg, Netherlands, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 964,829, Nov. 30, 1978, abandoned.
This application Apr. 26, 1982, Ser. No. 371,601
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754020

Int. Cl.³ C01B 25/30

U.S. Cl. 423—315

6 Claims

1. In the process of making sodium tripolyphosphate in the presence of one or more oxidants, from wet-processed phosphoric acids containing organic impurities and having initially a P₂O₅ content of less than 20 weight%, by neutralizing the phosphoric acid to a molar ratio of Na:P of 5:3 and one step spray drying the resulting orthophosphate solutions or suspensions in a spray tower, the improvement which comprises:

- adding the oxidant to the phosphoric acid,
- thereafter concentrating the acid to a P₂O₅ content of 27 to 32 weight %,
- neutralizing the concentrated acid and
- subjecting the orthophosphate solution or suspension obtained to a one step spray drying process at temperatures within the range of 300° to 500° C. with the resultant formation of a sodium tripolyphosphate suitable for use in detergent slurries and yielding in the hydration test (ROH) a rise of temperature of at least 7° C. between temperatures determined after 1 and 5 minutes.

4,431,621

METHOD FOR PREPARING ALUMINUM-SILICATE HAVING A ZEOLITE-LIKE STRUCTURE

Marco Taramasso, San Donato Milanese; Giovanni Perego, Milan, and Bruno Notari, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy
Continuation of Ser. No. 215,175, Dec. 11, 1980, abandoned.
This application Aug. 11, 1982, Ser. No. 407,055
Claims priority, application Italy, Mar. 13, 1980, 20557 A/80

Int. Cl.³ C01B 33/28

U.S. Cl. 423—329

1 Claim

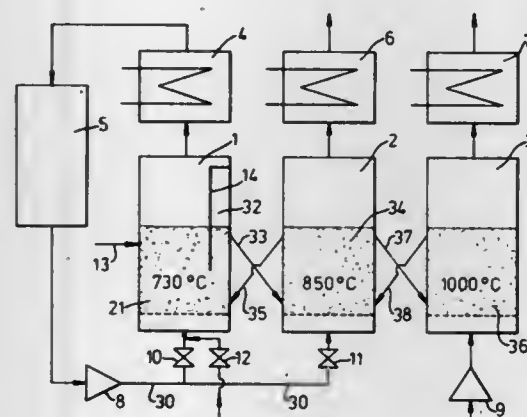
1. The process for producing aluminosilicates of the zeolite type having a SiO₂/Al₂O₃ molar ratio in the range of from 15 to 80, wherein the improvement consists in preparing a homogeneous mixture, free from nitrogenous base, comprising a source of silica, a source of alumina, alkali metal ions and hydroquinone and then subjecting said mixture to hydrothermal treatment in the temperature range of from 100° to 200° C. for a period in the range of from 2 days to 6 weeks.

4,431,622 PROCESS FOR PRODUCING CO₂ AND CO₂ SO PRODUCED

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Mar. 22, 1982, Ser. No. 360,412
Claims priority, application United Kingdom, Mar. 24, 1981, 8109213

Int. Cl.³ C01B 31/20; C01V 3/02
U.S. Cl. 423—437

8 Claims



- A process for making CO₂ comprising the steps of:
 - passing a carbon-containing fuel to a dense-phase fluidized fuel-conversion bed containing particles comprising reactive CaSO₄ and particles comprising reactive CaO, the bed being fluidized by passing into the bottom thereof a fluidizing gas which is substantially free of nitrogen and which contains an oxygen transfer agent and/or a source thereof for mediating the transfer of oxygen from CaSO₄ to fuel whereby the fuel is partially oxidized to products including CO and CO₂, and some CaSO₄ is reduced to CaS substantially without the liberation of sulfur moieties, the temperature of the fuel conversion bed being such that CaO will react with CO₂ to form CaCO₃ within the fuel conversion bed;
 - causing particles including particles comprising CaSO₄, particles comprising CaS and particles comprising CaCO₃ to pass to a fluidized decarbonation bed which is fluidized by passing into the bottom thereof at least some of the partially oxidized gas products obtained from the fuel conversion bed, said gas products constituting the sole fluidizing medium for the fluidized decarbonation bed and which gas products include hydrogen and/or a source thereof for transferring oxygen from CaSO₄ to CO to thereby oxidize CO to CO₂ and to reduce CaSO₄ to CaS, the decarbonation bed being operated at a temperature above the decarbonation temperature of CaCO₃ whereby CaCO₃ is decomposed to CaO and CO₂ thereby increasing the amount of CO₂ in the gas passing through the decarbonation bed;
 - recovering a gas containing CO₂ from the top of the decarbonation bed;
 - passing particles containing reactive CaS from the fluidized decarbonation bed to a fluidized oxidation bed in which the particles are fluidized by passing into the bottom of the bed a gas containing molecular oxygen whereby at least some reactive CaS is oxidized to reactive CaSO₄ with the liberation of heat which maintains the temperature of the oxidation bed above that of the fuel-conversion bed; and,
 - passing particles containing reactive CaSO₄ from the oxidation bed to the decarbonation bed and/or to the fuel-conversion bed.

4,431,623 PROCESS FOR THE PRODUCTION OF CARBON FIBRES FROM PETROLEUM PITCH

Gerrard Fug, Lavera, France, assignor to The British Petroleum Company p.l.c., London, England
Filed Jun. 4, 1982, Ser. No. 385,080
Claims priority, application United Kingdom, Jun. 9, 1981, 8117658

Int. Cl.³ D01F 9/12; C10C 3/02
U.S. Cl. 423—447.1

5 Claims

1. A method of producing carbon from a pitch obtained from a steam cracking residue of a petroleum fraction, which pitch has a β resin content of from 2 to 40% by weight, comprising spinning the pitch into fibres at a temperature higher than the softening point, treating the fibres to render them infusible and then subjecting the fibres to carbonisation by heating, characterised in that the treatment to infusibilize the fibres is controlled such that the α resin content of the fibres does not exceed 30% by weight and said infusibilizing treatment comprising

- treatment with a mixture of NO and O₂ at a temperature not exceeding 200° C., or
- treatment with a halogen in gaseous form followed by a treatment with O₂ at a temperature not exceeding 250° C., or
- treatment with SO₂, alone or mixed with O₂, at a temperature not exceeding 300° C.

4,431,624

FEEDSTOCK NOZZLE AND USE IN CARBON BLACK PROCESS

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 257,040, Apr. 24, 1981, Pat. No. 4,360,497.
This application Sep. 29, 1982, Ser. No. 427,254
Int. Cl.³ C01B 31/02; C09C 1/48

U.S. Cl. 423—450

6 Claims

1. A method for producing a carbon black comprising introducing hydrocarbon feedstock into the precombustion section of a carbon black reactor having a precombustion zone and a combustion zone through a reactor feedstock nozzle said method comprising serially cycling of feedstock flow to at least two of the components of the reactor nozzle said nozzle having as component parts:

- a central pipe with a diverging nozzle outlet with means for supplying a separate control supply of inlet material, and
- multiple concentric annuli surrounding said central pipe each annulus having a diverging nozzle outlet with a spray angle different from the other annuli and means for supplying a separate, controlled supply of inlet material to each annulus.

4,431,625

PRODUCTION OF CHROMIUM TRIOXIDE

Michael A. Marshall, Darlington, England, and Danvers A. Swales, Corpus Christi, Tex., assignors to British Chrome & Chemicals Limited, Stockton-on-Tees, England
Continuation-in-part of Ser. No. 120,432, Feb. 11, 1980, Pat. No. 4,291,000. This application Jun. 28, 1983, Ser. No. 508,687
Claims priority, application United Kingdom, Aug. 2, 1980, 8025312

Int. Cl.³ C01G 37/033

U.S. Cl. 423—607

24 Claims

1. A process in which chromium trioxide is made by the essential sequential steps of reacting sodium dichromate with sulphuric acid in a molar ratio of sodium dichromate to sulphuric acid of from about 1:1.33 to about 1:2.8 in an aqueous reaction mixture to form a liquor containing dissolved chromium trioxide and dissolved sodium sulphate, evaporating the liquor to cause crystallisation of at least about 70% of the chromium present in the liquor as chromium trioxide crystals substantially free of sodium sulphate and to cause the concentration of sodium sulphate to be close to but below that at

which crystals start to form, and separating the chromium trioxide crystals from the evaporated liquor.

4,431,626

TC-99M LABELED CARRIER FOR IMAGING

Eberhard Henze, Santa Monica, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed May 27, 1981, Ser. No. 268,319
Int. Cl.³ A61K 43/00, 49/00

U.S. Cl. 424—1.1

7 Claims

4. A radioimaging reagent comprising Tc-99m bound to a water soluble dextran of at least about 25,000 molecular weight by in situ reduction of pertechnetate in the presence of said dextran,

wherein said in situ reduction comprises:

contacting said pertechnetate with stannous chloride at a weight ratio of about 1-2:1 and at a pH in the range of about 1-4.

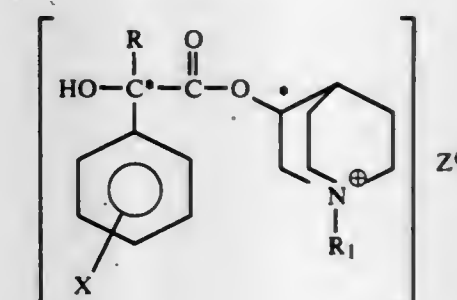
4,431,627

GAMMA-EMITTING RECEPTOR-BINDING 3-QUINUCLIDINYL GLYCOLATES; METHODS OF PREPARATION THEREOF AND IMAGING AND ASSAY METHODS UTILIZING SAME

William C. Eckelman, Rockville; Richard C. Reba, Silver Spring, both of Md.; Wacław J. Rzeszutarski, Washington, D.C., and Raymond E. Gibson, Arlington, Va., assignors to Research Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 156,106, Jun. 3, 1980, abandoned. This application Dec. 31, 1981, Ser. No. 336,340
Int. Cl.³ A61K 49/00, 43/00; C07D 453/02; G01N 33/54
U.S. Cl. 424—1.1

89 Claims

1. A compound of the formula:

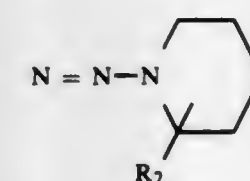


wherein

R is aryl, alkyl, cycloalkyl, phenyl, cyclopentyl, cyclohexyl, a ligand containing Tc-99m in chelated form or a ligand capable of chelating Tc-99m;

R₁ is H or lower alkyl;

X is in the ortho-, meta- or para-position, and is selected from the group consisting of ¹²⁵I, ¹²³I, ¹²⁷I, ¹⁸F, ⁷⁵Br, ⁷⁷Br, NH₂, and

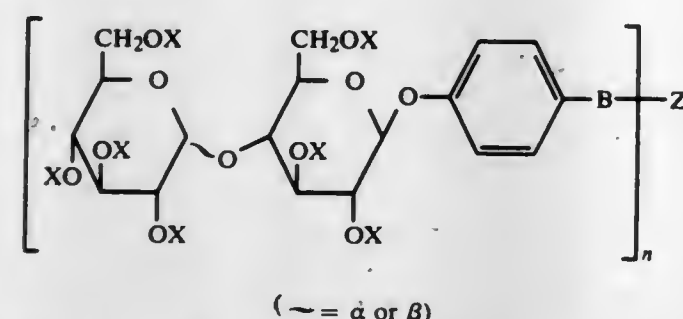


wherein R₂ is in the 2, 3, or 4 position and is selected from the group consisting of H and lower alkyl, provided that when R is a ligand capable of chelating Tc-99m or containing Tc-99m in chelated form, X is not a radioisotope and may also be H or lower alkyl;

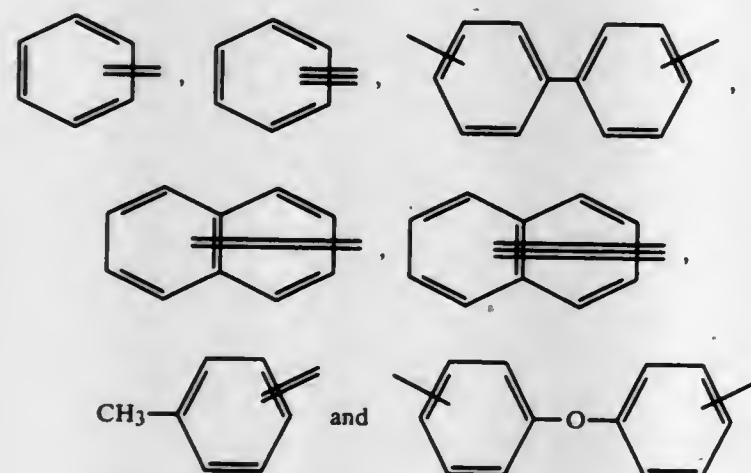
Z⁺ is an anion; or the free amine thereof; and

*denotes an asymmetric carbon atom.

fluid which comprises subjecting said body fluid to the action of an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula:



wherein X is $-\text{SO}_3\text{M}$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, zinc, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1-C_6), piperidine, pyrazine, alkanolamine (C_2-C_6) and cycloalkylamine (C_3-C_6); B is selected from the group consisting of $-\text{NHCO}-$ and $-\text{NHSO}_2-$; n is an integer 2 or 3; and Z is an arylene selected from the group consisting of:



4,431,638

POLY-CATION SALTS OF BIS(OR TRIS)[4-O-MONOHYDROXYTHIO]ARYLENE SULFATE DERIVATIVES

Robert E. Schaub, Upper Saddle River, N.J.; Janis Upeslaci, Pomona, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

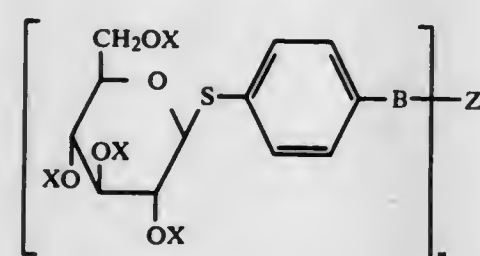
Filed Oct. 25, 1982, Ser. No. 436,751

Int. Cl.³ A61K 31/70; C07H 13/12

U.S. Cl. 424-180

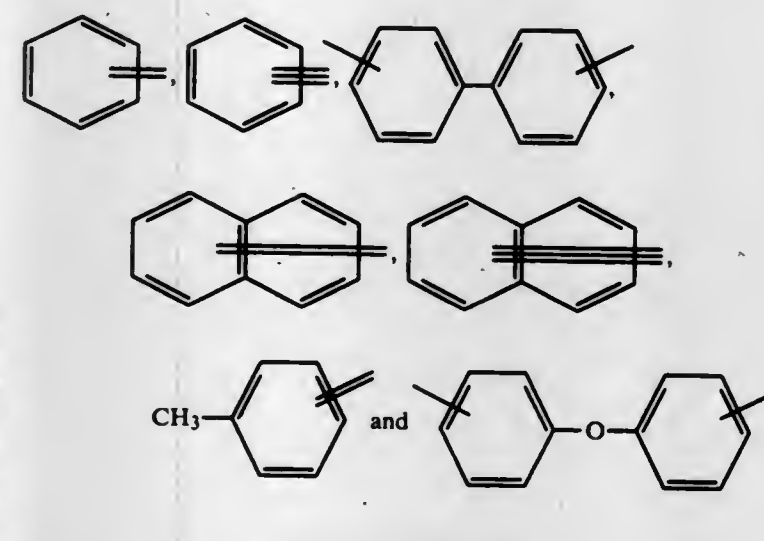
42 Claims

19. A method of modulating the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula:



wherein X is $-\text{SO}_3\text{M}$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, zinc, ammonia and substituted ammonia

selected from the group consisting of trialkylamine (C_1-C_6), piperidine, pyrazine, alkanolamine (C_2-C_6) and cycloalkylamine (C_3-C_6); B is selected from the group consisting of $-\text{NHCO}-$ and $-\text{NHSO}_2-$; n is an integer 2 or 3; and Z is an arylene selected from the group consisting of:



4,431,639

ADJUVANT FOR STIMULATING PRODUCTION OF LYMPHOCYTES

Dae-Eun Kim, 545-90, 6-dong, Anyang City, Kyonggi-do, Rep. of Korea

Division of Ser. No. 169,324, Jul. 16, 1980, Pat. No. 4,323,562.

This application Nov. 20, 1981, Ser. No. 323,609

Claims priority, application Rep. of Korea, Jul. 27, 1979, 1979-2546

The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.

Int. Cl.³ A61K 35/78

U.S. Cl. 424-195

1 Claim

1. A method for stimulating the production of lymphocytes in the circulating blood of a mammal, which comprises: administering to the mammal an adjuvant in an amount effective to stimulate the lymphatic system to elevate the number of lymphocytes in the blood, said adjuvant being a water-soluble, diethyl ether-soluble, fraction of *Atractylis lyrata* s. et z.

4,431,640

PROCESS FOR INDUCING ANABOLIC AND ANDROGENIC ACTIVITY IN ANIMALS

Jean A. Grandadam, Saint-Maur des Fosses, Huguette Dreux, Neuilly-sur-Seine, and Jean G. Teutoch, Pantin, all of France, assignors to Roussel Uclaf, Paris, France

Filed Nov. 30, 1981, Ser. No. 325,993

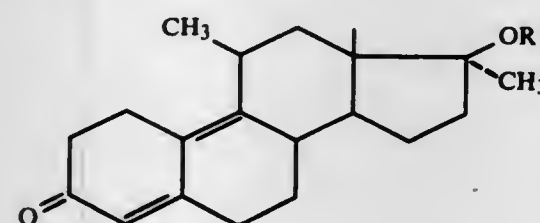
Claims priority, application France, Dec. 5, 1980, 80 25868

Int. Cl.³ A61K 31/56

U.S. Cl. 424-243

6 Claims

1. A method of inducing anabolic and androgenic activity in warm-blooded animals comprising administering to warm-blooded animals to anabolically and androgenically effective amount of at least one compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and acyl of an organic carboxylic acid of 1 to 18 carbon atoms.

4,431,641

PHARMACEUTICAL COMPOSITIONS HAVING ANTIPILEPTIC AND ANTINEURALGIC ACTION

Cesare Mondadori, Don Mills, Canada, and Markus Schmutz, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,197

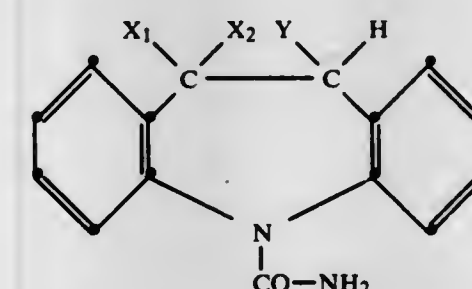
Claims priority, application Switzerland, Oct. 17, 1980, 7775/80

Int. Cl.³ A61K 31/33, 31/40, 31/44, 31/475

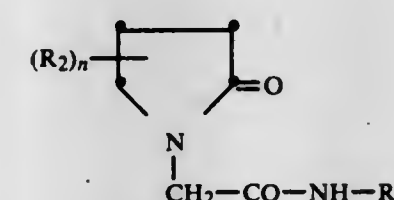
U.S. Cl. 424-244

14 Claims

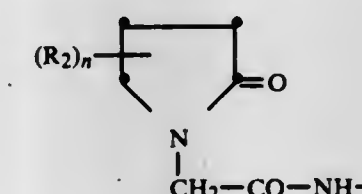
1. A pharmaceutical compositions comprising an antiepileptic amount of a combination of at least one compound of formula I as follows:



and an amount sufficient to potentiate the activity of the compound of formula I of at least one compound of formula III as follows:



wherein R₁ is hydrogen, lower alkyl, (di-lower alkylamino)-lower alkyl, carbamoylmethyl or a radical of the formula



wherein R₂ is lower alkyl, n is 0 or an integer from 1-4, and, if R₁ is hydrogen and n is 1, R₂ is hydroxy.

4,431,642

CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Kashikiriyama, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 270,029

Claims priority, application United Kingdom, Dec. 1, 1980, 8038456; Dec. 31, 1980, 8041636; Apr. 9, 1981, 8111164

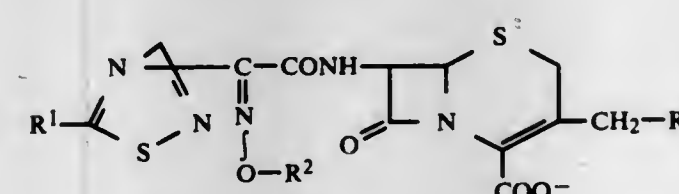
The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ A61K 31/545; C07D 501/46

U.S. Cl. 424-246

12 Claims

1. Cephem compounds of the formula:



wherein

R¹ is amino or a protected amino group;

R² is hydrogen, lower aliphatic hydrocarbon group which may be substituted with one substituent selected from the group consisting of carboxy, protected carboxy and halogen, cyclo(lower)alkyl or cyclo(lower)alkenyl; and

R³ is a thiazolio group which may be substituted with 1 to 3 substituents selected from the group consisting of lower alkyl and hydroxy(lower)alkyl, or a pyridinio group substituted with 1 to 3 substituents selected from the group consisting of halogen, cyano, hydroxy, amino, acylamino, lower alkanoyl, hydroxycarbonyl, C₁-C₄ alkylcarbamoyl, carboxy, protected carboxy, lower alkyl, hydroxy (lower)alkyl, sulfo(lower)alkyl, protected amino(lower)alkyl, amino(lower)alkyl, carboxy(lower)alkyl and hydroxyimino(lower)alkyl; and pharmaceutically acceptable salts thereof.

12. A pharmaceutical antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,431,643

SYN-ISOMER OF

3-SUBSTITUTED-7-[2-CYCLOPENTYLOXYIMINO-2-(2-AMINOTHIAZOL-4-YL)-ACETAMIDO]-3-CEPHEM-4-CARBOXYLIC COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 123,164, Feb. 20, 1980, Pat. No. 4,331,664, which is a continuation-in-part of Ser. No. 877,848, Feb. 15, 1978, which is a continuation-in-part of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Mar. 1, 1982, Ser. No. 353,879

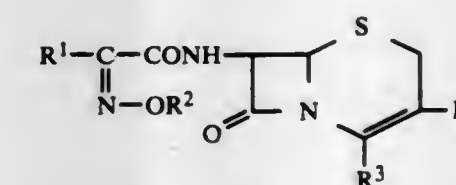
Claims priority, application United Kingdom, Apr. 12, 1976, 14916/76; Jun. 7, 1976, 23490/76; Japan, Oct. 19, 1976, 51-125826

Int. Cl.³ A61K 31/545; C07D 501/56

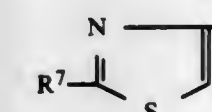
U.S. Cl. 424-246

5 Claims

1. Syn-isomer of 3,7-disubstituted-3-cephem-4-carboxylic acid compounds of the formula:



in which R¹ is



R² is cyclopentyl;

R³ is carboxy;

R⁴ is lower alkanoyloxymethyl, tetrazolythiomethyl or tetrazolythiomethyl having a lower alkyl; and

R⁷ is amino; and pharmaceutically acceptable salts thereof.

4,431,644

ANTIHYPERTENSIVE AGENTS

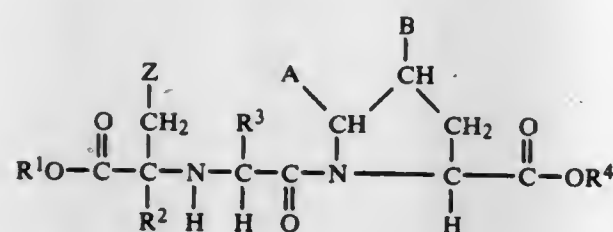
Elizabeth M. Smith, Verona; Joseph T. Witkowski, Morris Township, Morris County, and Ronald J. Doll, Maplewood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 8, 1982, Ser. No. 355,638

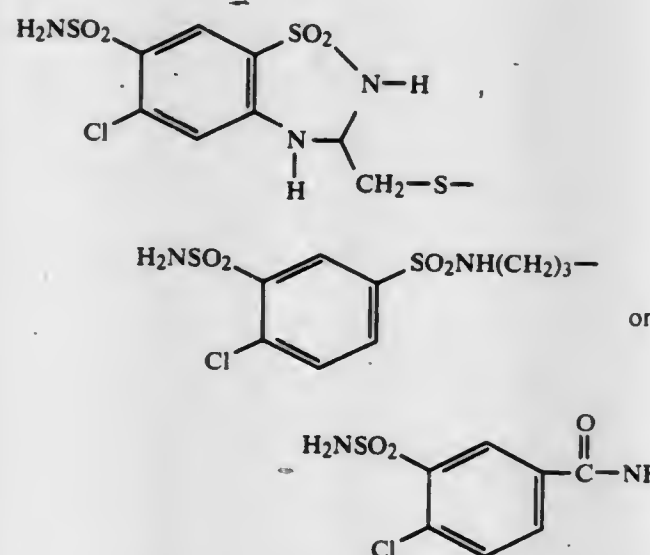
Int. Cl.³ C07D 285/24; A61K 31/40, 31/54; C07D 417/12
U.S. Cl. 424—246

12 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein R¹, R² and R⁴ are independently selected from hydrogen and lower alkyl; R³ is hydrogen, lower alkyl or amino lower alkyl; A and B taken together with the carbons to which they are attached form an alkylene ring having six carbon atoms or A and B are hydrogen; and Z is



11. A method of treating hypertension in mammals comprising administering to a mammal in need of such treatment an effective amount of a compound according to claim 1.

4,431,645

ANTIHYPERTENSIVE AGENTS

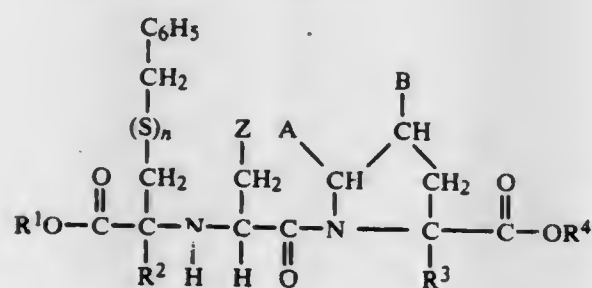
Elizabeth M. Smith, Verona, and Joseph T. Witkowski, Morris Township, Morris County, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 8, 1982, Ser. No. 355,639

Int. Cl.³ C07D 285/24, 417/12; A61K 31/40, 31/54
U.S. Cl. 424—246

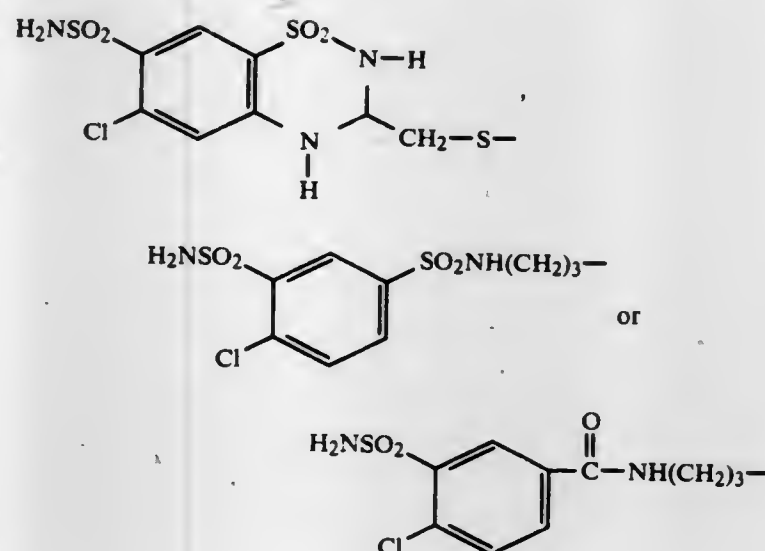
17 Claims

1. A compound of the formula



or a pharmaceutically acceptable salts thereof, wherein R¹, R², R³ and R⁴ are independently selected from hydrogen or lower alkyl; n is 1 or 0; A and B taken together with the carbons to

which they are attached form an alkylene ring having six carbon atoms or A and B are hydrogen; and Z is



16. A method of treating hypertension in mammals comprising administering to a mammal in need of such treatment an antihypertensive effective amount of a compound according to claim 1.

4,431,646

HEXAHYDRO-TRANS- AND TETRAHYDROPYRIDOINDOLE NEUROLEPTIC AGENTS

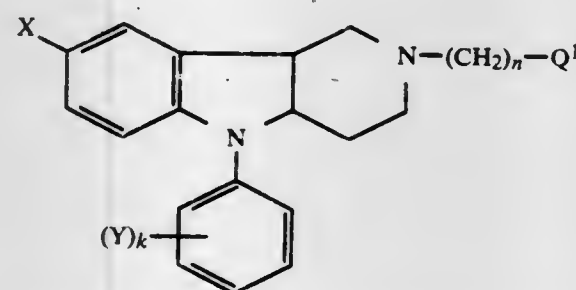
Willard M. Welch, Mystic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 259,569, Jan. 16, 1981, Pat. No. 4,337,250, which is a continuation-in-part of Ser. No. 182,177, Aug. 28, 1980, Pat. No. 4,352,807, which is a division of Ser. No. 061,573, Jul. 30, 1979, Pat. No. 4,252,811. This application May 20, 1982, Ser. No. 380,181

Int. Cl.³ C07D 487/14; A61K 31/435, 31/54

U.S. Cl. 424—246

17 Claims

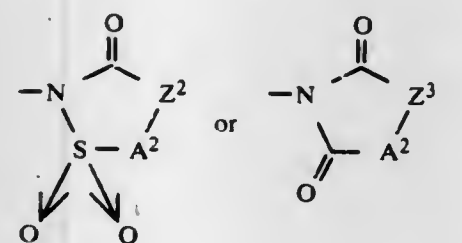
1. A (+) enantiomeric, a mixture of (+) and (−) enantiomeric or (±) racemic hexahydro-trans-4a,9b-trans-hexahydro-1H-pyridoindole derivative of the formula



or a pharmaceutically acceptable salt thereof, wherein

k is 1 or 2;

n is 2 to 9;

X and Y are each independently H, F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;Q¹ is

Z² and A² when taken together and Z³ and A³ when taken together are ethano, propano, etheno, o-benzene, or a

mono or disubstituted form of o-benzene, the mono and each of the disubstituents being independently F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;

A³ when taken separately is methano, ethano, etheno, o-benzene or a mono or disubstituted form of o-benzene, the mono substituent and each of the disubstituents being independently F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;

Z³ when taken separately is oxygen, sulfur or NR²; and R² is H, (C₁-C₅)alkyl, phenyl, benzyl, or a ring mono or disubstituted form of phenyl or benzyl, the monosubstituent and each of the disubstituents being independently F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;

17. A method of treating psychoses and neuroses in a patient requiring major tranquilization which comprises administering to the patient by oral, intravenous, intramuscular, subcutaneous or intraperitoneal route an effective amount of a derivative of claim 1.

4,431,647

METHOD OF USE OF ENANTIOMERS OF TRANS-INDENO[1,2-B]-1,4-OXAZINES

David E. McClure, Lansdale, assignor to Merck & Co., Inc., Rahway, N.J.

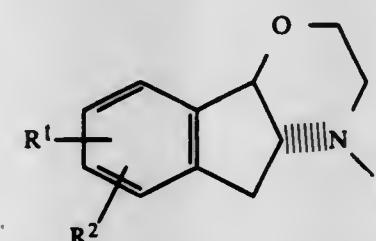
Continuation-in-part of Ser. No. 323,350, Nov. 20, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,104

Int. Cl.³ A61K 31/535

U.S. Cl. 424—248.58

2 Claims

1. A method of treating parkinsonism which comprises the administration to a patient in need of such treatment of an effective antiparkinson amount of the (R,R)-enantiomer substantially free of the (S,S)-enantiomer of a compound of structural formula:



(R,R)-enantiomer or a pharmaceutically acceptable salt thereof, wherein R is C₁-alkyl, C₂-alkenyl or phenyl-C₁-alkyl; and R¹ and R² are independently hydrogen, hydroxy or C₁-alkoxy.

4,431,648

THERAPEUTICALLY USEFUL PHENETHYL DERIVATIVES OF THIAZOLE

Dennis Bigg, Jouy-en-Josas, France, assignor to Synthelabo, Paris, France

Filed Jul. 2, 1982, Ser. No. 394,881

Claims priority, application France, Jul. 3, 1981, 81 13078

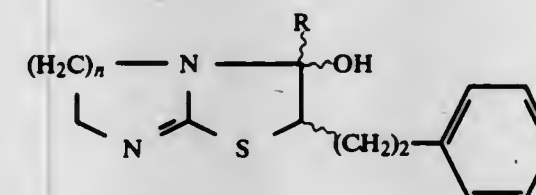
The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.³ C07D 513/04; A61K 31/425, 31/505

U.S. Cl. 424—251

9 Claims

1. Phenethyl derivatives or thiazole, and their optical isomers, of the formula:



wherein n is 1 or 2, and R is naphthyl, phenyl, or phenyl carrying one or more substituents selected from alkyl radicals of 1 through 4 carbon atoms, alkoxy radicals of 1 through 4 carbon atoms, methylenedioxy and trifluoromethyl radicals and halo-

gen atoms, and pharmaceutically acceptable acid addition salts thereof.

4,431,649

HEXAHYDRO-TRANS- AND TETRAHYDROPYRIDOINDOLE NEUROLEPTIC AGENTS

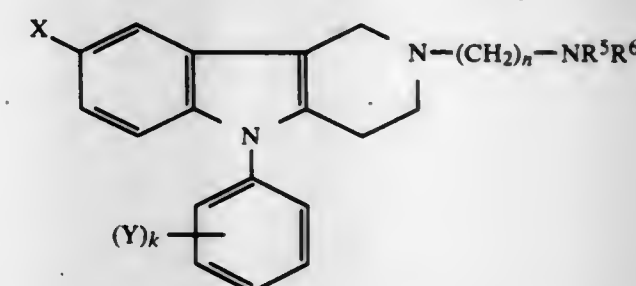
Willard M. Welch, Mystic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 259,569, Jan. 16, 1981, Pat. No. 4,337,250, which is a continuation-in-part of Ser. No. 182,177, Aug. 28, 1980, abandoned, which is a division of Ser. No. 61,573, Jul. 30, 1979, Pat. No. 4,252,811. This application May 20, 1982, Ser. No. 380,207

Int. Cl.³ C07D 487/04; A61K 31/44

U.S. Cl. 424—256

10 Claims

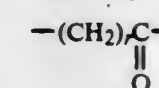
1. A tetrahydro-1H-pyridoindole derivative of the formula



or a pharmaceutically acceptable salt thereof, wherein

k is 1 or 2;

n is 2 to 9;

X and Y are independently H, F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;R⁵ taken separately is hydrogen;R⁶ taken separately is (C₁-C₈)alkanoyl or (C₁-C₇)alkoxycarbonyl; andR⁵ and R⁶ taken together are

wherein r is 3 to 5.

4,431,650

ESTERS OF BENZOFURANYL ACIDS

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

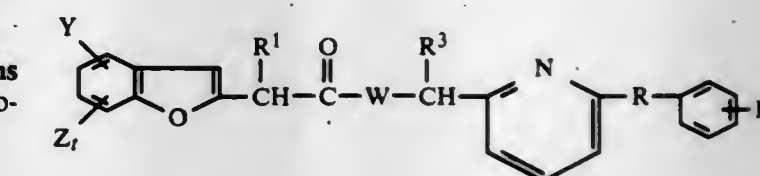
Filed Dec. 22, 1980, Ser. No. 219,218

Int. Cl.³ A10N 43/40; C07D 405/12

U.S. Cl. 424—263

8 Claims

1. A compound of the following formula:



wherein:

W is oxygen;

t is zero or one;

Y and Z are independently hydrogen, bromo, chloro, fluoro, lower alkyl, lower alkoxy, lower haloalkoxy or lower haloalkyl;

R¹ is lower alkyl, lower alkenyl or lower cycloalkyl;

R is oxygen, sulfur, or methylene;

R³ is hydrogen, cyano, ethynyl, methyl, ethyl, trifluoromethyl or dibromovinyl;

R⁵ is hydrogen, bromo, chloro, fluoro, methyl, methoxy or trifluoromethyl; and p is zero or one.

8. A process for the control of insects or acarids which comprises applying an insecticidally or acaricidally effective amount of a compound of claim 1, to said insects or acarids or the locus thereof.

4,431,651

2-PYRIDINONES AND THEIR USE AS CARDIOTONIC AGENTS

George Y. Leshner, Schodack; Baldev Singh, East Greenbush, and Philip M. Carabateas, Schodack, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

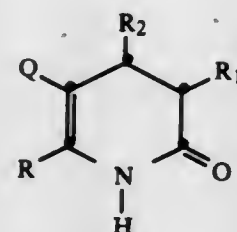
Filed Nov. 18, 1982, Ser. No. 442,623

Int. Cl.³ A61K 31/44; C07D 213/56

U.S. Cl. 424-263

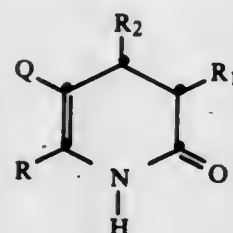
17 Claims

1. 3,4-Dihydro-3-R₁-4-R₂-5-Q-6-R-2(1H)-pyridinone having the formula



where Q is 4(or 3)-hydroxyphenyl, 4(or 3)-methoxyphenyl, 4(or 3)-pyridinyl or 4(or 3)-pyridinyl having one or two lower-alkyl substituents, R₁ and R₂ are each hydrogen or methyl and R is lower-alkyl, or an acid-addition salt thereof when Q is a pyridinyl substituent.

8. A cardiotonic composition for increasing cardiac contractility, said composition comprising a pharmaceutically acceptable carrier and, as the active component thereof, a cardiotonically effective amount of the compound having the formula



where R is lower-alkyl, R₁ and R₂ are each hydrogen or methyl and Q is 4(or 3)-hydroxyphenyl, 4(or 3)-pyridinyl or 4(or 3)-pyridinyl having one or two lower alkyl substituents, or pharmaceutically acceptable acid-addition salt thereof when Q is a pyridinyl substituent.

4,431,652

4-HYDROXY-5-SUBSTITUTED-3(2H)-ISOTHIAZOLONE-1,1-DIOXIDE DERIVATIVES USEFUL IN TREATING URINARY TRACT CALCULI

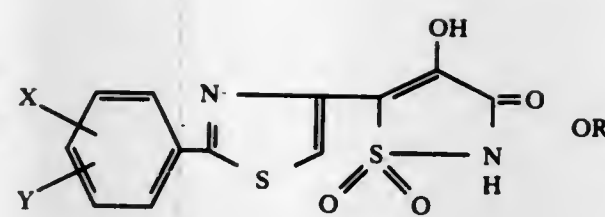
Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc. and Merck Sharp & Dohme (I.A.) Corp., both of Rahway, N.J.

Filed Dec. 29, 1980, Ser. No. 221,172

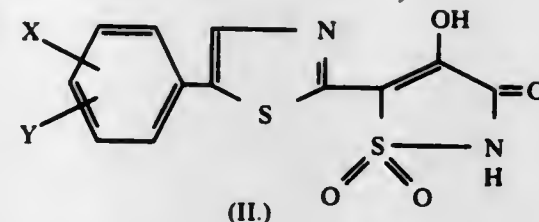
Int. Cl.³ A61K 31/44; C07D 275/02

U.S. Cl. 424-270

1. A compound of the formula:



(I.)



(II.)

where

X and Y are independently selected from the group consisting of hydrogen, halogen, and C₁₋₆ alkyl, provided that positions 2 and 6 of the substituted phenyl moiety may not be substituted by C₃₋₆ alkyl; or a pharmaceutically acceptable salt thereof.

4,431,653

PENICILLANIC ACID DERIVATIVES

Chung-Chen Wei, Cedar Knolls, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

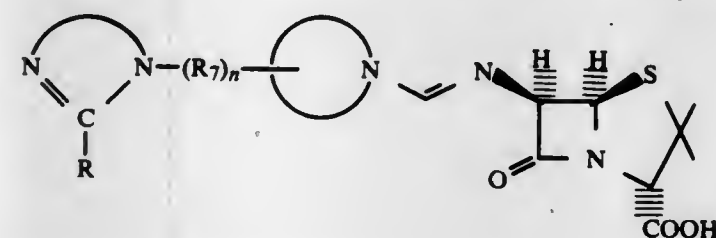
Filed Mar. 18, 1982, Ser. No. 359,326

Int. Cl.³ C07D 499/02; A61K 31/425

U.S. Cl. 424-270

40 Claims

1. A compound selected from compounds of the formula



wherein n is an integer from 0 to 1;



is a saturated 5 to 7 membered heterocyclic ring containing the nitrogen atom as the only heteroatom in said ring, said ring being unsubstituted or substituted in one or more positions with lower alkyl;

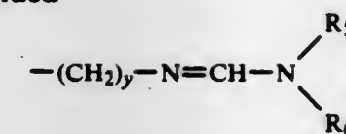


is a 5 to 7 membered heterocyclic ring having at most one additional nitrogen atom as the only hetero atom, from 0 to 2 additional double bonds, and aside from R, either being unsubstituted or substituted in one or more positions with lower alkyl; R is selected from the group consisting of lower alkyl, nitro, hydrogen,

—COOH, —(CH₂)_p—NHR₄; —(CH₂)_pOR₃ and

11 Claims

-continued



R₃ is hydrogen or lower alkyl, y is an integer from 0 to 4; R₄ is hydrogen, lower alkyl or an amino-protecting group, R₅ and R₆ are hydrogen or lower alkyl or one of R₅ is hydrogen or lower alkyl and R₇ is lower alkylene hydrolyzable esters thereof, salts thereof and hydrates thereof.

4,431,655

2,4-DISUBSTITUTED-1,2,5-THIADIAZOL-3(2H)-ONE ANTIMICROBIALS

Richard A. Dybas, Somerville; Bruce E. Witzel, Rahway, and Nathaniel Grier, Englewood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 142,193, Apr. 21, 1980, Pat. No. 4,362,877.

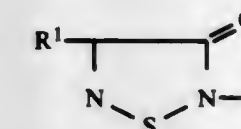
This application Jul. 12, 1982, Ser. No. 397,631

Int. Cl.³ A01N 43/82

U.S. Cl. 424-270

8 Claims

1. A method of inhibiting the growth of bacteria and fungi on a substrate comprising applying to that substrate a growth inhibiting quantity of a compound having the formula:



where R is C₁ to C₁₈ alkyl linear or branched; phenyl-C₁ to C₁₀ alkyl, phenyl, and phenyl independently mono- or di-substituted with bromine, chlorine, fluorine and iodine, with alkyl containing from C₁ to C₁₂ carbon atoms or with alkoxy having the same number of carbon atoms; and R¹ is C₁ to C₁₈ alkyl, linear or branched; loweralkoxyalkyl wherein the alkoxy group contains from one to six carbon atoms, tetrahydrofuran-2-ylmethyl, and phenyl-C₁ to C₁₀ alkyl; ring substituted or disubstituted phenyl-C₁ to C₁₀ alkyl where said substituent is the same or different and said substituent is bromine, chlorine, fluorine or iodine, C₁ to C₁₂ alkyl or C₁ to C₁₂ alkoxy.

4,431,654

6-(HYDROXYETHYL)-2-[(HETEROCYCLYL OR ARYL)THIOALKYLTHIO]-PENEM-3-CARBOXYLATES

Viyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Naginbhai M. Patel, Kearny, and Yi-Tsung Liu, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

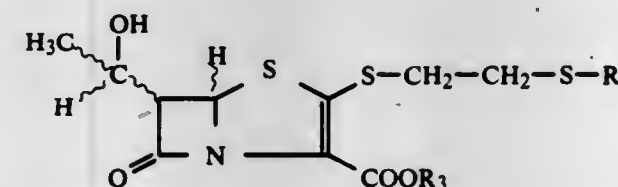
Filed Apr. 5, 1982, Ser. No. 365,427

Int. Cl.³ C07D 499/00; A61K 31/425

U.S. Cl. 424-270

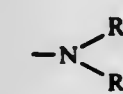
14 Claims

1. A compound represented by the formula

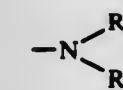


wherein R₂ represents a substituted or unsubstituted single ring or double fused ring aryl or heterocyclyl radical bonded to the sulfur atom by a ring carbon, selected from the group consisting of substituted phenyl, naphthyl, benzothiazolyl, oxaziny, pyridyl, purinyl, imidazolyl, pyrrol, thiazolyl, thiadiazolyl, benzamidazolyl, triazinyl, furyl, thienyl, thiazinyl, triazolyl, tetrazolyl and pyrimidyl, wherein when substituted, said aryl or heterocyclic rings have one or more substituent which can be the same or different

(a) are on a ring carbon or heteroatom, and are independently selected from the group consisting of lower alkyl,



and loweralkylene



wherein R₄ and R₅ are the same or different and are independently selected from the group consisting of hydrogen, halogen and lower alkyl or

(b) are on a ring carbon atom only and are selected from the group consisting of =O, hydroxy, lower alkoxy, —COOR₃ or halogen;

R₃ represents hydrogen, a pharmaceutically acceptable readily metabolizable ester-forming substituent or a pharmaceutically acceptable cation; and the wavy line indicates either the 5R,6S,8R or 5R,6R,8S stereoisomers.

4,431,656

3,5-DI-TERT-BUTYLSTYRENE DERIVATIVES, SALTS THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME AS AN ACTIVE INGREDIENT

Ikuo Katsumi, Kobe; Hideo Kondo, Takasago; Katsuji Yamashita; Takayoshi Hidaka, both of Kobe; Kazunori Hosoe, Takasago; Yutaka Ariki, Himeji; Toshiaki Yamashita, Kakogawa, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Filed Jan. 5, 1982, Ser. No. 337,168

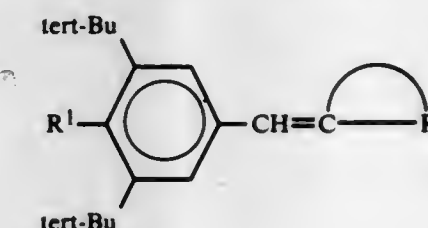
Claims priority, application Japan, Feb. 5, 1981, 56-16602; Nov. 9, 1981, 56-179948

Int. Cl.³ A61K 31/415; C07D 307/26

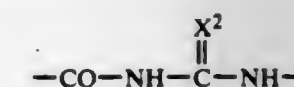
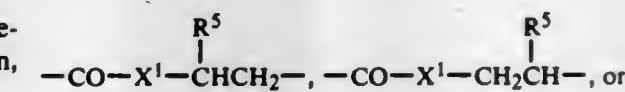
U.S. Cl. 424-273 R

28 Claims

1. A 3,5-di-tert-butylstyrene derivative of the formula (1):



wherein R¹ is R³COO, R⁴O or hydroxyl R² is



R³ is hydrogen or C₁-C₆ alkyl

R⁴ is C₁-C₄ alkyl

R⁵ is hydrogen or C₁-C₃ alkyl

X¹ is CH₂ or oxygen
X² is oxygen or sulfur
or a pharmaceutical salt thereof.

4,431,657

ANALGESIC COMPOSITIONS CONSISTING OF 2H-BENZOTHIENO[3,2-C]PYRAZOL-3-AMINE DERIVATIVES

Adolf Philipp, St. Laurent; Ivo Jirkovsky, Montreal, and Rene Martel, Candiac, all of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

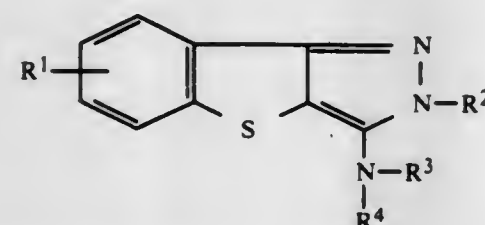
Filed May 24, 1982, Ser. No. 380,974

Int. Cl.³ C07D 495/04; A61K 31/415

U.S. Cl. 424—273 P

5 Claims

1. An analgesic composition, which comprises an effective amount of a compound of the formula



in which R¹ is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; R² is lower alkyl; R³ is hydrogen, lower alkyl, trihalomethyl(lower)alkyl; oxo(lower)alkyl; or lower alkanoyl; and R⁴ is hydrogen or lower alkyl; or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

5. A method of producing analgesia in a mammal, which comprises administering to the mammal an effective analgesic amount of a composition of claim 1 or a therapeutically acceptable acid addition salt thereof.

4,431,658

AZA PENEM COMPOUNDS

Adriano Afonso, West Caldwell, and Frank Hon, Paramus, both of N.J., assignors to Schering Corporation, Kenilworth, N.J. Division of Ser. No. 230,774, Feb. 2, 1981, Pat. No. 4,347,183.

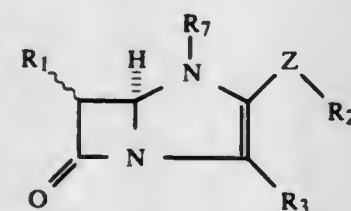
This application Jun. 11, 1982, Ser. No. 387,726

Int. Cl.³ A61K 31/415; C07D 233/02

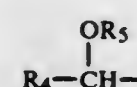
U.S. Cl. 424—273 R

3 Claims

1. A compound having the following structural formula:



wherein R¹ is hydrogen; lower alkyl; R₈-C-amino wherein R₈ is lower alkyl, lower alkyl substituted by one or more of one or two ring carbocyclic aromatic groups, lower alkoxy, phenoxy, alkenyl of 2 to 6 carbon atoms, alkynyl of 2-6 carbon atoms, cycloalkyl of 4-6 carbon atoms, unsubstituted or substituted heteroaryl or heteroaryl(lower)alkyl wherein the heteroaryl contains one or two hetero atoms selected from oxygen, nitrogen or sulfur and wherein the substituents in the heteroaryl are from 1 to 3 lower alkyl groups, wherein said R₈ substituents are optionally substituted by hydroxy, thiol, loweralkylthio, lower alkyl, lower alkoxy, halogen, cyano, carboxy, nitro, amino, aminoloweralkyl or haloloweralkyl; or



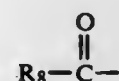
wherein R₄ is hydrogen, lower alkyl, phenyl substituted by

lower alkyl, lower alkoxy or halogen, heteroaryl wherein the heterocyclic ring is an aromatic heterocyclic containing a hetero atom selected from sulfur, oxygen or nitrogen, and R₅ is hydrogen or an O-protecting group;

R₂ is lower alkyl, phenyl substituted by lower alkyl, lower alkoxy or halogen, alkylaryl, aminoloweralkyl, an N-protected amino-lower alkyl, hydroxy lower alkyl, an O-protected hydroxyloweralkyl, thio lower alkyl, an α-amino acid ester, an α-(N-protected) amino acid ester or a lower alkyl carboxylic acid ester;

R₃ is nitrile, tetrazole, or —COOR₆ wherein R₆ is lower alkyl, loweralkyltrihalogenomethyl, phenyl substituted by lower alkyl, lower alkoxy or halogen, allyl, a metabolisable ester, hydrogen, or an alkali metal cation;

Z is sulfur, oxygen, —(CH₂)_n— wherein n is 1 or 2, or NR₇ wherein R₇ is hydrogen, lower alkyl, phenyl substituted by lower alkyl, lower alkoxy or halogen,



wherein R₈ is as defined above, or an N-protecting group; and the pharmaceutically acceptable salts thereof.

4,431,659

1-(ARYL)THIOCARBAMOYL-2-(ARYL)-3-PYRAZOLIDINONES AND THEIR NEMATOCIDAL USE

Kunikazu Sakai, Minoru Suda, and Kiyoshi Kondo, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

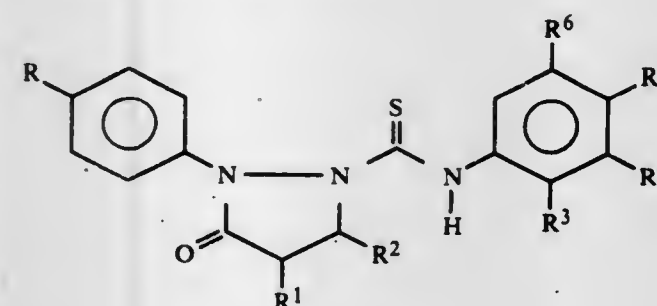
Filed Sep. 29, 1982, Ser. No. 426,470

Int. Cl.³ A01N 47/38; C07D 231/06

U.S. Cl. 424—273 P

7 Claims

1. A compound of the formula



in which

R is hydrogen, methyl or chloro

R¹ is hydrogen or methyl

R² is hydrogen or methyl

R³ is hydrogen, halogen or methyl

R⁴ is hydrogen or halogen

R⁵ is hydrogen, halogen, or lower alkoxy

R⁶ is hydrogen, or halogen

with the provisos:

(a) R³ is other than methyl when R¹ is methyl, R, R², R⁴ and R⁶ are each hydrogen and R⁵ is hydrogen or bromo;

(b) R³ is other than bromo when R¹ is methyl, R, R², R⁴ and R⁵ are each hydrogen, and R⁶ is hydrogen or bromo;

(c) R⁴ and R⁶ are not both chloro when R¹ is methyl and R, R², R³, and R⁵ are each hydrogen;

(d) R³ and R⁵ are not both chloro if R¹ is methyl and R, R², R⁴ and R⁶ are each hydrogen.

7. A method for controlling nematodes in agricultural crops comprising applying to the locus of infestation a nematocidal amount of a compound of claim 1, 2, 3, 4 or 5.

4,431,660

(4'-BIPHENYLYLOXY

AND-THIO-OXY)-3-HYDROXY-3-PYRROLINE-2,5-DIONES AND A METHOD OF TREATING CALCIUM OXALATE RENAL LITHIASIS THEREWITH

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.Y.

Division of Ser. No. 47,413, Jun. 11, 1979, Pat. No. 4,256,758.

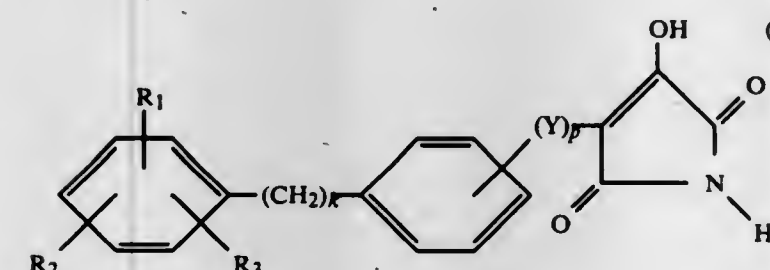
This application Oct. 17, 1982, Ser. No. 197,854

Int. Cl.³ C07D 207/456; A61K 31/40

U.S. Cl. 424—274

5 Claims

1. The compounds having the structure:



wherein

Y is (CH₂)_n; (CH₂)_m-O; (CH₂)_m-S;

n is 1 to 3;

m is 0 to 2;

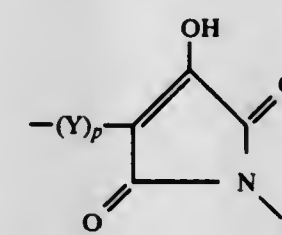
k is 0 to 3;

p is 1;

R₁, R₂ and R₃ are independently hydrogen, halogen, lower-alkyl containing 1 to 6 carbon atoms, loweralkoxy containing 1 to 6 carbon atoms,

wherein

the attachment of



to the aromatic ring is restricted to positions para or meta to the other substituent or pharmaceutically acceptable salts thereof.

5. A method of treating persons afflicted with calcium oxalate kidney or bladder stones or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to such a patient an effective amount of a compound of claim 1.

4,431,661

5-ARYL-3-AZABICYCLO[3.2.0]HEPTAN-6-ONE ACETALS, AND ANALGESIC USE THEREFOR

Thomas C. McKenzie, Pearl River; Joseph W. Epstein, Monroe, and William J. Fanshawe, Pearl River, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

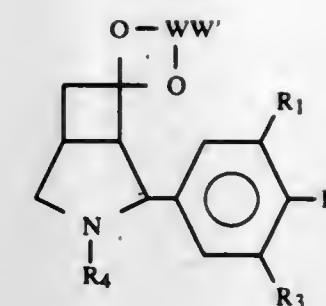
Filed Aug. 20, 1981, Ser. No. 294,548

Int. Cl.³ C07D 209/02, 405/02; A61K 31/40

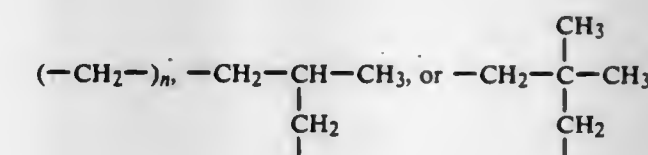
U.S. Cl. 424—274

24 Claims

1. Compounds having the formula:

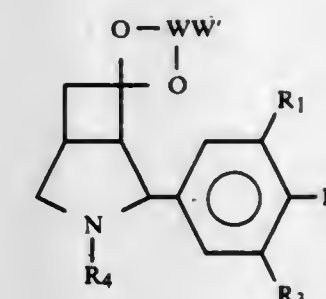


wherein R₁, R₂ and R₃ are each individually selected from the class consisting of hydrogen, hydroxy, chloro, bromo, C₁-C₃ alkyl, C₁-C₃ alkoxy, and trifluoromethyl, and any two or more of R₁, R₂ and R₃ may be the same; R₄ is selected from the group consisting of hydrogen, C₁-C₃ alkyl, C₁-C₄ alkyl, cyclopropylmethyl and phenethyl; and W and W' each represent a monovalent alkyl moiety having up to 3 carbon atoms or W-W' jointly represent a divalent moiety of the formula:

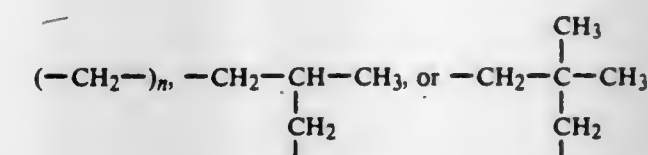


wherein n is an integer of 2 or 3; and the non-toxic pharmacologically-acceptable acid-addition salts thereof.

10. A method of treating pain in a mammal, which method comprises administering to said mammal a therapeutically effective amount of a compound having a formula:



wherein R₁, R₂ and R₃ are each individually selected from the class consisting of hydrogen, hydroxy, chloro, bromo, C₁-C₃ alkyl, trifluoromethyl and any two or more of R₁, R₂ and R₃ may be the same; R₄ is selected from the class consisting of hydrogen, C₁-C₃ alkyl, C₁-C₄ alkyl, cyclopropylmethyl and phenethyl; and W and W' each represent a monovalent alkyl moiety having up to three carbon atoms or W-W' jointly represent a divalent moiety of the formula:



wherein n is an integer of two or three; and the non-toxic pharmacologically-acceptable acid-addition salts thereof.

4,431,662

1-(1,3-BENZODIOXOL-5-yl)-2-PYRROLIDINONE AND ITS MEDICINAL USE

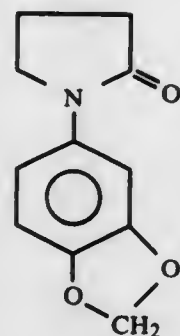
Gordon L. Hodgson, Jr., 115 Radcliff Cir., Durham, N.C. 27713
 Filed Feb. 26, 1982, Ser. No. 353,007
 Claims priority, application United Kingdom, Mar. 6, 1981, 8107090

Int. Cl.³ C07D 405/02; A61K 31/40

U.S. Cl. 424-274

16 Claims

1. The compound of formula (I):



namely, 1-(1,3-benzodioxol-5-yl)-2-pyrrolidinone.

4. A method for treatment or prophylaxis of pain in a mammal comprising the administration to said mammal of a non-toxic, effective analgesic amount of the compound 1-(1,3-benzodioxol-5-yl)-2-pyrrolidinone.

5. A method for treatment or prophylaxis of pyresis in a mammal comprising the administration to said mammal of a non-toxic, effective antipyretic amount of the compound 1-(1,3-benzodioxol-5-yl)-2-pyrrolidinone.

6. A method for treatment or prophylaxis of inflammation in a mammal comprising the administration to said mammal of a non-toxic, effective anti-inflammatory amount 1-(1,3-benzodioxol-5-yl)-2-pyrrolidinone.

4,431,663

TREATMENT OF PSYCHOSIS WITH META-SULFONAMIDO-BENZAMIDE DERIVATIVES

Ogata Masaru, Hyogo, and Matsumoto Hiroshi, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 124,726, Feb. 26, 1980, Pat. No. 4,350,635, which is a division of Ser. No. 872,584, Jan. 26, 1978, abandoned.

This application Jul. 15, 1982, Ser. No. 398,702

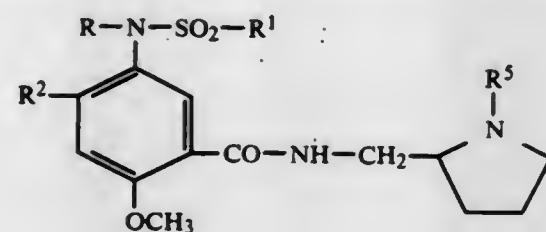
Claims priority, application Japan, Jan. 27, 1977, 52-8443; Aug. 8, 1977, 52-94884

Int. Cl.³ A61K 31/40

U.S. Cl. 424-274

2 Claims

1. A method of treating a patient suffering from a psychotic disorder, which comprises administering to the patient a pharmaceutically effective amount of a compound selected from the group consisting of a compound of the formula



wherein R is hydrogen or methyl, R¹ is methyl, ethyl or dimethylamino, R² is hydrogen, chlorine, fluorine, methyl or methoxy, and R³ is methyl, ethyl or vinyl, and a pharmaceutically acceptable acid addition salt thereof.

4,431,664

COMPOUND WITH ANTIULCEROGENIC ACTIVITY, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION THEREFROM

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Pomezia, Italy

Filed Aug. 5, 1982, Ser. No. 405,332

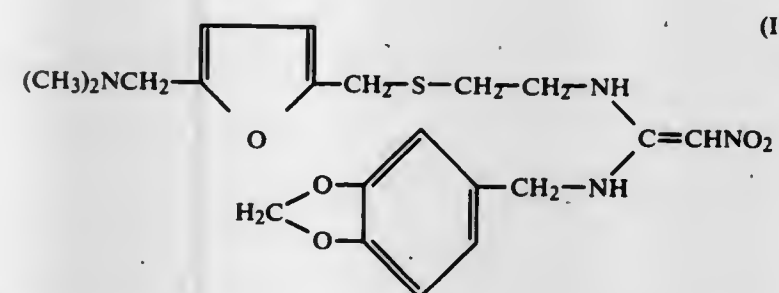
Claims priority, application Italy, Aug. 18, 1981, 23546 A/81

Int. Cl.³ C07D 317/44; A61K 31/36

U.S. Cl. 424-282

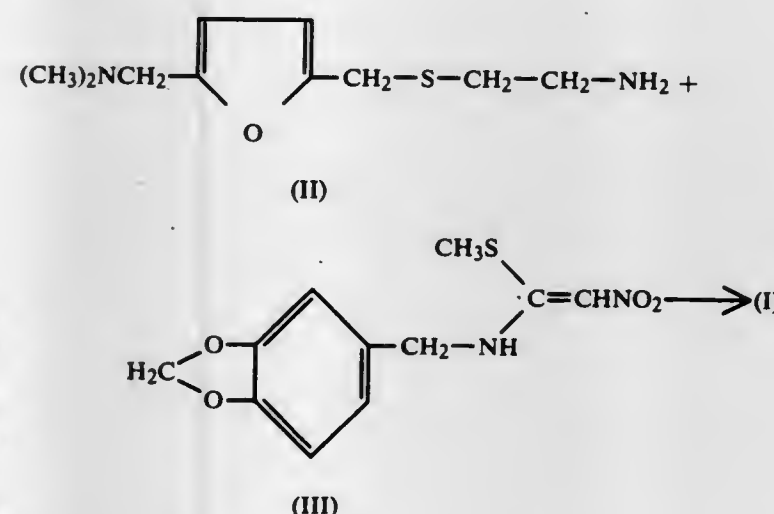
5 Claims

1. N-(2-(((5-dimethylamino)-methyl-2-furanyl)-methyl)-thio)-ethyl)-N'-(3,4-methylenedioxybenzyl)-2-nitro-1,1-ethenediamine of formula (I)

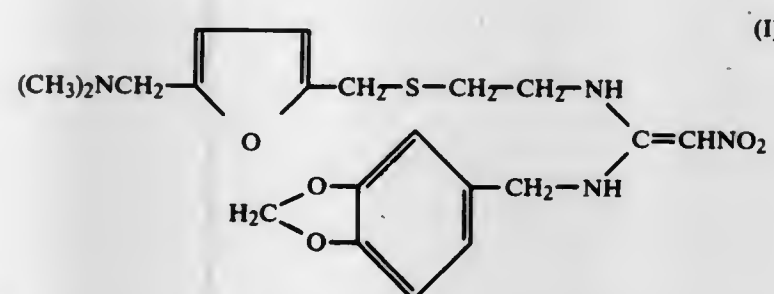


and their addition salts with pharmaceutically acceptable inorganic or organic acids.

2. Process for the preparation of compound (I), in which 2-((2-aminoethyl)thio-methyl)-5-(dimethylamino-methyl)-furan (II) is reacted with 1-nitro-2-methylthio-2-(3,4-methylenedioxybenzylamino)-ethene (III), according to the following reaction scheme:



5. Pharmaceutical composition with antiulcerogenic activity, which contains an antiulcerogenic effective amount of N-(2-(((5-dimethylamino)-methyl-2-furanyl)-methyl)-thio)-ethyl)-N'-(3,4-methylenedioxybenzyl)-2-nitro-1,1-ethenediamine of formula (I):



or their addition salts with pharmaceutically acceptable inorganic or organic acids, as the active ingredient.

4,431,665

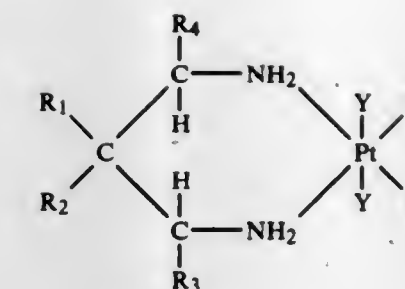
ACYLATED LAIDLAMYCIN DERIVATIVES

Arthur F. Kluge, Los Altos, and Robin D. Clark, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
 Continuation-in-part of Ser. No. 65,812, Aug. 13, 1979, abandoned. This application Jun. 24, 1980, Ser. No. 162,473
 Int. Cl.³ A61K 31/35; C07D 309/10

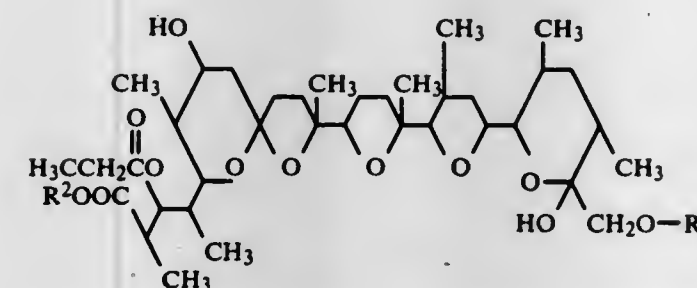
U.S. Cl. 424-283

14 Claims

1. A compound chosen from those represented by the Formula



wherein R₁ and R₂ are independently from each other a hydrogen atom or an alkyl, cycloalkyl, aryl or aralkyl group, while R₁ and R₂ together may be a cycloalkyl group, R₃ and R₄ are independently from each other a hydrogen atom or alkyl, aryl, aralkyl group and X and Y are independently from each other an anionic group, provided that when X and Y are both chlorine and R₁ and R₂ are both methyl, R₃ and R₄ are not each hydrogen.



wherein R¹ is an aliphatic acyl group of 2 to 12 carbon atoms or an alicyclic hydrocarbon acyl group of 4 to 9 carbon atoms and R² is an alkali metal cation or hydrogen.

4,431,666

PLATINUM(IV)-DIAMINE COMPLEXES, A PROCESS FOR THE PREPARATION THEREOF, A PROCESS FOR THE PREPARATION OF A MEDICINE USING SUCH A PLATINUM(IV)-DIAMINE COMPLEX FOR THE TREATMENT OF MALIGNANT TUMORS IN MICE

Eric J. Bulten, Bilthoven, and Francois Verbeek, Harmelen, both of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast Natuurwetenschappelijk onderzoek, The Hague, Netherlands

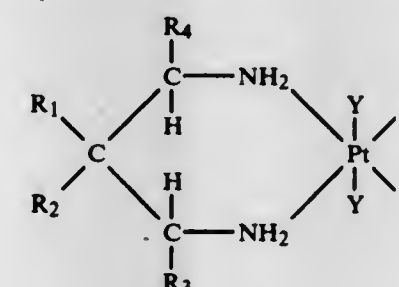
Continuation-in-part of Ser. No. 213,065, Dec. 4, 1980, abandoned. This application Feb. 6, 1981, Ser. No. 232,298
 Claims priority, application Netherlands, Mar. 1, 1980, 8000032

Int. Cl.³ C07F 15/00; A61K 31/28

U.S. Cl. 424-287

19 Claims

1. Platinum(IV)-diamine complexes having the formula:



wherein R₁ and R₂ are independently from each other a hydrogen atom or an alkyl, aryl or aralkyl group having 1-20 carbon atoms or a cycloalkyl group having 3-7 carbon atoms, while R₁ and R₂ together may be a cycloalkyl group having 3-7 carbon atoms, R₃ and R₄ are independently from each other a hydrogen atom or alkyl, aryl, aralkyl group having 1-20 carbon atoms and X and Y are independently from each other an anionic group, provided that when X and Y are both chlorine or when X is chlorine and Y is hydroxy R₁, R₂, R₃ and R₄ are not each hydrogen; when X and Y are both chlorine and R₁ and R₂ are both hydrogen, R₃ and R₄ are not each methyl and when X and Y are both chlorine and R₁ and R₂ are both methyl R₃ and R₄ are not each hydrogen.

10. Pharmaceutical composition comprising a suitable carrier and an amount sufficient to treat malignant tumors in mice of at least one of the platinum(IV) diamine complexes having the formula:

4,431,667

IMINO ETHERS USEFUL FOR CONTROLLING INSECT AND ARACHNID PESTS

Stephen J. Nelson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

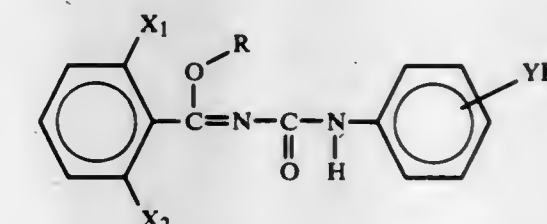
Filed Dec. 4, 1981, Ser. No. 326,896

Int. Cl.³ A01N 47/42; C07C 119/20

U.S. Cl. 424-298

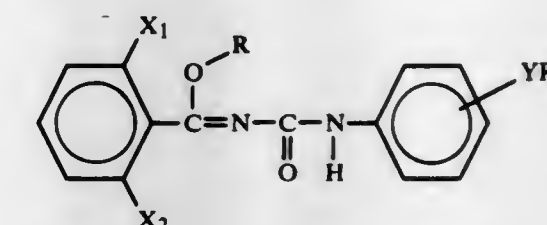
15 Claims

1. A compound of the formula:



wherein X₁ and X₂ are the same or different and are selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methyl, methoxy and trifluoromethyl; R is alkyl of from 1 to 5 carbon atoms; Y is selected from oxygen or sulfur; and R₁ is selected from a halo(C₁-C₃)alkyl.

13. Formulations useful for controlling susceptible insect and arachnid pests comprising an adjuvant carrier and as active ingredient a biologically effective amount of one or more compounds of the formula:



wherein X₁ and X₂ are the same or different and are selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methyl, methoxy and trifluoromethyl; R is alkyl of from 1 to 5 carbon atoms; Y is selected from the oxygen or sulfur; and R₁ is a halo(C₁-C₃)alkyl.

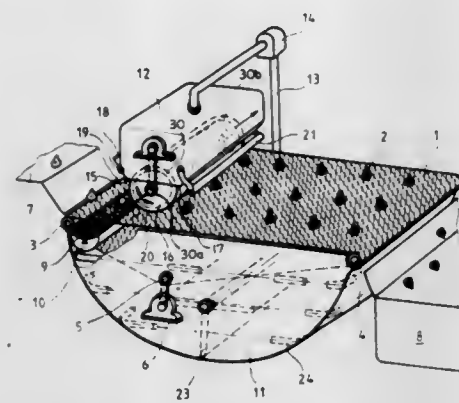
4,431,678

PROCESS FOR THE APPLICATION OF A VISCOUS CHOCOLATE MASS ON A PLURALITY OF IRREGULARLY-SHAPED INDIVIDUAL OBJECTS
 Helmut Sollich, Kammweg 2, D 4925 Kalletal 4, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 236,531, Feb. 20, 1981, abandoned. This application Apr. 5, 1982, Ser. No. 365,499
 Int. Cl.³ A23G 3/00, 3/20

U.S. Cl. 426—306

2 Claims



1. In a process for the application of a viscous chocolate mass on a plurality of irregularly-shaped individual objects; wherein the liquid chocolate mass is continually withdrawn from a lower container and is transferred to an upper container; continually conducting said mass from an outlet opening in the lower end of the upper container into said lower container; continually withdrawing said mass through said outlet opening and stirring said mass within the container by arranging a roll in said opening for adjusting the thickness of the chocolate mass adhering to said roll with a first doctor blade located ahead of the lowest point on said roll as viewed in the direction of rotation of said roll; scraping the chocolate mass from said roll with a second doctor blade located behind the lowest point on said roll as viewed in the direction of rotation of said roll; coating the bottom surface of said objects with chocolate mass in the region of said roll; conveying said bottom surface-coated objects on a grid-like conveyor belt continually past and between the lowest point on said roll and the surface of said chocolate mass in said lower container, wherein the spacing between the lowest point on said roll and the upper surface of the objects to be coated is not substantially larger than is necessary for the movement of the objects; wherein the improvement comprises:

- (a) rotating the roll in a direction opposite to and at a speed higher than the speed of the conveyor belt so as to efficiently convey the chocolate mass onto the irregularly-shaped objects position on said conveyor belt; and
- (b) cooling said chocolate mass by a cooling medium within said upper container.

4,431,679

COMPOSITION FOR TREATING FISH FILLET TO INCREASE YIELD AND SHELF LIFE

David L. Crawford, Astoria, Ore., assignor to Benckiser-Knap-sack GmbH, Ladenburg/Neckar, Fed. Rep. of Germany
 Filed Apr. 2, 1982, Ser. No. 364,715
 Int. Cl.³ A23B 4/02, 4/10

U.S. Cl. 426—332

18 Claims

1. A fish treatment composition which comprises:
 - (a) a phosphate mixture containing at least two of the following groups:
 - (i) about 0% to about 95% of sodium pyrophosphate (-diphosphate), potassium pyrophosphate (-diphosphate), or a mixture thereof;
 - (ii) about 14% to about 90% of sodium tripolyphosphate, potassium tripolyphosphate, or a mixture thereof;
 - (iii) about 5% to about 50% of sodium hexametaphos-

phate, potassium hexametaphosphate or a mixture thereof,

wherein said percentages are by weight based on the weight of the phosphate mixture, and said phosphate mixture has a statistical average content by weight of P_2O_5 of about 47% to about 68%; and

- (b) a preservative consisting of potassium sorbate, sorbic acid or a mixture thereof, in an amount by weight of about 0.1 to about 0.2 parts per part of said phosphate mixture; and,

- (c) sufficient citric acid such that when said composition is present in a suitable liquid vehicle, a pH in the range of about 5.6 to about 6.5 is attained.

4,431,680

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF A PEPPERMINT OIL BASED ORAL HYGIENE FLAVOR BY ADDING THERETO METHYL SUBSTITUTED OXOBICYCLO-4,4,0-DECANE DERIVATIVES

Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 182,451, Aug. 28, 1980, Pat. No. 4,320,772.

This application Oct. 22, 1981, Ser. No. 313,992

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

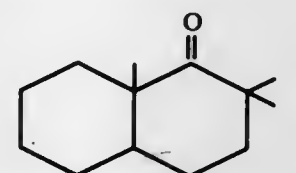
Int. Cl.³ A23L 1/226

U.S. Cl. 426—538

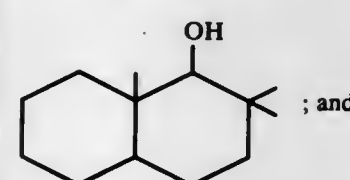
4 Claims

1. A process for augmenting or enhancing the aroma or taste of a peppermint oil-based oral hygiene flavor composition comprising the step of adding to said flavor composition from about 0.01% up to about 15% based on the total weight of said flavoring composition of a composition of matter selected from the group consisting of:

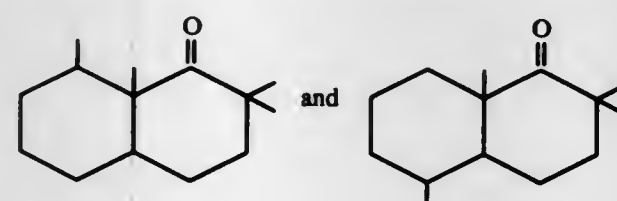
- (i) a compound having the structure:



- (ii) a compound having the structure:



- (iii) a mixture of compounds having the structures:



4,431,681

PROCESS FOR PREPARING A HIGH QUALITY, REDUCED-CALORIE CAKE

Elizabeth Hegedus, Tarrytown; John R. Frost, Beacon; Martin Glicksman, Valley Cottage, all of N.Y., and Jerry E. Silverman, Hamilton Square, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,404

Int. Cl.³ A21D 13/08

U.S. Cl. 426—553

11 Claims

1. A process for producing a high quality, 40% or greater calorie-reduced cake, with a moisture content of at least 40% which comprises:

- preparing a batter formulation, said batter formulation comprising from 40 to 65% water on a by weight basis, 5 to 30 % cake flour, 0 to 25% sugar, 1 to 6% shortening, 0 to 10% egg white solids, 0.5 to 6% of a leavening agent, 0 to 2% of an emulsifier and 1 to 20% of a water binder; adjusting said batter formulation to fall within the range of 15,000 to 50,000 cps. as measured by a Brookfield Viscometer; and
- baking said adjusted batter formulation at a temperature within the range of from 300°–450° F. (149°–232° C.) for 10 to 60 minutes sufficient to produce a bake loss ranging from 5 to 20%.

4,431,683

PROCESS FOR PRODUCING TRANSPARENT ELECTROCONDUCTIVE FILM

Ken Sasaki, Mobara; Kiyoshige Kinugawa, Chiba; Yoshio Hanada, Mobara; Keiichi Aoki, Mobara; Akira Ishii, Mobara, and Masaharu Koyama, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

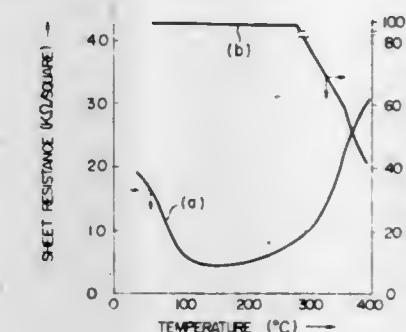
Filed Apr. 15, 1982, Ser. No. 368,666

Claims priority, application Japan, Apr. 24, 1981, 56-61191

Int. Cl.³ B05D 3/06, 5/04, 3/04, 1/18

U.S. Cl. 427—39

17 Claims



1. A process for producing a transparent electroconductive film on a glass substrate which comprises:
 - a step of forming a SiO_2 film on a glass substrate,
 - a step of removing a portion of the surface of the SiO_2 film to improve the wettability of the SiO_2 film for an indium complex solution,
 - a step of applying an indium complex solution to the SiO_2 film having improved wettability,
 - a step of drying the indium complex solution,
 - a step of irradiating with ultraviolet light the coated substrate, and
 - a step of calcining the coated substrate while removing organic materials by calcination.

4,431,684

ULTRASONIC VIBRATOR FOR APPLYING FINISH TO YARN

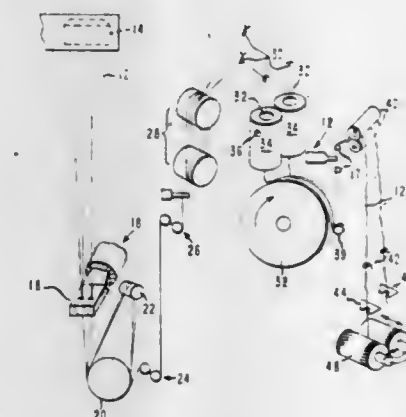
Alfred J. Strohmaier, Seaford, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Division of Ser. No. 269,529, Jun. 2, 1981. This application Aug. 27, 1982, Ser. No. 412,167

Int. Cl.³ B05D 1/02

U.S. Cl. 427—57

2 Claims



1. In an ultrasonic vibrator for atomizing liquids that includes an active horn terminating in an atomizing surface wherein liquid is fed to said atomizing surface through a bore in said horn connecting said atomizing surface and a source of supply for said liquid, the improvement comprising: said atomizing surface being a portion of the inner surface of an elongated passage open at each end, said elongated passage includ-

FROZEN AERATED CREAMY FROSTING AND METHOD THEREFOR

Gordon C. Smith, New City; Richard F. Hayes, Tarrytown; Carole G. Wendrovsky, Peekskill, and Andre J. Eydt, New York, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,767

Int. Cl.³ A23G 9/04

U.S. Cl. 426—565

6 Claims

1. A method for preparing an aerated, frozen, high-solids frosting composition containing sweeteners, water, fat, protein whipping agents, emulsifiers and stabilizers comprising the steps of:

- (a) heating and hydrating a blend of sweeteners, fat, protein whipping agent, emulsifiers and stabilizers for a sufficient time and at a sufficient temperature to pasteurize the blend, said blend having a solids content of from 60 to 68% by weight and said protein whipping agent being a sodium-calcium caseinate complex which is present at a level of from 1.8 to 3% by weight of the frosting composition;
- (b) homogenizing the blend at a pressure of at least 4000 psi in order to form a stable emulsion;
- (c) cooling the emulsion to between 35° and 60° F. and holding the emulsion within said temperature range for a period of at least 30 minutes;
- (d) whipping the emulsion to an overrun of between 50 and 70%;
- (e) blending crystalline sugar with the whipped emulsion at a weight ratio of from about 0.2–0.4:1 in order to produce a frosting composition having a solids content of from 70 to 78% by weight; and
- (f) freezing the said frosting composition.

ing a stringup slot in communication with said passage for introducing continuous lengths of yarn into the passage.

4,431,685

DECREASING PLATED METAL DEFECTS

Michael J. Canestaro, Endicott; Donald G. McBride, and John A. Welsh, both of Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,588

Int. Cl.³ G03C 5/00

U.S. Cl. 427—89

16 Claims

1. A method for decreasing plated metal defects which comprises applying to a metallic surface a layer of a metal different from said metallic surface and being a noble metal, then applying a photoresist layer onto the resulting noble metal coated surface and then electrolessly plating a metal.

4,431,686

METHOD FOR COATING A POROUS ELECTRODE

Günter Bewer, Westendorf; Hubertus Härle, Augsburg, and Dieter Lieberoth, Meitingen, all of Fed. Rep. of Germany, assignors to Sigr Elektrographit GmbH, Meitingen bei Augsburg, Fed. Rep. of Germany

Continuation of Ser. No. 226,938, Jan. 21, 1981, abandoned. This application Sep. 1, 1982, Ser. No. 413,961

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004080

Int. Cl.³ B05D 5/12; C25B 11/03

U.S. Cl. 427—125

8 Claims

1. Method for coating a porous sintered electrode unimpregnated with a ceramic oxide without also coating the porous interior of the electrode, for electrochemical processes with an activation layer which covers the electrode surface at least in part and contains metals and compounds of metals of the platinum group, which comprises coating the porous electrode surface to be covered by an activation layer with a suspension containing dispersed particles of a compound of a metal of the platinum group in a dispersion agent in which the particles will dissolve at an elevated temperature, the particles of the compound of a metal of the platinum group having diameters larger than the pore diameters of the electrode permitting the dispersion agent only to enter the pores, heating the coated electrode to an elevated temperature to dissolve the dispersed particles of the suspension in the dispersion agent, heating the electrode to deposit a layer of the metal of the platinum group on the electrode surface by evaporating the agent and decomposing the compound by heating the electrode to a temperature between 250° and 350° C.; repeating the cycle a plurality of times to obtain a layer of desired thickness; and then heating the electrode in an oxygen-containing atmosphere to a temperature between 400° and 600° C.

4,431,687

METHOD FOR THE MANUFACTURE OF A FABRIC-TYPE ARTIFICIAL LEATHER

Walter Föttinger; Erich Fahrbach, both of Weinheim; Kurt Jörder, Weinheim-Heiligkreuz; Karl-Heinz Morweiser, Birkenau, and Bohuslav Tecl, Weinheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,296

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127228

Int. Cl.³ B05D 5/00, 3/12

U.S. Cl. 427—246

22 Claims

1. A method for manufacturing a fabric-type artificial leather, comprising:

- forming a nonwoven fabric by using a dry method to join together hydrophobic fibers with a titer less than 2 dtex;
- densifying said fabric to a bulk weight of about 0.15 to 0.45 grams per cubic centimeter, by subjecting said fabric to intensive needling and by activating shrinking forces;
- uniformly impregnating said densified fabric, by means of

an aqueous carrier containing a heat sensitive elastomeric bonding agent, powdered barium sulfate and a compound that reacts with an acid to form a gas;

- exposing said impregnated fabric to an acidified bath which has been brought to a temperature higher than the bonding agent's coagulation temperature, so that the bonding agent spontaneously coagulates and a gas is simultaneously formed from the reaction of the acid and acid-reactive compound, said exposure providing an open pore structure in said bonding agent;
- washing and drying said fabric containing the coagulated bonding agent;
- grinding-over at least one side of said washed and dried fabric so as to produce a nap; and
- finally, intensively fulling said fabric.

4,431,688

PROCESS AND INSTALLATION FOR THE HIGH-VELOCITY DIP-COATING OF FILAMENT LIKE MATERIALS

Michel Kornmann, Geneva, Switzerland, assignor to Kokoku Steel-Wire Ltd., Tokyo, Japan

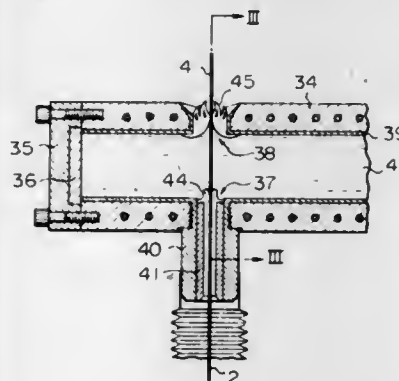
Filed Oct. 22, 1981, Ser. No. 313,982

Claims priority, application Japan, Mar. 10, 1981, 56-34762

Int. Cl.³ B05D 1/18, 3/04; C23C 1/00, 1/12

U.S. Cl. 427—310

14 Claims



1. A process for high-velocity dip-coating of filament-like articles by upwardly passing the article through bottom and top vertical openings of a spout containing molten metal, so as to provide a continuous molten-metal coating on the article; which comprises surrounding the article with a protective gas, wherein the spout has spout walls made of a material which is non-wettable by the molten metal, so that the protective gas penetrates into the molten metal in the bottom opening of the spout simultaneously with the article; then substantially all the protective gas progressively and regularly circulates between the spout walls and the molten metal away from the article, and thereafter emerges from the top opening of the spout surrounding and effectively shielding the molten-metal coated article.

6. The process of claim 1, in which the protective gas also contains a flux dispersed within the gas in the form of a vapor or a mist.

4,431,689

PROCESS FOR COATING A SUBSTRATE AND A LIQUID AQUEOUS COATING COMPOSITION TO BE USED THEREIN

Gerhard Günter, Ettlingen, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

Filed May 21, 1982, Ser. No. 380,839

Claims priority, application Netherlands, May 22, 1981, 8102516

Int. Cl.³ B05D 3/02

U.S. Cl. 427—388.2

12 Claims

1. A process for coating a metal or synthetic polymer sub-

strate by applying an aqueous coating composition to said substrate and subsequently baking the composition, characterized in that the aqueous coating composition contains a binder which per 100 parts by weight is composed of:

- 1-98 parts by weight of an aqueous dispersion of a film forming polymer having a minimum film forming temperature not higher than 45° C.;
- 1-98 parts by weight of a solid, particulate polymer having a softening temperature in the range of 45° to 260° C. and an average particle size in the range of 2 to 400 μ m, and
- 1-95 parts by weight of a solid, rubberlike polymer having an average particle size in the range of 1 to 500 μ m, the parts by weight being calculated on the polymers without water or an organic solvent, the baking taking place at a temperature above the softening point of said solid, particulate polymer and in the range of 70° to 260° C.;

said solid, rubberlike polymer (c) being selected from the class consisting of natural rubber, polyisoprene, a butyl rubber and the rubberlike copolymers of 1,3-butadiene, acrylonitrile or other monomers copolymerizable therewith, copolymers of styrene and 1,3-butadiene or other monomers copolymerizable therewith, and copolymers of ethylene, another α -alkylene such as propylene or a butylene, and a polyunsaturated compound such as dicyclopentadiene and/or 5-ethylidene norbornene-2, and mixtures thereof.

4,431,690

CONTROLLER FOR UNIFORM FLUID DISPENSING

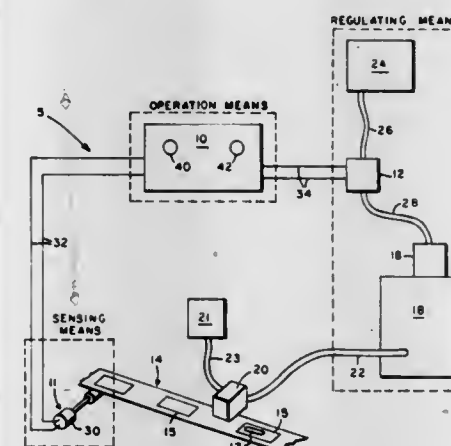
Timothy S. Matt, Bay Village, and Ralph G. Bruening, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Apr. 23, 1982, Ser. No. 371,119

Int. Cl.³ B05D 1/02; B05B 12/00

U.S. Cl. 427—424

15 Claims



14. A method of controlling the fluid dispensed onto a substrate in a system having relative movement between the substrate and a dispensing unit, comprising the steps of:

- sensing the relative movement;
- generating a signal reflective of the movement;
- computing the rate of movement signal from the movement signal;
- comparing the rate of relative movement to a preselected signal reflective of a desired maximum flow rate;
- generating a signal reflective of the comparison between the computed rate of movement signal and the preselected flow rate signal; and
- regulating the rate of supplying fluid to the dispensing unit in response to the comparison signal so that the rate of fluid movement between the dispensing unit and the substrate so that the amount of dispensed fluid per unit length of substrate is substantially constant.

4,431,691

DIMENSIONALLY STABLE SEALANT AND SPACER STRIP AND COMPOSITE STRUCTURES COMPRISING THE SAME

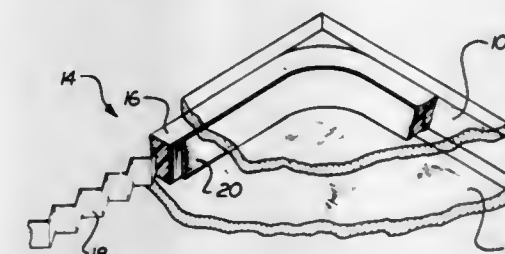
Thomas W. Greenlee, Shaker Heights, Ohio, assignor to Tremco, Incorporated, Cleveland, Ohio

Continuation of Ser. No. 507,232, Jan. 29, 1979, abandoned. This application Jul. 29, 1981, Ser. No. 287,975

Int. Cl.³ B32B 3/26; E06B 3/24

U.S. Cl. 428—34

6 Claims



1. A composite structure comprising first and second glass members having facing, generally parallel surfaces spaced generally a finite distance from each other and unitary means located around, and in adhering contact with, the peripheries of said surfaces for maintaining said glass members in spaced relationship and for effecting a seal in the space between said glass members, said unitary means consisting of elongated, deformable, continuous sealant means and an essentially continuous rigid undulating spacer means embedded in said sealant means and extending longitudinally the entire length of said sealant means, said unitary means being disposed within and bridging the space between said first and second glass members with said sealant means being of a substantially common cross sectional configuration and having substantially flat, substantially parallel, opposed surfaces in adhesive engagement with said facing surfaces, said unitary means having sufficient strength in the plane normal to said facing surfaces to maintain said first and second members at a generally finite distance from each other with said spacer means out of contact with said first and second glass members and further including a desiccant within the matrix of the sealant means facing the space between said glass members.

4,431,692

PROCESS FOR MAKING GLASS SURFACES ABRASION-RESISTANT AND ARTICLE PRODUCED THEREBY

William E. Hofmann, and Louis C. Konst, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 121,843, Feb. 15, 1980, abandoned.

This application Aug. 3, 1981, Ser. No. 289,429

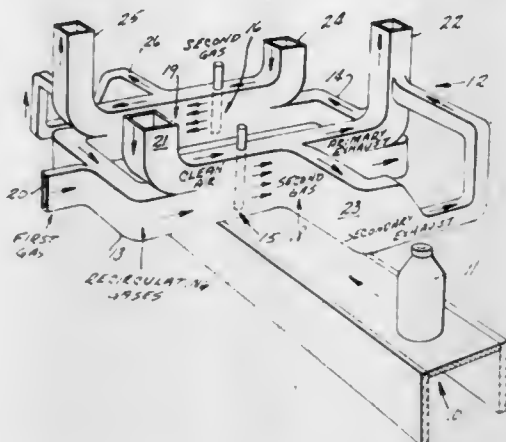
Int. Cl.³ B65D 23/00; B32B 7/00, 15/00

U.S. Cl. 428—35

15 Claims

12. As a product-by-process, a glass container having a protective coating over selected portions of its exterior surfaces which is formed by subjecting the newly-formed container possessing substantial heat of formation to an atmosphere of a dry, pyrolytically-decomposable treatment gas containing at least two constituents and directed in a positive flow pattern from inlet ports to exhaust means, a highly moisture-reactive first constituent confined to the center of said flow pattern as viewed in cross-section and a less moisture-reactive second constituent surrounding said first constituent of said flow pattern as viewed in cross-section to isolate said moisture-reactive first constituent from atmospheric moisture and prevent hydrolysis thereof, the said container passed through the flow pattern of the treatment gas at a temperature above the decomposition point temperature of the treatment gas constituents with the mouth portion of said container

extending beyond the treatment gas flow pattern, the outwardly extending mouth portion of said container being un-



coated and the selected exterior surface portions of said container being protectively coated.

4,431,693

UPC SCANNABLE MARKING COMPOSITION AND APPLICATIONS THEREOF

William T. Skukowski, Palmetto, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Filed Dec. 29, 1981, Ser. No. 335,400

Int. Cl.³ B32B 3/10; B65D 23/08; C09D 11/02

U.S. Cl. 428—35

16 Claims

10. A transparent container having a Universal Product Code symbol thereon wherein the container is filled with a commodity of relatively low reflectance in the range of from 600 to about 1000 nm and the printed indicia of the symbol comprise the reflective background portion of the symbol with the voids between the printed indicia comprising the low reflective portion of the symbol, and where the indicia are printed with a marking composition comprising a white pigment which reflects in the range from 600 to about 1000 nm and a red pigment exhibiting insufficient reflectance itself in said range to be suitable for the reflective component in a code symbol for processing by a Universal Product Code scanning system, wherein said pigments are present in amounts sufficient to provide a reflectance relative to the low reflective portion of the symbol suitable for processing by a Universal Product Code scanning system.

4,431,694

MULTIFIBER DESIGN FOR MICROCHANNEL PLATES

John T. Balkwill, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 3, 1982, Ser. No. 374,535

Int. Cl.³ B32B 3/20, 31/00; D02G 3/00

U.S. Cl. 428—188

13 Claims

1. A multifiber comprising a plurality of hollow glass cylindrical tubes of a first kind and a second kind, said tubes of first and second kinds being of a same outer diameter and said tubes of the first kind being packed compactly in parallel relationship in the form substantially of a column with cross-sectional shape of a convex polygon, said tubes of the first kind having thinner channel walls than said tubes of the second kind, and said tubes of the second kind being at each corner of said polygon.

5. A microchannel plate having a substantially flat front surface, said plate comprising a plurality of segments compactly packed together, each segment having a polygonal surface which forms a part of said front surface, each segment comprising a plurality of cylindrical hollow glass tubes of a first kind and of a second kind which have thicker channel walls than said tubes of the first kind, said tubes of first and second kinds being of a same outer diameter and said tubes of the first kind being packed compactly together in a parallel relationship in the direction perpendicular to said polygonal

surface, and said tubes of the second kind being at each corner of said polygon.

4,431,695

HIGH RESOLUTION RECORDING MEDIUM

Georg Flatscher, Schneizlreuth, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

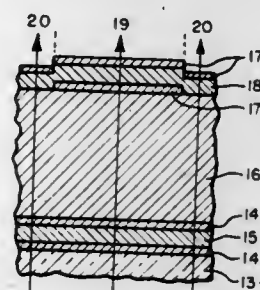
Filed Jan. 30, 1981, Ser. No. 230,280

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040489

Int. Cl.³ G01D 15/34; G02B 5/28; B32B 3/10

U.S. Cl. 428—209

19 Claims



1. In a multi-color, high density recording medium including a substrate and having at least two patterned interference filters formed thereon, wherein each of the filters transmits a different wavelength range of visible light, wherein each of the filters comprises an unpatterned interference layer of an inorganic material which is substantially absorption-free in the visible wavelength range of the spectrum, and wherein each interference layer is bounded on each side by a reflecting layer of an inorganic material, the improvement comprising:

at least one of the interference filters formed on the substrate comprises a first, unpatterned reflecting layer positioned on one side of the respective interference layer; and a second, patterned reflecting layer positioned on the other side of the respective interference layer, opposed to the unpatterned reflecting layer, such that said at least one interference filter is defined between the first and second reflecting layers and the pattern of only the second reflecting layer forms the pattern of said at least one interference filter.

4,431,696

MANUFACTURED ARTICLES BASED ON THERMOPLASTIC POLYMERS REINFORCED WITH GLASS FIBERS

Giovanni Di Drusco, Antonio Chiolle, Sergio Danesi, all of Ferrara, and Lino Credali, Casalecchio di Reno, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 5, 1981, Ser. No. 260,814

Claims priority, application Italy, May 6, 1980, 21818 A/80

Int. Cl.³ B32B 7/02

U.S. Cl. 428—212

1 Claim

1. Manufactured articles based on thermoplastic polymers and consisting essentially of, a three-layer structure, two of the layers being prepared from fibrils of an olefinic polymer containing 3 to 95% by weight of glass fibers longer than 1 mm, and arranged on a plane substantially parallel to the principal plane of the layers, said two layers being thermowelded to the third layer which is intermediate in respect thereto, has a thickness of at least 0.09 cm., and is prepared from a thermoplastic polymer compatible with the olefinic polymer of the other two layers, is substantially free from incorporated glass fibers and possesses a flexural modulus lower than that of the glass fibers contained in the other two layers.

4,431,697

LASER HARDENED MISSILE CASING STRUCTURE

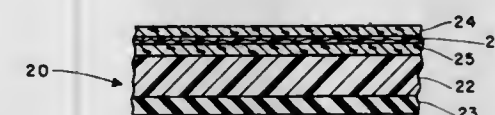
Edmund J. Rolinski, and Duane M. Patterson, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 2, 1982, Ser. No. 404,064

Int. Cl.³ B32B 5/16

U.S. Cl. 428—242

3 Claims



1. A thermally protective covering for the laser hardened casing structure of a missile, aircraft, or the like, which comprises:

- a first ablative layer adapted to be applied to said casing structure;
- a thermal barrier layer applied to said first ablative layer, said barrier layer comprising a carbon fabric impregnated with a heavy metal powder bearing resin; and
- a second ablative layer applied to said thermal barrier layer wherein said ablative layers comprise a cork-resin composition.

4,431,698

WATERPROOF PACKING

Edward M. Case, 40 Valley Forge Rd., Weston, Conn. 06883, and Chester S. Hopper, Boggs Hill Rd., Newtown, Conn. 06470

Filed Sep. 30, 1982, Ser. No. 430,417

Int. Cl.³ B65D 53/06; F16C 33/20; F16J 15/16

U.S. Cl. 428—244

25 Claims

1. A low-friction, water and steam-resistant packing suitable for both static and dynamic applications, said packing comprising inorganic fiber selected from the group consisting of chemical, electrical, structural and alkali resistant glasses, ceramic, quartz, carbon and graphite materials and dispersed and dried but unsintered polytetrafluoroethylene (TFE), said packing being essentially free of wetting agent.

17. A method of preparing a low-friction, water and steam-resistant packing comprising the steps of combining an inorganic fiber of a material selected from the group consisting of chemical, electrical, structural and alkali-resistant glasses, ceramic, quartz, carbon and graphite, with a polytetrafluoroethylene (TFE) dispersion containing a wetting agent, and heating the resulting combination to a temperature high enough to decompose the wetting agent but insufficiently high to sinter the particles of the dispersion.

4,431,699

AMINOPLAST RESIN CROSS-LINKING AGENTS AND NITROALKANOL USED TO TREAT CELLULOSE

Jerry H. Hunsucker, Terre Haute, Ind., assignor to Angus Chemical Company, Northbrook, Ill.

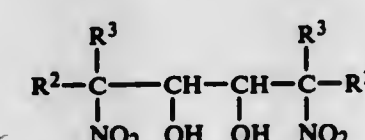
Filed Jan. 4, 1982, Ser. No. 336,732

Int. Cl.³ B32B 7/00; D03D 3/00, 15/00; C08G 12/12

U.S. Cl. 428—270

18 Claims

1. A composition adapted to treating textiles and non-woven cellulosic products comprising a mixture of a cross-linking agent and a nitroalkanol in an amount of from about 18 to about 142 parts per 100 parts by weight of the cross-linking agent, said nitroalkanol being represented by the formula:



where R² can be hydrogen, methyl or ethyl and R³ can be hydrogen or methyl; R² and R³ can be the same or different.

7. A method of reducing the residual formaldehyde content of a wrinkle-resistant fabric by impregnating the fabric with the composition of claim 1 and an acidic catalyst therefor and heating to 225° to 400° F. to effect a cure of the resin.

9. The method of claim 7 wherein the fabric is a woven textile of wool or cotton.

4,431,700

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Nobuo Tsuji; Yasuyuki Tanaka, and Koichi Yamauchi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 20, 1982, Ser. No. 451,350

Claims priority, application Japan, Dec. 28, 1981, 56-209902

Int. Cl.³ H01F 10/02

U.S. Cl. 428—336

14 Claims

1. A magnetic recording medium comprising a non-magnetic support and a magnetic recording layer coated thereon, consisting of a ferromagnetic fine powder and a binder, in which the binder contains (1) nitrocellulose having an average polymerization degree of 50 to 300 and a nitration degree of 10.7 to 13 and (2) a polyurethane resin having a number average molecular weight of 40,000 to 100,000, obtained from diphenylmethane diisocyanate and a mixture of polyneopentyl adipate having an average molecular weight of 800 to 2000 and polybutylene adipate having an average molecular weight of 800 to 2000 in a mixing proportion by weight of 2/8 to 9/1.

4,431,701

SILICONE RUBBER COVERED ELECTRICAL CONDUCTOR

Mitsuo Hamada, and Sadami Yasuda, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,506

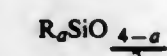
Claims priority, application Japan, Oct. 6, 1980, 55-139580

Int. Cl.³ B32B 15/06, 25/04

U.S. Cl. 428—379

6 Claims

1. A silicone rubber covered electrical conductor consisting essentially of a metallic conductor covered with a stripable silicone rubber which is made from a composition comprising (1) 100 parts by weight of organopolysiloxane having an average unit formula



wherein R is a monovalent radical selected from the group consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals, and cyanoalkyl radicals, and a is 1.90 to 2.002;

- 5 to 100 parts by weight of a silica filler in powdered form;
- 0.05 to 20 parts by weight of zinc oxide; and
- 0.1 to 5 parts by weight of orthochlorobenzoyl peroxide.

4,431,702

MAGNETIC RECORDING MEDIUM

Hiroshi Kawahara; Hitoshi Azegami, and Eiichi Horigome, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,245

Claims priority, application Japan, Apr. 27, 1981, 56-62557

Int. Cl.³ G11B 5/70; B32B 27/18

U.S. Cl. 428—422

5 Claims

1. In a magnetic recording medium of a magnetic layer comprising a magnetic powder and a resin binder on a support, the improvement comprising:

said magnetic layer additionally containing from 0.5-5% by wt of an ethylene trifluoride chloride polymer of a low

degree of polymerization and from 1-10% by wt of a fatty acid ester having a C₁₂-C₁₈ carbon atom content.

4,431,703

MAGNETIC RECORDING MEDIUM

Masashi Somezawa, Sendai; Shigeo Kimura, Chuo Tagajyo; Yuji Hinoto, and Hiroshi Yoshioka, both of Annaka, all of Japan, assignors to Sony Corporation and Shin-Etsu Chemical Co. Ltd., both of Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,574

Claims priority, application Japan, Nov. 26, 1981, 56/189617

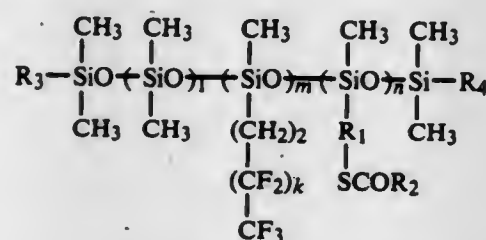
Int. Cl.³ H01F 10/02

U.S. Cl. 428-447

14 Claims



1. A magnetic recording medium comprising a non-magnetic base and a magnetic layer, in which the non-magnetic base is provided with a layer containing at least one organo-polysiloxane compound represented by the formula (I):



(wherein R₁ is a divalent hydrocarbon residue having 1 to 5 carbon atoms; R₂ is a monovalent hydrocarbon residue having from 7 to 21 carbon atoms; R₃ and R₄ may be the same or different and are -CH₃, -(CH₂)₂(CF₂)_kCF₃ or -R₁SCOR₂; k is 0 or an integer ranging from 1 to 12; each of l, m and n is independently 0 or an integer ranging from 1 to 200 and the sum of l+m+n is up to 300, with the proviso that when at least one of R₃ and R₄ is the group -R₁SCOR₂, each of l, m and n may be 0 and that when at least one of R₃ and R₄ is a group other than the group -R₁SCOR₂, each of l and m may be 0 but n is an integer ranging from 1 to 200).

4,431,704

COMPOSITION FOR BLOWOUT PREVENTER

Virgil E. Springer, Corsicana, Tex., assignor to Regal International, Inc., Corsicana, Tex.

Filed Mar. 29, 1983, Ser. No. 480,066

Int. Cl.³ E21B 33/06; C08K 3/04, 3/36

U.S. Cl. 428-450

24 Claims

1. A rubber composition comprising from about 45 to about 55 weight percent of an acrylonitrile-butadiene copolymer; from about 10 to about 15 weight percent of a first admixture further comprising a major amount of colloidal silica and minor effective amounts of coupling agent, curative, lubricant, dispersant, activator and antiscorching agent; from about 30 to about 40 weight percent of a second admixture further comprising a major amount of carbon black, wherein the carbon black to silica ratio is about 4 to 1, and minor effective amounts of plasticizer, antioxidant and antiozonant; and minor effective amounts of tetraethyl thiuram disulfide and benzothiazyl disulfide wherein the ratio of the tetraethyl thiuram disulfide to the benzothiazyl disulfide is about 1 to 7.5 by weight.

4,431,705

SHRINKABLE POLYAMIDE FILM AND PROCESS FOR ITS PRODUCTION

Kiyoshi Kitagawa, Hirakata, and Atsushi Komatsuzaki, Ohtsu, both of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Mar. 24, 1982, Ser. No. 361,242

Claims priority, application Japan, Apr. 14, 1981, 56-56486; Apr. 14, 1981, 56-56487

Int. Cl.³ B32B 27/08; C09J 7/02

U.S. Cl. 428-476.1

1 Claim

1. A biaxially stretched shrinkable polyamide film composed of a copolymer of 6,6-nylon/6-nylon in a weight ratio within a range of from 5/95 to 25/75 coated, on at least one side thereof, with a polyvinylidene chloride resin and having a hydrothermal shrinking ratio of at least 30% in both MD and TD, a hydrothermal shrinkage stress of from 300 to 700 g/mm² and an oxygen gas permeability of not more than 20 cc/m²·24 hrs. atm. as measured by the Mocon method.

4,431,706

HEAT SENSITIVE RECORDING SHEET

Masuhiko Sato, Tokyo, Japan, assignor to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,748

Claims priority, application Japan, Feb. 6, 1981, 56-15659

Int. Cl.³ B41M 5/18

U.S. Cl. 428-537

8 Claims

1. Heat sensitive recording sheet with a color forming layer, characterized in that it comprises dimethyl 1,4-benzenedicarboxylate in said color-forming layer containing a basic colorless or pale-colored chromogenic dyestuff and an organic color-developing agent.

4,431,707

PLATING ANODIZED ALUMINUM SUBSTRATES

Richard W. Burns, Round Rock, and Issa S. Mahmoud, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,022

Int. Cl.³ C25D 5/44, 11/16

U.S. Cl. 428-629

9 Claims

1. A method of preparing aluminum work pieces having sealed, thick anodic coatings thereon, for plating including the following steps:

sensitizing the surface of the work piece in a solution of SnCl₂ and HCl; and activating said surface in a solution containing PdCl₂ and HCl.

5. A method of preparing aluminum substrates for utilization as printed circuit board substrates comprising the following steps:

(a) hard anodizing;
(b) sealing;
(c) sensitizing and etching;
(d) rinsing;
(e) activating;
(f) rinsing;
(g) plating.

6. A substrate for printed circuit boards made in accordance with the method of claim 5.

4,431,708

ANNEALED CVD MOLYBDENUM THIN FILM SURFACE

Gary E. Carver, and Bernhard O. Seraphin, both of Tucson, Ariz., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 19, 1979, Ser. No. 105,338

Int. Cl.³ B32B 15/00; C23C 11/00

U.S. Cl. 428-641

9 Claims

4,431,710

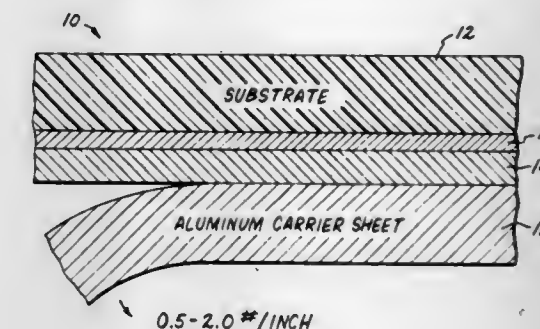
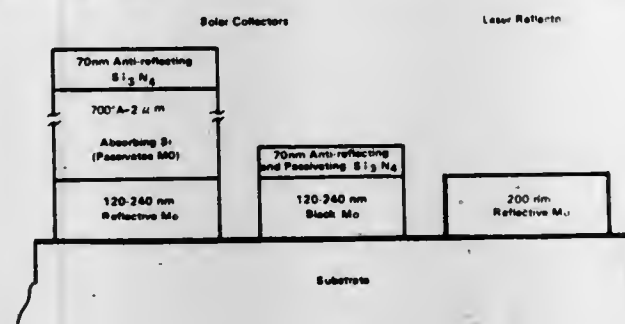
LAMINATE PRODUCT OF ULTRA THIN COPPER FILM ON A FLEXIBLE ALUMINUM CARRIER

Eric Lifshin, Loudonville, N.Y., and Margo E. Gill, Mountain View, Calif., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 227,290, Jan. 22, 1981, abandoned. This application May 27, 1983, Ser. No. 499,019

Int. Cl.³ B32B 15/20

6 Claims



1. A process for the manufacture of a highly reflective surface, comprising:

- (a) fabricating on a substrate a thin adherent film by chemical vapor deposition of Mo(CO)₆ at about atmospheric pressure of an inert carrier gas, said film showing a face centered cubic-MoOC structure under X-ray diffraction;
 - (b) annealing said film in an atmosphere substantially devoid of oxygen at a temperature of at least 700° C. for a duration of at least 3 minutes; and
 - (c) fabricating over said annealed film by chemical vapor deposition a layer of solar absorbing silicon.
8. A reflective surface manufactured according to the process of claim 1.

1. A laminate product as an article of commerce comprising a flexible aluminum carrier sheet/copper film combination consisting of said carrier sheet and a substantially pinhole-free vapor deposited ultra-thin film of copper in contact with and covering one major surface of said carrier sheet and adhering thereto by direct bonding action between the copper and bondable surface area of said major surface providing a release peel strength between about 0.5 and about 2.0 pounds per inch, said bondable surface area being at least in part naturally occurring oxide coating less than about 50-Angstroms thick.

4,431,709

BERYLLIUM TO METAL SEALS AND METHOD OF PRODUCING THE SAME

Robert L. Bronnes, Irvington; Richard C. Sweet, N. Tarrytown, and James D. O'Grady, Irvington, all of N.Y., assignors to North American Phillips Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,057

Int. Cl.³ C23C 15/00

U.S. Cl. 428-649

8 Claims

4,431,711

VACUUM METALLIZING A DIELECTRIC SUBSTRATE WITH INDIUM AND PRODUCTS THEREOF

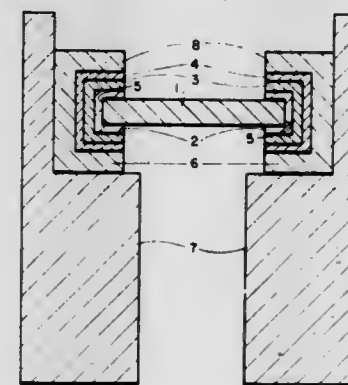
Richard C. Eisfeller, Greenland, N.H., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 133,857, Mar. 25, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,784

Int. Cl.³ B32B 3/10, 3/18, 5/16; C23C 13/02

U.S. Cl. 428-31

16 Claims



1. An intermetallic seal comprising a beryllium body having thereon a thin first cathode-sputtered layer of a metal selected from the group consisting of tantalum, niobium, zirconium, hafnium, titanium, and vanadium, a thin intermediate cathode-sputtered layer of a refractory metal, and a thin outer cathode-sputtered layer of a readily brazable metal, said outer layer being hermetically sealed to a metallic body formed of a metal the coefficient of expansion of which is approximately that of beryllium.



5. An automobile trim component comprising:
- a flexible elastomeric base having a prepared surface;
 - minute discrete rounded islands comprising indium adhered to said surface, said islands appearing visually as a continuous film but being electrically isolated one from another with said film being electrically non-conductive over the surface thereof, while having a light transmission of less than 25% substantially all of said islands having an average diameter of less than 3000 Å and a nominal film thickness of less than 1000 Å; and
 - a dielectric clear synthetic plastic top coat adhered to said surface and encapsulating and insulating said islands.

4,431,712

MAGNETIC RECORDING MEDIUM OF FERROMAGNETIC PARTICLES AND BINDER

Akihiro Matsufuji; Akira Kasuga; Hajime Miyatsuka, and Masashi Aonuma, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1982, Ser. No. 347,619

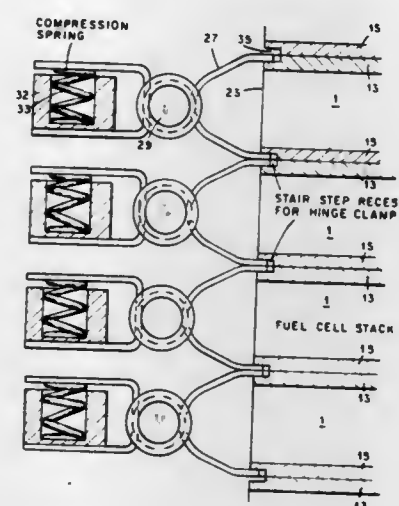
Claims priority, application Japan, Feb. 10, 1981, 56-18506
Int. Cl.³ B37B 27/40

U.S. Cl. 428-692

6 Claims

1. A magnetic recording medium, comprising: a non-magnetic support base; a magnetic layer overlaid on a surface of said non-magnetic support base, said magnetic layer comprising ferromagnetic particles and a binder, said ferromagnetic particles being metal particles and said binder comprising: (a) a copolymer of unsaturated carboxylic acid/vinyl chloride/vinyl acetate copolymer, (b) a polyurethane resin and (c) a polyisocyanate compound.

extending along the surface of said plate toward said opposite edges, at least one end of said channels terminating short of the



corresponding edge of said plate to define a recess for receiving a fastener.

4,431,713

METHOD FOR ADAPTING HIGH VOLTAGE CELLS OR BATTERIES FOR LOWER VOLT RATED APPLICATIONS

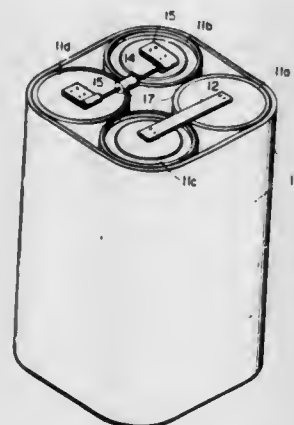
John R. Fehling, New Hyde Park, N.Y.; John P. Mathews, Mississauga, Canada, and Thomas Yatabe, Norcross, Ga., assignors to Duracell Inc., Bethel, Conn.

Filed Apr. 15, 1982, Ser. No. 368,535

Int. Cl.³ H01M 2/00

U.S. Cl. 429-7

8 Claims



1. A method for adapting a high voltage battery for lower voltage applications comprising the step of reducing the voltage of said battery by placing one or more p-n junctions and one or more resistive elements in series with cells of said battery whereby the cumulative voltage drop caused by said p-n junctions and resistive elements results in a voltage suitable for said lower voltage application.

4,431,714

FUEL CELL DESIGN AND ASSEMBLY

Alfred Myerhoff, Greensburg, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 1, 1982, Ser. No. 394,071

Int. Cl.³ H01M 8/02

U.S. Cl. 429-26

20 Claims

1. A bipolar cooling plate having discrete opposite edges, and means carried by the plate defining a plurality of channels

ELECTRICAL CONTACT STRUCTURES FOR SOLID OXIDE ELECTROLYTE FUEL CELL

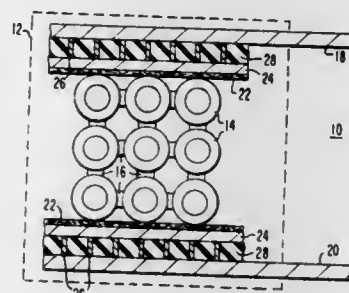
Arnold O. Isenberg, Forest Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 24, 1982, Ser. No. 361,286

Int. Cl.³ H01M 8/10

U.S. Cl. 429-30

7 Claims



1. In an electrical generator of the solid oxide electrolyte fuel cell type wherein a plurality of elongated tubular fuel cell elements are arranged in a matrix of rows and columns within a housing, which fuel cell elements include annular elongated inner and outer electrodes which are insulated from an electrolyte layer sandwiched between the electrodes, with electrical interconnections made between adjacent fuel cell elements of the matrix, which interconnections extend along the elongated tubular length of the fuel cell elements, and wherein gaseous reaction species are introduced at the inner and outer electrodes on opposed sides of the electrolyte for reaction at the electrolyte, and wherein at least two electrical output buses are connected to opposed perimeter rows of the fuel cell elements and extend through the housing for connection to an electrical load line, the improvement wherein the electrical connection of the electrical output buses to the respective row of fuel cell elements comprises:

- (a) high conductivity means in intimate electrical contact with the outer electrodes of a respective perimeter row of fuel cell elements and which high conductivity means is spaced apart from a respective output bus;
- (b) a plurality of symmetrically spaced apart electrically conductive members extending transversely from the high conductivity means to the output bus which transversely extending conductive members are electrically connected at opposed ends to the high conductivity means and the output bus to provide a multiplicity of parallel current paths between the high conductivity means and the output bus;

- (c) thermal insulation means disposed about the transversely extending conductive members between the high conductivity means and output bus.

4,431,716

HEAT ACTIVATED VENT

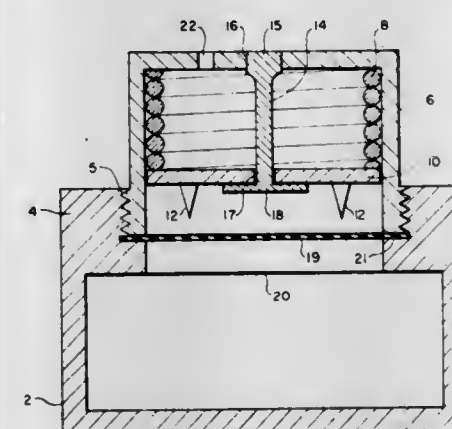
William J. Eppley, Skippack, Pa., and John A. Kelley, Willingboro, N.J., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 11, 1983, Ser. No. 465,722

Int. Cl.³ H01M 2/12

U.S. Cl. 429-53

13 Claims



1. A vent comprising: a vent housing means having a fluid passage therein, a diaphragm means for sealing said passage, diaphragm piercing means within said housing, spring means for urging said diaphragm piercing means into said diaphragm and heat responsive means in said vent housing means for spacing said diaphragm piercing means from said diaphragm means in opposition to said spring means below a predetermined temperature of said housing and for allowing said spring means to propel said diaphragm piercing means into said diaphragm above said temperature.

4,431,717

BATTERY CASE

Hideju Kikuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

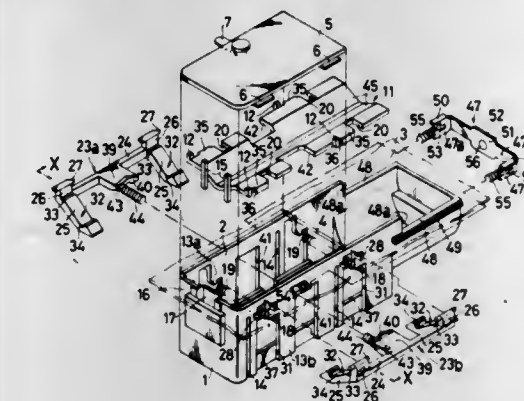
Filed Jan. 25, 1982, Ser. No. 342,234

Claims priority, application Japan, Jan. 31, 1981, 56-13185; Aug. 31, 1981, 56-136494

Int. Cl.³ H01M 6/30, 2/04, 10/48, 12/00

U.S. Cl. 429-100

14 Claims



1. A battery case for selectively housing batteries of different sizes, comprising: a housing dimensioned to receive the largest of said batteries and having an opening through which the batteries are insertable into said housing; a lid engageable in said opening for closing said housing; a battery holder disposed in said housing for movement in the direction toward and away from said opening between

- at least first and second positions to effectively vary the space available in said housing between said holder and said lid for accommodating the batteries therein; locking means selectively engageable with said holder so as to limit said movement of the latter in at least said first and second positions thereof relative to said housing; and battery size detecting means projecting into said housing and engageable by a battery inserted therein through said opening for movement by the inserted battery thereby to move said locking means for determining which of said locking means engages said holder so that the resulting position of said holder corresponds to the size of the inserted battery.

4,431,718

ELECTROCHEMICAL CELL WITH A LIQUID NEGATIVE ELECTRODE

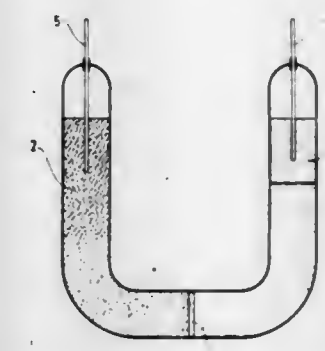
Lionel Bernard, Lille; Jean-Pierre Lelieur, Lambersart, and Alain Le Mehaute, Gif sur Yvette, all of France, assignors to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Dec. 1, 1981, Ser. No. 326,271

Claims priority, application France, Dec. 5, 1980, 80 25855
Int. Cl.³ H01M 10/36

U.S. Cl. 429-105

5 Claims



1. An electrochemical cell comprising a negative electrode including an alkali or an alkali-earth metal dissolved in liquid ammonia, a positive electrode, a separator formed by a porous non-selective membrane, and an electrolyte, wherein the positive electrode is chosen from emulsions or suspensions in ammonia of a solid compound suitable for intercalating the metal of the negative electrode, and said electrolyte includes a solution of an iodide of an alkali or alkali-earth metal.

4,431,719

LIQUID CATHODE CELL WITH CATHODE COLLECTOR HAVING RECESSES

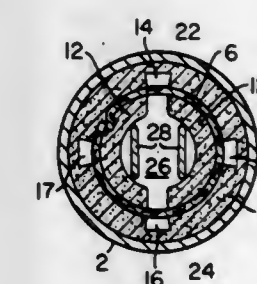
Lewis F. Urry, Columbia Station, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 31, 1982, Ser. No. 413,467

Int. Cl.³ H01M 4/36

U.S. Cl. 429-105

15 Claims



1. An electrochemical cell comprising a housing having a container and a cover, an anode disposed within said container,

a cathode collector, a porous separator disposed between said anode and said cathode collector and an electrolyte containing a liquid active reducible cathode and a conductive solute disposed within said container; the improvement being a cathode collector having recesses on that surface of the cathode collector which faces the anode so as to permit liquid cathode to have improved access to reaction sites on and within said cathode collector.

4,431,720

IMAGING SCREEN AND COATING THEREFOR FOR REAR-PROJECTION TELEVISION

Meyer L. Sugarman, Northbrook, Ill., assignor to Zenith Radio Corp., Glenview, Ill.

Filed Jul. 19, 1982, Ser. No. 399,619
Int. Cl.³ G03C 3/00, 5/18; G03B 21/60

U.S. Cl. 430—17

8 Claims

1. An improved rear-projection screen for presenting an image to a viewer, comprising:

- a lenticulated transparent substrate having a viewable front surface;
- a dual-purpose single layer coating disposed upon said front surface of said substrate and comprising image-transmitting areas and intervening light-absorbing areas, said coating having dispersed therein, in a common binder, light-scattering elements and photographically formed light-absorbing elements, said photographically formed elements serving to establish said light-absorbing areas, said coating area devoid of said photographically formed elements establishing said image-transmitting areas, said light-scattering elements included in said image-transmitting areas providing for diffusion of an image transmitted therethrough, said light-scattering elements included in said light-absorbing areas being effective to scatter light falling on said front surface of said substrate thereby enhancing the contrast of an image displayed upon said front surface.

4,431,721

USE OF PERYLENE PIGMENTS FOR PHOTOELECTROPHORETIC IMAGING

Max Jost, Oberwil, and Werner Sieber, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,467

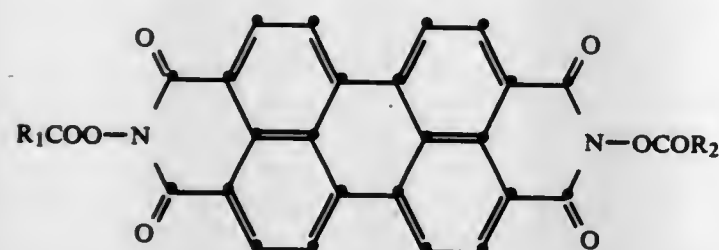
Claims priority, application Switzerland, Jun. 29, 1981, 4273/81

Int. Cl.³ G03G 13/22

U.S. Cl. 430—37

6 Claims

1. In a photoelectrophoretic imaging process, wherein a liquid suspension of photosensitive pigment particles between two electrodes, at least one of which is transparent, is subjected to the influence of an electric field and exposed to an image, the improvement which comprises using, as photosensitive pigment, an effective photosensitive amount of a perylene-tetracarboxylic acid diimide of the formula



wherein R₁ and R₂ are aliphatic, cycloaliphatic, aromatic or heterocyclic radicals.

4,431,722

PHOTOSENSITIVE ELEMENT FOR ELECTROPHOTOGRAPHY PRODUCED BY SUBLIMATION

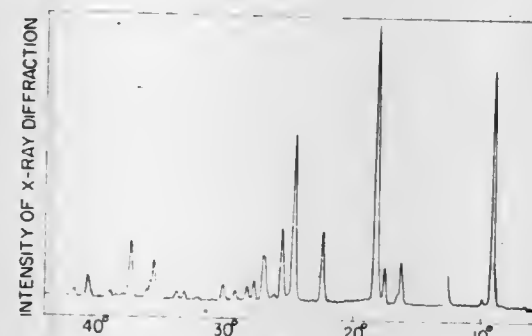
Yoshiaki Takei; Yoshihide Fujimaki; Naoko Akashi, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,658

Claims priority, application Japan, Oct. 16, 1980, 55-143699
Int. Cl.³ G03G 5/14

U.S. Cl. 430—57

10 Claims



1. A layered photosensitive element for electrophotography having a charge generating layer which comprises a dispersion of a photoconductive organic polycyclic quinone pigment produced by sublimation in an organic resin binder, a charge transport layer adjacent to said generating layer comprising an organic charge transport compound mixed with an organic resin binder, and a conductive substrate coated therewith.

4,431,723

AQUEOUS PROCESSIBLE, ALCOHOL RESISTANT FLEXOGRAPHIC PRINTING PLATES

Stephen Proskow, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1981, Ser. No. 304,371

The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

Int. Cl.³ G03C 1/68

U.S. Cl. 430—286

9 Claims

1. A photosensitive, elastomeric composition developable in aqueous base/organic solvent mixtures comprising, by total weight of the composition,

- (i) about 40 to 90 percent of a heat workable mercaptocarboxylic acid-modified polymer selected from at least one member of the group butadiene and isoprene, said polymer characterized by having
 - (a) a number average molecular weight of about 15,000 to 1,000,000,
 - (b) a carboxyl content of about 1 to 15 percent by weight of polymer (i),
 - (c) at least about 0.7 percent of sulfur, by weight of polymer (i),
- (ii) about 2 to 50 percent of a nongaseous, ethylenically unsaturated compound containing at least one terminal ethylenic group, said compound being compatible with polymer (i) and polymerizable by the radical generating system of (iii), and
- (iii) about 0.001 to 10 percent of a radical generating system activatable by actinic radiation.

4,431,724

OFFSET PRINTING PLATE AND PROCESS FOR MAKING SAME

Jury M. Ovchinnikov, Baltitsky pereulok, 3/25, kv. 36, Moscow; Valentina G. Solokhina, ulitsa Gotvalda, 14, kv. 48, Moscow; Xenia G. Samoshenkova, Kozhukhovskaya ulitsa, 16, kv. 84, Moscow; Veniamin S. Lapatukhin, Teply stan, mikroraion 1a, korpus 16, kv. 16, Moscow; Julia I. Belyaeva, Sniperskaya ulitsa, 10, korpus 1, kv. 214, Moscow; Genrietta Y. Krikman, Bolshhevitsky pereulok, 9, kv. 23, Moscow; Izabella I. Gushchina, ulitsa Korneichuka, 22, kv. 26, Moscow; Nikolai N. Krutikov, Jubileiny prospekt 76, kv. 14, Khimki Moskovskoi oblasti, and Ljubov I. Sulakova, Ferganskaya ulitsa, 13, korpus 2, kv. 55, Moscow, all of U.S.S.R.

Division of Ser. No. 222,971, Jan. 7, 1981. This application Mar. 10, 1982, Ser. No. 356,900

Int. Cl.³ G03F 7/08

U.S. Cl. 430—302

6 Claims

1. A method of making an offset printing plate which comprises applying onto a carbon steel substrate a light sensitive top layer based on derivatives of ortho-naphthoquinonediazidesulfonic acids, or derivatives of ortho-naphthoquinonediazidecarboxylic acids or a photopolymerizable composition; drying said top layer, transferring an image onto said dried top light sensitive layer by actinic radiation exposure through a diapositive when the light sensitive component is an ortho-naphthoquinonediazidesulfonic acid derivative or an ortho-naphthoquinonediazide-carboxylic acid derivative or through a negative when the light sensitive component is photopolymerizable; developing the image by treatment of the top layer with a 0.2-1.5% aqueous solution of an alkali metal salt or an alkali metal hydroxide at a temperature of about 18-25° C., thereby removing regions of the top layer from non-printing areas; and desensitizing the non-printing areas by treatment thereof with an aqueous solution consisting essentially of 0.5-2% of an organic hydrophilic colloid and 5-10% of a complex salt of an alkali metal and an inorganic cyanide complex.

4,431,725

LIGHT-SENSITIVE MATERIAL AND IMAGE FORMING PROCESSES USING THE SAME

Hiromichi Tachikawa; Yohnosuke Takahashi; Fumiaki Shinozaki, and Tomoaki Ikeda, all of No. 105, Oaza Mizonuma, Asaka-shi, Saitama, Japan

Continuation of Ser. No. 107,961, Dec. 28, 1979, abandoned.

This application Jul. 19, 1982, Ser. No. 399,583

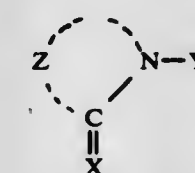
Claims priority, application Japan, Dec. 28, 1978, 54-77

Int. Cl.³ G03C 1/58

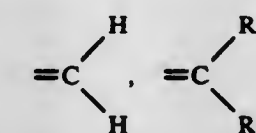
U.S. Cl. 430—325

7 Claims

1. A negative working process for forming images which comprises imagewise exposing to light a light-sensitive material comprising a support having thereon a light-sensitive layer containing an o-quinonediazide compound and a compound represented by the formula (I):



wherein Z represents the nonmetallic atoms forming a 5-membered ring; X represents



where R_a and R_b are an organic group other than a carboxylic acid or =N—R_c where R_c is a hydrogen atom or an organic

group other than a carboxylic acid group, and Y is a hydrogen atom or an organic group other than a carboxylic acid group to insolubilize the areas of said layer exposed to light, heating said imagewise exposed material simultaneously with or immediately following said imagewise exposing to accelerate the insolubilization of the areas of said layer exposed to light, uniformly exposing said heated material to actinic radiation, and developing said material in alkaline solution to remove only the imagewise unexposed areas of said layer.

4,431,726

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT CONTAINING A U.V. ABSORBING LAYER

Tetsuro Kojima; Tadashi Ikeda; Shingo Ishimaru, and Naohiko Sugimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1982, Ser. No. 453,657

Claims priority, application Japan, Dec. 25, 1981, 56-211283

Int. Cl.³ G03C 1/78

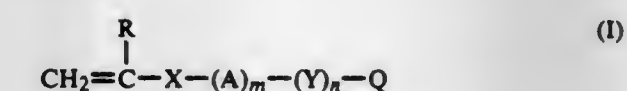
U.S. Cl. 430—512

14 Claims

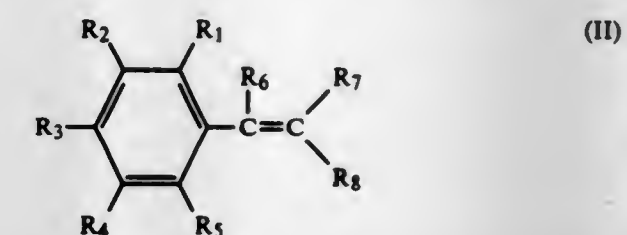


1. A silver halide photographic light-sensitive material comprising:

- a support base having thereon;
- a light-sensitive silver halide emulsion layer;
- a light-insensitive layer; and
- an ultraviolet ray absorbing polymer latex comprised of a homopolymer or a copolymer having repeating unit derived from monomers represented by the following general formula (I):



wherein R represents a hydrogen atom, a lower alkyl having 1 to 4 carbon atoms or a chlorine atom; X represents —CONH—, —COO— or a phenylene group; A represents a linking group selected from alkylene groups having 1 to 20 carbon atoms and arylene groups having 6 to 20 carbon atoms; Y represents —COO—, —OCO—, —CONH—, —NHCO—, —SO₂NH—, —NHSO₂—, —SO₂— or —O—; m and n each represents 0 or an integer of 1; and Q represents an ultraviolet ray absorbing group represented by the following general formula (II):



wherein R₁, R₂, R₃, R₄ and R₅ each represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 20 carbon

atoms, an aryl group having 6 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an alkylthio group having 1 to 20 carbon atoms, an arylthio group having 6 to 20 carbon atoms, an amino group, an alkylamino group having 1 to 20 carbon atoms, an arylamino group having 6 to 20 carbon atoms, a hydroxyl group, a cyano group, a nitro group, an acylamino group, a carbamoyl group, a sulfonyl group, a sulfamoyl group, a sulfonamide group, an acyloxy group or an oxycarbonyl group, and R_1 and R_2 , R_2 and R_3 , R_3 and R_4 or R_4 and R_5 may form a 5 to 6 member ring by ring closure; R_6 represents a hydrogen atom or an alkyl group having 1 to 20 carbon atoms; R_7 represents a cyano group, $-\text{COOR}_9$, $-\text{CONHR}_9$, $-\text{COR}_9$ or $-\text{SO}_2\text{R}_9$; and R_8 represents a cyano group, $-\text{COOR}_{10}$, $-\text{CONHR}_{10}$, $-\text{COR}_{10}$ or $-\text{SO}_2\text{R}_{10}$; wherein R_9 and R_{10} each represents an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms; wherein one of R_1 , R_2 , R_3 , R_4 , R_5 , R_6 , R_7 and R_8 bonds to the vinyl group through said linking group.

4,431,727

PROTECTIVE OVERCOATS FOR PHOTOGRAPHIC ELEMENTS

David J. Steklenski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,322

Int. Cl.³ G03C 1/78

U.S. Cl. 430—528

7 Claims

1. A radiation-sensitive photographic element comprising a support having on one side thereof a hydrophilic, radiation-sensitive layer and on the other side thereof, as the outermost layer, a layer comprising a compatible blend of:

- (a) cellulose nitrate and
- (b) a hydrophobic polymer

wherein said blend has a glass transition temperature of at least about 50° C. and contains a sufficient amount of cellulose nitrate so as to be resistant to chlorinated hydrocarbon solvents.

4,431,728

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takao Abe, and Tatsuhiko Kobayashi, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,803

Claims priority, application Japan, Jun. 19, 1981, 56-95558

Int. Cl.³ G03C 7/26

U.S. Cl. 430—544

22 Claims

1. A silver halide photographic light-sensitive material comprising:

- a support;
- a combination of an unfogged surface latent image type silver halide photographic emulsion and a first material which is non-diffusible under alkaline conditions and which is capable of releasing a diffusible development inhibitor or a precursor thereof as a result of cross oxidation with an oxidized product of a photographic developing agent; and
- a combination of an internal latent image type silver halide photographic emulsion whose silver halide grains contain therein, prior to development, fog nuclei and a dye image-forming material which is initially non-diffusible under alkaline conditions but which is capable of releasing a diffusible dye or a precursor thereof as a result of being oxidized by the oxidized product of said photographic developing agent.

METHOD FOR PREPARING PHOTOSENSITIVE SILVER HALIDE EMULSIONS

Martin L. Falxa, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 9, 1982, Ser. No. 406,323

Int. Cl.³ G03C 1/02

U.S. Cl. 430—569

10 Claims

1. A method for forming photosensitive silver iodobromide emulsions having a narrow grain size distribution which comprises precipitating silver iodobromide grains by simultaneously introducing a first ammoniacal solution of silver nitrate and a second solution of ammonium bromide into a third ammoniacal solution consisting essentially of gelatin and a water-soluble iodide salt under conditions wherein silver ions are not in excess during said precipitation, wherein said third solution contains less than 4 mole percent of a water-soluble bromide salt and wherein said grains contain about 0.5 to 25 mole percent iodide.

4,431,730

PROCESS FOR THE PREPARATION OF INTERNAL LATENT IMAGE TYPE SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Shigeharu Urabe; Shinji Sakaguchi; Ichizo Toya, and Tadao Sugimoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1982, Ser. No. 349,445

Claims priority, application Japan, Feb. 18, 1981, 56-22681

Int. Cl.³ G03C 1/28

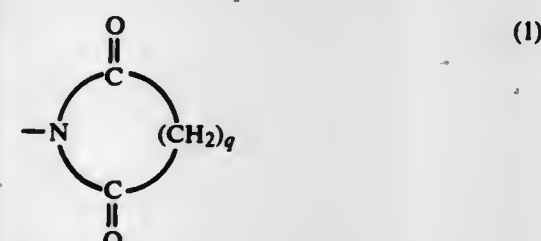
U.S. Cl. 430—604

11 Claims

1. A process for the preparation of an internal latent image type silver halide emulsion containing silver halide grains comprising a central core of silver halide doped with metal ions, chemically sensitized or a combination thereof and an outer shell of silver halide covering at least light-sensitive sites of the central core, which process is characterized in that the surface of the silver halide grain is subjected to chemical sensitization in the presence of a homopolymer or copolymer to improve said surface chemical sensitization, said homopolymer containing a repeating unit represented by general formula (I) and said copolymer selected from the group consisting of copolymers obtained by copolymerization of only monomer units of the formula (I) and copolymers obtained by the copolymerization of a monomer unit of the formula (I) copolymerized with an addition-polymerizable ethylenically unsaturated compound:



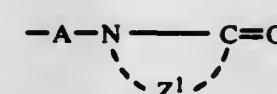
wherein R^1 is a hydrogen atom or an alkyl group, and Q is any one of groups (1) to (4) set forth below:



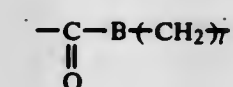
wherein q is an integer of from 2 to 4,



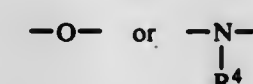
wherein R^2 and R^3 are each a hydrogen atom or an alkyl group;



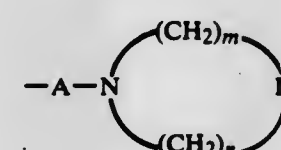
wherein Z^1 is a group of atoms required to a lactam ring, an oxazolidone ring or a pyridone ring, and A is a bond,



wherein B is



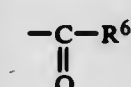
wherein R^4 is a hydrogen atom or an alkyl group, and l is an integer of from 1 to 6,



wherein A is the same as defined for the above formula (3), D is a bond, $-\text{O}-$, or



wherein R^5 is a hydrogen atom, an alkyl group or



wherein R^6 is an alkyl group, and m and n are each an integer of from 1 to 6 and $m+n$ is from 4 to 7;

and wherein said homopolymer is present in an amount of from 0.002 to 1 g per mol of silver or said copolymer is present in an amount providing 0.002 to 1 g of the repeating unit of the formula (I) per mol of silver.

4,431,731

INTERNAL LATENT IMAGE SILVER HALIDE EMULSIONS

Tadao Sugimoto; Ichizo Toya; Shigeharu Urabe, and Shinji Sakaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1982, Ser. No. 349,550

Claims priority, application Japan, Feb. 19, 1981, 56-23521

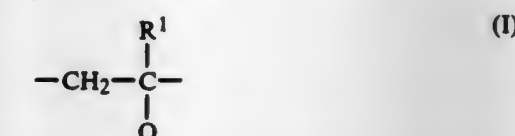
Int. Cl.³ G03C 1/34

U.S. Cl. 430—604

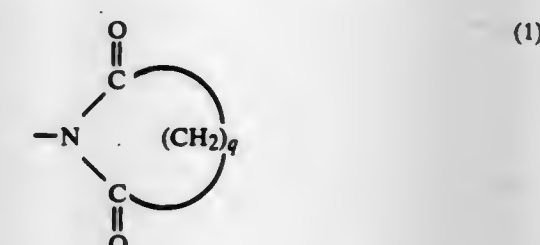
9 Claims

1. In an internal latent image silver halide emulsion comprising core/shell silver halide particles having a chemically sensitized surface and which are composed of a core of silver halide doped with metal ions and/or subjected to chemical sensitization and a shell which covers at least the sensitive sites of said core and a binder, the improvement wherein said silver halide emulsion contains a homopolymer containing a repeating unit represented by the formula (I) or a copolymer selected from the group consisting of copolymers obtained by copolymerization of only monomers of the formula (I) or copolymers obtained by copolymerization of a monomer of the formula (I) and an addition-polymerizable ethylenically unsaturated compound, said homopolymer or copolymer being present in a

stabilizing amount of 2 mg to 1,000 mg per mole of silver in the case of said homopolymer or being present in a stabilizing amount providing 2 mg to 1,000 mg of the repeating unit of the formula (I) per mole of silver in the case of said copolymer,



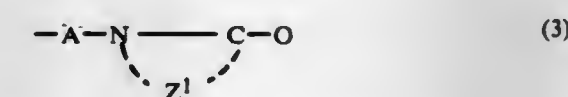
wherein R^1 represents a hydrogen atom and Q represents a group selected from the group consisting of the following (1)–(4):



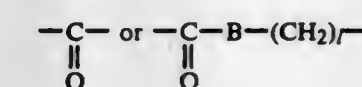
(4) wherein q represents an integer of 2 to 4,



wherein R^2 and R^3 each represents a hydrogen atom or an alkyl group,



wherein Z^1 represents an atomic group necessary to complete a lactam ring, an oxazolidone ring or a pyridone ring, and A represents a single bond,



wherein B represents $-\text{O}-$ or



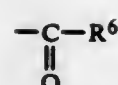
wherein R^4 represents a hydrogen atom or an alkyl group, and l represents an integer of 1 to 6, and



wherein A has the same meaning as in (3), D represents a single bond, $-\text{O}-$ or



and m and n each represents an integer of 1 to 6 which satisfies the relationship $m+n=4$ to 7, wherein R^5 represents a hydrogen atom, an alkyl group or



wherein R⁶ represents an alkyl group.

4,431,732

PROCESS FOR THE PREPARATION OF 11β,21-DIHYDROXY-2'-METHYL-5'βH-1,4-PREG- NADIENO(16,17-D)-OXAZOLE-3,20-DIONE

Alfred Weber, Mario Kennecke, and Rudolf Müller, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Dec. 23, 1981, Ser. No. 334,025

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3049401

Int. Cl.³ C12P 33/02

U.S. Cl. 435—61

5 Claims

1. A process for preparing 11β,21-dihydroxy-2'-methyl-5'βH-1,4-pregnadieno(16,17-d)-oxazole-3,20-dione consisting essentially of fermenting 11β,21-dihydroxy-2'-methyl-5'βH-4-pregneno(16,17-d)-oxazole-3,20-dione with a living culture of *Arthrobacter simplex* in the presence of 0.04–0.12 g of cobalt(II) ions per liter of culture broth.

4,431,733

PROCESS FOR PREPARING FRUCTOSE FROM LIQUEFIED STARCH

Robert O. Horwath, Westport, and Robert M. Irbe, Norwalk, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,590

Int. Cl.³ C12P 19/24, 19/20; C12N 9/92; C12R 1/645

U.S. Cl. 435—94

13 Claims

1. The process for preparing fructose which comprises contacting liquefied starch with glucoamylase to hydrolyze said starch to glucose and contacting the glucose so produced with glucose isomerase to isomerize at least a part of the glucose to fructose wherein said glucoamylase and glucose isomerase are obtained from an organism of the Basidiomycetes class of fungi.

4,431,734

ENZYMATIC PROCESS FOR THE TREATMENT OF XANTHAN GUMS TO IMPROVE THE FILTRABILITY OF THEIR AQUEOUS SOLUTIONS

Marguerite Rinaudo, Grenoble; Michel Milas, Eybens, and Norbert Kohler, Le Chesnay, all of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

Filed May 24, 1982, Ser. No. 381,610

Claims priority, application France, May 22, 1981, 81 10403

Int. Cl.³ C12P 19/06, 39/00; C13L 3/00; E21B 43/22

U.S. Cl. 435—104

19 Claims

1. A process for the treatment of a xanthan gum in order to improve the filtrability of its aqueous solutions, comprising enzymatically treating an aqueous solution of a xanthan gum having a total concentration of dissolved alkali and alkaline-earth metal salts of at least 10⁻² equivalents/liter with at least two enzymes of different types, one being a polysaccharase and another being a protease, under conditions compatible with the activity of said enzymes.

4,431,735

BIOLOGICAL PROCESS FOR THE PREPARATION OF RIFAMYCIN DERIVATIVES

Moon H. Han; Tae-Ick Mheen; Baik L. Seong, and Hyeung-Jin Son, all of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jan. 4, 1982, Ser. No. 336,593

Int. Cl.³ C12P 17/18; C12N 9/04; C12R 1/645

U.S. Cl. 435—119

7 Claims

1. A process for the enzymatic conversion of rifamycin B to oxidized derivatives thereof comprising subjecting rifamycin B to the action of a microbial oxidation enzyme derived from *Humicola* spp. (ATCC 20620) or *Monocillium* spp. (ATCC 20621) capable of converting rifamycin B to an oxidized derivative thereof in the presence of oxygen at a pH of from 4 to 10, and recovering an oxidized derivative of rifamycin B.

4,431,736

PHENYLHYDROQUINONE FROM BIPHENYL BY BIOTRANSFORMATION WITH SELECTED FUNGI

James A. Romesser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 1, 1982, Ser. No. 383,456

Int. Cl.³ C12P 7/22; C12R 1/645

U.S. Cl. 435—156

7 Claims

1. A method for making 2,5-dihydroxybiphenyl comprising contacting biphenyl with at least one fungal microorganism selected from *Thamnostylum piriforme*, in the presence of a source of organic nitrogen, the weight ratio of biphenyl to dry cells of microorganism being less than about 0.031 to 1.

4,431,737

PROCESS FOR THE PRODUCTION OF ALPHA-GALACTOSIDASE AND USES OF THE ENZYME THUS OBTAINED

Roberto Olivieri, Mentana; Paolo Pansolli, Rome; Eugenio Fascetti, Rome, and Pierluigi Ciuffolotti, Rome, all of Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Nov. 30, 1982, Ser. No. 445,844

Claims priority, application Italy, Dec. 3, 1981, 25424 A/81

Int. Cl.³ C12N 9/40, 1/18; C13J 1/00; C12R 1/865

U.S. Cl. 435—208

8 Claims

1. A biologically pure culture of *Saccharomyces cerevisiae* NNRL-Y 12533, said culture being capable of producing alpha-galactosidase in the absence of galactose.

4,431,738

METHOD OF PLANT TISSUE AND CELL CULTURE

Tadahiko Maeda, Dazaifumachi, and Kuniaki Tanaka, Kurume, both of Japan, assignors to Chlorella Industry Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,285

Claims priority, application Japan, Oct. 6, 1980, 55-138718

Int. Cl.³ C12N 5/00; C12R 1/90

U.S. Cl. 435—240

11 Claims

1. A method for culturing plant cells or plant tissue comprising culturing a piece of tissue excised from a plant body or cells obtained by cultivation of tissue excised from a plant body in a synthetic basal plant tissue culture medium containing an extract of *Chlorella* effective to cause cell multiplication and cell differentiation of said plant cells or plant tissue.

4,431,739

TRANSFORMANT BACTERIAL CULTURE CAPABLE OF EXPRESSING HETEROLOGOUS PROTEIN

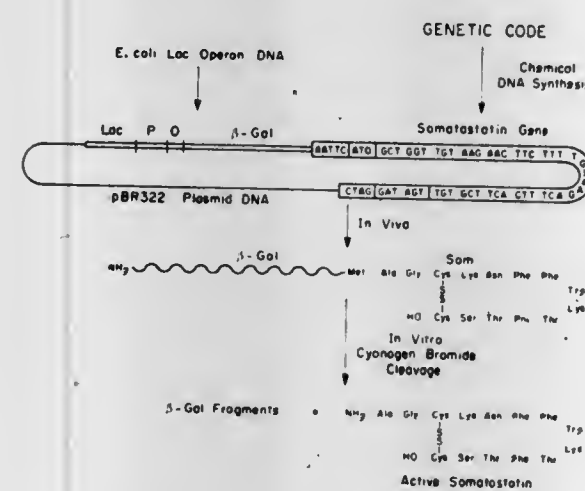
Arthur D. Riggs, La Verne, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 90,980, Nov. 5, 1979, Pat. No. 4,366,246, which is a continuation of Ser. No. 849,591, abandoned. This application Jul. 30, 1982, Ser. No. 403,675

Int. Cl.³ C12N 1/20, 15/00, 1/00

U.S. Cl. 435—253

5 Claims



1. A transformant bacterial culture cloned from one or more bacteria each comprising a recombinant microbial vehicle, said vehicle comprising:

a regulon, a structural gene coding for the amino acid sequence of a desired heterologous polypeptide and one or more termination codon(s) wherein a DNA sequence coding for additional protein is interposed between said regulon and termination codon(s) without altering the reading frame of said structural gene such that a precursor protein comprising both the amino acid sequence of the desired polypeptide and that of additional protein results from expression, the additional protein comprising a selective cleavage site adjacent the amino acid sequence of the desired polypeptide; the members of said culture being capable of expressing said precursor protein.

4,431,740

DNA TRANSFER VECTOR AND TRANSFORMED MICROORGANISM CONTAINING HUMAN PROINSULIN AND PRE-PROINSULIN GENES

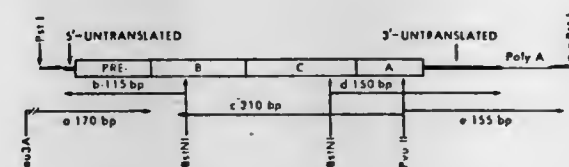
Graeme Bell; Raymond Pictet; Howard M. Goodman, and William J. Rutter, all of San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 75,192, Sep. 12, 1979, abandoned. This application Jun. 8, 1982, Ser. No. 386,338

Int. Cl.³ C12N 1/20, 15/00, 1/00; C12P 21/00

U.S. Cl. 435—253

14 Claims



1. A DNA transfer vector comprising an inserted cDNA consisting essentially of a deoxynucleotide sequence coding for human pre-proinsulin, the plus strand of said cDNA having a defined 5' end, said 5' end being the first deoxynucleotide of the sequence coding for said pre-proinsulin.

2. A DNA transfer vector comprising an inserted cDNA consisting essentially of a deoxynucleotide sequence coding for human proinsulin, the plus strand of said cDNA having a

defined 5' end, said 5' end being the first deoxynucleotide of the sequence coding for said proinsulin.

4,431,741

HYPOTHYROID CONTROL SERUM

Jerome Lewis, Framingham, and George H. Parsons, Jr., Arlington, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 17, 1981, Ser. No. 331,479

Int. Cl.³ G01N 33/54

U.S. Cl. 436—500

9 Claims

1. Hypothyroid control serum for use in thyroid function assay of serum with reagent antiserum, said control serum comprising serum from which T₃ and T₄ have been stripped, and antiserum to T₃ having an affinity less than 15% of the affinity of said reagent antiserum.

4,431,742

RADIORECEPTOR ASSAY FOR BENZODIAZEPINES IN SALIVA

Jack E. Rosenblatt, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 14,552, Feb. 23, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 249,229

Int. Cl.³ G01N 33/60; A61K 43/00

U.S. Cl. 436—504

6 Claims

1. In a radioreceptor assay for benzodiazepine in saliva which comprises measuring the diminution of attachment of a known quantity of radiolabeled benzodiazepine to a receptor carrier in the presence of an unknown quantity of unlabeled benzodiazepine in a known amount of human saliva, the improvement wherein

(1) the saliva is centrifuged to separate mucous sediment and serous supernatant;
(2) the serous supernatant is diluted and incubated with radiolabeled benzodiazepine and receptor carrier at 0° C. for about 45 minutes, wherein the receptor carrier is fresh brain cortex or striatum homogenized and formed into a pellet.

4,431,743

METHOD FOR DETERMINING STEROIDS IN HUMAN BODY LIQUIDS

Songja Pang, and Maria New, both of New York, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 887,326, Mar. 16, 1978, abandoned. This application Oct. 28, 1980, Ser. No. 201,589. The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ G01N 33/56, 33/58, 33/60, 33/52

U.S. Cl. 436—542

13 Claims

1. A method for determination of a steroid in a sample of a human body liquid which comprises the steps of:

(a) transferring said liquid sample onto a sheet of material which is capable of uniformly absorbing said liquid sample;
(b) drying the sample-containing sheet;
(c) treating a portion of the dry sample-containing sheet, which is equivalent to a predetermined amount of the sample with an aqueous solvent in order to obtain a mixture wherein the dried body liquid is substantially redissolved in the aqueous solvent;
(d) contacting said mixture with an aqueous solution of an agent, capable of selectively binding said steroid in the presence of a radio-isotopically labeled form of the steroid, whereby part of said labeled steroid and part of said unlabeled steroid present in the sample are bound by forming a complex with said binding agent, separating said bound steroids from unbound steroids in said aqueous solution and measuring the radioactivity of at least said

separated binding agent-steroids-complex or said unbound steroids to determine the concentration of said hormone as a function of the measured radioactivity.

4,431,744

CARBON BONDED REFRACTORY BRICK

Mark C. Kernion, Braddock, and David J. Michael, White Oak, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Jun. 2, 1982, Ser. No. 384,319
Int. Cl.³ C04B 35/52

U.S. Cl. 501—99

5 Claims

1. Carbon bonded refractory brick containing 1 to 6%, by weight, liquid thermosetting resin binder consisting of polyhydroxydiphenyl resin and a curing agent and the balance being refractory aggregate.

4,431,745

CARBON-BONDED MAGNESIA CARBON BRICKS

Akira Watanabe, Okayama; Takeo Okamura, Bizen, and Goji Saeki, Okayama, all of Japan, assignors to Kyushu Refractories Co., Ltd., Okayama, Japan

Filed May 17, 1982, Ser. No. 379,014

Int. Cl.³ C04B 35/04, 35/52

U.S. Cl. 501—101

2 Claims

1. Carbon-bonded magnesia carbon bricks characterized in that said bricks comprise 60–97 weight % sintered magnesia clinker of bulk specific gravity above 3.40, 3–40 weight % carbonaceous material and a carbon bonding formative agent.

4,431,746

PREPARING METAL-EXCHANGED HIGHLY SILICEOUS POROUS CRYSTALLINE MATERIALS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,495

Int. Cl.³ B01J 29/12, 29/16

U.S. Cl. 502—73

18 Claims

1. A method of preparing a catalyst composition which comprises contacting a porous crystalline siliceous zeolite having a silica-to-alumina mole ratio greater than about 20 with a solution of a transition metal complex of uncommon low charge for a period of time sufficient to exchange a portion of said metal complex with a component of said zeolite.

3. The method of claim 1 wherein said metal complex is a complex having a charge of 0 to 2 and said metal is selected from the group consisting of rhodium, iridium, titanium, zirconium, niobium, molybdenum, tantalum, tungsten, rhenium and the lanthanides.

8. The method of claim 1 wherein said zeolite is selected from the group consisting of Beta, ZSM-4, ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35, ZSM-38, ZSM-48, mordenite and synthetic faujasite.

4,431,747

SUPPORTED CARBON-CONTAINING MOLYBDENUM AND TUNGSTEN SULFIDE CATALYSTS, THEIR PREPARATION AND USE

Robert L. Seiver, Baton Rouge, La., and Russell R. Chianelli, Somerville, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 20, 1982, Ser. No. 400,004

Int. Cl.³ B01J 27/02, 31/12, 27/24, 27/20

U.S. Cl. 502—220

20 Claims

1. A process for the preparation of supported carbon-containing molybdenum sulfide and tungsten sulfide catalysts which comprises

compositing a preselected quantity of a porous, refractory inorganic oxide with a salt characterized by the formula



where B is an organo or hydrocarbyl substituted diammo-

nium ion, an organo or hydrocarbyl substituted ammonium ion or quaternary ammonium ion, or an ionic form of a cyclic amine containing one or more basic N atoms, x is 1 where B is an organo or hydrocarbyl substituted diammonium ion, or 2 where B is an organo or hydrocarbyl substituted ammonium or quaternary ammonium ion or an ionic form of a cyclic amine containing one or more basic N atoms, M is molybdenum or tungsten, and y is 0, or a fraction or whole number ranging up to 3, and

heat decomposing the salt of said catalyst precursor composite in the presence of hydrogen, hydrocarbon and sulfur to form said supported carbon-containing molybdenum sulfide or tungsten sulfide catalyst.

4,431,748

CATALYTIC COMPOSITIONS

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

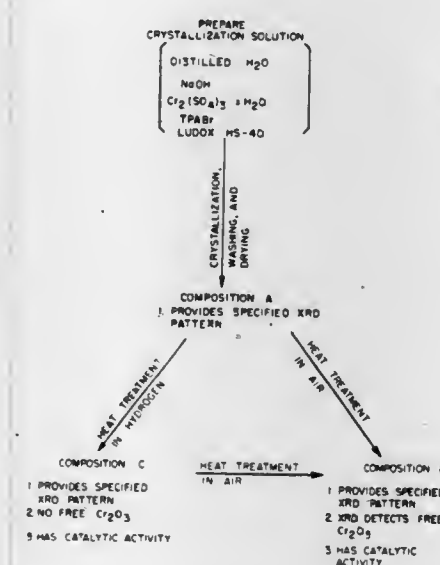
Continuation-in-part of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Jul. 9, 1981, Ser. No. 281,840

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ B01J 23/26, 29/00

U.S. Cl. 502—256

23 Claims



1. A catalytic composition which comprises a molecular sieve-containing component and a porous refractory inorganic oxide, said component and said refractory inorganic oxide having been intimately admixed with one another, said component comprising a mixture of a crystalline chromosilicate and an oxide of chromium, providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strength
11.14 ± 0.2	M
9.89 ± 0.2	VS
3.85 ± 0.07	MS
3.81 ± 0.07	M
3.72 ± 0.05	M
3.63 ± 0.05	M
2.67 ± 0.02	M
2.48 ± 0.02	M

and having the following composition in terms of mole ratios of oxides:



wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

4,431,749

LARGE PORE CATALYSTS FOR HEAVY HYDROCARBON CONVERSION

William P. Hettlinger, Jr., Russell, Ky., and James E. Lewis, Dublin, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.
PCT No. PCT/US81/00492, § 371 Date May 5, 1981, § 102(e)
Date May 5, 1981, PCT Pub. No. WO82/03571, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 10, 1981, Ser. No. 318,186

Int. Cl.³ B01J 29/06, 37/08

U.S. Cl. 502—68

30 Claims

1. A process for preparing a hydrocarbon conversion catalyst characterized by an increased percentage of feeder pores in the size range of about 100 to 6,000 Å, which process comprises admixing carbon black composed of primary reticulated particles having a size of about 400 to 30,000 Å, a carbon black dispersant and a shapable catalyst composition having hydrocarbon conversion characteristics;

during said admixing controlling the agglomeration of the primary reticulated carbon black particles by the amount and dispersing effectiveness of said dispersant, to provide increased percentages of feeder pores in the range of about 100 to 6,000 Å;

shaping said catalyst composition into solid shapes of hydrocarbon conversion catalyst containing 1 to 35 weight percent of said carbon black and

heating said solid catalyst shapes in the presence of an oxygen-containing gas at combustion conditions sufficient to remove said carbon black particles and provide large feeder pores of 100 to 6,000 Å in said solid catalyst shapes.

2. The process of claim 1 in which a promoter containing catalytic sites for hydrocarbon conversion is provided in said solid catalyst shapes and said shapable catalyst composition includes a matrix material for supporting said promoter in said solid catalyst shapes.

3. The process of claim 2 in which said promoter is a natural or synthetic zeolite.

4. The process of claim 1 in which said shapable catalyst composition includes silica and alumina materials capable of forming crystalline aluminosilicates, and in which said aluminosilicates are crystallized after at least a portion of said carbon black particles are mixed with said silica alumina materials.

4,431,750

PLATINUM GROUP METAL CATALYST ON THE SURFACE OF A SUPPORT AND A PROCESS FOR PREPARING SAME

Roger N. McGinnis, Bellingham, Wash.; Lewis E. Drehman, and Emory W. Pitzer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 19, 1982, Ser. No. 379,804

Int. Cl.³ B01J 21/04, 23/36, 23/40

U.S. Cl. 502—329

25 Claims

1. A method for preparing a supported platinum-group metal catalyst which comprises impregnating a porous support with an aqueous solution of a platinum-group metal sulfite and a rhenium compound, drying the thus-prepared composite, and heating the thus-dried composite at a temperature sufficient to decompose said sulfite, thereby producing said supported platinum-group metal catalyst, wherein said platinum-group metal is substantially deposited at the surface of said support and said platinum-group metal is at least one of platinum, iridium, osmium, palladium, rhodium, or ruthenium.

4,431,751

METHOD AND APPARATUS FOR PRODUCING SUPERHEATED STEAM WITH THE HEAT OF CATALYTIC METHANIZATION OF A SYNTHESIS GAS CONTAINING CARBON MONOXIDE, CARBON DIOXIDE AND HYDROGEN

Bernd Höhle, Jülich; Manfred Vorwerk, Erkelenz, and Udo Boltendahl, Havetoft, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

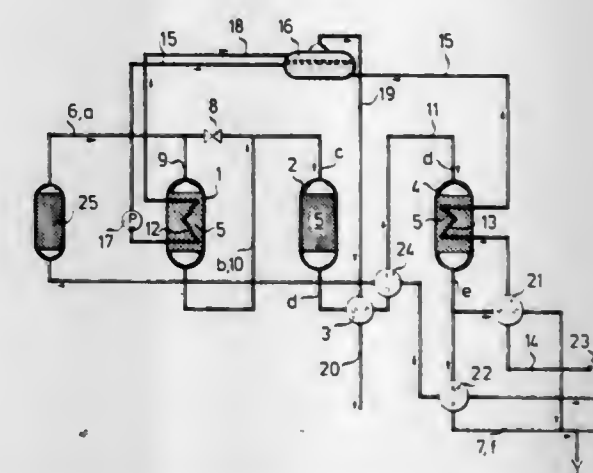
Filed May 26, 1982, Ser. No. 382,211

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121991

Int. Cl.³ C07C 1/04

U.S. Cl. 518—706

5 Claims



1. Process for generating superheated steam in heat exchange with a synthesis gas containing carbon monoxide, carbon dioxide and hydrogen utilized for catalytic methanization comprising the steps of:

passing a part of the synthesis gas stream through at least one first internally water-cooled reactor (1);

thereafter reuniting said part of said gas stream with the remainder of said gas stream and passing the reunited gas stream in succession, through an adiabatic reactor (2), a first heat exchanger (3) and a second internally water-cooled reactor (4);

passing water, in succession, first through the cooling system of said second internally water-cooled reactor (4) for preheating thereof to a temperature approximating the saturated steam temperature, and thereafter into said at least one first internally water-cooled reactor (1) for conversion therein into saturated steam and passing said saturated steam out of the cooling system of said at least one first reactor (1) and superheating said steam in said first heat exchanger (3).

4,431,752

UNSATURATED POLYESTER FOAMS

Stanley Oswitch, deceased, late of Sarnia, Canada (by Pauline Oswitch, legal representative), assignor to Fiberglas Canada Inc., Sarnia, Canada

Filed Nov. 8, 1982, Ser. No. 440,047

Int. Cl.³ C08J 9/06

U.S. Cl. 521—85

14 Claims

1. In a composition for producing an unsaturated polyester foam containing at least one of an unsaturated polyester, a cross-linkable monomer, a promoter, an accelerator, a catalyst and auxiliary agents, the improvement comprising:

incorporating sodium borohydride into said composition as a promoter for curing said composition and as a foaming agent producing hydrogen gas.

4,431,753

CATALYST BLEND CONTAINING
1,2-DIMETHYLIMIDAZOLE

Francois M. Casati, Highland Park; Hernan R. Penaloza, Palatine, and Francis W. Arbir, Itasca, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 13, 1983, Ser. No. 494,198
Int. Cl.³ C08G 18/14

U.S. Cl. 521-121

6 Claims

1. A catalytic combination comprising from about 20 to 80% 1,2-dimethylimidazole, from about 8 to 60% tris(3-dimethylaminopropyl)amine, and from about 2 to 50% of a salt of 1,8-diazabicyclo-5,5,0-undecene 7.

4,431,754

LOW VISCOSITY POLYMER POLYOLS VIA DILUTION
Dwight K. Hoffman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,709
Int. Cl.³ C08G 18/14, 18/63

U.S. Cl. 521-137

16 Claims

1. A method of making a polymer dispersion in a polyahl comprising (a) a first step of addition polymerizing monomer to form polymer particles in a polyahl medium to a first solids concentration; and (b) a second step of diluting, the dispersion obtained in step (a) with a polyahl to a second lower solids concentration, thereby obtaining a dispersion having a lower viscosity than if the polymer dispersion were prepared directly to said second solids concentration.

4,431,755

RUBBER COMPOSITION COMPRISING
PHYLLSILICATE MINERALS, SILANES, AND
QUATERNARY AMMONIUM SALTS

Kenneth E. Weber, North Hollywood, and Harold Mukamal, Seal Beach, both of Calif., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 16, 1982, Ser. No. 398,994
Int. Cl.³ C08L 9/06; C08K 3/36, 5/17

U.S. Cl. 523-203

91 Claims

1. A rubber composition formed according to an improved rubber compounding process comprising mixing and substantially uniformly dispersing in natural or synthetic rubber the following:

- A.
1. particulate Agent G at a level of from about 5 to about 200 phr,
 2. Agent H at a level of from about 0.005 to about 15 phr, and
 3. Agent I at a level of from about 0.005 to about 15 phr; or

- B.
1. a particulate adduct of Agents G and H having a median particle size in the range of from about 0.01 to about 20 microns and present at a level such that the portion thereof contributed from Agent G is at a level of from about 5 to about 200 phr and the portion thereof contributed from Agent H is at a level of from about 0.005 to about 15 phr, and
 2. Agent I at a level of from about 0.005 to about 15 phr; or

- C.
1. a particulate adduct of Agents G and I having a median particle size in the range of from about 0.01 to about 20 microns and present at a level such that the portion thereof contributed from Agent G is at a level of from about 5 to about 200 phr and the portion thereof contributed from Agent I is at a level of from about 0.005 to about 15 phr, and
 2. Agent H at a level of from about 0.005 to about 15 phr; or

- D. a particulate adduct of Agents G, H, and I having a median particle size in the range of from about 0.01 to

about 20 microns and present at a level such that the portion thereof contributed from Agent G is at a level of from about 5 to about 200 phr, the portion thereof contributed from Agent H is at a level of from about 0.005 to about 15 phr and the portion thereof contributed from Agent I is at a level of from about 0.005 to about 15 phr; or

- E.
1. a particulate adduct of Agents G and H having a median particle size in the range of from about 0.01 to about 20 microns and present at a level such that the portion thereof contributed from Agent G is at a level of from about 2.5 to about 100 phr and the portion thereof contributed from Agent H is at a level of from about 0.005 to about 15 phr, and
 2. a particulate adduct of Agents G and I having a median particle size in the range of from about 0.01 to about 20 microns and present at a level such that the portion thereof contributed from Agent G is at a level of from about 2.5 to about 100 phr and the portion thereof contributed from Agent I is at a level of from about 0.005 to about 15 phr;

wherein Agent G comprises phyllosilicate mineral particles having a median particle size in the range of from about 0.01 to about 20 microns;

wherein Agent H comprises an organosilane of formula I or II



wherein X is a group which is, or which upon hydrolysis forms a group which is, capable of reacting with a reactive site on the phyllosilicate mineral particles so as to form a bond between the organosilane of formula I or II and the phyllosilicate mineral particles,

wherein Y is an alkyl, aryl or alkyl-substituted aryl group containing from 1 to 40 carbon atoms and bears a functional group capable of reacting with a reactive site on the rubber so as to form a bond between the organosilane of formula I or II and the rubber,

wherein R₁ and R₂ are the same or different and are each selected from the group consisting of the groups described by X and Y, an alkyl group containing from 1 to 20 carbon atoms, an aryl group, and an alkyl-substituted aryl group wherein the alkyl substituents contain a total of from 1 to 20 carbon atoms, and

wherein K is an alkylene group containing from 1 to 20 carbon atoms or an alkyl sulfide or polysulfide group containing from 1 to 6 sulfur atoms and from 2 to 20 carbon atoms; and

wherein Agent I comprises a quaternary ammonium salt.

4,431,756

METHOD OF INCREASING THE VISCOSITY OF
EPOXIDE RESIN COMPOSITIONS

Christopher M. Andrews, Cambridge, England, assignor to Ciba-Gelby Corporation, Ardsley, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,639

Claims priority, application United Kingdom, Nov. 13, 1981, 8134290

Int. Cl.³ C08K 5/10, 5/16; C08L 63/00

U.S. Cl. 523-414

9 Claims

1. A method of increasing the viscosity of epoxide resins which comprises adding to an epoxide resin

- (a) a base having a basic strength, pK_b, of at most 9,
(b) from 5 to 50% by weight, calculated on the weight of the epoxide resin, of an organo-orthosilicate of formula



where R⁶ represents an alkyl group, an alkyl group substituted by at least one halogen atom, an aryl group substituted by at least one alkoxy group, an aryl group substituted by at least one halogen atom, an aryl group substituted by at least one alkyl group, an aryl group substituted by at least one alkoxy group, an aralkyl group substituted on the aryl moiety by at least one halogen atom, an aralkyl group substituted on the aryl moiety by at least one alkyl group, an aralkyl group substituted on the aryl moiety by at least one alkoxy group, or a heterocyclylalkyl group, all of the above-mentioned alkyl and alkoxy groups having from 1 to 15 carbon atoms and the aryl groups having from 6 to 10 carbon atoms, and

- (c) water,
and allowing the composition to develop thixotropy.

4,431,757

FAST SETTING ADHESIVE COMPOSITION

Toshinao Okitsu, Tokyo, and Tomio Uchida, Urawa, both of Japan, assignors to Konishi Co., Ltd., Osaka, Japan

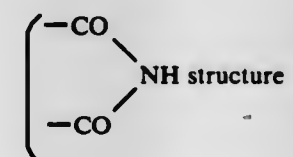
Filed Jul. 19, 1982, Ser. No. 399,735

Int. Cl.³ C08L 7/02, 9/00; C08J 3/02

U.S. Cl. 524-25

21 Claims

1. A water-based fast setting adhesive composition of a two-part separate application type wherein said parts are not mixed with each other before use for forming a bond, said adhesive composition comprising solutions A and B, wherein solution A consists essentially of an aqueous solution of a natural or synthetic high polymer having an amide bond (—CO—NH— structure) or an imide bond



within the molecule, or an aqueous dispersion obtained by adding at least one substance selected from a rubber latex and a synthetic resin emulsion to the aqueous solution of the natural or synthetic high polymer, the solid content of said substance being up to 10 parts by weight based on 1 part by weight of the solid content of the aqueous solution of the natural or synthetic high polymer, and wherein solution B consists essentially of an aqueous solution of a water-soluble dialdehyde compound, or an aqueous solution or dispersion obtained by adding a crosslinking agent for crosslinking the high polymer to the aqueous solution of the water-soluble dialdehyde compound, the amount of the crosslinking agent added being up to 10 parts by weight based on 1 part by weight of the dialdehyde compound contained in the aqueous solution of the water-soluble dialdehyde compound.

4,431,758

HEAT RESISTANT RESIN COMPOSITION
COMPRISING REACTION PRODUCT OF
POLYAMIDEIMIDE RESIN, ALCOHOL AND ACID
COMPONENT.

Yuichi Osada; Shozo Kasai; Yasunori Okada; Isao Uchigasaki, all of Hitachi; Toyoji Oshima, Higashikurume; Yoshiyuki Mukoyama, Hitachi, and Hiroshi Nishizawa, Kitaibaraki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,799

Claims priority, application Japan, Apr. 6, 1981, 56-52108

Int. Cl.³ C08G 18/60, 18/83, 69/48

U.S. Cl. 524-104

22 Claims

1. A heat resistant resin composition comprising a heat resistant resin and a phenolic solvent; the heat resistant resin being produced by reacting with heating

(A) a polyamideimide resin obtained by reacting in a phenolic solvent the following components (a) to (e):

- (a) a polyisocyanate containing an isocyanurate ring in an amount of 0 to 30 equivalent percents based on the total isocyanate equivalent,
(b) a diisocyanate free of an isocyanurate ring,
(c) a lactam,
(d) a tricarboxylic acid anhydride, and
(e) a compound different from the component (d) and selected from the group consisting of trimelic acid, tris(2-carboxyethyl)isocyanurate, 3,3',4,4'-butanetricarboxylic acid, anhydrides thereof and a reaction product of trimellitic anhydride and a trimer of isophorone diisocyanate or a trimer of tolylene diisocyanate, in an amount of 0 to 30 equivalent percents based on the total carboxyl equivalent, with

(B) an alcohol component selected from the group consisting of a di- or higher polyhydric alcohol and a mixture of a di- or higher polyhydric alcohol with a monohydric alcohol, and

(C) an acid component selected from the group consisting of a divalent or higher polyvalent carboxylic acid, an ester thereof and an anhydride thereof.

4,431,759

POLYESTER TEXTILE MATERIALS RESISTANT TO
UNDESIRABLE FIBRILLATION

Joseph H. Dusenbury, Spartanburg, and Dmitry M. Gagarine, Gaffney, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 8, 1981, Ser. No. 309,693

Int. Cl.³ C08K 5/06; C08L 67/02

U.S. Cl. 524-108

10 Claims

1. A partially oriented yarn which comprises a polyester resin and a cyclic acetal of sorbitol and an aromatic aldehyde; said cyclic acetal being present in an amount sufficient to reduce undesired fibrillation and frosting of textile materials made from such yarns which have been drawn and textured.

4,431,760

ESTERS AS PROCESSING AIDS FOR MALEIC
ANHYDRIDE RESINS

Brandford E. Giddings, Shaker Heights, and Richard J. Jorkasky, II, Bedford, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 150,020, May 15, 1980, abandoned.

This application Mar. 11, 1982, Ser. No. 357,227

Int. Cl.³ C08K 5/05, 5/10, 5/12

U.S. Cl. 524-171

8 Claims

1. A thermoplastic composition which comprises a blend of:
(1) a copolymer of maleic anhydride comprising maleic anhydride and a monomer copolymerizable therewith, and
(2) from 1-20 parts by weight of a lubricant dispersed in the copolymer wherein said lubricant is selected from the group consisting of the acetate ester of bisphenol A, sul-

phenyldiphenol, 4,4'-thiodiphenol, hydroquinone, resorcinol and o,o'-biphenol.

4,431,761

ETHYNYL AND SUBSTITUTED ETHYNYL-TERMINATED POLYSULFONES

Paul M. Hergenrother, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

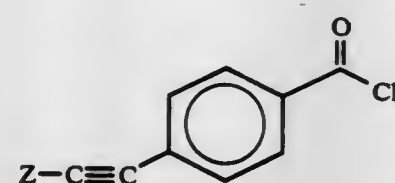
Filed Oct. 8, 1982, Ser. No. 433,598

Int. Cl.³ C08K 5/41

U.S. Cl. 524—171

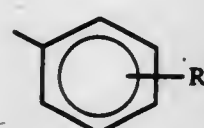
6 Claims

6. A process for preparing ethynyl and substituted ethynyl-terminated polysulfones comprising dissolving a polysulfone, having a molecular weight between 1000 and 50,000 g/mole, in a mixture of a chlorinated organic solvent and an organic base, adding a substituted 4-ethynylbenzoyl chloride of the formula:

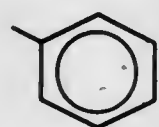


stirring for 0.5 to 4 hours and quenching in a non-solvent to precipitate the resulting substituted ethynyl-terminated polysulfone;

where Z is selected from the group consisting of: Si(CH₃)₃; H; straight or branched organic radicals having from 1 to 10 carbon atoms; substituted aromatic groups of the formula:



where R is selected from the group including: straight or branched organic radicals having from 1 to 12 carbon atoms, H, and



and halogenated derivatives of all of the above.

4,431,762

ULTRAVIOLET LIGHT SCREENING RESIN COMPOSITION

Shingo Araki, Settsu; Keizo Asai, Suita, and Seibei Ono, Nagaokakyo, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,383

Claims priority, application Japan, Jul. 23, 1981, 56-114463

Int. Cl.³ C08K 5/20

U.S. Cl. 524—220

8 Claims

1. A resin composition capable of substantially completely absorbing light with a wavelength below 370 nm comprising at least one compound (A) selected from the group consisting of 5'-chloro-3-hydroxy-2',4'-dimethoxy-2-naphthanilide, 4'-chloro-3-hydroxy-2',5'-dimethoxy-2-naphthanilide, 3,3'-dihydroxy-4,4''-bi-2-naphtho-O-toluidide and 3,3'-dihydroxy-4,4''-bi-2-naphtho-O-aniside in at least one thermoplastic resin selected from the group consisting of polycarbonate resins, polyester resins and polyamide resins.

4,431,763

FLEXIBLE SOLVENT BARRIER COATING

Katherine E. Reed, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1982, Ser. No. 433,418

Int. Cl.³ C08K 5/05; C08L 75/04; C09D 3/72

U.S. Cl. 524—389

16 Claims

1. Composition for coating a substrate comprising (a) a fully reacted, water-dilutable urethane polymer formed from the reaction of a glycol or polyol of polyester or polyether with diisocyanate, (b) water, and (c) a monohydric alcohol having less than seven carbon atoms, said water comprising from about 25 to about 55 weight percent of said composition.

4,431,764

ANTISTATIC TRANSPARENT COATING COMPOSITION
Motohiko Yoshizumi, Urawa, Japan, assignor to Mitsubishi Kinzoku Kaishiki Kaisha, Japan

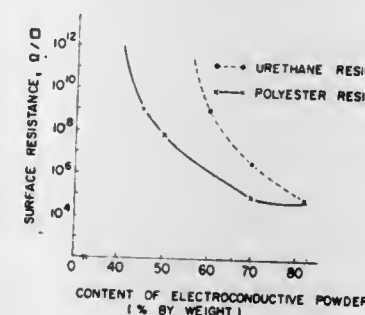
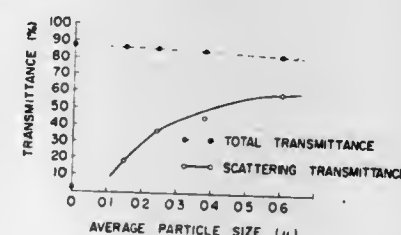
Filed Jun. 28, 1982, Ser. No. 395,065

Claims priority, application Japan, Nov. 18, 1980, 55-162184

Int. Cl.³ C08K 3/10

U.S. Cl. 524—409

12 Claims



1. An antistatic, transparent film-forming liquid coating composition comprising a thermoplastic or thermosetting binder resin and an electroconductive powder of 5 to 90% by weight based on the total quantity of said binder resin and said powder, said electroconductive powder comprising an antimony-containing tin oxide wherein the antimony content is 0.1 to 20% by weight and having a particle size of 0.4 μm or less, said antimony being present as Sb₂O₃ or Sb₂O₅ or mixtures thereof.

4,431,765

FREE FLOWING POLYBUTADIENE RESIN PARTICLES AND PROCESS FOR THE PREPARATION THEREOF

John M. Doshak, Akron; Mark R. Roodvoets, Munroe Falls, and Adel F. Halasa, Bath, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1980, Ser. No. 217,624

Int. Cl.³ C08K 3/22, 3/36, 7/20

U.S. Cl. 524—426

10 Claims

1. A process for forming free flowing polybutadiene thermoset resins that are free flowing and resistant to cold flow at ambient temperatures comprising the steps of: adding to a high molecular weight polybutadiene, having a 1,2-vinyl content of at least 90 percent, an amount of a filler material up to about 400 parts per 100 parts rubber, said amount being sufficient to render said resin free flowing and resistant to cold flow; mixing said polybutadiene resin with said filler to form a blend; and

chopping said blend into small particles.

4,431,766

CODED POLYMERIC MATERIAL AND METHOD

William F. Christie, Westfield, N.J., and Lawrence A. Smalheiser, Spring Valley, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 5, 1979, Ser. No. 90,967

Int. Cl.³ C08K 3/34

U.S. Cl. 524—443

3 Claims

1. A polymeric material, that can be formed into a final commercial product, which is coded for later identification by an instrumental method of analysis by the presence therein of an added trace amount of a zirconium silicate coding element only which is detectable and identifiable by said instrumental method of analysis in the absence of the step of freshly exposing a surface of the material and without substantial interference from other ingredients in the material.

4,431,767

LUBRICATED AROMATIC POLYESTER COPOLYMER COMPOSITION

Masaki Obora, and Yoshiteru Nagai, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 265,098, May 19, 1981, abandoned. This application Apr. 2, 1982, Ser. No. 364,881

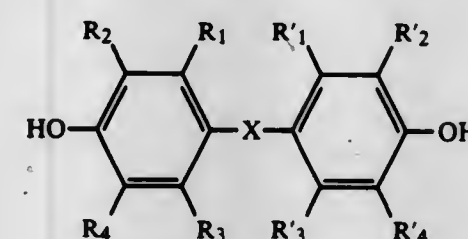
Claims priority, application Japan, Jun. 4, 1980, 55-75740

Int. Cl.³ C08K 5/01

U.S. Cl. 524—490

5 Claims

1. A lubricated aromatic polyester copolymer composition which comprises an aromatic polyester copolymer of a mixture of terephthalic acid and isophthalic acid or derivative thereof at a molar ratio of terephthalic acid group to isophthalic acid group of 9:1 to 1:9 and a bisphenol having the formula



wherein —X— represents —O—, —S—, —SO₂—, —CO—, or either of an alkylene group or an alkylidene group which can be substituted by a hydrocarbon group having one or more carbon atom or a halogen atom or a haloalkyl group; and R₁, R₂, R₃, R₄, R'₁, R'₂, R'₃, and R'₄ respectively represent hydrogen atom, a halogen atom, hydroxyl group or a hydrocarbon group; and a specific lubricant comprising more than 70 wt. % of n-paraffin having carbon atoms of 16 to 40 at a ratio of 0.05 to 5 wt. % based on said polyester copolymer.

4,431,768

AQUEOUS COMPOSITIONS CONTAINING ORGANIC POLYMERS CURABLE AT LOW TEMPERATURES IN THE WET STATE

Ritchie A. Wessling, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1982, Ser. No. 374,828

Int. Cl.³ C08J 9/00; C08L 1/00, 41/00

U.S. Cl. 524—543

15 Claims

1. An aqueous mixture of a low temperature curable, organic polymeric composition comprising (A) an organic polymer having a bound latent source of thiolate ions and bound cationic onium groups which are subject to displacement reactions with a thiolate ion, or a combination of (B) an organic polymer having a latent source of thiolate ions bound to the polymer and (C) an organic polymer having bound cationic onium groups which are subject to displacement reactions with a thiolate ion; said organic polymer (A) and at least one of or-

ganic polymers (B) and (C) having a sufficient amount of the bound onium groups to provide dispersion stability or cause the polymer to be water-soluble.

4,431,769

BINDER COMPOSITION FOR PAPER-COATING MATERIALS

Eiichi Yoshida, Tokyo; Susumu Tago, Kanagawa, and Kunio Imamura, Saitama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,464

Claims priority, application Japan, Mar. 31, 1981, 56-46438; Mar. 31, 1981, 56-46439; Apr. 1, 1981, 56-47167; Apr. 1, 1981, 56-47168

Int. Cl.³ C08L 39/00

U.S. Cl. 524—555

8 Claims

1. A binder composition for paper-coating materials, comprising an aqueous solution of one or more copolymers of (A) 50 to 95 wt % of acryl- or methacrylamide and (B) 5 to 50 wt % of at least one acrylic- or methacrylic acid derivative represented by the formulae (I), (II) and (III):



wherein R₁ and R₂ each represents a hydrogen atom and methyl group; R₃ represents a C₁₋₄ alkyl group; a C₁₋₄ hydroxyalkyl group having 1 to 3 hydroxy group one of which may be replaced by a halogen atom or may form an ether bond with a C₁₋₄ alkyl group or a C₁₋₄ hydroxyalkyl group; or a cyclic ether by dehydration with an adjacent hydroxy group; —CH₂C(H₂O)_nR₄; —CH₂CH₂N(R₅,R₆) and —CH₂CH₂N⁺(R₅,R₆,R₇)Z⁻; R₄ represents a hydrogen atom or a methyl group; R₅, R₆ and R₇ each represents a C₁₋₂ alkyl group; Z represents hydroxy ion or a halogen ion; and n is an integer of 2 to 25.

4,431,770

WHOLLY AROMATIC POLYESTER COMPRISING 4-OXY-4'-CARBOXYBIPHENYL MOIETY WHICH IS CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE

Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 402,882, Jul. 29, 1982, abandoned. This application May 2, 1983, Ser. No. 490,648

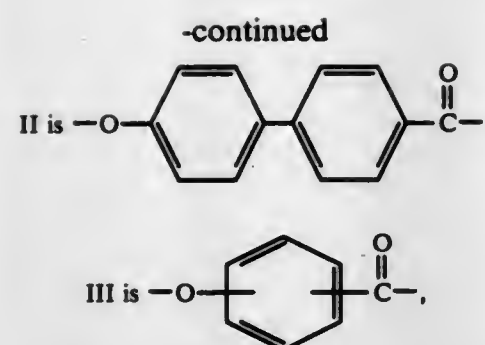
Int. Cl.³ C08G 63/06, 63/60

U.S. Cl. 524—599

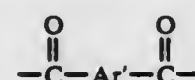
51 Claims

1. A melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase at a temperature below 350° C. consisting essentially of moieties I and II and optionally also including moiety III and/or moieties IV and V which may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:





wherein the bonds illustrated are meta and/or para disposed, IV is a dioxyaryl moiety of the formula —O—Ar—O— where Ar is a divalent radical comprising at least one aromatic ring, and V is a dicarboxyaryl moiety of the formula



where Ar' is a divalent radical comprising at least one aromatic ring, and with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures of the foregoing, and wherein moiety I is present in said wholly aromatic polyester in a concentration of approximately 4 to 65 mole percent, moiety II is present in a concentration of 20 to 65 mole percent, moiety III is present in a concentration of 0 to approximately 65 mole percent, and moiety IV is present in a concentration of 0 to approximately 25 mole percent, with the proviso that the total molar concentration of moieties I and II in said wholly aromatic polyester is approximately 50 to 100 mole percent.

4,431,771

POLYMERIZATION OF SILICONE POLYMER-FILLER MIXTURES AS POWDERS

James R. Falender, Sanford, and John C. Saam, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1983, Ser. No. 474,920
Int. Cl.³ C08L 83/04

U.S. Cl. 524—863 22 Claims

1. A method of producing a silicone polymer-filler mixture in powdered form comprising

- (A) combining
(i) 100 parts by weight of a polydiorganosiloxane oligomer of the formula



wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl and x is from 3 to 100 inclusive;

- (ii) sufficient reinforcing filler, said filler being acidic or neutral, to yield a powder when (i) and (ii) are mixed together; and
(iii) a catalytic amount of a catalyst selected from the group consisting of
(a) sulfuric acid or a sulfonic acid of the formula XSO_3H , wherein X is selected from the group consisting of halogen, alkyl, aryl, alkoxy, and alkaryl radicals,
(b) perfluorinated alkane sulfonic acid, and
(c) a combination of quaternary ammonium carboxylate and carboxylic acid,
to yield a powdery mixture,
(B) polymerizing the oligomer while maintaining the mixture in a powdery state, and
(C) inactivating the catalyst to yield a storage stable silicone

polymer-filler mixture in the powdery state in which (i) has increased in molecular weight.

4,431,772

VINYL CHLORIDE RESIN COMPOSITION

Takayuki Katto; Masanori Oota; Katsumi Suzuki, and Yoshikatsu Satake, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 389,159
Claims priority, application Japan, Jun. 23, 1981, 56-96862
Int. Cl.³ C08L 27/06, 33/12, 51/04

U.S. Cl. 525—80 18 Claims

1. A vinyl chloride resin composition with improved impact resistance and stress-whitening resistance consisting essentially of:

- (A) 60 to 98% of a vinyl chloride resin; and
(B) 2 to 40% of a graft copolymer, said graft copolymer having been obtained by adding and polymerizing, in one or more stages, 15 to 30 parts of a monomer mixture of an alkyl methacrylate, an aromatic vinyl monomer, and optionally an unsaturated nitrile containing a crosslinking agent in a quantity of 0 to 10% based on the monomer mixture including the crosslinking agent in the presence of a latex comprising 70 to 85 parts of a crosslinked rubber polymer having a degree of swelling of not greater than 7 and a particle size of 600 to 3,000 Å, the sum of the quantities of said monomer mixture and said rubber polymer amounting to 100 parts,

said latex of the rubber polymer in turn having been obtained through one or more stages of emulsion polymerization of a mixture monomer, said mixture monomer used in each stage comprising not less than 50% of butadiene, 0.2 to 20% of a crosslinking agent and a remainder of an ethylenically unsaturated monomer copolymerizable with butadiene, said rubber polymer thus having a total content of the cross-linking agent of 1.0 to 10%, all stated percentages and parts being by weight.

4,431,773

ADHESIVE COMPOSITION, FILM LAMINATE AND PRODUCT POUCH OR TUBE THEREFROM

Frederick C. Schwab, Metuchen, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,458
Int. Cl.³ C08L 9/00, 53/00

U.S. Cl. 525—98 5 Claims

1. An adhesive composition comprising a homogenous combination of:

- (a) a styrene-butadiene block copolymer having a monomer parts by weight ratio of from about 1 to 3:3 to 1;
(b) a cyclopentadiene-styrene resin having a monomer parts by weight ratio of from about 1:2 to 1:4 respectively; and
(c) a random terpolymer of (1) 1,3-pentadiene, (2) a monocyclic terpene; and (3) alpha methylstyrene, wherein the monomers are in a parts by weight ratio of from about 3-4:3-4:2.5-3.5 respectively; said combination comprising a parts by weight ratio of from about 7-10 of (a), 0.5-1.5 of (b), and 2-4 of (c).

4,431,774

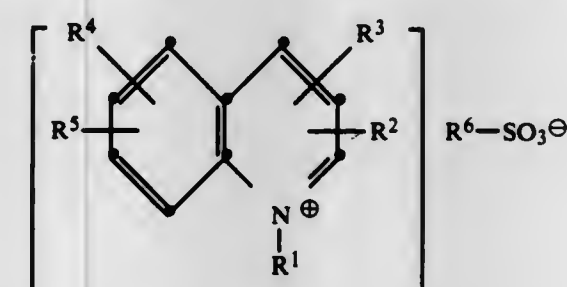
PROCESS FOR THE CURING OF STOVING LACQUERS

Louis Felder-Schraner, deceased, late of Basel, Switzerland (by Rita Gertrud Felder-Schraner, Marcel Charles Felder, heirs); Godwin Berner, Rheinfelden, and Rudolf Kirchmayr, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,278
Claims priority, application Switzerland, Sep. 14, 1981, 5925/81

U.S. Cl. 525—162 9 Claims

1. A process for curing an acid-catalyzed stoving lacquer which comprises incorporating 0.1 to 10%, by weight of lacquer solids, of a latent curing catalyst into said lacquer, said catalyst comprising a quinolinium sulfonate of the formula I



wherein R¹ is C₁-C₈-alkyl, C₁-C₄-alkyl substituted by halogen, hydroxyl or C₁-C₄-alkoxy, or it is C₂-C₈-alkenyl, C₇-C₉-phenylalkyl or C₅-C₈-cycloalkyl, R², R³, R⁴ and R⁵ independently of one another are each hydrogen, C₁-C₄-alkyl, halogen, -CN, -COO(C₁-C₄-alkyl), -CHO, hydroxyl, C₁-C₄-alkoxy, an acyloxy group R⁷COO-, a group R⁸-CH=CH-, C₇-C₉-phenylalkyl or phenyl, R⁶ is C₁-C₁₂-alkyl, C₆-C₁₀-aryl which is unsubstituted or mono- or polysubstituted by C₁-C₁₂-alkyl, C₁-C₄-alkoxy, halogen or a group R⁷CONH-, or it is fluorine, NH₂ or CF₃, and R⁷ and R⁸ independently of one another are each C₁-C₄-alkyl or phenyl; irradiating said catalyst-containing lacquer with shortwave light; and heating said irradiated lacquer.

4,431,775

PROCESS FOR VULCANIZING RUBBER AT A LOW TEMPERATURE

Isamu Maeda, and Masashi Aoshima, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 188,613, Sep. 19, 1980, Pat. No. 4,310,443, which is a division of Ser. No. 33,696, Apr. 26, 1979, Pat. No. 4,248,987, which is a division of Ser. No. 814,918, Jul. 12, 1977, Pat. No. 4,166,892, which is a continuation of Ser. No. 655,547, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 429,588, Jan. 2, 1974, abandoned. This application Sep. 23, 1981, Ser. No. 304,959

Claims priority, application Japan, Jan. 12, 1973, 48-6805
Int. Cl.³ C08L 15/02, 23/28, 23/36; C08J 3/24

U.S. Cl. 525—193 13 Claims

1. A process for vulcanizing a non-aqueous rubber base comprising at least one halogen-containing amorphous polymer other than chloroprene rubber, said process comprising vulcanizing said non-aqueous rubber base at a temperature ranging from 5° to 85° C. in the presence of 0.01 to 20 parts by weight of at least one vulcanizing agent selected from the group consisting of an organic hydroperoxide and ketone peroxide per 100 parts by weight of said rubber, and 0.01 to 20 parts by weight of at least one vulcanization activator or accelerator selected from the group consisting of ethylene dimethacrylate, 1,3-butylene dimethacrylate, triethylolpropane trimethacrylate, p-quinone dioxime, and p,p'-dibenzoyl quinone dioxime.

4,431,776

FAST-CURING OLEFIN COPOLYMER RUBBER COMPOSITIONS

Wolfgang Honsberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 1, 1982, Ser. No. 394,328
Int. Cl.³ C08L 23/34, 23/16; C08J 3/24

U.S. Cl. 525—194 16 Claims

1. An elastomeric composition comprising an ethylene, propylene, nonconjugated diene copolymer rubber; a sulfur curative for the copolymer rubber; about 5-15 parts by weight per 100 parts copolymer rubber of a chlorosulfonated polyolefin which contains 20-50 weight percent chlorine and 0.2-1.5 weight percent sulfur; and about 0.25-1 parts by weight per 100 parts copolymer rubber of a diamine-generating curing agent.

4,431,777

BLOCK COPOLYMERS OF DIENE HAVING THEIR TERMINAL END BLOCKS OF A RANDOM COPOLYMER OF STYRENE OR ALKYLSTYRENE AND AN ALPHA-METHYLSTYRENE

Lu H. Tung, and Grace Y. Lo, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 288,622, Jul. 30, 1981, abandoned, which is a continuation of Ser. No. 169,575, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 95,696, Nov. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 12,539, Feb. 15, 1979, abandoned. This application Nov. 17, 1982, Ser. No. 442,337
Int. Cl.³ C08F 297/04

U.S. Cl. 525—314 12 Claims

1. A method for the preparation of a block copolymer having the configuration AB(BA)_n, wherein n is an integer of from 1 to 3 inclusive; A represents a block which is a random copolymer of an alkenyl aromatic monomer and an α-methylstyrene monomer, wherein the mole ratio of alkenyl aromatic monomer to α-methylstyrene monomer ranges from 1:0.5 to 1:2.5; B represents a polydiene selected from a group consisting of 1,3-butadiene, isoprene and mixtures thereof where the polydiene contains not over 25 mole percent 1,2 vinyl groups, the polydiene blocks having polymerized therein from 0 to 10 weight percent of a monovinyl aromatic compound, the polydiene blocks being 2 to 98 weight percent and the alkenyl aromatic monomer α-methylstyrene blocks being from 98 to 2 weight percent of the polymer, the steps of the method comprising polymerizing the diene monomer in a hydrocarbon solvent, and optionally in the presence of the α-methylstyrene monomer, employing a multifunctional lithium polymerization initiator in the absence of oxygen and moisture at a temperature of from about 40° to 120° C. to provide a living diene polymer block of desired molecular weight dissolved in the hydrocarbon solvent, adding a polar solvent to the hydrocarbon solvent containing the living diene polymer and the α-methylstyrene monomer, adding α-methylstyrene monomer if not already present, and then adding continuously the alkenyl aromatic monomer at a rate whereby a random alkenyl aromatic monomer-α-methylstyrene monomer polymer blocks are polymerized and chemically attached to the polydiene block.

4,431,778

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 233,438, Feb. 11, 1981, Pat. No. 4,343,712, which is a continuation-in-part of Ser. No. 75,635, Sep. 14, 1979, abandoned. This application Apr. 29, 1982, Ser. No. 372,880
Int. Cl.³ C08F 8/00

U.S. Cl. 525—328.5 5 Claims

1. A copolymer of acrylamide-styrene sulfonic acid or the sodium, potassium or ammonium salt thereof, alkoxylated with

a material selected from the group consisting of ethylene oxide or a mixture of ethylene oxide and propylene oxide.

4,431,779 POLYETHERIMIDE-POLYPHENYLENE ETHER BLENDS

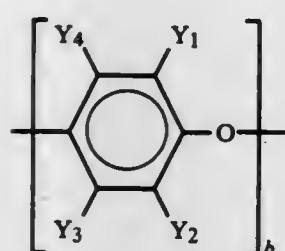
Dwain M. White, Schenectady, and Robert O. Matthews, Voorheesville, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 2, 1982, Ser. No. 364,903
Int. Cl.³ C08L 71/04, 79/08

U.S. Cl. 525—397

8 Claims

1. A composition comprising a blend of (a) a polyphenylene ether and (b) polyetherimide wherein the polyphenylene ether consists essentially of the structural formula:



wherein the oxygen ether atom of one structural unit is connected to the benzene nucleus of the next adjoining unit, b is a positive integer and is at least 50 and Y₁, Y₂, Y₃ and Y₄, which may be the same or different, are nonvalent substituents selected from the group consisting of hydrogen, halogen, hydrocarbon radicals, halohydrocarbon radicals having at least two carbon atoms between the halogen atom and the benzene nucleus, hydrocarboxy radicals and halohydrocarboxy radicals having at least two carbon atoms between the halogen atom and the benzene nucleus.

4,431,780 LOW SOLVENT, WATER-DILUTABLE BINDERS FOR AIR DRYING COATING COMPOSITIONS

Gert Dworak, Wolfgang Daimer, and Heinrich Lackner, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Wernsdorf, Austria

Filed May 25, 1982, Ser. No. 381,854

Claims priority, application Austria, May 29, 1981, 2403/81
Int. Cl.³ C08G 63/76

U.S. Cl. 525—444.5

4 Claims

1. Low solvent air drying binders for air drying coating compositions which are water dilutable upon partial or total salt formation with ammonia or an amine and have an oil length of from 30 to 60% and an intrinsic viscosity of between 10 and 15 ml/g, comprising the partial condensation at elevated temperature of

(A) 30–70% by weight of a film forming fatty acid modified alkyd resin intermediate with an acid value of between 30 and 200 mg KOH/g, an intrinsic viscosity λ_A of from 4.5 to 8 ml/g and an oil length of from 5 to 60%, with

(B) 70–30% by weight of a film forming fatty acid modified alkyd resin intermediate with an acid value of below 5 mg KOH/g, a hydroxyl value of from 50 to 300 mg KOH/g, an intrinsic viscosity λ_B of from 8 to 12 ml/g and an oil length of from 5 to 60%,

the ratio between the intrinsic viscosities λ_B/λ_A lying between 1.4 to 2.7.

4,431,781 PAINT BINDERS INCLUDING EPOXY RESINS MODIFIED TO CONTAIN OXAZOLIDINE GROUPS AND PROCESS FOR PRODUCING SAME

Willibald Paar, Graz, Austria, assignor to Vianova Kunstharz, A.G., Wernsdorf, Austria

Filed Oct. 12, 1982, Ser. No. 433,984

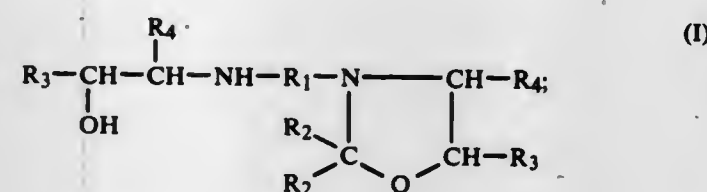
Claims priority, application Austria, Oct. 12, 1981, 4364/81; Sep. 1, 1982, 3273/82

Int. Cl.³ C08G 59/64

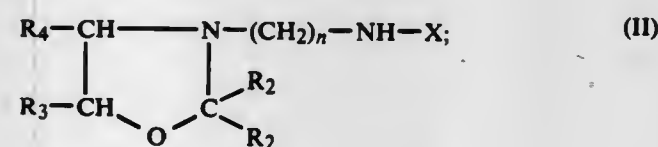
U.S. Cl. 525—502

14 Claims

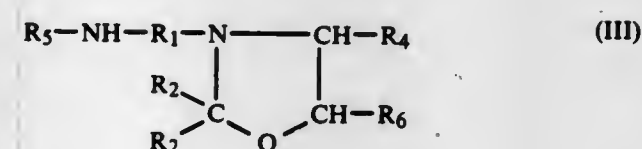
1. Paint binders, water-soluble upon total or partial neutralization with inorganic and/or organic acids, which are the reaction products of a compound having at least two 1,2-epoxy groups per molecule with a secondary amine of the general formula



or



or



and mixtures thereof, wherein

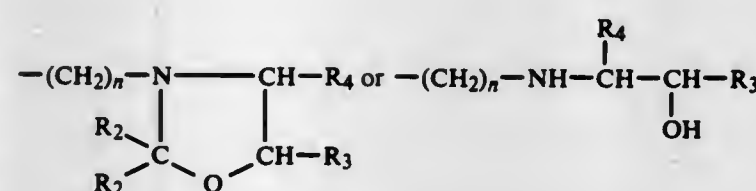
R₁ is a straight chain or branched chain or cyclic alkylene radical with from 2 to 12 C-atoms or an aralkylene radical, R₂ is a straight chain or branched chain alkyl radical with from 1 to 4 C-atoms or an aryl group or a hydrogen atom, or both R₂ groups jointly are ring-forming alkylene radicals optionally substituted with alkyl, aryl, or alkoxy radicals,

R₃ is a saturated or unsaturated aliphatic or cycloaliphatic or aromatic hydrocarbon radical, optionally carrying ether or ester linkages,

R₄ is H or CH₃—,

n is 2–4,

X is either



R₅ is a radical after reaction with an active hydrogen atom of an acrylic or methacrylic monomer, monofunctional with regard to the double bond, and

R₆ is a hydrogen atom or an alkyl radical,

and with a saturated and/or unsaturated carboxylic acid, the quantity of basic compounds being chosen in order that the end product has a theoretical amine value of at least 35 mg KOH/g.

4,431,782 PROCESS FOR THE PREPARATION OF RADIATION-CURABLE, WATER-THINNABLE VINYL ESTER RESINS

Robert F. Harris, and Dwight K. Hoffman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 286,739, Jul. 27, 1981, abandoned. This application Jan. 7, 1983, Ser. No. 456,225
Int. Cl.³ C08F 283/00

U.S. Cl. 525—531

16 Claims

1. A process for preparing sulfonium-stabilized, water-compatible, radiation-curable vinyl ester compounds wherein epoxy compounds having on the average at least one pendant or terminal 1,2-epoxy group per molecule are reacted with a mercaptan and with an unsaturated monocarboxylic acid to form, on the average, vinyl ester compounds containing sulfide moieties after which said sulfide moieties are reacted with an alkylene oxide and a protonic acid to form sulfonium moieties of said vinyl ester compounds.

4,431,783 VINYL CHLORIDE POLYMERIZATION IN REACTOR COATED WITH BUILD-UP SUPPRESSANT PRODUCT

Robert W. Walker, London, and John Stuart-Webb, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 26, 1981, Ser. No. 315,265

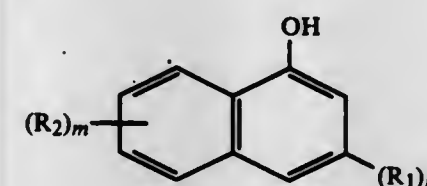
Claims priority, application United Kingdom, Oct. 31, 1980, 8035121

Int. Cl.³ C08F 2/20

U.S. Cl. 526—62

10 Claims

1. A process for the polymerisation of vinyl chloride in aqueous suspension wherein the polymerisation is carried out in a polymerisation reactor having adherently deposited on internal surfaces thereof a build-up suppressant coating comprising a product having build-up suppressant activity which is formed by the condensation of formaldehyde and an effective 1-naphthol of formula



wherein n is 0 or 1; m is 0, 1, 2 or 3; and R₁ and R₂ which may be the same or different are selected from Cl, lower alkyl (1–5 carbon atoms), hydroxyl, and lower alkoxy (1–5 carbon atoms).

4,431,784 PROCESS FOR THE PREPARATION OF POLYMERS OF α-OLEFINS AT HIGH TEMPERATURES

Michael A. Hamilton, and Vaclav G. Zboril, both of Kingston, Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Filed Dec. 30, 1981, Ser. No. 335,633

Int. Cl.³ C08F 4/64, 10/02

U.S. Cl. 526—116

19 Claims

1. In a solution process for the preparation of high molecular weight polymers of α-olefins selected from the group consisting of homopolymers of ethylene and copolymers of ethylene and C₃–C₁₂ α-olefins, said process comprising feeding monomer selected from the group consisting of ethylene and mixtures of ethylene and at least one C₃–C₁₂ α-olefin, a coordination catalyst and inert hydrocarbon solvent to a reactor, polymerizing said monomer at a temperature in the range of 105°–320° C. and recovering the polymer so obtained, the improvement wherein said coordination catalyst is obtained by combining a first component with a second component, said first component being obtained by admixing a solution of an

organoaluminum compound in inert hydrocarbon solvent with a solution of titanium tetrahalide in inert hydrocarbon solvent at a temperature of less than 30° C. and heating the resultant admixture to a temperature of 150°–300° C. for a period of from 10 seconds to 10 minutes, said organoaluminum compound being of the formula AlR_nX_{3–n} and being admixed with the titanium compound so that the atomic ratio of aluminum to titanium in the first component is in the range 0.2–2.0, said second component being a solution of organoaluminum compound in inert hydrocarbon solvent in which organoaluminum compound is, independently, also of the formula AlR_nX_{3–n}, said first and second components being combined so that the atomic ratio of aluminum in the second component to titanium is in the range 0.9 to 3; where R is alkyl, cycloalkyl, aryl or alkyl-substituted aryl and has 1–20 carbon atoms, n=1, 1.5, 2 or 3 and X is halogen.

4,431,785 ION EXCHANGE RESINS

Thomas J. Howell, Langhorne, Pa.; William G. Paterson, Wickham, and Ian Pattison, Washington, both of England, assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 904,178, May 8, 1978, Pat. No. 4,246,386, which is a continuation-in-part of Ser. No. 797,716, May 17, 1977, abandoned. This application Jan. 16, 1981, Ser. No. 225,509

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ C08F 2/20, 212/08

U.S. Cl. 526—207

5 Claims

1. In the process of preparing hard, crosslinked, discrete copolymer beads by the free-radical polymerization in an aqueous dispersion of a monomer comprised of a major proportion of (a) monovinyl monomer and a minor proportion of (b) crosslinking monomer having at least two active vinyl groups, wherein the improvement comprises conducting the polymerization reaction at a temperature within the range of about 30° to 95° C. with a modifier in admixture with the aforesaid monomer mixture, the modifier being present in a concentration of from about 0.01 to about 10 millimoles per mole of monomers, in the monomer mixture (a) and (b), said modifier being an organic compound containing allylic unsaturation, said organic compound being capable of moderating rate of polymerization, and wherein the modifier is selected from the group consisting of bicycloheptadiene, dimethyloctatriene, terpenes, 2-methyl styrene, alpha-methyl styrene dimer, limonene, cyclohexadiene, methyl cyclohexadiene, camphene, geraniol, farnesol, 2-norbornene, cyclododecatriene, cyclooctadiene, cyclododecene, allyl benzene and 4-vinyl-1-cyclohexene.

5. A copolymer bead prepared by the process of claim 1.

4,431,786 NOVEL FLUORODIOXOLES AND FLUORODIOXOLE POLYMERS

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

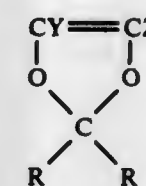
Filed May 6, 1982, Ser. No. 375,468

Int. Cl.³ C08F 14/18

U.S. Cl. 526—247

9 Claims

1. A polymer of a fluorodioxole having the formula



wherein Y is hydrogen or chlorine; Z is hydrogen, fluorine, or chlorine, or R is fluorine or the trifluoromethyl group; said

polymer being a homopolymer, a copolymer with tetrafluoroethylene, or a terpolymer with tetrafluoroethylene and vinylidene fluoride; with the proviso that when at least one of Y and Z is chlorine, the polymer is not a homopolymer.

4,431,787

ANAEROBIC ADHESIVES

Gerhardt P. Werber, Naperville, Ill., assignor to Eschem Inc., Chicago, Ill.

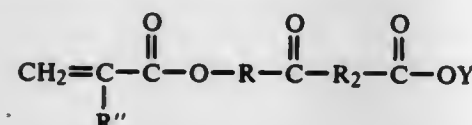
Continuation-in-part of Ser. No. 100,244, Dec. 4, 1979, abandoned, which is a division of Ser. No. 647,217, Jan. 7, 1976, Pat. No. 4,209,604. This application May 20, 1981, Ser. No. 265,539

Int. Cl.³ C08F 2/00, 30/04, 18/00

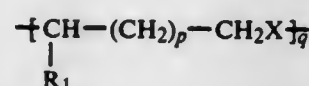
U.S. Cl. 526—240

6 Claims

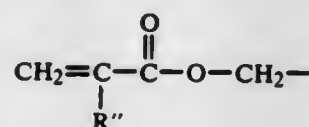
1. An anaerobic adhesive composition, comprising: an acrylic monomer having the general formula:



wherein R' is a member selected from the group consisting of hydrogen, chlorine, methyl and ethyl radicals; R₂ is an unsaturated divalent alkyl or substituted alkyl group of from 2-4 carbon atoms, or an unsaturated divalent carbocyclic aliphatic ring of from 4-9 carbon atoms; R is



where p is an integer of from 0 to 2, q is an integer of from 1 to 3, R₁ is a member selected from the group consisting of hydrogen, methyl, ethyl, chloromethyl, methylol, phenyl, methoxyphenyl, methoxybutyl, methoxyallyl and



radicals where R' is as previously defined, and X is a member selected from the group consisting of —O—, —NH— and —NR'— where R' is a benzyl radical or an alkyl group of from 1-4 carbon atoms; and Y is hydrogen, a metal, an amine ion, an ammonium ion, a guanidinium ion, or a short length carbon chain; said acrylic monomer being in combination with a metal activatable polymerization catalyst and a polymerization inhibitor.

4,431,788

PROCESS FOR PRODUCING STARCH/POLYOLEFIN POLYMER COMPOSITIONS

Walter Kaminsky, Pinneberg-Waldenau, Fed. Rep. of Germany, assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 234,291, Feb. 17, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 440,789

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007433

Int. Cl.³ C08K 5/16; C08F 10/00

U.S. Cl. 527—313

24 Claims

1. A process for producing starch/polyolefin polymer compositions by polymerization of at least one olefin in an inert, liquid or gaseous reaction medium at a temperature from —50° C. to 145° C. in the presence of a halogen-free Ziegler-Natta catalyst by

(a) contacting starch first with an aluminum trialkyl compound; and then with a halogen-free transition metal compound of the general formula (cyclopentadienyl)_nMR_m

wherein M is a metal selected from the group consisting of Cr, Ti, V or Zr; R is a lower hydrocarbon radical having from 1 to 6 carbon atoms or acetyl acetate; and n and m are integers from 0 to 4 and the sum of n+m is sufficient to saturate M, wherein the molar ratio of said aluminum trialkyl compound to said halogen-free transition metal compound is from 2:1 to 1000:1; followed by

(b) contacting said at least one olefin with the mixture of step (a).

4,431,789

NOVEL ORGANOPOLYSILOXANE HAVING ALCOHOLIC HYDROXY GROUPS AND A METHOD FOR THE PREPARATION THEREOF

Satoshi Okazaki, and Kenichi Isobe, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,508

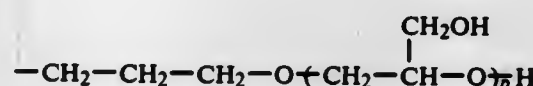
Claims priority, application Japan, Mar. 13, 1981, 56-36134

Int. Cl.³ C08G 77/06, 77/40

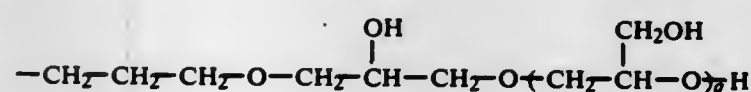
U.S. Cl. 528—15

5 Claims

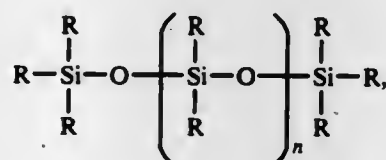
1. A method for the preparation of an organopolysiloxane having at least one polyhydric group expressed by the formula



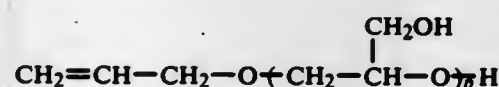
or



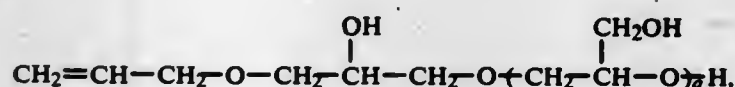
in which p and q are each a positive integer, and bonded to the silicon atom which comprises heating a reaction mixture containing an organohydrogenopolysiloxane represented by the general formula



in which n is a positive integer and R is a hydrogen atom, a hydroxy group or a monovalent hydrocarbon group directly bonded to the silicon atom, at least one of the groups denoted by R being a hydrogen atom, and a polyglycerol compound having an aliphatically unsaturated linkage in a molecule expressed by the formula



or



in which p and q are each a positive integer, in the presence of a catalytic amount of a Group VIII noble metal in the Periodic Table and wherein the reaction mixture is diluted with isopropyl alcohol.

4,431,790
CURING AGENTS FOR POLYURETHANE AND PROCESS USING SAME

Arihiko Umeda, Tokyo; Seichi Ota, Ichikawa, and Yoshiyuki Iwase, Tokyo, all of Japan, assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,689

Claims priority, application Japan, Aug. 12, 1980, 55-109806

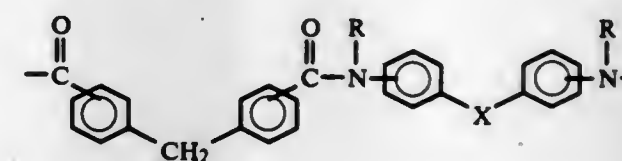
Int. Cl.³ C08G 18/32, 18/62; C09K 3/00

U.S. Cl. 528—73

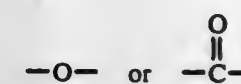
17 Claims

1. Curing agents for polyurethane preparation comprising reaction products of (1) a polyoxyalkylene polyamine with (2) a derivative of acrylic acid or an alpha-substituted acrylic acid having a terminal hydroxyl group; or (3) a compound having an oxy ring and reaction products of (1) and (2), above, with (3) and reaction products of (1) and (3), above, with (2).

17. A process for preparing polyurethanes comprising condensing a polyisocyanate and a hydroxyl-containing compound in the presence of from 5 to 100 weight percent based on said compound of at least one curing agent according to claim 1.



wherein X represents a covalent bond or X represents



and wherein R represents a mixture of —CH₃ and —CH₂—C≡CH in varying percentages.

4,431,793

AROMATIC POLYCARBONATE END CAPPED WITH BRANCHED CHAIN ALKYL ACYL HALIDE OR ACID

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

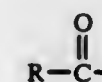
Filed Jun. 9, 1982, Ser. No. 386,750

Int. Cl.³ C08G 63/62

U.S. Cl. 528—198

27 Claims

1. A composition comprising an aromatic polycarbonate resin derived from a dihydric phenol and a carbonate precursor chain terminated with a residue having the formula



wherein R is a branched alkyl of from four to seven carbon atoms, inclusive and X is halogen or hydroxy.

4,431,794

CONTINUOUS PREPARATION OF OXYMETHYLENE POLYMERS

Juergen Sadlowski, Ludwigshafen; Manfred Walter, Speyer, and Klaus Hinselmann, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,614

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147309

Int. Cl.³ C08G 2/16

U.S. Cl. 528—232

7 Claims

1. A continuous process for the preparation of an oxymethylene polymer by mass polymerization of the monomer with the aid of a conventional initiator, in the presence or absence of a regulator, wherein during the polymerization the polymerization mixture is present in fluid form.



—SO—, —SO₂, and —S— radicals and R' is a tetravalent aliphatic or aromatic hydrocarbon radical.

4,431,792

THERMOSET-THERMOPLASTIC AROMATIC POLYAMIDE CONTAINING N-PROPYL GROUPS

Terry L. St. Clair, Poquoson; James F. Wolfe, Blacksburg, both of Va., and Thomas D. Greenwood, Bristol, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 199,768, Oct. 23, 1980, Pat. No. 4,395,540.

This application Dec. 7, 1982, Ser. No. 447,371

Int. Cl.³ C08G 69/32

U.S. Cl. 528—183

4 Claims

1. A solvent stable thermosetting thermoplastic polyamide

by weight of a cyclic carbonate at temperatures between 100° and 250° C. in the presence of 0.001 to 1% by weight, based on the quantity of monomers, of an alkaline catalyst.

4,431,796

SINGLE STAGE PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ORGANO SILICON HALIDE CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 409,008

Int. Cl.³ C08G 73/18

U.S. Cl. 528—336

19 Claims

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises preparing a mixture of (1) at least one aromatic tetraamine containing two groups of amine substituents, said amine substituents in each group being in an ortho position relative to each other, and (2) at least one dicarboxylic acid, and heating the mixture above the melting temperature of the mixture in contact with an organosilicon halide polymerization catalyst.

4,431,797

PREPARATION OF POLY(P-METHYLENEBENZOATE) COPOLYESTERS

Edward E. Paschke, and John A. Donohue, both of DuPage, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,434

Int. Cl.³ C08G 63/06; C25B 3/04

U.S. Cl. 528—361

9 Claims

1. An electrochemical process for preparation of polymers of p-hydroxymethylbenzoic acid which process comprises: (a) electrochemical reduction in aqueous solution of terephthalic acid to ammonium salt of p-hydroxymethylbenzoic acid, (b) hydrogenation of said aqueous solution to remove 4-carboxybenzaldehyde, (c) removal of water content of said aqueous solution, (d) decomposition of said ammonium salt of p-hydroxymethylbenzoic acid to p-hydroxymethylbenzoic acid at a temperature within the range of from about 150° C. to about 190° C., (e) polymerization of said p-hydroxymethylbenzoic acid monomer under polymerization conditions in presence of a glycol and a suitable catalyst wherein resulting polymer has an inherent viscosity of at least 0.5 dl/g.

4,431,798

PREPARATION OF POLY(P-METHYLENEBENZOATE) FROM P-HYDROXYMETHYLBENZOIC ACID

Edward E. Paschke, Wheaton, and Steven A. Cereface, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,546

Int. Cl.³ C08G 63/06

U.S. Cl. 528—361

18 Claims

1. A process for the production of a resinous substantially homopolymeric poly(p-methylenebenzoate), which comprises polymerizing p-hydroxymethylbenzoic acid containing no more than about 10% by weight terephthalic acid and no more than about 0.3% by weight total 4-carboxybenzaldehyde and p-toluic acid impurities under polycondensation and melt polymerization conditions in the presence of a suitable catalyst with the proviso that when the total concentration of 4-carboxybenzaldehyde, terephthalic acid and p-toluic acid impurities is more than about 0.6 (wt)%, a glycol is present in a concentration sufficient to theoretically react with substantially all of the carboxyl equivalents of the terephthalic acid impurities.

4,431,799

6'-MODIFIED FORTIMICIN COMPOUNDS

John S. Tadanier, Waukegan, Ill.; Robert Hallas, Kenosha, Wis., and Jerry R. Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,129

Int. Cl.³ A61K 31/71; C07H 17/04

U.S. Cl. 536—16.1

2 Claims

1. The compound 4,6'-di-N-(2,2,2-trichloroethoxycarbonyl)1,2'-di-N-benzoyloxycarbonylfortimicin B.

4,431,800

PROCESS FOR HYDROXYPROPYLATING STARCH

Steven J. Leusner, Lakewood, N.J.; Jay H. Katcher, Dover, Del., and Theodore H. Joseph, Cranbury, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,728

Int. Cl.³ C08B 31/08

U.S. Cl. 536—111

15 Claims

1. A process for making a neutral, hydroxypropylated starch with less than 1 ppm of propylene chlorohydrin comprising: (a) making an aqueous alkali solution in a reaction vessel wherein said alkali solution is effective to maintain a pH in excess of 8.5 after the addition of a hydroxypropylation aid, a catalyst, and starch; (b) dissolving the hydroxypropylation processing aid and the catalyst in said alkali solution; (c) adding between 0.1 and 1.0 parts of starch to each part of water in the catalyst and processing aid containing solution with continuous stirring so as to form a homogenous starch slurry; (d) adding propylene oxide to the homogenous starch slurry; (e) closing the reaction vessel and keeping it at an elevated temperature for an extended period of time so as to hydroxypropylate the starch; (f) opening the reaction vessel and actively aerating the starch slurry until the propylene oxide concentration in the head space above the starch slurry is below 0.1 parts per million; (g) neutralizing the starch with any food grade acid so that the pH of the starch slurry is less than 7; and (h) drying the slurry.

4,431,801

POLYCYCLIC ETHER ANTIBIOTIC

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 285,264, Jul. 20, 1981, Pat. No. 4,361,649.

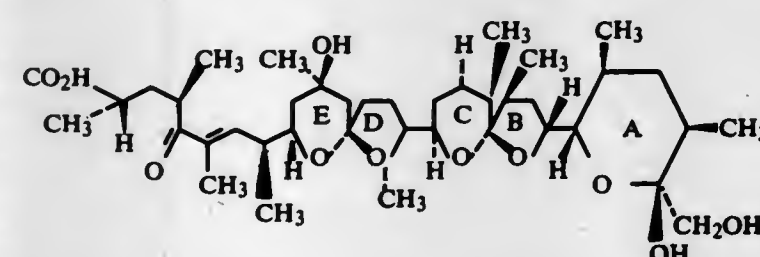
This application Jul. 23, 1982, Ser. No. 401,234

Int. Cl.³ C07H 3/06

U.S. Cl. 536—123

3 Claims

1. The antibiotic of the formula



or the pharmaceutically acceptable salts thereof.

4,431,802

N-HETEROCYCLYL-N-CYANO-N-(HETEROCYCLYLTHIOALKYL)-GUANIDINES

Alan E. Moormann; Barnett S. Pitzele, both of Skokie; Gilbert W. Adelstein, Evanston, and Nancy J. Malek, Skokie, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

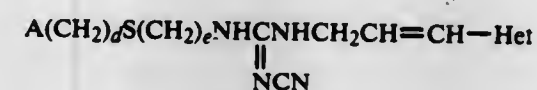
Continuation-in-part of Ser. No. 172,341, Dec. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 101,923, Dec. 16, 1980, Pat. No. 4,239,908. This application Nov. 23, 1981, Ser. No. 324,244

Int. Cl.³ C07D 239/24

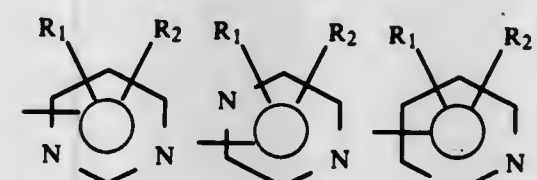
U.S. Cl. 542—416

5 Claims

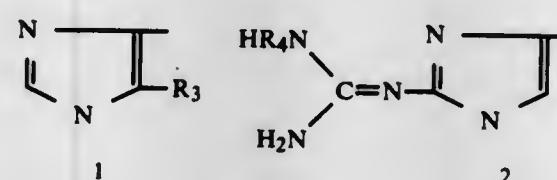
1. A compound of the formula:



or a pharmacologically acceptable salt thereof wherein Het is of the formula:



wherein A is of the formula:



wherein

R₁ and R₂ can be the same or different and each represents hydrogen, halogen, hydroxy, trifluoromethyl, alkoxy containing 1 to 7 carbon atoms
R₃ represents hydrogen, halogen or alkyl containing 1 to 7 carbon atoms;
R₄ represents hydrogen or alkyl containing 1 to 7 carbon atoms d is 0, 1 or 2 and e is 2 or 3 when A is of formula 1 and d is 1 or 2 and e is 2 or 3 when A is of formula 2.

4,431,803

7-EPI 3-EXOMETHYLENECEPHAMS

Stjepan Kukolja, Carmel, and Janice L. Pfell, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

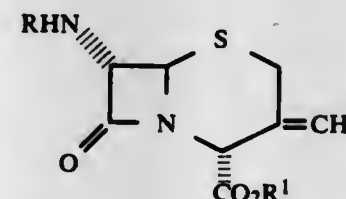
Filed Dec. 21, 1981, Ser. No. 333,156

Int. Cl.³ C07D 501/22; A61K 31/545

U.S. Cl. 544—16

14 Claims

1. A 7-epi-exomethylenecepham of the formula



wherein R is hydrogen or an acyl group conventionally used in the cephalosporin art and derived from a carboxylic acid, and R¹ is hydrogen, a carboxy-protecting group, or a salt-forming cation.

4,431,804

THIAZOLYLACETAMIDO COMPOUNDS

Peter Angehrn, Böckten, and Roland Reiner, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 29, 1982, Ser. No. 344,243

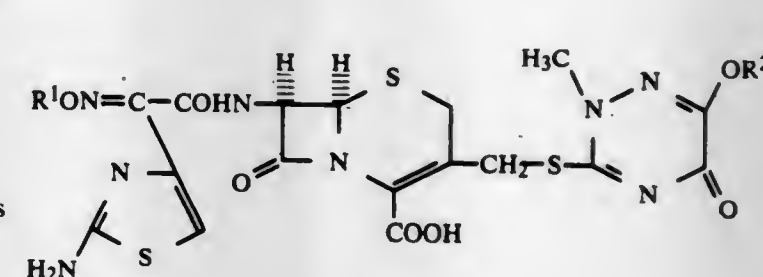
Claims priority, application Switzerland, Feb. 17, 1981, 1030/81

Int. Cl.³ C07D 501/56

U.S. Cl. 544—27

6 Claims

1. A compound of the formula



in which

R¹ is carboxy-lower alkyl and R² is hydrogen, a cation or (with the oxygen atom) a readily hydrolyzable ether group selected from the group consisting of lower alkanoyloxyalkyl, lower alkoxyalkoxyalkyl, a lactonyl group, lower alkoxyethyl and lower alkanoylaminoethyl as well as readily hydrolyzable esters selected from the group consisting of lower alkanoyloxy alkyl, lower alkoxyalkoxyalkyl, lactonyl, lower alkoxyethyl and lower alkanoyl aminomethyl esters and salts of these compounds and hydrates of the compounds of formula I and of their esters and salts.

4,431,805

PYRIDO[2,3-d]-PYRIMIDINES

Carroll G. Temple; John A. Montgomery, and Robert D. Elliott, all of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Continuation-in-part of Ser. No. 305,907, Sep. 25, 1981, abandoned. This application Jan. 11, 1982, Ser. No. 338,542

Int. Cl.³ C07D 471/04; A61K 31/505; C07D 487/04

U.S. Cl. 544—279

1 Claim

1. 2,4-Diaminopyrido[2,3-d]pyrimidine-6-carboxaldehyde.

4,431,806

PROCESS FOR THE PREPARATION OF PIGMENTS OF THE PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDE SERIES, AND THEIR USE

Ernst Splietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst A.G., Frankfurt am Main, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,927

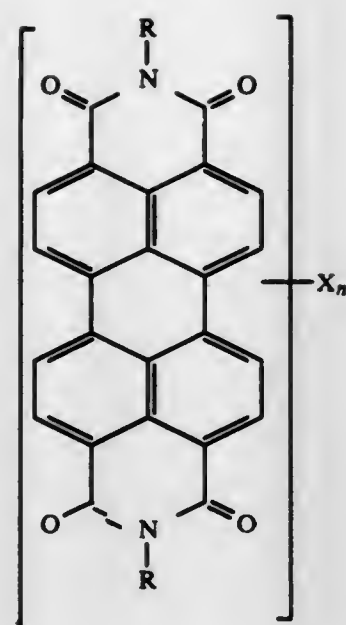
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018006

Int. Cl.³ C07D 471/06; C09B 3/14, 67/00

U.S. Cl. 546—37

7 Claims

1. A process for the preparation of a perylene-3,4,9,10-tetracarboxylic acid diimide pigment of the formula



in which

R is hydrogen or alkyl of from 1 to 4 carbon atoms, X is chlorine and/or bromine and n is a number of from 0 to 4, which comprises converting the corresponding crude pigment to its sulfate, isolating the sulfate, hydrolyzing the sulfate to liberate therefrom the pure pigment, separating off the pure pigment, and dry-milling the pure pigment, in its anhydrous state, with or without one or more solid additives and with subsequent solvent finishing.

4,431,807

4-METHYL-5-(UNSUBSTITUTED AND SUBSTITUTED PHENOXY)-6-METHOXY-8-(AMINOALKYLAMINO)-QUINOLINES

Richard E. Strube, Alexandria, Va., and Maurice P. LaMontagne, Detroit, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

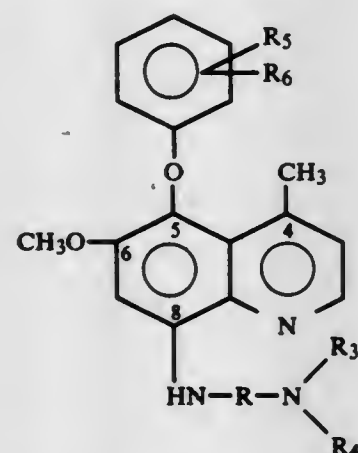
Continuation of Ser. No. 158,798, Jun. 12, 1980, abandoned.

This application Dec. 8, 1981, Ser. No. 328,638

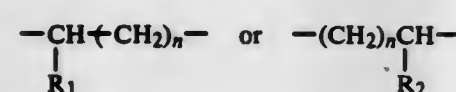
Int. Cl.³ C07D 215/20; A61K 31/47

U.S. Cl. 546—171

1. A compound of the formula:



wherein R is an alkylene group which is



wherein n is 3 or 4, wherein R₁ and R₂ are methyl or ethyl; wherein R₃ is hydrogen and R₄ is hydrogen, wherein R₅ and

R₆ are hydrogen, chloro, bromo, fluoro, trifluoromethyl or methoxy groups and wherein the compound is a free amine or a pharmaceutically acceptable acid amine salt.

4,431,808

TRICYCLIC COMPOUNDS

Miroslav Protiva; Karel Sindelar; Antonin Dlabac, and Jirina Metysova, all of Prague, Czechoslovakia, assignors to SPOFA, spolene podniky pro zdravotnickou výrobu, Prague, Czechoslovakia

Filed Mar. 9, 1982, Ser. No. 356,474

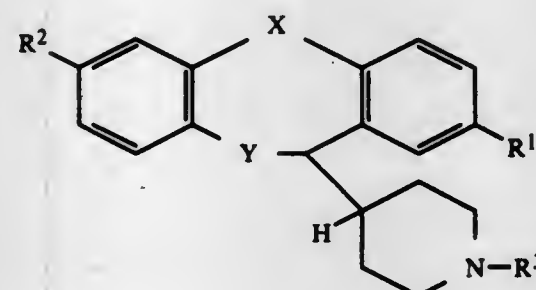
Claims priority, application Czechoslovakia, Mar. 13, 1981, 1841-81

Int. Cl.³ C07D 411/04, 409/04, 407/04

U.S. Cl. 546—197

12 Claims

1. Tricyclic compound of the formula



wherein

- X and Y are selected from the group consisting of oxygen and sulfur,
- R¹ is selected from the group consisting of hydrogen, a halogen atom, an alkyl, alkoxy or alkylthio group of 1-3 carbon atoms, a trifluoromethyl group, and a trifluoromethylthio group,
- R² is selected from the group consisting of hydrogen and fluorine atoms, and
- R³ is selected from the group consisting of hydrogen and a methyl group.

4,431,809

ANTIBIOTIC A-33853 DERIVATIVES

Marvin M. Hoehn, and Karl H. Michel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind. Continuation-in-part of Ser. No. 253,346, Apr. 13, 1981, Pat. No. 4,329,472, which is a division of Ser. No. 123,330, Feb. 21, 1980, Pat. No. 4,293,649. This application May 7, 1982, Ser. No. 375,853

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ C07D 413/12

U.S. Cl. 546—270

3 Claims

1. A compound of the structure

4,431,811

DECAPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Division of Ser. No. 208,324, Nov. 19, 1980, Pat. No. 4,380,668.

This application Mar. 29, 1982, Ser. No. 362,674

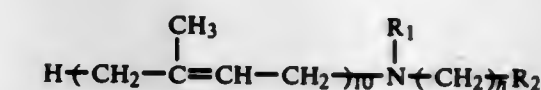
Claims priority, application Japan, Nov. 19, 1979, 54-148821

Int. Cl.³ C07D 213/53; A61K 31/44

U.S. Cl. 546—304

3 Claims

1. A compound selected from the group consisting of



wherein n represents an integer of 0-2, R₁ represents hydrogen atom, a lower alkyl group or decaprenyl group, and R₂ represents a pyridyl group, and pharmaceutically acceptable acid addition salts thereof.

4,431,812

PYRIDINECARBINOLS

Ernst Buschmann; Eberhard Ammermann, both of Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,185

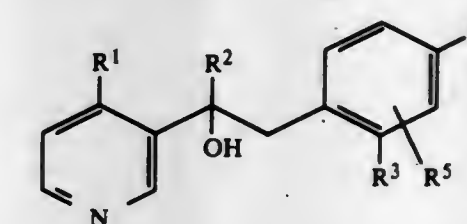
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1981, 3126819

Int. Cl.³ C07D 213/30

U.S. Cl. 546—344

3 Claims

1. A pyridinecarbinol of the formula



where R¹ is hydrogen or alkyl of 1 to 6 carbon atoms, R² is C₁-C₈-alkyl and R³ and R⁴ are chlorine, and R⁵ is hydrogen, and the plant-physiologically tolerated acid addition salts thereof.

4,431,813

PROCESS FOR THE PREPARATION OF 2-MERCAPTOBENZOTHAZOLES

Reinhard Handte, Hofheim am Taunus; Lothar Willms, Unkel, and Ernst Blume, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst A.G., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,445

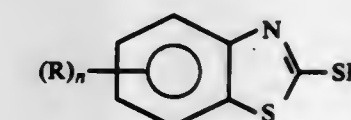
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008225

Int. Cl.³ C07D 277/72

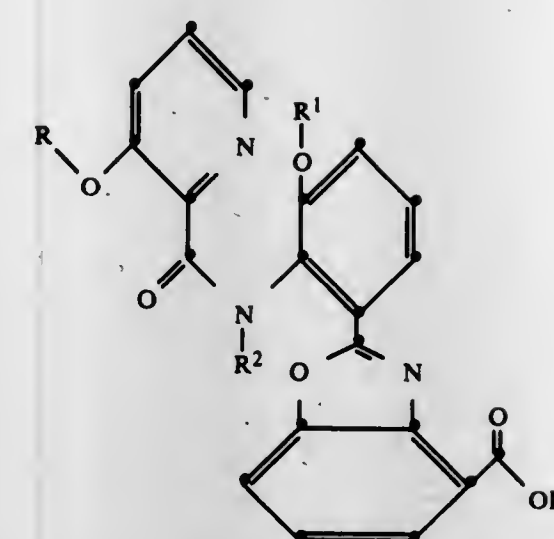
U.S. Cl. 548—165

6 Claims

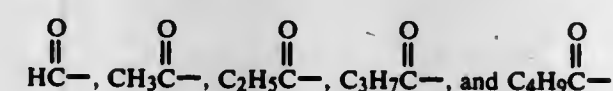
1. A process for the preparation of a 2-mercaptobenzothiazole compound of the formula



wherein R is



wherein R, R¹ and R² are selected from the group consisting of hydrogen,



or a pharmaceutically-acceptable ammonium, alkali metal, and alkaline earth metal salt thereof, with the proviso that only one of R, R¹ and R² can be hydrogen at any one time.

4,431,810

INTERMEDIATES FOR THE PREPARATION OF 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

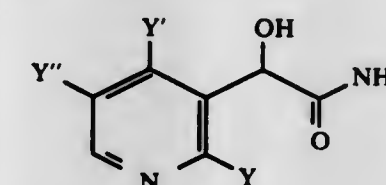
Division of Ser. No. 252,962, Apr. 23, 1981, Pat. No. 4,342,771, which is a continuation-in-part of Ser. No. 222,202, Jun. 2, 1981, Pat. No. 4,367,234, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application May 20, 1982, Ser. No. 380,176

Int. Cl.³ C07D 213/56, 213/55

U.S. Cl. 546—291

7 Claims

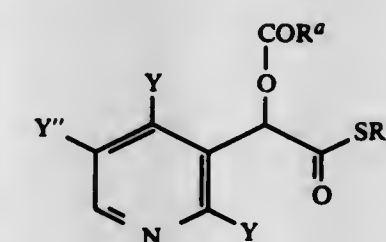
1. A compound of the formula



wherein

Y is hydrogen or (C₁-C₃)alkoxy, Y' is hydrogen or (C₁-C₃)alkyl, and Y'' is hydrogen or halo.

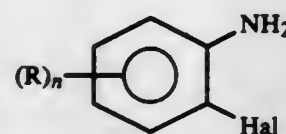
4. A compound of the formula



wherein

Y is hydrogen or (C₁-C₃)alkoxy, Y' is hydrogen or (C₁-C₃)alkyl, Y'' is hydrogen or halo, and R^a and R^b are each independently (C₁-C₃)alkyl.

(C₁-C₄) alkyl, (C₁-C₄) alkoxy,
(C₁-C₄) alkylthio, fluorine, chlorine, bromine,
CF₃, NO₂, or CN, and
n is 0 or 1
which consists essentially of reacting a corresponding 2-halogenoaniline of the formula



wherein Hal is selected from the group consisting of fluorine, chlorine and bromine and R and n are as defined above with an alkali metal xanthate or alkaline earth metal xanthate at a temperature in the range of 100° C. to 170° C. and in the presence of a polar aprotic solvent.

6. The process of claim 1 wherein said xanthate is formed in situ by reaction of carbon disulfide in the presence of a corresponding base selected from the group consisting of alkali metal hydroxide, alkali metal carbonate, alkaline earth metal carbonate, alkali metal bicarbonate and alkaline earth metal bicarbonate.

4,431,814

HETEROCYCLIC COMPOUNDS

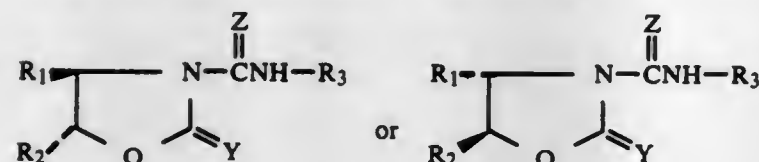
Isao Iwataki, Minoru Kaeriyama, Nobuo Matsui, and Tomio Yamada, all of Kanagawa, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan
Division of Ser. No. 187,412, Sep. 15, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 348,757
Claims priority, application Japan, Oct. 3, 1979, 54-127707; Apr. 18, 1980, 55-50363

Int. Cl.³ C07D 263/26; A61K 31/42

U.S. Cl. 548-230

15 Claims

1. A compound represented by the formula



or racemate thereof wherein

each of Y and Z is oxygen or sulfur,

R₁ is alkyl of one to four carbon atoms,R₂ is thienyl, furyl, phenyl, phenyl having one alkoxy, or phenyl having one or two substituents selected from a group consisting of alkyl, halogen, haloalkyl, nitro and methylenedioxy, andR₃ is a five to seven membered cycloalkyl with or without one or two methyl, cyclohexenyl or tetrahydropyranyl.

4,431,815

1-[3-(2,4-DICHLOROPHENYL)PROPYL]IMIDAZOLE AND SALTS THEREOF

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 67,406, Aug. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 8,101, Jan. 31, 1979, abandoned, and Ser. No. 952,774, Oct. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 936,406, Aug. 24, 1978, Pat. No. 4,284,641. This application Feb. 1, 1983, Ser. No. 462,769

Int. Cl.³ C07D 233/56

U.S. Cl. 548-335

2 Claims

1. 1-[3-(2,4-Dichlorophenyl)propyl]imidazole, or a pharmaceutically acceptable acid addition salt thereof.

4,431,816
2,3-DIHYDRO-2-(IMIDAZOLYMETHYL)BENZO(B)THIOPHENES

Dinanath F. Rane, Emerson; John J. Wright, Cedar Grove, and Russell E. Pike, Stanhope, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

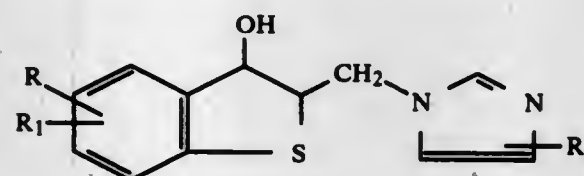
Continuation-in-part of Ser. No. 215,948, Dec. 12, 1980, Pat. No. 4,352,808. This application Mar. 3, 1982, Ser. No. 354,463
Claims priority, application European Pat. Off., Dec. 4, 1981, 81110131

Int. Cl.³ C07D 403/00; A01N 43/50, 43/56

U.S. Cl. 548-336

1 Claim

1. Compounds represented by the formula



wherein

R and R₁ are independently hydrogen, lower alkyl groups, or halogen; and
R₃ is hydrogen or lower alkyl.

4,431,817

FLUORINATED IMIDAZOLYL ALKYLAMINES

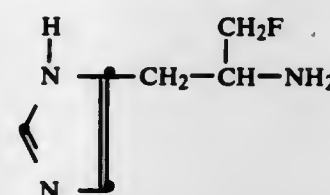
Arthur A. Patchett, Cranford, and Janos Kollonitsch, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 886,602, Mar. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 802,350, Jun. 1, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 140,376

Int. Cl.³ C07D 233/64

U.S. Cl. 548-342

1 Claim

1. A compound of the formula



a pharmaceutically acceptable salt or individual optical isomer thereof.

4,431,818

PROCESS OF PREPARING IMIDAZOLE 4(5) DITHIOCARBOXYLIC ACID

Natsuo Sawa, Tadotsu, and Tokuchi Saeki, Onohara, both of Japan, assignors to Shikoku Chemical Corporation, Kagawa, Japan

Division of Ser. No. 370,354, Apr. 21, 1982, Pat. No. 4,394,511.
This application Jan. 24, 1983, Ser. No. 460,663

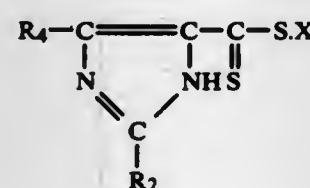
Claims priority, application Japan, Apr. 23, 1981, 56-62240

Int. Cl.³ C07D 233/90

U.S. Cl. 548-343

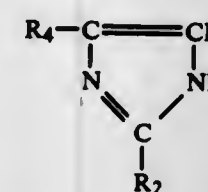
5 Claims

1. A process for the preparation of imidazole compounds represented by the following general formula:



wherein R₂ stands for a hydrogen atom or a monovalent hydrocarbon group having up to 20 carbon atoms, R₄ stands for a hydrogen atom or an alkyl group having up to 4 carbon

atoms, and X stands for a hydrogen atom or an alkali metal atom, which comprises reacting an imidazole compound represented by the following general formula:



wherein R₂ and R₄ are as defined above, with carbon disulfide and an alkali metal hydroxide in the presence of a solvent, and if necessary, acidifying the obtained imidazole compound.

4,431,819

3-(PYRROLO AND 3-INDOLYL)-3-DIPHENYLAMINO SUBSTITUTED PHTHALIDES

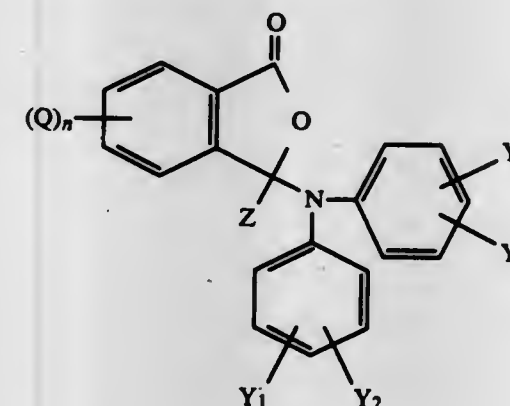
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of Ser. No. 963,955, Nov. 27, 1978, Pat. No. 4,251,092, which is a continuation-in-part of Ser. No. 821,926, Aug. 4, 1977, Pat. No. 4,182,714, which is a continuation-in-part of Ser. No. 755,376, Dec. 29, 1976, abandoned. This application Apr. 28, 1980, Ser. No. 144,769

Int. Cl.³ C07D 405/04, 405/14, 307/83

U.S. Cl. 548-463

31 Claims

1. A compound having the formula



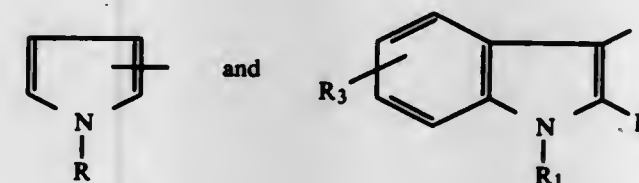
wherein:

Q is selected from the group consisting of di-lower-alkylamino, nitro, halo and COX where X is hydroxyl, benzyloxy, alkoxy having from 1 to 18 carbon atoms or OM where M is an alkali metal cation, an ammonium cation or a mono-, di- or tri-alkylammonium cation having from 1 to 18 carbon atoms;

n is 0; or 1 when Q is di-lower-alkylamino, nitro or COX; or from 1 to 4 when Q is halo;

Y₁, Y₂, Y₃ and Y₄ are the same or different and are selected from the group consisting of hydrogen, halo, hydroxyl, lower-alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl, COOR₄ and NR₅R₆ where R₄ and R₅ are hydrogen or lower-alkyl and R₆ is hydrogen, lower-alkyl, cycloalkyl having from 5 to 7 carbon atoms, or lower alkanoyl;

Z is selected from the group consisting of



in which

R is hydrogen or non-tertiary alkyl having from 1 to 4 carbon atoms;

R₁ is hydrogen, or non-tertiary alkyl having from 1 to 18 carbon atoms;
R₂ is hydrogen, phenyl or non-tertiary alkyl having from 1 to 4 carbon atoms; and
R₃ is hydrogen, non-tertiary alkyl having from 1 to 4 carbon atoms or non-tertiary alkoxy having from 1 to 4 carbon atoms.

4,431,820

6-METHOXY INDOLINE ACETATE AND ITS 5-NITRO AND 5-AMINO DERIVATIVES

Wendell Wierenga, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

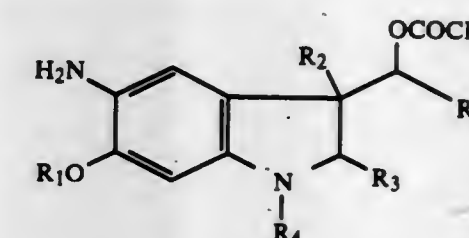
Division of Ser. No. 207,838, Nov. 18, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,464

Int. Cl.³ C07D 209/26

U.S. Cl. 548-491

6 Claims

1. A compound of the formula



wherein R₁ is selected from the group consisting of CH₃-, -CH₂Ph, -CH₂CH₂CH₂-, -CH₂SCH₃, -CH₂OCH₃, -CH₂OCH₂CH₂OCH₃, -CH₂CCl₃, and -CH₂CH₂Si(R₂)₃; and R₂ and R₃ are H, alkyl of from 1 to 5 carbon atoms, inclusive, and phenyl; and R₄ is selected from the group consisting of SO₂R₂, SO₂CH₂CO phenyl, CO₂CH₂Z, where Z is selected from the group consisting of CH₂I, CCl₃, CH₂SO₂R₂, Ph (phenyl), and fluorenylmethyl.

4,431,821

FLUORINATED TRYPTAMINES

Arthur A. Patchett, Cranford, and Janos Kollonitsch, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

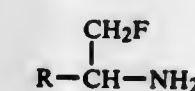
Division of Ser. No. 140,376, Apr. 14, 1980, which is a division of Ser. No. 886,602, Mar. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,350, Jun. 1, 1977, abandoned. This application Jul. 20, 1981, Ser. No. 285,168

Int. Cl.³ C07D 209/16

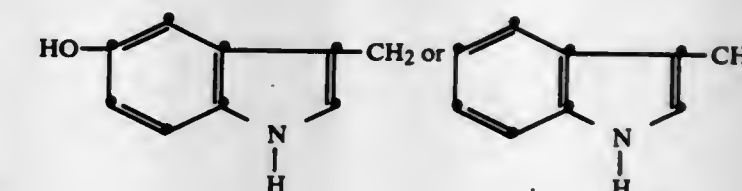
U.S. Cl. 548-508

7 Claims

1. A compound of the formula



wherein R is



4,431,822

TETRAHYDROPHthalIMIDES, AND THEIR PRODUCTION AND USE

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Osaka; Ryo Yoshida, Kawanishi; Hiromichi Oshio, and Katsuzo Kamoshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 23, 1982, Ser. No. 360,998

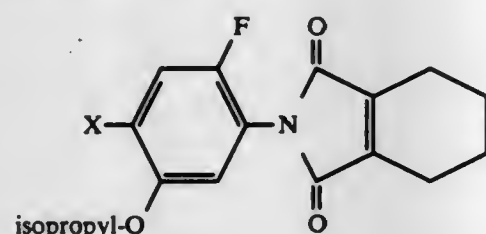
Claims priority, application Japan, Mar. 30, 1981, 56-47816; Dec. 28, 1981, 56-211414

Int. Cl.³ C07D 209/48; A01N 43/38

U.S. Cl. 548-513

3 Claims

1. A compound of the formula:



wherein X is a chlorine atom or a bromine atom.

4,431,823

1H-PYRROLE-3-CARBONITRILE-4(2-BENZOYL)PHE-NYL DERIVATIVES AS INTERMEDIATES FOR PYRROLO[3,4-d][2]BENZAZEPINES

Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 286,124, Jul. 23, 1981, Pat. No. 4,354,973.

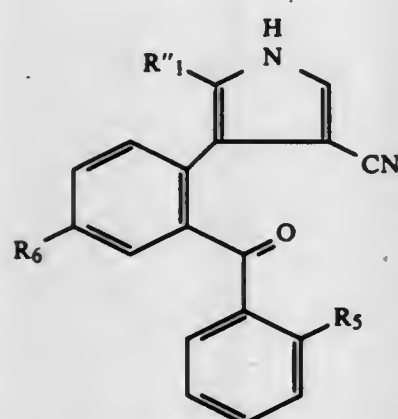
This application Aug. 3, 1982, Ser. No. 404,788

Int. Cl.³ C07D 207/34

U.S. Cl. 548-561

4 Claims

1. A compound of the formula



wherein R₁ is selected from the group consisting of hydrogen, lower alkyl, C₃ to C₇ alkenyl and C₃ to C₇ alkynyl; R₅ is hydrogen or halogen and R₆ is halogen.

4,431,824

PREPARATION OF 4,4',7,7'-TETRACHLOROTHIOINDIGO PIGMENTS OF HIGH COLOR STRENGTH

Helmut Hoch, and Heinrich Hiller, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,498

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101873

Int. Cl.³ C07D 333/64; C09B 7/10

U.S. Cl. 549-56

15 Claims

1. A process for the preparation of 4,4',7,7'-tetrachlorothioindigo pigments of high color strength, which comprises oxidizing 3-hydroxy-4,7-dichlorothionaphthene or a mixture of 3-hydroxy-4,7-dichlorothionaphthene and 4,4',7,7'-tetrachlorothioindigo in aqueous-alkaline suspension, which con-

tains from 0.5 to 10% by weight, based on the aqueous suspension, of an alkali metal hydroxide, with a salt of a nitroaromatic sulfonic acid in the presence of a high-boiling water-immiscible or only slightly water-miscible aromatic liquid at from 40° to 100° C., neutralizing the suspension after the end of the oxidation, removing the water from the aqueous organic suspension by separation or distillation, and heating the organic suspension to 110°-180° C., thereby isolating said pigment.

4,431,825

PREPARATION OF ALKENYL SUCCINIC ANHYDRIDES

Justin C. Powell, Fairfax, Va., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,822

Int. Cl.³ C07D 307/60

U.S. Cl. 549-255

13 Claims

1. The method of preparing a product alkenyl-substituted polycarboxylic acid anhydride which comprises

reacting at 150° C.-300° C. in the presence of a catalyst selected from the group consisting of ferric chloride, ferric bromide, and stannic chloride,

(i) an olefin oligomer reactant of molecular weight \bar{M}_n of 250-30,000; and

(ii) an anhydride of an unsaturated aliphatic polycarboxylic acid in amount of 0.5-5 moles per mole of olefin oligomer, thereby forming product alkenyl-substituted polycarboxylic acid anhydride; and recovering said product alkenyl-substituted polycarboxylic acid anhydride.

4,431,826

PROCESS FOR THE PREPARATION OF ALKENYL SUCCINIC ANHYDRIDE

William A. Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 20, 1982, Ser. No. 410,113

Int. Cl.³ C07D 307/60

U.S. Cl. 549-255

12 Claims

1. A process for the preparation of alkenyl succinic anhydride from maleic anhydride and a mixture of straight chain alpha olefins in the C₁₃ to C₂₂ range which comprises:

(A) introducing the alpha olefins into a distillation zone wherein at least a portion of the lowest boiling alpha olefin is vaporized and taken overhead;

(B) isomerizing the remaining bottoms from the distillation zone to reduce the alpha olefin content to less than 15% of the total olefin bottoms content;

(C) recombining the alpha olefin overhead fraction recovered from step (A) with the isomerized olefin bottoms fraction of step (B); and

(D) reacting the recombined olefins from step (C) with maleic anhydride to provide the alkenyl succinic anhydride product.

4,431,827

PENTADECANOLIDE DERIVATIVES

Charles Fehr, Versoix, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Apr. 5, 1982, Ser. No. 365,336

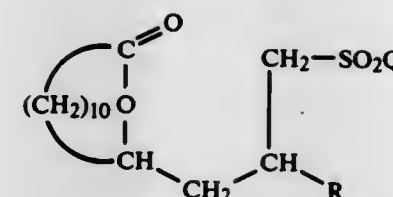
Claims priority, application Switzerland, Apr. 21, 1981, 2593/81

Int. Cl.³ C07D 313/00

U.S. Cl. 549-271

1 Claim

1. A compound of the formula



where symbol R represents a hydrogen atom or a methyl radical and Q represents a lower alkyl, phenyl or p-tolyl radical.

4,431,828

REGENERATION OF 6-FLUORO-4-CHROMANONE FROM BY-PRODUCTS IN THE SYNTHESIS OF SORBINIL

Berkeley W. Cue, Jr., Gales Ferry; Philip D. Hammen, East Lyme, and Stephen S. Massett, Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 10, 1982, Ser. No. 440,657

Int. Cl.³ C07D 311/22

U.S. Cl. 549-401

14 Claims

1. A process for the regeneration of purified 6-fluoro-4-chromanone from R- or a mixture of R- and RS-6-fluorospiro[chroman-4,4'-imidazolidine]-2,5'-dione, R- or a mixture of R- and RS-6-fluoro-4-ureidochroman-4-carboxylic acid, or a cationic salt thereof, which comprises the steps of:

(a) hydrolysis in the presence of an aqueous inorganic base to form an intermediate amino acid which is R- or a mixture of R- and RS-4-amino-6-fluorochroman-4-carboxylic acid;

(b) degradation of said intermediate amino acid in an aqueous solvent with a chlorinating agent to form a mixture of 6-fluoro-4-chromanone and 6-fluoro-4-chloriminochroman; and

(c) hydrogenation of said mixture of 6-fluoro-4-chromanone and 6-fluoro-4-chloriminochroman over a noble metal catalyst in an aqueous or aqueous organic solvent to yield said purified 6-fluoro-4-chromanone.

4,431,829

PROCESS FOR THE PREPARATION OF 1,4:3,6-DIANHYDRO-D-GLUCITOL 5-NITRATE

Einhard Kiegel, Mannheim, and Karl Lauer, Schriesheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,773

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028873

Int. Cl.³ C07D 307/00

U.S. Cl. 549-464

5 Claims

1. Process for the preparation of 1,4:3,6-dianhydro-D-glucitol-5-nitrate comprising

(a) acetylating, at a temperature from 0° C. to 80° C., 1,4:3,6-dianhydro-D-glucitol with 0.5 to 1.5 mole equivalents of acetic anhydride in the presence of basic solvent acting as an acid acceptor and catalyst for the acetylation and an inert water immiscible solvent or solvent mixture, and substantially removing non-reacted 1,4:3,6-dianhydro-D-glucitol, and substantially all resulting

1,4:3,6-dianhydro-D-glucitol-2,5-diacetate from the reaction mixture;

(b) nitrating the product of step (a) including 1,4:3,6-dianhydro-D-glucitol-2-acetate with nitric acid to obtain a mixture comprising

1,4:3,6-dianhydro-D-glucitol-2-acetate-5-nitrate, isolating the 1,4:3,6-dianhydro-D-glucitol-2-acetate-5-nitrate, by precipitation through dilution of the nitrating acid with water and subsequent filtration; and

(c) hydrolyzing the 1,4:3,6-dianhydro-D-glucitol-2-acetate-5-nitrate latter mixture with an inorganic base to yield 1,4:3,6-dianhydro-D-glucitol-5-nitrate.

4,431,830

PROCESS FOR THE PREPARATION OF ISOSORBIDE-5-NITRATE

Karl Schönafinger, Uehlfeld, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,221

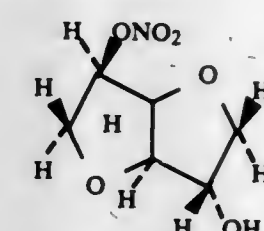
Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117612

Int. Cl.³ C07D 493/04

U.S. Cl. 549-464

13 Claims

1. A process for the preparation of 1,4:3,6-dianhydro-D-sorbit-5-yl nitrate of the formula I



also known as isosorbide-5-nitrate, which comprises (a) reacting 1,4:3,6-dianhydro-D-sorbitol, also known as isosorbide, with an aliphatic carboxylic acid in contact with an acid catalyst to an acylation mixture containing, as the main product, isosorbide-2-acylate, and as a by-product, isosorbide-2,5-diacetate and only traces of isosorbide-5-acylate, (b) nitrating the acylation mixture and (c) hydrolyzing and/or transesterifying the resulting nitration mixture in order to split off acyl groups wherein isosorbide-2-acylate is not distilled from the acylation mixture.

4,431,831

SUBSTITUTED FURANS

George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 324,064, Nov. 23, 1981, Pat. No. 4,357,345.

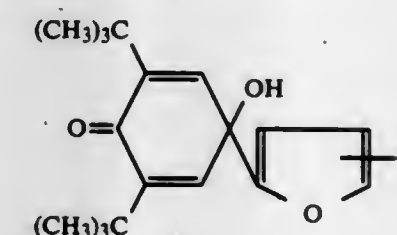
This application Aug. 18, 1982, Ser. No. 409,337

Int. Cl.³ C07D 307/46

U.S. Cl. 549-498

2 Claims

1. Compounds of the formula:



wherein R is hydrogen, chloro, bromo, iodo, or methyl.

4,431,832

ORGANIC FIBERS HAVING IMPROVED SLIP PROPERTIES

Peter Huber; Peter August; Helga Lampelzammer, all of Burg-hausen, and Willi Primas, Simbach, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 108,895, Dec. 31, 1979, Pat. No. 4,394,518, which is a continuation of Ser. No. 876,454, Feb. 9, 1978, abandoned. This application Aug. 24, 1982, Ser. No. 411,051

Int. Cl.³ C07F 7/08, 7/10, 7/18

U.S. Cl. 556-426

2 Claims

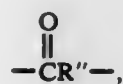
1. A polymeric organosilicon compound of the formula



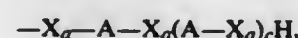
wherein R is selected from the group consisting of monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals having from 1 to 10 carbon atoms, D is a radical of the formula



where X is selected from the group consisting of



$-\text{OR}''-, -\text{SR}''-, -\text{SO}_2\text{R}''-$, where R' is hydrogen or R, R'' is a bivalent aliphatic hydrocarbon radical, A is selected from the group consisting of a bivalent aromatic hydrocarbon radical and a substituted bivalent aromatic hydrocarbon radical, M is a radical of the formula



a is 0 or 1, b is 0, 1 or 2, c is 0 or a number of from 1 to 5, d is 0 or 1, m is 0 or a number of from 1 to 20, n is a number of from 1 to 1,000 with the proviso that at least one X_aA-X_dA group is present per molecule, in which a is 1.

4,431,833

PROSTAGLANDIN AND HYDROXYLATED FATTY ACID ESTER FORMULATIONS

Shahid A. Lodhi, Spring Valley, and Bernard Sims, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

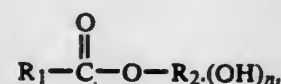
Filed Dec. 27, 1982, Ser. No. 453,633

Int. Cl.³ C07C 177/00; A61K 31/557

U.S. Cl. 560—2

10 Claims

1. A method for stabilizing E-type prostaglandins comprising the step of admixing an E-type prostaglandin with an amount of hydroxylated derivative of a fatty acid having the formula



where R₁ is C₂-C₂₄ alkyl; R₂ is C₂-C₂₄ alkyl; and n is an integer from 1 to 6, denoting from 1 to 6 hydroxyl groups which may be substituted in the alkyl groups R₁ or R₂, effective to stabilize the prostaglandin.

4,431,834

HERBICIDAL BICYCLIC COMPOUNDS

David Cartwright, Woodley, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 29, 1982, Ser. No. 363,227

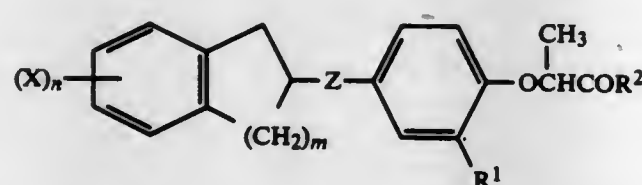
Claims priority, application United Kingdom, Apr. 16, 1981, 8112109

Int. Cl.³ C07C 69/76

U.S. Cl. 560—56

7 Claims

1. Compounds of formula (I)



wherein X is hydrogen, halogen, trifluoromethyl, cyano, nitro, sulphonamido, C₁₋₄ alkyl, C₁₋₄ alkoxy, C₁₋₄ alkylthio, C₁₋₄ alkylsulphonyl or C₁₋₄ alkylsulfinyl; n is 1 or 2; m is 1 or 2; Z

is $-\text{O}-, -\text{S}-, -\text{NH}-$ or $-\text{N}(\text{CH}_3)-$; R¹ is hydrogen or fluorine; and R² is hydroxy, C₁₋₆ alkoxy optionally substituted with hydroxy, carboxy, halogen or C₁₋₄ alkoxy; cyclohexyloxy optionally substituted with halogen or C₁₋₄ alkyl; C₃₋₆ alkenyloxy; C₃₋₆ alkynyloxy; phenoxy optionally substituted with halogen or C₁₋₄ alkyl; benzyloxy optionally substituted with halogen or C₁₋₄ alkyl; C₁₋₄ alkylsulphonamido; a group of general formula $-\text{NR}^3\text{R}^4$ wherein R³ is hydrogen or C₁₋₄ alkyl and R⁴ is C₁₋₄ alkyl optionally substituted with hydroxy or phenyl or R⁴ is hydrogen, phenyl, chlorophenyl, C₁₋₄ alkoxy or a group of general formula $-\text{NR}^5\text{R}^6$ wherein R⁵ is hydrogen or C₁₋₄ alkyl and R⁶ is hydrogen, C₁₋₄ alkyl, phenyl or chlorophenyl, or the group $-\text{NR}^5\text{R}^6$ is pyrrolidine, piperidino or morpholino; or, in the case of a compound wherein R² comprises an acidic group, a salt thereof.

4,431,835

HYDROCARBONYLATION/CARBONYLATION OF ALKYL CARBOXYLATES

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 6, 1981, Ser. No. 280,218

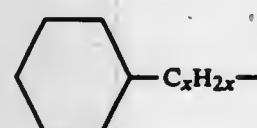
Claims priority, application France, Aug. 7, 1980, 80 17704

Int. Cl.³ C07C 67/36, 51/12, 45/49, 29/36

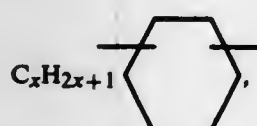
U.S. Cl. 560—105

24 Claims

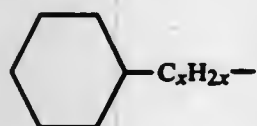
1. A process for the hydrocarbonylation and/or carbonylation of an alkyl carboxylate having the formula R-CO-O-R', in which R represents a linear or branched chain alkyl radical having from 1 to 16 carbon atoms, a cycloalkyl radical having from 3 to 6 carbon atoms, a phenyl radical, a radical



or a radical



with x being an integer ranging from 1 to 6, and R' represents a linear or branched chain alkyl radical having 1 to 5 carbon atoms or a radical



with x being as above defined and further in which R and R' may be the same or different, comprising reacting the alkyl carboxylate with carbon monoxide and hydrogen, in an aqueous medium, in the liquid phase and in the presence of a catalytically effective amount of (i) ruthenium, (ii) cobalt, (iii) at least one iodine-containing promoter, and (iv) chromium.

4,431,836

HYDROGENATION USING CHITIN AND CHITOSAN BASED IMMOBILIZED METAL CATALYSTS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 237,030, Feb. 23, 1981, Pat. No. 4,367,355, Continuation-in-part of Ser. No. 83,926, Oct. 11, 1979, Pat. No. 4,274,980. This application Sep. 28, 1982, Ser. No. 426,016

Int. Cl.³ C07C 5/02, 5/03, 5/08

U.S. Cl. 560—105

5 Claims

1. A process for the hydrogenation of an unsaturated organic material having a carbon-carbon double bond or triple bond and at least one non-reducible functional group comprising contacting an effective amount of a catalyst, said catalyst containing a zerovalent Group VIII metal immobilized in a highly dispersed state on an aminated polysaccharide as a support, with a feedstock containing the unsaturated organic material in the presence of hydrogen so as to effect the hydrogenation of the carbon-carbon double or triple bond.

4,431,837

LONG CHAIN ALIPHATIC HYDROCARBON ETHOXYLATED ALCOHOL BENZOATES

Navin Geria, Warren, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 329,091

Int. Cl.³ C07C 69/76

U.S. Cl. 560—112

16 Claims

1. Long chain aliphatic hydrocarbon ethoxylated alcohol benzoates containing no more than about 5 moles of ethylene oxide.

4,431,838

EXTRACTIVE DISTILLATION OF ALCOHOL-ESTER MIXTURES AND TRANSESTERIFICATION

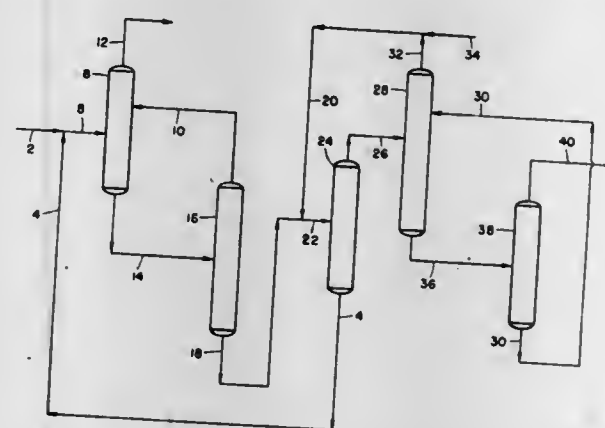
Julian Feldman, and John M. Hoyt, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 232,795, Feb. 9, 1981, abandoned. This application Feb. 8, 1982, Ser. No. 346,834

Int. Cl.³ B01D 3/40; C07C 67/02, 67/48

U.S. Cl. 560—234

12 Claims



1. A process of transesterification of a C₁-C₄ alkanol and a dissimilar C₁-C₄ alkyl acetate which comprises:

(a) subjecting a mixture of (1) C₁-C₄ alkyl acetate, (2) an aliphatic or an aromatic alcohol, having a boiling point above about 160° C. and (3) an effective amount of a transesterification catalyst to transesterification conditions and extractive distillation in the presence of a first extractive solvent to produce a first overhead product comprising the corresponding alcohol of the C₁-C₄ alkyl acetate and a small amount of the C₁-C₄ alkyl acetate and a first bottoms product comprising the acetate of the aliphatic or aromatic alcohol, the transesterification catalyst and the first extractive solvent, said first extractive solvent being a hydrocarbon which does not form an azeotrope with a

C₁-C₄ alkanol and which had a boiling point at least 25°-30° C. above the higher of the boiling points of the C₁-C₄ alkyl acetate and its corresponding alcohol,

(b) subjecting the first bottoms product to fractional distillation to produce a second overhead product comprising the first extractive solvent and a second bottoms product comprising the acetate of the aliphatic or aromatic alcohol and the transesterification catalyst,

(c) subjecting a mixture of (1) a C₁-C₄ alkanol whose number of carbon atoms is dissimilar to that of the alkyl group of the C₁-C₄ alkyl acetate of step (a) and (2) the second bottoms products to transesterification conditions and fractional distillation to produce a third overhead product comprising a portion of the C₁-C₄ alkanol of step (c) and the corresponding alkyl acetate of the remaining portion of the C₁-C₄ alkanol and a third bottoms product comprising the aliphatic or aromatic alcohol and the transesterification catalyst,

(d) subjecting the third overhead product to extractive distillation in the presence of a second extractive solvent to produce a fourth overhead product comprising a portion of the C₁-C₄ alkanol of step (c) and a trace of its corresponding acetate and a fourth bottoms product comprising the remaining portion of the corresponding acetate and the second extractive solvent, said second extractive solvent being a hydrocarbon which does not form an azeotrope with a C₁-C₄ alkanol and which has a boiling point at least 25°-30° C. above the higher of the boiling points of the C₁-C₄ alkanol and its corresponding acetate, (e) subjecting the fourth bottoms product to fractional distillation to produce a fifth overhead product comprising acetate of the C₁-C₄ alkanol of step (c) and a fifth bottoms product comprising the second extractive solvent, and (f) separately recovering the C₁-C₄ alkanol of the first overhead product and the C₁-C₄ alkyl acetate of the fifth overhead product as the products of this process.

4,431,839

TOLUIC ACID

Francis J. Waller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1981, Ser. No. 328,843

Int. Cl.³ C07C 51/145

U.S. Cl. 562—406

22 Claims

1. Process for oxidatively carbonylating toluene to toluic acid, at least 50 mol % of the toluic acid being the p-isomer, said process comprising contacting and reacting, at 110°-250° C., at a pressure of at least 500 psi (3.45 MPa), toluene, carbon monoxide, oxygen and the catalyst ingredients consisting essentially of

(a) a compound of rhodium or iridium; (b) a sulfur oxy-acid or a Group Ia or IIa metal salt of a sulfur oxy-acid; (c) a sulfur oxy-acid or sulfur oxy-acid mixture having a Hammett acidity value ($-\text{H}_0$) of greater than 7.0; and (d) a cupric salt of a sulfur oxy-acid; said catalyst ingredients containing 0.3-30 mol % of (a) and 70-99.7 mol % of (b+c+d), with the molar ratios (b/a) and (c/a) each being at least 2 and the molar ratio (d/a) being at least 0.5, and recovering toluic acid.

4,431,840

PROCESS FOR PREPARING 2-BENZOYL BENZOIC ACIDS

Gordon J. Sterken, Cincinnati, Ohio; Ramamurthi Kannan, and James E. Kassner, both of Edgewood, Ky., assignors to Sterling Drug Inc., New York, N.Y.

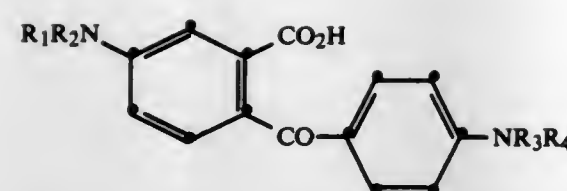
Filed Oct. 22, 1982, Ser. No. 436,003

Int. Cl.³ C07C 101/78

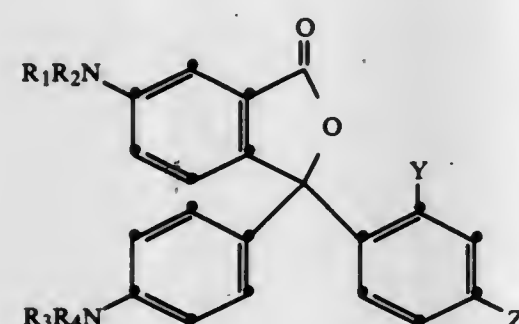
U.S. Cl. 562—441

8 Claims

1. A process for preparing a 2-benzoylbenzoic acid derivative having the formula



which comprises reacting a phthalide derivative having the formula



with a lower-alkanoic acid and water where in the above formulas:

- R₁, R₂, R₃ and R₄ are the same or different non-tertiary lower alkyl,
Y is hydrogen and Z is NR₃R₄, or
Y is non-tertiary lower alkyl, non-tertiary lower alkoxy or di-lower-alkylamino and Z is di-lower-alkylamino.

4,431,841

PROCESS FOR MAKING DIARYLAMINES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sep. 16, 1982, Ser. No. 419,249

Int. Cl.³ C07C 85/00

U.S. Cl. 564—398

5 Claims

1. An improved process for preparing diarylamines from alicyclic ketones and primary aromatic amines, in the presence of platinum group catalyst, the improvement comprising carrying out the said process in the presence of an acid promoter selected from sulfuric acid, phosphoric acid, trihaloacetic acid, and alkyl or aryl sulfonic acid.

4,431,842

CATALYTIC PREPARATION OF NITROALKANES

William V. Hayes, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1982, Ser. No. 446,076

Int. Cl.³ C07C 76/02

U.S. Cl. 568—948

20 Claims

1. A process for making nitroalkanes which comprises reacting in the vapor phase a mixture of a lower alkanol and nitric acid, or nitrogen dioxide, and an inert diluent gas in the presence of a catalyst which is an oxide or a salt of at least one metal of Group II of the periodic table.

4,431,843

METHYL SUBSTITUTED OXOBICYCLO-4,4,0-DECANE DERIVATIVES, PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

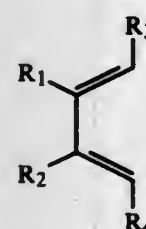
Division of Ser. No. 277,130, Jun. 25, 1981, Pat. No. 4,339,467, which is a continuation-in-part of Ser. No. 182,451, Aug. 28, 1980, Pat. No. 4,320,772. This application Apr. 26, 1982, Ser. No. 372,249

Int. Cl.³ C07C 49/637, 49/553

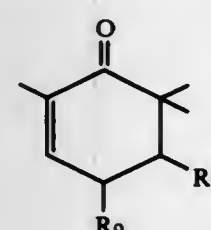
U.S. Cl. 568—374

7 Claims

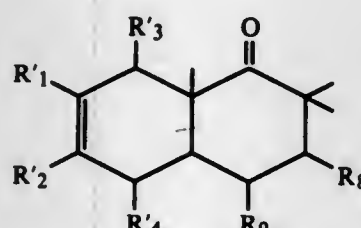
1. A product produced according to the process of intimately admixing a diene having the structure:



with a ketone having the structure:



thereby producing a mixture of bicyclic compounds defined according to the structure:



the reaction being carried out at a temperature in the range of from -15° C. up to 100° C.; in the presence of or in the absence of a solvent; and in the presence of a Lewis acid catalyst; the mole ratio of diene:ketone being in the range of from about 1:1 up to about 10:1, wherein R₁, R₂, R₃, R₄, R₈, R₉, R₁', R₂', R₃', and R₄' represent the same or different methyl or hydrogen with the provisos that R₃ is the same as R₃' or R₄'; R₄ is the same as R₃' or R₄'; R₁ is the same as R₁' or R₂'; and R₂ is the same as R₁' or R₂'.

4,431,844

PREPARATION OF POLYUNSATURATED KETONES

Lothar Janitschke, Kleinniedesheim; Werner Hoffmann, Neuhofen; Lothar Arnold, Heidelberg; Manfred Stroezel, Ilvesheim, and Hans-Jürgen Scheiper, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,249

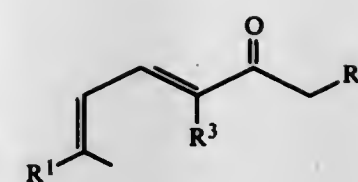
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114071

Int. Cl.³ C07C 45/45

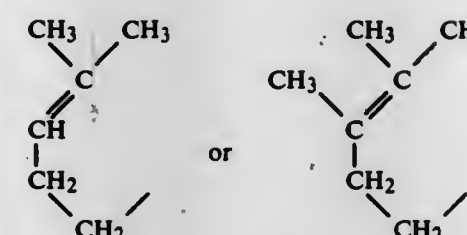
U.S. Cl. 568—390

11 Claims

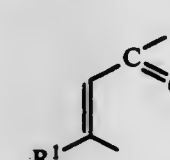
1. A process for the preparation of unsaturated ketones of formula I:



wherein R¹ is methyl,



and R² and R³ are both hydrogen or are different with one hydrogen and the other methyl, comprising: reacting on aldehyde of formula II



with a molar excess of acetone or methylethylketone at an elevated temperature in the presence of an aqueous alkali metal hydroxide solution; wherein (a) all of the reactants, including the aqueous medium, generally existing as two liquid phases, are thoroughly mixed, (b) the temperature is maintained at a level from 10° to 120° C. above the boiling point of the lowest-boiling constituent of the reaction mixture, and (c) the pressure is maintained at a level from p to 100 bar, wherein p is the vapor pressure of the mixture of reaction ingredients at the reaction temperature.

4,431,845

METHOD FOR THE PREPARATION OF 1-HYDROXYL-TERMINATED POLY(HALOALKYLENE ETHERS)

Chung I. Young, Roseville, and Loren L. Barber, Jr., Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 213,118, Dec. 4, 1980, abandoned. This application Mar. 5, 1982, Ser. No. 355,179

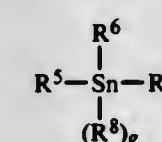
Int. Cl.³ C07C 41/02, 41/03

U.S. Cl. 568—606

8 Claims

1. A method for the preparation of hydroxyl-terminated poly(haloalkylene ethers) which comprises reacting a hydroxyl material containing from about 1 to 6 hydroxyl groups and a haloalkylene oxide in the presence of a catalytic amount of a catalyst system comprising

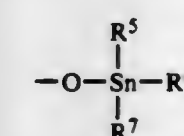
- (i) a fluorinated acid selected from the group consisting of bis(fluorinated aliphatic sulfonyl)protonic)alkanes, HF and acids of the formula H_mXF_{n+m} wherein X is selected from the group consisting of boron, phosphorous, arsenic and antimony; m is 0 or 1; n is 3 when X is boron and n is 5 when X is phosphorous, arsenic and antimony; and
(ii) a polyvalent tin compound having the formula



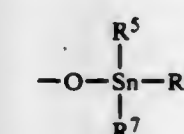
wherein
g is 0 or 1;
R⁵ and R⁶ are the same or different and are selected from

saturated and unsaturated aliphatic and aromatic hydrocarbyl groups containing from 1 to about 10 carbon atoms;

R⁷ is selected from the group consisting of oxygen and saturated and unsaturated aliphatic and aromatic hydrocarbyl groups containing from 1 to about 10 carbon atoms, provided that when R⁷ is oxygen then g is 0; and R⁸ is selected from the group consisting of fluorine, acyloxy groups containing less than about 10 carbon atoms, saturated aliphatic hydrocarbyl groups containing from 1 to about 10 carbon atoms and



provided that when R⁵, R⁶, and R⁷ are each saturated aliphatic hydrocarbyl groups then R⁸ is selected from the group consisting of fluorine, acyloxy groups containing less than about 10 carbon atoms and



provided that when said fluorinated acid is said bis(fluorinated aliphatic sulfonyl)alkane, the molar ratio of said polyvalent tin compound to said bis(fluorinated aliphatic sulfonyl)alkane is in the range of about 0.2:1 to 2:1; and provided further than when said fluorinated acid is selected from HF and acids of the formula H_mXF_{n+m}, the molar ratio of said polyvalent tin compound to said fluorinated acid is in the range of about 1.13:1 to 3:1.

4,431,846

REDUCTION OF O-ETHYLPHENOL IN M,P-CRESOL BY PREFERENTIAL T-BUTYLATION

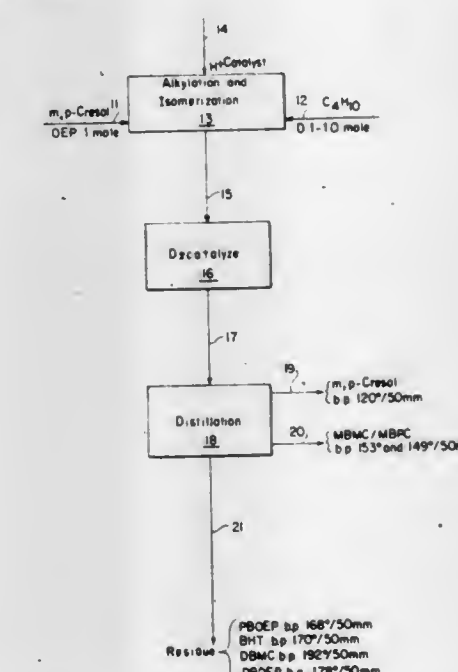
Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 24, 1982, Ser. No. 381,159

Int. Cl.³ C07C 37/68

U.S. Cl. 568—750

13 Claims



1. A process for reducing the amount of ortho-ethylphenol impurity contained in a mixture of meta and para isomers of cresol comprising the steps of:

- (a) alkylating at a temperature of from about 0° C. to about 150° C. with a t-butyl group obtained from a compound selected from the group consisting of isobutylene, t-butylalcohol, t-butyl chloride, diisobutylene, t-butylated meta-cresols and t-butylated para-cresols to give a final molar ratio of t-butyl groups to total ortho-ethylphenol and meta and para-cresols of about 0.1:1.0 to about 1.0:1.0 in the presence of an acidic catalyst of sufficient acid strength to catalyze said alkylation;
- (b) equilibrating the t-butylated mixture at a temperature from about 100° C. to about 160° C. to reduce the content of ortho-ethylphenol and raise the level of 4-t-butyl-o-ethylphenol in the presence of said catalyst;
- (c) removing said catalyst; and
- (d) fractionally distilling the mixture to obtain the meta-para-cresol mixture with a reduced content of ortho-ethylphenol impurity, and leaving the p-t-butyl-o-ethylphenol derivative of said impurity as residue.

4,431,847

METHOD FOR REMOVING BROMINATED PHENOLIC WASTE

Joseph A. Bossier, Greenwell Springs, and Julio J. Vega, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 29, 1982, Ser. No. 402,931
Int. Cl.³ C07C 37/68

U.S. Cl. 568—755

29 Claims

15. A process for removing halogenated phenolic compounds from a liquid medium, said liquid medium having a pH within the range of 7-14, said process comprising:

- (a) adding an oxidizing agent to said liquid medium,
- (b) reacting at a temperature of 30° F. to 300° F. for sufficient time to polymerize said halogenated phenolic compounds to form a solid polymer and
- (c) separating said solid polymer from said liquid medium.

4,431,848

PREPARATION OF RESORCINOL AND SUBSTITUTED RESORCINOLS BY LIQUID-PHASE DEHYDROGENATION OF 1,3-CYCLIC DIONES DERIVED BY VAPOR-PHASE CYCLIZATION OF DELTA-KETO CARBOXYLIC ACID ESTERS

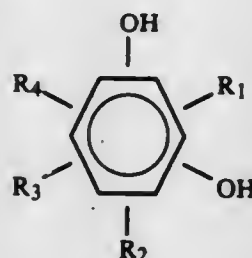
Nicholas P. Greco, Edgewood, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 26, 1982, Ser. No. 372,030
Int. Cl.³ C07C 37/00

U.S. Cl. 568—772

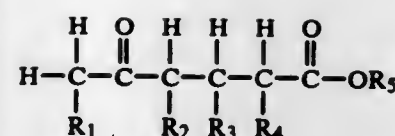
17 Claims

1. A process for making resorcinol or substituted resorcinols of the general formula



wherein R₁-R₄ are selected from hydrogen and alkyl groups of up to about 6 carbon atoms, with the proviso that the total number of carbon atoms of R₁-R₄ cannot exceed about 24, said process comprising the steps of:

- (a) passing a vapor stream through a reaction zone containing a carbon catalyst suitable for catalyzing cyclization of a delta-keto ester to form a cyclic dione, said vapor stream comprising a delta-keto ester and a condensable non-reactive carrier, said delta-keto ester having the general formula



wherein R₁-R₄ are defined as before and R₅ is selected from alkyl, aryl and alkylaryl groups, with the proviso that the total number of carbon atoms of R₅ cannot exceed about 24

said non-reactive carrier having a sufficiently high boiling point so that said carrier is a liquid at 25° C. and one atmosphere pressure, whereby the vapor stream may be easily condensed and the cyclic dione subsequently separated from the carrier and from unreacted delta-keto ester; (b) contacting a liquid solution containing cyclic dione obtained in step (a) with a supported noble metal catalyst at a pressure from about one atmosphere to about 20 atmospheres and at a temperature in a range from about 170° C. to about 250° C. for a time sufficient to dehydrogenate the cyclic dione and form resorcinol or a substituted resorcinol.

4,431,849

PROCESS FOR PREPARING A METHYL PHENOL

Howard A. Colvin, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 21, 1981, Ser. No. 313,517
Int. Cl.³ C07C 37/00, 37/58

U.S. Cl. 568—799

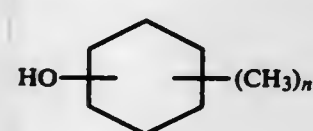
16 Claims

1. A process for preparing a methyl phenol from an alkylbenzene having the general structural formula



wherein R is a secondary alkyl group having from 3 to 4 carbon atoms and n is an integer from 1 to 3, inclusive, which comprises

- (A) contacting said alkylbenzene with molecular oxygen to provide an oxidation product solution containing tertiary hydroperoxide and primary hydroperoxide;
- (B) acid decomposing the hydroperoxide in the presence of catalytic quantities of a mineral acid catalyst;
- (C) hydrogenating the acid decomposition product at a temperature ranging from about 0° to about 200° C. under a pressure of 0 to about 552 kPa for 0.2 to about 10 hours in the presence of a hydrogenation catalyst selected from the group comprising chromium, copper, palladium, platinum, nickel, ruthenium and rhodium;
- (D) neutralizing the hydrogenation product with at least one base selected from the group comprising ammonia, ammonia hydroxide, alkali metal hydroxide or alkali metal carbonate; and
- (E) recovering from the hydrogenation product methyl phenol of the general structural formula



where n is as set forth above.

4,431,850

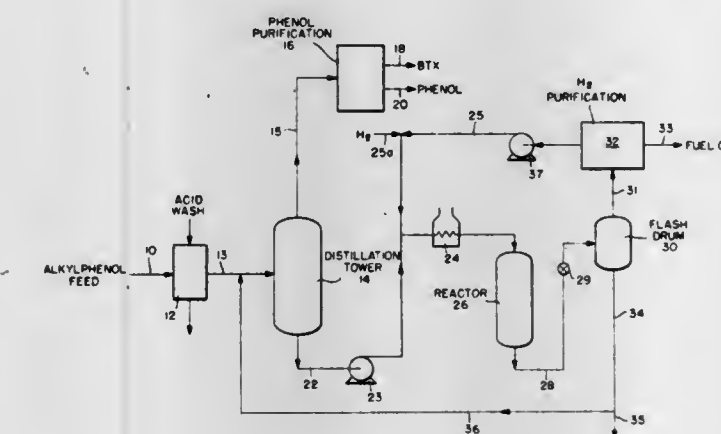
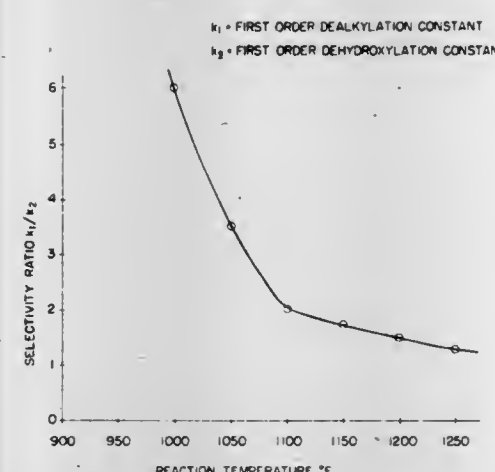
LOW TEMPERATURE HYDRODEALKYLATION OF ALKYLATED PHENOLS

Derk T. A. Huibers, Pennington, and Cheng-Yih Jenq, Princeton, both of N.J., assignors to HRI, Inc., Gibbstown, N.J.

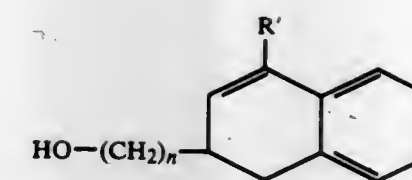
Filed Nov. 9, 1981, Ser. No. 319,771
Int. Cl.³ C07C 37/50

U.S. Cl. 568—805

11 Claims

DEALKYLATION SELECTIVITY RATIO k_1/k_2 VS REACTION TEMPERATURE

1. A process for thermal hydrodealkylation of alkylated phenols feedstock to produce phenol, comprising admixing the feed solution comprising a mixture of alkylated phenols selected from the group consisting of cresols, methyl-ethyl phenols and xlenols with hydrogen to provide a hydrogen to phenol molar ratio of at least about 1.0 and reacting said mixture at temperature ranging from about 900° to about 1050° F., to produce increased yield of phenol product.



wherein n is 1, 2 or 3, and R' is phenyl or orthofluorophenyl.

4,431,852

HALOXYDRINS

James A. Falconer, Falkirk; Raymond V. H. Jones, Linlithgow, and Ian G. C. Fleming, Kirkcaldy, all of Scotland, assignors to Imperial Chemical Industries Limited, London, England

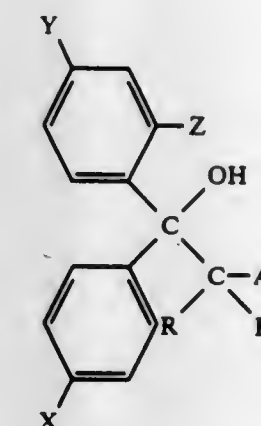
Filed Apr. 22, 1982, Ser. No. 370,815
Claims priority, application United Kingdom, May 12, 1981, 8114396

Int. Cl.³ C07C 33/34

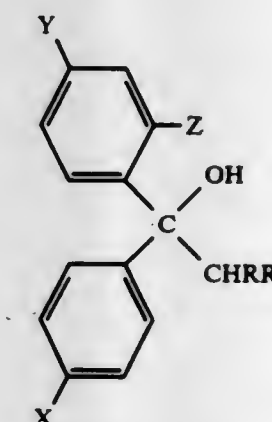
U.S. Cl. 568—809

2 Claims

1. A process for the preparation of the haloxydrins of formula (I):



wherein R and R¹, which may be the same or different, are hydrogen or alkyl; X, Y and Z are each independently hydrogen, chlorine or fluorine and A is chlorine or bromine, which comprises reacting a tertiary alcohol of general formula (II):



4,431,851

3-(HYDROXYALKYL)-3,4-DIHYDRO-1-ORTHOHALOPHENYL NAPHTHALENES

Gerard H. Moinet, Orsay; Philippe L. Dostert, Paris, and Guy R. Bourger, Colombes, all of France, assignors to Delalande S.A., Courbevoie, France

Division of Ser. No. 331,484, Dec. 16, 1981, Pat. No. 4,386,090.
This application Mar. 8, 1983, Ser. No. 473,182

Claims priority, application France, Dec. 22, 1980, 80 27252; Dec. 14, 1981, 81 23304

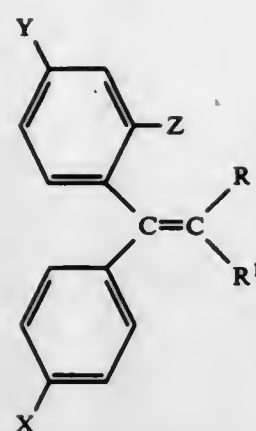
Int. Cl.³ C07C 31/137

U.S. Cl. 568—808

1 Claim

1. A compound having the formula

or a substituted alkene of general formula (III):



with chlorine, bromine, hypochlorous acid or hypobromous acid in water at a pH not exceeding 7 and at a temperature from 10° to 150° C.

4,431,853

DICYCLOHEXYLETHANE DERIVATIVES

Hisato Sato, Tokyo; Haruyoshi Takatsu, Kodaira; Kiyofumi Takeuchi, Urawa; Yutaka Fujita, Yokohama; Masayuki Tazume, Urawa, and Hiroyuki Ohnishi, Kanagoe, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,453

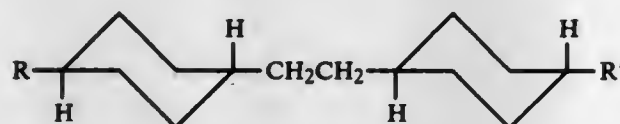
Claims priority, application Japan, Jan. 14, 1981, 56-4136

Int. Cl.³ C07C 13/00

U.S. Cl. 585—20

6 Claims

1. A 1,2-di(trans(equatorial-equatorial)cyclohexyl)-ethane derivative of the following general formula



wherein R and R', independently from each other, represent a linear alkyl group having 1 to 8 carbon atoms with the proviso that the total number of carbon atoms in R and R' is from 4 to 9 inclusive.

4,431,854

CONTINUOUS PREPARATION OF ETHYLBENZENE IN A HETEROGENEOUS-PHASE REACTION

Guenther Heimlich, Ainring; Gregor Tremmel, Gruenstadt, and Manfred Lieb, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,848

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039760

Int. Cl.³ C07C 2/70

U.S. Cl. 585—313

3 Claims

1. A process for the continuous preparation of ethylbenzene in a heterogeneous-phase reaction, by alkylating benzene with ethylene, using a molar ratio of benzene to ethylene of from 1.5 to 3.4:1, in the presence of a catalyst based on a complex organic aluminum chloride compound and used in an amount of from 0.06 to 0.02 mole of AlCl₃ per mole of benzene, and in the presence or absence of a conventional amount of an anhydrous hydrogen halide as co-catalyst, at from 130° to 160° C. and under a pressure of from 2 to 5 bar, using a residence time of from 5 to 60 minutes and carrying out the reaction in at least one zone, the material discharged from the zone being separated into (a) a less dense organic phase, which consists essentially of the useful product, unconverted benzene, higher ethylbenzenes and residues, and (b) a denser organic phase which consists essentially of the complex organic aluminum chloride compound, and the less dense phase (a) being worked up by distillation, with isolation of the useful product and recycling

(III)

of unconverted benzene, while the denser phase (b) is recycled to the reaction zone and losses of catalyst or co-catalyst are made up, in which process the material formed in the reaction zone is vigorously mixed in a pressure vessel before phase separation for not less than 20 minutes and up to 60 minutes at from 120° to 160° C., the pressure in the pressure vessel being either the same as the pressure in the reaction zone or is from 0.5 to 2 bar below the pressure in the reaction zone.

4,431,855

REDUCED POLYMER FORMATION IN DISPROPORTIONATION REACTION BY ADDITION OF CO TO FEED

Robert E. Reusser, Bartlesville, Okla., and Donald G. Kuper, Houston, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1982, Ser. No. 413,203

Int. Cl.³ C07C 3/62

U.S. Cl. 585—360

15 Claims

1. A method of cleaving a cyclic olefin to give a product comprising at least one diolefin comprising: introducing carbon monoxide into a reaction zone along with a feed comprising said cyclic olefin and ethylene under disproportionation conditions; and recovering said at least one diolefin product.

4,431,856

FLUID ZEOLITE CATALYST CONVERSION OF ALCOHOLS AND OXYGENATED DERIVATIVES TO HYDROCARBONS

Nicholas Daviduk, Pennington, and James H. Haddad, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

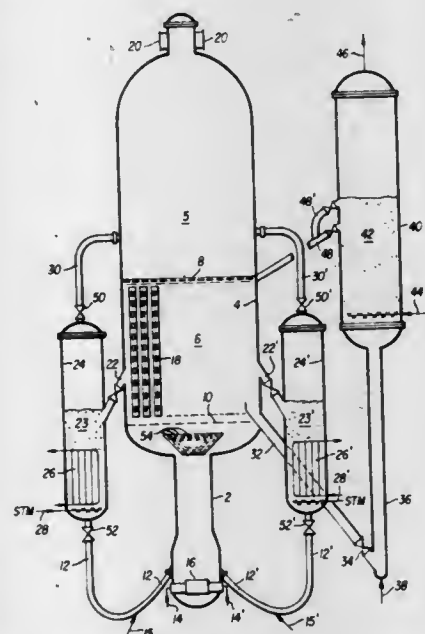
Continuation-in-part of Ser. No. 192,151, Sep. 29, 1980, Pat. No. 4,328,384, which is a continuation-in-part of Ser. No. 89,706, Oct. 30, 1979, Pat. No. 4,238,631. This application Mar. 23, 1982, Ser. No. 361,154

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ C07C 1/20

U.S. Cl. 585—469

21 Claims



ELECTRICAL

4,431,858 METHOD OF MAKING QUASI-GRAIN BOUNDARY-FREE POLYCRYSTALLINE SOLAR CELL STRUCTURE AND SOLAR CELL STRUCTURE OBTAINED THEREBY

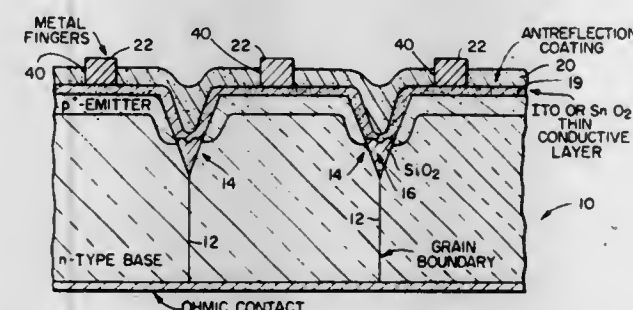
Franklin N. Gonzalez, and Arnost Neugroschel, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed May 12, 1982, Ser. No. 377,558

Int. Cl.³ H01L 31/06, 31/18

U.S. Cl. 136—258

12 Claims



1. A p/n junction photodiode-type solar cell comprising a body of polycrystalline semiconductor material having a surface adapted to receive incident radiation and a p/n junction generally parallel to said surface wherein the degrading effects of grain boundaries on the diode performance are substantially eliminated by preferentially etched grooves in said surface between neighboring grains, a non-conductive coating on the bottom of each said groove which interrupts the p/n junction at the grain boundaries, and electrical conductors on said surface electrically connecting areas isolated by said grooves.

4,431,859 BUSHING FOR GAS-INSULATED ELECTRICAL EQUIPMENT

Mitsubishi Kishida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

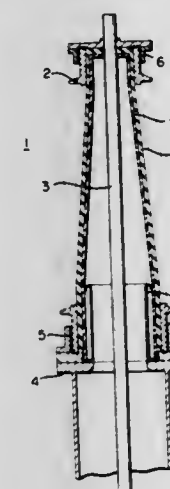
Filed Nov. 18, 1981, Ser. No. 322,665

Claims priority, application Japan, Nov. 27, 1980, 55-168911; Dec. 11, 1980, 55-176738; Dec. 11, 1980, 55-176739

Int. Cl.³ H01B 17/26, 17/36, 17/42

U.S. Cl. 174—31 R

10 Claims



1. A bushing for gas-insulated electrical equipment having electrical conductors, comprising: a porcelain tube for surrounding a conductor penetrating through its central part and for containing a gaseous insulator, an insulating tube disposed inside said porcelain tube and extending in spaced parallel relation with an inner peripheral surface of said porcelain tube, and an insulating medium made of a semisolid insulating compound of high viscosity deformable with a predetermined force filling the interspace between said porcelain tube and said insulating tube.

4,431,860 MULTISTRANDED COMPONENT CONDUCTOR CONTINUOUSLY TRANSPOSED CABLE

Daniel D. Perco, Hamilton, and Paul V. Birke, Burlington, both of Canada, assignors to Westinghouse Canada Inc., Hamilton, Canada

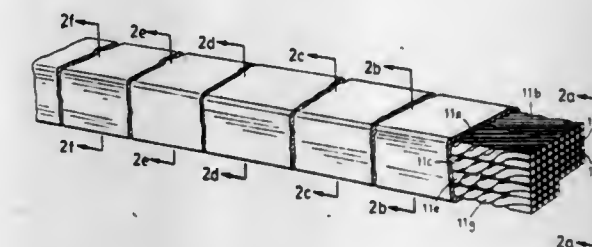
Filed May 24, 1982, Ser. No. 381,407

Claims priority, application Canada, Aug. 13, 1981, 383855

Int. Cl.³ H01B 7/30; H02K 3/14

U.S. Cl. 174—34

3 Claims



1. A cable for use in an electrical apparatus comprising: a plurality of ropes of electrical conductors all of which ropes are continuously transposed along the length thereof, said ropes being formed by a plurality of separate electrical conductors, wherein each conductor is coated with a suitable layer of insulation.

4,431,861 HEAT RECOVERABLE ARTICLE FOR HIGH VOLTAGE CABLE TERMINATIONS AND SPLICES AND METHOD FOR MAKING TERMINATION AND SPLICES USING SAME

Robin J. T. Clabburn, Menlo Park, Calif., and Richard J. Penneck, Lechlade, England, assignors to Raychem Limited, London, England

Continuation-in-part of Ser. No. 126,524, Mar. 3, 1980, abandoned, which is a continuation of Ser. No. 618,358, Oct. 1, 1975, abandoned. This application Aug. 25, 1980, Ser. No. 180,901

Claims priority, application United Kingdom, Oct. 8, 1974, 43613/74

Int. Cl.³ H02G 15/064, 15/184; H01B 1/24, 5/14

U.S. Cl. 174—73 R

30 Claims



1. A hollow recoverable article, which can be recovered by heating and which is useful in making splices and terminations in a high voltage electrical cable, comprising:

(a) a monolithic heat-shrinkable polymeric sleeve containing an anti-tracking system, the outer surface of said sleeve providing the outer surface of said article and having an initial tracking voltage (as measured by ASTM D2303) of at least 2.5 KV, and

(b) adhered to at least a portion of the inner surface of said sleeve, a layer which provides at least a part of the inner surface of said article, which is solid at room temperature and exhibits stress grading electrical impedance character, and which does not interfere in any substantial way with recovery of the sleeve; the recoverability of said article being substantially solely provided by said sleeve.

14. In the method of making a splice or termination in high voltage electrical cable wherein a portion of the covering

about the conductor element is removed to bare the conductor and a termination or splice is made thereto, the improvement comprising:

(a) disposing about the area from which the covering has been removed a hollow recoverable article which can be recovered by heating comprising a monolithic heat-shrinkable polymeric sleeve containing an anti-tracking system, the outer surface of said sleeve providing the outer surface of said article, which is solid at room temperature and exhibits stress grading electrical impedance character, and which does not interfere in any substantial way with recovery of the sleeve, the recoverability of said article being substantially solely provided by said sleeve; and

(b) heating said article to cause the shrinkage of said sleeve about the area to be covered.

4,431,862

MULTIWIRE CONDUCTOR HAVING INCREASED INTERWIRE RESISTANCE AND GOOD MECHANICAL STABILITY AND METHOD FOR MAKING SAME

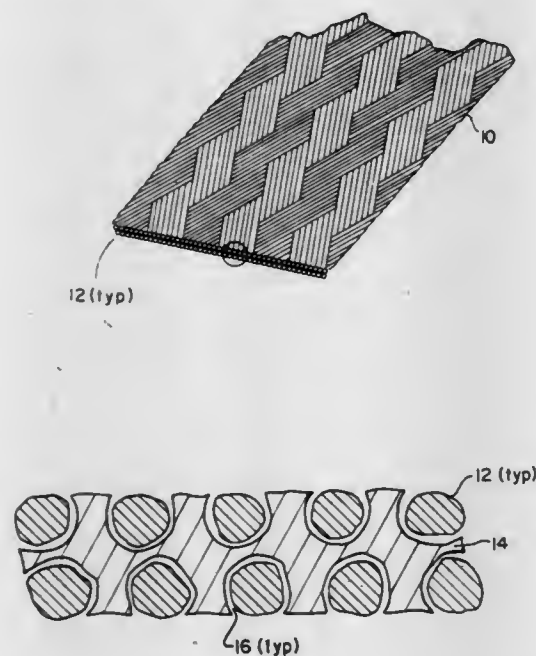
Thomas Luhman, Seattle, Wash., and Carl Klamut, East Patchogue, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 15, 1982, Ser. No. 358,083

Int. Cl.³ H01B 7/08, 12/00

U.S. Cl. 174—128 R

10 Claims



1. A method for increasing the inter-wire resistance of a multi-wire conductor of the type which is mechanically stabilized by a solder filler, comprising the steps of:

(a) heating the conductor to a uniform temperature which is sufficient to cause the "hot-short" phenomena in the solder, but which is below the melting temperature of the solder; and

(b) flexing the conductor without cooling so that said solder separates from said wires at the solder/wire interface.

9. The conductor of claim 6, wherein the conductor is a braided, ribbon-type conductor.

4,431,863 PROTECTIVE BOOT FOR CABLES AND METHOD OF APPLYING SAME

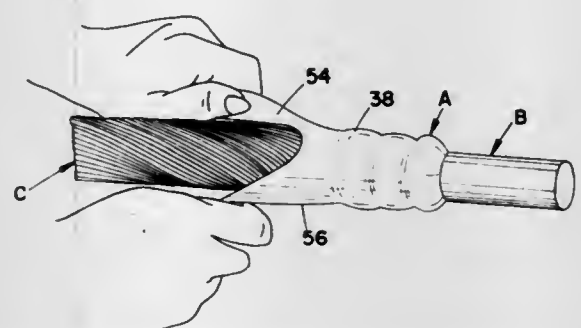
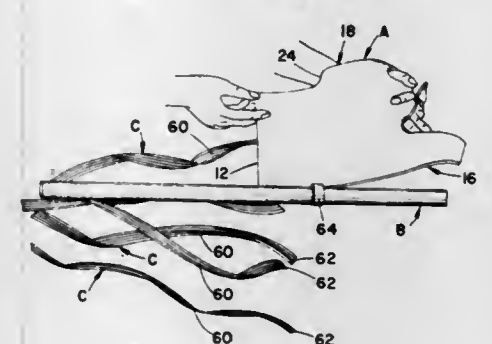
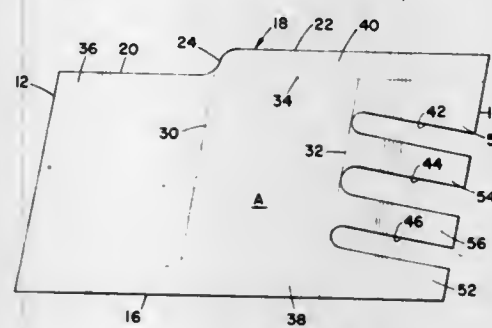
Allan R. Metzler, Jr., Orange, Ohio, assignor to Preformed Line Products Company, Mayfield Village, Ohio

Filed Oct. 8, 1981, Ser. No. 309,563

Int. Cl.³ H02G 1/00; H01B 7/24

U.S. Cl. 174—136

21 Claims



1. A boot forming member for externally and internally covering end portions of rods surrounding a cable comprising: a substantially flat sheet of highly flexible elastomeric material having inner and outer sleeve forming portions therealong, said sheet being wrappable around a cable to form said inner and outer sleeve forming portions into inner and outer sleeves with said inner sleeve positioned beneath end portions of rods surrounding the cable and with said outer sleeve extending axially of the cable beyond the rod end portions, and said outer sleeve forming portion having plural spaced-apart gripping means along the one end portion thereof opposite from said inner sleeve forming portion for providing manual gripping of said outer sleeve at a plurality of circumferentially spaced locations to pull same inside out back into said inner sleeve in overlying relationship to the rod end portions.

12. In an assembly including a cable having a plurality of rods surrounding same and including rod end portions, a protective boot internally and externally covering at least one of said rod end portions, said boot being defined by a flat sheet of elastomeric material having an inner sleeve forming portion wrapped around said cable beneath said one rod portion and having an integral outer sleeve forming portion pulled over said one rod end portion.

17. A method of positioning a boot over end portions of rods surrounding a cable comprising the steps of: spacing said rod end portions outwardly of said cable;

providing a flat sheet of elastomeric material having inner and outer sleeve forming portions; wrapping said inner sleeve forming portion around said cable beneath said rod end portions while wrapping said outer sleeve forming portion around said cable axially beyond said rod end portions; moving said rod end portions inwardly in close surrounding relationship to said inner sleeve forming portion; and, pulling said outer sleeve forming portion inside out over said rod end portions.

4,431,864

COMMUNICATIONS SYSTEM INPUT-OUTPUT CONVERTER

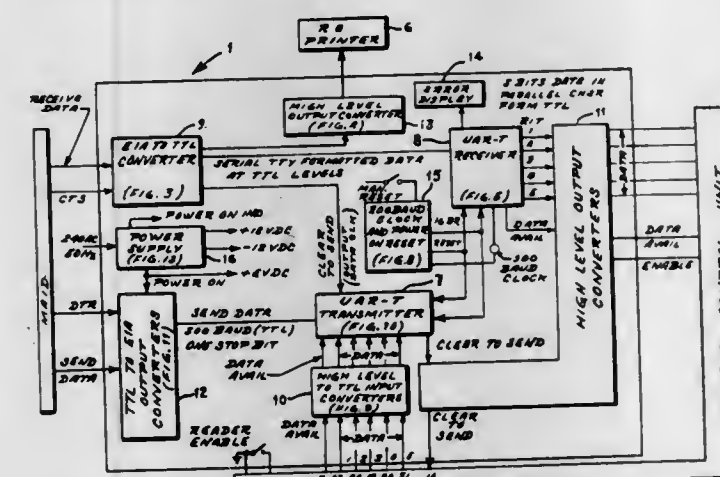
Norman J. Sturdevant, Jr., Lee, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 14, 1981, Ser. No. 311,471

Int. Cl.³ H04L 11/02, 3/00

U.S. Cl. 178—3

1 Claim



1. In a communication system having an interface terminal operating at a first logic voltage level of +6 V and providing simultaneous asynchronous transmission and reception of serial 7 bit digital data and a digital message transmission and reception terminal with recording means operating at a second logic voltage level of 0 to -12 Vdc with parallel 5 bit digital data, the improvement residing in an input/output converter, said input/output converter comprising:

a programmable processor means having a receiver function and a transmitter function and operating at a third logic voltage level of 0 to 5 Vdc.

a first converter circuit receiving serial 7 bit digital data from said interface terminal at said first logic voltage level and converting said data to said third logic voltage level, a second converter circuit receiving parallel 5 bit digital data from said digital message transmission and reception terminal at said second logic voltage level and converting said data to said third logic voltage level,

a third converter circuit receiving serial 7 bit digital data from said programmable processor means at said third logic voltage level, converting said data to said first logic voltage level and transmitting said converted data to said interface terminal,

a fourth converter circuit receiving 5 bit parallel data from said programmable processor means at said third logic voltage level, converting said data to said second logic voltage level and transmitting said converted data to said digital message transmission and reception terminal, and system clock operating at a 300 baud rate,

said programmable processor means being a universal asynchronous receiver transmitter and implementing its receiver function by receiving serial 7 bit data from said first converter circuit, converting said serial 7 bit data to 5 bit parallel data and transmitting said converted data to said fourth converter circuit,

said programmable processor means implementing its trans-

mitter function by receiving parallel 5 bit digital data from said second converter circuit and converting said parallel 5 bit digital data to serial 7 bit digital data,

said recording means comprising a printer operating at said second logic voltage level with serial 7 bit data and said input/output converter including a fifth converter circuit, said fifth converter circuit receiving 7 bit digital data at said third logic voltage level from said first converter circuit, converting said data to said second logic voltage level and transmitting said converted data to said printer, and

said input/output converter including an error detection circuit responsive to the receiver function of said programmable processor, said error detection circuit indicating the absence of the correct logic voltage level during processing functions.

4,431,865

DIGITAL SIGNAL ENCRYPTING AND DECRYPTING APPARATUS AND SYSTEM

Georges G. Bernede, Le Plessis-Robinson, and Jean M. Gregeois, Cachan, both of France, assignors to Telediffusion de France, Paris, France

PCT No. PCT/FR80/00149, § 371 Date Jun. 10, 1981, § 102(e) Date Mar. 6, 1981

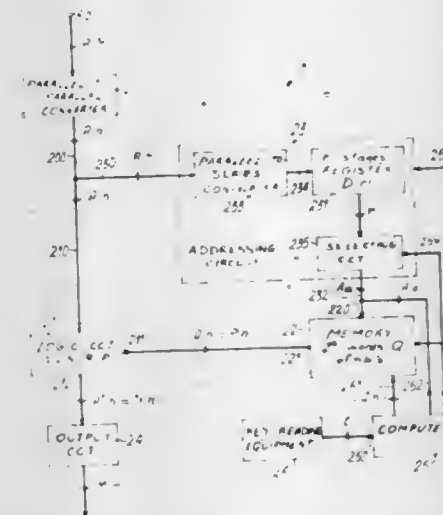
PCT Filed Oct. 10, 1980, Ser. No. 241,068

Claims priority, application France, Oct. 10, 1979, 79 25256

Int. Cl.³ H01K 1/00

U.S. Cl. 178—22.14

16 Claims



1. An encrypting and decrypting system for encrypting and decrypting a digital signal having n-bit words N_i , wherein the integer i denotes the rank of said word N_i in said signal, into a digital enciphered signal having n-bit words R_i , said system comprising an enciphering unit at the transmitting end and a deciphering unit at the receiving end,

said enciphering unit including: logic means for combining each word N_i and an n-bit predetermined word P_{i-1} in accordance with a logic function g to produce a corresponding enciphered word $R_i = g(N_i, P_{i-1})$, and means comprising a register for receiving the enciphered words R_i to produce the words P_{i-1} according to a predetermined algorithm based on the enciphered words R_i , said deciphering unit including logic means for combining each enciphered word R_i and said predetermined word P_{i-1} in accordance with a logic function to produce a deciphered word $N_i = h(R_i, P_{i-1})$ corresponding to the enciphered data word, the h function being contrary to the g function, means analogous to these of said enciphering unit for producing said words P_{i-1} ; each of said P_{i-1} predetermined word producing means having an output connected to the corresponding logic means of the deciphering means for storing 2ⁿ predetermined words P_{i-1} stored at a respective a-bit address A_{i-1} , and means connected to the corresponding register for addressing said

storing means by said A_{i-1} addresses having a-bits belonging at least wholly to the word stored in the corresponding register.

4,431,866

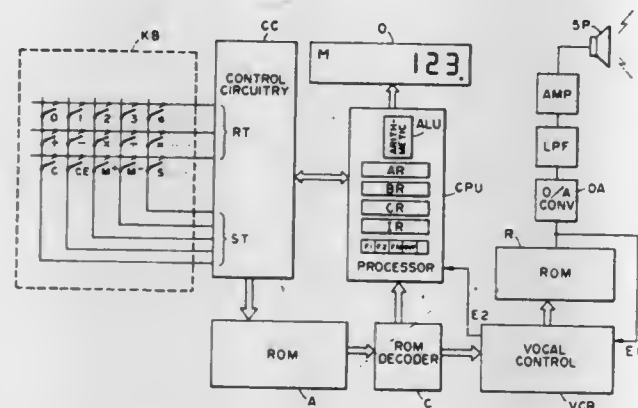
ELECTRONIC APPARATUS WITH VOCAL OUTPUT
Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 194,988, Oct. 8, 1980, abandoned. This application Apr. 19, 1983, Ser. No. 485,381

Claims priority, application Japan, Oct. 15, 1979, 54-132570
Int. Cl.³ G10L 1/00

U.S. Cl. 381—51

11 Claims



1. An electronic apparatus for operating on data and including means capable of producing data in the form of a voiced output, comprising:

- input means for entering data;
- detection means for detecting overflow of data entered by said input means and beyond the operational capacity of said apparatus; and
- inhibiting means connected to said detection means for inhibiting production of said data as a voiced output by said producing means when an overflow is detected by said detection means.

4,431,867

MODEM WITH LOW PART COUNT AND IMPROVED DEMODULATOR

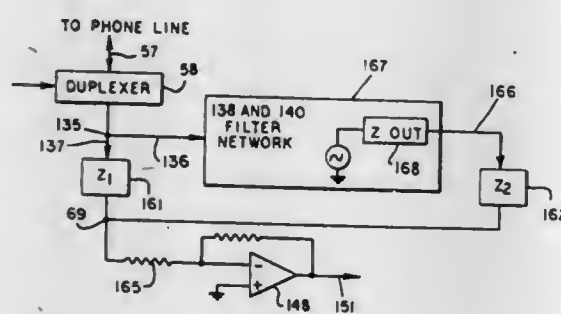
Dale A. Heatherington, Decatur, Ga., assignor to Hayes Microcomputer Products, Inc., Norcross, Ga.

Division of Ser. No. 273,398, Jun. 15, 1981. This application Dec. 13, 1982, Ser. No. 449,464

Int. Cl.³ H04M 11/00

U.S. Cl. 179—2 C

2 Claims



1. In a data communications adapter including means for coupling a telephone line to a first point in a signal path, said first point being an input point to a filter network, said filter network including an output, and a decoding means for decoding signals from said telephone line, the improvement comprising in combination:

- a first impedance connecting said first point to a second point;
- means for connecting said output of said filter network to a

third point and for providing a low output impedance at said third point;

a second impedance connecting said second point and said third point;

wherein said first impedance, said second impedance and said output impedance provide a low pass function between said first point and said second point; and said output impedance and said second impedance provide a high pass function between said output of said filter network and said second point; and

means connecting said second point and said decoding means.

4,431,868

SOLID STATE TELEPHONE LINE INTERFACE CIRCUIT WITH RINGING CAPABILITY

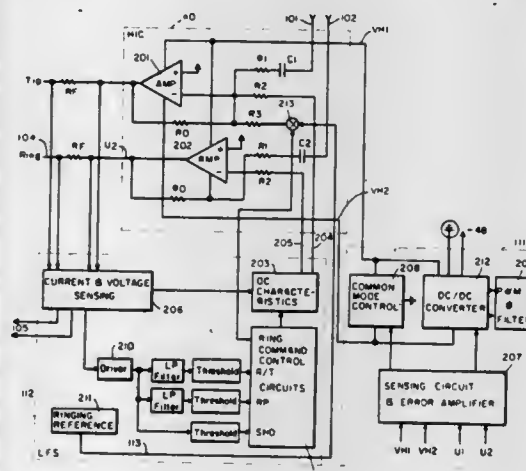
Daniel M. Bolus, Shelton, and Ramon C. W. Chea, Jr., Monroe, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,545

Int. Cl.³ H04M 3/02, 19/02

U.S. Cl. 179—18 FA

7 Claims



1. A telephone line circuit connected between subscriber tip and ring conductors of a two-wire telephone line and a two-wire source of integrated telephone signals, comprising:

a ringing reference source providing a ringing signal at a low amplitude level;

solid state amplifying means selectively responsive to said integrated telephone signals, to variable amplifier energizing signals, and to said ringing signal, said amplifying means being connected to provide drive current to said subscriber tip and ring conductors, and wherein said amplifying means comprises a separate solid-state operational amplifier driving each of said tip and ring subscriber conductors;

a programmable signal generator, including slaving means responsive to the instantaneous signal amplitude at the output of said amplifying means for generating and coupling said variable amplifier energizing signals to said amplifying means, said slaving means generating said energizing signals with a predetermined instantaneous offset voltage with respect to said instantaneous signal amplitude and said ringing signal coupled to said amplifying means to provide relative linearity of amplification; wherein said integrated telephone signals include first input characteristics corresponding to a ringing command, and in which said telephone line circuit comprises means for electronically switching a ringing signal from said ringing reference to the input of the one of said separate solid-state operational amplifiers corresponding to said subscriber tip conductor during said first input characteristics corresponding to said ringing command.

4,431,869

TELEPHONE LINE FEED

Anthony W. Sweet, Saffron Walden, England, assignor to Standard Telephones and Cables Limited, London, England

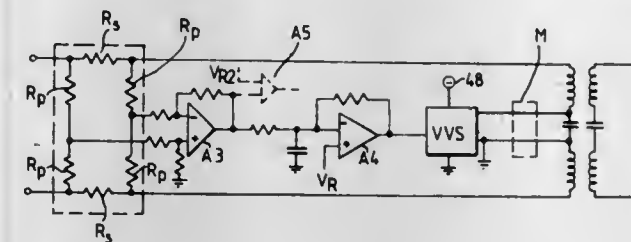
Filed Dec. 3, 1980, Ser. No. 212,347

Claims priority, application United Kingdom, Dec. 6, 1979, 7942104

Int. Cl.³ H04M 1/00; H04B 3/16

U.S. Cl. 179—77

10 Claims



the common terminal and to the second control signal being of the other state for causing the second FET to have a higher impedance, and a third control circuit responsive to the second control signal being of the one state for causing the third FET to have a low impedance and being responsive to the second control signal being of the other state to cause the third FET to have a higher impedance;

whereby during a transition of the first control signal to the one state and the second control signal to the other state, an AC current at the first terminal is sufficiently isolated from the second terminal by the third FET so as to have sufficient voltage at the common terminal to cause the second FET to exhibit the higher impedance state.

4,431,872

TELECOMMUNICATION RECEIVERS

Peter L. Edwards, Eastleigh, England, and Barry Ward, LaGarde, France, assignors to International Business Machines Corp., Armonk, N.Y.

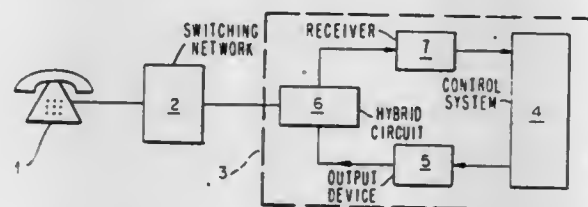
Filed May 3, 1982, Ser. No. 373,956

Claims priority, application European Pat. Off., May 15, 1981, 81302158

Int. Cl.³ H04M 11/00

U.S. Cl. 179—84 VF

4 Claims



1. A dual tone multi-frequency signal receiver comprising a hybrid circuit for transmitting audio and DTMF signals to and receiving audio and DTMF signals from a telecommunication network, an audio output device for feeding audio signals to the hybrid circuit, an audio protected DTMF receiver for receiving DTMF signals from the hybrid circuit characterized by the receiver including a non-audio protected DTMF receiver tuned to a particular DTMF pair of signals and connected to receive signals from the hybrid circuit and having an output connected to switching means which disconnects the output of the audio output device from the hybrid circuit whenever the particular pair of DTMF signals is received.

4,431,873

DIAPHRAGM DESIGN FOR A BENDER TYPE ACOUSTIC SENSOR

Robert G. Dunn, Dartmouth, and Kenneth N. Barnard, West Peteswick, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

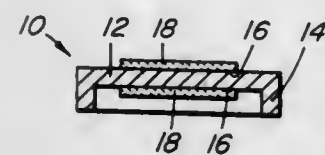
Filed Dec. 8, 1981, Ser. No. 328,648

Claims priority, application Canada, Jan. 9, 1981, 368178

Int. Cl.³ H01L 41/08

U.S. Cl. 179—110 A

7 Claims



1. An omnidirectional acoustic sensor having an edge mounted air-backed diaphragm in an assembly which has a central axis, said assembly being mounted so as to be responsive to acoustic pressure waves, wherein the improvement comprises a plurality of piezoelectric ceramic discs, one disc

mounted on each face of the diaphragm to form therewith a sensor unit whose acoustical and capacitive sensitivities are relatively independent of varying static pressure, the discs and diaphragm being of a preselected size such that the ratio of disc diameter to diaphragm is not greater than about 0.8 and the maximum radius of said discs further lies within the radius of zero stress of said diaphragm, said radius of zero stress being defined as that radius, measured from the center of said diaphragm where the stress is greatest, outwardly to the point on the diaphragm where the stress is at a minimum.

4,431,874

BALANCED CURRENT MULTIPLIER CIRCUIT FOR A SUBSCRIBER LOOP INTERFACE CIRCUIT

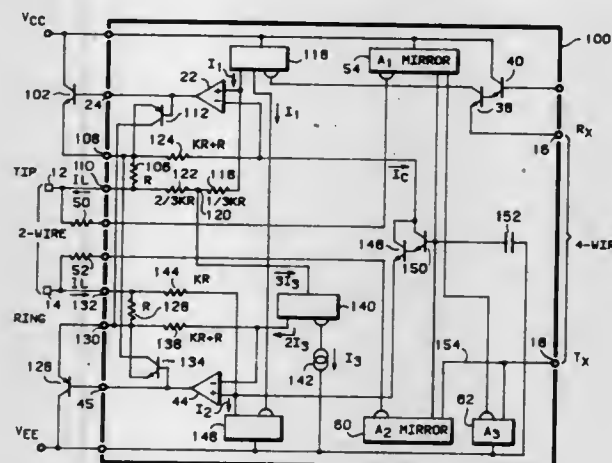
Don W. Zobel, Tempe; W. Eric Main, Mesa; W. David Pace, Tempe, and Dennis L. Welty, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1981, Ser. No. 305,013

Int. Cl.³ H04B 1/58

U.S. Cl. 179—170 NC

13 Claims



1. In a subscriber loop interface circuit (SLIC) for providing signal conversion between a balanced subscriber loop and a pair of unidirectional transmission paths, the SLIC being adapted to receive a supply voltage including sensing circuit means coupled to first and second loop terminals having a plurality of current mirrors for producing a direct current drive signal in response to a load being connected across the loop terminals and current amplification means coupled to the first and second loop terminals which is responsive to the direct current drive signal for supplying loop current to the load which is proportional to the direct current drive signal, the improvement comprising the current amplifier means including a pair of current difference amplifiers which form a balanced current multiplier with each current difference amplifier being coupled between a respective one of the first and second loop terminals and the sensing circuit means, each current difference amplifier including means for both sourcing and sinking current at the respective loop terminal coupled therewith for providing rejection of longitudinal signals having current magnitudes that exceed the magnitude of the loop current that occur across the loop terminals.

4,431,875

SIGNALLING AND CHANNEL LOOP TEST CIRCUITS FOR STATION CARRIER TELEPHONE SYSTEM

Frank L. Simokat, Babylon, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Division of Ser. No. 932,704, Aug. 11, 1978, Pat. No. 4,230,910.

This application Jun. 12, 1980, Ser. No. 158,874

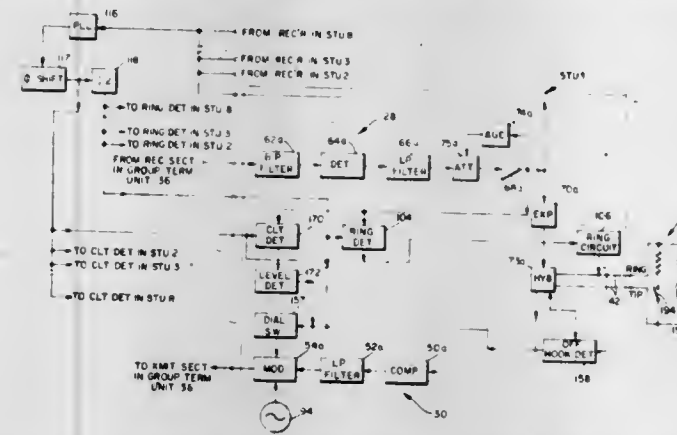
Int. Cl.³ H04B 3/46

U.S. Cl. 179—175.3 R

4 Claims

1. A method of conducting a channel loop test on a transmission channel of an amplitude modulated telephone carrier system wherein said channel is defined by first and second transmitting and receiving channel terminal circuits which are

interconnected by a transmission line, said first terminal circuit having (a) a communication transmitter for transmitting a first carrier signal of preselected frequency over said line to said second terminal circuit, and (b) a communication receiver tuned to receive a second carrier signal of a preselected frequency that is different from the frequency of said first carrier signal, and said second terminal circuit having (a) a communication receiver tuned to receive said first carrier signal and (b) a communication transmitter operative to transmit said second carrier signal, said method comprising the steps of supplying a channel loop test a.c. signal of preselected frequency, injecting said a.c. signal at a preselected level into the transmitter of said first terminal circuit for amplitude modulating said first carrier signal, receiving and detecting said first carrier signal in the receiver of said second terminal circuit to recover said a.c.,



signal, providing an additional signal of preselected frequency, utilizing said additional signal to synchronously detect said a.c. signal following its recovery by the detection of said first carrier signal in said second terminal circuit, transmitting said second carrier signal over said line from the transmitter of said second terminal circuit to said first terminal circuit upon synchronously detecting said a.c. signal, conducting the recovered a.c. signal through at least a part of the transmitter in said second terminal circuit to amplitude modulate said second carrier signal, receiving and detecting said second carrier signal in the receiver of said first terminal circuit to recover said a.c. signal from said second carrier signal, and comparing the level of the a.c. signal with a reference value after the a.c. signal is recovered by the detection of said second carrier signal.

4,431,876

KEY SWITCH

Wolfgang Labude, Constance; Karl-Heinz Bauer, and Edgar Maisch, both of Bad Neustadt, all of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,692

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018810

Int. Cl.³ H01H 9/00, 13/00

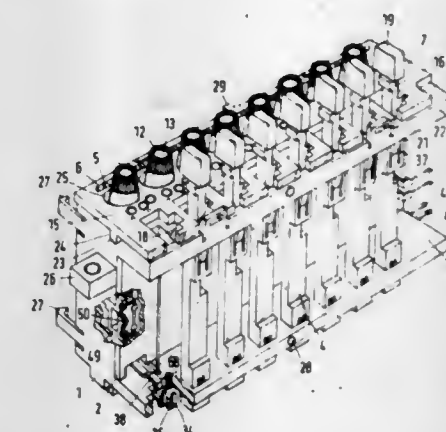
U.S. Cl. 200—5 R

20 Claims

20. Key switch apparatus for housing a plurality of manually operated keys positioned in an array, each of said keys being adapted to provide an electrical contact when manually moved, each said key comprising:

a key slide element adapted to be moved from a normal OFF position to an ON position, said key slide element having at least one longitudinal recess extending in its sliding direction and a leaf spring contact mounted in said recess, first and second fixed contact members, said first member having abutment means positioned in said recess for receiving one end of said leaf spring in an abutting relationship, said slide having second abutting means for receiving the other end of said leaf spring so as to normally hold said spring against said first member in a curved manner, said second member being positioned next to said first member and adjacent said recess so that when said slide is moved

toward said first member said leaf spring curves out of said recess and contacts said second member, thereby provid-



ing an electrical connection between said first and second members.

4,431,877

THERMAL SHIELD FOR CIRCUIT BREAKER OPERATING SPRING

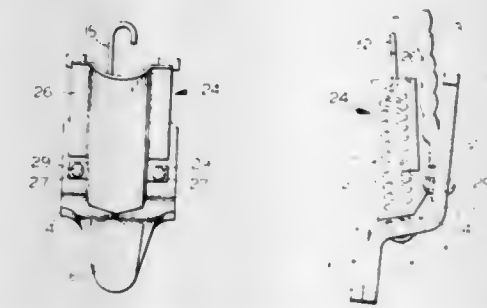
Eldon B. Heft, West Hartford, and Joseph B. Kelaita, Jr., Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,449

Int. Cl.³ H01H 33/02

U.S. Cl. 200—144 R

10 Claims



1. A thermal heat shield for molded case circuit breakers comprising:

a body member at least partially encompassing a circuit breaker operating spring; and means for attaching said body member to a circuit breaker moveable contact arm, said body member being concentrically arranged on said spring.

4,431,878

COMPRESSION PISTON SWITCH

Lutz Niemeyer, Birr, and Klaus Ragaller, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 9, 1982, Ser. No. 386,582

Claims priority, application Switzerland, Jun. 30, 1981, 4290/81

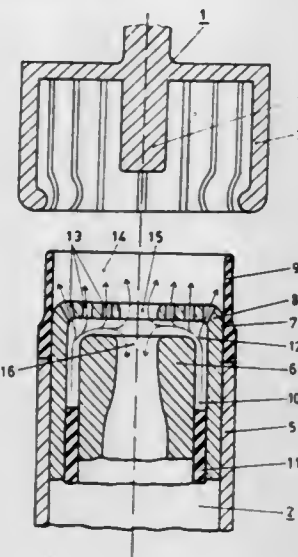
Int. Cl.³ H01H 33/88

U.S. Cl. 200—148 R

5 Claims

1. A compression piston switch comprising: a first switching part; a second switching part displaceable relative to said first switching part; said first switching part including a contact piece; a flow guiding device consisting of conductive material and at least partially encircling said contact piece and electrically conductively connected to the first switching part, a flow duct for arc quenching gas being formed between said contact piece and said flow guiding device;

said flow guiding device including an annular part forming a constriction through which at least a portion of the arc quenching gas flows; and



said annular part extending across said contact piece and being disposed, in a switch-off position of the switch, opposite said second switching part, thereby shielding said contact piece and said flow duct from the electric field arising between said first and second switching parts after arc extinction.

4,431,879

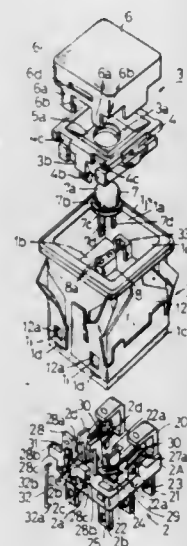
ILLUMINATION-TYPE PUSHBUTTON SWITCH CONSTRUCTION

Yasushi Fujita, and Hiroshi Sato, both of Tokyo, Japan, assignors to Nihon Kaihiki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1982, Ser. No. 425,368

Claims priority, application Japan, Oct. 6, 1981, 56-148403[U]; Jul. 1, 1982, 57-098217[U]
Int. Cl.³ H01H 9/18

U.S. Cl. 200—314

18 Claims



1. An illumination-type pushbutton switch construction comprising:

- a housing having at least one open end;
- a switch section provided in said housing;
- an operation section slidably arranged in said housing in proximity to said open end of said housing;
- a switch operating section for actuating said switch section in cooperation with said operation section;
- an illumination unit disposed so as to be movable in said housing in response to the operation of said operation section and including at least one light emitting element having pin-like terminals and a socket for securely inserting therein said pin-like terminals;
- a terminal means for said illumination unit provided in said housing;

an electrically conductive bias means disposed between said illumination unit and said terminal means therefor; and wherein said operation section includes a pushbutton, a switch actuating means detachably fitted with respect to said pushbutton and a supporting frame detachably attached to said switch actuating means, said supporting frame having a holding portion for holding said light emitting element; and

wherein said switch operating section includes an actuating plate disposed so as to be slidable along the inner surface of said housing, said actuating plate being detachably attached to said switch actuating means, to thereby allow said pushbutton, switch actuating means, supporting frame and actuating plate to be connected in series and detachable from one another so as to be integrally movable.

4,431,880

ROCKER SWITCH WITH INTEGRALLY DEFINED RETENTION MEANS FOR RESISTOR AND LAMP

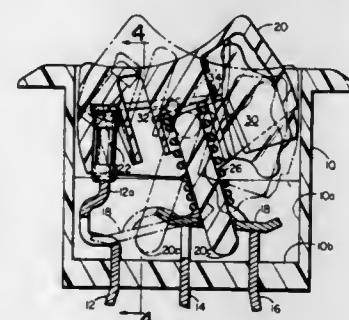
Milton N. Ives, Wolcott, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Feb. 16, 1983, Ser. No. 466,966

Int. Cl.³ H01H 9/16

U.S. Cl. 200—315

3 Claims



1. In an electric switch having a case defining a cavity for several fixed contacts and having an actuator movably mounted in the case for shifting a movable contact between at least two positions associated with certain of these fixed contacts to provide at least two switch conditions, the improvement to said actuator comprising

a depending central portion cooperable with and adapted to so shift the movable contact in response to actuator movement,

an electrically energizable lamp,

a downwardly open recess to receive said lamp,

a generally cylindrical resistor in electrical series with said lamp,

a downwardly open recess for a resistor, said resistor recess being spaced from said lamp recess so that said recesses are provided adjacent opposite ends of said actuator and on either side of said depending central portion, said resistor recess defined by opposed concave surfaces of axially elongated generally cylindrical contour and oriented at an acute angle with respect to one another so that one said concave cylindrical surface serves to guide the resistor into place during insertion in said recess and the other said concave cylindrical surface having a portion inclined with respect to said one surface and spaced therefrom so that after insertion said resistor can be pivoted about its inner end until its outer end abuts said other concave cylindrical surface, and said other surface having resistor retention lips associated therewith to secure said resistor in said recess by engagement with said resistor outer end.

4,431,881

PUSHBUTTON DRIVE FOR KEY CONTACTS

Heinrich Sauer, and Günter Rittammer, both of Amberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

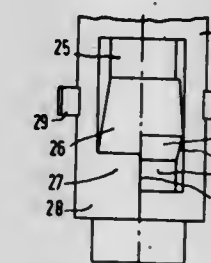
Continuation of Ser. No. 226,354, Jan. 19, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,207

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002169

Int. Cl.³ H01H 13/62

U.S. Cl. 200—328

10 Claims



1. A pushbutton drive for key contacts comprising a housing, a mushroom button having a mushroom stem which is movably guided in the housing between a rest position and an operating position, a detent plunger spring-loaded transversely to the longitudinal direction of movement of the mushroom stem and disposed in the housing for engaging the mushroom stem, an operating position detent disposed on the mushroom stem and cooperating with the detent plunger for latching the mushroom stem in the operating position and for allowing the mushroom stem to be released from the operating position upon rotation of the mushroom stem in the operating position, a rest position detent disposed on the mushroom stem and cooperating with the detent plunger to latch the mushroom stem in the rest position, the rest position detent including spaced rotation preventing surfaces disposed on the mushroom stem cooperating with the detent plunger for preventing rotation of the mushroom stem in the rest position, the mushroom stem having surface configuration cooperating with the detent plunger for providing the mushroom stem with a jump action as the mushroom stem is moved from the rest position detent to the operating position detent, means for loading the mushroom stem with a restoring force including a torsional component to urge the mushroom stem from the operating position to the rest position, a rest position detent surface associated with the rest position detent which is disposed between the rotation preventing surfaces, the detent plunger contacting the rest position detent surface in the rest position, an operating position detent surface associated with the operating position detent, the detent plunger contacting the operating position detent surface in the operating position, means for restoring the mushroom stem to the rest position detent from the operating position detent comprising another surface extending along the mushroom stem from adjacent the rest position detent surface to adjacent the operating position detent surface, the other surface intersecting the operating position detent surface such that the detent plunger can slide from the operating position detent surface to the other surface to allow the mushroom stem to be rotated in the operating position and intersecting one of the rotation preventing surfaces of the rest position detent to allow the detent plunger to enter the rest position detent from the other surface under the action of the means for loading.

4,431,882

TRANSPARENT CAPACITANCE MEMBRANE SWITCH

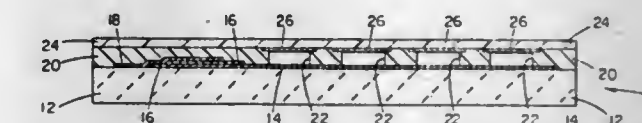
Norman J. Frame, Whitefish Bay, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Aug. 12, 1982, Ser. No. 407,450

Int. Cl.³ H01H 13/70; G08C 9/00

U.S. Cl. 200—5 A

7 Claims



1. A capacitance membrane switch, comprising a substrate supporting a first contact portion, a flexible membrane supporting a second contact portion aligned over said first contact portion, means for spacing said membrane from said substrate in the absence of an actuating force on said flexible membrane, said first and second contact portions, substrate, flexible layer, and means for spacing being together at least partially transparent to light travelling therethrough, thereby defining a zone of transparency surrounding and including said contact portions, and a capacitance element electrically connected to one of said first and second contact portions, said capacitance element being offset from said contact portions so as to be located outside said zone of transparency.

4,431,883

DUAL ACTION SWITCH ASSEMBLY

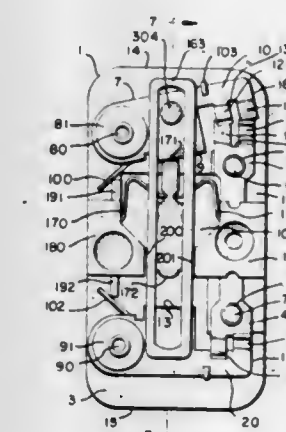
Robert B. Frank, Morris Plains, N.J., assignor to General Automotive Specialty Co., Inc., Carlstadt, N.J.

Filed Feb. 22, 1982, Ser. No. 350,630

Int. Cl.³ H01H 15/08

U.S. Cl. 200—67 D

11 Claims



1. A dual action switch assembly comprising:

- a base;
- two spaced pairs of contact members, each pair having a fixed contact member mounted on the base, and a movable contact member mounted on said base for pivotal movement;
- resilient biasing members comprised of two springs each of said springs being coupled at one end to said base and at the other end to a respective one of said movable contact members to continuously urge each movable contact member against its corresponding fixed contact member;
- a slider unit slidably mounted on said base between said contact member pairs; and
- at least one tensioned locking element interposed between said base and said slider unit for alternatively holding one or the other of said movable contact members in an open position relative to its corresponding fixed contact member while simultaneously permitting the other movable

contact member to be in a closed position relative to its corresponding fixed contact member.

4,431,884

SNAP ACTION SWITCH

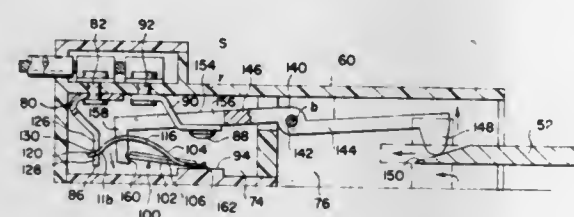
Dennis P. Flumignan, Sterling Heights; Ben J. Charboneau, Wixom, and Gary B. Zulauf, Pinckney, all of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Aug. 9, 1982, Ser. No. 406,183

Int. Cl.³ H01H 21/40

U.S. Cl. 200—67 D

19 Claims



1. A snap action switch comprising an elongated housing having spaced opposed side walls, spaced opposed top and bottom walls, a transversely extending end wall at one end of the housing, and an intermediate transversely extending bridge wall, said walls together defining a switch chamber portion, a pair of opposed spaced stop surfaces in said switch chamber including at least one fixed contact, an elongated spring contact element of resilient metal strip material mounted in said switch chamber and including an elongated body member and an elongated plate spring member, said body member being rigidified against flexure and comprised of a pair of laterally spaced parallel legs having opposite ends, said legs being integral with and connected at one of their said ends by a flat base end portion of said body member, said plate spring member being connected at one end with said base end portion and extending flatwise therefrom in a direction generally lengthwise of said legs and at a location therebetween and terminating in a free other end, and mounting means supporting said spring contact element in said switch chamber for pivotal movement in a plane including said stop surfaces, said mounting means comprising both a bracket arm terminal contact in said switch chamber and an elongated actuator lever located in said housing and pivotally mounted intermediate its ends and exteriorly of said switch chamber on a pivot pin in said housing for pivotal movement in said plane, said lever extending into the said switch chamber portion of the housing from said pivot pin in a direction generally lengthwise of said switch contact element, said bracket arm terminal contact and actuator lever pivotally engaging respective ones of said members at the other ends thereof opposite their said one ends connected to said flat base end portion and longitudinally spring loading said plate spring member in a longitudinally bowed shape effective to hold said members in said pivotally engaged relation with said bracket arm terminal contact and said actuator lever, with the spring contact element normally held by said plate spring member in a stable rest position with the said base end portion thereof in pressure contact with one of said stop surfaces, said plate spring member acting to cause said spring contact element to snap over to an unstable position with the said base end portion thereof in pressure contact with the other one of said stop surfaces on application of an actuating force to said actuator lever in a direction to move the respective one of said members engaged therewith to an over-center position relative to the other one of said members.

4,431,885

VACUUM INTERRUPTER

Shinzo Sakuma, Kawasaki; Junichi Warabi, Shizuoka, and Yutaka Kashimoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

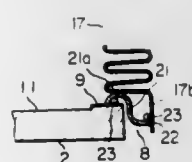
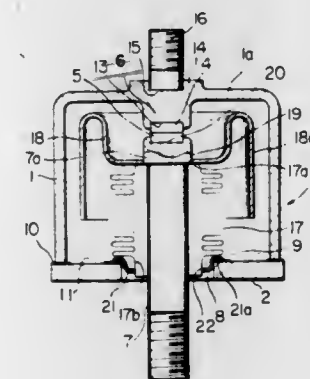
Filed Nov. 5, 1981, Ser. No. 318,553

Claims priority, application Japan, Nov. 5, 1980, 55-157957[U]

Int. Cl.³ H01H 33/66

U.S. Cl. 200—144 B

3 Claims



1. A vacuum interrupter comprising a pair of stationary and movable electrical contacts provided within a vacuum vessel enclosed by an insulating end plate having a bore in the center thereof, a movable contact rod for actuating the movable electrical contact relative to the stationary electrical contact so that the stationary and movable contacts are engageable with each other, and a cup-shaped cylindrical bellows having a first end operatively joined to the moveable contact rod and a second end connected to the insulating end plate of the vacuum vessel, the bellows being provided at the second end thereof with a tubular portion,

the improvement comprising an auxiliary member functioning as a vacuum-tight member adapted to be interposed between and hermetically brazed to the bellows and the end plate,

said auxiliary member comprising an integral arcuate portion and a bottom portion having a center bore, an outer periphery of said tubular portion of the bellows being fitted into said bore in said auxiliary member, wherein one end of said auxiliary member is hermetically connected to an inner end surface of the end plate, the other end of said auxiliary member extending towards the center of the bore in the end plate and being hermetically connected to the outer periphery of the tubular portion of said bellows, said bellows further including a wave portion integral with the tubular portion thereof, the wave portion being mounted to contact the inner surface of said arcuate portion to define a closed space or cavity between the inner surface of said auxiliary member and the outer surface of the tubular portion,

said auxiliary member effecting precise positioning of the bellows in radial and axial directions of the end plate during assembly of the interrupter, contact between the wave portion and arcuate portion restricting movement of the arcuate portion to prevent breakage of the bellows and reduce fatigue therein.

4,431,886

CIRCUIT-BREAKER

Robert J. Logan, Sheffield, England, assignor to Northern Engineering Industries plc, Great Britain

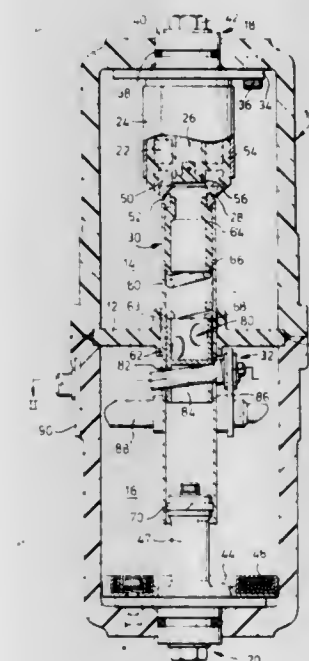
Filed Jul. 9, 1982, Ser. No. 396,798

Claims priority, application United Kingdom, Aug. 12, 1981, 8124645

Int. Cl.³ H01H 33/04

U.S. Cl. 200—144 A

9 Claims



1. A circuit-breaker comprising:

- (a) wall means defining first and second chambers which contain pressurized gas having arc-extinguishing properties;
- (b) first and second terminals mounted in said wall means;
- (c) a fixed annular contact located in said first chamber;
- (d) a movable annular contact engageable in butting relationship with said fixed contact and movable along a line of movement with which both said contacts are coaxial;
- (e) a hollow movable contact member which carries said movable contact and movable along said line of movement, said contact member extending through a part of said wall means separating said chambers and having ports controlling communication between said chambers in dependence upon the position of said contact member, said contact member being electrically connected to said second terminal;
- (f) a coil coaxial with said line of movement of said contact member and having a first end connected to said first terminal and a second end connected to said fixed contact;
- (g) a ferromagnetic body positioned adjacent said coil and positioned so that the least distance between said body and said movable contact is always greater than the least distance between said body and said fixed contact; and
- (h) mechanism operable to move said contact member along said line of movement to engage said movable contact with said first contact and then to turn said contact member angularly about said line of movement to turn said movable contact in wiping engagement with said fixed contact.

4,431,887

GAS-BLAST SWITCH

Christian Sturzenegger, Zürich; Willi Schütz, Buchs; Bruno Aeschbach, and Heinz Aeschbach, both of Reinach, all of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

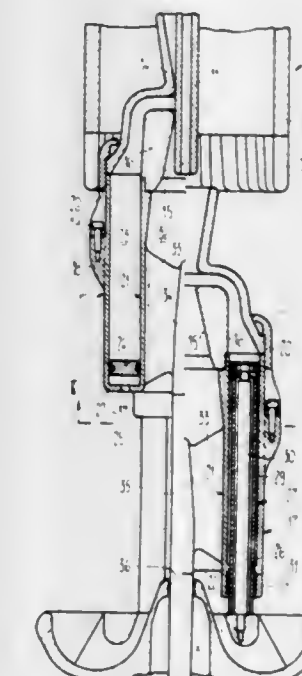
Filed Jun. 21, 1982, Ser. No. 390,391

Claims priority, application Switzerland, Jul. 9, 1981, 4507/81

Int. Cl.³ H01H 33/70

U.S. Cl. 200—148 A

6 Claims



1. A gas-blast switch comprising:

- a movable contact element;
- a blast nozzle movable in conjunction with said movable contact element and surrounding said movable contact element;
- said blast nozzle having an inlet side;
- a stationary contact element engaging with said movable contact element and closing said blast nozzle in a cut-off position of said gas-blast switch;
- a pump chamber which can be pressurized during a cut-off stroke of the gas-blast switch and with which there is operatively connected the inlet side of the blast nozzle;
- said pump chamber having a jacket-like construction and being bounded by an inner cylinder and an outer cylinder;
- said inner cylinder supporting the movable contact element;
- said outer cylinder supporting the blast nozzle;
- a stationarily supported, substantially ring-shaped pump piston for the displacement of both cylinders;
- a substantially ring-shaped floor member for interconnecting both of said cylinders solely at ends thereof facing away from said blast nozzle;
- said floor member being provided with at least two guide bores;
- sliding contact means provided for said at least two guide bores; and
- a respective electrically conductive, stationarily anchored column member supporting said piston and engaging through said guide bores.

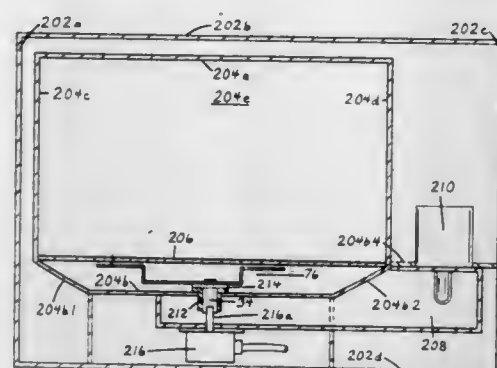
4,431,888

MICROWAVE OVEN WITH IMPROVED FEED STRUCTURE

James E. Simpson, Coralville, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa
Division of Ser. No. 971,727, Dec. 21, 1978, Pat. No. 4,284,868.
This application Nov. 24, 1980, Ser. No. 209,848
Int. Cl.³ H05B 6/72

U.S. Cl. 219—10.55 F

9 Claims



1. A microwave oven, comprising:
an oven cavity defined by conductive bounded walls;
one of said walls having a portion extending outwardly from said cavity defining a recess;
an elongated waveguide positioned outside said cavity, said waveguide having one side with at least a portion thereof formed by a portion of the outside of said one of said walls;
an aperture in said one of said walls communicating from said recess to said waveguide;
a primary directive radiator positioned in said recess in said cavity;
said radiator being supported by a probe antenna extending through said aperture into said waveguide; means for rotating said radiator; and
a magnetron coupled to said waveguide wherein microwave energy is transmitted from said magnetron through said waveguide and is coupled by said probe antenna to said radiator.

4,431,889

COMBINATION MICROWAVE AND CONVECTION OVEN

Domenick Saponara, Macungie, and William J. Day, Allentown, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 319,536, Nov. 9, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,783

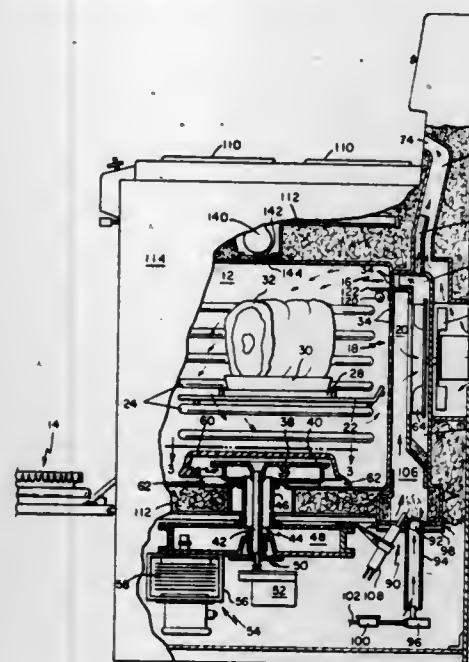
Int. Cl.³ H05B 6/64

U.S. Cl. 219—10.55 F

6 Claims

1. In combination:
a conductive enclosure supplied with microwave energy;
a combustion plenum positioned outside said enclosure;
a burner for supplying fuel to said combustion plenum;
a blower system positioned above said combustion plenum, said blower system drawing vapor from said enclosure through a first set of perforations and recirculating said vapor past a vent back into said enclosure through a second set of perforations, a portion of said vapor being exhausted through said vent; and
said combustion plenum communicating with the input of said blower system outside said enclosure wherein products of combustion from said combustion plenum are drawn through said blower system before being directed

into said enclosure wherein a substantially constant negative pressure is created in said combustion plenum for



drawing primary combustion air and fuel from said burner.

4,431,890

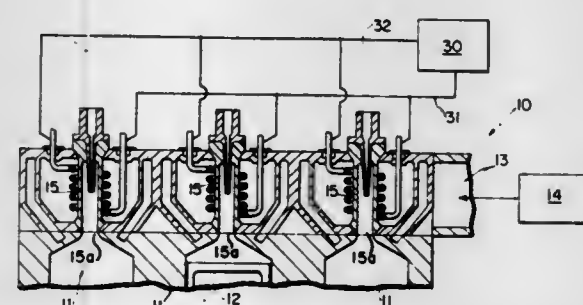
INDUCTION HEATED STEAM FLASH PLUG

James L. Ramer, Rt. 1, Box 382, Whitestown, Ind. 46075
Filed Dec. 22, 1980, Ser. No. 218,908

Int. Cl.³ H05B 6/10

U.S. Cl. 219—10.51

12 Claims



1. A steam flash plug comprising:
(a) a hollow body member having an open discharge end;
(b) means for injecting a fine spray of water into said hollow body member;
(c) means for inductively heating said hollow body member whereby said fine spray of water is converted into steam when injected into said hollow body member; and
(d) a housing defining an expansion chamber having a movable element therein, said expansion chamber having an open end coincident with said hollow body member open discharge end, whereby said expansion chamber physically expands in volume in response to forces which are generated by the steam and applied to said movable element.

4,431,891

ARRANGEMENT FOR MAKING CONTACT BETWEEN THE CONDUCTOR TRACKS OF PRINTED CIRCUIT BOARDS WITH CONTACT PINS

Anton Forstner, Dietikon, and Imre Bajka, Niederglatt, both of Switzerland, assignors to Siemens-Albis AG, Zurich, Switzerland

PCT No. PCT/CH80/00054, § 371 Date Jan. 8, 1981, § 102(e)
Date Jan. 8, 1981, PCT Pub. No. WO80/02662, PCT Pub. Date Dec. 11, 1980

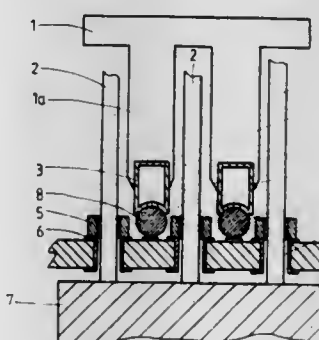
PCT Filed May 8, 1980, Ser. No. 229,592

Claims priority, application Switzerland, Jun. 5, 1979, 5195/79

Int. Cl.³ H05B 6/10; B23K 1/00

U.S. Cl. 219—9.5

8 Claims



1. An arrangement for making contact between electrical conductor tracks of printed circuit boards and contact pins by heating bodies formed of solder material and arranged at the region of predetermined contact locations where contact is to be made, comprising:

- a displaceable induction loop through which there can flow a high-frequency alternating current in order to generate an electromagnetic alternating field;
- said induction loop possessing an essentially rectangular-shaped configuration and serving to make contact between the conductor tracks of the printed circuit board and contact pins arranged in rows and spaced very closely in relation to one another and inserted into bores of the printed circuit board, said induction loop being adapted to fit between said rows of pins;
- said induction loop having two lengthwise extending portions, a loop end, and a substantially U-shaped web provided at the region of said loop end, said substantially U-shaped web constituting a raised connection in relation to a plane containing both of said lengthwise extending portions of the induction loop;
- a displaceable support member for supporting the induction loop and displaceable with respect to a plane containing the printed circuit board; and
- said lengthwise extending portions of said substantially rectangular-shaped induction loop comprising two substantially mutually parallel extending leg members arranged relative to said displaceable support member such that upon lowering said support member in the direction of said printed circuit board into coacting relationship with one another there is operatively engaged at least one row of the contact pins at which contact is to be made and such contact pins are simultaneously brought together with related contact locations thereof into the effective region of the electromagnetic alternating field of the induction loop and are thereby substantially uniformly heated.

4,431,892

VENTILATED MODULAR COOKTOP CARTRIDGE

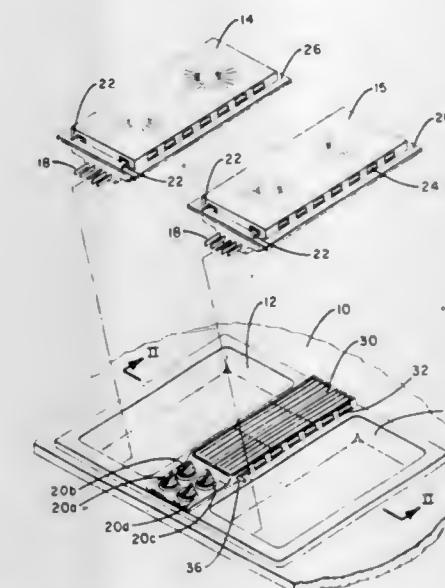
Donald A. White, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.

Filed Jul. 17, 1981, Ser. No. 284,283

Int. Cl.³ H05B 6/12; F24C 15/10

U.S. Cl. 219—10.49 R

11 Claims



1. A cooking range for selectively receiving cooking cartridge means comprising:

- housing means having at least one pan-like member forming a recess;
- proximity ventilation means in said housing means having an inlet opening adjacent to the opening of said recess;
- cooking cartridge means defining a cavity containing heat producing means therein and adapted to be releasably mounted in said recess; a flange on said cartridge means adapted to coact with said housing means to support said cartridge means so that said cartridge means is partially received in said recess;
- wall means on said cartridge extending above a plane defined by said flange which is essentially coplanar with the opening of said recess;
- a first set of airflow ports on one side of said cartridge means and a second set of airflow ports on another side of said cartridge means opposite said one side with said first set of airflow ports being located in said wall means above said flange and defining air inlet means into said cavity and said second set of airflow ports being adjacent said proximity ventilation means when said cartridge means is releasably mounted in said recess and defining air outlet means, said proximity ventilation means being operable for educting air from said cavity into said proximity ventilation means through said air outlet means thereby causing ambient air to be drawn into said cavity through said air inlet means so that air circulation is established through said cavity and whereby said heat producing means are cooled by airflow induced exteriorly of said cartridge means.

4,431,893

FRONT PROGRAMMABLE TIMER FOR A MICROWAVE OVEN

Stephen A. Levie, Burnsville, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 23, 1981, Ser. No. 324,146

Int. Cl.³ H05B 9/06

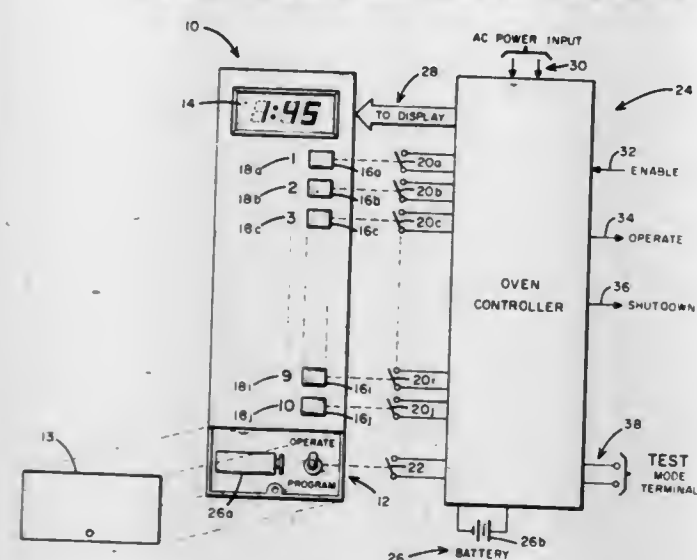
U.S. Cl. 219—10.55 B

11 Claims

1. A Method of programming a microwave oven controller comprising the steps of:

- A. actuating a tamper-proof switch to a first position such that a plurality of input switches are made effective to input desired operating times into said controller;
- B. actuating one of said input switches to identify it and

inputting a desired operating time by actuating switches from among said plurality of input switches such that said controller receives, stores and thereafter associates said desired operating time with said one input switch; and



C. actuating said tamper-proof switch to a second position such that subsequent actuation of said one input switch will recall its associated desired operating time and operate said controller for that time.

4,431,894

METHOD OF AND APPARATUS FOR AUTOMATICALLY THREADING A CONTINUOUS ELECTRODE WIRE IN AN ELECTROEROSION MACHINE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

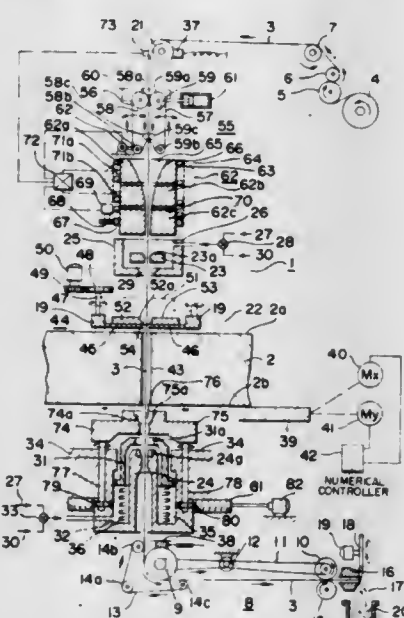
Filed Nov. 4, 1981, Ser. No. 318,255

Claims priority, application Japan, Nov. 10, 1980, 55-157044

Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 W

32 Claims



1. A method of automatically threading a continuous electrode wire through a workpiece in a traveling-wire electroerosion machine having a predetermined path of wire travel between wire supply means and wire takeup means, the method comprising the steps of:

- establishing a straight-line threading path across a said workpiece generally in said path of wire travel between the wire supply and takeup means;
- positioning said workpiece to locate a machining-start position thereof in said straight-line threading path;
- disposing, at one side of said workpiece and with axial spacing from the wire supply and takeup means establishing said path, a rotary guide block having a rotary axis and a tapered opening coaxial therewith so as to position said

opening axially in alignment with said straight-line threading path, said opening being tapered convergently in the direction of said workpiece;

- locating, behind said opening in said straight-line threading path, a free end of a said electrode wire extending from one of said wire supply and takeup means; and
- advancing said electrode wire from said one of the supply and takeup means to introduce said free end into said tapered opening while rotating said guide block about said rotary axis to allow said free end to pass through said opening and then into and through said workpiece along said threading path.

4,431,895

POWER SOURCE ARRANGEMENT FOR ELECTRIC DISCHARGE MACHINING

Haruki Obara, Sagami-hara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

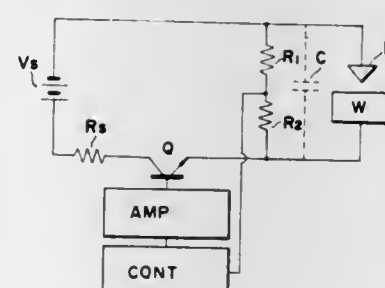
Filed Apr. 8, 1981, Ser. No. 252,215

Claims priority, application Japan, Apr. 16, 1980, 55-49942

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 P

4 Claims



1. A power source arrangement for electric discharge machining, in which a power source and a switching element are connected in series to an elongated electrode and a workpiece electrode separated from the elongated electrode by a gap and the switching element is driven by a pulse signal to perform electric discharge machining of the workpiece, comprising:

detector means for comparing a reference voltage and the gap voltage in the gap between the electrode and the workpiece to generate a detector signal when arcs and shorts form in the gap between the electrode and the workpiece;

oscillator means for continuously producing a pulse signal having a predetermined period;

pulse signal generator means responsive to the detector signal for generating an additional pulse signal having ON and OFF intervals, the ratio of the OFF interval to the ON interval of the additional pulse signal gradually increasing with the lapse of time, said pulse signal generator means including first means responsive to the detector means for generating a first digital signal for a first predetermined period of time following the detection of an arc or short, a second gate having a first input responsive to the first means and a second input, and means connected between the output of the detector means and the second input of the second gate for allowing the pulse signal of predetermined period to pass through the first gate when the detector means detects neither an arc nor a short; and

gate means responsive to the additional pulse signal and to the pulse signal of a predetermined period for driving the switching element until the arc or short is removed following the detection of its occurrence by the detector means, said gate means including a first gate having a first input for receiving the additional pulse signal and a second input for receiving the pulse signal of predetermined period, the output of the first gate driving the switching element;

wherein the first means comprises a first timer connected to the detector and a first oscillator connected to the first timer, wherein the second gate comprises an OR gate, and

wherein the means connected between the detector means and the second input of the second gate comprises an inverter.

4,431,896

METHOD AND APPARATUS FOR ORIENTING THE WIRE GUIDANCE HEADS ON SPARK EROSION CUTTING EQUIPMENT FOR ERODING WITH A GREAT WIRE SLOPE

Attilio Lodetti, Losone, Switzerland, assignor to A.G. für industrielle Elektronik AGIE, Losone, Switzerland

PCT No. PCT/CH80/00047, § 371 Date Dec. 26, 1980, § 102(e)

Date Oct. 31, 1980, PCT Pub. No. WO80/02395, PCT Pub. Date Nov. 13, 1980

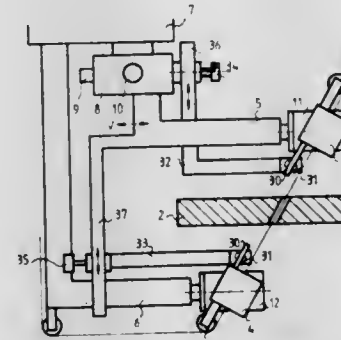
PCT Filed Apr. 22, 1980, Ser. No. 212,727

Claims priority, application Switzerland, Apr. 26, 1979, 3930/79

Int. Cl.³ B23P 1/12, 1/04

U.S. Cl. 219—69 W

10 Claims



- Spark erosion apparatus to cut, by spark erosion, a deformation into a workpiece (2) having a cutting wire electrode (1); an upper wire guidance head (3); a lower wire guidance head (4), the workpiece (2) being positioned between the upper and lower guidance heads;
- an upper support arm (5) supporting the upper guidance head and being movable, with respect to the workpiece, in an upper coordinate plane;
- a lower support arm (6) supporting the lower guidance head and being movable, with respect to the workpiece, in a lower coordinate plane independently of the upper support arm;
- and comprising, in accordance with the invention at least one gimbal suspension (11, 12) secured to and movably, tiltably securing at least one guidance head (3, 4) on, and with respect to the associated support arm (5, 6) and having orthogonal gimbal axes, said orthogonal axes intersecting at a transition point;
- means (21) secured to the at least one head and guiding the wire in a path between the outside of the at least one head remote from the workpiece and through said transition point;
- and independently controllable drive means (14, 18) coupled to said at least one gimbal suspension and individually controlling the position of the at least one head with respect to each one of the respective orthogonal gimbal axes.

4,431,897

METHOD AND APPARATUS FOR DISCHARGE MACHINING

Tetsuro Ito, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

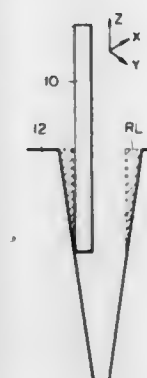
Filed Sep. 4, 1981, Ser. No. 299,415

Claims priority, application Japan, Sep. 10, 1980, 55-125799; Sep. 10, 1980, 55-125800

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 G

7 Claims



1. A discharge machining method for machining a workpiece by applying electric current to said workpiece and an electrode through a machining solution in a machining gap between said workpiece and said electrode, and by moving said electrode relative to said workpiece in a main machining direction and in a direction perpendicular to the main machining direction, comprising the ordered steps of:

- initially displacing said electrode downwardly relative to said workpiece in the main machining direction to a predetermined depth while machining said workpiece primarily with a lower end portion of said electrode;
- thereafter circularly moving said electrode relative to said workpiece in a direction perpendicular to the main machining direction while simultaneously (1) retracting said electrode upwardly from said predetermined depth in the main machining direction, and (2) increasing the radius of circular movement of said electrode in proportion to the retracting movement thereof while machining said workpiece primarily with side surfaces of said electrode, and
- moving said electrode toward the center of the circulating locus of said electrode in response to a shortcircuit between the electrode and the workpiece to thereby establish a gap between said electrode and said workpiece.

4,431,898

INDUCTIVELY COUPLED DISCHARGE FOR PLASMA ETCHING AND RESIST STRIPPING

Alan R. Reinberg, George N. Steinberg, both of Westport, and Charles B. Zarowin, Rowayton, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sep. 1, 1981, Ser. No. 298,416

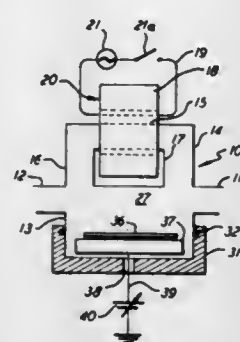
Int. Cl.³ B23K 9/00; B01K 1/00

U.S. Cl. 219—121 PG

6 Claims

1. An apparatus for the plasma etching of semiconductor devices comprising, a plasma chamber comprising tubing means defining a continuous discharge path about an opening through said plasma chamber, a power source, transformer means for inductively coupling said power source to said plasma for generating a plasma therein, platform means made of electrically conductive material

disposed in such plasma chamber for supporting one or more semiconductor devices to be etched,



a variable source of d.c. or a.c. voltage connected to said platform for controlling the level of sheath voltage between said plasma and said semiconductor device.

4,431,899

CUTTING ASSEMBLY

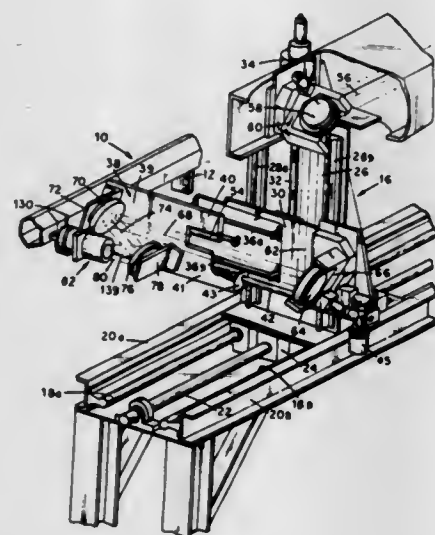
Daniel J. Racki, Greensburg; Clark E. Swenson, Monroeville; William A. Bencloski, Herminie, and Arthur L. Wineman, Greensburg, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,615

Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LG

7 Claims



1. An assembly for cutting a workpiece with a laser beam, comprising:
 - means for holding said workpiece in a predetermined position for cutting;
 - a support table mounted for movement toward and away from said workpiece;
 - a mirror mounted on said support table for directing a laser beam toward said workpiece;
 - a tube mounted on said support table between said mirror and said workpiece, said laser beam being directed toward said workpiece through said tube;
 - a ring rotatably mounted on the end of said tube that is disposed adjacent said workpiece;
 - means mounted on said ring for directing a gas stream toward the point of impingement of said laser beam on said workpiece; and
 - detent means associated with said tube and ring for releasably locking said ring on said tube in either of two rotational positions 90° apart.

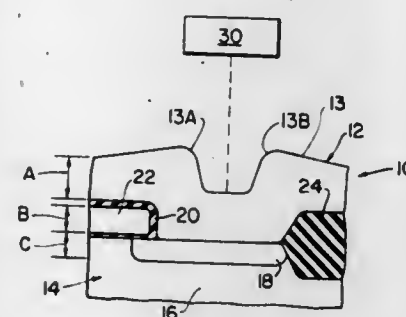
4,431,900
LASER INDUCED FLOW GE-O BASED MATERIALS
Michelangelo Delfino, and William I. Lehrer, both of Los Altos, Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jan. 15, 1982, Ser. No. 339,601

Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LM

15 Claims



1. A method of inducing flow or densification of a first portion of a structure in close proximity to a second portion of the structure, said structure portion including a silicon substrate and interconnect metallization, said first portion being of the type wherein flow or densification is induced therein upon application of heat thereto, said method comprising laser heating said first portion to an extent substantially greater than said second portion wherein said first portion comprises germanium-oxygen bonded material.

4,431,901

INDUCTION PLASMA TUBE

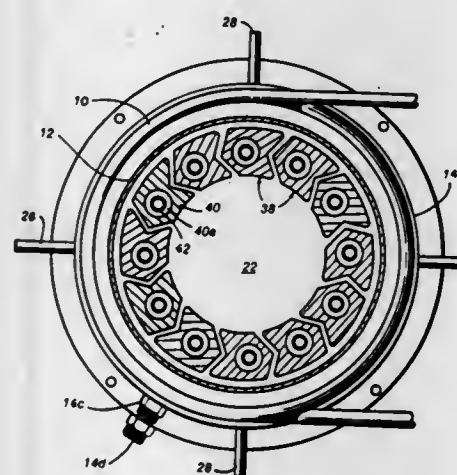
Donald E. Hull, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 2, 1982, Ser. No. 394,559

Int. Cl.³ B23K 5/00

U.S. Cl. 219—121 PR

5 Claims



1. An induction plasma tube comprising an electrical induction coil having a central longitudinal axis, a tubular enclosure centered coaxially on said axis and located inside said coil, and a segmented metal radiation shield centered coaxially on said axis inside said enclosure, said shield consisting of a plurality of elongate fluid-cooled metal shield segments extending parallel to said axis, said segments being disposed in a circular arrangement adjacent the interior surface of said enclosure and being substantially equally spaced apart circumferentially such that said shield has a generally tubular configuration, and said shield segments being shaped in cross-section so as to occlude line-of-sight transmission of light through said radiation shield.

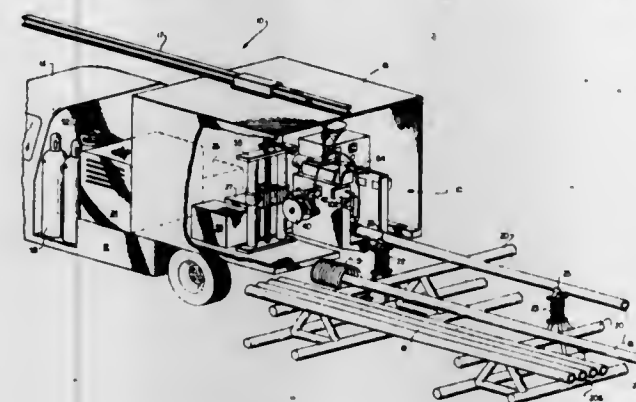
4,431,902
PORTABLE HARDBANDER
H. Bruce Wallen, Evanston, Wyo., assignor to Rocky Mountain Hardbanders, Inc., Vernal, Utah

Filed Jul. 31, 1981, Ser. No. 288,880

Int. Cl.³ B23K 9/12, 9/04

U.S. Cl. 219—125.12

30 Claims



1. An apparatus for welding a metal band onto a drill string section comprising in combination:
 - an electrical power source;
 - a welding torch assembly electrically coupled to the power source;
 - means for supporting the drill string section;
 - means for securely engaging a portion of the drill string section;
 - means for rotating the engaging means and the drill string section;
 - means for elevating the drill string section;
 - means for elevating the torch assembly, the engaging means and the rotating means;
 - means for oscillating the welding torch assembly so as to produce a metal band having a predetermined width; and
 - means for supporting and transporting the power source, the welding torch assembly, the engaging means, the rotating means and the elevating means, wherein said means for transporting also provides support for portions of the drill string section during welding of said drill string section.

4,431,903

SOLDERING IRON WITH FLAT BLADE HEATING ELEMENT

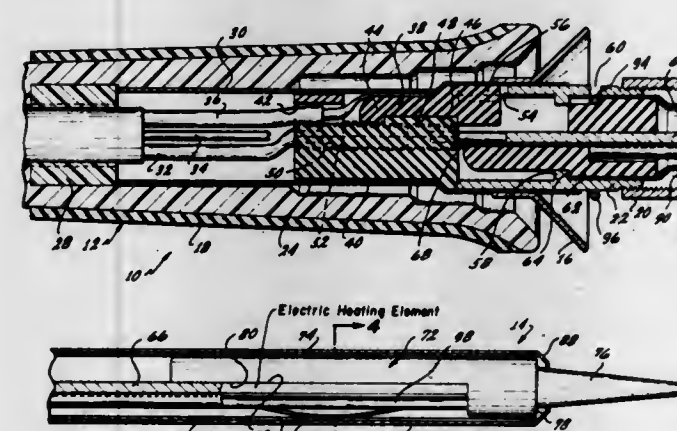
Ronald Riccio, Hermosa Beach, Calif., assignor to Eldon Industries, Hawthorne, Calif.

Filed Nov. 9, 1981, Ser. No. 319,598

Int. Cl.³ H05B 3/06; B23K 3/02

U.S. Cl. 219—238

6 Claims



1. In an electric soldering iron having an elongated handle, an electric heating element, attachment means serving to mount said heating element on said handle, a tip member located so as to receive heat from said heating element, and

- holding means for holding said tip relative to said heating element, the improvement comprising:
 - said heating element being an elongated heating element having an elongated flat planar heated surface, said heating element extending outwardly from said attachment means and said handle;
 - said tip member including a body having an elongated flat planar heat transfer surface and an operative tip extending outwardly away from said body and separated from said body by a shoulder;
 - said tip member located with respect to said heating element such that said heated surface and said heat transfer surface are coplanar with each other with at least a portion of said flat heated surface proximate to at least a substantial portion of said heat transfer surface;
 - an elongated retaining tube having ends, one of said ends being provided with an internally extending flange, said retaining tube being positioned around said body of said tip member and said heating element so as to hold said tip member relative to said heating element in a position wherein said flange rests against said shoulder and said tip extends outwardly away from said heating element through one of said ends of said tube;
 - spring means located in said retaining tube and extending between said retaining tube and said heating element, said spring means for holding said portion of said heated surface and said substantial portion of said heat transfer surface intimately contiguous with each other; and
 - said holding means comprising means connecting the other end of said retaining tube with said handle so as to prevent movement of said retaining tube and said tip member generally away from said handle.

4,431,904

ELECTRIC CIGAR LIGHTER

Masaru Suzuki, Chiryu, Japan, assignor to Seisakusho Kabushiki Kaisha Tokai Rika Denki, Aichi, Japan

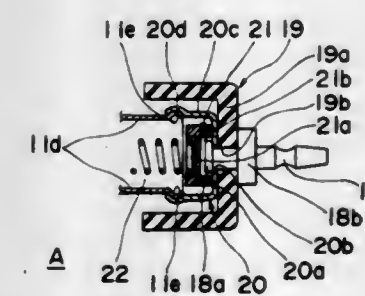
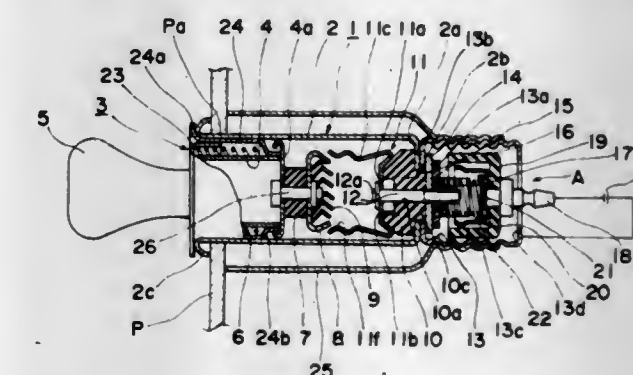
Filed Oct. 29, 1982, Ser. No. 437,863

Claims priority, application Japan, Nov. 4, 1981, 56-165305[U]; Nov. 10, 1981, 56-168679[U]

Int. Cl.³ F23Q 7/24

U.S. Cl. 219—265

8 Claims



1. An electric cigar lighter for use in vehicles and the like, which comprises a tubular holder having a thermostatic latch

therein which is mounted on a bottom wall of said holder; a movable igniting unit which is slidably mounted in said holder and has, at its rear end, a heating element adapted to electrically connect said thermostatic latch when said unit is moved rearwardly to a closed-circuit position in the holder; an end cap, a bottom wall of which is secured to a rear face of the bottom wall of said holder; a plurality of thermostatic contacts in the form of legs which are secured to a bottom wall of said thermostatic latch and which rearwardly extend into said end cap, and also which respectively have ribs at their rear ends; a movable contact unit which is mounted in said end cap so as to be movable in an axial direction of said holder and for a limiting distance including an insulating holder, a terminal rivet secured to said insulating holder so as to extend rearwardly, a contact member in the form of a cap is secured to said insulating holder so as to face said thermostatic contacts and electrically connect said terminal rivet and has, at a front end of a cylindrical wall thereof, a circular rib engageable with the ribs of said thermostatic contacts, and a spring which is mounted in said end cap so as to rearwardly urge said movable contact unit and is adapted, during overheating of said heating element, to overcome friction between said ribs of the thermostatic contacts and said rib of the contact member and make said thermostatic contacts disengage from said contact member to rearwardly move said movable contact unit to its open-circuit position when the thermostatic contacts are physically transformed due to the heat from said heating element.

4,431,905

CONDENSATE EVAPORATOR

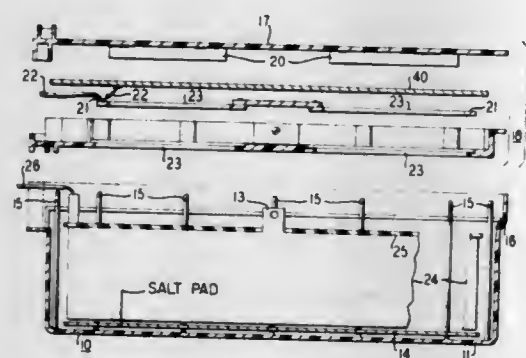
Charles W. Slocum, 423 Highway 71, Spring Lake Heights, N.J. 07762

Filed Jun. 25, 1981, Ser. No. 277,079

Int. Cl.³ F22B 1/30; H05B 1/02, 3/60

U.S. Cl. 219—274

5 Claims



1. An improved evaporator device adapted to collect and disperse condensate comprising:

container means for collecting a condensate, said container means including a substantially rectangular base joining four substantially rectangular sides, each of said sides being joined end to end to form an open rectangular configuration and at one edge to said rectangular base to form an open substantially rectangular shaped receptacle, said sides being flared at the open end of said rectangular receptacle to form a shoulder;

electrode means for generating an electric current, said electrode means being mounted in said container means and including a pair of rectangular blades having geometric dimensions similar to those of one pair of facing sides in said container means, each of said blades including a projecting terminal at one end and a centrally located projecting mounting ear for cooperating with a support portion,

grounding means for interposing a protective ground plane between said electrode means and the open end of said container means, said grounding means being mounted in the open end of said container means and including an electrically inert support portion adapted to accept said ear and at least one substantially rectangular metallic

plate, said plate being perforated by a plurality of parallel slots so that condensate can flow therethrough and into said container means;

conductor means for delivering electricity to said electrodes and including line leads connected to said terminals on said blades and a ground lead connected to said plate;

cover means for enclosing the open end of said container means, said cover means being mounted on said shoulder in said container means and including a plurality of diverters and a plurality of slots disposed in relation to the slots in said grounding means to form pairs adapted to cooperatively pass condensate therethrough and into said container means, and

a salt composition dispersed in said container whereby condensate collected in said container means will mix with said salt composition so as to improve electrical conductivity between said blades when said condensate reaches the level permitting contact with said blades.

4,431,906

ELECTRIC RICE COOKER

Hiroyuki Oota, Iwakura; Terutaka Aoshima, Toyohashi; Ryuhō Narita, and Kenji Yamamori, both of Nagoya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

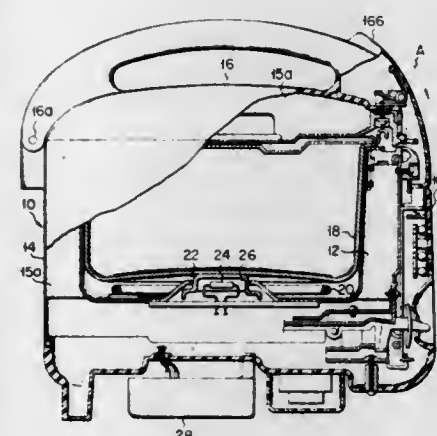
Filed Dec. 14, 1982, Ser. No. 449,641

Claims priority, application Japan, Dec. 18, 1981, 56-205544

Int. Cl.³ F27D 11/02

U.S. Cl. 219—441

14 Claims



1. An apparatus for electrically cooking rice with an appropriate amount of water, comprising:

(a) a cooking kettle containing the rice and water;

(b) electrical heater means for heating said kettle;

(c) thermal insulating frame means for supporting and enclosing said kettle and said heater means;

(d) temperature measuring means for measuring an actual kettle temperature and producing a first electrical signal which indicates the actual kettle temperature;

(e) cooking amount measuring means for electrically detecting an actual amount of contents in said kettle every time a cooking operation is performed and for producing a second electrical signal which indicates the actual amount of the contents in said kettle; and

(f) controlling means connected to said temperature measuring means and said cooking amount measuring means, for determining a reference temperature corresponding to a suitable cooking complete temperature of said kettle corresponding to the actual amount of contents of said kettle and a cooking condition in response to the second electrical signal every time the cooking operation is performed, and for deenergizing said heater means when the actual kettle temperature, which is indicated by the first electrical signal and which is increased upon heating by said heater means, is equal to the reference temperature to interrupt heating by said heater means.

4,431,907

RANGE TEMPERATURE PROTECTION

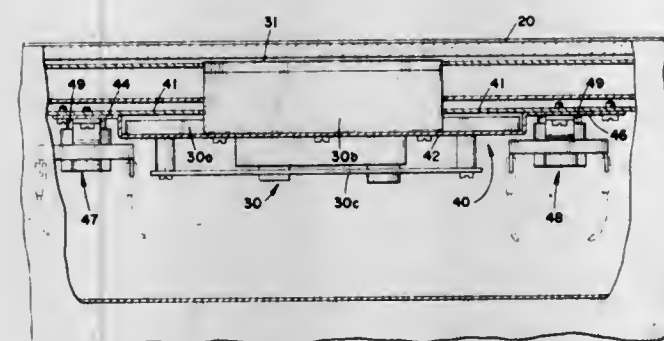
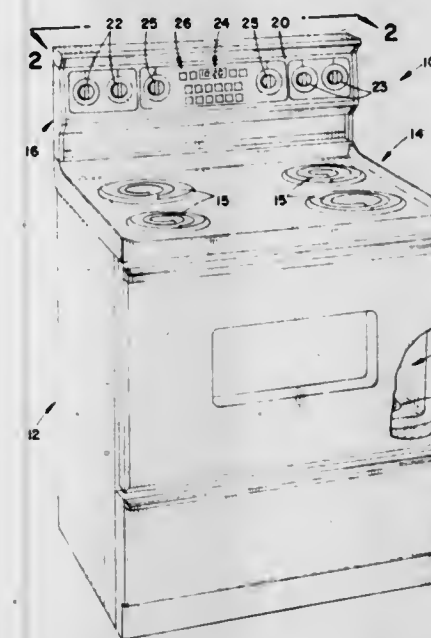
Eugene J. Barnett, Mansfield, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 16, 1981, Ser. No. 312,097

Int. Cl.³ H05B 3/68

U.S. Cl. 219—449

4 Claims



1. In a domestic range having a radiant-type heating means temperature-regulated by a control unit including an electronic control module, an over-temperature protection means for the control module comprising:

a temperature-sensitive switch means located generally at the site of the control module, the switch means disabling at least a portion of the heating means at a predetermined sensed temperature to preclude damage to the module caused by high temperatures generated by the heating means; and

a metallic heat sink member, both the switch means and the module being fixed thereto, the switch means sensing the temperature of the heat sink member portion to which it is fixed.

4,431,908

ELECTRIC HEATING APPARATUS

Karl Fischer, Am Gansberg 23, D-7519 Oberderdingen, Fed. Rep. of Germany, and Gerhard Goessler, Oberderdingen, Fed. Rep. of Germany, assignors to Karl Fischer, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 128,052, Mar. 7, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,499

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909238

Int. Cl.³ H05B 3/68

U.S. Cl. 219—459

13 Claims

1. An electric heating apparatus for heating foods and liquids in a cooking vessel, comprising:

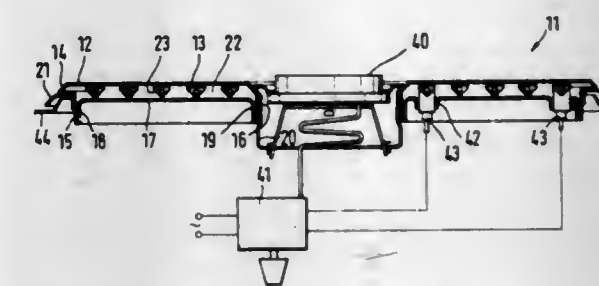
a metal upper part having upper and lower surfaces, the

upper surface forming a cooking surface for the cooking vessel;

a metal lower part covering the bottom of the heating apparatus, a sealable space being formed between the upper part and the lower part;

at least one tubular heating device with a metal covering arranged in the space and having a large flat contact surface for thermally conductively engaging the lower surface of the upper part, the space having at least a partial vacuum formed therein; and,

one of the upper and lower parts being constructed as a resilient, relatively thin-walled membrane with respect to the other of the upper and lower parts, and having elongation zones, and the other of the upper and lower parts being relatively thick, with respect to the part constituting the thin-walled membrane, and forming the only principal load bearing member of the apparatus and for cooking vessels placed on the apparatus, the at least partial vacuum and atmospheric pressure together imparting a concave distortion to the upper metal part which counteracts a



convex distortion of the upper metal part due to expansion upon heating, and at the same time, imparting a concave distortion to the flexible membrane, which as a result of the elongation zones, continuously presses the at least one heating device and the lower surface of the upper metal part into thermal engagement with one another, notwithstanding the concave and convex distortions to which the upper metal part is subjected, the upper metal part being thereby held substantially flat during heating, maximizing the surface contact between the cooking surface and a cooking vessel resting thereon;

whereby a maximum efficiency of operation is achieved by: a low thermal inertia of the heating apparatus engendered by the absence of members capable of storing heat and the absence of structure capable of conducting heat away from the cooking surface; the continuous thermal engagement of the at least one heating device with the lower surface of the upper metal part irrespective of distortion; and, the substantial flatness of the cooking surface which maximizes surface contact and heat transfer between the cooking surface and the cooking vessel.

4,431,909

COUNTER ASSEMBLY

Paul L. Kennedy, Meridan, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sep. 30, 1982, Ser. No. 430,720

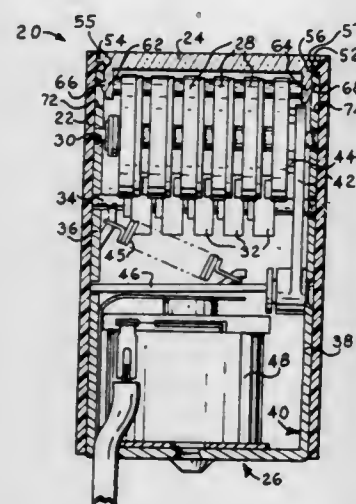
Int. Cl.³ G06C 5/02

U.S. Cl. 235—1 D

9 Claims

1. In a counter assembly of the type having a counter module insert including a bank of counter readout wheels at a front end thereof for registering a count, a transparent viewing crystal for viewing the counter wheel readout, an outer case having an opening at a rear end for receiving the counter module insert and having a crystal receptacle at a front end thereof for mounting the viewing crystal, the improvement wherein the outer case has abutment means engageable by the counter module insert for aligning the insert within the case, the counter module insert at the front end thereof has a pair of laterally spaced rearwardly facing shoulders, and the crystal

has a pair of laterally spaced rearwardly projecting retention fingers engageable with the shoulders of the module insert for



retaining the case, crystal and module insert in assembled relationship.

4,431,910

DISTANCE RECORDER HAVING A PLANETARY REDUCING MECHANISM FOR A TWO-WHEELED VEHICLE OR THE LIKE

Alain P. B. Huret, Bougival, France, assignor to Huret et ses Fils, Nanterre, France

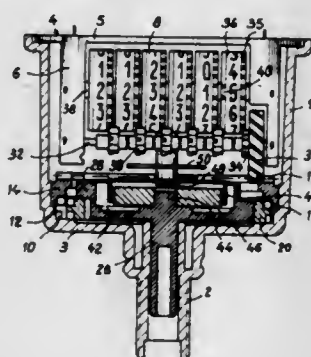
Filed Apr. 12, 1982, Ser. No. 367,745

Claims priority, application France, Apr. 22, 1981, 81 07997

Int. Cl.³ G01C 22/00

U.S. Cl. 235—96

9 Claims



1. A distance recorder comprising a case having a bottom end wall, a mechanism enclosed in said case and including a driving cable extending out of said case, recording and adding means, and a transmission interposed between the driving cable and the recording and adding means and comprising a rotatable planet gear disposed axially against the bottom end wall and carrying two superimposed coaxial sets of outer teeth which sets have different numbers of teeth, a first internal gear fixed in position in said case and engaged with one of said sets of teeth, a second internal gear which is coaxial with said first internal gear and freely rotatably mounted in said case and engaged with the other of said sets of teeth, a shaft coaxial with said internal gears and rotatably mounted in said case, and an eccentric rigid with the shaft, which shaft is drivenly connected to the driving cable, the planet gear being freely rotatably mounted on the eccentric so as to be made to rotate around said first internal gear and thereby rotate the second gear relatively to said case, the second gear having a spiral gear which has teeth extending axially upwardly from an upper surface of the second gear and is drivenly connected to the recording and adding means, the first and second internal gears, the planet gear and said bottom end wall being parallel to one another and assembled in a compact manner axially of the shaft so as to take up substantially a minimum amount of space at the bottom of the case.

4,431,911 CASH REPLACEMENT SYSTEM INCLUDING AN ENCODED CARD AND CARD ACCEPTOR

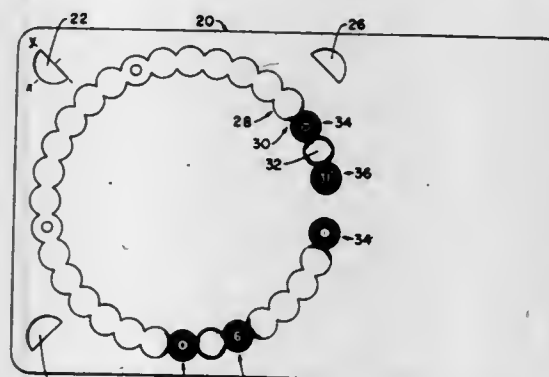
Charles C. Rayburn, 1446 N. Bridgeport Dr., Mount Prospect, Ill. 60056

Continuation-in-part of Ser. No. 262,096, May 11, 1981, abandoned. This application Oct. 1, 1981, Ser. No. 307,466

Int. Cl.³ G06K 7/04

U.S. Cl. 235—444

20 Claims



1. A control system comprising an encoded card and a card acceptor mechanism wherein said card comprises a thin layer of material which has a plurality of apertures therein of predetermined shape and orientation and said card acceptor mechanism comprises a card receiving section for receiving therein at least the part of said card which has said apertures therein, a plurality of sensing members which correspond in number to the number of said apertures and are each in alignment with a corresponding one of said apertures, said sensing members comprising a probe section which has a shape and orientation that corresponds to the shape and orientation of the aperture with which it is aligned so as to be capable of fitting into said corresponding aperture and a card engagement section which engages said card when said probe sections are positioned into their corresponding apertures, sensing drive means for driving said sensing members toward and away from a position where said probe sections are positioned into said apertures and function means which is constructed to provide operability of a device controlled by said system only when all of said probe means of said sensing members are positioned into a corresponding aperture in a card and all of said card engagement sections engage said card said system further comprising punch means for punching at least one hole in said card upon the first positioning of said sensing members into said apertures, and detection means shaped so as to be capable of fitting into said holes which is driven by said sensing drive means toward and away from the position where said detection means are positioned in said holes wherein said function means is constructed to prevent said operability when said detection means are positioned in prior punched holes even if said sensing members are positioned in said apertures.

4,431,912 METHOD FOR CONTROLLING THE OPERATION OF AN OPTICAL SCANNER

LeRoy D. Dickson; Charles M. Pierce, both of Raleigh; Olen L. Stokes, Cary, and Norman J. Woodland, Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,036

Int. Cl.³ G06K 7/10

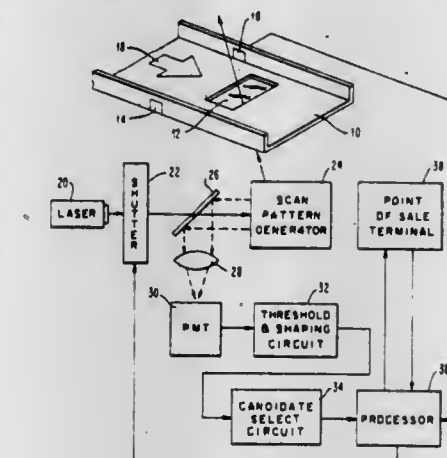
U.S. Cl. 235—466

7 Claims

1. For use with the type of optical symbol scanner having a coherent light source, a single item detector capable of producing signals indicating the presence or absence of an item and means for recognizing symbols carried by such an item, an improved scan operation controlling method comprising the steps of:

producing an item-scanning light pattern in response to a first output signal from said item detector; analyzing light reflected from said item to locate and decode any symbol carried thereon;

initiating one or more time out sequences as a function of



output signals from said item detector and said symbol recognition means; and terminating the light pattern and substantially simultaneously transferring at least one recognized symbol from the scanner for further processing upon the earliest completion of any initiated time out sequence.

4,431,913

ONE-DIMENSIONAL SCANNER

Souichi Sekimoto, and Ryoki Kato, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

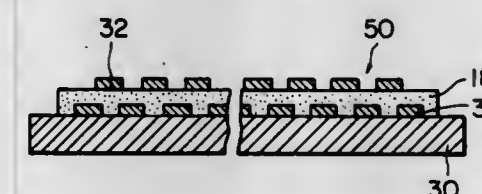
Filed Aug. 24, 1981, Ser. No. 295,284

Claims priority, application Japan, Dec. 4, 1980, 55-170252

Int. Cl.³ H01L 31/08

U.S. Cl. 250—211 R

2 Claims



1. A one-dimensional scanner for use in an image reader comprising:

an upper electrode array having a plurality of upper electrode elements arranged at a predetermined pitch and at a predetermined spacing from each other in a one-dimensional scanning direction;

a lower electrode array having a plurality of lower electrode elements arranged at a predetermined pitch and at a predetermined spacing from each other in a one-dimensional scanning direction in an opposed, spaced and staggered relation to said plurality of upper electrode elements, so that each lower electrode element is positioned across two adjacent upper electrode elements thereby defining a picture element region therebetween;

a layer of photosensitive material interposed between said upper and lower electrode arrays; and

one-dimensional scanning means adapted to select respective pairs of upper and lower electrode elements overlapping each other sequentially in said one-dimensional scanning direction, thereby selecting picture element regions one after another in said scanning direction to effect one-dimensional scanning; wherein

one of said upper electrodes and lower electrodes is light-transmissible so that image-bearing light is projectable onto said layer of photosensitive material.

4,431,914 PHOTOELECTRON SWITCHING IN SEMICONDUCTORS IN THE PICOSECOND TIME DOMAIN

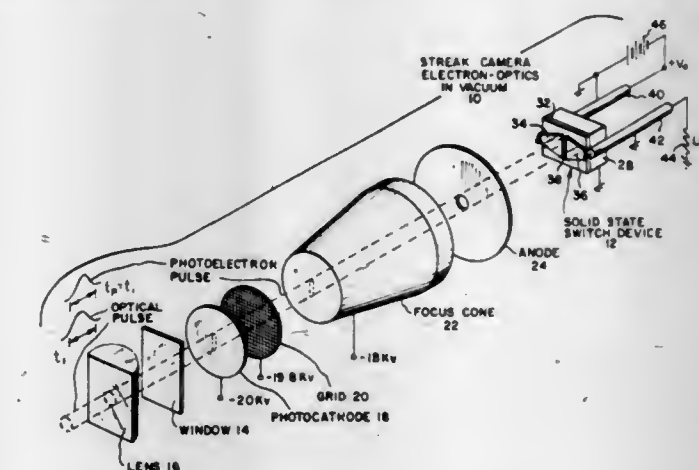
Gerard Mourou, Rochester, and Steven L. Williamson, Henrietta, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,721

Int. Cl.³ H01J 40/14, 31/50

U.S. Cl. 250—211 J

32 Claims



14. A system for switching electric current in response to an optical signal within the picosecond time domain which comprises means for converting said optical signal into photoelectrons which constitute a photoelectronic signal, a solid state device having a body of semiconductor material, electrodes defining a gap exposing said body of semiconductor material, means for accelerating the photoelectrons to an energy equal or greater than the band gap energy of said semiconductor material and illuminating essentially the entire gap with said photoelectrons to enable the flow of electric current through said body between said electrodes within said picosecond time domain.

4,431,915

ELECTRON BEAM APPARATUS

Seiichi Nakagawa; Yoshio Ishimori, and Naoki Date, all of Akishimashi, Japan, assignors to Jeol Ltd., Tokyo, Japan

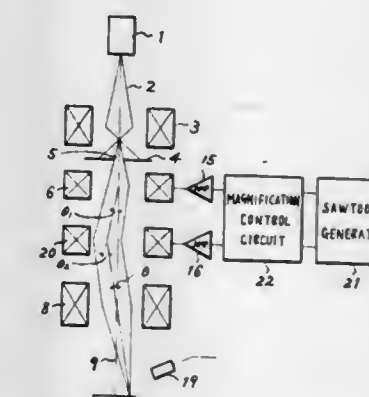
Filed Nov. 19, 1981, Ser. No. 323,094

Claims priority, application Japan, Nov. 21, 1980, 55-164384

Int. Cl.³ H01J 29/70; G01N 23/00

U.S. Cl. 250—310

6 Claims



1. An electron beam apparatus comprising an electron gun for emitting an electron beam, a condenser lens for condensing the said electron beam, an objective lens for focusing the said electron beam on the specimen, upper and lower deflection coils interposed between the said condenser lens and said objective lens, the said upper deflection coil comprising a toroidal coil, the said lower deflection coil comprising a saddle-shaped coil, the said deflection coils being energized by a deflection current supplied from a single power supply which

generates scanning signals having frequencies ranging from slow scanning speeds to television scanning speeds, a detection means for detecting data signals from the said specimen illuminated with the said electron beam, and the means for displaying an image of the said specimen utilizing the said signals detected by the said detection means.

4,431,916

OPTICAL DATA BUS RECEIVER WITH SIGNAL WAVEFORM RESTORING MEANS

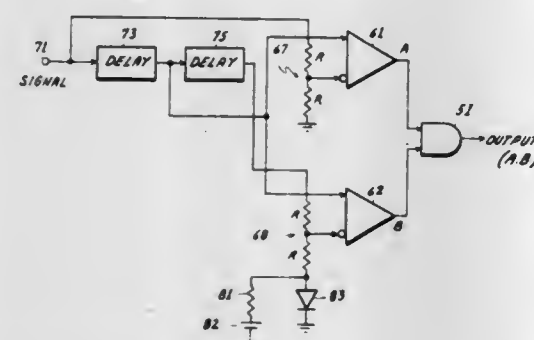
Philip R. Couch, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,311

Int. Cl.³ H01J 40/14; H04B 9/00

U.S. Cl. 250—214 R

5 Claims



2. An optical receiver comprising: means for generating an electrical output signal in response to an optical input, threshold means including means for deriving from said electrical output signal two replica signals which are phase-shifted relative to one another and to said electrical output signal, and means for converting two of said signals into respective thresholds, and output shaping means including means for individually comparing the remaining signal with each of said thresholds and for generating respective comparison signals having values representative of two logic states in dependence on the results of said comparisons, and means for issuing an outgoing signal only when both of said comparison signals are simultaneously at the value representative of one of said logic states.

4,431,917

COMPACT, HIGH COLD SHIELD EFFICIENCY OPTICAL SYSTEM

Robert C. Gibbons, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 27, 1981, Ser. No. 325,459

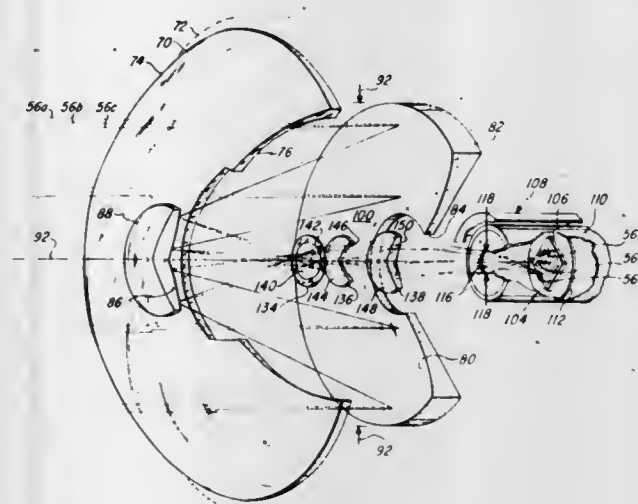
Int. Cl.³ H01J 31/49; G01J 1/00

U.S. Cl. 250—332

6 Claims

1. A radiant energy receiver comprising: (a) a compact high cold shield efficiency optical means having a catadioptric objective optical system for forming a first focal plane for radiant energy emanating from a scene and a temperature tolerant relay optical means positioned after the first focal plane for refocusing throughout varying temperatures said first focal plane to a fixed second focal plane through an exit pupil; (b) a cold shield means having an aperture at the exit pupil, the aperture having substantially the same geometric configuration as the flux formed at the exit pupil to thereby reduce substantially any extraneous radiant energy reaching a detector means; and

- (c) a detector means positioned at the second focal plane, said detector means operative in response to the impinging



radiant energy for producing electrical signals representative thereof.

4,431,918

ETCHABLE GLASS COLD SHIELD FOR BACKGROUND LIMITED DETECTORS

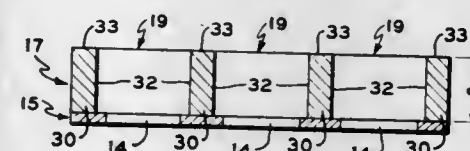
William J. White, Chelmsford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 27, 1981, Ser. No. 248,127

Int. Cl.³ G01J 1/00

U.S. Cl. 250—338

15 Claims



1. An electromagnetic radiation detection system comprising: optics for viewing a scene emanating electromagnetic radiation, the optics providing a field of view of the scene; an array of detectors mounted in the path of the field of view of the optics for producing electrical signals representative of electromagnetic radiation impinging on the detectors; a shield comprising a member of etchable glass having apertures formed therein, the position of the aperture edges being in predetermined relation to the edges of the detectors for shielding interfering electromagnetic radiation generated outside the field of view of the optics to improve the sensitivity of the detector array; cooling means for cooling the array of detectors and the shield; and electro-optics coupled to the electrical output of the array for forming a display of the scene viewed by the optics.

4,431,919

DETECTION APPARATUS, PARTICULARLY FOR USE IN LIQUID CHROMATOGRAPHY

Heiner Köstlin; Manfred Peterek, both of Aachen; Hartwig Schaper, Rötgen, all of Fed. Rep. of Germany; Robert J. Dolphin, Cambridgeshire, and Frederick W. Willmott, Grinstead Sussex, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

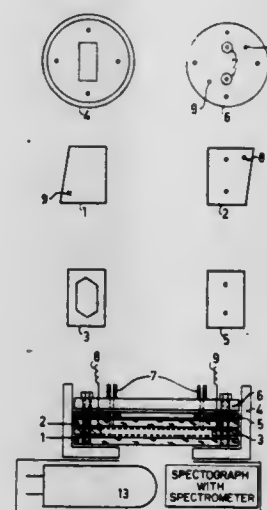
Filed Apr. 10, 1981, Ser. No. 252,722

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013765

Int. Cl.³ G01N 21/76, 27/00

U.S. Cl. 250—361 C

5 Claims



1. A detection apparatus for use with a liquid chromatography apparatus, characterized in that the detection apparatus comprises an electro-chemiluminescence cell (12) having connections (7) for the supply and discharge of a mobile phase coming from the separation column of a liquid chromatography apparatus, two facing electrodes (1, 2), one of which electrodes is transparent, a voltage source (11) and a detector (14) for electric current connected to the electrodes (1, 2) of the cell.

4,431,920

IONIZING RADIATION DOSE MONITOR USING SILICON-ON-SAPPHIRE TRANSISTOR

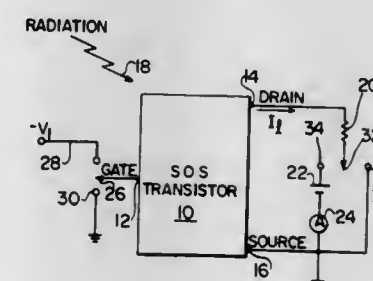
Joseph R. Srour, Manhattan Beach; Orille L. Curtis, Stockton; Siegfried Othmer, Sherman Oaks, and Susan C. C. Chen, Rancho Palos Verdes, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,473

Int. Cl.³ G01T 1/22

U.S. Cl. 250—370

6 Claims



1. A circuit for monitoring radiation, the circuit comprising: a solid state switching device having gate, source and drain terminals; means for applying a first bias between the gate and source terminals; means for applying a bias between the drain and source terminals during irradiation of the device;

- means for applying a second bias between the gate and source terminals for a preselected measurement interval; means connected between the drain and source terminals for measuring back-channel leakage current while the second bias is applied; and means for reducing the drain-to-source bias to zero.

4,431,921

POSITION SENSITIVE PROPORTIONAL COUNTER OF HIGH RESOLUTION WITH DELAY LINE READ OUT TO MEASURE THE SURFACE DISTRIBUTION OF IONIZING RADIATION

Heinz A. A. W. Filthuth, 189 Kerner Strasse, D-7547 Wildbad, Fed. Rep. of Germany

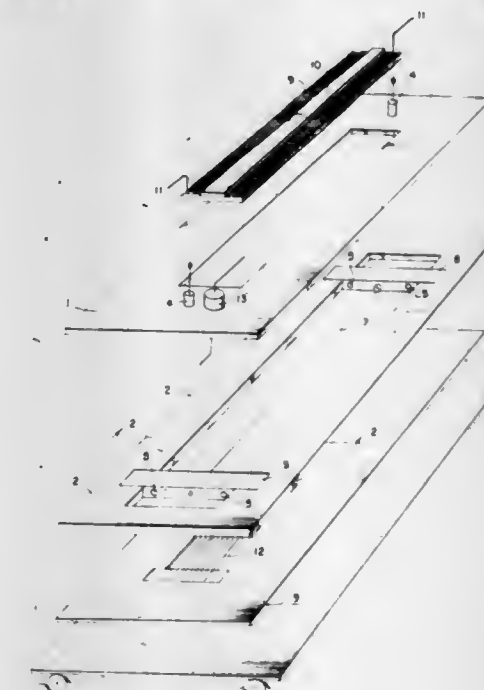
Filed Jan. 29, 1981, Ser. No. 230,047

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3002950

Int. Cl.³ G01T 1/18

U.S. Cl. 250—374

24 Claims



1. A position sensitive proportional counter of high resolution having at least one anode counting wire with delay line read out, counting gas therein, and which is provided with an open entrance window to measure a surface distribution of ionizing radiation, comprising a counter wall opposite to the entrance window and that forms at least part of the delay line for seeing the counting wires under the largest possible solid angle of the ionizing radiation.

4,431,922

MIXED PHOSPHORS COMPRISING BOTH GD₂O₂S AND GDTAO₄ AND X-RAY SCREENS THEREOF

Stanley H. Patten, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1981, Ser. No. 335,644

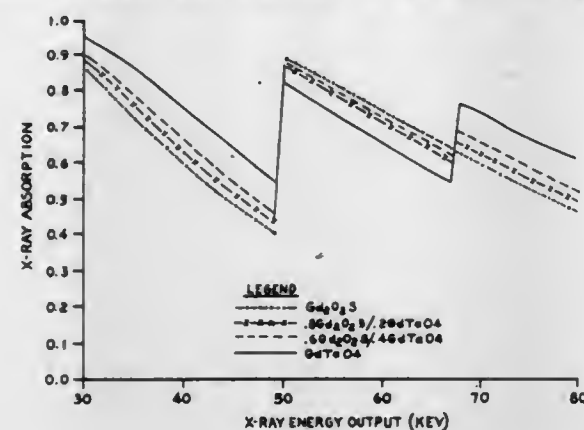
Int. Cl.³ C09K 11/475; G01T 1/00

U.S. Cl. 250—486.1

5 Claims

3. A mixed phosphor consisting essentially of a major

amount of gadolinium oxysulfide and a minor amount of gadolinium tantalate, and wherein from about 0.005 percent to 8

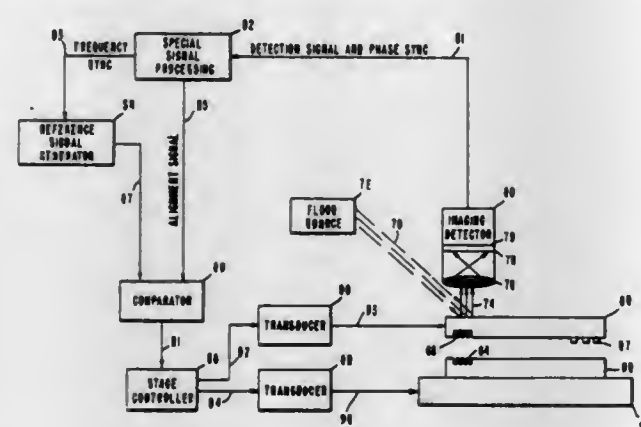


percent of the host metal ions have been replaced by trivalent terbium ions.

4,431,923

ALIGNMENT PROCESS USING SERIAL DETECTION OF REPETITIVELY PATTERNED ALIGNMENT MARKS
Victor Wang, and Robert L. Seliger, both of Agoura, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.
Continuation-in-part of Ser. No. 149,600, May 13, 1980, Pat. No. 4,327,292. This application Feb. 3, 1982, Ser. No. 345,284
Int. Cl.³ G01N 21/00, 23/00
U.S. Cl. 250—491.1

3 Claims



1. A process for aligning the surface of a chosen member with a chosen fixed reference point comprising the steps of:
 - (a) providing a set of alignment marks on said surface of said member and spaced at a predetermined periodicity;
 - (b) providing said chosen fixed reference point;
 - (c) providing a source of incoherent flood radiation for illuminating said set of alignment marks;
 - (d) illuminating said set of alignment marks with said flood radiation to produce reflected radiation therefrom;
 - (e) imaging said reflected radiation onto an imaging detector means comprising a charge-coupled device to generate from said set of alignment marks a detection signal comprising a serial electronic signal as a function of time and containing serial information corresponding to the position of said set of alignment marks;
 - (f) electronically processing said detection signal to generate an alignment signal with a high signal-to-noise ratio;
 - (g) providing a reference electrical signal comprising a periodic signal of a predetermined frequency and phase;
 - (h) comparing the phase angle of said alignment signal and the phase angle of said reference signal and generating an error signal proportional to the phase difference of said alignment signal and said reference signal; and
 - (i) providing lateral movement of said set of alignment marks with respect to said chosen reference point in response to said error signal until said alignment signal and said reference signal become congruent in phase, to produce accu-

rate alignment of said surface of said chosen member with said chosen reference point.

4,431,924

CODE SYSTEM IN A MULTI-CHANNEL ANALYSIS EQUIPMENT AND A DEVICE RELATED TO THE SYSTEM

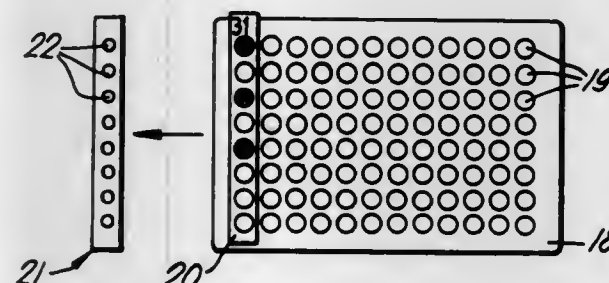
Osmo Suovanemi, Helsinki; Esko Kaukanen, Espoo, and Pertti Ekholm, Helsinki, all of Finland, assignors to Labsystems Oy, Helsinki, Finland

Filed Apr. 8, 1981, Ser. No. 252,173

Claims priority, application Finland, Apr. 28, 1980, 801356
Int. Cl.³ G06K 7/10

U.S. Cl. 250—566

3 Claims



1. A coding system for multiple channel optical analysis equipment comprising:
 - a sample holder including a plurality of specimen wells into which the specimens to be analyzed are disposed, said specimens wells being arranged in a matrix; and
 - a code piece mounted on said sample holder for indicating the measurement points to be read by said optical analysis equipment, said code piece including optical indicia means for reading by said optical analysis equipment, said indicia means being arranged in the same order and with the same relative distances as at least one row of said matrix of said specimen wells and said measurement channels of said optical analysis equipment.

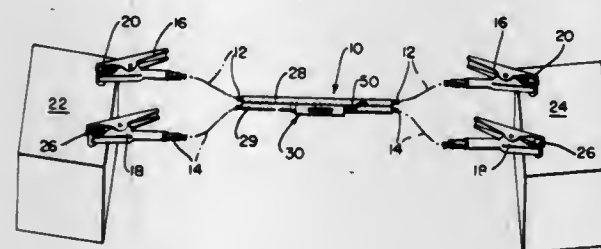
4,431,925

BATTERY JUMPER CABLE ASSEMBLY
Claude M. Frisbee, and Henry R. Logan, both of Bettendorf, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 11, 1982, Ser. No. 407,228

Int. Cl.³ H02J 7/34; H02G 11/00; H01H 9/00
U.S. Cl. 307—10 R

1 Claim



1. A battery jumper cable assembly for connecting a pair of batteries, said cable assembly including:
 - a ground wire and a power wire with said wires being connected at their opposite ends to clamping means and said clamping means being connected to said batteries;
 - a switch assembly connected along the length of said power wire, said switch assembly including a housing for a manually operable slidable switch element having an electrically conductive contact plate, said switch element mounted on said contact plate with said contact plate being of a greater length than said switch element for extending beyond the ends of said switch element, said

4,431,927

MOS CAPACITIVE BOOTSTRAPPING TRIGGER CIRCUIT FOR A CLOCK GENERATOR

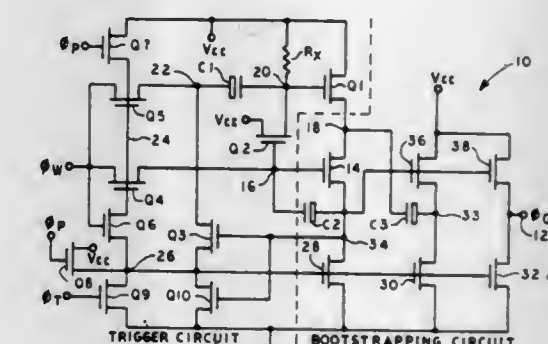
Sargent S. Eaton, Jr., and David R. Wooten, both of Colorado Springs, Colo., assignors to Immos Corporation, Colorado Springs, Colo.

Filed Apr. 22, 1981, Ser. No. 256,590

Int. Cl.³ H03K 17/12, 19/096, 5/135

U.S. Cl. 307—269

13 Claims



1. In an MOS clock generator which includes a bootstrapped circuit coupled to a control transistor for bootstrapping the drain voltage of the control transistor to a high level and for developing a clock output signal in response to a trigger signal, and which includes a trigger circuit to condition the gate and drain of the control transistor prior to the trigger signal to facilitate bootstrapping, an improved trigger circuit for conditioning the control transistor in response to a pre-charge signal and then a warmup signal, and for enabling the control transistor to be bootstrapped in response to the trigger signal, comprising:
 - a first transistor having its source coupled to the drain of the control transistor, and having its gate coupled to a first node;
 - a capacitor coupled between the first node and a second node;
 - an impedance coupled between the first node and a power supply voltage for charging the capacitor and for pre-charging the first node substantially to the potential of the power supply voltage so that the first transistor is turned on to drive the drain of the control transistor to a pre-charged potential just below the power supply voltage; and
 - transistor means receiving the pre-charge signal, then the warmup signal and then the trigger signal and being coupled to the second node and to the gate of the control transistor, said transistor means being:
 - (a) responsive to the pre-charge signal for driving the voltage at the second node low and for driving the voltage at the gate of the control transistor low to turn it off;
 - (b) responsive to the warmup signal for then driving the gate of the control transistor substantially up to the potential of the power supply voltage to turn it on, and for driving the second node substantially up to the potential of the power supply voltage to cause a position voltage transition to be coupled to the first node via the capacitor, so that the first transistor is turned on hard to supply increased current to the drain of the control transistor to maintain its drain potential at essentially its pre-charged potential; and
 - (c) responsive to the trigger signal for discharging said second node such that a negative voltage transition is coupled to said first node to turn the first transistor off as the voltage at the drain of the control transistor is driven high by the bootstrapping circuit to develop a high level clock output signal.

4,431,926

COUNTER CONTROLLED SIGNAL GENERATOR
Hiroshi Mayumi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

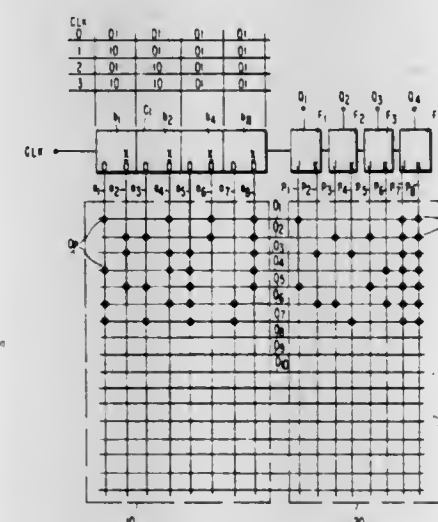
Continuation of Ser. No. 41,973, May 23, 1979, abandoned. This application Dec. 17, 1981, Ser. No. 331,744

Claims priority, application Japan, May 24, 1978, 53-62671

Int. Cl.³ H03K 6/00, 21/16, 25/00

U.S. Cl. 307—260

10 Claims



1. An integrated circuit comprising a single control terminal receiving a single train of control signals, counter means having a plurality of bit stages, each of said bit stages having true and complement outputs, said counter means counting said single train of control signals applied through said single control terminal, a programmable AND logic array having a plurality of inputs coupled to said outputs of said counter and a plurality of product term lines, a programmable OR logic array having a plurality of inputs coupled to said product term lines and a plurality of sum term lines, and a plurality of flip-flops having inputs coupled to said sum term lines, wherein a plurality of different output signals are simultaneously derived from the outputs of said flip-flops in synchronism with said control signals.

4,431,928

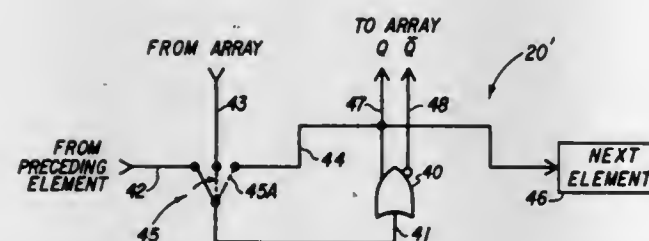
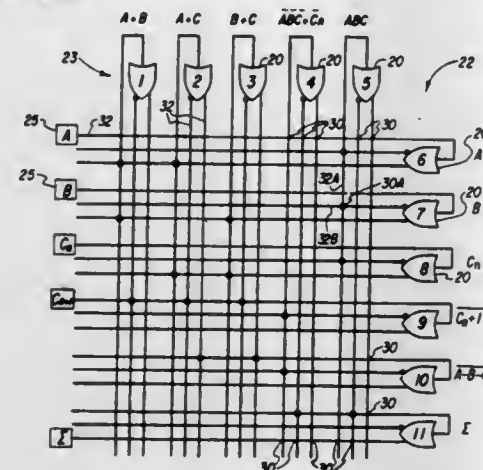
SYMMETRICAL PROGRAMMABLE LOGIC ARRAY
Zdenek E. Skokan, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 22, 1981, Ser. No. 276,318

Int. Cl.³ H03K 19/177

U.S. Cl. 307-465

9 Claims



1. A programmable logic array comprising:
 - a substrate;
 - a plurality of logic elements symmetrically arrayed around the periphery of a surface of said substrate for accepting and transmitting electrical signals;
 - a plurality of input/output terminals symmetrically arrayed around the periphery of said surface and located adjacent to said array of logic elements;
 - a plurality of first electrically conductive paths connected to and originating from each of said logic elements to form input and output lines, said first conductive paths spanning said substrate adjacent to said surface to terminate on the opposite side of said substrate, whereby said first conductive paths intersect one another;
 - a plurality of second electrically conductive paths connected to and originating from each of said terminals and spanning said substrate adjacent to said surface to terminate on the opposite side of said substrate, whereby said second conductive paths intersect one another and said first conductive paths; and
 - a plurality of interconnect cells formed by the intersection of said first conductive paths, by the intersection of said second conductive paths, and by the intersection of said first and second conductive paths, said cells comprising circuitry to isolate said first and second conductive paths, wherein said first and second conductive paths are selectively made to interconnect electrically by causing the corresponding interconnect cell to be electrically conductive.
2. A logic element in a programmable logic array comprising:
 - switching means having a plurality of selectable input lines for selectively connecting one of said selectable input lines to a common input line;
 - a logic gate having an input port connected to said common input line;

an output line from a preceding logic element in said array connected to one of said selectable input lines;
an output line from said array connected to one of said selectable input lines;
an output line from said logic gate connected to one of said selectable input lines and to an input line of said array; and
an output line of said logic gate connected to a next logic element in said array, thereby forming a selectably serial connection of a plurality of said logic elements in said array.

4,431,929

CMOS DYNAMIC AMPLIFIER

Eric A. Vittoz, Cernier, Switzerland, assignor to Centronique Horloger S.A., Neuchatel, Switzerland

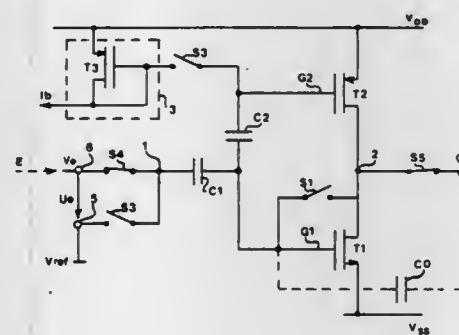
Filed Mar. 8, 1982, Ser. No. 355,613

Claims priority, application Switzerland, Mar. 26, 1981, 2048/81

Int. Cl.³ G06G 7/18; H03F 3/30

U.S. Cl. 307-490

8 Claims



1. A low-consumption C-MOS amplifier comprising: first and second transistors of complementary types, and having a gate, a source and a drain, said first and second transistors being drain coupled and connected in series between the terminals of a power supply source and having their respective gates capacitively coupled both to each other and to a common input node, a first switch means connected between the gate and the drain of the first transistor, a second switch means connected between the gate of the second transistor and a bias voltage source, a third switch means connected between the input node and a terminal which is at a reference potential, a fourth switch means connected between the input node and an input terminal receiving an input signal, a fifth switch means connected between a point which is between the drains of the first and second transistors and an output terminal, and means for causing periodic closure of the first, second and third switch means in a first, preparation phase of said amplifier, and periodic closure of the fourth and fifth switch means in a second, amplification phase of said amplifier.

4,431,930

DIGITAL TIME DOMAIN NOISE FILTER

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 5, 1981, Ser. No. 308,342

Int. Cl.³ H03K 17/30, 17/60, 5/01, 5/08

U.S. Cl. 307-520

4 Claims

1. A trigger circuit comprising:
 - latch means having a digital output and set and reset input means;
 - a pair of complementary input transistors having their outputs respectively coupled to said set and reset inputs wherein one of said complementary transistor outputs is directly coupled to said latch and the other transistor output is coupled by way of a current mirror;
 - means for coupling the control electrodes of said complementary transistors in common to a source of reference potential; and

4,431,932

ADVANCED SPIRAL PANCAKE ARMATURE FOR A DYNAMOELECTRIC MACHINE

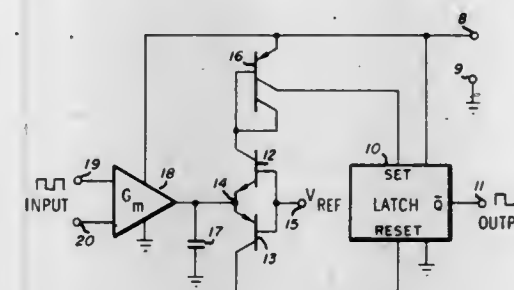
Richard D. Nathenson, Pittsburgh, and Mukund R. Patel, Monroeville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 17, 1982, Ser. No. 419,372

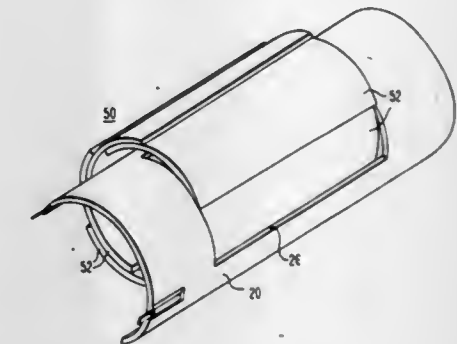
Int. Cl.³ H02K 9/00

U.S. Cl. 310-208

18 Claims



whereby said latch changes state when said signal input rises to a first threshold level and when said input falls below a second threshold level.



4,431,931
MOTOR-VEHICLE ALTERNATOR HAVING A ROTARY INDUCTOR

Pierre Perrier, and Mathieu Mattei, both of Ramonville-Saint Agne, France, assignors to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

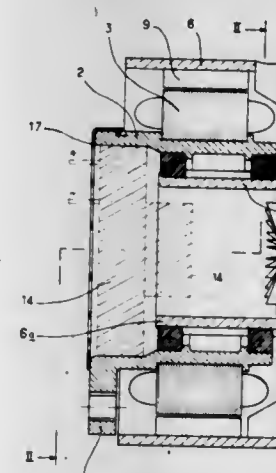
Filed Nov. 17, 1981, Ser. No. 322,288

Claims priority, application France, Nov. 19, 1980, 80 24540

Int. Cl.³ H02K 9/04

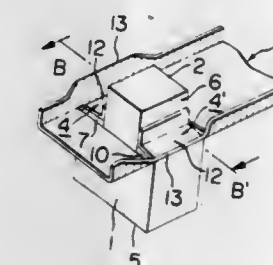
U.S. Cl. 310-61

10 Claims



1. An alternator for supplying electrical energy in a motor vehicle having an engine, comprising:
 - (a) a fixed armature;
 - (b) a winding on said armature;
 - (c) rotary inductor means rotatable relative to said fixed armature;

- (d) a yoke in the form of an annulus of U-shaped cross-section supporting said rotary inductor means for rotation around said fixed armature, said U-shaped yoke including inner and outer peripheral portions and a generally circular core extending between and connecting the inner and outer portions of the yoke together, said inner peripheral portion of the yoke defining hollow shaft means supporting said rotary inductor means for rotation relative to said fixed armature, said hollow shaft means having first and second open ends and defining a housing therein; and
- (e) a ventilating fan in said housing defined by the hollow shaft means, said ventilating fan being connected to said yoke for rotation therewith to force air through the housing.



1. A brush holding device for a brush of an electric motor wherein the transverse cross-section of one end of the brush is formed into a rectangular, parallelepiped shape, the opposed ends of which are parallel to each other, said brush holding device comprising a rectangular, resilient plate including an opening therethrough, the shape of which corresponds to the cross-sectional shape of the end of the brush for receiving the one end of the brush, a pair of opposed, elastically deformable sidewalls integral with and extending along at least the portion of the length dimension of said plate that is adjacent the opening therethrough and at least two opposed bent pieces formed

4,431,933
BRUSH HOLDING DEVICE
Takaichi Mabuchi, 5-2 Tokiwadaira 6-chome, Matsudo-shi, Chiba-ken, Japan

Filed Sep. 28, 1979, Ser. No. 79,894

Claims priority, application Japan, Oct. 9, 1978, 53-138780[U]; Dec. 29, 1978, 53-181767[U]

Int. Cl.³ H02K 13/00

U.S. Cl. 310-239

11 Claims

integrally with said plate, said bent pieces extending into the opening and in a direction towards each other, said bent pieces each comprising a first section integral with said plate and a second section extending from said first section, said second section having a surface area that is at an obtuse angle with respect to the plane of said first section, said surface area of each of said second sections being adapted to retainably contact one of the sides of the one end of the brush.

4,431,934

ELECTRICALLY ACTUATED PIEZOELECTRIC CONTROL ELEMENT

Peter Kleinschmidt, and Max Göpfert, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

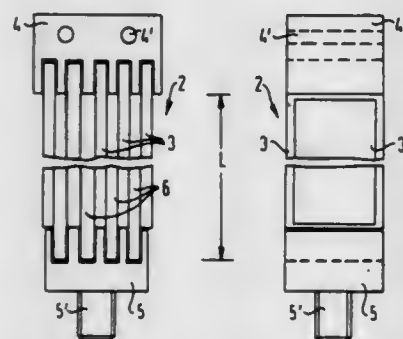
Filed Oct. 27, 1981, Ser. No. 315,359

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040563

Int. Cl.³ H01L 41/04

U.S. Cl. 310—331

17 Claims



1. An electrically actuated piezoelectric control element comprising: a transducer formed of a plurality of lamellae of piezoelectric material which are of one piece construction in an actuation direction and provided with electrodes, said lamellae being combined to form a packet; a length of the lamellae being at least five times as great as a thickness of the individual lamella and the lamellae all having substantially a same thickness; the lamellae length and a length of the packet from end to end being shortened or lengthened by the piezoelectric effect upon application of an electric voltage depending on an operational sign of said voltage and the polarization of the material; each and every one of the lamellae being disposed in the packet at intervening spacings from one another and the intervening spaces existing between all adjacent lamellae being filled up by a respective spacer; a power transmission element being rigidly attached in dove-tailed fashion to the two ends of the lamella packet; and the lamellae and spacers being connected to one another such that they cannot be displaced with respect to one another.

4,431,935

SENSOR STRUCTURE INCORPORATING MULTIPLE PIEZOELECTRIC GENERATORS

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 15, 1981, Ser. No. 302,002

Int. Cl.³ H01L 41/02

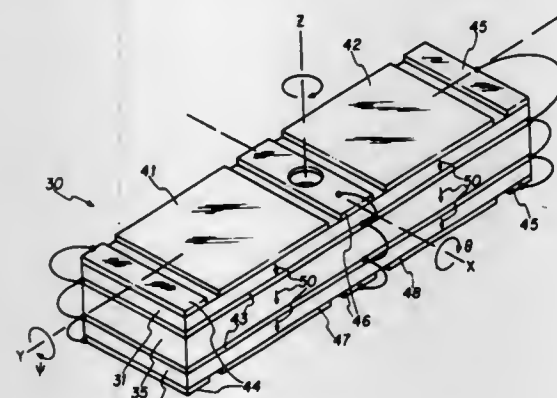
U.S. Cl. 310—331

42 Claims

1. Sensor means comprising:

a plurality N of flat plates of piezoelectric material, each said plate having two opposing major surfaces, said plates being arranged according to a laminated structure, and first, second, and third electrodes located on predetermined major surfaces, said first and third electrodes located to contact opposite major surfaces of a predetermined one of said plates so as to form a first signal-generating electrode pair, said second and third electrodes located to contact opposite major surfaces of a predetermined one of said plates so as to form a second signal-generating electrode

pair, said first electrode and said second electrode being configured and located such that, relative to a reference axis perpendicular to the major surfaces, the first and second electrodes are angularly displaced from one another by a non-zero amount, and



a further electrode EM located between said first and second electrodes and having at least a portion located on the same major surface as is contacted by at least one of the first and second electrodes, said further electrode EM being electrically isolated from both the first and second electrodes and being electrically shorted to said third electrode.

4,431,936

TRANSDUCER STRUCTURE FOR GENERATING UNIFORM AND FOCUSED ULTRASONIC BEAMS AND APPLICATIONS THEREOF

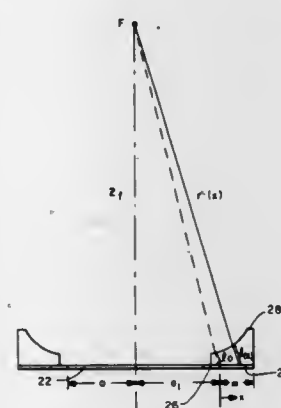
Chong-Cheng Fu, Stanford, and Levy Gerzberg, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 18, 1982, Ser. No. 350,020

Int. Cl.³ H01L 41/04

U.S. Cl. 310—335

6 Claims



1. A transducer structure for use in ultrasonic flow measurements comprising a first planar disc-shaped transducer element for generating and receiving a first uniform ultrasonic beam, a second annular transducer element about said first transducer element, and lens means on one surface of said second transducer element for receiving a second ultrasonic beam which is focused within said first beam.

4,431,937

PIEZOELECTRIC CRYSTAL ASSEMBLY INCLUDING PROTECTIVE MOUNTING AND COVERING MEANS

Maurice Y. White, Spring Hill, Kans., assignor to SFE Technologies, San Fernando, Calif.

Filed Oct. 26, 1981, Ser. No. 314,576

Int. Cl.³ H01L 41/22

U.S. Cl. 310—344

14 Claims

1. A piezoelectric crystal assembly comprising:

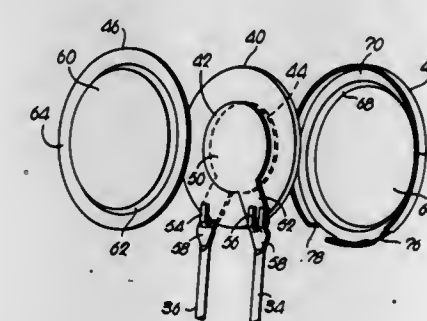
a substantially circular, disc-like, quartz, piezoelectric crys-

tal element of a type which vibrates in a thickness shear mode and having a pair of opposite, major faces, each of said faces including a substantially circular, central area and a substantially annular, outer zone, each of said zones including a major segment and a minor segment, said minor segments being angularly displaced from each other in a direction around said element;

a first, electrically conductive, electrode structure secured to one of said faces in engaging, substantially covering relationship to said central area and said minor segment of said outer zone of said one face;

a second, electrically conductive, electrode structure secured to the other of said faces in engaging, substantially covering relationship to said central area and said minor segment of said outer zone of said other face;

a first, substantially circular, cover member having a central portion in spaced relationship to said central area of said one face of said element, an intermediate portion extending laterally from said central portion of said first member toward said outer zone of said one face of said element, and a substantially annular, outer portion extending outwardly from said intermediate portion of said first member and beyond the periphery of said element, said outer portion of said first cover member having an electrically



non-conductive face in engaging, supporting relationship with a substantially annular, marginal part of said outer zone of said one face of said element;

a second, substantially circular, cover member having a central portion in spaced relationship to said central area of said other face of said element, an intermediate portion extending laterally from said central portion of said second member toward said outer zone of said other face of said element, and a substantially annular, outer portion extending outwardly from said intermediate portion of said second member and beyond the periphery of said element, said outer portion of said second cover member having an electrically non-conductive face being in engaging, supporting relationship with a substantially annular, marginal part of said outer zone of said other face of said element;

means for positively interconnecting said members and holding said members in said relationship thereof to said element for supporting said element between said members;

means for effecting respective electrical connections from outside said members to the part of each of said electrode structures disposed upon said minor segment of said outer zone of the corresponding of said faces; and

sealing means in protective covering relationship to said members.

GROOVED PIEZOELECTRIC RESONATING ELEMENT AND A MOUNTING THEREFOR

Jiro Inoue, Ishikawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

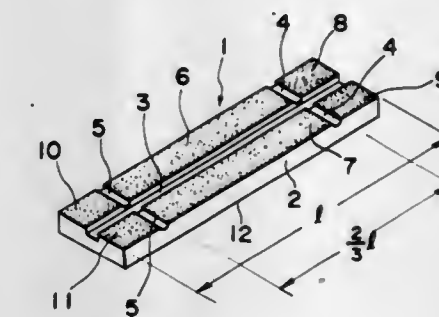
Filed Dec. 3, 1982, Ser. No. 446,729

Claims priority, application Japan, Dec. 9, 1981, 56-198785; Dec. 9, 1981, 56-198786; Dec. 9, 1981, 56-198787; Dec. 9, 1981, 56-198788; Dec. 9, 1981, 56-198789

Int. Cl.³ H01L 41/08

U.S. Cl. 310—348

13 Claims



1. A piezoelectric resonating element comprising:

(a) a piezoelectric plate (2) having an elongated rectangular shape with first and second major flat surfaces, said piezoelectric plate (2) formed with an elongated groove (3) on said first major flat surface extending in a lengthwise direction of said piezoelectric plate (2) to separate said first major flat surface into first and second lands;

(b) a first electrode (6) deposited on said first land;

(c) a second electrode (7) deposited on said second land; and

(d) a third electrode (12) deposited entirely on said second major flat surface.

4,431,939

STRUCTURE AND METHOD FOR ELIMINATING BLOCKED APERTURES CAUSED BY CHARGED PARTICLES

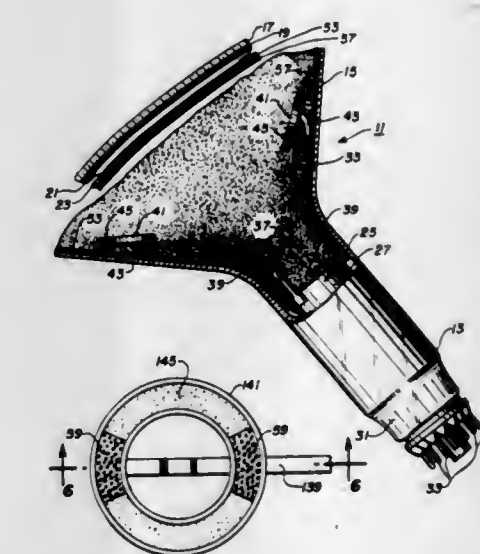
Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1981, Ser. No. 287,562

Int. Cl.³ H01J 29/07, 29/94; F01J 9/20

U.S. Cl. 313—402

5 Claims



2. In a cathode-ray tube comprising an evacuated envelope, a luminescent viewing screen within said envelope, means for producing at least one electron beam within said envelope for exciting said screen to luminescence, an apertured mask closely spaced from said screen within said envelope for selectively intercepting and transmitting portions of said electron beam,

and a barium getter for coating said mask with a gas-sorbing, conductive barium film, the film on the mask having at least one insulative particle attached thereto which when impinged upon by said electron beam acquires a negative charge that deflects said transmitting portion of said beam, the improvement comprising:

a porous member through which barium passes only slowly, said porous member covering less than the entirety of said barium getter, said porous member providing a reservoir of barium, liberated during the coating of said mask, for subsequent deposition of a gas-sorbing, conductive barium film overlay on said particle, thereby rendering said particle conductive so that said transmitting portions of said beam are not deflected by said particle.

4,431,940

COLOR DISPLAY TUBE HAVING A DEFLECTION DEVICE AND DEFLECTION DEVICE FOR A COLOR DISPLAY TUBE

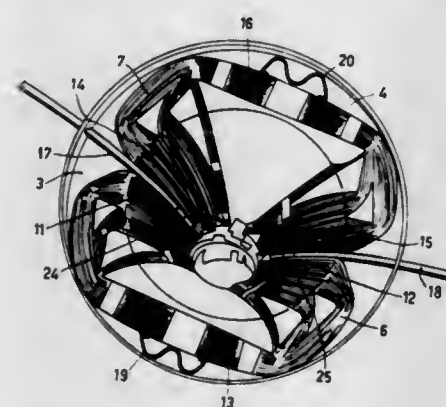
Adrianus M. Habraken; Nicolaas G. Vink; Adriaan J. Groothoff, and Marcellis H. J. Driessen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 10, 1981, Ser. No. 282,126

Claims priority, application Netherlands, Jul. 17, 1980, 8004114

Int. Cl.³ H01J 29/76; H01F 1/00

U.S. Cl. 313—413

23 Claims



1. A color display tube having three electron guns which are positioned in one plane for projecting three electron beams towards a display screen, and having a deflection device which is mounted on the display tube, said deflection device having a substantially frustoconical supporting member with a front end facing said display screen having a large diameter and a rear end facing said electron guns having a relatively small diameter, which member supports a first set of deflection coils arranged about the longitudinal axis of said tube deflecting the three electron beams in a first direction, and a second set of deflection coils arranged about said axis for deflecting the three electron beams in a second direction orthogonal to said first direction, the first set of deflection coils comprising two coils one of which is provided opposite to and spaced from the other in the supporting member, each coil being formed by two longitudinal parts extending substantially parallel to said axis and being connected at their respective front and rear ends by transverse parts, characterized in that adjusting means, cooperating with the longitudinal parts of the coils of the first set, are provided so as to vary the distances between the adjoining longitudinal parts of said coils at least at one end of the supporting member, and pressure means for keeping the said longitudinal parts of said coils in contact with the adjusting means.

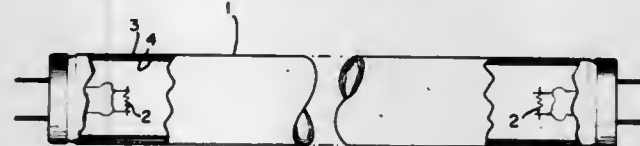
4,431,941 FLUORESCENT LAMP HAVING DOUBLE PHOSPHOR LAYER

Joseph A. Roy, and Fred R. Taubner, both of Danvers, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jun. 11, 1979, Ser. No. 47,434

Int. Cl.³ H01J 61/48

U.S. Cl. 313—487

2 Claims



1. A fluorescent lamp comprising a glass envelope having electrodes at its ends and containing a discharge-sustaining and ultraviolet-radiation-emitting filling of mercury and inert gas, a first phosphor layer disposed on the inner envelope surface and a second phosphor layer superposed on the first phosphor layer, the phosphor of the first layer being less expensive than the phosphor of the second layer, the phosphor of the second layer being between about 3 to 18 weight percent of the total phosphor in both layers so that less than 80% of the ultraviolet radiation is converted into visible light by the second phosphor layer, the remaining ultraviolet radiation penetrating through to the first phosphor layer, the efficiency of the lamp in converting ultraviolet radiation into visible light being greater because of the double phosphor layer than if only the first phosphor layer were present.

4,431,942 COLOR-CORRECTED HID MERCURY-VAPOR LAMP HAVING GOOD COLOR RENDERING AND A DESIRABLE EMISSION COLOR

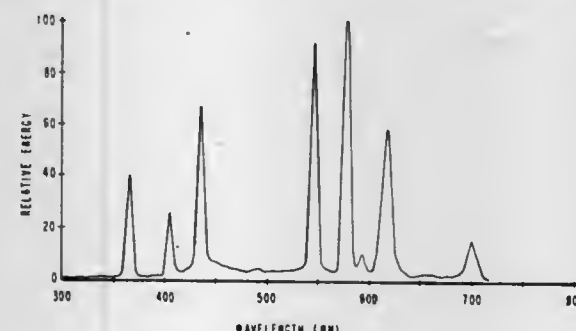
William A. Thornton, Cranford, N.J., assignor to North American Philips Electric Corp., New York, N.Y.

Filed Nov. 4, 1981, Ser. No. 318,230

Int. Cl.³ H01J 1/62, 63/04

U.S. Cl. 313—487

6 Claims



5. A color-corrected high-pressure mercury-vapor lamp which provides good color rendition of illuminated objects and which also has a commercially desirable emission color, said lamp comprising an arc tube which, when normally operated, emits both visible and ultraviolet radiations, and an outer envelope surrounding said arc tube, a phosphor coating carried on the inner surface of said outer envelope, said phosphor coating substantially comprising a mixture of three finely divided phosphor components, a first of said phosphor components when excited by said ultraviolet radiations having a fluorescent output which is substantially confined to the shorter wavelength region of the visible spectrum and has its peak of emission at from 440 nm to 470 nm, a second of said phosphor components when excited by said ultraviolet radiations having a fluorescent output which is substantially confined to the middle wavelength region of the visible spectrum and has its peak of emission at from 520 nm to 560 nm, and the third of said phosphor components when excited by said ultra-

violet radiations has a fluorescent output which is substantially confined to the longer wavelength region of the visible spectrum and has its peak of emission at from 605 nm to 630 nm, the relative weight of said first phosphor component and the relative weight of said second phosphor component when expressed with respect to the weight of said third phosphor component each has a ratio of from 0.05:1 to 0.4:1, and the total of said emissions of said first and said second and said third phosphor components when combined with said visible emissions from said arc tube as normally operated producing a composite lamp emission which at least approximates a cool-white color and which is positioned at least proximate the black-body line as inscribed on the x,y-chromaticity diagram of the ICI system.

4,431,943

ELECTRON DISCHARGE DEVICE HAVING A HIGH SPEED CAGE

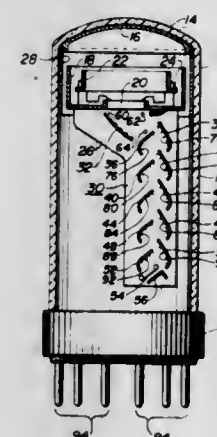
Richard D. Faulkner, and Robert E. McHose, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 216,907, Dec. 16, 1980, abandoned. This application Oct. 14, 1981, Ser. No. 311,279

Int. Cl.³ H01J 40/00

U.S. Cl. 313—533

7 Claims



1. An electron discharge device of the type having a source of primary electrons, an anode and an electron multiplier disposed between said source of electrons and said anode, said electron multiplier comprising:

a primary dynode having a secondary emissive surface for propagating secondary electrons therefrom in response to primary electrons from said source impinging thereon, at least one secondary dynode spaced from said primary dynode for continuing the propagation of said secondary electrons toward said anode, an electron permeable member disposed between said source and said primary dynode and extending between said primary dynode and said secondary dynode, and steering means disposed between said electron permeable member and said secondary dynode for directing said secondary electrons from said primary dynode toward said secondary dynode.

4,431,944

DELAY LINE HAVING COUPLED CAVITIES FOR A TRAVELING-WAVE TUBE AND A TRAVELING-WAVE TUBE EQUIPPED WITH SAID LINE

Christian Deville, and Francis Payen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 15, 1981, Ser. No. 302,569

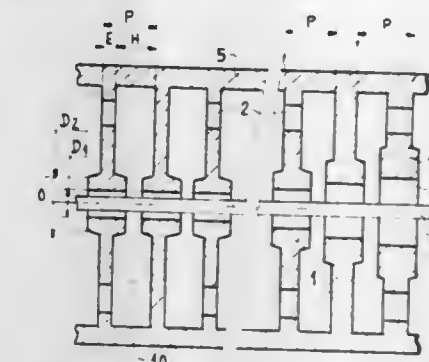
Claims priority, application France, Sep. 19, 1980, 80 20216

Int. Cl.³ H01J 25/34

U.S. Cl. 315—3.6

3 Claims

1. A delay line for a traveling-wave tube having coupled cavities of reentrant shape limited externally by a cylindrical wall whose axis coincides with the axis along which the electron beam of the tube is propagated, said cavities being limited



4,431,945

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP

Kouzou Kawashima and Akira Ito, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

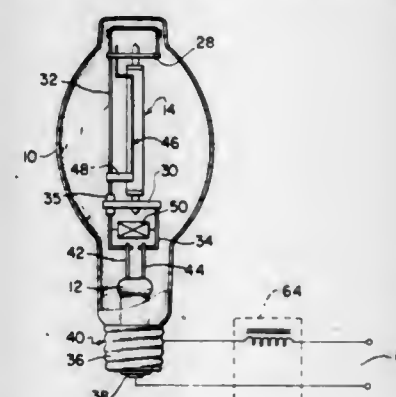
Filed Mar. 5, 1982, Ser. No. 355,190

Claims priority, application Japan, Mar. 16, 1981, 56-37724

Int. Cl.³ H01J 7/44, 17/34, 23/16, 29/96; H01K 1/62

U.S. Cl. 315—63

9 Claims



1. A high pressure metal vapor discharge lamp comprising: an outer jacket having a lamp base at one end; a discharge tube disposed in said outer jacket, said discharge tube being provided with a pair of spaced electrodes and containing a filling comprising a starting rare gas at a pressure from 40 to 200 Torr, said rare gas being composed primarily of xenon; means for starting said discharge tube comprising a glow starter having a pair of contacts spaced at most 2.5 mm from each other and containing a glow starter gas composed primarily of argon at a pressure satisfying the expression

$$7 \leq P_g \leq -\frac{5}{160} P_i + 19.25 \text{ (Torr)}$$

where P_g represents the gas pressure in the glow starter

and P_i represents the rare gas pressure in the discharge tube; and
a starting electric conductor connected to one of said discharge tube electrodes, said starting conductor contacting said discharge tube on starting of the discharge tube and separating from the discharge tube after starting.

4,431,946

POSITIVE SPACE-CHARGE CLOSING SWITCH APPARATUS

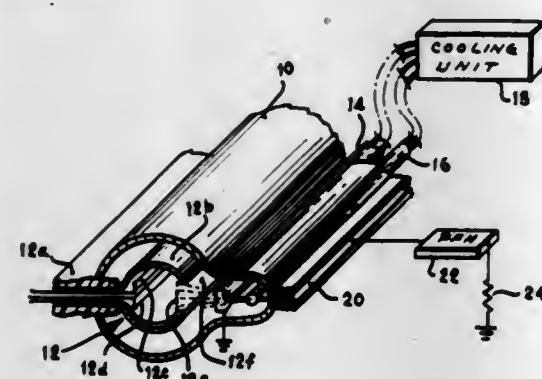
James P. O'Loughlin, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,312

Int. Cl.³ H05B 41/36

U.S. Cl. 315—150

10 Claims



1. A positive space-charge closing switch apparatus comprising in combination:

a housing means containing a gas at a predetermined partial pressure,

an anode electrode positioned within said housing means but electrically isolated therefrom, said anode electrode being energized to a high potential level with respect to said housing means,

an ion plasma gun means positioned within said housing means but insulated therefrom, said ion plasma gun means receiving first and second control signals, said ion plasma gun means generating an ion beam in response to said first and second control signals, and,

a cathode electrode positioned within said housing means, electrically isolated from said housing means and in alignment with said ion plasma gun means and said anode electrode, said ion beam being directed to and through said anode electrode to said cathode electrode, said anode electrode and said cathode electrode being arranged with respect to each other to form a gap of a predetermined dimension, said ion beam traversing said gap to electrically close the gap between said anode electrode and said cathode electrode thereby performing a switch action.

4,431,947

CONTROLLED LIGHT SOURCE

Lincoln Ferriss, Lincoln Park, N.J., and Donald Shernoff, White Plains, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 4, 1982, Ser. No. 384,853

Int. Cl.³ H05B 41/36

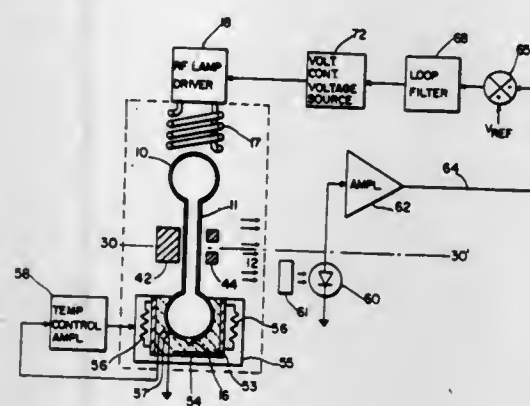
U.S. Cl. 315—151

2 Claims

1. A controlled light source comprising:

a dumbbell-shaped lamp having an elongated envelope with an enlarged upper end and an enlarged lower end and a narrow middle portion disposed therebetween;
temperature controlling means disposed adjacent to said lower end for controlling the temperature at said lower end to aid in maintaining level intensity of the lamp during its operation;

radio frequency means disposed adjacent to said upper end for exciting the lamp;
filtering means for filtering a portion of the light directed along the lamp's major optical axis to derive a monotonic wavelength component, said filtering means being disposed adjacent to said middle portion;
detecting means for detecting the intensity of the monotonic component, said detecting means being disposed adjacent to said filtering means; and
feedback means connected between the detecting means and the radio frequency means for controllably exciting the lamp in accordance with the intensity of the monotonic component;



wherein the temperature controlling means comprises:
means encapsulating the lower end;
heat conductive means for containing the encapsulating means;
at least one heating element positioned adjacent to the conductive means;
means located adjacent to the lower end for sensing the temperature of the lower end; and
means connected in circuit with the sensing means and heating elements for controlling electrical power delivered to the elements.

4,431,948

APPARATUS FOR CONTROL OF LOAD POWER CONSUMPTION

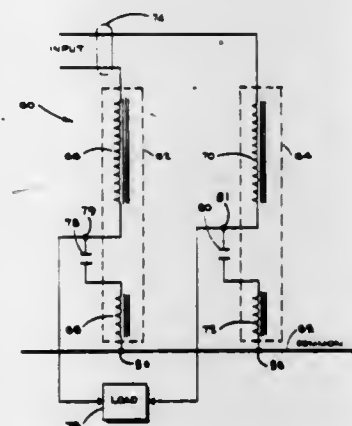
Delbert E. Elder, Santa Ana; Gerald F. Forder, San Gabriel, and Albert J. Donnelly, Santa Ana, all of Calif., assignors to Standun Controls, Inc., Santa Ana, Calif.

Filed Aug. 9, 1982, Ser. No. 406,410

Int. Cl.³ H05B 41/38

U.S. Cl. 315—276

10 Claims



1. An apparatus for selectively reducing the voltage applied from an input to a load in an AC power system of the type having an AC common, the apparatus comprising:
an autotransformer having a series winding and a common winding, the series winding being connected between the input and the load, the common winding being connected between the load and AC common, and

a switching device connected in series with said common winding for preventing the flow of current in said common winding for applying full voltage to said load, and for permitting the flow of current in said common winding for reducing the voltage to said load, said switching device being electrically isolated from said AC common by at least a portion of said common winding.

4,431,949

LATERAL CONVERGENCE CORRECTION SYSTEM

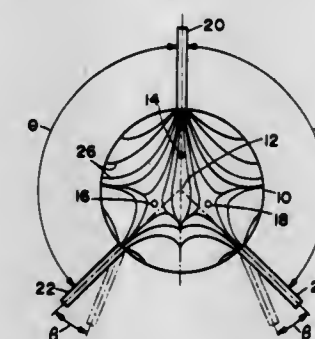
Clayton C. Wahlquist, West Valley City, Utah, and Archie M. Barter, Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 31, 1982, Ser. No. 364,077

Int. Cl.³ H01J 29/70, 29/76

U.S. Cl. 315—368

11 Claims



1. A lateral convergence deflection system for a delta-gun color CRT, comprising
first, second and third means for producing magnetic fields in a region of the CRT traversed by electron beams from the three electron guns, the relative strengths and orientations of the fields being chosen to provide a substantially unidirectional field in the path of one beam and field nulls in the paths of the other beams.

4,431,950

CAPSTAN DRIVE SYSTEM FOR HIGH SPEED TAPE DUPLICATOR

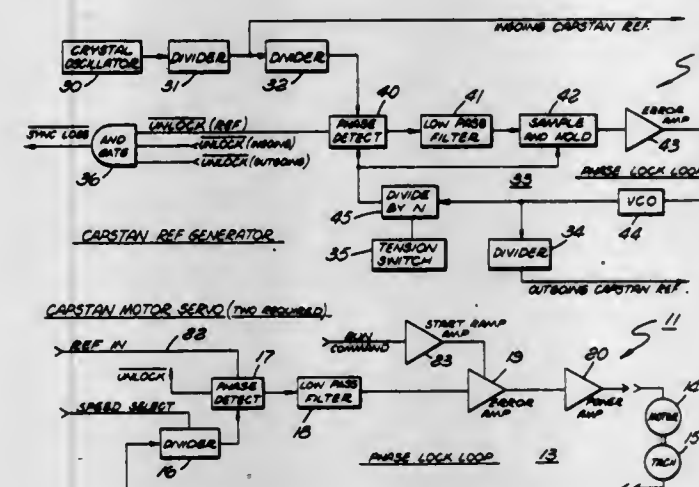
Barrett P. Bingaman, Burbank, Calif., assignor to CETEC Corporation, El Monte, Calif.

Filed Jul. 28, 1982, Ser. No. 402,772

Int. Cl.³ B65H 59/38, 77/00; G05B 5/00; H02P 5/00

U.S. Cl. 318—7

9 Claims



1. In a speed control system for a tape drive having an ingoing capstan and an outgoing capstan with a magnetic head therebetween, the combination of:
first and second dc motors for driving said ingoing and outgoing capstans, respectively;
first and second phase lock loop circuits for driving said first

and second motors, respectively, each of said first and second phase lock loop circuits including
a motor speed sensor providing a motor speed signal, a phase detector having said motor speed signal and a capstan reference signal as inputs,
an amplifier for driving the motor, and
a low pass filter between the output of said phase detector and the input of said amplifier;
a stable reference oscillator providing one of said capstan reference signals; and
a third phase lock loop circuit for producing the other of said capstan reference signals, and including
a phase detector having an output of said stable reference oscillator as an input,
a voltage controlled oscillator providing an output frequency varying as a function of the input voltage thereto,
a low pass filter between the output of said phase and the input of said voltage controlled oscillator, and
a frequency divider circuit having the output of said voltage controlled oscillator as an input and providing a second input to said phase detector, with said voltage controlled oscillator output providing said other capstan reference signal.

4,431,951

RESISTANCE THERMAL UNIT FOR THERMAL ELECTRIC ENERGY DEMAND METER

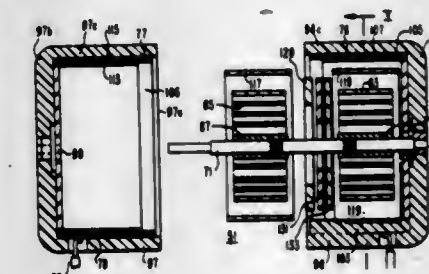
Albert W. Allan, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 25, 1982, Ser. No. 342,527

Int. Cl.³ H02N 10/00

U.S. Cl. 318—117

5 Claims



1. A resistance thermal unit responsive to a variable electric quantity comprising:

- a housing formed of dielectric material,
- a shaft mounted by the housing for rotation about an axis,
- a pair of thermoresponsive bimetallic spiral springs wound about the shaft and spaced axially along the shaft, the springs being effective when heated to rotate the shaft in opposite directions,
- the housing having a pair of separable cup-shaped sections each having a chamber constructed of a solid insulating wall and accommodating a separate one of the springs, each section enclosing a clearance space concentrically around the corresponding spring,
- heating means including a pair of heating elements each having a pair of spaced terminals, each heating element including an arcuate assembly of a flattened, heat-resistant, dielectric core and of an electric-resistant wire spirally wound on the core with first opposite end portions connected to corresponding spaced load terminals, and
- one assembly being disposed in the clearance space around each corresponding spring.

4,431,952

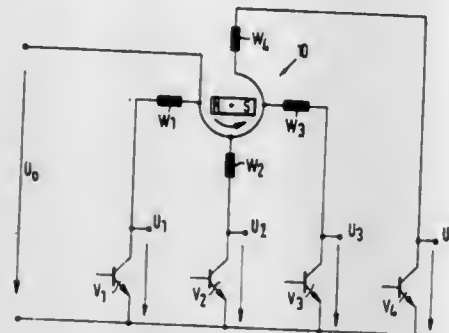
ELECTRIC POWERED APPARATUS

William L. Sheppard, 36655 Romulus Rd., Romulus, Mich. 48174

Continuation of Ser. No. 109,898, Jan. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 923,213, Jul. 10, 1978, abandoned. This application May 28, 1982, Ser. No. 383,348 Int. Cl.³ H02K 33/00

U.S. Cl. 318—135

41 Claims

**1. A motor comprising:**

an inner pole member having a longitudinal bore extending therethrough;
 a coil surrounding said inner pole member;
 an outer pole member having one end connected to one end of said inner pole member and an opposite end disposed in spaced relationship to the opposite end of said inner pole member, thereby defining a gap therebetween;
 contact armature means movably disposed within said bore and having a contact thereon;
 contact means engageable by said contact when said contact armature moves in one direction;
 output armature means mounted for movement between a first position immediately proximate to said gap and a second position spaced therefrom;
 biasing means urging said output armature toward said second position and said contact toward said contact means;
 and
 circuit means interconnecting said coil, said contact and said contact means such that said coil is energized when said contact means and said contact are engaged, said coil being operable to induce a magnetic field to cause said output armature to move to said first position and to cause said contact thereafter to move out of engagement with said contact means to deenergize said coil.

4,431,953

CIRCUIT FOR OPERATING A SYNCHRONOUS MOTOR FROM A DC SUPPLY

Hans-Dieter Schray, Markgröningen; Bernd Taubitz, Schwiebedingen, and Rainer Wirtz, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,861

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042819

Int. Cl.³ H02K 29/00

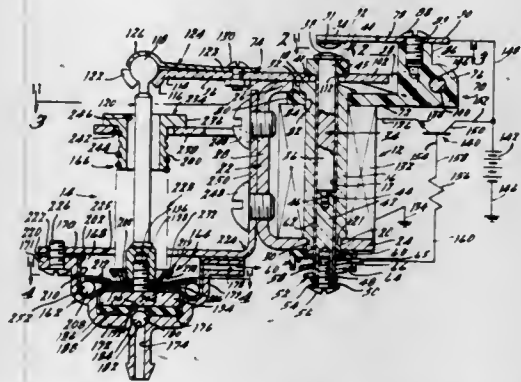
U.S. Cl. 318—254

6 Claims

1. Circuit for operating, from a d.c. supply of electric voltage, a synchronous electric motor having a stator equipped with a plurality of phase windings, n in number, and a pole-wheel rotor, by cyclically connecting said windings to said d.c. voltage supply, comprising means, responsive to voltage induced in said windings while said windings are not connected to said d.c. voltage supply, for connecting each of said windings in a predetermined sequence to said d.c. voltage supply over an angular interval which is substantially $360^\circ/n$ of the voltage wave induced in the winding, said interval being substantially centered on the extreme value of the voltage of the negative half of said voltage wave in the particular winding,

said connecting means being arranged to connect each of said windings thereto in response to comparison of the voltages induced in two others of said windings and comprising for that purpose:

means (V_1, V_2, V_3, V_4) for switching each of said windings individually into and out of connection with said d.c. voltage supply in response to control signals;
 means (11, 12, 13, 14) for comparing the voltage at corresponding terminals of each pair of windings that succeed each other in the energization sequence for switching on a winding other than those of which the voltage is being compared, which is approaching an induced voltage extreme value of the polarity opposite to that of the induced voltage component of the compared voltages and for simultaneously switching off the winding which was the



last previous one in sequence to have been switched on, the number of said phase windings being sufficiently large and said comparing means being constituted so that said last previous winding in sequence to have been switched on is never one of said pair of windings of which the voltage is being compared;

means (15-23) including a cyclic counter (23), for recognizing, during operation of said motor, said pair of windings for each comparison operation of said comparing means and for processing the output of said comparing means to provide control signals for said switching means (V_1, V_2, V_3, V_4), and

means for blocking the advance of said cyclic counter (23) for a predetermined time after every advance operation thereof.

4,431,954

MOTOR VEHICLE WINDSHIELD WIPER APPARATUS WITH STORM PATTERN

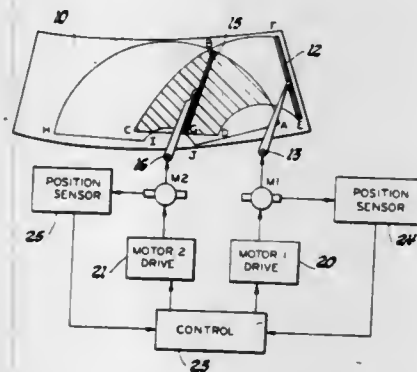
Keith H. Carpenter, Kettering; Donald E. Graham, Centerville, and James J. Kowalk, West Carrollton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1982, Ser. No. 444,798

Int. Cl.³ H02P 1/04

U.S. Cl. 318—443

5 Claims



1. Wiper apparatus for a vehicle windshield having driver and passenger sides, comprising in combination:

4,431,955

STEP MOTOR CONTROL CIRCUIT

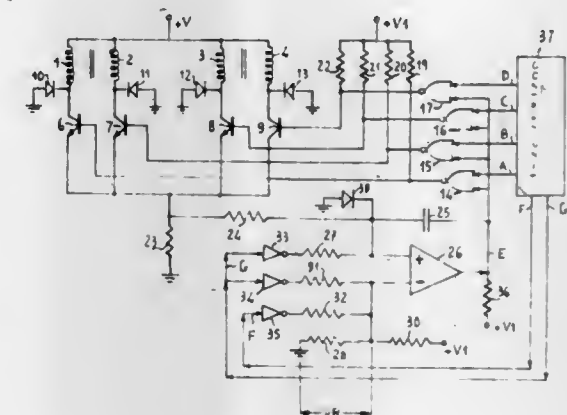
Leonardo Faedi, Mazza di Rho, and Maurizio Bertoli, Milan, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 2, 1981, Ser. No. 326,783

Claims priority, application Italy, Dec. 18, 1980, 26747 A/80 Int. Cl.³ H02K 29/04

U.S. Cl. 318—696

3 Claims



1. Step motor control circuit of the "current chopping" type comprising:

current switching devices for intermittently applying an energization current to the motor phases;
 a comparator circuit having inverting and non-inverting inputs;
 a detector of the energization current applying a first detected signal, proportional to the detected current, to one input of said comparator circuit;
 a reference signal generator coupled to said comparator for supplying to the other input of said comparator circuit a reference signal selectable among a plurality of reference signals, said comparator circuit thus supplying a command signal for said switching devices to open said current switching devices when said first signal has a value equal to the reference signal, and to close them after a certain period;
 first circuit means, coupled to said comparator circuit for modifying the period for selectively turning off said current switching devices in inverse proportion to the magnitude of the reference signal applied to said comparator.

4,431,956

DRIVE EQUIPMENT

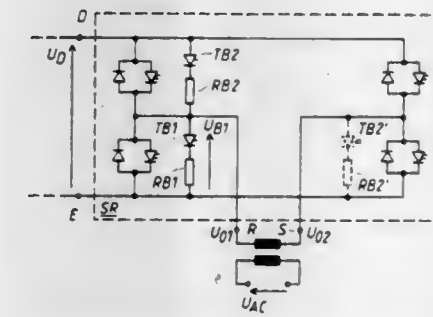
Lennart Ängquist, Enköping, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Sep. 9, 1981, Ser. No. 300,538

Claims priority, application Sweden, Sep. 25, 1980, 8006706 Int. Cl.³ H02P 3/22

U.S. Cl. 318—759

9 Claims



1. Drive equipment for an AC motor, which equipment comprises,

a self-commutated DC/AC converter for transmitting electrical power from a network to the motor for driving the motor and for transmitting electrical power from the

a first wiper having a pivot below the driver side of the windshield;
 a second wiper having a pivot to the passenger side of the pivot of the first wiper;
 first and second electric motors effective, when actuated, to drive said first and second wipers, respectively, through arcs across said windshield;
 means effective to control the actuation of said motors to generate repeated wipe cycles of said first and second wipers, each such cycle having a first phase in which said first and second wipers are driven in substantially parallel synchronization from positions adjacent the bottom of the windshield through arcs across the driver and passenger sides of the windshield, respectively, to positions in which the first wiper is adjacent the driver end of the windshield, a second phase in which the first wiper is deactivated and the second wiper is driven through a further arc across the driver side of the windshield to the bottom thereof and back and a third phase in which the first phase is reversed, whereby improved driver visibility results from the greater wipe frequency on the driver side and the positive cleaning thereof on each wipe.

5. Wiper apparatus for a vehicle windshield having driver and passenger sides, comprising in combination:

a first wiper having a pivot below the driver side of the windshield and being movable to sweep an arc across the windshield between an inner position at the bottom center thereof and an outer position at the driver side end thereof;

a second wiper having a pivot to the passenger side of the pivot of the first and being movable to sweep an arc across the windshield between an inner position at the bottom of the passenger side thereof and a storm position at the bottom of the driver side thereof, said arcs of the first and second wipers having a substantial portion of overlap on the driver side of the windshield;

first and second electric motors effective, when actuated, to drive said first and second wipers, respectively, at substantially similar speeds through said arcs;

first means effective to sense and signal the inner and outer positions of said first wiper and the inner and storm positions of said second wiper, said means being further effective to sense and signal a predetermined outer position of the second wiper intermediate said inner and storm positions and corresponding to said outer position of the first wiper in a tandem wipe mode of operation;

second means effective, upon sensing of the inner positions of both wipers, to activate the first and second motors to drive both wipers in tandem toward the driver side of the windshield;

third means effective, upon sensing of the outer position of the first wiper, to deactivate the first motor and thus stop the first wiper in said position;

fourth means effective, upon sensing of the storm position of the second wiper, to activate the second motor to drive the second wiper toward the passenger side of the windshield;

fifth means effective, upon sensing of the second wiper passing its outer position while moving toward the passenger side of the windshield, to activate the first motor to drive the first wiper in tandem with the second toward the passenger side;

sixth means effective, upon sensing the outer positions of the first and second wipers to activate the first and second motors to drive both wipers in tandem toward the passenger side of the windshield; and

driver selection means actuable in a first mode to actuate the first, second and sixth means for tandem wiper operation and further actuable in a second mode to actuate the first, second, third, fourth and fifth means, whereby improved driver visibility results from greater wipe frequency over the portion of overlapping arcs and the positive cleaning thereof on each wipe.

motor to the network for braking the motor, the converter having at least two AC terminals and two DC terminals, a smoothing capacitor connected between said DC terminals, a braking resistor and a controllable semiconductor element in series with the braking resistor, the series-connected resistor and element being connected between one of the AC terminals of the converter and one of its DC terminals for absorbing electrical power from the motor during braking thereof, and control members for control of the current through the braking resistor in dependence on the voltage appearing on that side of the converter to which power is supplied during braking of the motor.

4,431,957

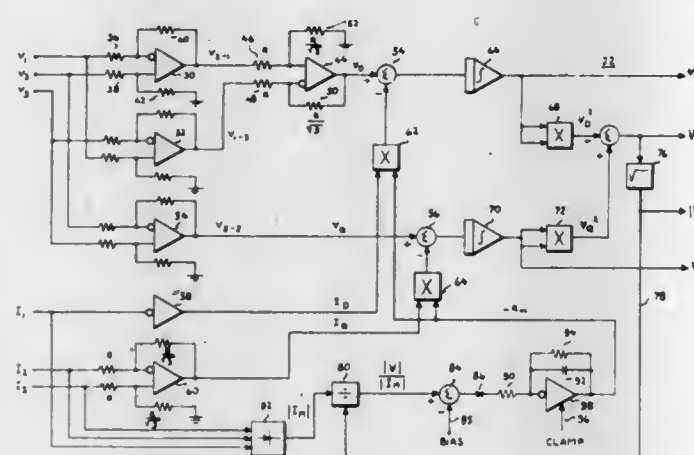
METHOD AND APPARATUS FOR GENERATING SIGNALS REPRESENTING MOTOR FLUX IN AN AC MOTOR

B. Paul Chausse, Roanoke, Va., and John D. D'Atre, Ballston Lake, N.Y., assignors to General Electric Company, Salem, Va.

Filed Dec. 29, 1981, Ser. No. 335,344
Int. Cl.³ H02P 5/40

U.S. Cl. 318—805

11 Claims



1. A system for deriving a signal proportional to motor flux of an alternating current motor provided with electrical power from a polyphase alternating current power source comprising:

- means to develop voltage signals representing the direct and quadrature components of the voltage supplied to said motor from said source;
- means to develop current signals representing the direct and quadrature components of the current supplied to said motor from said source;
- means to develop a total current signal representing the total current supplied to said motor from said source;
- means to supply a bias signal proportional to the anticipated ratio of the absolute value of motor flux to the absolute value of total motor current; and,
- means responsive to said voltage signals, said current signals, said total current signal and said bias signal to develop a flux signal proportional to motor flux, including means responsive to said total current signal and said flux signal to develop a signal employed to correct the motor resistance used in developing said flux signal.

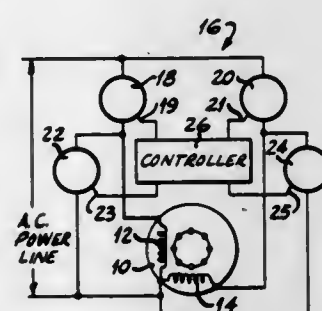
4,431,958 CONTROL APPARATUS FOR SINGLE PHASE AC INDUCTION MOTOR

Herman P. Schutten, Milwaukee; Jan K. Sedivy, Elm Grove, and Robert W. Sackett, Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 230,080, Jan. 30, 1981. This application Jul. 29, 1982, Ser. No. 403,250
Int. Cl.³ H02P 5/40

U.S. Cl. 318—816

14 Claims



1. A control apparatus for establishing a rotating field in a single phase AC induction motor having a rotatable output and first and second sets of mechanically displaced windings which are energized alternately and cyclically by a single phase AC input to establish a rotating field to effect rotation of the output without phasing capacitors or inductors comprising, a single phase AC input which is adapted to have a single phase AC wave form applied thereto, first solid state switch means for interconnecting said first set of windings of said AC motor and said single phase AC input, second solid state switch means for interconnecting said second set of windings of said AC motor and said single phase AC input, said first switch means when conductive applying AC energy from said input to said first set of windings, said second switch means when conductive applying AC energy from said input to said second set of windings of said AC motor, said first switch means when non-conductive preventing the application of energy from said input to said first set of windings, said second switch means when non-conductive preventing the application of energy from said input to said second set of windings and controller means responsive to said single phase AC wave form applied to said input for controlling the conduction of said first and second switch means and rendering each of said first and second switch means alternately and cyclically conductive for discrete time periods during each cycle of the single phase AC wave form on said input.

4,431,959 REGULATOR FOR CHARGING A BATTERY WITH A PERMANENT MAGNET ALTERNATOR

Gregory M. Remmers, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

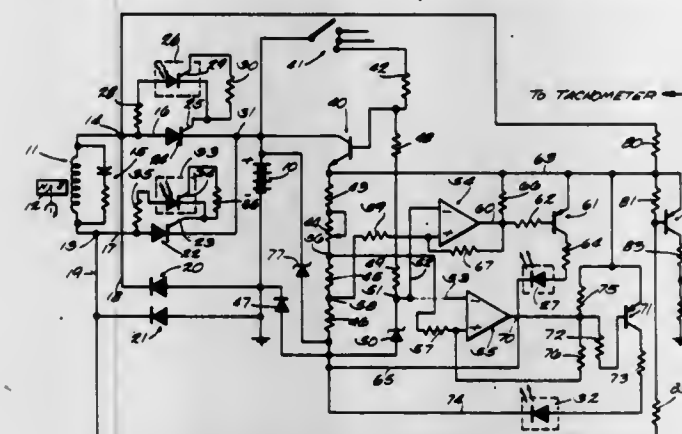
Filed Aug. 27, 1982, Ser. No. 412,117
Int. Cl.³ H02J 7/00

U.S. Cl. 320—59

6 Claims

1. A regulator for regulating charging of a battery from the output terminals of a source of alternating current, said regulator comprising first and second half-wave rectifier circuit means, first means for sensing a battery voltage lower than full battery voltage by a first selected amount and for generating a first control signal in response thereto, second means for sensing a battery voltage lower than full battery voltage by a second selected amount greater than the first selected amount and for generating a second control signal in respect thereto, means responsive to generation of the first control signal for connecting said first half-wave rectifier circuit means in a series circuit between the terminals of the source of alter-

nating current and the battery so as to charge the battery with half-wave direct current and responsive to generation of the second control signal for connecting said second half-wave rectifier circuit means in another series



circuit between the terminals of the source of alternating current so as to charge the battery with full-wave direct current in conjunction with said first half-wave rectifier circuit means.

4,431,960

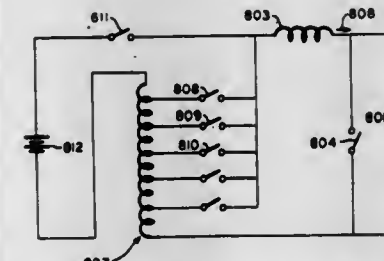
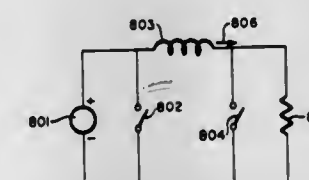
CURRENT AMPLIFYING APPARATUS

Oved S. F. Zucker, Del Mar, Calif., assignor to FDX Patents Holding Company, N.V., La Jolla, Calif.

Filed Nov. 6, 1981, Ser. No. 319,065
Int. Cl.³ G05B 24/02

U.S. Cl. 323—340

36 Claims



1. An energy transfer, current amplifying device comprising: an inductor coil comprising a plurality of inductor elements for storing magnetic energy; an energy source switchably connected to a first side of said inductor coil for supplying an energizing current to said coil; a load inductor, a first side of which is connected to said inductor coil and operable to receive current flowing in said inductor coil; contact means operable to effectively connect said first side of said inductor coil to said load inductor to form a current carrying circuit between said inductor coil and load inductor and to thereafter progressively disconnect at least some of said elements of said inductor coil from said circuit, thereby increasing the magnitude of the current in said circuit.

4,431,961 TURNABLE ELECTRODE

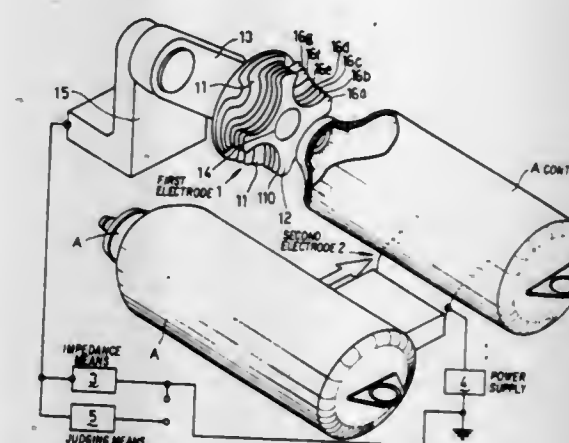
Michio Kakumoto, Naruto, Japan, assignor to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

Filed Sep. 11, 1981, Ser. No. 301,225
Claims priority, application Japan, Sep. 16, 1980, 55-131784[U]

Int. Cl.³ G01R 31/12

U.S. Cl. 324—54

8 Claims



1. An electrode for checking the integrity of an article being transported on a moving conveyor comprising: an element rotatably supported on an axis transverse to the direction of movement of said conveyor, said element having formed in its periphery at least one access portion shaped to conform substantially to the exterior contour of said article, said axis being positioned adjacent the path of movement of said article on said conveyor whereby the exterior of said article passes in close proximity with said conforming access portion and rotation of said electrode about said axis maintains said access portion in close proximity with said article.

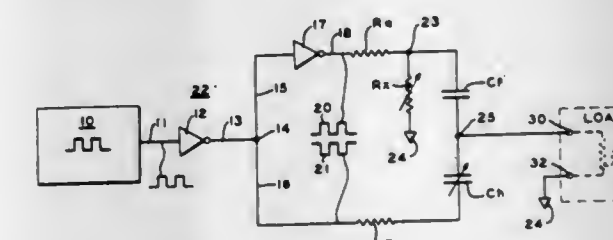
4,431,962 CAPACITOR MONITORING BY SINGLE RESISTOR ADJUSTMENT

Arlon D. Kompellen, Richfield, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Mar. 11, 1982, Ser. No. 357,235
Int. Cl.³ G01R 11/52, 27/26

U.S. Cl. 324—60 C

9 Claims



1. A capacitor monitoring circuit with resistive null calibration means, including: voltage driving means including output circuit means with said output circuit means providing two varying voltages of equal amplitude and that are opposite phases of a wave form; first measuring circuit means including a first resistance connected in series with first capacitor means between processing circuit output means and a first of said varying voltages; second measuring circuit means including a second resistance connected in series with second capacitor means between said processing circuit output means and a second of said varying voltages; said first and second resistances being generally of the same magnitude; said first and said second capacitor means being of different capacitive values with one of said capacitor means being variable in nature;

said first and said second capacitor means being joined at said processing circuit output means to form said processing circuit output means with respect to a ground and said output means connected to control a load; and adjustable resistance means connected between one of said capacitor means and ground to adjust the voltage applied to the capacitor means to which said adjustable resistance means is connected to null a processing circuit output means voltage with respect to ground.

4,431,963

APPARATUS FOR DETERMINING A NATURAL CURRENT FLOW IN WELL CASING

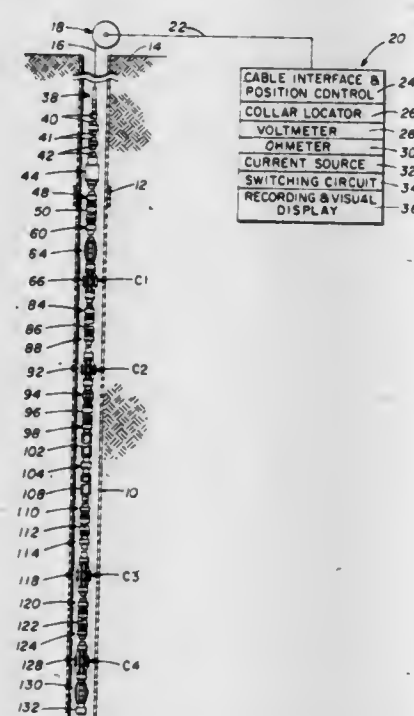
Arnold M. Walkow, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 28, 1981, Ser. No. 305,873

Int. Cl.³ G01R 27/02

U.S. Cl. 324—65 R

14 Claims



1. An apparatus for determining current flow in well casing, comprising:

- means to pass a measuring instrument through a well bore from the earth's surface on a cable;
- a measuring instrument including a housing operably connected to said cable;
- a pair of electrically separate electrodes mounted on said housing in a spaced relation to each other operably, electrically connectable with the interior of a well's casing;
- means to measure the voltage on the interior of the well's casing between said pair of electrodes;
- means to pass a predetermined current through the casing such that it passes the well's casing spanned by said pair of electrodes;
- means to determine the resistance of the well's casing between said pair of electrodes from a voltage measurement and a predetermined current; and
- means to determine the current flow in the well's casing from a voltage measurement and a resistance.

4,431,964

METHOD FOR DETERMINING A NATURAL CURRENT FLOW IN WELL CASING

Arnold M. Walkow, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 28, 1981, Ser. No. 306,017

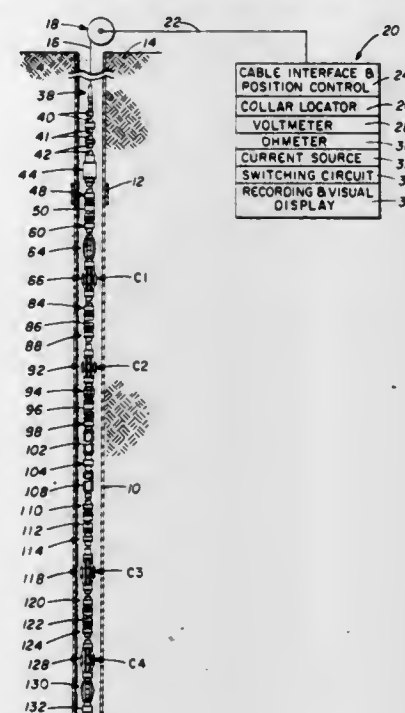
Int. Cl.³ G01R 27/02

U.S. Cl. 324—65 R

17 Claims

1. A method for determining the current flow in well casing, comprising the steps of:

- measuring native voltage in a well's casing between two locations within a string of well casing;
- passing a known current through the well casing such that it passes through the locations at which the native voltage was measured;
- determining the absolute voltage change, in the well casing at the locations at which the native voltage was



measured from the value of the native voltage to another voltage value occurring during said passing of a known current;

- determining the casing's resistance from the absolute voltage change measurement and the known current;
- determining the native current flow in the casing from the absolute voltage change and the casing resistance.

4,431,965

MICROWAVE RADIATION MONITOR

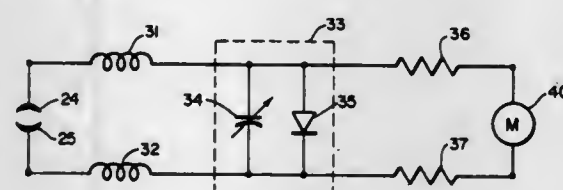
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Hauppauge, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,790

Int. Cl.³ G01R 21/10, 19/22; H01Q 1/36

U.S. Cl. 324—95

5 Claims



1. A microwave radiation monitor comprising: a dual Archimedean spiral antenna; a diode characterized by a variable capacitance that decreases as the reverse voltage across said diode increases; inductance means coupling said diode to the inner ends of said spiral antenna, the reactance of said inductance means being selected to substantially resonate with said capacitance when a predetermined frequency is monitored; and a meter connected to measure the current through said diode.

4,431,966

MODULAR BACKLIGHTED ANALOG/DIGITAL INSTRUMENT DISPLAY

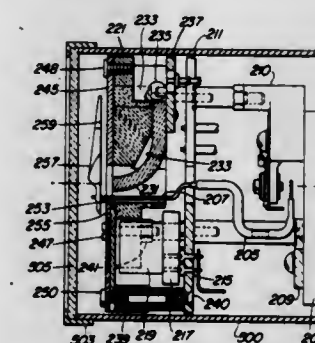
Frank Pucciarello, Newark, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed May 12, 1981, Ser. No. 262,851

Int. Cl.³ G01R 1/02, 1/08, 19/26

U.S. Cl. 324—114

6 Claims



1. A modular analog/digital instrument display for use in a cylindrical housing comprising:

- a base adapted to fit within said housing;
- an analog meter movement adapted to fit within said housing and mounted to said base, said meter movement including a rotatable shaft having a portion thereof extending in a direction substantially parallel to the longitudinal axis of said housing;
- a circuit board adapted to fit within said housing and mounted in a spaced-apart relationship to said meter movement, said circuit board including electrical contacts formed on at least a portion thereof, said circuit board further having an opening formed therein for receiving said meter movement shaft;
- a digital display;
- means for mounting said digital display to said circuit board including means for electrically connecting electrical contacts of said digital display with said contacts of said circuit board;
- a light collecting plate adapted to fit within said housing and mounted to said circuit board, said light collecting plate being formed from a light transmissive material and including a first opening adapted to receive at least a portion of said digital display, and a second opening adapted to receive said meter movement shaft;
- a light pipe having one end disposed within said second opening of said light collecting plate;
- an analog dial adapted to fit within said housing and mounted to said light collecting plate, said dial including light transmissive portions indicative of selected dial markings, a first opening for receiving a portion of said light pipe, and a second opening for exposing said digital display to view;
- a light transmissive dial pointer mounted to said rotatable meter shaft and arranged adjacent said dial and said light pipe; and
- means, mounted adjacent said light collecting plate and said light pipe, for illuminating said light collecting plate whereby said light transmissive portions of said dial are illuminated by light scattered by said light collecting plate, and said dial pointer is illuminated by light transmitted through said light pipe.

4,431,967

METHOD OF MOUNTING A SEMICONDUCTOR ELEMENT FOR ANALYZING FAILURES THEREON

Tadashi Nishioka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

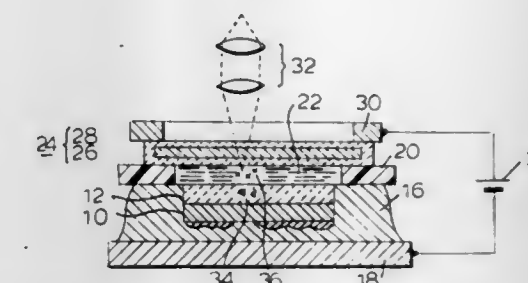
Filed Aug. 21, 1980, Ser. No. 180,011

Claims priority, application Japan, Aug. 28, 1979, 54-110085

Int. Cl.³ G01R 31/22

U.S. Cl. 324—158 R

1 Claim



1. A method which comprises the steps of: inserting a semiconductor chip including a semiconductor element disposed on a main surface of the semiconductor chip into an electrically conducting member from an upper surface thereof so as to leave said main surface of said semiconductor chip exposed while at least one portion of a surface which is opposite to the main surface and lateral surfaces of said semiconductor chip are in intimate contact with said electrically conducting member; disposing an electrically insulating spacer including an opening on the upper surface of said electrically conducting member so as to cause said opening to be opposite to the main surface of said semiconductor chip; forming a film of a nematic liquid crystal in said opening so as to be intimate contact with the main surface of said semiconductor chip; placing a transparent plate having a transparent electrically conducting film disposed on at least one surface thereof on said electrically insulating spacer so that said transparent electrically conducting film is in contact with said nematic liquid crystal film; and applying a DC voltage across said electrically conducting member and said transparent electrically conducting film, wherein failures on said semiconductor chip are analyzed by using a dynamic scattering effect of said nematic liquid crystal film.

4,431,968

METHOD OF THREE-DIMENSIONAL NMR IMAGING USING SELECTIVE EXCITATION

William A. Edelstein, Schenectady, and Paul A. Bottomley, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,229

Int. Cl.³ G01R 33/08

U.S. Cl. 324—309

29 Claims

1. A method of three-dimensional NMR imaging in which selective excitation is used to excite a thick planar slab of nuclear spins in an imaging sample situated in a static magnetic field and in which the necessary imaging information for constructing a series of tomographic section images of said thick planar slab is collected simultaneously from throughout said thick planar slab, said method comprising the steps of:

- applying for a first predetermined time interval a magnetic field gradient along a first axis of said imaging sample;
- irradiating said imaging sample, during said first time interval, with a frequency selective RF pulse so as to excite a plurality of nuclear spins in said thick planar slab of said imaging sample such that said thick planar slab is selected to be situated within the region over which the receiver coil for detecting NMR signals is sensitive;

4,431,973

OPERATIONAL AMPLIFIER

Kunihiko Goto, Kawasaki; Kazuhiro Kobayashi, Tokyo; Akihiko Ito, Kawasaki; Hisami Tanaka, Yokohama, and Tadairo Saito, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

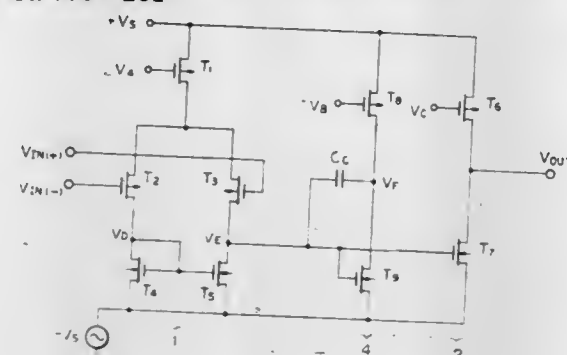
Filed Jul. 1, 1981, Ser. No. 279,596

Claims priority, application Japan, Jul. 4, 1980, 55-91370

Int. Cl.³ H03F 3/45

U.S. Cl. 330-261

17 Claims



1. An operational amplifier operatively connectable to receive first and second input signals, comprising: a differential circuit, having a non-inverting input terminal operatively connectable to receive the first input signal, having an inverting input terminal operatively connectable to receive the second input signal, and having an output terminal, for detecting a potential difference between the first and second input signals; an output amplifier having an input terminal connected to said output terminal of said differential circuit; and a phase compensating circuit comprising: an inverting amplifier having an input terminal connected to said output terminal of said differential circuit and having an output terminal; and a phase compensating capacitor connected between said output terminal of said inverting amplifier and said output terminal of said differential circuit, said inverting amplifier having a signal delay time less than the signal delay time of said output amplifier.

4,431,974

EASILY TUNED IMPATT DIODE MODULE

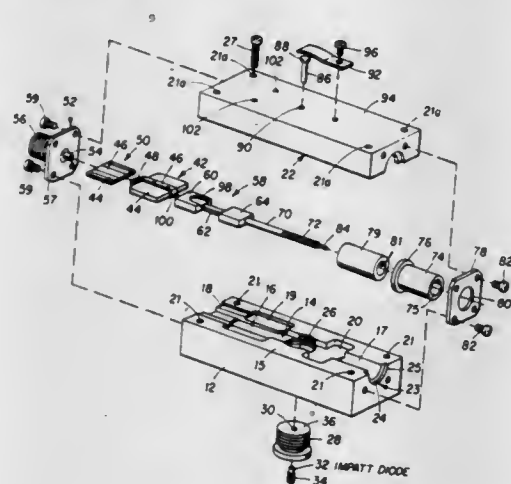
Donnie L. Landt, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1982, Ser. No. 350,699

Int. Cl.³ H03B 7/14

U.S. Cl. 331-107 DP

12 Claims



1. An impedance tuning circuit comprising: an electrically conductive member having a channel formed therein;

means for receiving a frequency generating semiconductor device in said channel; a resonator means movably positioned within said channel for contacting a semiconductor device for varying the imaginary component of impedance presented to a semiconductor device; and a transmission line means positioned in said channel adjacent said resonator means and movable along said channel with respect to said resonator for varying the component of real impedance presented to a semiconductor device.

4,431,975

OSCILLATOR CIRCUIT FOR ULTRASONIC CLEANING

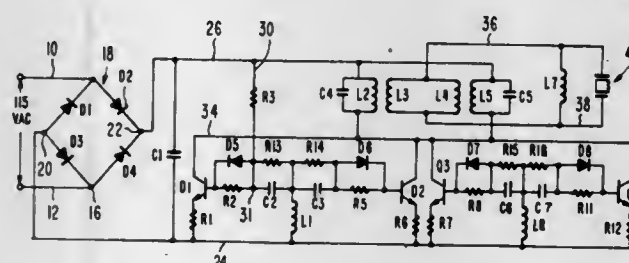
Richard J. Podlesny, Morrisville, Pa., assignor to Ultrasonic Power Corporation, Trenton, N.J.

Filed Apr. 16, 1981, Ser. No. 250,621

Int. Cl.³ H03B 5/36, 5/00

U.S. Cl. 331-117 R

5 Claims



1. In an oscillator circuit for use in resonating a transducer in a plurality of fundamental modes and the harmonics thereof, said circuit being connected to a rectified power supply by a pair of power supply leads and including a plurality of transistors connected in parallel and having high reverse base-emitter voltage breakdown values, a plurality of base bias resistors and feedback inductors providing connections for a plurality of feedback capacitors to the bases of the transistors and to one of said leads, respectively, and resistor means connected between at least one of said feedback capacitors and the other power supply lead for turning the transistors on, the improvement comprising a base drive network for the transistors in which a plurality of resistors are so connected to the feedback capacitors as to provide an alternate discharge current path for the feedback capacitors and thereby divert at least a portion of said discharge current from the transistors, said circuit including resistive connections between the emitters of the several transistors and said one of the power supply leads, the oscillator circuit further including a separate conductor connecting the collectors of the transistors in parallel, oscillator coil primary windings connected between said other power supply lead and said separate conductor, respective oscillator coil secondary windings being connected to the transducer, and respective oscillator coil feedback windings serving as said feedback inductors and providing the connections between the feedback capacitors and said one power supply lead, said improvement further comprising disposing the plurality of resistors and the feedback capacitors in sets, each of which includes at least one resistor in parallel with each feedback capacitor.

4,431,976

ADAPTIVE FILTER

Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,502

Claims priority, application Netherlands, Dec. 2, 1980, 8006543

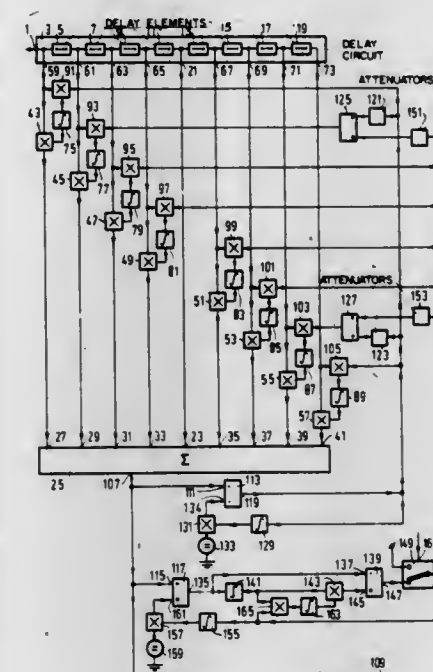
Int. Cl.³ H03H 15/00

U.S. Cl. 333-166

7 Claims

1. An adaptive filter comprising a delay circuit to which a signal to be corrected is applied, said delay circuit having a plurality of serially arranged delay elements having taps at respective outputs thereof, amplitude control circuits con-

nected to said taps, an adder circuit coupled to respective outputs of said amplitude control circuits for forming a signal corrected by said filter, a difference-determining circuit for forming an error signal between a signal corrected by said filter and a reference signal having a waveform which substan-



tially corresponds to a desired waveform for the signal corrected by said filter, and circuits for generating control signals for a number of said amplitude control circuits, said generating circuits being controlled by said error signal, characterized in that said generating circuits are further controlled by an inverse version of the signal corrected by said filter.

4,431,977

CERAMIC BANDPASS FILTER

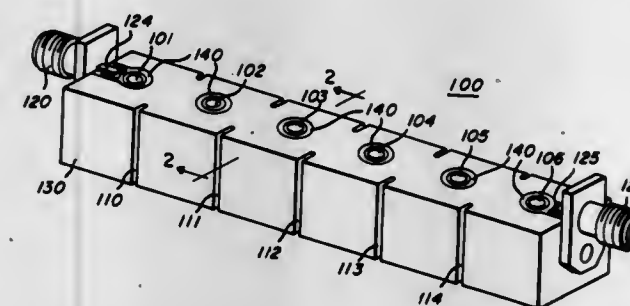
Raymond L. Sokola, Lake Zurich, and Charles Choi, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1982, Ser. No. 349,346

Int. Cl.³ H01P 1/202, 1/205, 7/04

U.S. Cl. 333-206

48 Claims



1. A filter comprising: means comprised of a dielectric material having top and bottom surfaces, said dielectric means further having at least two holes extending from the top surface toward the bottom surface thereof and spatially disposed at a predetermined distance from one another; first electrode means comprised of a conductive material disposed on the dielectric means at a predetermined distance from one of the holes in the dielectric means; second electrode means comprised of a conductive material disposed on the dielectric means at a predetermined distance from a hole other than said one of the holes in the dielectric means; and said dielectric means further being covered with a conductive material with the exception of portions surrounding one end of said one hole and said other hole and surrounding the first and second electrode means, and the conduc-

tive material at said one end of each hole further being capacitively coupled to the surrounding conductive material whereby a foreshortened coaxial resonator is produced for each hole.

4,431,978

COIL ASSEMBLY

Richard S. Lenzing, Farmington, Conn., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 230,165, Jan. 30, 1981, abandoned. This application Mar. 30, 1982, Ser. No. 363,703

Int. Cl.³ H01H 67/02

U.S. Cl. 335-132

7 Claims



1. In an electrical apparatus of the type comprising a stationary magnet that supports a coil form on which a coil is wound, the combination comprising: (a) the stationary magnet comprising a plurality of parallel extending legs; (b) an integral coil form of insulating material extending about one of the legs and comprising: (1) interior coil walls forming an interior aperture adapted to permit insertion of the coil form on said one leg of the magnet; (2) flange portions extending radially outward at top and bottom ends of the coil walls; (3) flange extensions integral with and extending from at least one of the flange portions, said flange extensions being flexible to permit their extending coplanar to the flange portion when the coil is wound on the coil walls and to permit their being bent substantially orthogonally during assembly of the contactor; (4) said flange extensions extending substantially orthogonally to the flange portions and being interposed between the coil and at least one adjacent leg of the stationary magnet to constitute an insulation barrier therebetween.

4,431,979

SYNTHETIC RESIN-BONDED ELECTROMAGNETIC COMPONENT AND METHOD OF MANUFACTURING SAME

Theodorus G. W. Stijntjes, and Cornelis J. Esveldt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,399

Claims priority, application Netherlands, Jul. 22, 1980, 8004200

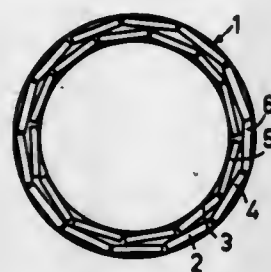
Int. Cl.³ H01F 7/00

U.S. Cl. 335-210

12 Claims

1. An electromagnetic component comprising preshaped

sintered oxidic bodies having soft magnetic properties bound together by means of a synthetic resin binder composition characterized in that said preshaped sintered bodies are densely packed and in mutual contact with each other and said



synthetic resin binder composition contains a soft magnetic powder and fills the cavities between said bodies so as to thereby form a solid body of an accurately defined shape and dimensions.

4,431,980

ELECTRICAL APPARATUS WINDING

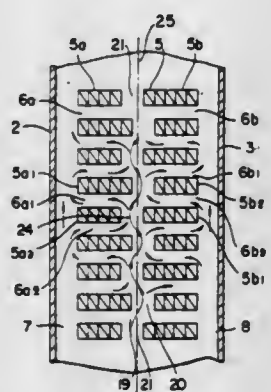
Masahiro Ikegawa; Takahiro Daikoku, both of Ibaraki; Wataru Nakayama, Kashiwa, and Taisel Uede, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 195,107, Oct. 8, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,447

Int. Cl.³ H05K 7/20

U.S. Cl. 336—60

6 Claims



1. An electrical apparatus winding comprising a plurality of winding units arranged in a vertical direction between an inner insulating sleeve and an outer insulating sleeve, horizontal cooling paths through which cooling fluid flows, each of said horizontal cooling paths being defined between mutually adjacent winding units, and inner and outer vertical cooling paths through which the cooling fluid flows, said inner and outer vertical cooling paths being defined between said inner insulating sleeve and said winding units, respectively, said winding units being divided in the radial direction into winding sub-units which are spaced from one another in the radial direction so that a straight line extending in the vertical direction passes through the plurality of winding units in the space between the winding sub-units thereof, the sum of the number of turns of the winding sub-units of a respective winding unit being the same for each winding unit, central vertical cooling paths being defined by said radially spaced winding sub-units and the vertical arrangement thereof, said central vertical cooling paths being connected to said horizontal cooling paths at an upper side of said winding sub-units and to said horizontal cooling paths at a lower side of said winding sub-units, said central vertical cooling paths each including one via flow path being a substantially straight flow path extending in the vertical direction and defined at least by vertically arranged pairs of said radially spaced winding sub-units and one branch induced flow path defined at least between selected ones of said vertically adjacent winding units along said via flow path, said via flow path extending along the vertically extending straight

line, each of the vertically arranged pairs of said radially spaced winding sub-units having respective end portions of said winding sub-units adjacent to and radially spaced in opposite directions from the vertically extending straight line and each of the plurality of pairs of winding sub-units being spaced from each other by the same distance so that the width of said via flow path in the radial direction through each of said winding units is the same, said branch induced flow path being connected to said via flow path for making said cooling fluid flow such that the flow direction of said fluid flowing in one said horizontal cooling path at an upper side of at least a selected one of said winding sub-units is reversed to the flow direction of said fluid flowing in a vertically adjacent horizontal cooling path at a lower side of the at least selected one of said winding sub-units, said branch induced flow path for different ones of said winding units being alternately located on the right side and the left side of said via flow path in the vertical direction.

4,431,981

PRESSURE UNIT ASSEMBLY

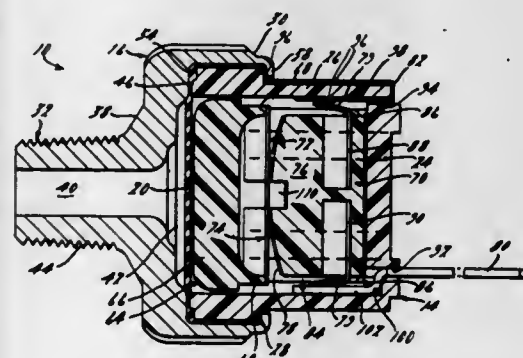
Nelson Fuller, and Rudolph Bergsma, both of Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 22, 1982, Ser. No. 421,220

Int. Cl.³ H01L 10/10

U.S. Cl. 338—42

13 Claims



1. In a pressure transducer having a housing defining an enclosed interior position, the pressure transducer which comprises a pressure responsive element which varies an electrical characteristic of an electrical circuit element in accordance with sensed pressure, the improvement which comprises a generally flat but resiliently flexible spring contact element for varying the electrical characteristic of said electrical circuit element comprising a main contact portion disposed in a diametrical sense with respect to the axis of the transducer and at least one projection which projects in a radial sense from a central region of the main contact portion in a direction which is non-parallel to the diametrical sense of the main contact portion and wherein said electrical circuit element comprises a resistance which is distributed in a general diametrical sense with respect to the axis of the transducer, but which is convex toward and in juxtaposition to said main contact portion, and wherein said spring contact element is disposed to be resiliently flexed by the pressure responsive element with the main contact portion being flexed into selective contact with said resistance in accordance with sensed pressure and with the free end of said at least one projection bearing against an interior portion of said housing to aid in supporting the spring contact element during flexing.

4,431,982

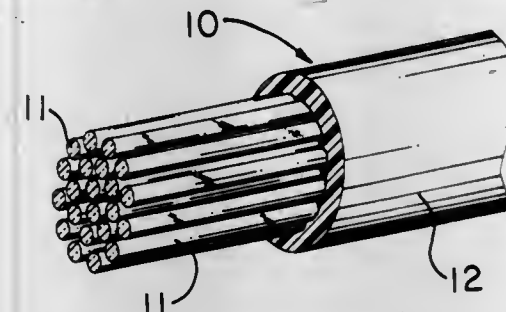
ELECTRICALLY CONDUCTIVE POLYDIORGANOSILOXANES

Carl M. Monroe, and Randall P. Sweet, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich. Continuation of Ser. No. 130,943, Mar. 17, 1980, abandoned, which is a division of Ser. No. 9,219, Feb. 5, 1979, Pat. No. 4,250,075. This application Jun. 12, 1981, Ser. No. 272,821

Int. Cl.³ H01C 3/06, 7/00

U.S. Cl. 338—214

33 Claims



1. A method of improving the useful electrical life of automotive ignition cable, of the type having a controlled resistivity core, when subjected to high voltage electrical impulses, the method consisting essentially of coating nonmetallic fibers with an electrically conductive composition comprising a polydiorganosiloxane having greater than 2 percent by weight phenyl radicals based on the weight of the composition, the amount of phenyl radical present being increased as the use temperature is increased to that amount necessary to extend the useful electrical life at use temperature, and greater than 15 percent by weight of electrically conductive carbonaceous particles of less than 20 micrometers average diameter, using the coated nonmetallic fibers as the controlled resistivity core.

4,431,983

PTCR PACKAGE

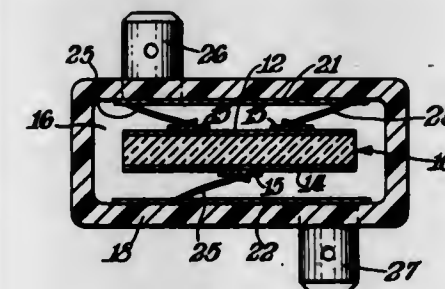
George H. Rodriguez, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 182,565, Aug. 29, 1980, Pat. No. 4,325,051. This application Nov. 19, 1981, Ser. No. 323,011

Int. Cl.³ H01C 13/00

U.S. Cl. 338—220

3 Claims



1. A positive temperature coefficient resistor (PTCR) package comprising a PTCR ceramic slug; two electrodes being bonded to two spaced-apart surface area portions, respectively, of said slug, each of said two electrodes including a glass-bonded aluminum layer adhering to one of said-body surface area portions and a silver film patch of substantially less area adhering to said glass-bonded aluminum layer; two spring loaded metal contacts; and a plastic housing enclosing said electrode PTCR slug and holding said spring loaded contacts against said two silver patches, respectively.

4,431,984

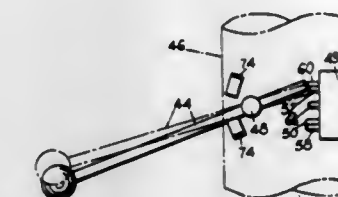
SIGNAL SYSTEM FOR VEHICLES

Carl L. Bileck, 19605 SW. Madeline, Aloha, Oreg. 97005 Continuation of Ser. No. 240,776, Mar. 5, 1981, abandoned. This application Feb. 16, 1982, Ser. No. 348,857

Int. Cl.³ B60Q 1/00

U.S. Cl. 340—107

1 Claim



1. A signal system for vehicles comprising
(a) an electric circuit;
(b) right and left turn signal means in said circuit arranged to be mounted at the rear of a vehicle;
(c) right and left courtesy request turn indicating means in said circuit arranged to be mounted on a vehicle so as to be visible from the rear of the vehicle;
(d) said turn indicating means comprising right and left indicating arrows and a courtesy word request which provide a turn request to a following driver to be used upon the failure of such following driver to heed a turn signal of the vehicle,
(e) a visual electric courtesy word greeting in said system arranged to be mounted on a vehicle so as to be visible from the rear for expressing gratitude to a following driver upon his giving the right of way after viewing said visual electric courtesy request indicating means,
(f) a movable hand operated lever having a neutral position and also having a pair of first engaging positions and a pair of second engaging positions associated with respective ones of said first engaging positions,
(g) first switch means in said circuit operated by said hand lever in its first engaging positions for controlling operation of respective right and left turn signal means,
(h) second switch means in said circuit operated by said hand lever in its second engaging positions for controlling operation of respective right and left courtesy request turn indicating means,
(i) third switch means at said neutral position of said lever,
(j) said second engaging positions of said switches being located past their respective first engaging positions whereby said lever in moving to its second engaging positions is arranged to first engage said first switch means,
(k) and control means in said circuit arranged to be armed by movement of said lever to said second positions and arranged upon return of said lever from its second engaging positions to its neutral position in engagement with said third switch means to provide a timed operation of said courtesy word greeting.

4,431,985

STEPPER MOTOR SYSTEM FOR DIGITALLY MEASURING INPUT QUANTITIES

Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 2, 1981, Ser. No. 239,844

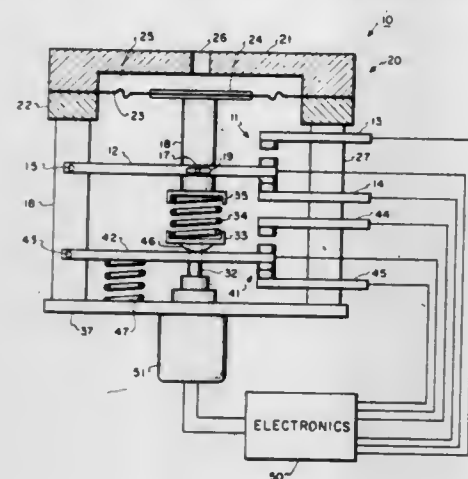
Int. Cl.³ H03K 13/02

U.S. Cl. 340—347 AD

29 Claims

1. A digital system for measuring an input quantity comprising:

input means for providing a first force in response to an input quantity to be measured;
 stepper motor means for providing a second force;
 measuring means connected to said input means and to said stepper motor means and responsive to said first and second forces such that said measuring means provides an



output when said first and second forces reach a predetermined relationship; and,
 control means connected to said stepper motor means and to said measuring means for causing said stepper motor means to step from a reference position and for counting the steps of said stepper motor means until said measuring means provides said output.

4,431,986

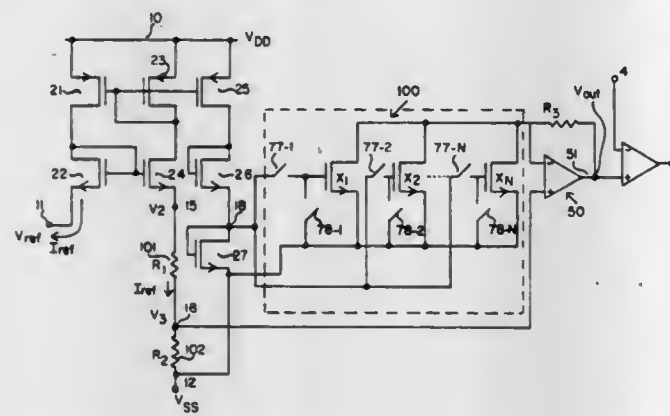
DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS WITH BIPOLAR OUTPUT SIGNALS
 Yusuf A. Haque, San Jose; Vikram Saletore, Cupertino, and Jeffrey A. Schuler, Saratoga, all of Calif., assignors to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Oct. 9, 1981, Ser. No. 310,156

Int. Cl.³ H03K 13/02

U.S. Cl. 340-347 AD

7 Claims



1. A digital to analog converter with bipolar output signals responsive to a first reference voltage and a digital word for generating an output voltage within a range of output voltages having a midpoint value equal to the value of the first reference voltage, which comprises:

a first lead for the reception of a first supply voltage;
 a second lead for the reception of a second supply voltage;
 a third lead for the reception of a first reference voltage, said reference voltage having a value between said first supply voltage and said second supply voltage;
 an operational amplifier having an inverting input lead, a noninverting input lead and an output lead;
 means for generating a second reference voltage and applying said second reference voltage to said noninverting input lead of said operational amplifier;

a load connected between said output lead and said inverting input lead of said operational amplifier;
 means for generating a reference current from said first reference voltage;
 a plurality of N current mirroring devices for mirroring said reference current, where N is a selected integer equal to the maximum number of current mirroring devices, said plurality of N current mirroring devices being connected between said inverting input lead of said operational amplifier and said second supply voltage;
 wherein the output voltage on said output lead of said operational amplifier is determined by the conduction of each of said N current mirroring devices, and the midpoint of the range of said output voltage is equal to said first reference voltage.

4,431,987

ANALOG-TO-DIGITAL AND DIGITAL-TO-ANALOG CONVERTERS AND METHODS OF OPERATION

Arliss E. Whiteside, Royal Oak, Mich., assignor to The Bendix Corporation, Southfield, Mich.

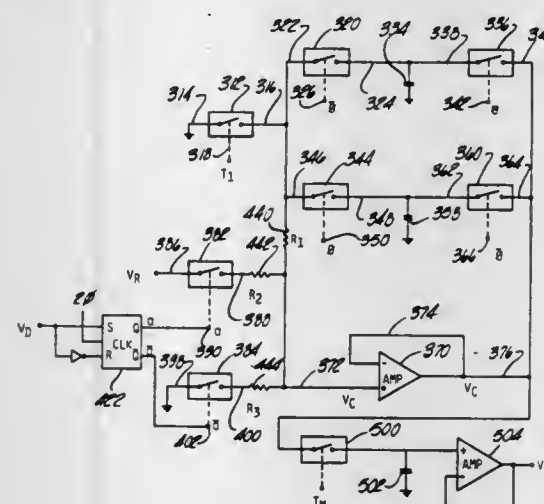
Division of Ser. No. 134,600, Mar. 27, 1980, Pat. No. 4,333,075.

This application Feb. 25, 1982, Ser. No. 352,509

Int. Cl.³ H03K 13/02

U.S. Cl. 340-347 DA

24 Claims



1. A method for converting a non-binary digital word to an analog signal comprising the steps of:

repetitively generating a predetermined set of timing signals in response to clock signals received from an external source;

decoding a received non-binary digital word to serially generate bit value signals having a first value when the received bit is high and a second value when the received bit is low;

generating an initial feedback signal V_p having a predetermined value in response to only the first timing signal in each set of timing signals;

generating a comparison signal V_c in response to said timing signals, a feedback signal V_p , a reference signal V_R , and said bit value signals, said comparison signal having a value

$$V_c = (1-k)V_p + kV_R$$

when said bit value signal has said first value, and generating said comparison signal V_c having a value

$$V_c = kV_p$$

when said bit value signal has said second value, wherein k has a predetermined value in the range of $0 < k < 1$, and V_R is a reference signal having a value equal to the full scale value of the analog signal;
 storing said comparison signal V_c to generate said feedback

signal V_p for use in the generation of the next sequential comparison signal V_c ;
 repeating said steps of generating and storing said comparison signal in response to the remaining timing signals in said set of timing signals using the stored feedback signal V_p ; and
 outputting said comparison signal V_c in response to the last timing signal in each set of timing signals to generate an analog output signal having a value corresponding to the value of the received non-binary digital word.

4,431,988

MICROPROCESSOR-BASED KEYBOARD/DISPLAY UNIT FOR CONFIGURING CONTROL INSTRUMENTS

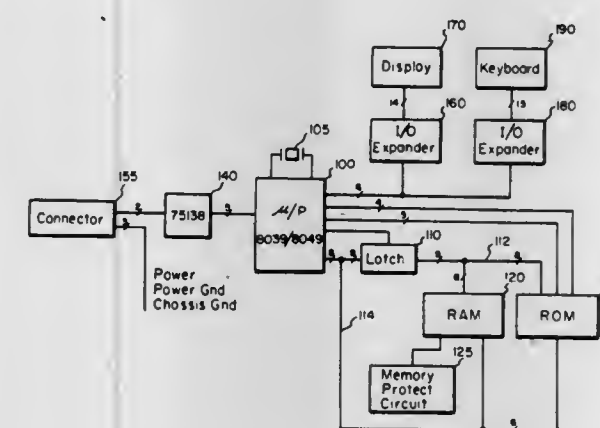
Anthony J. Molusis, Southington, and Thomas M. O'Loughlin, Milford, both of Conn., assignors to Bristol Babcock Inc., Waterbury, Conn.

Filed Jan. 23, 1981, Ser. No. 227,969

Int. Cl.³ G09G 3/00

U.S. Cl. 340-712

6 Claims



1. A keyboard/display unit comprising:

a first microprocessor,

a keyboard having a plurality of keys through which data and/or commands may be supplied to said first microprocessor,

a display controlled by said first microprocessor

a read only memory in which is stored an operating program for said first microprocessor, said operating program defining the functions associated with at least some of said keys of said keyboard, and

means for connecting said keyboard/display unit to one of a plurality of other instruments for supplying data and/or commands to said instrument from said keyboard/display unit and for providing information from said instrument to said keyboard/display unit, said keyboard/display unit being responsive to signals from the particular instruments to which said keyboard/display unit is connected to that upon receipt at said unit of a signal from a first type of instrument at least some of said keys of said keyboard are defined by said operating program to have first functions with respect to the input of data and/or commands to said first type of instrument and upon receipt at said unit of a signal from a second type of instrument said keys are defined by said operating program to have second functions with respect to the input of data and/or commands to said second type of instrument, whereby the same keys supply different data and/or commands to different types of instruments upon being connected thereto.

4,431,989

APPARATUS FOR ELECTROLYTIC CLEAR DISPLAY ON A DULL BASE

Hubert Grange, Grenoble, and Robert Meyer, Saint Ismier, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

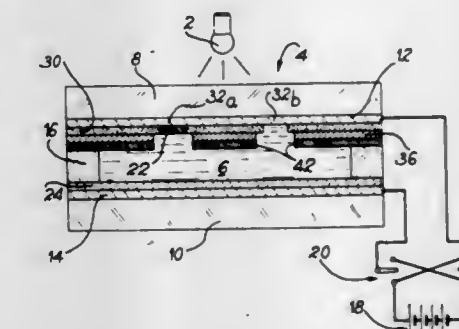
Filed Jun. 30, 1981, Ser. No. 279,057

Claims priority, application France, Jul. 3, 1980, 80 14838

Int. Cl.³ G09G 3/16

U.S. Cl. 340-763

16 Claims



1. Electrolytic device for light display on a dark background comprising a light source (2) illuminating a cell formed by two insulating walls, namely a first transparent wall (8) and a second wall (10) spaced apart from said first wall, one of the said walls (8, 10) being provided with a first conductive coating (12) forming a transparent electrode constituted by a plurality of segments (32) constituting the actual display, the other of said walls (10, 8) being provided with a second conductive coating (14) forming the counter-electrode and positioned to face the electrode, an electrolyte (6) containing ions and inserted between the electrode and the counter-electrode and power supply means (18, 20) connected to electrode (12) and to counter-electrode (14), said display also being characterized in that it comprises means (22) for giving the selected segments (32a) of electrode (12) a first dark appearance, means (24) for giving non-selected segments (32b) of electrode (12) a light appearance, these non-selected segments being those which it is desired to display and means (42, 44, 46, 48, 52) for giving the entire surface of the electrode which is free from segments (56) a second dark appearance which is identical to the first, said means (22) for giving the first dark appearance being constituted by a first dark deposit obtained by an electrochemical reaction of the ions contained in the electrolyte (6).

4,431,990

SELECTIVE CALL COMMUNICATION RECEIVER
 Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850, and William H. Dittmer, Lexington, Nebr., assignors to Keith H. Wycoff, Lexington, Nebr.

Division of Ser. No. 46,510, Jun. 7, 1979, Pat. No. 4,385,398.

This application Feb. 8, 1982, Ser. No. 346,721

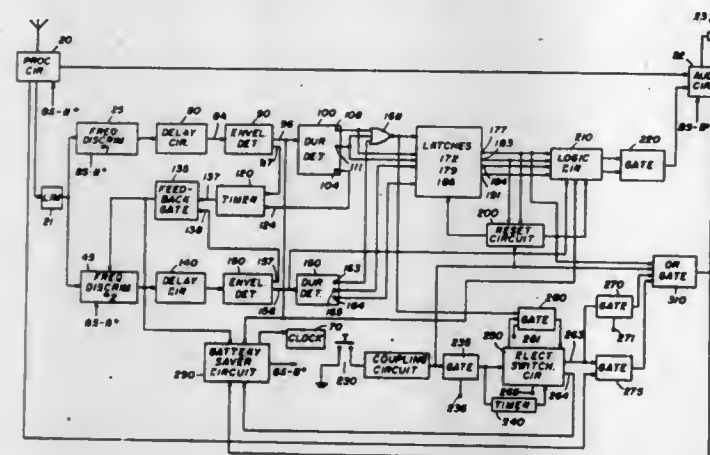
Int. Cl.³ H04Q 9/12

U.S. Cl. 340-825,48

41 Claims

1. In a selective call communication receiver adapted to respond to a sequence of at least first and second detected code tones, the combination comprising normally operative tone means responsive to a first detected code tone of predetermined frequency for providing a control signal persisting substantially for the duration of the first detected code tone, a source of clock pulses, duration detector means having a clock input coupled to said source of clock pulses and having a reset input coupled to said normally operative tone means and having first and second outputs, said duration detector means being rendered operative by the control signal for the duration thereof to divide the frequency of the clock pulses by first and second factors respectively associated with said first and second outputs, the values of the factors and the period of the clock pulses being selected to cause said duration detector means to produce a first output signal on said first output when

the control signal exceeds a first predetermined duration and a second output signal on said second output when the control signal exceeds a second longer predetermined duration, normally inoperative tone means coupled to said first output and being rendered operative by the first output signal and then



being responsive to a second detected code tone of predetermined frequency for providing a third output signal, and utilization means coupled to said second output and to said normally inoperative tone means and being operative to use the second output signal or the third output signal.

4,431,991

ENCODER FOR TRANSMITTED MESSAGE DEACTIVATION CODE

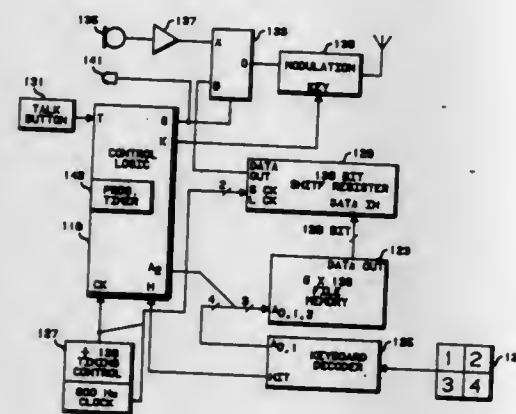
David F. Bailey, Plantation; Allen J. Weidler; Merle L. Gilmore, both of Ft. Lauderdale, all of Fla., and Gary W. Clow, Sierra Madre, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 13, 1981, Ser. No. 310,593

Int. Cl.³ H04Q 7/00, 9/00; H04M 11/02

U.S. Cl. 340—825.52

21 Claims



1. A method of encoding information signals for transmission to a plural population of receivers, each said receiver being capable of selectively establishing more than one time period for address correlation and having an audio circuit, comprising the steps of: generating coded signals to address selected ones of said plural receiver population; generating information of selectively variable length, subsequent to said coded signals, to be processed by said selected ones of said plural receiver population; generating coded deactivation signals immediately after the end of said information of selectively variable length causing said selected ones of said plural receiver population to terminate processing of said information.

4,431,992 CIRCUIT FOR ADDRESSING A SET OF REGISTERS IN A SWITCHING EXCHANGE

Pierre Boulard; Jean-Yves Cozic, both of Lannion, and Georges Fliche, Perros-Guirec, all of France, assignors to Societe Anonyme dite: Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

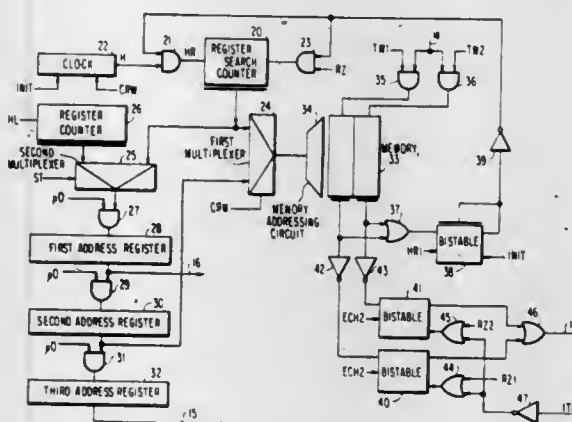
Filed Nov. 25, 1981, Ser. No. 325,062

Claims priority, application France, Nov. 26, 1980, 80 25058

Int. Cl.³ H04Q 3/56, 9/02, 11/04

U.S. Cl. 340—825.53

5 Claims



1. A circuit for addressing a set of registers of a switching exchange, said circuit comprising:

- a register counter controlled by an advance signal to address a plurality N of registers in a repetitive frame;
- a first address register, a second address register and a third address register connected in series, the first address register addressing said set of registers for reading from a register, the third address register addressing the set of registers for writing to a register, each address being present at the output of the register counter and at the output of the first register during one frame time interval defined by said advance signal, each address being then transferred to the second address register where it is present during a first time interval, and then to the third address register where it is also present during a second time interval following said first time interval;

- a memory having N words of at least one bit each;
- a clock which delivers a train of N pulses;
- a register search counter;

- a first multiplexer having a first input connected to the register search counter, a second input connected to the output of the second address register, and an output connected to an addressing circuit of the memory;
- a second multiplexer having a first input connected to the register search counter and a second input connected to the register counter;

wherein the input of the first multiplexer is enabled by a write signal applied to the first multiplexer; wherein the input of the memory receives a particular bit of an instruction which is being processed in a register, with the write signal enabling the value of said particular bit to be written into the memory when the address of the register which is being processed is contained in the second address register with the value of said particular bit being 1 when the instruction requires rapid processing and otherwise being 0; and wherein the advance signal is blocked when a transfer signal whose duration is equal to one time interval is applied to the second multiplexer after m time intervals to enable its first input and to transmit an address displayed by the register search counter which is inhibited as soon as a bit whose value is 1 is read in the memory, the register search counter carrying out a search for a bit whose value is 1 in a time of less than m-1 time intervals, said transfer signal introducing in the frame one extra time interval once every m time intervals, said extra time inter-

val being assigned to a register whose instruction requires rapid processing.

4,431,993

THRESHOLD VOLTAGE GENERATOR

Jacobus Van Der Mark, Apeldoorn, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

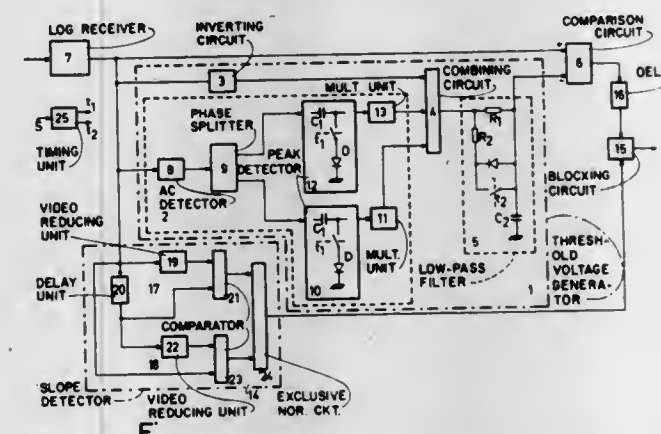
Filed Jan. 26, 1981, Ser. No. 228,529

Claims priority, application Netherlands, Feb. 4, 1980, 8000674

Int. Cl.³ G01S 9/00

U.S. Cl. 343—5 CE

5 Claims



1. Circuitry for thresholding applied video signals ($V_{DC} + V_{AC}$) from a radar receiver, characterized in that the circuitry comprises:

- a comparison circuit connected to said receiver and operating with a threshold voltage;
- a circuit connected to said receiver for inverting the applied video signals;

AC-detecting and phase-splitting means connected to said receiver for separately producing an in-phase AC component (V_{AC}) and an out-of-phase AC component ($-V_{AC}$) of the applied video signals ($V_{DC} + V_{AC}$);

first peak detecting and weighting means connected to said AC-detecting and phase-splitting means for producing the output voltage $V_{AC} - \Delta P$ and for modifying the latter voltage to $(1+k)(V_{AC} - \Delta P)$, where the voltage component ΔP is the temporal average of the positive peak value of the supplied signal V_{AC} , and k is a predefined factor; second peak-detecting and weighting means connected to said AC-detecting and phase-splitting means for producing the output voltage ($-V_{AC} - \Delta N$) and for modifying the latter voltage to $k(-V_{AC} - \Delta N)$, where the voltage component ΔN is the temporal average of the negative peak value of the supplied signal ($-V_{AC}$) and k is said predefined factor; and

combining and low-pass filtering means connected to said inverting circuit and to said first and second peak-detecting and weighting means for producing an output voltage $V_{DC} + \Delta P + k(\Delta P + \Delta N)$ and for low frequency filtering of said output voltage to obtain the desired threshold voltage for the comparison circuit.

4,431,994

COMBINED RADAR/BAROMETRIC ALTIMETER

Robert A. Gemin, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1981, Ser. No. 260,879

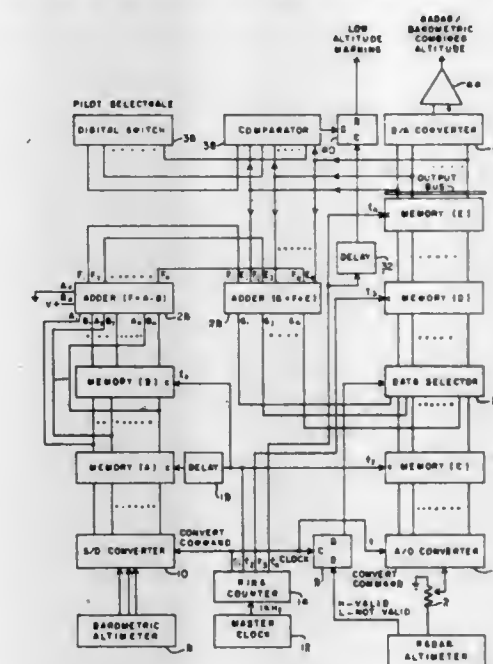
Int. Cl.³ G01J 13/08; G06F 15/50

U.S. Cl. 343—12 A

5 Claims

1. A method for supplying altitude signals to an output bus using radar and barometric altimeters, comprising the steps of: a. selecting the altitude signals from the radar altimeter for output to the output bus if a validity indicator shows them to be valid;

- b. computing the change of altitude from the barometric altimeter over a given unit of time;
- c. adding said change to the altitude signals on said output bus to provide corrected altitude signals; and
- d. if the radar altitude signals are not valid, alternatively



selecting said corrected altitude signals for output to the output bus;

the valid or not valid status of the radar altitude signals being used as the sole criteria whether to select the altitude signals from the radar altimeter or the corrected altitude signals.

4,431,995

PHASED ARRAY SIGNAL PROCESSING

Paul Barton, Bishop's Stortford; Peter K. Blair, Harlow, and William D. Waddoup, Sawbridgeworth, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

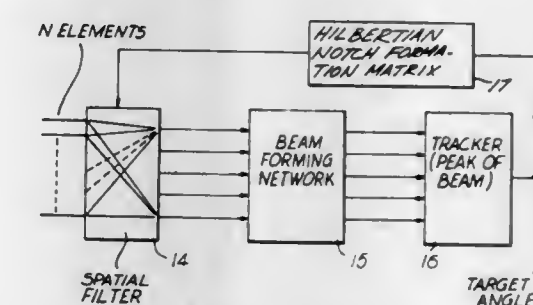
Filed Mar. 19, 1981, Ser. No. 245,504

Claims priority, application United Kingdom, Mar. 26, 1980, 8010173

Int. Cl.³ H04B 7/00

U.S. Cl. 343—373

8 Claims



1. A phased array radar system comprising: first means for converting multi-channel analog information signals with zero intermediate frequency to digital representations thereof; second means comprising multi-channel digital filtering means responsive to said first means for obtaining angular discrimination wherein filtering is implemented in parallel on all the channels by a matrix operation according to one or more predetermined algorithms yielding a plurality of outputs each with a different effective pulse center spanning substantially the original extent of the antenna aperture; beam-forming means to which said second means outputs are applied; and signal processing means to which the outputs of the

beam-forming means are applied to yield an output representative of target angle.

4,431,996

MISSILE MULTI-FREQUENCY ANTENNA

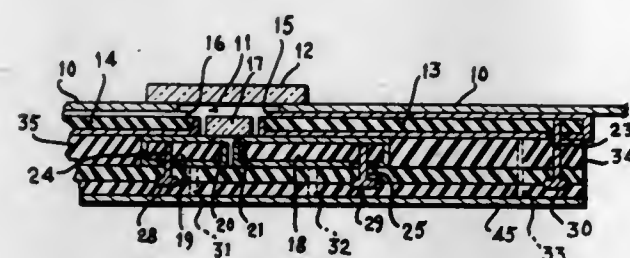
Thomas A. Milligan, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 3, 1981, Ser. No. 326,975.

Int. Cl.³ H01Q 1/28

U.S. Cl. 343—708

7 Claims



1. In a spacecraft, a multiple frequency antenna comprising a transverse circumferential strip aperture in the outer skin of said spacecraft,
- a plurality of quarter wavelength annular microwave cavities, each cavity having a circumferential micro-wave energy radiating slot, said cavities being positioned proximate the inner surface of said spacecraft outer skin, the radiating slot of each said cavity being substantially in register with and oriented to transmit microwave energy through said circumferential strip aperture, and means for feeding microwave energy to said cavities.

4,431,997

COMPOUND ELEMENT FOR IMAGE ELEMENT ANTENNAS

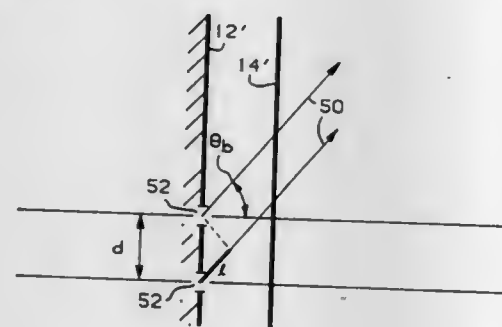
Bill H. Sasser, Phoenix, and Raymond G. Immell, Mesa, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 18, 1981, Ser. No. 235,390

Int. Cl.³ H01Q 13/10, 19/185

U.S. Cl. 343—770

3 Claims



1. An image element antenna for operating at a predetermined frequency comprising:
 - a partially reflecting plane having a known Brewster angle at said predetermined frequency;
 - a totally reflecting plane parallel to said partially reflecting plane, said partially reflecting plane and said totally reflecting plane defining a space therebetween;
 - at least one doublet element lying in said space, said doublet element comprising a pair of radiating elements spaced a distance d apart, where d is approximately equal to the wavelength corresponding to said predetermined frequency divided by twice the sine of said Brewster angle;
- and means for feeding energy to and receiving energy from said at least one doublet element at said predetermined frequency.

4,431,998
CIRCULARLY POLARIZED HEMISPHERIC COVERAGE
FLUSH ANTENNA

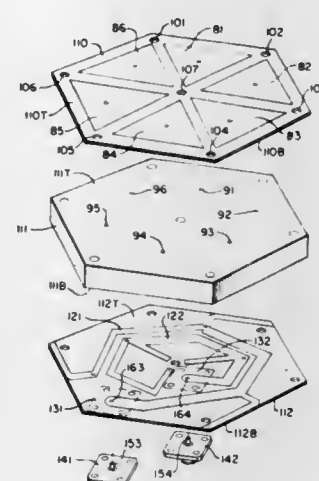
Kenneth R. Finken, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed May 13, 1980, Ser. No. 149,548

Int. Cl.³ H01Q 21/26

U.S. Cl. 343—797

14 Claims



1. An antenna comprising:
 - a plurality of antenna elements spaced apart from each other; and
 - an impedance matching and signal coupling network for feeding signals to said antenna elements in phase rotation; and wherein
- each of said antenna elements comprises
 - a radiating feed wire stub and a thin radiating element, one end of said feed wire stub being connected to said network and the other end of said feed wire stub being connected to said thin radiating element such that the radiation coverage profile generated by said plurality of antenna elements provides broad beam hemispherical coverage in the form of a first component shaped as a variation in one cycle of phase with azimuth defined by said feed wire stubs and a second component corresponding to an equivalent crossed-dipole mode pattern by way of which the null in the stub contribution to the pattern is compensated.

4,431,999

INTERFERENCE CANCELLING SYSTEM USING A NOTCH AND OMNIDIRECTIONAL ANTENNA

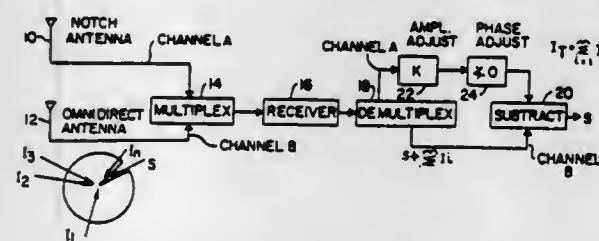
Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 114,547, Jan. 23, 1980, abandoned, which is a continuation of Ser. No. 970,017, Dec. 18, 1978, abandoned. This application Jul. 8, 1982, Ser. No. 396,200

Int. Cl.³ H01Q 3/30; H04B 7/00

U.S. Cl. 343—381

3 Claims



1. A method of cancelling interference in a communication system comprising:
 - receiving signals from substantially all directions on an omnidirectional antenna means;
 - receiving coherent and correlated signals from substantially

all directions except in the direction of a desired signal on a directable notch antenna means; adjusting the amplitude and phase of said signals received by said notch antenna means to match said signals received by said omnidirectional antenna means; and subtracting signals received on said directable notch antenna means from signals received on said omnidirectional antenna means.

4,432,000

REGISTERING APPARATUS

Harald Eriksson, Sollentuna, Sweden, assignor to Svenska Försäkringsforskningsinstitutet, Spanga, Sweden

PCT No. PCT/SE81/00239, § 371 Date Apr. 30, 1982, § 102(e) Date Apr. 30, 1982, PCT Pub. No. WO82/00894, PCT Pub. Date Mar. 18, 1982

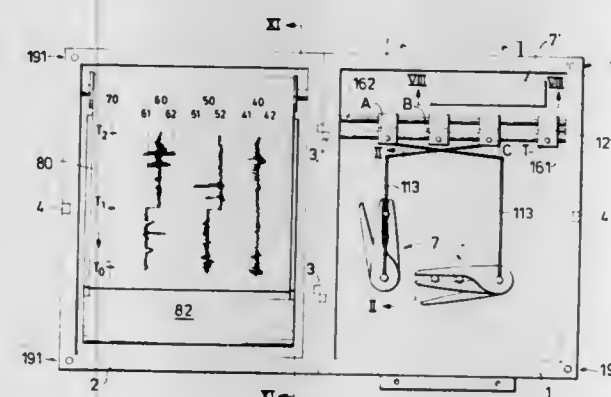
PCT Filed Aug. 26, 1981, Ser. No. 380,681

Claims priority, application Sweden, Sep. 2, 1980, 8006123

Int. Cl.³ G01D 9/00, 15/16; G01P 15/00

U.S. Cl. 346—7

10 Claims



1. Apparatus for registering accelerations and retardations, including a basic structure (1,2) on which an inertial mass (31) is suspended by spring means (21, 22) and adapted for controlling a writing means (C) coacting with a web (80) of registering medium adapted for running substantially transverse the direction of movement of the writing means, characterized in that the spring means (21,22) includes two spring elements, of which the first element (21) is adapted for urging the mass (31) to a normal position (60; S₀) with a force (ΔF) attaining a fraction of the force (F_0) with which the mass maximally acts on the first spring element (21) under the action of gravity, and that the second spring element (22) is adapted to start exercising an elastic deformation resistance to the displacement of the mass when the latter is moved past a displacement position (61,62), substantially situated at a distance (S) from the normal position (60; S₀) corresponding to the length (s+r) the mass can maximally deform the biased first element (21) under the action of gravity minus a length (r) corresponding to the deformation of the first spring element occurring for a loading on the first element (21) with a force of the same order of magnitude as said biasing force (ΔF).

4,432,001

HEAT-SENSITIVE RECORDING HEAD DRIVING METHOD

Toshiharu Inui, Haruhiko Moriguchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

Filed Jan. 6, 1982, Ser. No. 337,556

Claims priority, application Japan, Jan. 16, 1981, 56-3774

Int. Cl.³ G01D 15/10

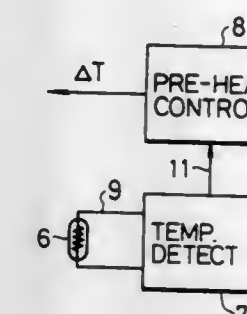
U.S. Cl. 346—76 PH

4 Claims

1. A method of driving the heat-sensitive recording head of a heat-sensitive recording apparatus in which the heat generating resistors of said heat-sensitive recording head are selectively caused to generate heat according to a parallel signal, which is obtained by subjecting serial video signals to serial-to-parallel conversion, so that said video signals are thermally

recorded on a heat-sensitive recording sheet which is in contact with said heat generating resistors, characterized in that

said heat generating resistors are caused to generate heat during the serial-to-parallel conversion by utilizing for a predetermined period of time the parallel signal which is



outputted by a circuit adapted to subject the serial video signals to serial-parallel conversion, so that the part of said heat-sensitive recording sheet which is in contact with said heat generating resistors is preheated to a predetermined temperature lower than the heat generating start temperature at which recording occurs.

4,432,002

DATA RECORDING MEDIUM AND MANUFACTURING METHOD THEREFOR

Hideo Ando, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

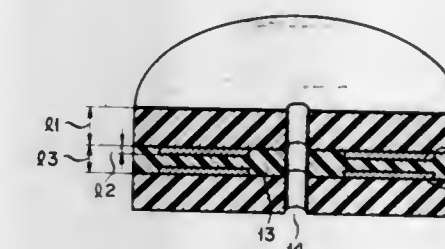
Filed Oct. 6, 1981, Ser. No. 309,102

Claims priority, application Japan, Oct. 9, 1980, 55-141720

Int. Cl.³ G01D 15/32

U.S. Cl. 346—135.1

6 Claims



1. A data recording medium comprising:
 - two disc-shaped substrates of 0.3 millimeter to 5 millimeter in thickness opposing each other at a distance;
 - a pair of radiation-sensitive recording layers, each of which is formed on part of an opposing surface of each of said substrates and which oppose each other at a distance; and
 - an interlayer with a low reflectivity which fills a space defined between said recording layers and the space defined between parts of said substrates not covered by said recording layer so that said interlayer is bonded to said recording layers and to said substrates.

4,432,003

INK-JET PRINTING DEVICE

Aquilino Barbero, Pavone Canavese, and Mario Buat, Carema, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 20, 1981, Ser. No. 313,226

Claims priority, application Italy, Oct. 31, 1980, 68664 A/80

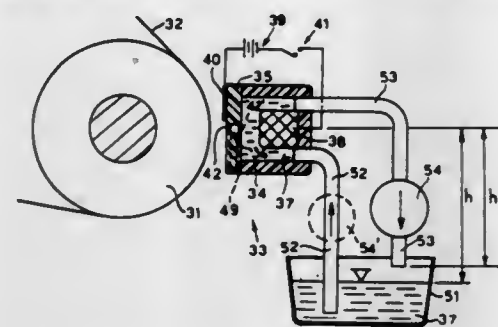
Int. Cl.³ G01D 15/16

U.S. Cl. 346—140 R

45 Claims

1. An ink-jet printing device in which printing is effected by inducing the selective emission from a nozzle of particles of liquid ink, said ink being electrically conductive, a container

made of an electrically insulating material for containing said ink, a nozzle provided on said container having a diameter less than 0.2 mm and a length of between 0.2 and 0.5 mm, an electrode inside said container disposed to be in electric contact with said ink, a counter-electrode disposed adjacent to the



nozzle on the outer surface of said container, and electrical means selectively operable to excite the electrode and counter-electrode by voltage pulses between 1000 and 3000 V so as to generate, between the meniscus of the ink at the nozzle and the counter-electrode, an agitation condition such as to cause the expulsion of a plurality of ink particles through the nozzle.

4,432,004

DEVICE FOR CAPPING THE JET NOZZLES OF AN INK JET PRINTING HEAD

Alfred Glättli, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

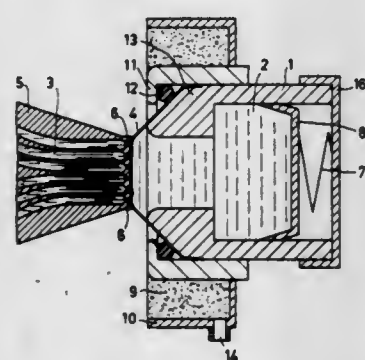
Filed Oct. 22, 1981, Ser. No. 313,865

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041187

Int. Cl.³ G01D 15/18

U.S. Cl. 346—140 R

7 Claims



1. A device for capping jet nozzles of an ink jet printing head by means of deformable material, comprising:
 - a container which is filled with a wetting medium;
 - a semipermeable diaphragm covering the side of said container which faces the jet nozzles, at least at the area of said jet nozzles;
 - said semipermeable diaphragm being arranged against the mouths of said jet nozzles;
 - said diaphragm being permeable for the wetting medium; and
 - a piston arranged inside said container on which a force is exerted in the direction of the diaphragm.

4,432,005

INK CONTROL SYSTEM FOR INK JET PRINTER

Peter L. Duffield, Wayland, Mass.; Arthur L. Cleary, Derry, N.H., and Calvin M. Winey, III, Billerica, Mass., assignors to Advanced Color Technology, Inc., Chelmsford, Mass.

Filed May 10, 1982, Ser. No. 376,758

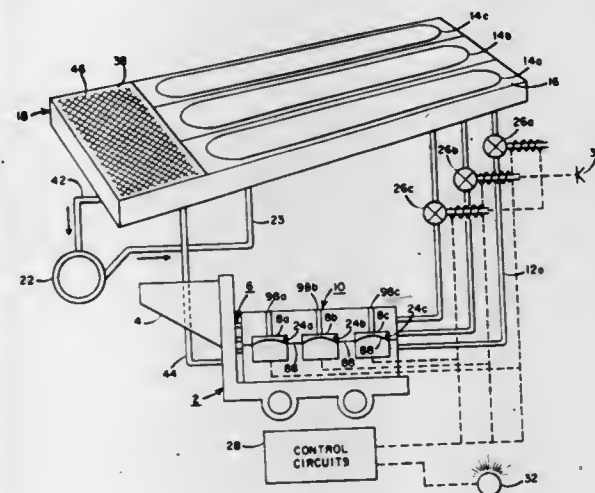
Int. Cl.³ G01D 15/18

U.S. Cl. 346—140 R

2 Claims

1. In an ink jet printer having a printing head and a movable carriage carrying said printing head, an ink supply system comprising

a primary ink cartridge having an enclosed supply chamber, a flexible ink reservoir enclosed in said chamber, a secondary ink container on said carriage having therein an ink-receiving reservoir comprising a dome-shaped receptacle, a flexible diaphragm having a dome shaped portion dividing said receptacle into upper and lower cavities and arranged to nest within said upper cavity, said lower cavity being connected to said ink supply conduit,



means including a flexible ink-supply conduit for transferring ink from said ink reservoir of said primary ink cartridge to said ink-receiving reservoir of said secondary ink container, a venting passageway communicating with said upper cavity, and pump means connected to said chamber operative to maintain said chamber under continuous gaseous pressure.

4,432,006

SEMICONDUCTOR MEMORY DEVICE

Akira Takel, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki

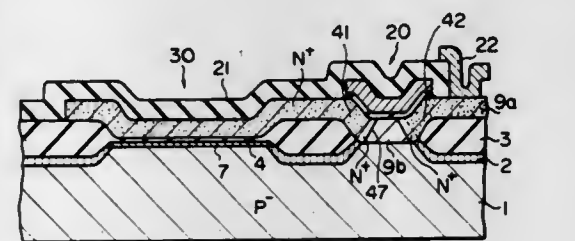
Filed Aug. 29, 1980, Ser. No. 182,671

Claims priority, application Japan, Aug. 30, 1979, 54-109640

Int. Cl.³ H01L 27/04; G11C 11/40

U.S. Cl. 357—23

8 Claims

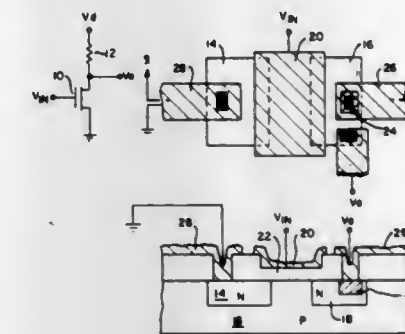


1. A semiconductor memory device comprising:
 - a semiconductor substrate having a first conductivity type and first and second surface regions that are separated from each other;
 - a heavily doped region having said first conductivity type formed in said first surface region of said semiconductor substrate;
 - a first insulating film formed on said heavily doped region over said first surface region of said semiconductor substrate and leaving exposed said second surface region of said semiconductor substrate;
 - a semiconductor layer, including a first part formed on said first insulating film over said first surface region, and a second part formed on said semiconductor substrate in said second surface region, said second part including a

single-crystalline region where said second part of said semiconductor layer contacts said semiconductor substrate in said second surface region;

a capacitor comprising (a) at least a part of said first insulating film over said first surface region of said semiconductor substrate, (b) at least a part of said heavily doped region in said first surface region of said semiconductor substrate, and (c) said first part of said semiconductor layer which is disposed on said first insulating film over said first surface region of said substrate, said first part of said semiconductor layer over said first surface region comprising an information storage region; and

said second part of said semiconductor layer comprising the source, channel and drain regions of a transistor, said source region being short-circuited with said first part of the semiconductor layer comprised in said capacitor.



regions, and an electrically conductive material on said surface and contacting only said third region.

4,432,007

ULTRASONIC TRANSDUCER FABRICATED AS AN INTEGRAL PART OF A MONOLITHIC INTEGRATED CIRCUIT

William R. Cady, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

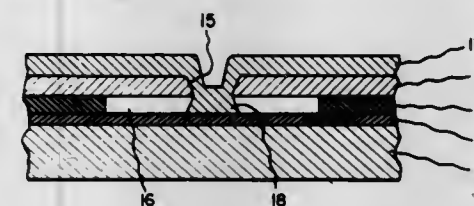
Division of Ser. No. 958,799, Nov. 8, 1978, Pat. No. 4,262,399.

This application Sep. 18, 1980, Ser. No. 188,461

Int. Cl.³ H01L 29/84, 29/66

U.S. Cl. 357—26

4 Claims



1. The combination on a single monolithic integrated circuit chip of an integrated ultrasonic electrostatic transducer and monolithic electronic circuitry for the amplification and signal processing of received echo signals, said electrostatic transducer comprising at least four continuous layers overlying one another on a semiconductor substrate, the first layer being made of insulating material, the second layer being insulating and having a plurality of void region apertures, the third layer projecting over said void regions with the exception of a small through-hole above every void region, the fourth layer closing said through-holes to seal off every void region and form a transducer structure capable of sensing received ultrasonic energy in which a change in the spacing between said substrate and last two layers, one of which is made of metal, results in a change of capacitance.

4,432,008

GOLD-DOPED IC RESISTOR REGION

Ron Maltiel, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 21, 1980, Ser. No. 170,562

Int. Cl.³ H01L 27/04, 29/167

U.S. Cl. 357—51

1 Claim

1. An integrated semiconductor field effect transistor and resistor comprising a semiconductor body having a major surface, a first doped source region and a second doped drain region formed in said body and abutting said surface, said first region being spaced from said second region, a gate contact between said first and second regions and insulatively spaced from said surface, a third region formed within one of said first and second regions and abutting said surface, said third region

4,432,009

VIDEO PRE-FILTERING IN PHANTOM RASTER GENERATING APPARATUS

Glenn A. Reitmeyer, Trenton, N.J., and Christopher H. Strolle, Glenside, Pa., assignors to RCA Corporation, New York, N.Y.

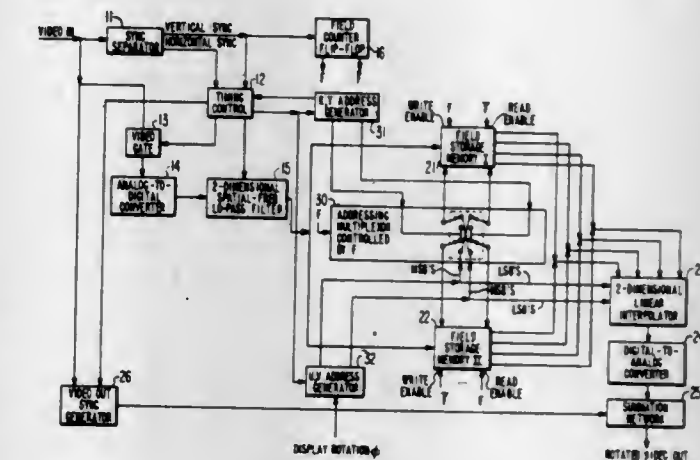
Filed Sep. 24, 1981, Ser. No. 305,171

Claims priority, application United Kingdom, Mar. 24, 1981, 8109253

Int. Cl.³ H04N 5/14

U.S. Cl. 358—22

28 Claims



20. A method of reducing the diagonal resolution of a base-band digital television signal having equal horizontal and vertical resolutions smaller than said diagonal resolution, so that said diagonal resolution is made substantially the same as said horizontal and vertical resolution, said method comprising the step of:

passing said base-band digital television signal through a two-dimensional spatial-frequency low-pass filter having a circular-cylindric pass-band in the spatial-frequency domain.

4,432,010

REAR PROJECTION APPARATUS

Masanori Oguino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,590

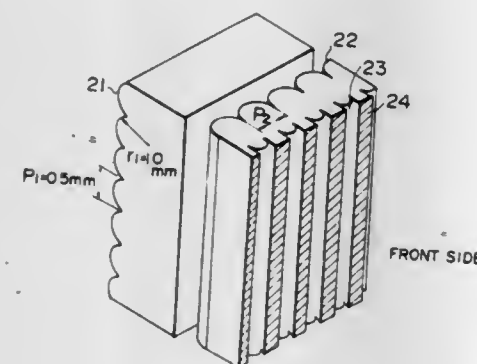
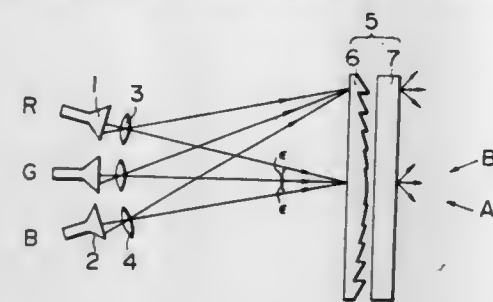
Int. Cl.³ H04N 9/31

U.S. Cl. 358—60

13 Claims

1. A rear projection apparatus for displaying a color image comprising: red, green and blue color image sources located horizontally to each other in this order for producing respective color images of different colors; projection lenses located respectively in front of said image sources for projecting light fluxes from said respective image sources along converging optical paths; and

a screen located at convergent points of said projected light fluxes and including a light-transmitting lenticular sheet having an input surface and an exit surface for the projected light fluxes;
said input surface of the lenticular sheet being constituted by



diffusing lenticular profiles having a ratio of lenticulated depth X_v to close-axis-curvature radius R_1 (X_v/R_1) which is within a range of 0.5 to 1.8, said profiles being prolonged along the optical axis and constituting aspherical input lenticular lenses,
said lenticular sheet having a thickness of approximately

$$\left(1 - \frac{1}{n}\right)$$

times said radius R_1 where n is refractive index of a material of said sheet,
said aspherical input lenticular lenses refracting projected input light flux of the red color and the blue color having a path extending at an angle to the normal of said screen in such a way as to provide coma aberration at said exit surface of the lenticular sheet,
said exit surface of the lenticular sheet having output lenticular lenses extending in the same direction as said input lenticular lenses and having light-stopping black stripes incorporated thereon and extending in parallel with said input lenticular lenses,

said output lenticular lenses refracting light flux of the red color and the blue color in accordance with said coma aberration formed thereon, whereby a center light flux of input light at an angle to the normal of said screen projected at center portions of said input lenticular lenses is refracted by a larger amount in view of the difference between the red color and the blue color than the amount of refraction of other light flux projected close to valley portions of said input lenticular lenses, thereby making an output light flux corresponding to said input center light flux not parallel to each other but shifted in opposite directions by an amount substantially proportional to said depth X_v of said input lenticular profiles,
said black stripes being located at an area where substantially no efficient light flux exits.

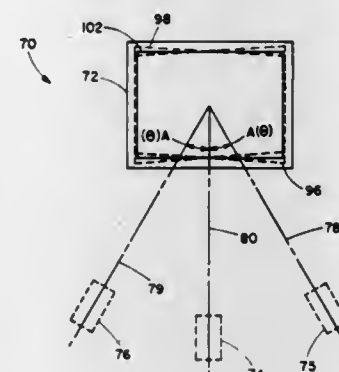
4,432,011 METHOD FOR OPTICAL ALIGNMENT OF A PROJECTION TELEVISION SYSTEM

Stanley E. Lehnert, Addison, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 19, 1982, Ser. No. 350,467
Int. Cl.³ H04N 9/31

U.S. Cl. 358—60

6 Claims



1. A method for the optical alignment of a projection television system having a bank of three light projection means for projecting into coincidence red, green and blue images respectively to form a composite color image in space, and having a projection screen spaced from said light projection means for receiving and displaying said composite color image, the central one of said projection means having its projection optical axis congruent with the axis of said a projection screen for projecting an undistorted, rectilinear center image, with the adjacent, off-axis ones of said light projection means projecting purposely distorted off-axis images effective to substantially compensate, upon projection, for the non-linear magnification distortion of the image resulting from the off-axis location of said adjacent ones of said light projection means, each light projection means including cathode ray tube means for forming the respective image; pod means for receiving and holding said cathode ray tube means, and pod adjustment means for enabling pod adjustments to be made in azimuth and elevation; and lens means for projecting the respective image on said projection screen; the method of optical alignment comprising:
replacing the cathode ray tubes with lamp means;
interposing between said lamp means and said lens means a graticular geometrical analog of said undistorted center image in the pod of said central projection means, and analogs of said purposely distorted off-axis images in the pods of the off-axis light projection means;
consecutively and concurrently projecting said analogs on said screen and superimposing said images on said screen by manipulating said pod adjustment means;
removing said lamp means and said geometrical analogs, and re-inserting respective ones of said cathode ray tubes; whereby the images projected by said light projection means will be in substantial optical alignment each with the other and with said screen.

4,432,012 PROCESS FOR OFFSET CONVERSION TO GRAVURE

Ervin A. Licko, Norridge; Frederick W. Lind, Arlington Heights, and Robert W. Richmond, Chicago; Walter W. Martin, Bellwood, all of Ill., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1981, Ser. No. 327,546
Int. Cl.³ H04N 1/46

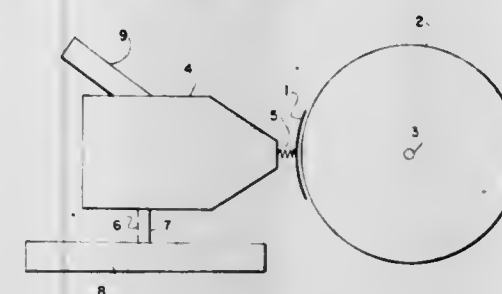
U.S. Cl. 358—75

22 Claims

1. A method for converting offset to gravure by the electronic engraving process, which process utilizes an electronic engraving machine, a computer and a scanning machine wherein an input image is scanned on a point to point and line to line basis thereby forming an electronic image that is passed to said computer wherein said electronic image is digitized and mathematically altered by one or more procedures to restore

or enhance its quality, and controlling said engraving machine with the readout from said enhanced image, said conversion method comprising:

providing positive offset separations on white backing as sharply focussed input to said scanning machine;
precisely defocussing said input by an amount effective to blend said dots, said defocussing being effected by moving said scanning head towards said image or by equivalent optical or electronic means;



scanning said defocussed input thereby forming an out-of-focus digitized image in said computer;
mathematically enhancing the detail of said out-of-focus image; and
controlling said engraving machine by the readout of said detail-enhanced image.

4. The method described in claims 1 or 2 or 3 including the step of mathematically manipulating said digitized image to enhance color rendition.

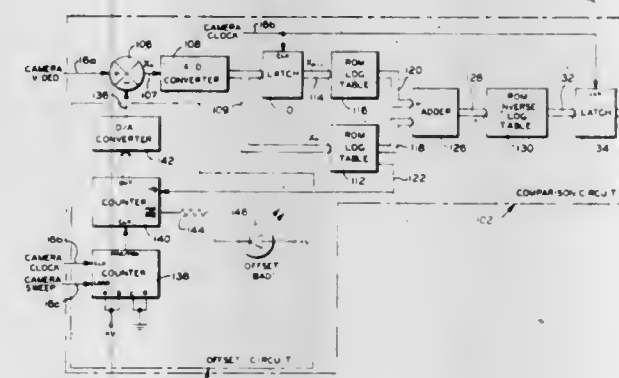
4,432,013 METHOD AND APPARATUS FOR COMPARING DATA SIGNALS IN A CONTAINER INSPECTION DEVICE

John W. V. Miller, Toledo, Ohio, and John W. Juvinal, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 23, 1981, Ser. No. 323,793
Int. Cl.³ H04N 7/18

U.S. Cl. 358—106

18 Claims



other said common connection will be at another logic state, means responsive to the logic state of said common connection by producing corresponding write signals and means for superimposing said write signals on said composite video signal for said write signals to increase the intensity of the television monitor scanning beam to define an outline in the raster corresponding to the size of the photographic camera frame, the delay devices being adjusted such that they provide output signals to said gates in combinations that result in writing said outline.

4,432,015

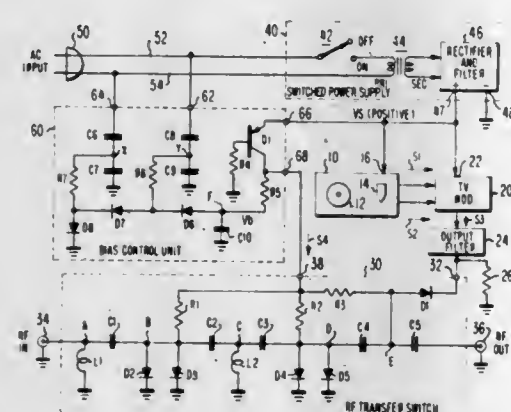
VIDEO APPARATUS HAVING IMPROVED ANTENNA TRANSFER SWITCHING SYSTEM

Eber F. Lambert, and Todd J. Christopher, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Filed May 17, 1982, Ser. No. 379,095

Int. Cl.³ H04N 5/48

U.S. Cl. 358—181

12 Claims



1. Apparatus, comprising:
a pair of supply lines for connection to a source of A.C. power;
a power switch, subject to switching between open and closed conditions;
power supply means coupled to said supply lines via said power switch for providing a D.C. supply voltage when said power switch is in said closed condition;
RF signal source means responsive to said D.C. supply voltage for providing an RF output signal within a predetermined frequency band;
RF transfer switch means having a first circuit path for coupling said RF output signal to an RF output connector and a second circuit path for coupling an RF input connector to said RF output connector, the first path including a series connected diode means, the second path including a shunt connected diode means; and
control means for applying a forward bias signal to each diode means in each path when said power switch is in said closed condition and for applying a reverse bias signal to each diode means in each path when said power switch is in said open condition.

4,432,016

TRANSLATING CIRCUIT FOR TELEVISION RECEIVER ON-SCREEN GRAPHICS DISPLAY SIGNALS

Robert L. Shanley, II, and Robert P. Parker, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 20, 1981, Ser. No. 323,351

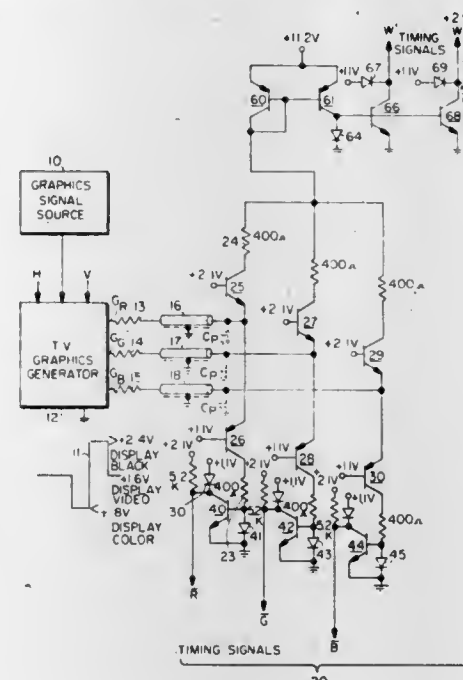
Int. Cl.³ H04N 5/22

U.S. Cl. 358—183

11 Claims

1. Signal translating apparatus for coupling switching signals to a switched utilization circuit, said apparatus comprising:
a source of current representative of switching signals exhibiting first and second amplitude levels of mutually complementary sense relative to a quiescent level;
first and second mutually complementary conductivity type transistors each with a base electrode, a collector output

electrode and a signal input consisting of an emitter electrode, said emitter electrodes of said first and second transistors being connected in common;
means for coupling said current source to said emitters of said first and second transistors for causing said first transistor to conduct collector current proportional to said first amplitude level of said switching signal, and for



- causing said second transistor to conduct collector current proportional to said second amplitude level of said switching signal;
means for biasing said first and second transistors to conduct a quiescent current; and
means for respectively coupling output collector currents of said first and second transistors to control inputs of said utilization circuit.

4,432,017

ADJACENT BILINEAR PHOTOSITE IMAGER

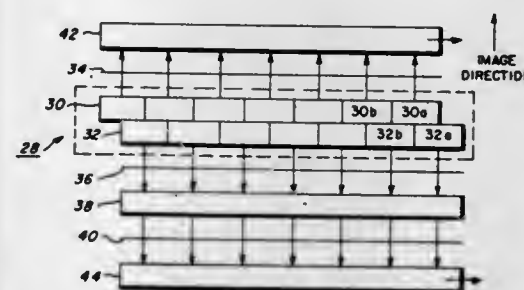
James C. Stoffel, Rochester; Jagdish C. Tandon, Fairport, and Ned J. Seachman, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,770

Int. Cl.³ H04N 3/14

U.S. Cl. 358—213

12 Claims



1. A high density charge coupled device imaging array (28) on a single integrated circuit chip, wherein the improvement is characterized by,
a first row (32) of photosite means deposited on said integrated circuit chip, said photosite means being sensitive to applied light information representative of one scan line of data,
a second row (30) of photosite means deposited on said integrated circuit chip adjacent to and contiguous with said first row of photosite means, said second row of photosite means being offset from said first row of photosite means approximately one-half the length of individual

photosite means on said first row such that said second row of photosite means are sensitive to applied light information in the same said one scan line of data intermediate the photosite means in said first row of photosite means, said first and second rows of photosite means comprising a bilinear array of photosite means.

4,432,018

EXPLOSION PROOF CATHODE-RAY TUBE

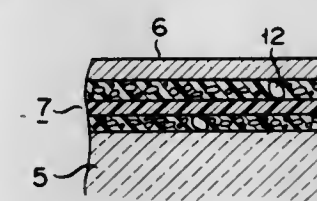
Masaomi Futatsudera, Menuka; Syoichi Yokoyama, Hanyu, and Osamu Yasutome, Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed May 17, 1982, Ser. No. 378,731

Claims priority, application Japan, May 21, 1981, 56-75741

Int. Cl.³ H04N 5/65

U.S. Cl. 358—246

5 Claims



1. An explosion proof cathode-ray tube comprising:
an envelope having a faceplate, a funnel, and a neck;
an adhesive tape which is wound around side walls of said faceplate and which contains solid particles; and
a metal tape which is wound around said adhesive tape.

4,432,019

SIMULTANEOUS AMPLITUDE SEQUENCY APPARATUS

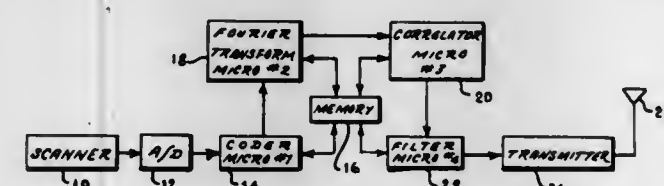
James J. Maier, 37 Kellogg St., Clinton, N.Y. 13323

Filed Mar. 12, 1982, Ser. No. 357,443

Int. Cl.³ H04N 1/41

U.S. Cl. 358—260

6 Claims



1. A simultaneous amplitude sequency apparatus comprising in combination:
A transmitter group which comprises:
a scanner means to scan a scene and generate an image signal thereof,
an A/D converter means to convert said image signal to a digital signal,
a coder means to receive said digital signal, said coder means coding said digital signal to provide a coded digital signal,
a first memory means to receive and store said coded digital signal,
a Fourier transform means to receive said coded digital signal, said Fourier transform means transforming said coded digital signal into a frequency signal, said frequency signal being applied to said first memory means for storage,
a correlator means to receive said frequency signal from said Fourier transform means and to receive said coded digital signal from said first memory means, said correlator means correlating said frequency signal with said coded digital signal, said correlator means generating a correlated samples signal from the portions of the frequency signal which meet the correlation criteria,
a filter means to receive said correlated samples signal from said correlator means, said filter means only passing those correlated samples of said correlated samples

4,432,020

ADMINISTRATION DATA STORAGE IN A FACSIMILE SYSTEM

Yasuichi Onose, Sakurai; Takashi Nakajiri, Nara, and Takeo Tsumura, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

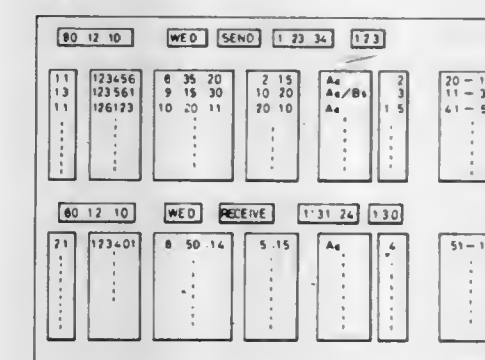
Filed Jan. 27, 1982, Ser. No. 343,380

Claims priority, application Japan, Jan. 27, 1981, 56-11133; Jan. 27, 1981, 56-11136

Int. Cl.³ H04N 1/32

U.S. Cl. 358—257

10 Claims



1. An administration data storage system in a facsimile system which transmits image data from a transmitting office to a receiving office, and records an image through the use of a recording device in accordance with the image data transmitted from the transmitting office and received by the receiving office, said administration data storage comprising:
transfer means for bidirectionally transmitting administration data between the transmitting office and the receiving office;
memory means for storing the administration data related to each transmission operation;
said memory means including,
first memory section means for storing administration data accumulated during data transmittal; and,
second memory section means for storing administration data accumulated during data receipt; and;

print out means for printing out said administration data stored in said memory means;
said administration data stored in said first memory section means being printed separately from the administration data stored in said second memory section means.

4,432,021

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Kenji Kaneko, Iwai, Japan, assignor to Victor Company of Japan Ltd.

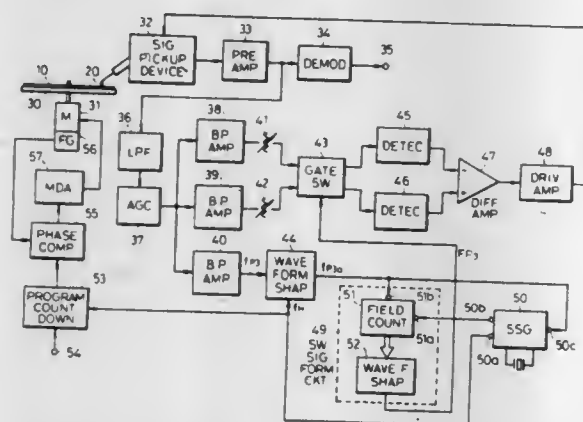
Filed Dec. 17, 1981, Ser. No. 331,778

Claims priority, application Japan, Dec. 22, 1980, 55-181576

Int. Cl.³ H04N 5/76; G11B 7/00, 21/10

U.S. Cl. 358—342

7 Claims



1. A rotary recording medium reproducing apparatus for reproducing a rotary recording medium having a spiral video signal track recorded with a video signal by use of a reproducing element, said recording medium further having a reference signal track between each video signal track turn alternately switched over and recorded with first and second reference signals for an interval corresponding to said each track turn, and recorded with a third reference signal at a position corresponding to the position where said first and second reference signals are switched over, said reproducing apparatus comprising:

- a standard signal generating circuit for generating first and second standard signals respectively having frequencies equal to the horizontal scanning frequency and the vertical scanning frequency of said recorded video signal;
- a waveform shaping circuit for synchronizing a reproduced third reference signal with the first standard signal from said standard signal generating circuit, and subjecting the reproduced third reference signal to waveform-shaping;
- a switching signal forming circuit for forming a switching signal in response to the second standard signal from said standard signal generating circuit and the signal from said waveform shaping circuit; and
- means for obtaining a tracking control signal for controlling tracking of said reproducing element by switching reproduced first and second reference signals by said formed switching signal.

4,432,022

ORIGINAL READING APPARATUS

Jun Tokumitsu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,263

Claims priority, application Japan, Apr. 14, 1980, 55-48916; May 15, 1980, 55-64445

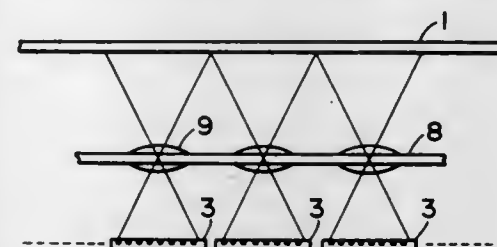
Int. Cl.³ H04N 1/02

U.S. Cl. 358—293

3 Claims

1. An original reading apparatus comprising:
support means for supporting thereon an original to be read;
light-receiving means for receiving a light beam from said original; and
ommateal imaging means for forming the image of said

original on said light-receiving means, said ommateal imaging means having a plastic lens block in which a plurality of lenses are formed integrally with one another, said plastic lens block being divided into an effective lens portion having the function of condensing the light beam and a lens protecting portion for protecting said effective lens portion and having an outer end surface, the distance



between the outer end surface of said lens protecting portion and said effective lens portion being equal to or greater than $\frac{1}{2}$ of the thickness of said effective lens portion so that when moisture enters said imaging means through said effective lens portion, moisture entering simultaneously from the outer end surface of said lens protecting portion cannot reach said effective lens portion.

4,432,023

RASTER SCANNER CONTROL

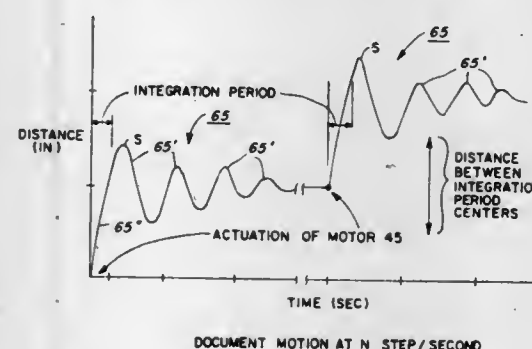
Glenn M. Mehalek, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1981, Ser. No. 316,468

Int. Cl.³ H04N 1/12

U.S. Cl. 358—293

4 Claims



1. The method of controlling an asynchronously operated scanner having step means for producing line by line scanning motion between a document to be scanned and at least one linear scanning array, the steps which comprise:

- (a) on a demand for image signals, actuating said step means to step said document one line and start scanning motion between said document and said array;
- (b) simultaneously with each actuation of said step means and start of said scanning motion, actuating said scanning array to commence scanning of the document line viewed by said array as said step means is actuated and scanning motion of said document begins and
- (c) deactuating said array when scanning of said document line is completed while scanning motion of said document continues as said step means completes stepping of said document through one line.

4,432,024

METHOD AND APPARATUS FOR MINIMIZING NON-LINEAR DISTORTION IN THE RECORDING OF A BI-LEVEL SIGNAL

Takeo Eguchi, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan

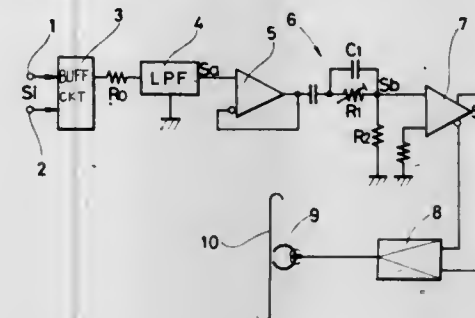
Filed May 13, 1981, Ser. No. 263,062

Claims priority, application Japan, May 24, 1980, 55-69446

Int. Cl.³ G11B 5/09

U.S. Cl. 360—45

19 Claims



1. A method of recording a bi-level signal on a magnetic record medium so as to minimize distortion thereof when that signal is reproduced, comprising the steps of low-pass filtering said bi-level signal to remove higher frequency components thereof, differentiating the filtered bi-level signal to modify the phase thereof to increase the duty ratio of a plurality of consecutive cycles of said bi-level signal when the repetition rate at which bi-level signal changes over increases abruptly while maintaining the repetition rate thereof substantially unchanged; amplifying the phase-modified bi-level signal; and recording the amplified, phase-modified bi-level signal.

4,432,025

SYSTEM AND METHOD FOR FORMATTING PAIRS OF CONCENTRIC MAGNETIC TRACKS OF DIFFERENT CAPACITY TO A PLURALITY OF EQUAL CAPACITY LOGICAL TRACKS

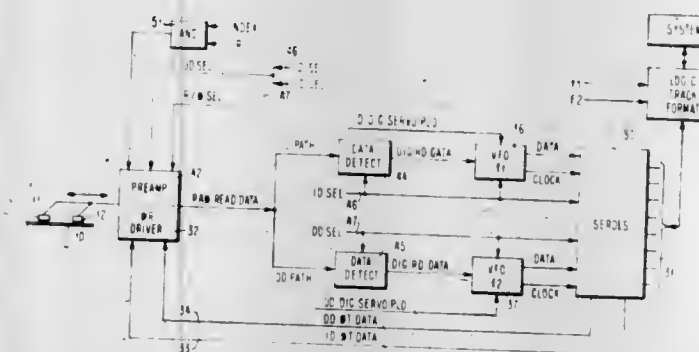
John M. Grogan, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 268,414, May 29, 1981, abandoned. This application Apr. 6, 1982, Ser. No. 364,121

Int. Cl.³ G11B 5/09

U.S. Cl. 360—48

12 Claims



1. A disk file including at least one disk having first and second groups of concentric recording tracks, first and second magnetic transducers each of which are associated with a different one of said groups and positionable conjointly to a selected pair of tracks in different said groups in response to an externally supplied address signal, means for generating first and second recording frequencies which control the linear recording densities of respective said tracks in said first and second groups whereby the byte capacity per track of said first group of tracks is X bytes and of said second group of tracks is Y bytes, said file being characterized by each said pair of physical tracks having at least one logical track which includes a first portion on one physical track and a second portion on

the other physical track which portions are transduced in one continuous operation.

4,432,026

APPARATUS AND METHOD FOR DETERMINING READ HEAD POSITION

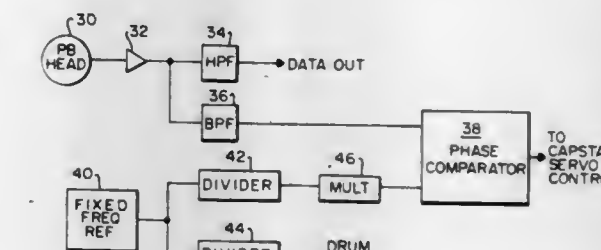
Charles H. Coleman, Jr., Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 10, 1981, Ser. No. 291,344

Int. Cl.³ G11B 5/00, 21/10

U.S. Cl. 360—77

15 Claims



1. An apparatus for positioning a magnetic read head substantially over the center of a selected data track on a magnetic recording medium having a plurality of such tracks, said data track including a tracking signal of a predetermined frequency so as to enable read cross-talk of said signal on an adjacent track, comprising:

- a first data track on one side of, and adjacent to said selected track having recorded therein a tracking signal of frequency equal to said selected track frequency but out of phase in one direction a predetermined amount;
- a second data track on the opposite side of and adjacent to said selected track having recorded therein a tracking signal of frequency equal to said selected track frequency but out of phase in the opposite direction from said first track signal a predetermined amount;
- means connected to the output of said read head for detecting a sum tracking signal having components from each said tracking signal; and
- means for comparing the phase of the sum tracking signal with the phase of a reference signal of the same frequency and for generating in response thereto a signal indicative of any position deviation of the read head from the center of said selected track.

4,432,027

MAGNETIC HEAD

Tetsuo Higuchi, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo and Canon Denso Kabushiki Kaisha, Saitama, both of, Japan

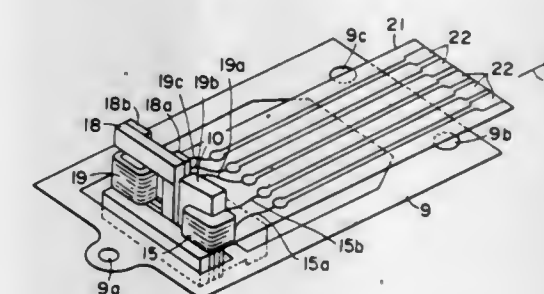
Filed Jul. 2, 1981, Ser. No. 280,097

Claims priority, application Japan, Jul. 11, 1980, 55-97865[U]

Int. Cl.³ G11B 5/48, 21/16, 5/54, 21/22

U.S. Cl. 360—104

6 Claims



1. A magnetic head for at least one of recording information on and reading information from a recording medium, the information being processed by information processing means, said magnetic head comprising:

support means formed with at least one aperture; connecting means, having electrical contact means thereon, supported on said support means and formed with at least one aperture; and at least one magnetic head element, connected by said electrical contact means on said connecting means to the information processing means, also supported on said support means and received in an aperture therein and in an aperture in said connecting means, portions of said magnetic head element holding therebetween said support means and said connecting means.

4,432,028

SHIELDED MAGNETORESISTANCE TRANSDUCER HIGH DATA DENSITY APPLICATIONS

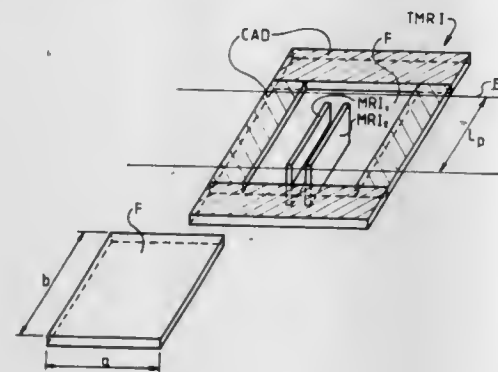
Jacques Desserre, Orcemont, and Michel Helle, Marco, both of France, assignors to Cii Honeywell Bull, Paris, France

Filed Oct. 26, 1981, Ser. No. 314,975

Claims priority, application France, Nov. 27, 1980, 80 25198
Int. Cl.³ G11B 5/30

U.S. Cl. 360—113

13 Claims



1. A magnetoresistance transducer for reading data present in a plurality of tracks of a multi track magnetic carrier comprising:

at least one magnetoresistance (MRI₁, MRI₂) disposed perpendicular to the direction of travel of the data of each track (P) of the carrier, first and second plane magnetic means MCH_{env1}—MCH_{env2}, MCH_{iv1}—MCH_{iv2} disposed parallel to the carrier and arranged respectively at opposite sides of the magnetoresistance, so that when the magnetoresistance is positioned opposite a given data item of the track (P) on the carrier the first means are situated opposite the immediate magnetic surroundings of the track (P) and the second means are situated opposite the data items of the track (P) and at either side of the given data item opposite which the magnetoresistance is situated.

4,432,029

PROTECTIVE MEANS FOR SERIES CAPACITORS
Bertil Lundqvist, Västerås, Sweden, assignor to Asea Aktiebolag, Västerås, Sweden

Filed Jul. 2, 1982, Ser. No. 394,810

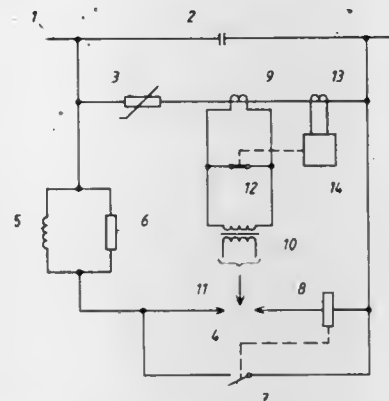
Claims priority, application Sweden, Jul. 6, 1981, 8104184
Int. Cl.³ H02H 7/16

U.S. Cl. 361—16

10 Claims

1. A protective means for a series capacitor in a high-voltage network, said means comprising
a voltage-dependent resistor arranged in parallel with said capacitor,
a spark gap arranged in parallel with said resistor for shunting the latter in case of overload thereof,
a current-sensing member for sensing the current through said resistor,
an energy absorption detector for sensing the temperature of said resistor, and
a pulse transformer electrically or magnetically connected

to said current-sensing member, for triggering said spark gap,
said current-sensing member, during normal operation, being short-circuited by a switching device which is controlled by said detector in such a way that the switching



device is opened if the temperature of said resistor exceeds a predetermined level, whereby a trigger pulse, generated directly by the resistor current via said current-sensing member and said pulse transformer, may pass to said spark gap.

4,432,030

SHORT CIRCUIT PROTECTION SYSTEM

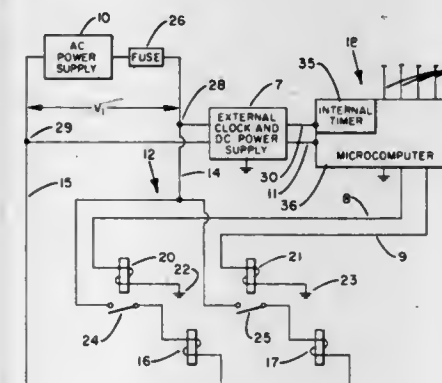
Mario F. Briccetti, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,788

Int. Cl.³ H02H 3/24

U.S. Cl. 361—92

1 Claim



1. An electrical system for protecting an AC power supply, which is part of an electrical control system for heating and/or cooling equipment, from a short circuit condition in a load having a plurality of branch circuits which are each electrically connected in series with the AC power supply and which are electrically connected in parallel to each other, comprising:

a switch means, electrically connected in series with each branch circuit in which it is desired to protect against a short circuit condition, for selectively connecting each branch circuit to the AC power supply;
a clock means for monitoring voltage drop across the load and for generating a clock signal only when the monitored voltage drop exceeds a selected voltage level;
a relay means, associated with each switch means in a branch circuit, for receiving electrical control signals and for opening the associated switch means to disconnect the branch circuit from the AC power supply when no electrical control signal is received by said relay means and for closing the associated switch means to connect the branch circuit to the AC power supply when an electrical control signal is received by said relay means; and
a microcomputer system for detecting the clock signal generated by the clock means, for generating and supplying an electrical control signal to each relay means when the

clock signal generated by the clock means is detected by said microcomputer system, for temporarily shutting down operation of the AC power supply by temporarily discontinuing the supply of electrical control signals to all of the relay means after a preselected time interval during which no clock signal is detected by said microcomputer, for automatically testing the branch circuits, after a temporary operational shut down of the AC power supply, by generating and supplying electrical control test signals to selected relay means according to preprogrammed procedures and by monitoring the operation of the branch circuits when the test signals are supplied to the selected relay means to detect a short circuit condition in the branch circuits, and for completely shutting down operation of the AC power supply by completely discontinuing the supply of electrical control signals to all of the relay means if the automatic testing by said microcomputer system detects a short circuit condition in the branch circuits.

4,432,031

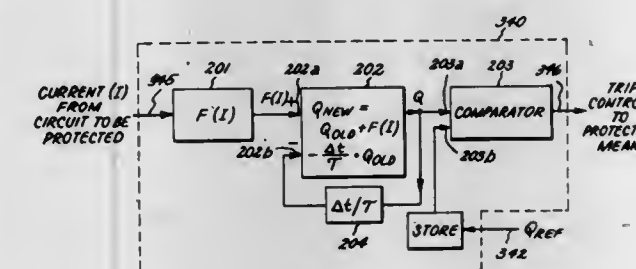
METHOD FOR OVERCURRENT PROTECTION
William J. Premerlani, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 373,933

Int. Cl.³ H02H 3/093

U.S. Cl. 361—97

8 Claims



1. A method for protecting a power distribution system from excessive current, the system including circuit interruption means for interrupting power to the system, comprising:

(a) storing a predetermined system parameter, wherein the predetermined system parameter includes a forcing function F(I) defined by:

$$F(I) = \frac{\Delta t}{\tau} \cdot Q_{ref} \cdot \left(1 - \left(1 - \frac{\Delta t}{\tau} \right)^{\left(\frac{T(I)}{\Delta t} \right)} \right)$$

wherein T(I) is the desired time to remove power from the system, Δt is the time during which an actual system parameter is determined, Q_{ref} is a first predetermined threshold and is the thermal time constant of said circuit interruption means, and wherein the predetermined system parameter is indicative of the predetermined time the actual system parameter is permitted to safely exist in the system;

(b) quadratically extending said forcing function F(I) into the region between F(I)=0 and

$$F(I) = \frac{\Delta t}{\tau} \cdot Q_{ref}$$

whereby the response time to interrupt power to the system when threshold Q_{ref} is exceeded is decreased;

(c) determining the value of the actual system parameter;
(d) repetitively modifying the value of said predetermined system parameter in accordance with said actual system parameter, thereby creating a dynamic history of said predetermined system parameter; and
(e) generating a control signal to actuate said circuit interruption means if the predetermined system parameter

dynamic history exceeds a second predetermined threshold.

4,432,032

AUXILIARY VOLTAGE SNUBBER CIRCUIT

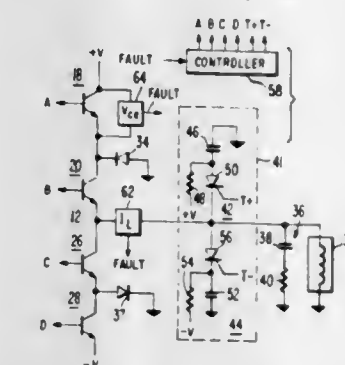
Richard H. Baker, Bedford, Mass., and Miroslav Glogolia, Somerville, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 115,283, Jan. 25, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,095

Int. Cl.³ H02H 7/20, 7/122

U.S. Cl. 361—111

18 Claims



1. A switching circuit for controlling current flow between a D.C. voltage source and an inductive load, comprising: transistor means having a supply terminal to be connected to the voltage source and an output terminal to be connected to the said inductive load;
control means for selectively turning on and off said transistor means;

primary snubber means for suppressing an inductive load generated voltage during turn-off of said transistor means including first capacitor means and first resistor means connected directly in shunt with said inductive load, said capacitor means being charged during turn-on periods of said transistor means and discharged through said inductive load during turn-off periods of said transistor means, current generated by the back EMF of said inductive load thereby bypassing said transistor means during said turn-off periods, wherein there is a delay time in said snubber means due to an inherent snubber time constant; and
auxiliary snubber means for reducing load current conducted by said transistor means during turn-off transitions of said transistor means during said primary snubber delay time, comprising second capacitor means, means for charging said second capacitor means to a capacitor voltage, means for detecting a load current overload, and means responsive to the load current overload for turning off said transistor means and discharging said second capacitor means into said inductive load as the magnitude of said load voltage drops below that of said capacitor voltage during overload.

4,432,033

POWER SOURCE FOR A SOLENOID CONTROLLED FLUID PRESSURE DEVICE

Robert W. Brundage, 135 Paradise Rd., Painesville, Ohio 44077

Filed Jul. 1, 1982, Ser. No. 394,266

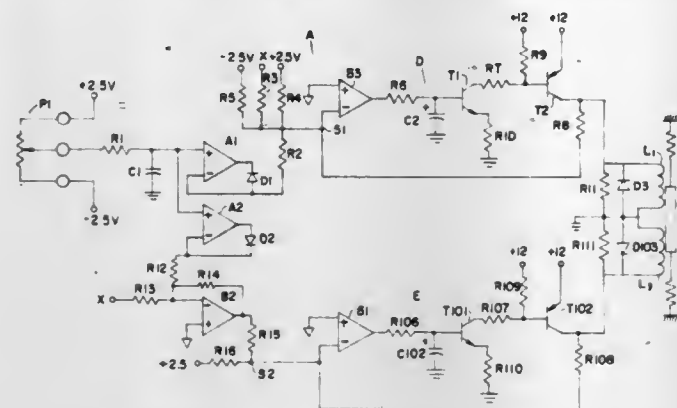
Int. Cl.³ H01H 47/32

U.S. Cl. 361—152

7 Claims

4. A control circuit producing current for first and second magnetic coils acting on a single magnetically controlled element comprising means producing first and second independently variable control signals; means applying said first independently variable control signal to said first coil; means applying said second independently variable control signal to said second coil; means creating an alternating dither signal having a given peak to peak potential; first adder means adding said dither signal to said first independently variable control signal

producing a first added signal; second adder means adding said dither signal to said second independently variable control signal such that said dither signal portion of said second added



signal is out of phase with said dither signal portion of said first added signal; means applying said first added signal to said first magnetic coil; and, means applying said second added signal to said second magnetic coils.

4,432,034

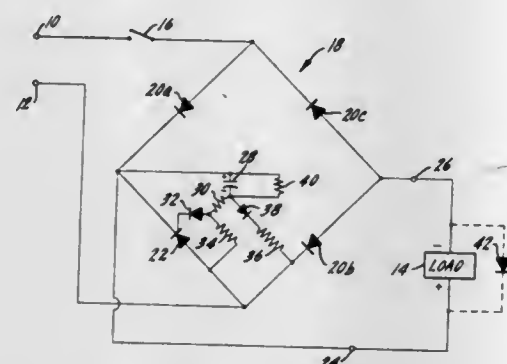
BRIDGE RECTIFIER FOR SELECTIVELY PROVIDING A FULL-WAVE OR A HALF-WAVE RECTIFIED VOLTAGE
Andrew M. Wohler; Frederick A. Miller, both of St. Charles, and Verne E. Dietrich, Glen Ellyn, all of Ill., assignors to Spraying Systems Co., Wheaton, Ill.

Filed Sep. 30, 1981, Ser. No. 307,003

Int. Cl.³ H01H 47/04

U.S. Cl. 361—154

9 Claims



1. An energy conserving circuit adapted to convert automatically a full-wave rectified voltage fed to a DC load from an AC source to a half-wave rectified voltage after a predetermined time has elapsed, said circuit comprising:

input means for connection to an AC source;
output means;
a DC load operatively connected to said output means;
a bridge rectifier operatively coupled between said input and output means, said bridge rectifier comprising a first current path including a pair of diodes for conducting positive half-cycles of said AC source and a second current path including a silicon controlled rectifier for conducting negative half-cycles of said AC source;

control means operatively connected to the gate terminal of said silicon controlled rectifier and including a capacitor for turning off automatically the silicon controlled rectifier after a predetermined time has elapsed so as to reduce the power dissipation in said load, whereby both the positive and negative half-cycles of said AC source are applied to said load when said silicon controlled rectified is in the conductive state and only the positive half-cycles of said AC source is applied to said load when said silicon controlled rectifier is in the non-conductive state; and said control means further including:

(i) a first resistor and a first diode connected in series with said capacitor, said first resistor having its one end connected to one end of said capacitor and having its

other end connected to the anode of said first diode, the other end of said capacitor being connected to the cathode terminal of said silicon controlled rectifier, the cathode of said first diode being connected to the gate terminal of said silicon controlled rectifier,

(ii) a second resistor having its one end coupled to the junction of said first resistor and said first diode and having its other end coupled to the anode terminal of said silicon controlled rectifier, and

(iii) a second diode and a third resistor connected in series, the anode of said diode being coupled to the junction of said capacitor and said first resistor, the cathode of said second diode being coupled to one end of said third resistor, the other end of said third resistor being coupled to the anode terminal of said silicon controlled rectifier.

4,432,035

METHOD OF MAKING HIGH DIELECTRIC CONSTANT INSULATORS AND CAPACITORS USING SAME

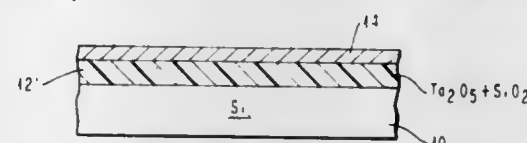
Ning Hsieh, San Jose, Calif.; Eugene A. Irene, Hopewell Junction, N.Y.; Mousa H. Ishaq, Essex Junction, and Stanley Roberts, South Burlington, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,315

Int. Cl.³ H01G 4/10, 4/06; B05D 5/12

U.S. Cl. 361—322

24 Claims



24. A capacitor comprising first and second conductive layers, and a dielectric layer interposed between said conductive layers, said dielectric layer consisting of a mixture of an oxide of a transition metal and an oxide of silicon.

4,432,036

SWITCHGEAR WITH STAB-POSITIONING SYSTEM

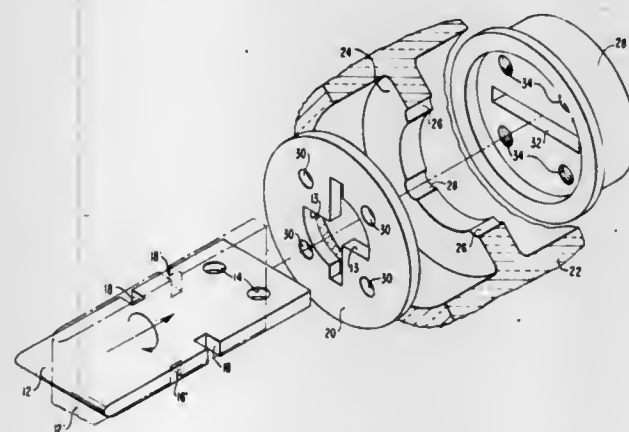
Alexander Zwillich, Pittsburgh; Carl R. Merola, Monroeville, and Stephen S. Ciccotelli, Pittsairn, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 241,920, Mar. 9, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,567

Int. Cl.³ H02B 1/04

U.S. Cl. 361—337

2 Claims



1. Switchgear apparatus, comprising:

- (a) a housing;
- (b) a support means disposed within the housing for supporting a conductor means for connection with an external electrical circuit;
- (c) a first lock retaining means abutting said support means

having a vertical aperture therein supporting in a vertical position an electrical stab means for electrical connection with the conductor means;

(d) a horizontal opening formed by ledges in the first lock retaining means which is connected to said vertical aperture whereby the electrical stab means is rotated from the vertical aperture position to the horizontal opening position;

(e) a second lock retaining means abutting the support means, axially spaced from the first lock retaining means having a horizontal aperture therein supporting and locking the electrical stab means in a horizontal position after rotation thereof to the horizontal opening position; and

(f) circuit breaker means connected to the electrical stab means for distribution of power in the switchgear apparatus.

4,432,037

MULTI-LAYER PRINTED CIRCUIT BOARD AND METHOD FOR DETERMINING THE ACTUAL POSITION OF INTERNALLY LOCATED TERMINAL AREAS

Bernhard Brabetz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

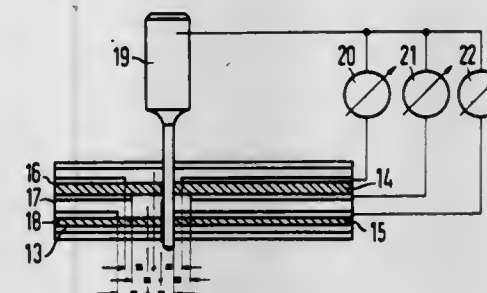
Filed Oct. 26, 1981, Ser. No. 315,038

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045433

Int. Cl.³ H05K 3/46

U.S. Cl. 361—410

9 Claims



1. A multi-layer printed circuit board alignment system, comprising: a plurality of board sections including an internal board section having a conductive circuit layer thereon which includes an internally disposed terminal area formed in the circuit layer; at least one test pattern on said internal board section in addition to the conductive circuit layer which is fabricated in a manner similar to fabrication of the circuit layer, said test pattern comprising an electrically conductive locating pattern adapted for sensing by an external electrical probe, and said external electrical probe comprising a conductive drill means for making a plurality of test bores in a given pattern having a predetermined constant spacing between adjacent bores so as to determine a deviation distance of a point to said locating pattern from a given reference point by a tolerance determined by said predetermined constant spacing.

4,432,038

CIRCUIT ASSEMBLIES

Melvyn R. Bell, Fife, Scotland, assignor to Ferranti, plc, Gatley, England

Continuation of Ser. No. 134,462, Mar. 27, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,055

Claims priority, application United Kingdom, Mar. 31, 1979, 7911358

Int. Cl.³ H05K 7/20

U.S. Cl. 361—386

13 Claims

13. A combination of at least one first circuit assembly, each first circuit assembly comprising an at least substantially planar substrate, on at least one major surface of which substrate is supported at least one component with leads extending therefrom, and there is also supported on said one major surface of

the substrate at least one connector connected to said at least one component, the connector having a plurality of electrically conducting connector pieces, each connector piece both co-operating with a lead of the component, and providing a terminal of the circuit assembly, the leads extend at least substantially in at least one plane parallel to said one major surface of the substrate, and the connector pieces extend parallel to each other, and parallel to said one major surface of the substrate, the connector pieces are secured to a block of electrical insulating material of the connector, and extend at right angles to at least one surface of the insulating block, and the block of electrical insulating material is retained by at least one bridging



member of the connector, and the arrangement is such that, with the bridging member secured to the substrate, the block co-operates with the bridging member and is loosely retained between the bridging member and the substrate whereby movement of the block is provided relative to the substrate and relative to the bridging member, in a plane normal to said one major surface of the substrate, and the combination also including at least one second circuit assembly, each second circuit assembly having at least one other connector cooperating and mating with said at least one connector of the first circuit assembly and abutting against said one surface of the insulating block.

4,432,039

LIGHT TRANSMITTING SYSTEM FOR AUTOMOBILE HEADLAMP

Pierre Cible, Bobigny, France, assignor to Cible Projecteurs, Bobigny, France

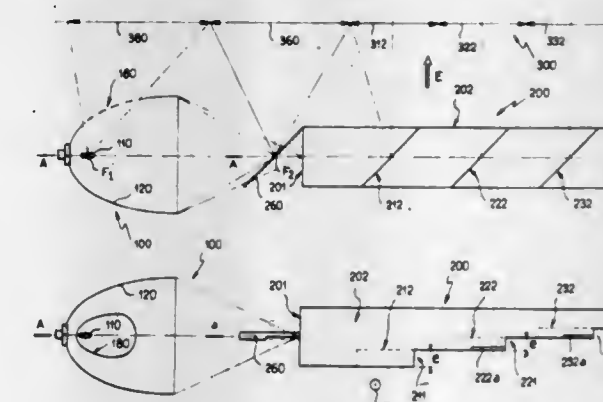
Filed Sep. 30, 1982, Ser. No. 428,951

Claims priority, application France, Oct. 5, 1981, 81 18679

Int. Cl.³ F21V 7/04

U.S. Cl. 362—31

8 Claims



1. A light transmitting system for an automobile headlamp comprising a real light source, a light channel, means for concentrating flux from said source onto one end of said light channel, and a series of lenses, said light channel being formed by a single transparent bar arranged horizontally and transversely with reference to the direction of illumination, the front of said bar being formed by a vertical light output face and the rear of said bar having a series of vertical shape defining a series of oblique vertical reflecting facets constituting as many virtual light sources and being arranged in optical co-operation with said lenses, said lenses having axes which are parallel to the direction of illumination so that said lenses project images corresponding to said facets in said direction of

illumination in order to form an assembly of elementary light beams merging into one single beam.

4,432,040

RETRACTABLE HEAD LAMP STRUCTURE FOR AUTOMOBILES

Takashi Matsuura, Toyota; Motomu Hayashi, Okazaki, and Kazuyoshi Yukimoto, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

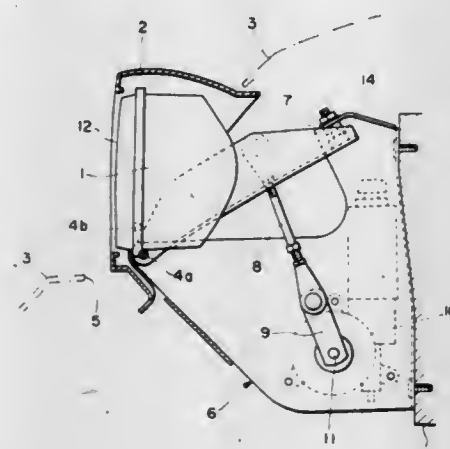
Filed Apr. 19, 1982, Ser. No. 369,361

Claims priority, application Japan, Apr. 22, 1981, 55-058381

Int. Cl.³ B60Q 1/00

U.S. Cl. 362—61

5 Claims



1. An automobile head lamp structure comprising a head lamp assembly including a lens surface and means for projecting a beam of light along an optical axis, and means for mounting said head lamp assembly on the automobile for movement of the head lamp between an extended position in which said optical axis is directed forwardly of the automobile and a retracted position in which the head lamp assembly is retracted into the automobile body, said mounting means including means for supporting said head lamp assembly pivotably about a pivot axis, wherein the improvement comprises said pivot axis being inclined with respect to a transverse line extending horizontally and perpendicularly to a longitudinal centerline of the automobile.

4,432,041

SMOKE PENETRATING EMERGENCY LIGHT

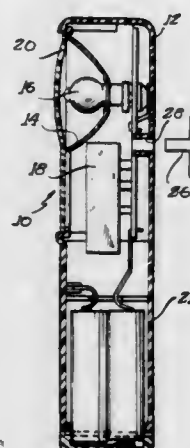
Richard E. Pfisterer, Chicago, and Richard M. Schultz, Oakwood Hills, both of Ill., assignors to Firex Corporation, Downers Grove, Ill.

Filed Dec. 27, 1982, Ser. No. 453,603

Int. Cl.³ H04M 1/22

U.S. Cl. 362—86

12 Claims



1. A self-contained portable lighting unit having a housing, a light directing reflector, a lamp, and a compartment for holding one or more batteries for powering the unit, the lighting

unit being particularly adapted to function as an emergency light, said unit comprising:

a piezo-ceramic transducer for producing an electrical signal proportional to the intensity of the sound that is detected thereby and for providing an audible alarm in response to an electrical signal being applied thereto;

electrical circuit means connected to said transducer and receiving the electrical signal produced thereby, said circuit means activating said lamp in response to said signal having a predetermined minimum magnitude for a predetermined time;

means for monitoring the voltage level of the battery and providing an intermittent signal of predetermined frequency to said transducing means to cause the same to emit an audible alarm sound in the event the voltage level of the battery drops below a predetermined level.

4,432,042

PORTABLE BOOK LIGHT

Noel E. Zeller, 7 Brentwood Ave., White Plains, N.Y. 10605

Filed Feb. 25, 1983, Ser. No. 469,786

Int. Cl.³ F21L 7/00

U.S. Cl. 362—183

12 Claims



1. A portable book-light comprising a base member formed as an enclosed longitudinally extending capsule, a rigid tubular arm, means within said capsule rotatably supporting said tubular arm for transverse movement, a lamp, means mounting said lamp on the other end of said tubular arm, said last means including first means for rotatably supporting said lamp on the end of said arm for circular movement relative thereto, second means attached to said first means for supporting said lamp for vertical movement relative to said arm, and a socket supported from said second means to hold said lamp, and a book-light support extending outwardly from the long side of said capsule, said support comprising a first member having a pair of arms respectively rigidly attached at one end to opposite ends of said capsule, whereby an open area is defined by the two arms on opposite sides with the capsule at one end and the integral connection at the other, and a plate flexibly attached at one end to said capsule and extending outwardly therefrom into said defined open area, said plate extending near its outer end above said arms, whereby the play between said plate and said arms permits the insertion of a flat article therebetween to support the book-light.

4,432,043

COMBINED FLUORESCENT LAMP AND SPOTLIGHT

John S. Yuen, Kwun Tong Kowloon, Hong Kong, assignor to Parly Tools Manufacturing Limited, Kowloon, Hong Kong

Filed Dec. 9, 1982, Ser. No. 448,287

Claims priority, application United Kingdom, Dec. 23, 1981, 8138799

Int. Cl.³ F21V 33/00

U.S. Cl. 362—184

14 Claims

1. A combined fluorescent lamp and spotlight, comprising in combination:

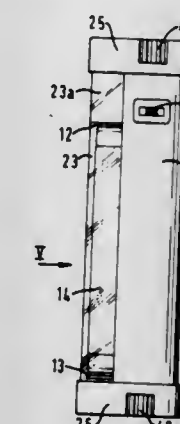
a body member of generally rectangular section with one open side and having tubular cylindrical projections with screw threads at the ends of said body member;

a chassis member received on said body member and closing

said open side thereof, said chassis member having mounted thereon a bulb holder, fluorescent tube mounting members, electrical circuit components, a switch and battery contacts;

a cover of transparent material and of elongate arch section to overlie a fluorescent tube mounted on said tube mounting members of said chassis member;

a pair of end members each formed with an aperture there-through, each of which said apertures receives a respec-



tive one of said tubular projections of said body member, and a peripheral flange to overlap said cover and thereby retain said cover in position on said body member; and end caps with screw threads to engage with said screw threads of said tubular projections of said body member and to engage a respective one of said end members to retain said end members in position on said body member, one of said end caps having a transparent end wall and a reflector therein to receive a bulb mounted in said bulb holder.

4,432,044

TASK LIGHTING SYSTEM

Terry L. Lautzenheiser, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 26, 1981, Ser. No. 247,848

Int. Cl.³ F21S 3/00

U.S. Cl. 362—223

18 Claims



1. A light control mask for use with a generally linear light source to control light distribution, said mask comprising:

an elongated, generally tubular member having dimensions substantially equal to that of the light source and defining a longitudinal dimension;

means for rotatably supporting said tubular member around the light source; and

variable light transmission means extending substantially along the entire longitudinal dimension of said member for controlling the amount of light transmitted through said member to thereby reduce areas of illumination longitudinally of said member and in a central area of said member so that said member can transmit less light in an area than at other areas and a more uniform brightness can be achieved, said variable light transmission means comprising a plurality of opaque markings which define a pattern having a longitudinal centerline and a vertical centerline along dimensions of said member, said pattern being relatively dense along a longitudinal centerline of the member to reduce high illumination levels which would emanate from a linear light source disposed within said member, said pattern being denser in said central area of said tubular member than adjacent the ends of the member, said

pattern varying in density circumferentially of said member, and said light transmission means having a light transmission value along its longitudinal centerline which varies from approximately 20% at the vertical centerline of the member to approximately 25% at the ends of the member, said pattern being a mirror image of itself about the vertical centerline of the member.

4,432,045

LOW PROFILE OVERHEAD LIGHTING FIXTURE LENS SHIELD

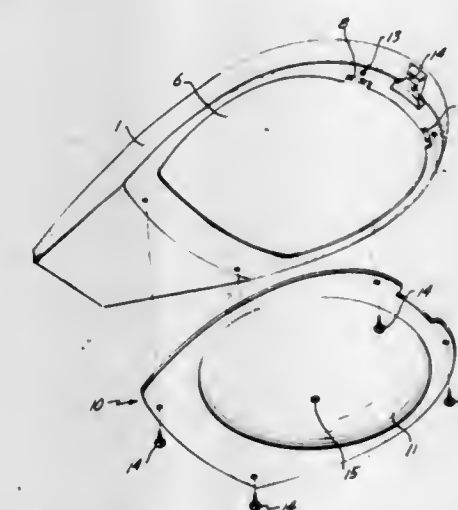
William H. Merritt, 3812-32nd Ave. West, Seattle, Wash. 98199

Filed Apr. 12, 1982, Ser. No. 367,200

Int. Cl.³ F21V 15/00

U.S. Cl. 362—375

4 Claims



1. A low profile overhead luminaire including a body having an aperture of noncircular profile and light-producing means encircled by the body comprising the combination of a transparent substantially planar glass lens of noncircular profile matching the shape of the aperture and mounted to the body covering the aperture, a transparent shallow gently bulging strong plastic shell of noncircular profile similar to the shape of the aperture and having a central portion substantially in the form of a convex spherical segment with an altitude no more than one-fourth the length of its base chord and having an external flange integral with said central portion, said flange being of varying width, projecting outward from the margin of said central portion and having a maximum width at least as great as one quarter of the radius of said spherical segment central portion, and means for securing said flange to the body at the outer side of said lens.

4,432,046

PROTECTIVE CASING FOR A LAMP HOLDER

Johannes S. Palsson, Borgarheiði 6, 810 Hveragerði, Iceland

Filed Oct. 19, 1982, Ser. No. 435,339

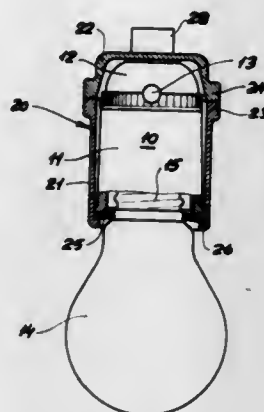
Int. Cl.³ F21V 15/00

U.S. Cl. 362—376

2 Claims

1. A protective casing for a lamp holder for outdoor use having a tubular section with an outer end into which a lamp cap is insertable, an inner end attached to a base member and diametrically oppositely extending lead-in cables, the casing comprising a substantially cylindrical part made of relatively soft, elastic material, a radially outwardly extending rim flange on one end of said cylindrical part, a radially inwardly extending annular flange on the other end of said cylindrical part, a dish-shaped base part made of relatively soft elastic material, a radially outwardly extending rim flange on the open end of said base part, cooperatively engaging sealing faces on said flanges, cooperating recesses in said engaging faces which when aligned with the lead-in cables for the lamp holder form openings through which the lead-in cables extend and are sealed therein, an elastic sealing ring extending between the

inner surface of said radially inwardly extending annular flange and the outer surface of the lamp cap, and means to clamp said rim flanges together so that said cooperating faces are in sealing engagement with each other, said lead-in cables are sealed in said openings formed by said recesses and said sealing ring is



sealingly compressed at its radially outer portion between said radially inwardly extending flange and the outer end of the lamp holder and at its radially inner portion against said outer surface of the lamp cap to seal the lamp holder within the casing.

4,432,047

SEQUENCE CONTROL APPARATUS

Yoshihiko Okayama, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

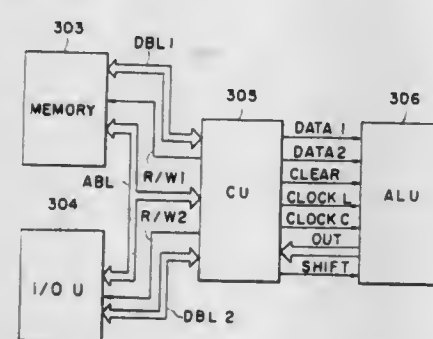
Filed May 12, 1981, Ser. No. 262,978

Claims priority, application Japan, May 16, 1980, 55-65002

Int. Cl.³ G06F 15/46

U.S. Cl. 364-147

1 Claim



1. In a programmable sequence control apparatus comprising:

a first memory for storing a plurality of sequence program instructions, a relay ladder operation unit for executing logic operation simulating an real relay ladder circuit having n rows and m columns (n and m are positive integers), an input/output control unit which is connected with input and output elements for introducing input data representing logical states of the input elements and delivering output data representing logical states of the output elements, said input data being used in said ladder operation unit as a contact data, and a control unit responsive to said each program instruction for delivering control signals to said relay ladder operation unit, the improvement wherein said input/output control unit has a second memory for storing said input and output data, each of the addresses in said second memory being related to a position in said relay ladder circuit defined by a pair of column's and row's members;

each of said program instruction in the first memory includes information concerning said position, which includes addresses corresponding to said input or output elements, a branch data representing whether one row corresponding to an address in a column is connected directly with one directly below in the subsequent column or not, and a

line data representing whether the row in said column is the last (or bottom) one or not;

said relay ladder operation unit has a plurality of logic circuits equal to the number of columns in the relay ladder circuit, each of said logic circuits comprising:

a first shift register for storing said contact data, a second shift register for storing said branch data and a gate circuit which receives said contact and branch data being stored in said shift registers for producing a plurality of signals, each of signals representing logical state of each row in one column, and

a memory for storing output data which is formed when all of contact and branch data in one sequence cycle are registered in said first and second shift registers, said control unit firstly decodes said program instructions consecutively and supplies decoded branch data and the corresponding contact data fetched out of said second memory to said logic circuits, and

simulation of said relay ladder circuit in one sequence cycle terminates when said control unit decodes all program instructions, and all of the contact and branch data corresponding to said each position in the ladder circuit are registered in said shift registers.

4,432,048

MULTIPLE DIGITAL CONTROLLER SYSTEM

Tetsuo Ito, and Setsuo Arita, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

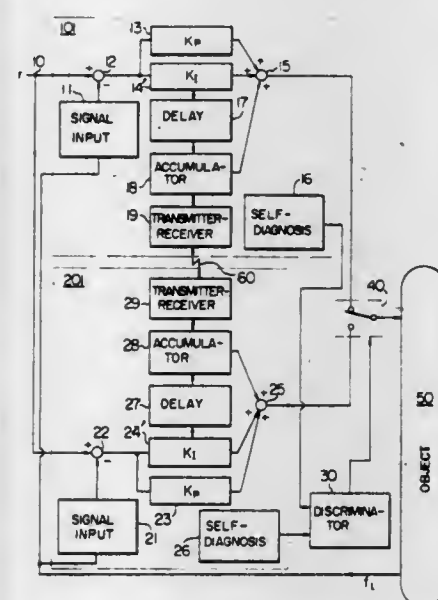
Filed Jun. 9, 1981, Ser. No. 272,006

Claims priority, application Japan, Jun. 9, 1980, 55-78219

Int. Cl.³ G05B 9/03, 23/02; G06F 15/46

U.S. Cl. 364-187

7 Claims



1. A multiple digital controller system comprising a main digital controller and at least one stand-by digital controller, each of which controllers includes signal input means; integral calculation means for independently integrating an input signal derived from the signal input means; output means for producing an output object control signal which is capable of controlling an object, said output object control signal including the data representing the result of integral calculation; and self-diagnosis means for diagnosing whether or not the associated controller is in normal operation, the system further comprising switch-over means for selecting one of said output object control signals of said digital controllers for applying to said object in accordance with an output signal of said self-diagnosis means, wherein the improvement comprises the system including means for transmitting the data representing the result of integral calculations executed in said integral calculation means of said main digital controller performing control of said object in a period $(n-1)$ (where n is 2, 3, 4, ...) to said stand-by digital controller before the integral calculation in the next period (n) starts, the integral calculation means of said

stand-by digital controller executing the integral calculation in the period (n) on the basis of the data calculated in the period $(n-1)$ in the integral calculation means of said main digital controller.

4,432,050

DATA PROCESSING SYSTEM WRITE PROTECTION MECHANISM

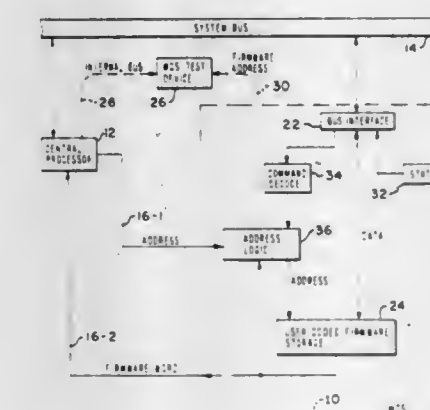
Robert J. Harris, 148 Westford St., Chelmsford, Mass. 01824; Scott W. Ryburn, 86 Meriam St., Lexington, Mass. 02173; William E. Woods, 79 Woodland St., Natick, Mass. 01760, and Henry F. Hartley, 78 Hanks St., Lowell, Mass. 01852

Continuation of Ser. No. 947,985, Oct. 2, 1978, abandoned. This application Oct. 1, 1980, Ser. No. 192,875

Int. Cl.³ G06F 9/22, 11/00

U.S. Cl. 364-200

6 Claims



4,432,049

PROGRAMMABLE MODE SELECT BY RESET

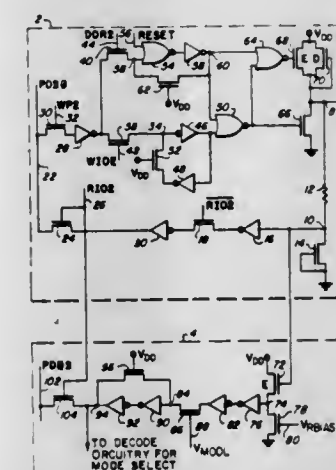
Pern Shaw, 9003 Viking Dr., Austin, Tex. 78758; Donald L. Tietjen, 1200 Barton Hills Dr., Apt. 185, Austin, Tex. 78704, and Michael F. Wiles, 1902 Flintrock St., Round Rock, Tex. 78664

Continuation of Ser. No. 939,721, Sep. 5, 1978, abandoned. This application Sep. 29, 1980, Ser. No. 192,157

Int. Cl.³ G06F 3/00; H03K 17/00

U.S. Cl. 364-200

9 Claims



1. An integrated circuit microprocessor comprising:

an input/output terminal,

a reset terminal,

an input storage element for storing digital information input to the microprocessor,

an output storage element for storing digital information to be output from the microprocessor,

reset means for receiving a reset signal coupled to the reset terminal, and for resetting and initializing the microprocessor to perform a predetermined operation, in response to the reset signal changing from a first predetermined voltage level to a second predetermined voltage level,

input/output means coupled to the reset means and to the output storage element, for selectively coupling the output storage element to the input/output terminal in response to at least one operation of the microprocessor, but only when the reset signal is at the second voltage level, and

voltage level detection means coupled to the reset means and to the input storage element, for selectively coupling the input storage element to the input/output terminal when the reset signal is at the first voltage level, and for uncoupling the input storage element from the input/output terminal when the reset signal thereafter changes to a predetermined voltage level intermediate the first and second voltage levels.

1. A microprogram-controlled data processing system comprising:

a source of a plurality of user-generated control words;

a control store having a first control memory means and a second control memory means, each said control memory means including a plurality of storage locations for addressably storing said user-generated control words;

means for transferring in serially said plurality of user-generated control words from said source to said control store;

a data input register in said control store for receiving said transferred user-generated control words;

address generating means in said control store for generating addresses associated with said storage locations in said first control memory means and said second control memory means;

write control means for controlling the transfer of each of said user-generated control words received by said data input register from said data input register into one of said storage locations associated with said generated addresses in said first control memory means and said second control memory means;

a third control memory means for addressably storing system control words different from said user-generated control words;

a central processing unit coupled to said source, said control store, and said third control memory means, said central processing unit being constructed and arranged to execute either a said system control word or a said user-generated control word under said microprogram-control, said central processing unit for initiating the transfer of said user-generated control words from said source to said control store over said transferring means;

means for generating a write signal in response to said transfer initiation by said central processing unit to indicate that said user-generated control words are being loaded into said first and second control memory means;

means for selectively transferring to said central processing unit for execution thereby said user-generated control words from said first control memory means and said second control memory means, and said system control words from said third control memory means; and

means responsive to said write signal for inhibiting the transfer of said user-generated control words from said first control

memory means and said second control memory means to said central processing unit while said user-generated control words are being loaded into said first control memory means and said second control memory means.

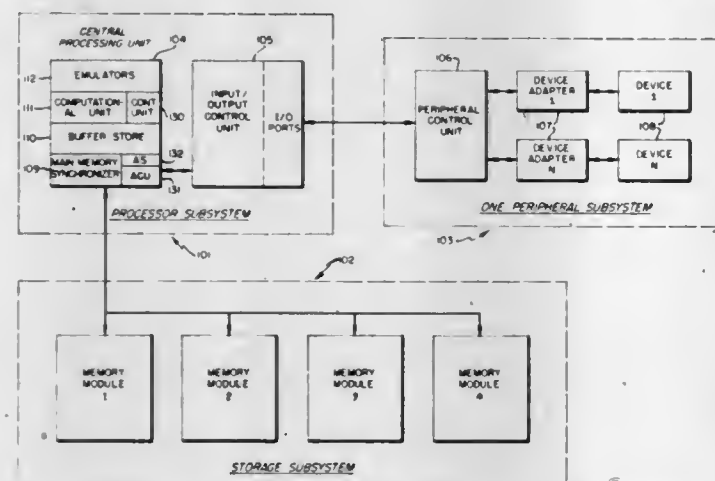
4,432,051

PROCESS EXECUTION TIME ACCOUNTING SYSTEM
Jean-Louis Bogaert, Clamart; Philippe-Hubert deRivet, Paris, both of France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 5,200, Jan. 22, 1979, abandoned, which is a continuation of Ser. No. 529,016, Dec. 2, 1974, abandoned; which was a continuation of Ser. No. 823,315 Aug. 10, 1977, abandoned. This application Oct. 30, 1980, Ser. No. 202,423 Claims priority, application France, Nov. 30, 1973, 73 42702 Int. Cl.³ G06F 3/00, 9/22

U.S. Cl. 364—200

4 Claims



1. In a computer system wherein a plurality of processes each comprising a series of executable instructions are competing for access to a central processing unit, and wherein the central processing unit selectively grants access to the competing processes one at a time and executes the instructions included in the accessed process to thereby place the process being executed into a running state, the remaining processes being in either a ready state waiting to be executed by the central processing unit or a wait state waiting for the occurrence of a non-processing event in the computer system, an accounting system for dynamically assigning the plurality of processes to the running, ready, and wait states and for accumulating the amount of time each of the processes is assigned to one of the states, a time accounting system comprising:

a time-of-day clock coupled to said central processing unit for outputting the time-of-day when said clock is accessed, said time-of-day clock being accessed by said central processing unit whenever a said process changes state to output a current state entry time associated with a said process whenever said associated process enters said running, ready or wait states and a current state exit time associated with a said process whenever a said process exits said running, ready, or wait states;

a memory coupled to said central processing unit for storing the contents of a plurality of addressable process control blocks in one-to-one association with said plurality of processes, each of said process control blocks including first, second, and third storage locations for storing indications of the amount of time said associated process has been in said running, ready, and wait states, respectively; means coupled to and controlled by said central processing unit for individually accessing said process control blocks and for transferring the information stored in said accessed process control blocks to said central processing unit;

a control store memory for storing a plurality of microinstructions;

means for decoding said stored microinstructions to produce corresponding control signals;

means for selectively addressing said microinstructions stored in said control store memory and for transferring said addressed microinstructions to said decoding means; and

means for transferring said produced control signals to said central processing unit, said central processing unit operating in response to said control signals to (1) select a said ready state process for execution by said central processing unit, (2) control said accessing and transferring means to access and transfer to said central processing unit said information stored in said process control block associated with said selected ready state process, (3) compute the amount of time said selected ready state process had been in said ready state from said current state entry and exit times associated with said selected ready state process, (4) update said second storage location of said process control block associated with said selected ready state process with said computed time said selected ready state process had been in said ready state, (5) control said accessing and transferring means to access and transfer to said central processing unit said information stored in said process control block associated with a said executed process, (6) compute the amount of time said executed process had been in said running state from said current state entry and exit times associated with said executed process, and update said first storage location of said process control block associated with said executed process with said computed time that said executed process had been in said running state, (7) select said waiting state processes waiting for the occurrence of a specified non-processing event to control said accessing and transferring means to access and transfer to said central processing unit said information stored in said process control blocks associated with said selected waiting state processes, (6) compute the amount of time each of said selected waiting state processes had been in said waiting state from said current state entry and exit times associated with said selected waiting state processes, and (9) update said third storage locations of said process control blocks associated with said selected waiting state processes with the amounts of time said associated waiting state processes had been in said waiting state.

4,432,052

MICROCOMPUTER DEVICE USING DISPATCH ADDRESSING OF CONTROL ROM

Kevin C. McDonough; John W. Hayn, and Jeffrey D. Bellay, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,624

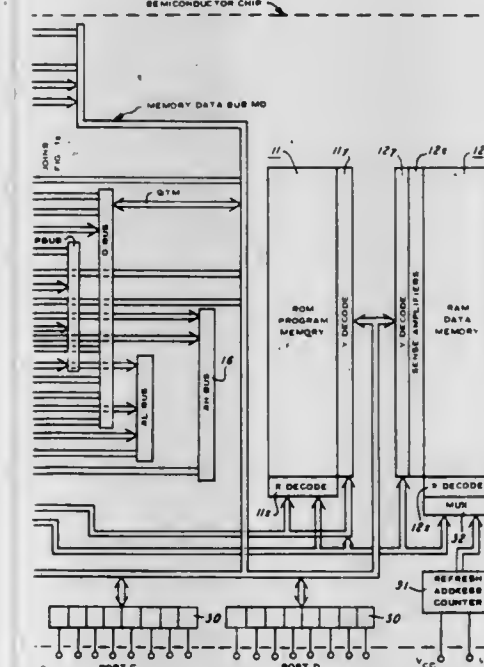
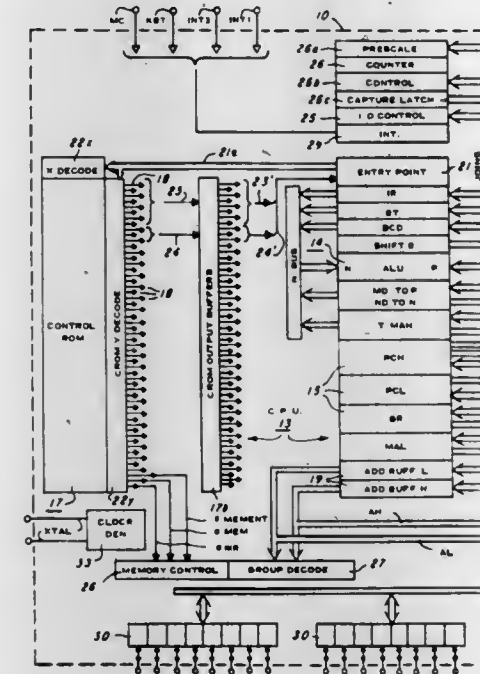
Int. Cl.³ G06F 9/22

U.S. Cl. 364—200

15 Claims

1. A microprocessor device comprising:
a semiconductor integrated circuit having an arithmetic/logic unit, a plurality of registers for storing data and memory addresses, parallel busses for interconnecting the arithmetic/logic unit and the registers, an instruction register, and control means having an input coupled to the instruction register, said control means generating control outputs coupled to the arithmetic/logic unit and the busses and registers for controlling operation thereof in response to instruction words temporarily stored in the instruction register, all within the integrated circuit, and wherein the control means includes a read-only-array having an address input and a command output and includes addressing means receiving said input coupled to said instruction register and having an output for applying a sequence of addresses to said address input to define an operation selected by an instruction word, said sequence

including a first address derived from said instruction word in said instruction register, and said sequence includ-



ing a second address subsequently derived from the same said instruction word still in said instruction register.

4,432,053

ADDRESS GENERATING APPARATUS AND METHOD
Blaine D. Gaither, Sierra Madre; William W. Farley, IV, Pasadena; Albert Johnson, Altadena, and Brian L. Parker, Pasadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 29, 1981, Ser. No. 278,155

Int. Cl.³ G06F 7/00, 9/00

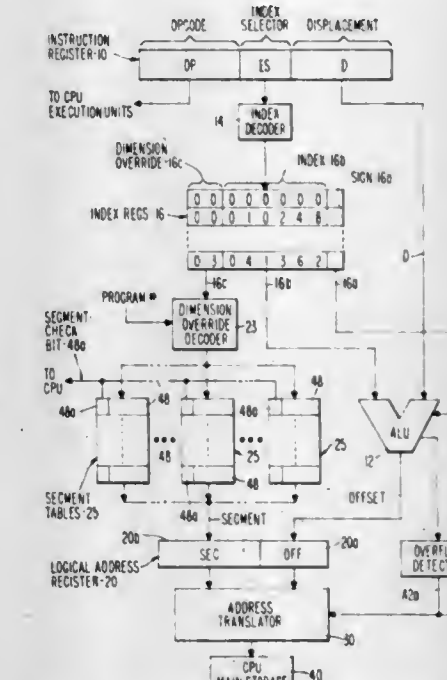
U.S. Cl. 364—200

8 Claims

1. In a data processing system having a memory and an address translator, improved apparatus for generating a logical address for use by said translator in accessing said memory, said apparatus comprising:

means for storing data indicative of a logical address, said data including index selection data and displacement data; a plurality of index registers each including index data and address override data; means responsive to said index selection data for selecting one of said index registers; a logical address register having first and second portions; means including an adder for adding the index data in a selected index register to said displacement data and for

storing the result in said first portion of said logical address register; table storing means for storing a plurality of tables each containing a plurality of address locating entries for a corresponding one of a plurality of programs performable by said system; selection means responsive to a program identification signal



provided by said system and to said address data in a selected index register for accessing a corresponding one of the address locating entries in a selected one of said tables and for storing this accessed entry in said second portion of said logical address register; and means for applying the contents of the first and second portions of said logical address register to said address translator.

4,432,054

LOOP DATA TRANSMISSION CONTROL METHOD AND SYSTEM

Masakazu Okada; Hitoshi Fushimi; Seiichi Yasumoto, and Takuji Hamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

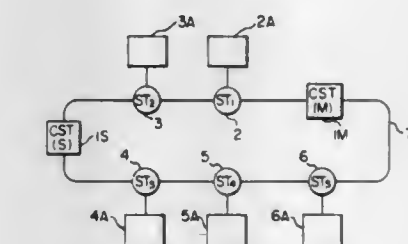
Filed Aug. 28, 1981, Ser. No. 297,405

Claims priority, application Japan, Sep. 3, 1980, 55-121074

Int. Cl.³ G06F 3/04; H04Q 9/00

U.S. Cl. 364—200

6 Claims



1. A loop data transmission system comprising a loop trans-

mission line and a plurality of stations including at least two control stations connected to said loop transmission line for effecting data transmission between stations via said transmission line;

wherein each of said control stations includes control means for controlling that control station so that one of said control stations operates as master to normally control data transmission through said transmission line while the other of said control stations operates as slave to be normally ready for operating as master in place of said one control station, first means responsive to said control means for operating said control station as a slave in a transit mode wherein data transmissions received from said transmission line are applied directly back to said transmission line, and second means responsive to said control means for operating said control station as a master in a control mode to control data transmission on said transmission line including the application to said transmission line of a clock signal for controlling the operations of said stations, each of said plurality of stations and said two control stations including clock extractor means for extracting a clock signal from a signal received from said transmission line; and

wherein said control means in each of said control stations includes third means connected to said first and second means for suspending transmission of a clock signal for a first predetermined time period upon detection of a state of clock suspension in which no clock signal is received from said transmission line, fourth means for controlling said second means to transmit a clock signal for a second predetermined time period after said suspension of the clock transmission, fifth means for controlling said second means to transmit a priority determination signal indicative of the level of priority of that control station for being master as compared to the other control station after transmission of the clock signal during said second predetermined time period, sixth means for comparing a priority determination signal received on said transmission line with the priority determination signal transmitted under control of said fifth means, seventh means responsive to said comparing means indicating that said received priority determination signal is of higher priority level than said transmitted priority determination signal for actuating said first means to operate said control station as a slave in a transmit mode, and eighth means responsive to said comparing means for determining that the control station has the priority to be master to control data transmission through said transmission line by detecting when said received priority determination signal is identical to said transmitted priority determination signal and for actuating said second means to place said control station in the control mode.

4,432,055

SEQUENTIAL WORD ALIGNED ADDRESSING APPARATUS

Edward R. Salas, Billerica; Chester M. Nibby, Jr., Peabody, and Robert B. Johnson, Billerica, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 29, 1981, Ser. No. 306,839

Int. Cl.³ G06F 13/00

U.S. Cl. 364-200

42 Claims

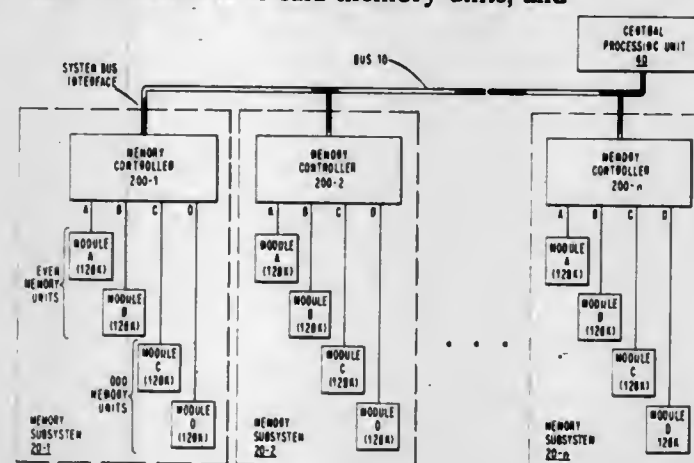
1. A memory subsystem for use in a system including a processing unit coupled to a multiword bus in common with said subsystem for transfer of information therebetween during bus transfer cycles of operation, said unit being operative to generate memory requests on said bus to said subsystem, each of said requests include a multibit coded address containing row and column addresses, said subsystem comprising:

a plurality of independently addressable memory module units, each memory unit being individually coupled to said multiword bus and having a set of input address lines, said each memory unit including a plurality of rows of random access memory chips and said random access memory

chips including a number of addressable arrays of memory storage devices, said arrays being divided into a number of rows and columns;

first and second multibit tristate register means coupled to said bus for storing said row and column addresses respectively of each said memory request address for transfer to said memory module units and said first and second register means being connected to each of said sets of lines of said memory module units;

increment circuit means being coupled to said bus for receiving the least significant column address bits applied in parallel to said second tristate register means, said increment circuit means being operative to modify said least significant column address bits in response to at least one of said least significant address bits during the transfer of said row address to said memory units; and



selection circuit means coupled to said bus for receiving the least significant row address bits applied in parallel to said first address register means, to said increment circuit means and to said set of address lines of a predetermined one of said memory module units, said selection circuit means being operative to apply in succession said least significant row address bits and the resulting column least significant address bits produced by said increment circuit to said predetermined one of said memory module units in parallel with said row and column addresses applied from said first and second register means respectively enabling simultaneous access to a plurality of sequential storage locations within said number of said addressable arrays of said memory module units during a single bus cycle of operation.

4,432,056

PROGRAMMABLE ELECTRONIC COMPUTER

Harutsugu Aimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 154,870, May 30, 1980, abandoned.

This application Jun. 28, 1983, Ser. No. 508,986

Claims priority, application Japan, Jun. 5, 1979, 54-70396

Int. Cl.³ G06F 9/00

U.S. Cl. 364-200

6 Claims

1. A programmable computer comprising:

a program memory for storing a plurality of program steps as an instruction of a program sequence, said program memory storing first information in a predetermined part of a first program step of said plurality of program steps and second information in a predetermined part of the remaining program steps of said plurality of program steps;

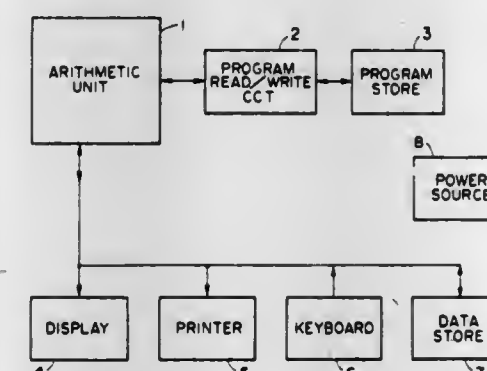
address memory means for storing address information corresponding to at least one of said program steps;

a first program step memory for storing a program step, corresponding to said address information stored in said address memory means, from said program memory;

a second program step memory for storing a program step,

corresponding to address information adjacent said address information stored in said address memory means, from said program memory;

determination means connected to said first program step memory and to said second program step memory for determining the content in said predetermined parts of said program step stored in said first program step mem-



ory and of said program step stored in said second program step memory, said determination means producing a first signal when first information is stored at least in said first program step memory; and

arithmetic operation means responsive to a first signal produced by said determination means for carrying out a program sequence from a program step stored in said first program step memory.

4,432,057

METHOD FOR THE DYNAMIC REPLICATION OF DATA UNDER DISTRIBUTED SYSTEM CONTROL TO CONTROL UTILIZATION OF RESOURCES IN A MULTIPROCESSING, DISTRIBUTED DATA BASE SYSTEM

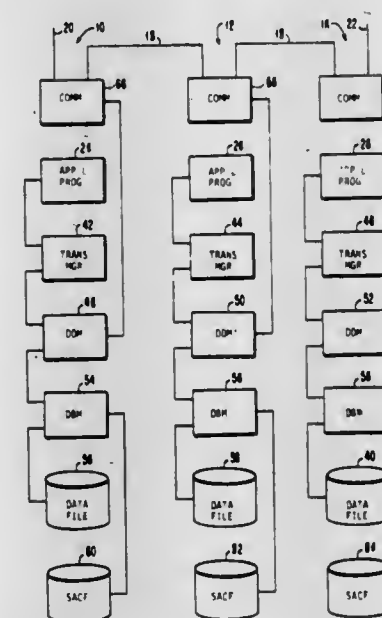
Thomas P. Daniell, Palo Alto; Robert C. Harding, Jr., Cupertino; Neil J. Lewis, Oakland, and Sven H. H. Nauckhoff, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,531

Int. Cl.³ G06F 9/00

U.S. Cl. 364-300

12 Claims



1. A method for operating a computing apparatus having a plurality of nodes, each node having storage means for storing a plurality of data items and means responsive to a request for accessing a specified data item, and communication means interconnecting selected nodes, the method including the steps of controlling access to the specified data item and controlling

the modification of copies of the data item, characterized by the steps of:

distributing data access control to each node of the apparatus; and, responsive to a request having a specified currency, dynamically replicating data items while selectively deferring conformation of the replicated data; such that the most current data items migrate to their respective affinity nodes.

4,432,058

MICRO-COMPUTER NETWORK SYSTEMS FOR MAKING AND USING AUTOMATIC LINE-CALL DECISIONS IN TENNIS

Lyle D. Supran, 18A Blackheath Rise, London, England
Continuation-in-part of Ser. No. 866,492, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 460,805,

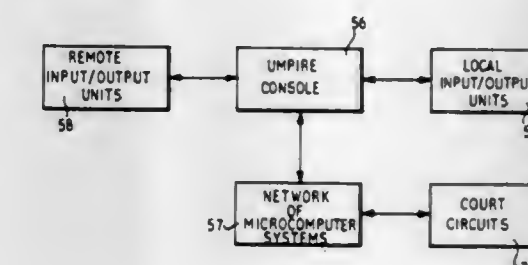
Apr. 15, 1974, Pat. No. 4,071,242, which is a continuation-in-part of Ser. No. 238,888, Mar. 28, 1972, abandoned, Ser. No. 230,897, Mar. 1, 1972, Pat. No. 3,854,719, and Ser. No. 396,067, Sep. 10, 1973, abandoned, which is a division of Ser. No. 230,728, Mar. 1, 1972, abandoned. This application Jul. 16, 1980, Ser. No. 169,390

Claims priority, application United Kingdom, Jul. 17, 1979, 7924918

Int. Cl.³ G06F 15/44; A63B 61/00

U.S. Cl. 364-410

33 Claims



1. A system for making automated decisions in tennis including: electrical circuits which can be switched by means of a tennis ball action in a zone being monitored; and means operating on a pattern recognition basis for recognizing said tennis ball action in distinction from other events by analyzing at least the frequency of switchings at least in one of said electrical circuits.

4,432,059

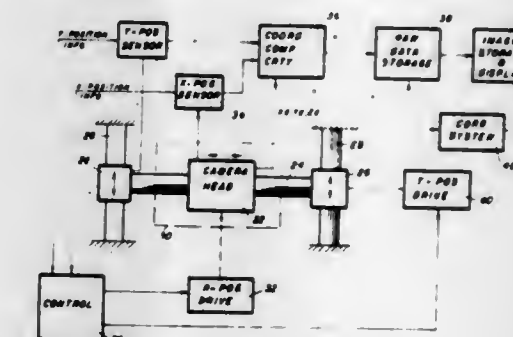
SCANNING GAMMA CAMERA

Dan Inbar; Tsur Bernstein, both of Haifa, and Yair Shimoni, Jerusalem, all of Israel, assignors to Elscint Ltd., Haifa, Israel
Filed Sep. 3, 1980, Ser. No. 183,844

Int. Cl.³ G01T 1/20

U.S. Cl. 364-414

32 Claims



1. A scanning gamma camera comprising:

(a) a head responsive to activity in an unknown radiation field for producing data;

(b) scan control means for causing the head to follow a scan regimen wherein the radiation field scanning by the head has a non-uniform scanning time interval distribution; and

(c) means responsive to said data for recording a representation of the activity distribution of the field so as to compensate for the non-uniform scanning time interval distribution.

4,432,060

EARTH CENTER POINTING PHASE LOCKED HORIZON SENSOR ELECTRONIC LOOP

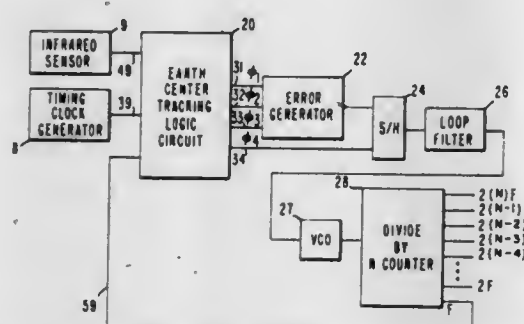
Donald R. Cargille, Venice, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 4, 1981, Ser. No. 231,210

Int. Cl.³ G06F 15/50; G01J 1/00

U.S. Cl. 364—434

4 Claims



1. An electronic processor circuit which is responsive to applied input signals, which input signals are repetitive and of a known character, for producing a plurality of output signals which are at a higher frequency than, and phase locked to, the input signals, for rejecting undesirable input signals which are external to a preselected pulse width range, and for locating the center of a preselected radiant astronomical body, comprising:

an astronomical center-tracking logic circuit means responsive to said applied input signals and to a feedback signal whose frequency of repetition is to be made the same as said applied input signal and a preselected edge of said feedback signal is to be positioned at the center of said applied input signal, means for producing a first output signal which remains active when the frequency of repetition of said feedback signal is greater than that of said applied input signals, and which is indicative of the duration from the leading edge of said applied input signals to said preselected edge of said feedback signal when the frequency of repetition of said feedback signal is the same as that of said applied input signal, a second output signal which remains active when the frequency of repetition of said feedback signal is less than that of said applied input signal, and which is indicative of the duration from said preselected edge of said feedback signal to the other edge of said applied input signal when the frequency of repetition of said feedback signal is the same as that of said applied input signal, a third output signal indicative of the duration of the absence of said applied input signals, and a means for producing, following said second output signal, a sample pulse only if said applied input signal is within said preselected pulse width range;

an analog error generator means for responding to said first, second, and third output signals from said center-tracking logic circuit means for integrating a constant current down during the duration of said first output signal, integrating a constant current up during the duration of said second output signal, and integrating a zero value current during the duration of said third output signal;

a sample-and-hold circuit gated on by said sample pulse for sampling the output signal of said analog error generator;

a voltage controlled oscillator responsive to said analog error generator sampled output signal for producing an output signal having a high frequency of oscillation;

a divide-by-N means responsive to said high frequency of oscillation signal for producing a plurality of signals of lower frequencies of oscillation, one of which is applied to said center-tracking logic circuit as said feedback signal.

4,432,061 SYSTEM FOR CONTROLLING THE VOLTAGE OF AN ELECTROFILTER

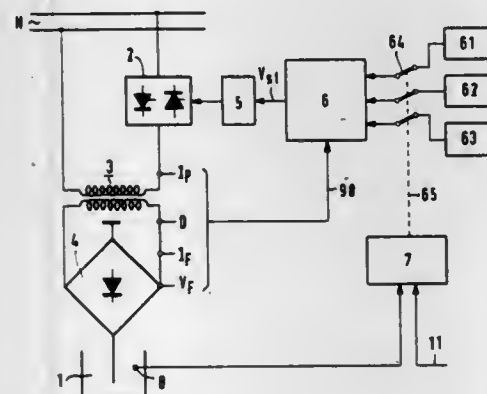
Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Siemens Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,246

Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017685

Int. Cl.³ G05B 13/02; B03C 3/68
U.S. Cl. 364—480

3 Claims



1. A method for controlling the voltage of an electrofilter in a plant, the method having the steps of lowering the filter voltage by a predetermined amount after a voltage breakdown at the electrofilter, and raising the filter voltage in accordance with a predetermined voltage-time function until a further voltage breakdown occurs, the method comprising the further steps of:

storing data corresponding to a plurality of voltage drop factors and a plurality of voltage-time functions prior to performing the step of raising the filter voltage; and controlling the operation of the filter in accordance with said data corresponding to said voltage drop factors and voltage-time functions, said controlling of the filter being performed in response to a selectable one of a plurality of process states of the plant.

3. A digital arrangement for controlling the voltage of an electrofilter employed in a plant, the arrangement being of the type wherein an electrofilter voltage is lowered by a predetermined amount after a voltage breakdown and thereafter raised in accordance with a predetermined voltage-time function until a subsequent breakdown occurs, the arrangement comprising:

memory means for storing data corresponding to at least a plurality of voltage drop factors and a plurality of voltage-time functions, said data being stored at a point in time corresponding to the initiation of the operation of the electrofilter; and

control means responsive to a selectable one of a plurality of process states in the plant for recalling corresponding portions of said data from said memory means.

4,432,062 METHOD FOR OPTIMIZING THE KNOCK FREQUENCY OF AN ELECTROFILTER SYSTEM

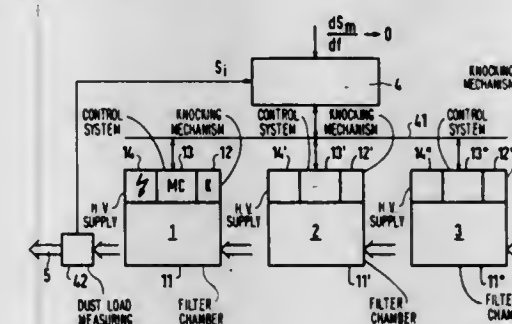
Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,353

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001595

Int. Cl.³ G06F 15/46; B03C 3/76
U.S. Cl. 364—500

1 Claim



1. A method for optimizing the knock frequency of an electrofilter installation having a plurality of electrofilters, for treating dust laden gas to obtain a purified gas connected such that the gas to be purified flows through them in series, comprising the steps of:

selecting an initial repetition rate of knocks for each of the filters; automatically controlling each of said electrofilters so that only one of the electrofilters is being knocked at a time; measuring the long term average of the measured dust loading of the purified gas from the electrofilter installation; changing the interval between knocks automatically; and repeating the measuring and changing steps until the long term average of the measured dust loading approaches a minimum.

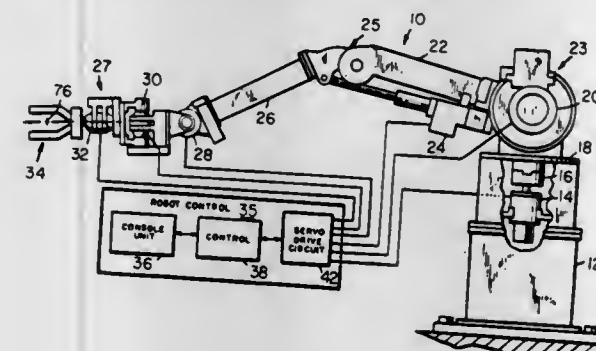
4,432,063 APPARATUS FOR AUTOMATICALLY MOVING A ROBOT ARM ALONG A NONPROGRAMMED PATH

Brian J. Resnick, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 6, 1981, Ser. No. 308,983

Int. Cl.³ G06F 15/46
U.S. Cl. 364—513

6 Claims



1. An apparatus for controlling the motion and operation of a function element associated with nonprogrammed positions during execution of a programmed cycle of operation defined by programmed positions and functions, the positions and functions described by sets of input signals representing respectively coordinates of positions relative to a first coordinate system and function codes, the apparatus being connected to

an external path generator for producing further sets of input signals, the apparatus comprising:

- a machine having machine members connected to one end of the function element and actuators associated with the machine members for providing a plurality of axes of motion to move the function element, said plurality of axes of motion and the machine members defining a generalized coordinate system different from the first coordinate system; and
- a machine control including a memory for storing programmed sets of input signals, a data communications interface for exchanging sets of input signals between the external path generator and the machine control, and a servo mechanism circuit connected to the actuators to control the position and motion of the function element, the control further including:
 - means responsive to a function code signal recalled from the memory for receiving sets of input signals from the external path generator;
 - means for producing drive signals in response to the input signals received from the external path generator, the drive signals representing coordinates of the non-programmed positions relative to the generalized coordinate system;
 - means for applying the drive signal to the servo mechanism circuit to effect motion of a tool centerpoint associated with the function element to the nonprogrammed position; and
 - means responsive to input signals received from the external path generator for terminating the reception of input signals therefrom and for resuming the recalling of input signals from the memory.

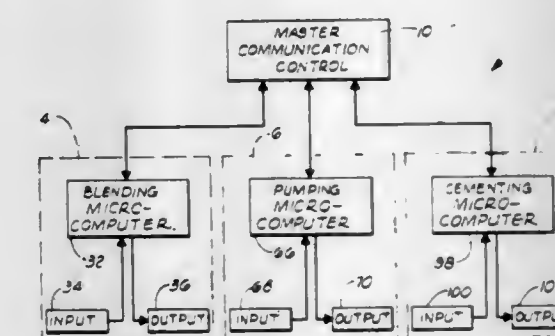
4,432,064 APPARATUS FOR MONITORING A PLURALITY OF OPERATIONS

Kenneth D. Barker, Duncan, and Edward P. Arnold, Comanche, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 27, 1980, Ser. No. 201,161

Int. Cl.³ G06F 15/46; E21B 47/00; G01D 21/00
U.S. Cl. 364—550

20 Claims



1. A system for monitoring a plurality of operations, comprising:

- first input means for detecting a first physical condition identified with a first operation of said plurality of operations and for converting said first condition into a first electrical input signal;
- first microcomputer means, responsive to said first electrical input signal, for producing a first output signal electrically representing information about said first physical condition, said first microcomputer means including:
 - first electronic microprocessor means;
 - first electronic memory means;
 - first input signal conditioning means for transforming said first electrical input signal into a digital signal usable by said first microprocessor means;
 - first priority control means for establishing priority control commands for said first microprocessor means; and

first bus means for providing communication links between said first microprocessor means, said first memory means, said first input signal conditioning means and said first priority control means;

first output means for displaying said first output signal in a humanly understandable form;

second input means for detecting a second physical condition identified with a second operation of said plurality of operations and for converting said second condition into a second electrical input signal;

second microcomputer means, responsive to said second electrical input signal, for producing a second output signal electrically representing information about said second physical condition, said second microcomputer means including:

second electronic microprocessor means;

second electronic memory means;

second input signal conditioning means for transforming said second electrical input signal into a digital signal usable by said second microprocessor means;

second priority control means for establishing priority control commands for said second microprocessor means; and

second bus means for providing communication links between said second microprocessor means, said second memory means, said second input signal conditioning means and said second priority control means;

second output means for displaying said second output signal in a humanly understandable form;

master microcomputer means for handling information transfers between said first and second microcomputer means; and

communication interface means for providing a first communication path between said master microcomputer means and said first microcomputer means and for providing a second communication path between said master microcomputer means and said second microcomputer means.

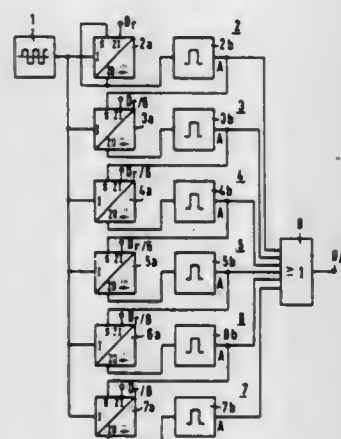
4,432,065

METHOD AND APPARATUS FOR GENERATING A PULSE TRAIN WITH VARIABLE FREQUENCY

Georg Heinle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 18, 1980, Ser. No. 217,904
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951927

Int. Cl.³ H03K 5/04

U.S. Cl. 364-701



1. An apparatus for generating a pulse train having an adjustable frequency, comprising:
 - (a) a clock for generating a reference frequency f_0 having a period T_0 ;
 - (b) a frequency divider connected to the output of said clock for delivering narrow output pulses with the period

$D_r T_0$, wherein $D_r = N \cdot p$; N being an integer and p being an adjustable integer;

- (c) $(N-1)$ triggerable pulse generators, each of which delivers a narrow intermediate pulse at its output at a delay time $t_r = p \cdot T_0$ after the arrival of a pulse at its trigger input; and
- (d) an OR gate;
- (d1) whereby the trigger input of a first one of said pulse generators is connected to the output of said frequency divider;
- (d2) whereby the trigger input of each additional one of said pulse generators is connected to the output of the preceding pulse generator; and
- (d3) whereby the outputs of said frequency divider and of said pulse generators are connected to said OR gate, the output of which delivers said desired pulse train.

4,432,066

MULTIPLIER FOR BINARY NUMBERS IN TWO'S-COMPLEMENT NOTATION

Nico F. Benschop, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

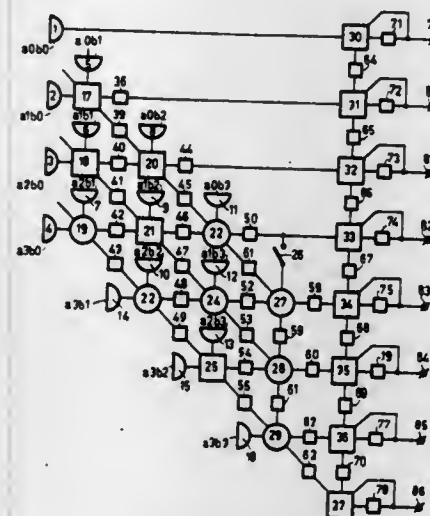
Continuation of Ser. No. 71,801, Sep. 4, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,887

Claims priority, application Netherlands, Sep. 15, 1978, 7809398

Int. Cl.³ G06F 7/52

U.S. Cl. 364-758

6 Claims



1. A device for multiplying a first and second binary number, said numbers having at the most q and p ($p, q > 2$) bit positions, respectively, said device having first means for forming at the most $p \times q$ bit-wise partial products of said two numbers, second means having an array of $(p-1) \times q$ arithmetic modules, $(p-1)$ of said modules having at least two inputs, the other arithmetic modules having three inputs, for forming an algebraic sum from each input of two and three binary values respectively, taking into account their sign, and for forming therefrom a two-bit number of result and carry; said modules being connected in accordance with corresponding bit-wise significance levels for receiving said partial products and corresponding bits of said results until for each significant level a single final result bit is generated on the outputs of $(p+q-2)$ modules and also an additional bit of highest significance on a special output of the most-significant one of said $(p+q-2)$ modules and a bit of lowest significance on the output of lowest significance of said first means, characterized in that for the multiplication of two numbers in two's-complement notation said second means has eight groups comprising:
 - a first group consisting of a single subtractor module (29) for receiving, as a full subtractor, the most significant partial product of positive sign and two further bits of intermediate result of negative sign;
 - a second group of one module (25) for receiving, as full adder, the two partial products of next-lower significance

of negative sign and one bit of intermediate result of negative sign;

- a third group of $(q-3)$ modules (22) for receiving, as full subtractors, one partial product which originates from the most-significant bit position of the second number and the respective $(q-3)$ most-significant but two bit positions of the first number of negative sign, a further partial product of positive sign which does not originate from the most-significant bit position of the first number, and one further bit of intermediate result of negative sign;
 - a fourth group of one module (19) for receiving, as at least a half-subtractor, a partial product originating from the most-significant bit position of the second number and from the least-significant bit position of the first number of negative sign, and one further partial product of positive sign which does not originate from the most-significant bit position of the first number;
 - a fifth group of $(p-2)$ modules (23, 24) for receiving, as a full subtractor, one partial product of negative sign which originates from the most-significant bit position of the second number and the relevant $(p-2)$ less-significant bit positions of the first number, and furthermore two bits of intermediate result of positive sign;
 - a sixth group of $(p-2)$ modules (17, 18) for receiving as at least a half-adder, two partial products of positive sign;
 - a seventh group of $(p-2)$ $(q-3)$ modules (20, 21) for receiving, as a full adder, a partial product of positive sign and two bits of intermediate result of positive sign; and
 - an eighth group of $(p-2)$ modules (27, 28) for receiving, as a full subtractor, a result bit of negative sign with a carry bit of positive sign, originating from said fifth group, and also the result bit of said second group of negative sign, and for serially presenting an output carry bit within the eighth group and subsequently to the first group, and $(p-2)$ results bits parallel-wise to the outputs of the eighth group;
- third means for supplying the least-significant module of the eighth group with the final result bit of next-lower significance level of negative sign;
- the full subtractors of the first, third, fifth and eighth groups being constructed to form the said logic functions;
- all (half) subtractors comprising, in order to form the product of two numbers having exclusively bits of positive sign, a control input in order to be controlled as a (half) adder by a signal present thereon, said third means having a control input in order to be deactivated by a signal then present thereon.

4,432,067

MEMORY CARTRIDGE FOR VIDEO GAME SYSTEM

Carl J. Nielsen, Saratoga, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

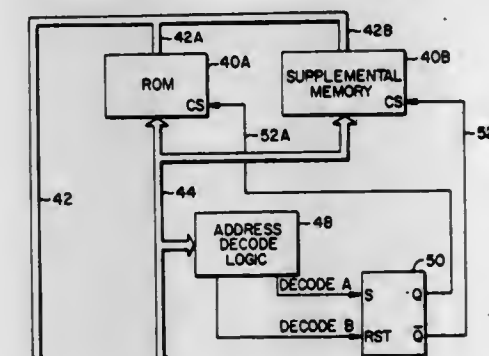
Division of Ser. No. 261,301, May 7, 1981, Pat. No. 4,368,515.

This application Aug. 9, 1982, Ser. No. 406,650

Int. Cl.³ G06F 15/44

U.S. Cl. 364-900

15 Claims



1. A cartridge adapted to be removably attached to a video game system of the type having an address bus and a data bus

for providing address signals on the address bus and for receiving data signals on the data bus, the cartridge comprising:

- a connector having primary address lines and data lines, the connector being adapted to conductively couple the primary address lines to the address bus and to conductively couple the data lines to the data bus when the cartridge is attached to the video game system;
- a supplemental address line;
- first memory means coupled to the primary address lines and to the supplemental address line and having a plurality of memory locations for providing digital signals corresponding to data stored in selected memory locations in response to the address signals on the primary address lines and the presence of a supplemental address signal on the supplemental address line;
- second memory means coupled to the primary address lines and to the supplemental address line having a plurality of memory locations for providing digital signals corresponding to data stored in selected memory locations in response to the address signals on the primary address and the absence of a supplemental address signal on the supplemental address line; means for coupling the digital signals provided by the first and second memory means to the data lines; and
- decoder means coupled to the primary address lines and to the supplemental address line for providing the supplemental address signal on the supplemental address line in response to detecting a combination of address signals corresponding to a first address on the primary address lines.

4,432,068

METHOD OF CONTROLLING A BUBBLE MEMORY DEVICE

Sakan Takai, and Toshiaki Sukeda, both of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

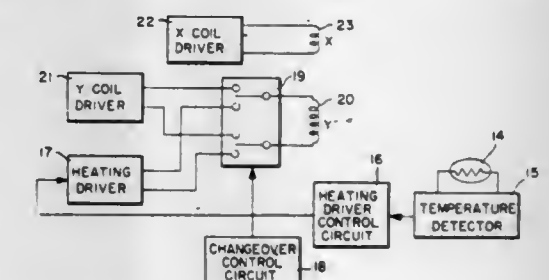
Filed Sep. 2, 1981, Ser. No. 298,620

Claims priority, application Japan, Feb. 3, 1981, 56-14756

Int. Cl.³ G11C 19/08

U.S. Cl. 365-6

11 Claims



1. A method of driving a magnetic bubble memory device having a rotating field generation coil which applies a rotating field to a magnetic pattern formed on a magnetic bubble memory chip and transfers the magnetic bubbles along the magnetic pattern, comprising the step of:
 - (a) heating the magnetic bubble memory chip by applying a heating current to the rotating field generation coil in such a period that the magnetic bubbles are not being transferred.

4,432,069

MULTIPLEXED MAGNETIC BUBBLE DETECTORS

Donald K. Rose, and Peter J. Silverman, both of Palo Alto, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 29, 1981, Ser. No. 229,345

Int. Cl.³ G11C 19/08

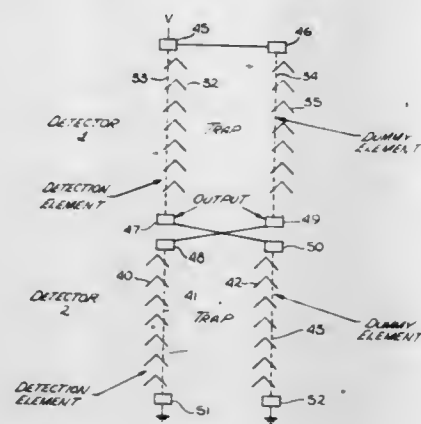
U.S. Cl. 365-8

8 Claims

1. A magnetic bubble detection apparatus comprising:
 - a first magnetic bubble detector including a first propagation element which propagates bubbles from its leading edge

to its trailing edge under the influence of a rotating magnetic field, and a first detection element insulated from said first propagation elements and disposed in the region of said leading edge of said first propagation element so as to sense the presence of a bubble as it is propagated through the region of said leading edge of said first propagation element; and,

a second magnetic bubble detector including a second propagation element which propagates bubbles from its lead-



ing edge to its trailing edge under the influence of said rotating magnetic field, and a second detection element insulated from said second propagation element and disposed in the region of said trailing edge of said second propagation element so as to sense the presence of a bubble as it is propagated through the region of said trailing edge of said second propagation element;

whereby the outputs from said first detection element and second detector element may be multiplexed.

4,432,070

HIGH SPEED PROM DEVICE

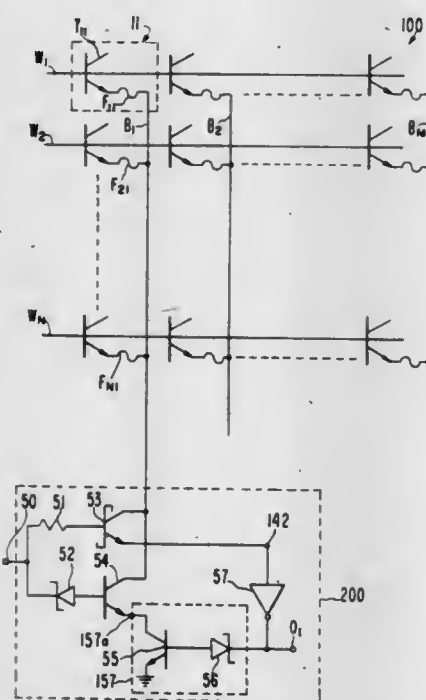
William E. Moss, Sunnyvale, Calif., assignor to Monolithic Memories, Incorporated, Santa Clara, Calif.

Filed Sep. 30, 1981, Ser. No. 307,044

Int. Cl.³ G11C 7/00, 17/00

U.S. Cl. 365—96

8 Claims



1. A semiconductor memory structure comprising:
 - a memory cell capable of being set permanently in a first state or a second state, said cell normally being in said first state and having an output lead;
 - means for determining the state of said memory cell, said means for determining comprising a read transistor having a collector connected to said output lead of said memory

cell, a base for receiving an enable signal, and an emitter serving as an output node and providing a signal indicative of the state of said memory cell; and

programming means comprising a first programming transistor having a collector connected to the output terminal of said memory cell, a base for receiving an enable signal, and an emitter, and a second programming transistor having a collector connected to said emitter of said first transistor, a base for receiving a programming voltage indicating the desired state of said memory cell, and an emitter connected to a reference voltage.

4,432,071

APPARATUS FOR FAST ACCESS TO A SERIES OF STORED IMAGES

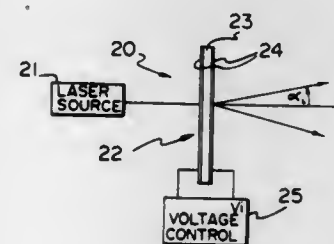
Alexander Szabo, Gloucester, Canada, assignor to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Dec. 4, 1981, Ser. No. 327,067

Int. Cl.³ G11C 11/42, 13/04

U.S. Cl. 365—124

4 Claims



1. Apparatus for providing successively accessible interference patterns comprising:
 - optical memory means having a storage material for storing frequency holes in at least two spatial dimensions and a frequency dimension, the frequency holes forming interference patterns in at least two spatial dimensions wherein the frequency dimension includes a series of different interference patterns, the optical memory means further having transparent electrode means on two surfaces of the storage material for applying an electric field across the storage material;
 - means for directing an optical beam of wavelength λ onto the storage means; and
 - control means for varying the electric field potential across the storage material thereby shifting different interference patterns into resonance with the optical beam to provide an optical output of the stored interference patterns.

4,432,072

NON-VOLATILE DYNAMIC RAM CELL

Hu H. Chao, Yorktown Heights, and Donelli J. DiMaria, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,462

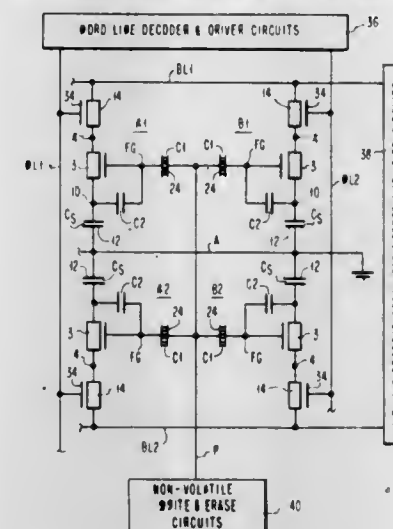
Int. Cl.³ G11C 11/24, 11/34

U.S. Cl. 365—149

31 Claims

1. A memory cell comprising:
 - a storage capacitor having a storage node and a plate,
 - means for applying a constant voltage to said plate,
 - a control electrode,
 - a voltage divider circuit having serially-connected first and second capacitors and a floating gate connected to a common point between said first and second capacitors, said voltage divider circuit being disposed between said control electrode and said storage node,
 - a bit line,
 - a switching device disposed between said storage node and

said bit line, and a floating gate field effect transistor disposed between said storage node and said switching



device and said floating gate field effect transistor being controlled by said floating gate.

4,432,073

SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

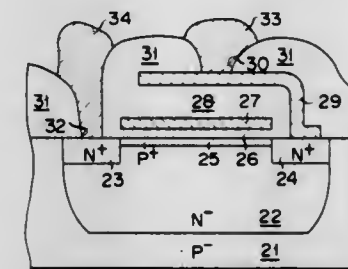
Filed Jan. 23, 1981, Ser. No. 227,918

Claims priority, application Japan, Jan. 25, 1980, 55/7531; Jan. 25, 1980, 55/7533

Int. Cl.³ G11C 11/40

U.S. Cl. 365—182

10 Claims



1. A semiconductor memory device comprising:
 - a semiconductor substrate;
 - a plurality of dynamic gain memory elements formed on the surface of said semiconductor substrate, each of the memory elements having a gate electrode and channel electrodes comprising source and drain electrodes;
 - a plurality of resistive elements each corresponding to a different memory element and each having two ends, one end of each of said resistive elements being connected to one of the channel electrodes of the corresponding memory element;
 - a first column line to which the ends of said resistive elements not connected to the memory element channel electrodes are commonly connected for reading data;
 - a second column line to which the gate electrodes of said memory elements are commonly connected for writing data; and
 - a plurality of row lines for reading and writing data, said row lines being connected to the memory elements channel electrodes not connected to said resistive elements.

4,432,074

PROCESS FOR THE OPERATION OF A CID ARRANGEMENT

Heiner Herbst, Haar, and Rudolf Koch, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

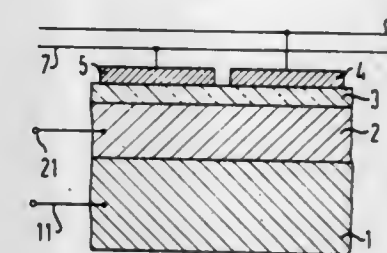
Continuation of Ser. No. 834,426, Sep. 19, 1977. This application Nov. 1, 1978, Ser. No. 956,604

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1976, 2642145

Int. Cl.³ G11C 11/34; H01L 29/78

U.S. Cl. 365—183

6 Claims



1. A method for the operation of a CID (Charge Injection Device) arrangement for storing and non-destructive read-out of analog signals, comprising the steps of:
 - providing a substrate which comprises doped semiconductor material of one conductivity type with a substrate terminal, a doped layer of the opposite conductivity type arranged on a surface of the substrate, said doped layer having a terminal contact, at least first and second insulating layer capacitors on the doped layer arranged in matrix form in rows and columns, said substrate extending below all of the first and second insulating layer capacitors, a gate electrode of the first capacitor being connected column-wise to a column line, said at least one second insulating layer capacitor being arranged directly beside the first insulating layer capacitor, the gate electrode of said second insulating layer capacitor being connected row-wise to a row line;
 - connecting a substrate voltage above a reference voltage to the substrate terminal of the substrate;
 - connecting a first voltage relative to the substrate voltage to at least one column line, a depletion boundary layer being produced in the doped layer beneath the gate electrode of the first capacitor connected thereto, said first voltage on the column line being selected to be such that the depletion boundary layer extends to the substrate;
 - placing an analog signal voltage to be read in on the column line and which is no higher than was the first voltage;
 - connecting a second voltage which is greater than the analog signal voltage currently prevailing on the column line to the row line, a depletion boundary layer being produced in the doped layer beneath the gate electrode of the second insulating capacitor and above the substrate so that a signal charge stored beneath the first capacitor gate electrode flows beneath the second capacitor gate electrode; and
 - reading out the stored signal charge beneath the second capacitor gate electrode to beneath the first capacitor gate electrode by connecting the row line to the reference voltage and electrically disconnecting the first capacitor gate electrode from any predetermined potential, a read-out analog signal being non-destructively produced on the column line and the disconnected first capacitor gate electrode.

4,432,075

ELECTRICALLY PROGRAMMABLE NON-VOLATILE MEMORY

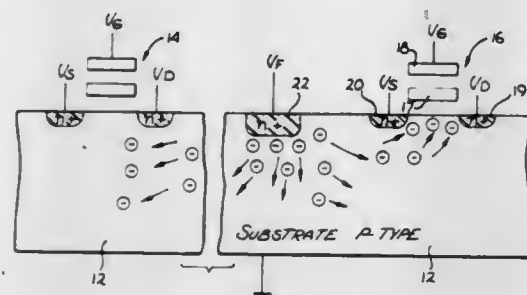
Boaz Eitan, Sunnyvale, Calif., assignor to Hebrew University of Jerusalem, Jerusalem, Israel

Filed Dec. 4, 1981, Ser. No. 327,474

Int. Cl.³ G11C 11/40

U.S. Cl. 365—185

29 Claims



1. An electrically programmable memory disposed on a substrate including:

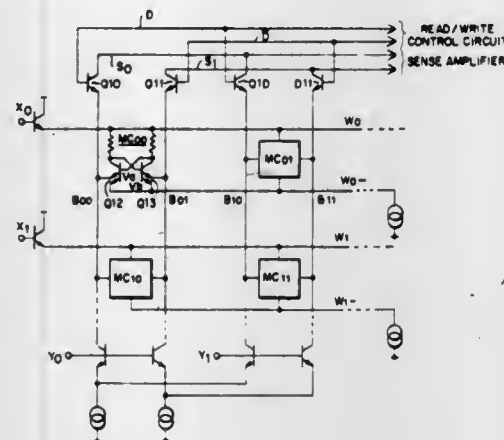
a plurality of electrically programmable memory cells formed on the surface of said substrate each having at least one region disposed in said substrate, a charge storing region and a control gate;

charge generation means formed on said surface of said substrate for causing a charge imbalance in said substrate such that charge is present for charging any one of said plurality of said cells; and,

electrical means coupled to said cells for selectively applying potentials to said cells such that said charge is caused to accelerate towards at least one of said charge storing regions and to become trapped therein,

whereby a plurality of cells may be programmed from a single source of charge formed on said substrate.

mode, the voltage of the respective bit lines to a voltage higher than the voltage of the respective bit lines during



positioned on a common axis having large diameter open ends facing each other;
 an intervening median ring assembly comprising means for closing said frustum-shaped radiating shells and containing flexible diaphragms;
 an internal acoustic drive mechanism fastened to and located between the frustum-shaped radiating shells, said acoustic driver mechanism comprises a uniform cross-sectioned elliptical ring shaped active first driver element and an active second driver element spanning the inside distance between and attached to the interior of said elliptical ring shaped active first driver element on the major axis of said first driver element, said first driver element having means for expanding said first driver and said second driver element having means for contracting said second driver and vice-versa upon receipt of the same electrical signal; an air-filled elastomer-walled tube routed within said radiator, said air-filled tube maintained at the same pressure as the surrounding medium; and oil filling said radiator.

4,432,081

QUICK DATE SETTING BY PUSH-BUTTON IN A WATCH
 Herbert Schwartz, Wurmberg, Fed. Rep. of Germany, and Jean P. Skwarek, Besancon, France, assignors to Timex Corporation, Waterbury, Conn.

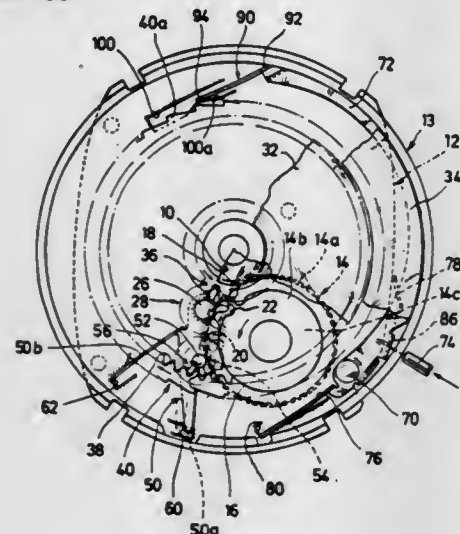
Filed Nov. 20, 1981, Ser. No. 323,204

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3032871; Dec. 11, 1980, 3046569

Int. Cl.³ G04B 27/00

U.S. Cl. 368—35

13 Claims



1. An improvement in a date indexing device for an analog watch with a rotatable date ring, which has at least one toothed rim for the purpose of its indexing, with a driving gear train between the motor of the watch and the date ring as well as a setting member for the manual indexing of the date ring, wherein the improvement comprises a setting member designed as a push button operating an indexing pawl for indexing the date ring and the driving gear train has a disengageable gear element, said disengageable gear element comprising a self-blocking, toothed indexing gear element adapted to be disengaged only when the push button is actuated.

4,432,082

OPTICAL MEMORY SYSTEM HAVING A LONG SEEK CAPABILITY

Der-Chang Hsieh, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1982, Ser. No. 349,468

Int. Cl.³ G11B 7/00

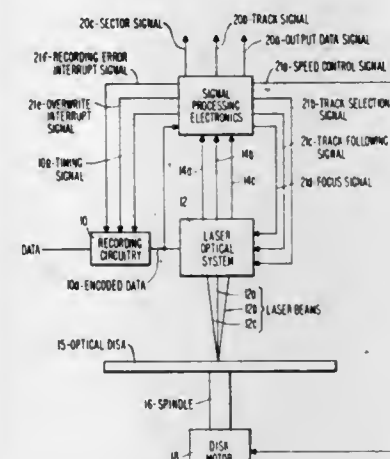
U.S. Cl. 369—32

21 Claims

11. In a high density data storage system including a recording medium having a plurality of spaced tracks and providing

a radiation beam for reading data stored in a track as said beam follows said track, an improved method of providing for movement of said beam over a relatively large number of tracks using a long seek positioning means, said method comprising the steps of:

moving said beam in a controlled track following relationship with respect to a track on said medium;
 disabling said controlled track following relationship when said beam is to be moved to a different track;
 generating a feedback signal representing the difference between the current and desired positions of said long seek positioning means;



moving said long seek positioning means in response to the generated feedback signal;
 detecting the arrival of said long seek positioning means at its final position in response to both the velocity of movement of said beam and the difference between current and desired positions being below predetermined maximum values; and
 enabling said controlled track following relationship after detecting arrival of said long seek positioning means at its final position.

4,432,083

OPTICAL MEMORY SYSTEM HAVING TRACK FOLLOWING

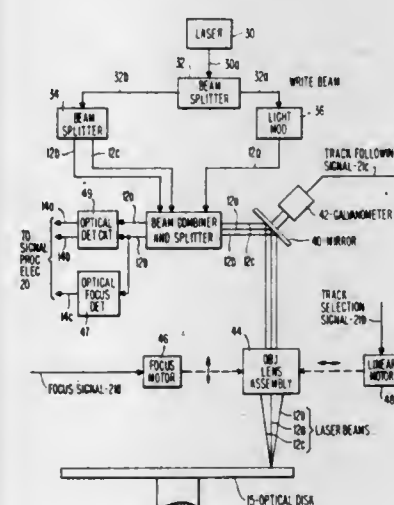
Der-Chang Hsieh, Thousand Oaks, and Edward V. LaBudde, Newbury Park, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1982, Ser. No. 349,536

Int. Cl.³ G11B 7/00

U.S. Cl. 369—44

12 Claims



1. In a high density data storage system including a recording medium having at least one track, the combination comprising:
 means including a radiation beam for reading data recorded in said track;

means providing for relative movement of said radiation beam along said track;
 means for deriving a track following signal indicative of the deviation of said radiation beam from said track;
 first position control means for providing movement of said radiation beam relative to said track over a relatively small distance, said first position control means being responsive to said track following signal for moving said radiation beam to reduce said deviation so that said radiation beam follows said track;
 detecting means for detecting the movement of said first position control means; and
 second position control means operating concurrently with said first position control means while said first position control means is operating to cause said radiation beam to follow said track, said second position control means being responsive to said detecting means for providing movement of said first position control means so as to reduce the movement required thereby for maintaining said radiation beam following said track.

4,432,084

APPARATUS FOR REPRODUCING SIGNALS FROM A DISC

Akira Fukumitsu, Fukaya, and Koichi Kobayashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

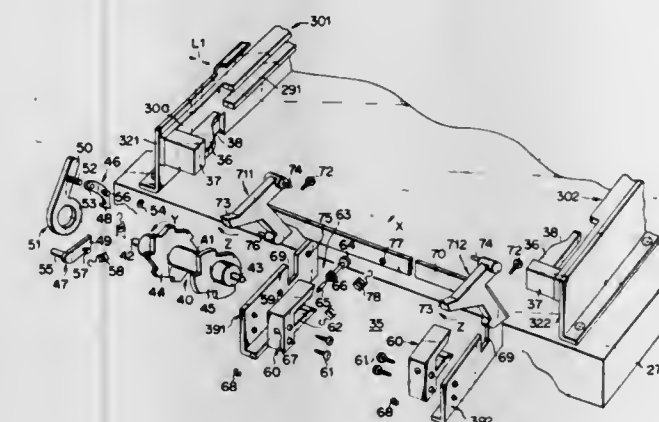
Filed Sep. 28, 1981, Ser. No. 306,348

Claims priority, application Japan, Oct. 3, 1980, 55-137572

Int. Cl.³ G11B 17/04

U.S. Cl. 369—77.2

6 Claims



1. An apparatus for reproducing signals from an information carrying disc, in which the disc, surrounded by a holding frame and stored in a casing, is inserted into the apparatus, said holding frame having locking means for being locked with said casing when the holding frame is inserted in the casing, and a bank which is formed at one side thereof along a direction perpendicular to direction of inserting the casing into said apparatus, comprising:

- (A) a housing; and
 (B) holding means for holding said holding frame when said casing is inserted in the housing and whereby, after the casing is withdrawn from the housing, the disc remains in said housing, and for releasing said holding frame when the empty casing is inserted in said housing and whereby, after the casing is withdrawn therefrom, the disc is removed from said housing, said holding means including:
 (a) a member for releasing locking engagement between said casing and said holding frame by said locking means when said casing is inserted in said housing, and for causing locking engagement between said casing and said holding frame by said locking means when the empty casing is inserted in said housing;
 (b) a gear assembly including a ratchet gear which has gear teeth numbering "2n" on the outer circumferences thereof and which is rotatable in one direction around a predetermined axis parallel to the casing, and a cam

gear which has gear teeth numbering "n" on the outer circumference thereof, the outer surface of said gear teeth being defined as first cam surfaces, said cam gear being ganged to rotate with said ratchet gear, a bottom land of said cam gear being defined as a second cam surface;

- (c) a moving mechanism which is swingable while being engaged with said casing inserted in said housing and which pivots said ratchet gear by an angle corresponding to one tooth along said one direction, said moving mechanism including:
 (c1) a lever which is pivotally mounted to said ratchet gear to be rotatable around said predetermined axis and which is engageable with said casing which is inserted in the housing to swing within a predetermined range in correspondence with one insertion and withdrawal of said casing,
 (c2) a latch, one end of which is pivotally supported by said lever and the other end of which is engaged with one tooth of said ratchet gear, so that one tooth of said ratchet gear may be pivoted in correspondence with the reciprocal pivotal movement of said lever, and
 (c3) a stopper, one end of which is pivotally supported by said housing and the other end of which is engaged with the other tooth of said ratchet gear, so that rotation of said ratchet gear in the opposite direction may be prevented; and
 (d) a locking member having a fulcrum, a point of action and a point of reaction, said fulcrum providing pivotal support at said housing, said point of action being in contact with the first or second cam surface of said cam gear, said point of reaction being engaged with the bank of said holding frame to hold said holding frame to said housing when said point of action is in contact with the first cam surface, and said point of reaction not being engaged with said holding frame when said point of action is in contact with the second cam surface.

4,432,085

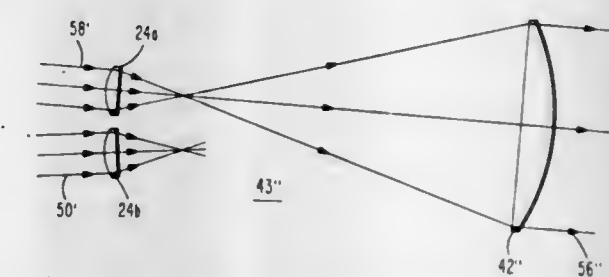
DUAL INPUT TELESCOPE FOR MULTI-BEAM OPTICAL RECORD AND PLAYBACK APPARATUS
 Charles W. Reno, Cherry Hill, and Genevieve L. Allee, West Collingswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,659

Int. Cl.³ G11B 3/74, 7/00

U.S. Cl. 369—93

11 Claims



1. An optical information recording and retrieval system for use in recording and retrieving data on a surface of a record medium, said system comprising:

- a light source for providing a beam of light;
 means for splitting said light beam into record and playback light beams defining first and second light paths respectively;
 means for combining said record and playback light beams such that said record and playback light beams form a third light path optically coupling said combining means and said surface of said record medium;
 a beam expansion telescope positioned in said third light path, said beam expansion telescope having first and second input lenses, said first and second input lenses being

positioned in said third light beam path such that the longitudinal axes of said record and playback light beams are substantially coaxial with the optical axes of said first and second input lenses respectively and the optical axes of said input lenses are not coaxial.

4,432,086

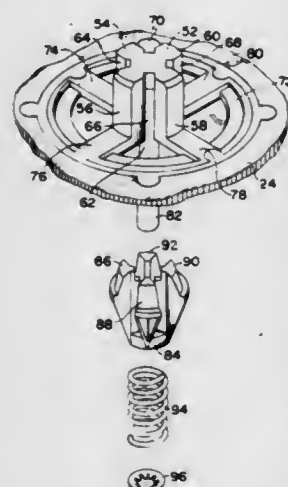
TURNTABLE APPARATUS FOR VIDEO DISC PLAYER
Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,372

Int. Cl.³ G11B 17/04, 25/04, 23/02

U.S. Cl. 369-269

6 Claims



1. Apparatus for centering a centrally-apertured disc record on a rotatable turntable comprising:

- (A) a stationary post;
- (B) a bearing member having at least two radially extending slots communicating with the peripheral surfaces thereof; said bearing member being rotatably mounted on said post; said turntable being suspended from said bearing member for rotation therewith;
- (C) a segmented spindle having at least two radially extending fingers; said segmented spindle being slidably disposed about said post such that said fingers extend outwardly from said slots in said bearing member; and
- (D) means for biasing said spindle away from said turntable to effect engagement between the peripheral surfaces of said protruding fingers and the inner walls of the record center hole as a record is passed along said spindle for placement on said turntable.

4,432,087

DEMULTIPLEXER CIRCUIT

William M. Hubbard, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 16, 1982, Ser. No. 408,227

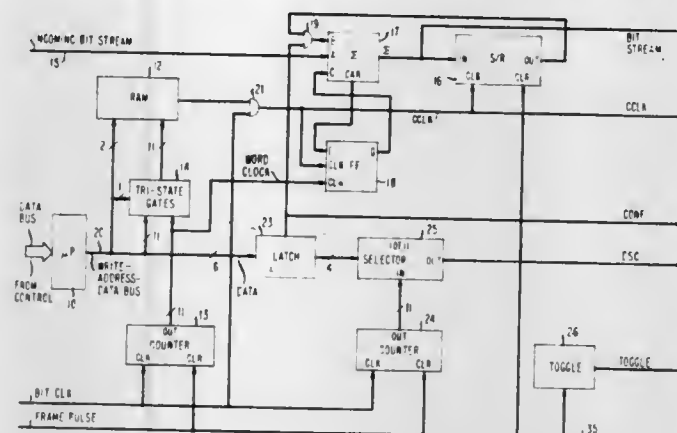
Int. Cl.³ H04J 3/02

U.S. Cl. 370-55

5 Claims

1. Demultiplexer apparatus for a time division multiplexed digital bit stream which includes n-bit PCM encoded speech signal(s) and/or one or more data signals at different data rates comprising memory means (12) having a storage capacity at least equal to the number of bits in a frame of said multiplexed digital bit stream, means (10, 14) for storing in said memory means information as to the bit or bits to be demultiplexed out of said multiplexed digital bit stream, counter means (13) operating in bit synchronism with said digital bit stream and serving to access the memory means to provide output signals indicative of the bit or bits carrying information for the demultiplexer subscriber station, means (32, 34, 42, 44) using said output signals to read the bit or bits in said digital bit stream intended for said station into another memory means (31, 41), and means (33, 34, 43, 44) for reading out the bit or bits stored

in the latter memory means at a steady rate, each data signal being read out at a different but steady rate irrespective of the



number of data bits in a frame or the position thereof in a frame.

4,432,088

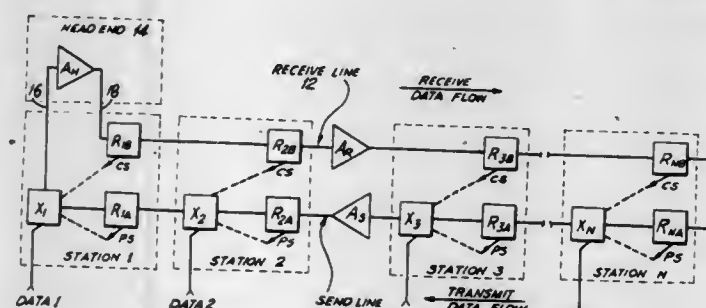
CARRIER SENSE DATA HIGHWAY SYSTEM
Robert Frankel, Centereach, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 258,972

Int. Cl.³ H04J 6/00

U.S. Cl. 370-85

14 Claims



1. A data transmission system comprising a transmission medium of a predetermined overall length for propagating information along a desired path, said transmission medium having a certain propagation delay time corresponding to said overall length; and a number of data stations successively coupled to said transmission medium over its length for communicating with one another, any given one of said data stations including:

- (a) transmitting means for transmitting signals into said transmission medium wherein each of said signals begins with a carrier of a duration of at least said certain propagation delay time and said carrier is followed by a data message which corresponds to data information;
- (b) means for supplying data information to said transmitting means to enable a signal including said carrier and said data message to originate from said given data station; and
- (c) receiving means coupled to said transmitting means for receiving other signals which originate from other ones of said data stations located in a given direction along said transmission medium relative to said given data station and for inhibiting said transmitting means from originating a signal from said given data station in response to reception of a carrier of any of said other signals, said receiving means being arranged to provide said other signals to said transmitting means for transmission to remaining ones of said data stations located in the opposite direction along said transmission medium relative to said given data station, so that said given data station can originate and complete a data message which can be validly received by other selected ones of said data stations after said carrier

originates continuously over said certain propagation delay time from said given data station.

4,432,089

DIGITAL LOOP TRANSCEIVER FOR INTERFACING A DIGITAL PABX TO A DIGITAL SUBSCRIBER SET VIA A SUBSCRIBER LINE

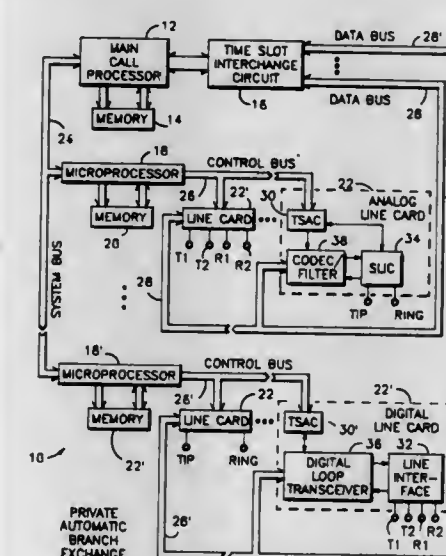
Henry Wurzburg, Round Rock, and Stephen H. Kelley, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1981, Ser. No. 334,412

Int. Cl.³ H04J 3/00; H04M 9/06

U.S. Cl. 370-110.1

18 Claims



1. A digital loop transceiver circuit for providing duplex communication of digital data words on first and second channels and a signalling bit associated with each of said first and second channels, between a duplex subscriber line and a digital I/O port, the transceiver circuit comprising:

- receiver means for successively receiving a first and a second of said digital data words and of said signalling bits in synchronization with a receive data clock, said first digital data word and the respective signalling bit being received from said digital I/O port in response to a first channel receive enable signal, and said second digital data word and the respective signalling bit being received from said digital I/O port in response to a second channel receive enable signal;
- modulation means for serially modulating said first and second digital data words and the respective signalling bits for transmission via a first portion of said subscriber line;
- sync detection means for detecting a modulated signal on a second portion of said subscriber line, and providing a valid sync signal in response to said detection;
- demodulation means for serially demodulating, in response to said valid sync signal, a third and a fourth of said digital data words and of said signalling bits received via said second portion of said subscriber line; and
- transmitter means for transmitting said third and fourth digital data words and the respective signalling bits in synchronization with a transmit data clock, said third digital data word being transmitted to said digital I/O port in response to a first channel transmit enable signal, and said fourth digital data word being transmitted to said digital data port in response to a second channel transmit enable signal.

4,432,090

AUTOMATIC ERROR CORRECTION SYSTEM FOR TELEPRINTER TRAFFIC WITH BUNCHED REPETITION

Herman da Silva, Voorburg, Netherlands, assignor to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegraphie en Telefonie), The Hague, Netherlands

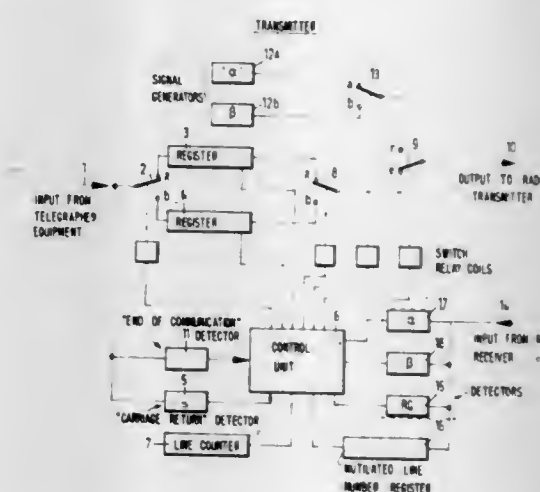
Filed Jun. 15, 1981, Ser. No. 273,501

Claims priority, application Netherlands, Jun. 23, 1980, 8003622

Int. Cl.³ G06F 11/00; G08C 25/00

U.S. Cl. 371-32

4 Claims



1. In a radio teleprinter message communication system having remote transmitting and receiving stations, each station having a teleprinter, a transmitter-receiver, and an automatic error detection and correction device, the improvement comprising means to reduce the time spent in repetition of detected erroneous signals for systems having relatively long propagation times between stations, said means comprising:

- (A) means at each transmitting station for counting each line of a message transmitted from a teleprinter,
- (B) means at each transmitting station for comparing the current line count in said counting means with a predetermined line count limit corresponding to a page of lines, and for generating a page limit signal when the current line count equals the predetermined line count limit,
- (C) means at each transmitting station for assigning and transmitting identifying numbers associated with each line of a teleprinter message,
- (D) means at each transmitting station for storing at least twice the number of lines represented by said predetermined line count limit and their assigned numbers,
- (E) means at each receiving station for checking each said line received for errors,
- (F) means at each receiving station for storing the numbers assigned to said lines that were received with errors,
- (G) means at each receiving station for requesting repetition of just those lines that were received with errors by transmitting their assigned and stored numbers to that transmitting station that sent said erroneous lines,
- (H) means at that said transmitting station for interrupting the transmission of the message being transmitted upon the detection of a page limit signal and for repeating said erroneous lines requested to be repeated and which have not been previously repeated, upon the completion of which the counting means at that said transmitting station is reset and the transmission of the remainder of the message being transmitted is resumed, and
- (I) means at that said transmitting station for repeating said erroneous lines requested to be repeated and which have not been previously repeated upon the completion of the message being transmitted, upon the completion of which the counting means at that said transmitting station is reset in preparation for the start of the transmission of the next message.

4,432,091

SEMICONDUCTOR LASER DEVICE

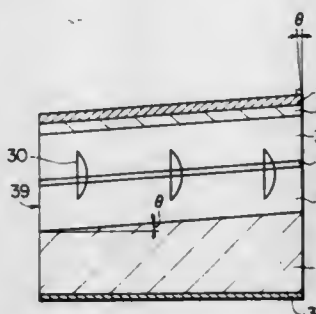
Takao Karoda, Kokubunji; Takashi Kajimura, Hachioji; Yasutoshi Kashiwada, Hinodemachi; Naoki Chinone, Hachioji; Kunio Aiki, Takasaki, and Jun-ichi Umeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 25, 1982, Ser. No. 342,357

Claims priority, application Japan, Feb. 6, 1981, 56-15743

Int. Cl.³ H01S 3/19

U.S. Cl. 372-45

3 Claims



1. In a semiconductor laser device having at least a first semiconductor layer, second and third semiconductor layers which are formed in a manner to sandwich the first semiconductor layer and which have a wider band gap and a lower refractive index than those of the first semiconductor layer, an optical resonator and carrier injection means; a semiconductor laser device characterized in that at least said first semiconductor layer has an angle of inclination relative to an axis which is perpendicular to optically flat faces constituting said optical resonator.

4,432,092

SEMICONDUCTOR LASER

Iwao Teramoto, Ibaraki; Takashi Sugino, Takatsuki, and Kunio Itoh, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

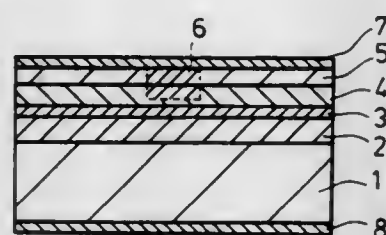
Filed Jun. 4, 1981, Ser. No. 270,351

Claims priority, application Japan, Jun. 17, 1980, 55-82642

Int. Cl.³ H01S 3/19

U.S. Cl. 372-46

4 Claims



1. In a semiconductor laser the combination comprising:
a semiconductor substrate having thereon semiconductor epitaxial layers including an active layer,
a current limiting layer overriding the uppermost layer of said semiconductor epitaxial layers and having an opposite conductivity to that of said uppermost layer,
a stripe-shaped impurity diffused region having an impurity of opposite type to that of said current limiting layer, wherein
said current limiting layer is terrace-shaped having a thinner part and a thicker part with a step inbetween, and
said stripe-shaped impurity diffused region is disposed substantially over said step, thereby making said diffused region have a deeper part of a narrower width than that of said stripe-shaped impurity diffused region and a shallower part, a diffusion front of said deeper part remaining in a layer neighboring on said active layer.

4,432,093

MELTING DEVICE BY DIRECT INDUCTION IN A COLD CAGE WITH SUPPLEMENTARY ELECTROMAGNETIC CONFINEMENT OF THE LOAD

Jean Reboux, Massy, France, assignor to SAPHYMO-STEL-Ste. d'Applications de la Physique Moderne et d'Electronique, Massy, France

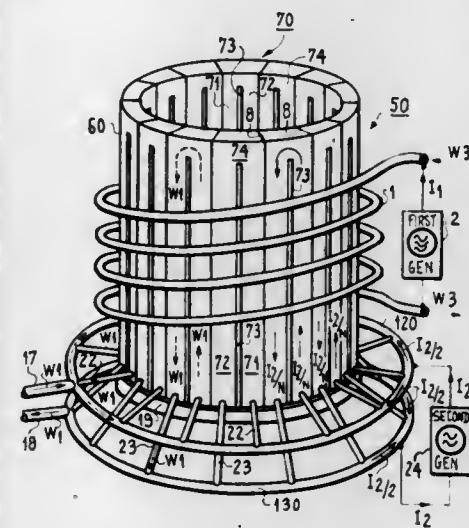
Filed Dec. 21, 1981, Ser. No. 333,165

Claims priority, application France, Dec. 23, 1980, 80 27320

Int. Cl.³ H05B 5/16, 11/00

U.S. Cl. 373-157

10 Claims



1. Device for direct induction melting of a charge, including:
a cold shroud for holding said charge, said shroud having a cylindrical sidewall and a vertical axis of symmetry, said sidewall including a plurality of electrically conducting elongated tubular sections assembled side by side, oriented parallel to said axis and electrically insulated from each other, a solenoid-shaped inductor coaxially surrounding said sidewall, a first alternating current power generator and first means for connecting said first generator to said inductor for inducing heating current within the charge and for exerting first forces of confinement acting on the periphery of the charge portion located within the field of the inductor, means for electrically interconnecting said tubular sections at their respective ends, two by two, for forming at least one further confinement inductor, a second alternating current power generator and second means for connecting said second generator to said at least one further inductor, said means for interconnecting being so arranged that alternating current flows through all conducting sections of the sidewall in alternately opposite directions for generating a further electromagnetic force of confinement, keeping the conducting portions of the charge away from said sidewall, which thereby simultaneously carries out both cooling and confinement functions.

4,432,094

METHOD FOR RECOGNIZING DIGITAL INFORMATION TRANSMITTED IN A MOBILE RADIO COMMUNICATION SYSTEM

Probodh Das Gupta, Germaring, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,867

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036614

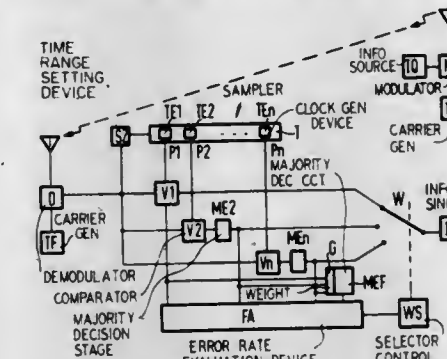
Int. Cl.³ H04B 17/00

U.S. Cl. 375-94

4 Claims

1. A method for recognizing digital information of a digital information transmission, comprising the steps of:
first sampling, at a whole multiple of the information clock frequency, a pulse in a respective area of the pulse representing an information element in which the pulse assumes its suspected, quasi-stationary state;
then sampling the pulse of the information element at least

one more time at a further multiple of the information clock frequency a corresponding number of sampling times within a further extended sampling range of the pulse representing the information element; and



performing a majority decision with the sampling results to determine the sampling mode which exhibits the smallest perceived information error rate.

4,432,095

RADIOGRAPHIC INSTALLATION COMPRISING A FILM SUPPORT TRANSPORTABLE FROM A READINESS POSITION INTO AN EXPOSURE POSITION

Dieter Adelmeyer, Erlangen; Hartmut Duschka, Uttenreuth, and Helmut Schott, Fuerth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

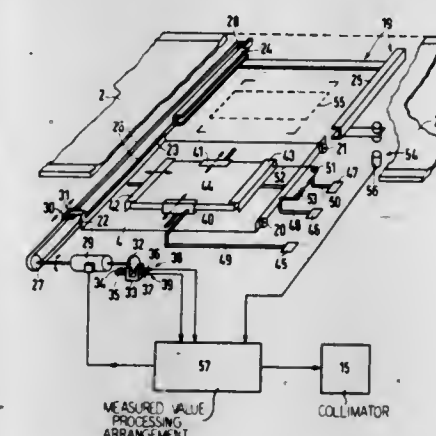
Filed Sep. 14, 1981, Ser. No. 302,231

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035448

Int. Cl.³ G03B 41/16

U.S. Cl. 378-181

12 Claims



1. A radiographic installation comprising a film support, guide means for said film support for guiding movement thereof in a displacement direction from a readiness position into at least one exposure position and back again, said film support having displaceable clamping jaws for the mounting of x-ray film cassettes of varying format, and respective actuator means and actuator proximity sensing means for cooperation to generate position indicating signals for use in positioning of an x-ray film cassette by means of the film support, the film support and the clamping jaws being coupled with the respective actuator means such that the respective actuator means associated with the clamping jaws are adjustable in the displacement direction of the film support in dependence upon the clamping position of each clamping jaw pair, the actuator proximity sensing means being connected with the guide means for the film support, and an actual value generating means responsive to movement of the film support in the displacement direction and cooperating with said actuator proximity sensing means for indicating when an x-ray film cassette clamped by said clamping jaws has reached a desired exposure position.

4,432,096

ARRANGEMENT FOR RECOGNIZING SOUNDS

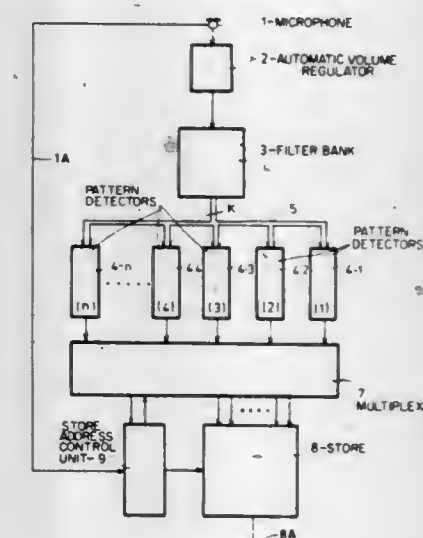
Ernst Bunge, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 14, 1981, Ser. No. 301,869

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536640

Int. Cl.³ G10L 1/00

U.S. Cl. 381-43

5 Claims



1. A preprocessor for sound signals for use in a sound recognition system comprising:

- a filter bank having a first input for receiving an electrical input signal which represents a sound pattern, and a plurality of first outputs for presenting a spectral component signal on each first output as filtered out from said electrical input signals and integrated over predetermined fixed time intervals;
- a plurality of sound vector detectors each having a plurality of window detectors which are provided with second inputs selectively connected to said first outputs for receiving at least one spectral component signal in each of two threshold detectors for comparison thereof with respective predetermined lower and upper threshold values, each window detector having a second output for outputting a binary signal indicating alternatively a "between-thresholds" or an "out-of-thresholds" situation, wherein each sound vector detector furthermore has a combinatorial logic detector for detecting coinciding "between bounds" signals outputted by all its proper window detectors, and thereupon producing a sound vector identifier signal on a third output;
- storage means having a detector for detecting occurrence of any sound vector identifier signal and thereupon generating a storage location access control signal for storing in a predetermined succession of storage locations sound vector representation signals successively received on a data input connected to all said third outputs;
- said storage means including a random access memory and an address generator therefor, the output of said detector being coupled to an incrementing input of said address generator, said storage means furthermore having a data encoder for translating any sound vector identifier signal to a corresponding binary code for storage; and
- each of said pattern detectors having an address associated therewith, said storage means further including a store for storing said addresses of said pattern detectors which produce an output signal at a predetermined time.

4,432,097

TONE CONTROL CIRCUIT

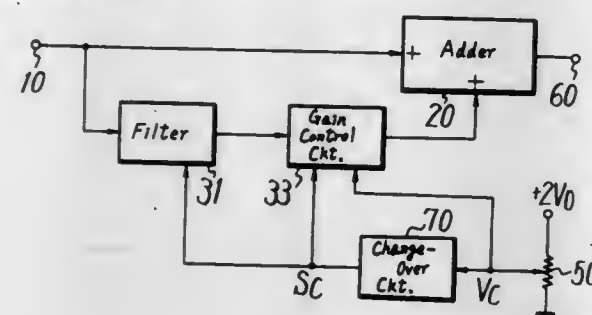
Takashi Okada, and Hajime Nakajima, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan
 PCT No. PCT/JP80/00328, § 371 Date Aug. 24, 1981, § 102(e)
 Date Aug. 24, 1981, PCT Pub. No. WO81/01922, PCT Pub.
 Date Jul. 9, 1981

PCT Filed Dec. 25, 1980, Ser. No. 296,411

Claims priority, application Japan, Dec. 29, 1979, 54-170791

Int. Cl.³ H03G 5/14

U.S. Cl. 381-98



1. A tone control circuit having a first signal path passing an input signal directly and a second signal path having at least a filter and a gain control circuit, comprising:

- (a) calculating means for adding a signal from said first signal path to a signal from said second signal path to form an output signal;
- (b) control means for providing a control voltage for said gain control circuit; and
- (c) switching means for determining a frequency mode of said output signal from said control voltage and changing

the frequency characteristic of said second signal path in accordance with said frequency mode.

4,432,098

APPARATUS AND METHOD FOR TRANSFER OF INFORMATION BY MEANS OF A CURL-FREE MAGNETIC VECTOR POTENTIAL FIELD

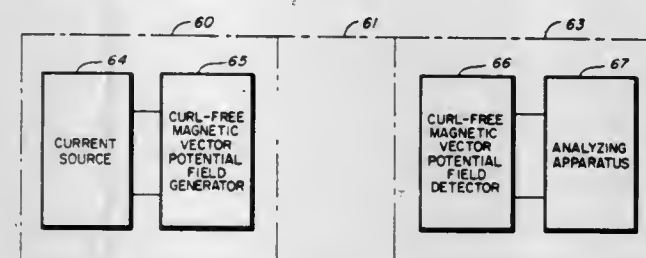
Raymond C. Gelinas, Concord, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1980, Ser. No. 198,324

Int. Cl.³ H04B 5/00

U.S. Cl. 455-41

8 Claims



1. A system for transmission of information comprising:
- field generating means responsive to an input signal modulated with said information for generating a magnetic vector potential radiation field having a curl-free component modulated with said information; and
 - detector means for detecting said curl-free component of said magnetic vector potential radiation field, said detector producing a signal containing said information.

DESIGN PATENTS

GRANTED FEB. 14, 1984

ERRATA

For
CLASS

D14-053

See
PATENT NO.

272,579

DESIGNS

FEBRUARY 14, 1984

272,579

TELEPHONE

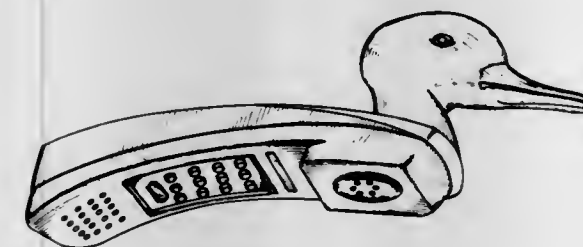
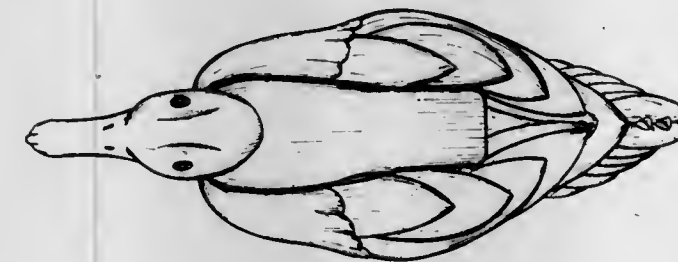
Robert G. Snyder, Verona, Pa., assignor to Specialty Phones, Barbara A. Petroff, 1858 12th Ave., Greeley, Colo. 80631 Inc., Pittsburgh, Pa.

Filed Feb. 13, 1981, Ser. No. 234,717

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



272,581

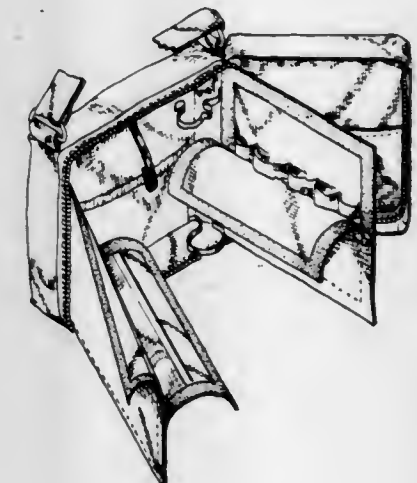
MEDICAL SUPPLY PACK

Filed Oct. 20, 1981, Ser. No. 313,315

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-71



272,582

DENTAL KIT CONTAINER

Charles G. Shepherd, 1008 Westdale Rd., Oakville, Ontario, Canada (L6L 5A2)

Filed Dec. 24, 1981, Ser. No. 334,211

Claims priority, application Canada, Jun. 26, 1981, 26-06-81-4

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-18



272,580

SHOE SOLE

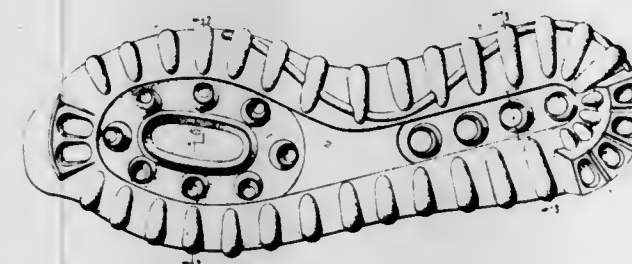
Jerry D. Stubblefield, 11723 NW. Demacus, Portland, Oreg. 97229

Filed Mar. 20, 1981, Ser. No. 245,740

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-320



272,583
TOOTHBRUSH

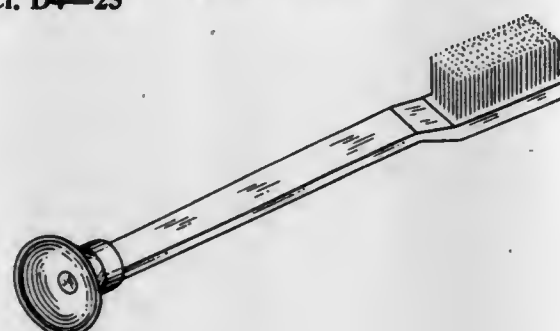
Melvyn D. McAlpine, 3 Joubert Rd., Moret, Randburg, Transvaal, South Africa

Filed Nov. 30, 1979, Ser. No. 98,901

Claims priority, application South Africa, Jun. 5, 1979, 79/0438

Term of patent 14 years
Int. Cl. D4-02

U.S. Cl. D4-25



272,584
CASSETTE TAPE HOLDER

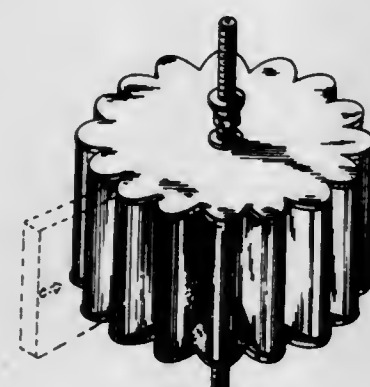
James W. Barber, 301 E. Roy #25, Seattle, Wash. 98102

Filed Feb. 4, 1980, Ser. No. 118,645

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-25



272,585
CHAIR

Thomas E. Tolleson, Peach Tree City, Ga., assignor to Haskell of Pittsburgh, Inc., Verona, Pa.

Filed Jan. 18, 1982, Ser. No. 340,502

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-31



272,586
CHAISE

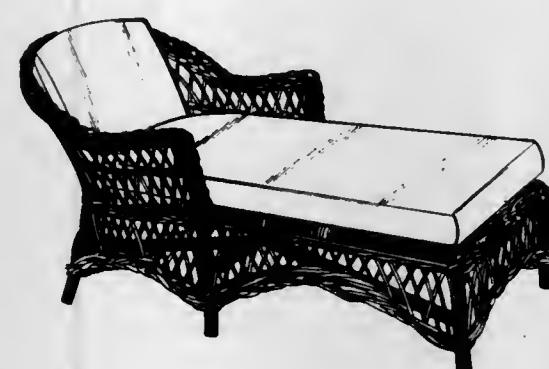
Mike T. Claman, 475 Park Ave., New York, N.Y. 10022

Filed Aug. 10, 1981, Ser. No. 291,495

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-57



272,587
STACKABLE CHAIR

Eberhard Pamberg, Bergstrasse 1, 473 Ahlen, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,873

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 156

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-78



272,588
SOAP DISH FIXTURE

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510,

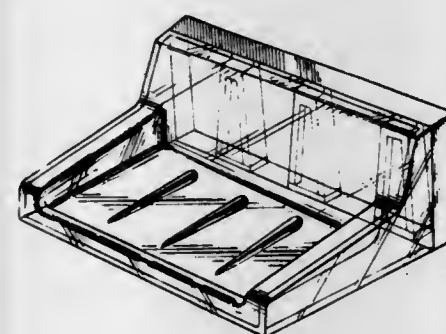
and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,675

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D6-90



272,589
STANDING HOLDER FOR TUMBLER AND TOOTHBRUSHES

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510,

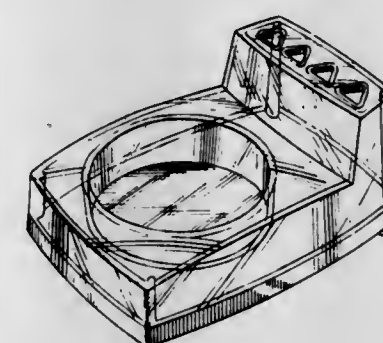
and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,838

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-92



272,590
TOWEL RING FIXTURE

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510,

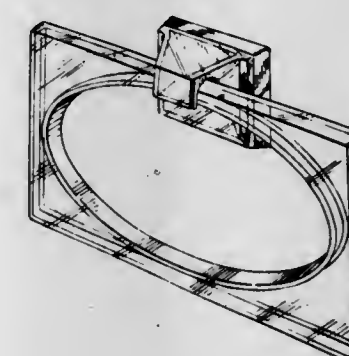
and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,674

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-99



272,591
BAR SUPPORT BRACKET

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510,

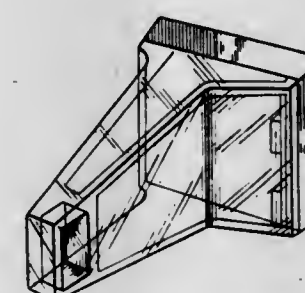
and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,680

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-103



272,592
ADJUSTABLE RECORD HOLDER

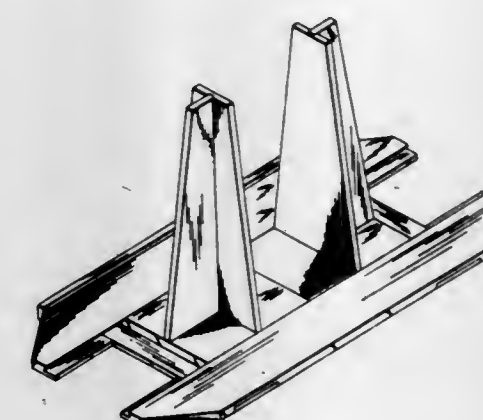
Matthew B. Woods, 6088 Main St., Trumbull, Conn. 06611

Filed Jun. 26, 1981, Ser. No. 277,635

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-185



272,593
ROCKER GLIDE OR SIMILAR ARTICLE

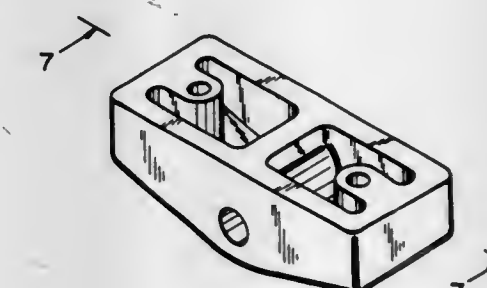
George E. Fort, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,697

Term of patent 14 years

Int. Cl. D6-99

U.S. Cl. D6-191



272,594
COMBINED GARMENT HANGER AND RETAINER FOR SKIRTS, SLACKS OR TROUSERS

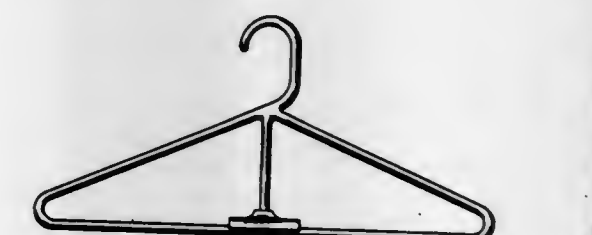
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205

Filed Sep. 30, 1982, Ser. No. 430,264

Term of patent 14 years

Int. Cl. D6-08

U.S. Cl. D6-256



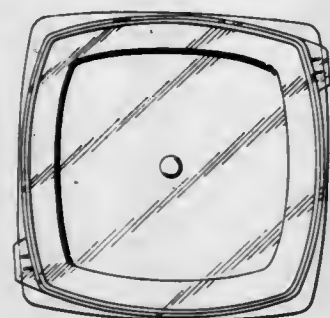
272,595

COVERED FOOD STORAGE CONTAINER

David O. Chase, Skaneateles, N.Y., and Paul H. Pfuhl, Wrentham, Mass., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 214,600, Dec. 9, 1980, Pat. No. Des. 267,703. This application Apr. 22, 1981, Ser. No. 256,432
Term of patent 14 years
Int. Cl. D07-01

U.S. Cl. D7-16



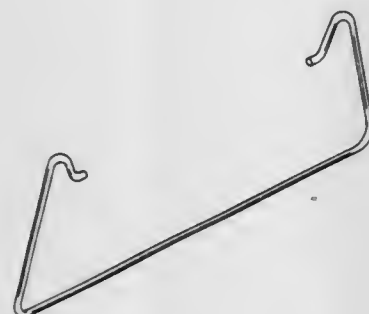
272,596

TIRE CHAIN APPLICATOR

Kant F. Leach, 4395 S. Galapago St., Englewood, Colo. 80110
Filed Mar. 5, 1981, Ser. No. 240,764

Term of patent 14 years
Int. Cl. D8-05

U.S. Cl. D8-14

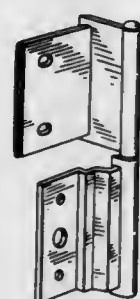
272,597
HINGE

Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada (M3H 3T8), and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada (L4C 5J4)

Filed Apr. 7, 1981, Ser. No. 251,992

Term of patent 14 years
Int. Cl. D8-06

U.S. Cl. D8-329



272,598

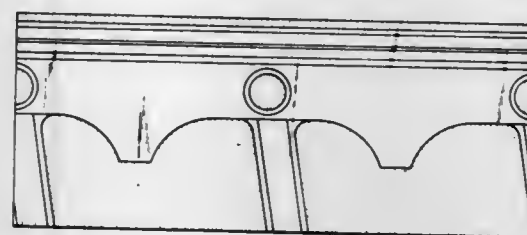
WRAPPER FOR A CAN OR THE LIKE

Angelos Zaloumis, 4801 Fox Chapel Rd., Fairfax, Va. 22030

Filed Jan. 28, 1981, Ser. No. 229,088

Term of patent 14 years
Int. Cl. D9-99

U.S. Cl. D9-305



272,599

EYE DROP SOLUTION BOTTLE

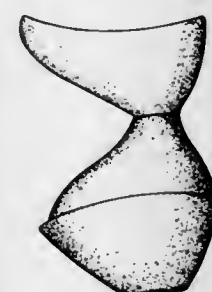
Stephen P. Hnatyshyn, 4 Wyldwood Ct., Bracebridge, Ontario, POB ICO, Canada

Filed Jan. 22, 1981, Ser. No. 227,375

Claims priority, application Canada, Oct. 27, 1980, 27-10-80-5
Term of patent 14 years

Int. Cl. D9-01; D24-04

U.S. Cl. D9-337



272,600

SUTURE PACKAGE

Robert J. Kubas, Ridgefield, Conn.

Filed Dec. 12, 1980, Ser. No. 215,599

Term of patent 14 years
Int. Cl. D9-03

U.S. Cl. D9-346



272,601

BOTTLE OR SIMILAR ARTICLE

Alvin A. Baumer, Jr., Metairie, La., assignor to Baumer Foods, Inc., New Orleans, La.

Filed Oct. 20, 1981, Ser. No. 312,991

Term of patent 14 years
Int. Cl. D9-01

U.S. Cl. D9-350

272,602
BOTTLE

Wolfgang Gregory, Markham, Canada, assignor to BP Refining & Marketing Canada Limited/Raffinage et Marketing BP Canada Limitee, Toronto, Canada

Filed Apr. 27, 1981, Ser. No. 258,071

Claims priority, application Canada, Nov. 10, 1980, 10-11-80-6
Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-375

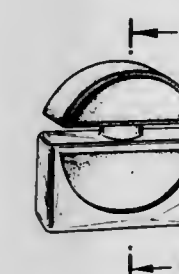
272,603
BOTTLE

Pierre Dinand, 1 E. 53rd St., New York, N.Y. 10016

Filed Oct. 22, 1981, Ser. No. 313,776

Term of patent 14 years
Int. Cl. D9-01

U.S. Cl. D9-384



272,604

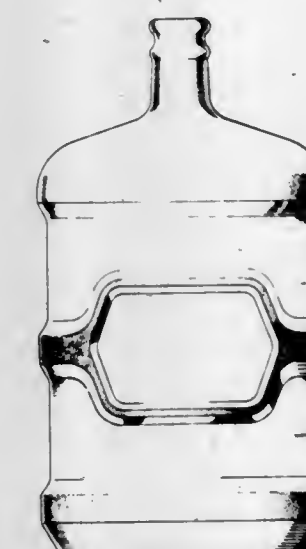
PLASTIC CONTAINER FOR LIQUIDS

John A. Cox, Bethel Park, Pa., assignor to Liqui-Box Corporation, Worthington, Ohio

Filed Aug. 4, 1981, Ser. No. 288,233

Term of patent 14 years
Int. Cl. D9-01

U.S. Cl. D9-391



272,605

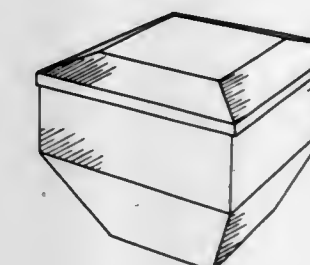
CONTAINER FOR LIQUIDS OR THE LIKE

Francois Pelletier, 2954 Mousseau St., Longueuil, Quebec, Canada (J4L 1V3)

Filed Sep. 8, 1981, Ser. No. 299,994

Term of patent 14 years
Int. Cl. D9-03

U.S. Cl. D9-431



272,606

CONTAINER FOR LIQUIDS OR THE LIKE

Francois Pelletier, 2954 Mousseau St., Longueuil, Quebec, Canada (J4L 1V3)

Filed Sep. 8, 1981, Ser. No. 299,995

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-431



272,607

PULL TAB FOR A CONTAINER END

Gary K. Hasegawa, Chicago, and Donald R. Richardson, Orland Park, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

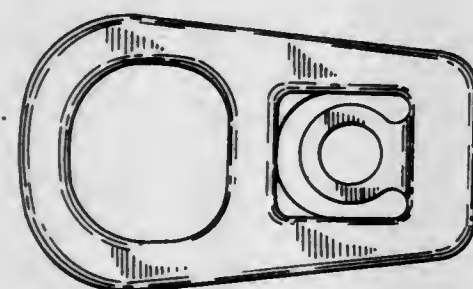
Division of Ser. No. 690,011, Aug. 22, 1979. This application

Sep. 11, 1981, Ser. No. 300,873

Term of patent 14 years

Int. Cl. D9-07

U.S. Cl. D9-438



272,608

COMPASS HEADING DISPLAY

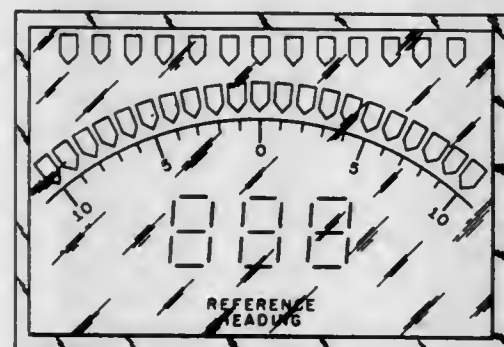
Charles R. Wesner, Crozet, and Gregory Schluge, Afton, both of Va., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,588

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-74



272,609

RING-PENDANT

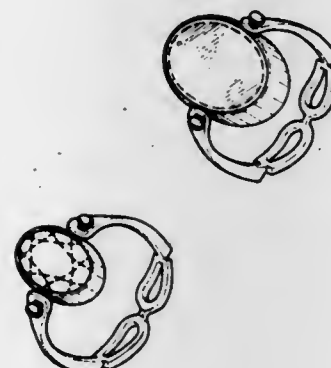
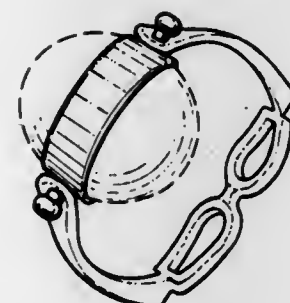
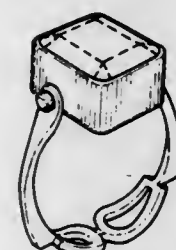
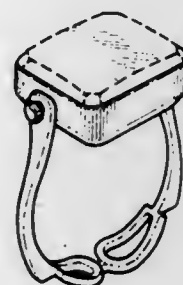
Gabriel D. Ofiesh, II, P.O. Box 45, Charlottesville, Va. 22902

Filed Aug. 25, 1981, Ser. No. 296,012

Term of patent 14 years

Int. Cl. D11-01

U.S. Cl. D11-2



272,610

MOTORCYCLE EMBLEM OR THE LIKE

Alwin J. Stahel, St. Paul, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.

Filed May 26, 1982, Ser. No. 382,106

Term of patent 14 years

Int. Cl. D11-03

U.S. Cl. D11-107



272,611

STANDING PLAQUE

Ramon Trujillo, 465 E. 28 St., #17, Hialeah, Fla. 33010, and Juan Munoz, 858 W. 79th Pl., Hialeah, Fla. 33014

Filed Mar. 30, 1981, Ser. No. 250,623

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-133



272,612

STATUETTE

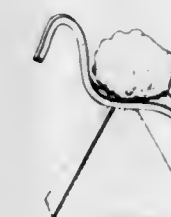
William L. Gale, 145 Riverview Dr. E., Great Falls, Mont. 59401

Filed Mar. 22, 1982, Ser. No. 360,868

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-157



272,613

TROPHY FIGURE

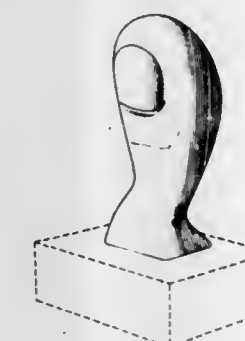
John P. Stewart, 17 Hillcrest Rd., Burlington, Mass. 01803

Filed Jan. 4, 1982, Ser. No. 336,968

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-160



272,614
TIRE

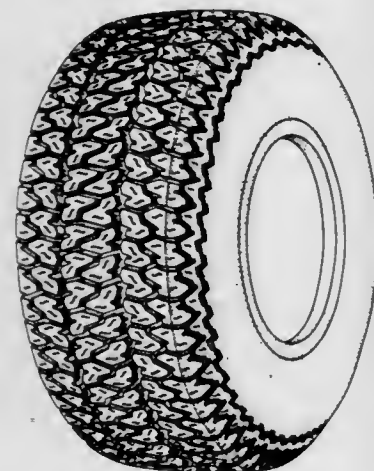
Dennis W. Krupa, Kent, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 8, 1981, Ser. No. 299,768

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-147



272,616

OUTER REAR VIEW MIRROR FOR AUTOMOBILE

Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

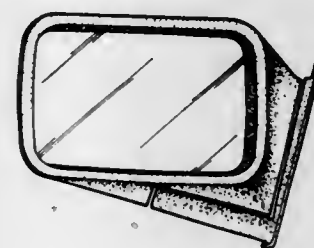
Filed Mar. 27, 1981, Ser. No. 248,524

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12271

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-187



272,617

DASHBOARD COVER

Mark P. Lopez, 8335 True Ave., Pico Rivera, Calif. 90660

Filed Aug. 3, 1981, Ser. No. 289,198

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-192



272,615

FAIRING FOR MOTOR TRICYCLE

Jun Ito, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

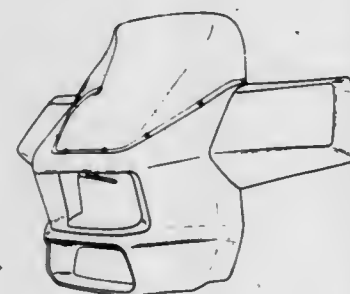
Filed Sep. 14, 1981, Ser. No. 301,865

Claims priority, application Japan, Mar. 13, 1981, 56-10241

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-182



272,618

COMBINED STEP AND HAND HOLD FOR USE ON A HELICOPTER

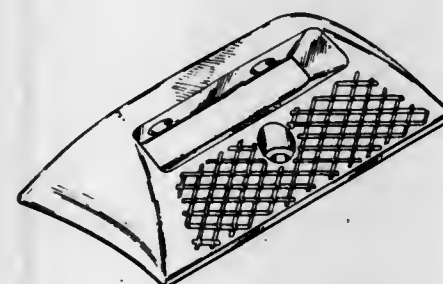
Robert B. McNab, and James A. Wolfe, both of Jonesboro, Tenn., assignors to Aeronautical Accessories, Inc., Bristol, Tenn.

Filed Oct. 2, 1981, Ser. No. 307,851

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-345



272,619

CONTROL PANEL FACE PLATE

Salam Elmenyawi, 2196 Barnes St., St-Laurent, Quebec, Canada

Filed Sep. 8, 1981, Ser. No. 300,462

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-35



272,621

TELEPHONE

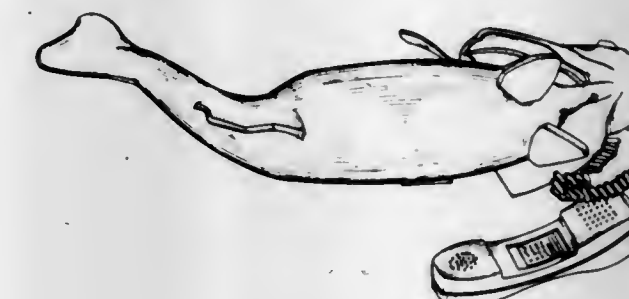
Robert G. Snyder, Verona, Pa., assignor to Specialty Phones, Inc., Pittsburgh, Pa.

Filed Feb. 12, 1981, Ser. No. 234,029

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



272,622

LARGE TELEPHONE KEYSET

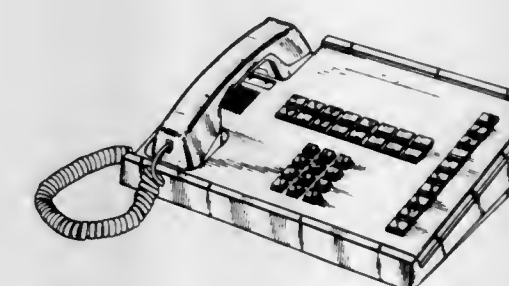
Donald A. Foggia, Ocean, N.J.; Deepak R. Muzumdar, Boca Raton, Fla.; Gerhart F. Klaiber, Boca Raton, Fla., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.

Filed Oct. 23, 1980, Ser. No. 199,989

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-58



272,620

TAPE CASSETTE

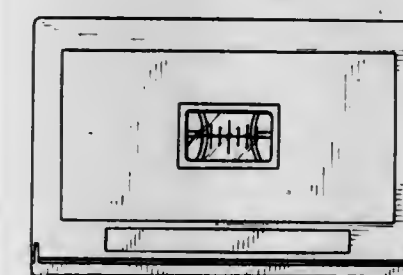
Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Company Limited, Daito and Efuti Giken Company Limited, Yokohama, both of Japan

Filed Nov. 28, 1980, Ser. No. 211,041

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-11



272,623

CLOCK RADIO RECEIVER

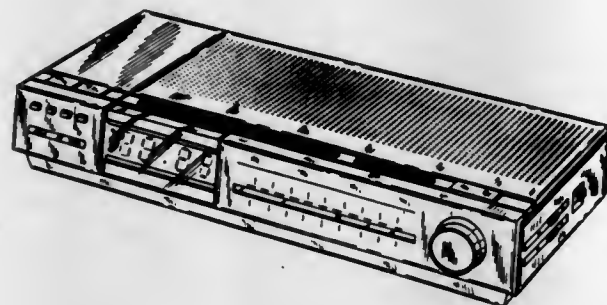
Dieudonne G. Aoijs, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,069

Claims priority, application United Kingdom, Apr. 13, 1981, 999989

Term of patent 14 years
Int. Cl. D14-03; D10-01

U.S. Cl. D14-73



272,624

TELEPRINTER KEYBOARD

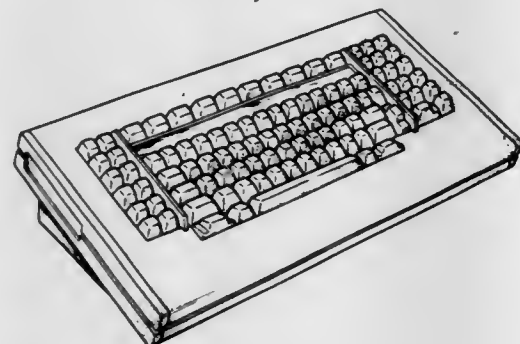
Donald M. Genaro, Hawthorn, and Alvin R. Tilley, Red Bank, both of N.J., assignors to Teletype Corporation, Skokie, Ill.

Filed Nov. 23, 1981, Ser. No. 324,337

Term of patent 14 years

Int. Cl. D14-02, 03

U.S. Cl. D14-93



272,625

FACSIMILE TRANSCIEVER

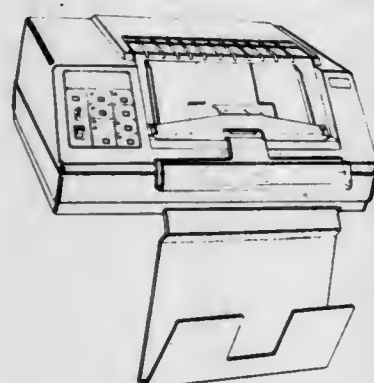
Masatsugu Suzuki, and Haruki Noma, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 294,901

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-94



272,626

INTERACTIVE TERMINAL DISPLAY

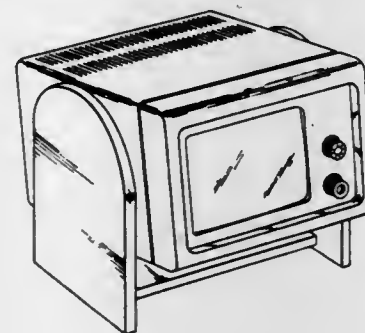
Donald F. Lahey, Saratoga, and Dallas G. Molerin, Union City, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1981, Ser. No. 300,780

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-113



272,627

FUEL DISPENSER

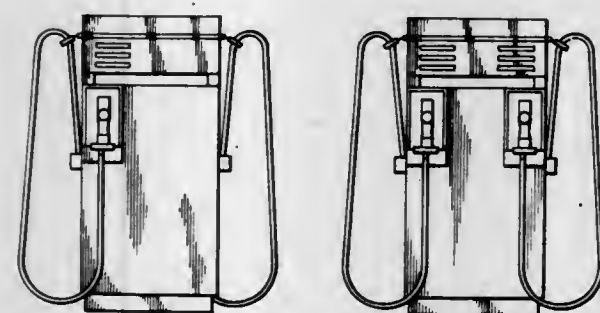
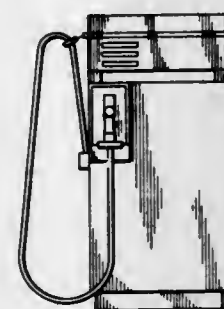
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. Des. 266,673. This application Apr. 5, 1982, Ser. No. 365,665

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9.1



272,628

FUEL DISPENSER

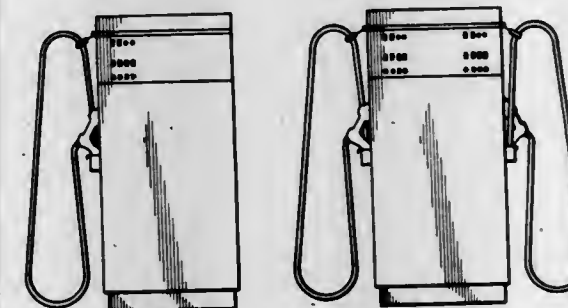
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. Des. 266,673. This application Apr. 5, 1982, Ser. No. 365,666

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9.1



272,629

FUEL DISPENSER

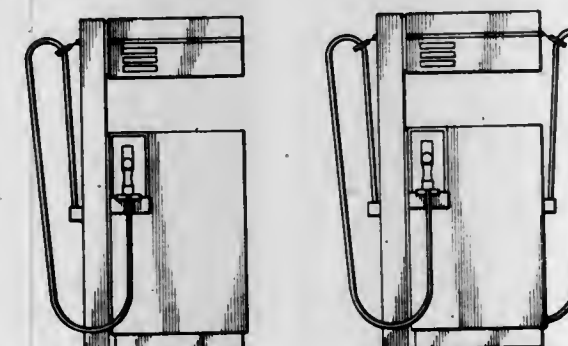
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. Des. 266,673. This application Apr. 5, 1982, Ser. No. 365,837

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9.1



272,630

COMBINED MULTIPLE-UNIT MOTOR FUEL DISPENSER

Leonardus P. Koppens, Industrieweg 5, 5531 AD Bladel, Netherlands

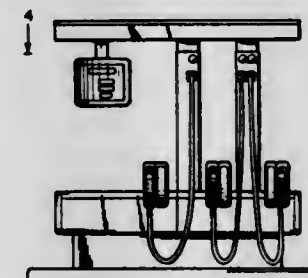
Filed Mar. 23, 1982, Ser. No. 361,100

Claims priority, application Benelux, Sep. 23, 1981, 56104-00

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9.2



272,631

FUEL DISPENSER

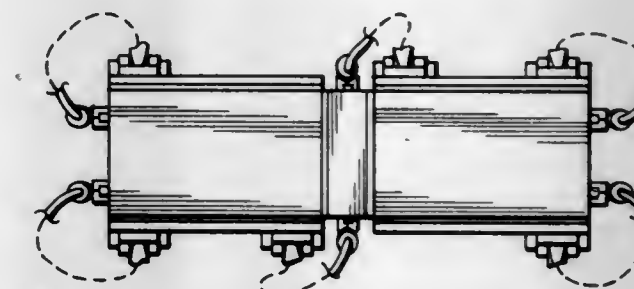
Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 118,376, Feb. 4, 1980, Pat. No. Des. 266,673. This application Apr. 5, 1982, Ser. No. 365,838

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9.2



272,632

FRONT PROJECTION DEVICE

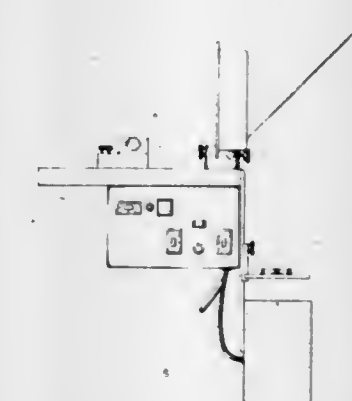
Henry J. Oles, 207 W. Mimosa, San Marcos, Tex. 78666

Filed Nov. 12, 1981, Ser. No. 320,341

Term of patent 14 years

Int. Cl. D16-02

U.S. Cl. D16-11



272,633

PHOTOGRAPHIC SHEET MATERIALS CASSETTE

Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33021

Filed Nov. 30, 1981, Ser. No. 326,123

Term of patent 14 years

Int. Cl. D16-99

U.S. Cl. D16-32



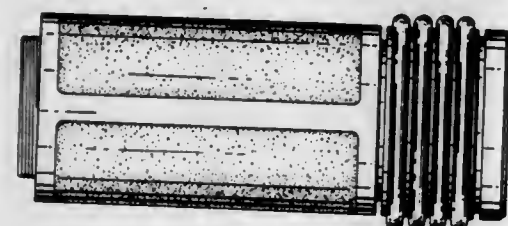
272,634

CAMERA LENS

Steven M. Breslau, Evanston, Ill., and M. Gary Grossman, Fort Lee, N.J., assignors to Sima Products Corporation, Chicago, Ill.

Filed Dec. 4, 1981, Ser. No. 327,480
Term of patent 14 years
Int. Cl. D16-06

U.S. Cl. D16-134



272,636

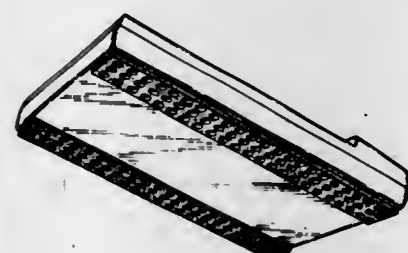
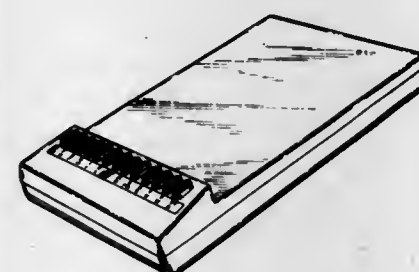
TELEPHONE INDEX

Yuen Se-Kit, Kowloon, Hong Kong, assignor to John Manufacturing, Ltd., Kowloon, Hong Kong

Filed Oct. 17, 1980, Ser. No. 197,929
Claims priority, application United Kingdom, Apr. 18, 1980, 994541

Term of patent 14 years
Int. Cl. D19-02

U.S. Cl. D19-76



272,635

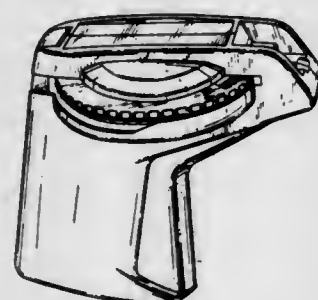
EMBOSSING TOOL

Dane Pedersen, Alameda, Calif.

Filed Aug. 12, 1982, Ser. No. 407,599
Claims priority, application United Kingdom, Mar. 11, 1982, 1 005 546

Term of patent 14 years
Int. Cl. D15-09

U.S. Cl. D18-19



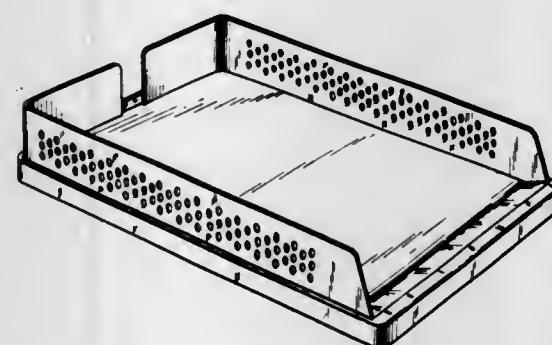
272,637

MAIL TRAY

Raul Barbieri, and Giorgio Marianelli, both of Via Faruffini, 13, 20149 Milan, Italy

Filed Dec. 2, 1981, Ser. No. 326,900
Claims priority, application Italy, Jun. 15, 1981, 22085/81[U]
Term of patent 14 years
Int. Cl. D19-02

U.S. Cl. D19-92



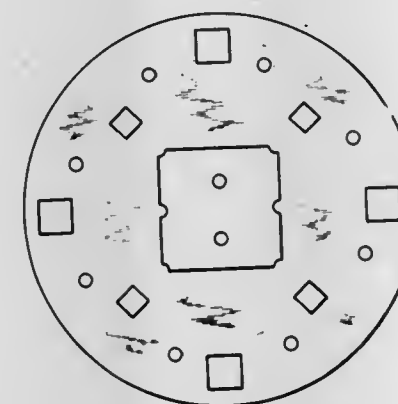
272,638

GAME BOARD

Eric Nathanson, 2618 Batchelder St., Brooklyn, N.Y. 11235
Filed Feb. 24, 1982, Ser. No. 352,017

Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-32



272,639

DART

Alan Y. T. Lee, 24 Ferncliff Rd., Cos Cob, Conn. 06807
Filed Nov. 14, 1980, Ser. No. 206,842

Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-49



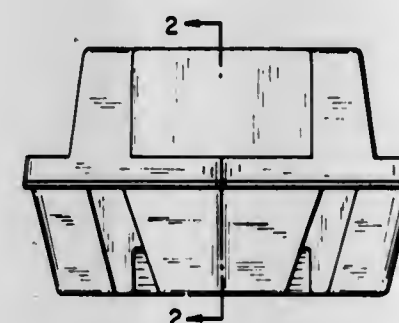
272,640

GAME PLAYING PIECE

Leonard H. Israel, 817 20th St., Apt. 103-S, Santa Monica, Calif. 90403, and Perry J. Grant, 727 Ocampo Dr., Pacific Palisades, Calif. 90272

Division of Ser. No. 122,268, Feb. 19, 1980. This application
Nov. 2, 1981, Ser. No. 317,149
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-51



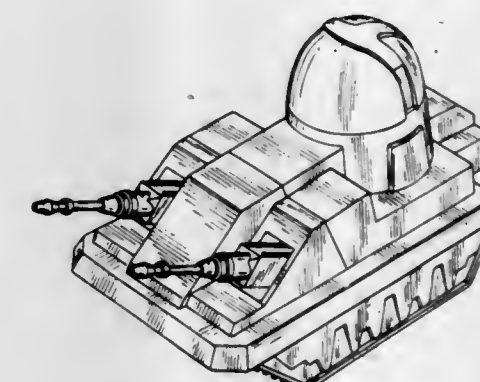
272,641

TOY VEHICLE

Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.

Filed Dec. 16, 1981, Ser. No. 331,435
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-131



272,642

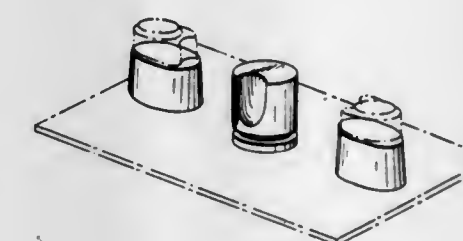
SANITARY FITTING FOR A BIDET

Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 92,874, Nov. 9, 1979. This application May 14, 1982, Ser. No. 378,364

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 79/3

Term of patent 14 years
Int. Cl. D23-01

U.S. Cl. D23-25



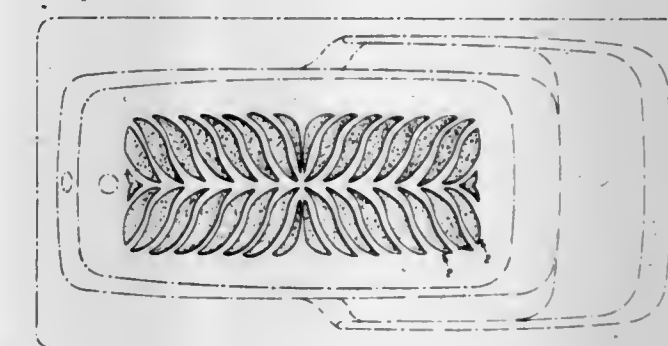
272,643

ANTI-SLIP BATHTUB BOTTOM

Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.

Division of Ser. No. 65,243, Aug. 9, 1979. This application Mar. 8, 1982, Ser. No. 355,289
Term of patent 14 years
Int. Cl. D23-02

U.S. Cl. D23-69



272,644

SNOW SKIING BOOT DRYING DEVICE

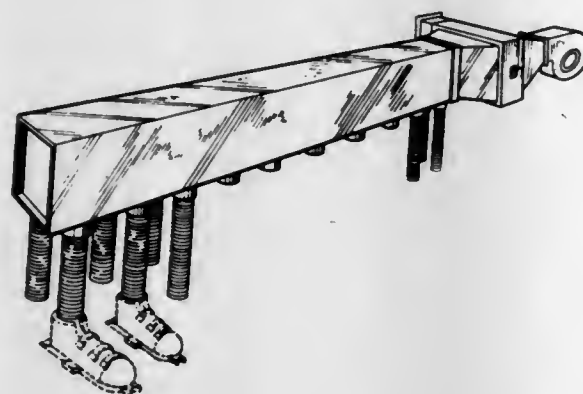
Charles A. Warren, Rte. 2, Box 63, and Clyde Armstrong, Rte. 1, both of Denver, N.C. 28037

Filed Oct. 5, 1981, Ser. No. 308,404

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-77



272,646

ROOM AIR CLEANER

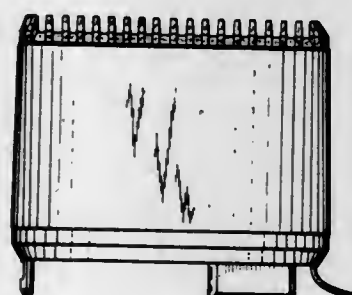
Masao Tsuji, Old Lyme, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,111

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-149



272,645

AIR CLEANER

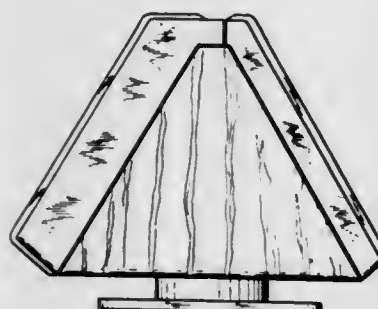
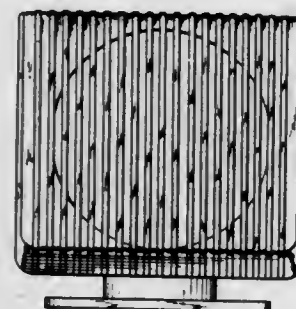
Ronald L. Muller, Old Saybrook, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,879

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-149



272,647

SURGICAL STAPLING INSTRUMENT

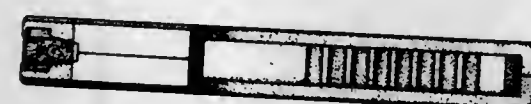
Thomas E. Warman, Williamsburg, and Lawrence E. Spreckelmeir, Cincinnati, both of Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Feb. 27, 1981, Ser. No. 238,926

Term of patent 14 years

Int. Cl. D24-02; D8-05

U.S. Cl. D24-27



272,648

REAMER/RASP TOOL WITH DISPOSABLE, DEBRIS RETAINING CUTTING SURFACE

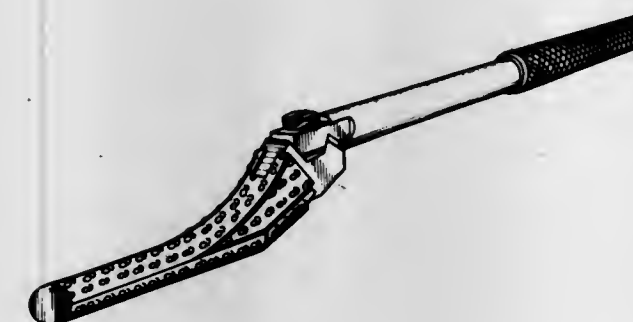
Richard C. Bolesky; Nicholas Cindrich, both of Warsaw, and Michael H. Doll, North Webster, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Aug. 3, 1981, Ser. No. 289,544

Term of patent 14 years

Int. Cl. D24-02, 03

U.S. Cl. D24-28



272,650

EXERCISER FOR ORIFICE MUSCLES

Stuart Bloch, 93 Watchung Ave., Montclair, N.J. 07043

Filed Nov. 16, 1981, Ser. No. 322,070

Term of patent 14 years

Int. Cl. D24-99

U.S. Cl. D24-36



272,651

DOUBLE LUMEN CATHETER

Sakharam D. Mahurkar, 1926 W. Harrison St., Chicago, Ill. 60612

Filed Nov. 2, 1981, Ser. No. 317,232

Term of patent 14 years

Int. Cl. D24-02

U.S. Cl. D24-54



272,649

EXERCISER FOR ORIFICE MUSCLES

Stuart Bloch, 93 Watchung Ave., Montclair, N.J. 07043

Filed Nov. 16, 1981, Ser. No. 322,069

Term of patent 14 years

Int. Cl. D24-99

U.S. Cl. D24-36



272,652
BUILDING

Roland E. Anderson, 120 Bradley Rd., Madison, Conn. 06443
Filed Feb. 19, 1981, Ser. No. 236,000
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D25—22



272,653

COMPACT FLUORESCENT LAMP

Edward W. Morton, Teaneck; Daniel W. O'Mullan, Bloomfield, and Thomas E. Dooley, Clifton, all of N.J., assignors to North American Philips Electric Corp., New York, N.Y.
Filed Mar. 23, 1981, Ser. No. 245,870
Term of patent 14 years
Int. Cl. D26—04

U.S. Cl. D26—3

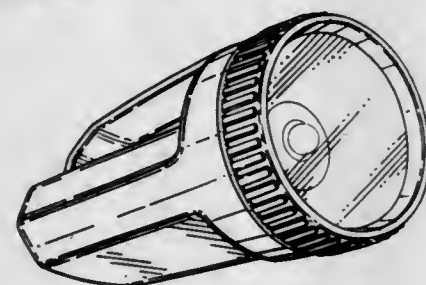


272,654
TORCH

Simon M. H. Ho, 60 Hung To Road, Flat 11B, Kwun Tong, Kowloon, Hong Kong
Filed Sep. 29, 1980, Ser. No. 191,481
Claims priority, application United Kingdom, Apr. 25, 1980, 994642

Term of patent 14 years
Int. Cl. D26—02

U.S. Cl. D26—48

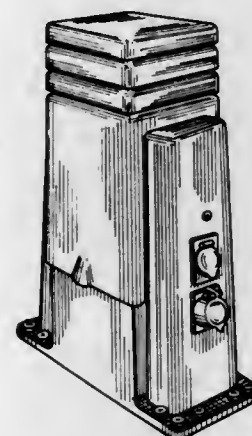


272,655

ILLUMINATED MARINE UTILITY PEDESTAL
Robert Smith, Jupiter, Fla., assignor to Martha Smith, Jupiter, Fla.

Filed Aug. 14, 1981, Ser. No. 292,798
Term of patent 14 years
Int. Cl. D13—03; D26—03

U.S. Cl. D26—51

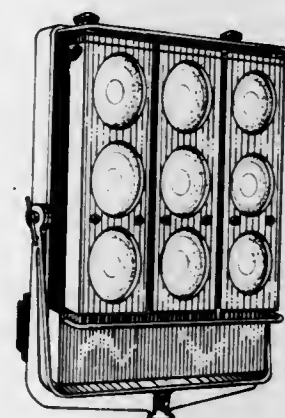


272,656

FLOODLIGHT OR THE LIKE

Lawrence M. Parker, North Hollywood, Calif., assignor to Mole-Richardson Co., Los Angeles, Calif.
Filed Nov. 5, 1981, Ser. No. 318,517
Term of patent 14 years
Int. Cl. D26—03

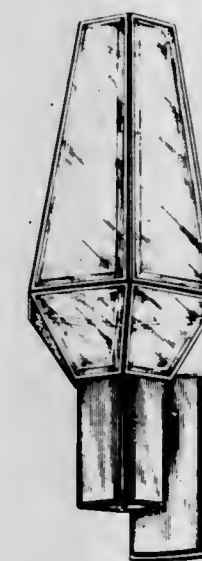
U.S. Cl. D26—65



272,657
LANTERN

John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Mar. 6, 1980, Ser. No. 127,879
Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—87

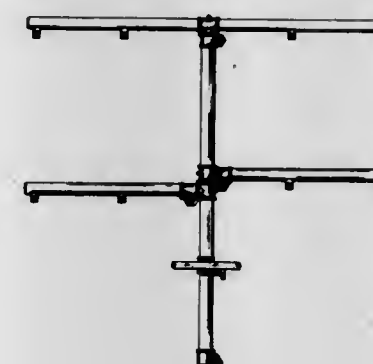


272,658

LIGHTING SUPPORT ASSEMBLY

Darrell A. Schoenig, 432 Clover La., Ft. Collins, Colo. 80521
Filed Sep. 21, 1981, Ser. No. 303,850
Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—138

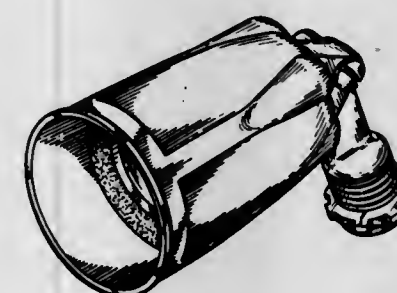


272,659

LAMP HOLDER

Richard C. Medley, Fogelsville, Pa., assignor to Square D Company, Palatine, Ill.
Filed Oct. 1, 1981, Ser. No. 307,408
Term of patent 14 years
Int. Cl. D26—05; D13—03

U.S. Cl. D26—138

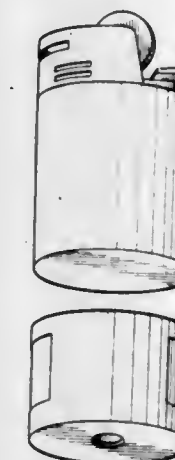


272,660

COMBINED LIGHTER AND CIGAR/CIGARETTE FILTER PERFORATOR

Raphael Torreblanca Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed May 4, 1981, Ser. No. 260,196
Term of patent 14 years
Int. Cl. D27—05

U.S. Cl. D27—38



272,661

APPLICATOR FOR LOTIONS AND OINTMENTS
Alfred Cutler, 17657 Pomerado Rd., #252, Rancho Bernardo, Calif. 92128

Filed Feb. 3, 1983, Ser. No. 463,682
Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D28—7



272,662

RETRACTABLE HEATING BRUSH

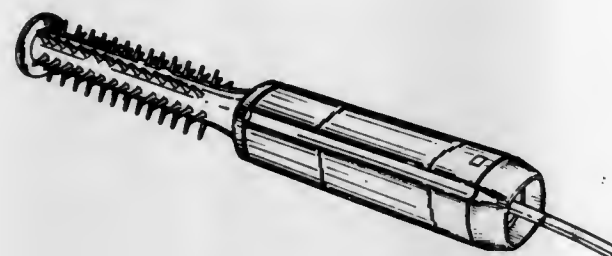
Henri Smal, Oupeye, Belgium, assignor to Societe Anonyme F A C O, Herstal, Belgium

Filed Apr. 10, 1981, Ser. No. 252,759

Claims priority, application Benelux, Feb. 6, 1981, 55 443-00
Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-35



272,663

HAIR STYLING ACCESSORIES CONTAINER

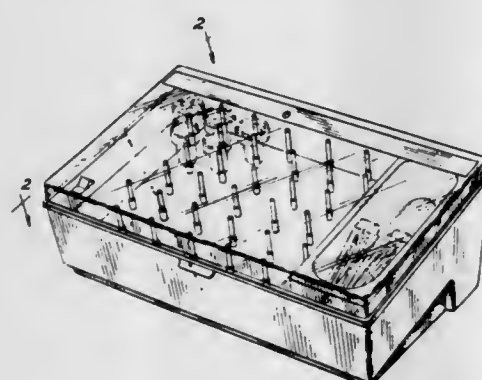
John R. Forsberg, Arlington Heights, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jul. 20, 1981, Ser. No. 284,600

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-38



272,664

TWEEZER

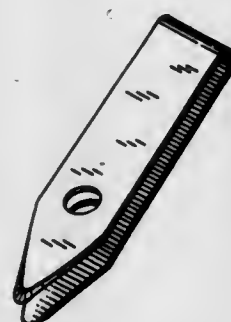
William F. Jones, P.O. Box 4, Wethersfield, Conn. 06109

Filed Dec. 7, 1981, Ser. No. 328,453

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-55



272,665

AQUARIUM

Michael H. James, Verdala Towers, Allerton Rd., Liverpool, England

Filed Dec. 10, 1980, Ser. No. 214,849

Claims priority, application United Kingdom, Sep. 5, 1980, 996445

Term of patent 14 years

Int. Cl. D6-02

U.S. Cl. D30-8



272,666

AQUARIUM

Michael H. James, Verdala Towers, Allerton Rd., Liverpool, England

Filed Dec. 10, 1980, Ser. No. 214,850

Claims priority, application United Kingdom, Jun. 10, 1980, 995228

Term of patent 14 years

Int. Cl. D6-02

U.S. Cl. D30-8



272,667

ANIMAL IDENTIFICATION TRANSPONDER TAG

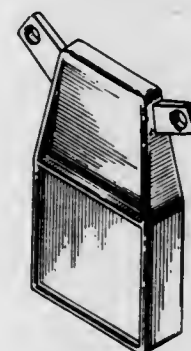
James H. Kazara, Sheridan, Wyo., assignor to ElectroDynamics, Inc., Sheridan, Wyo.

Filed Feb. 18, 1981, Ser. No. 235,699

Term of patent 14 years

Int. Cl. D30-08

U.S. Cl. D30-43



272,668

DRUM FOR A LAUNDRY MACHINE

William H. Percival, Cheslyn Hay Near Walsall, and Henry R. Wilkins, Shifnal, both of England, assignors to Servis Realisations Limited, Wednesbury, England

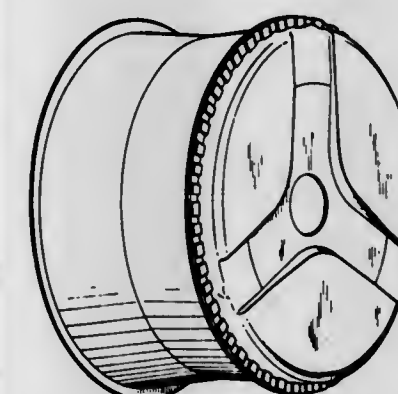
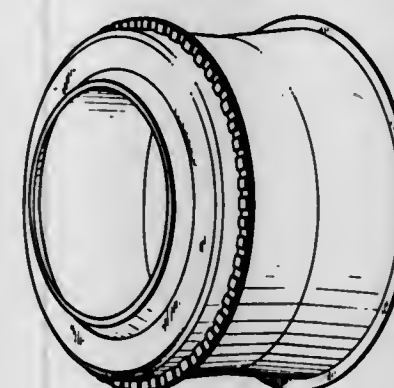
Filed Apr. 14, 1981, Ser. No. 254,089

Claims priority, application Denmark, Oct. 28, 1980, 897/1980

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D32-29



272,670

LIFTING JACK

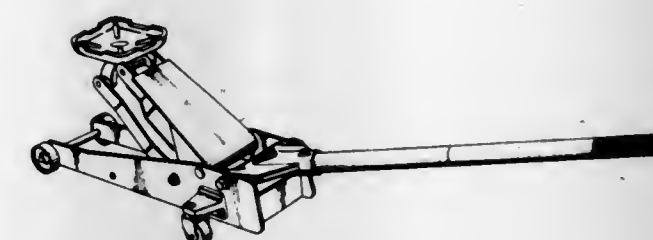
Tozaburo Tsujimura, Shizuoka, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Mar. 6, 1981, Ser. No. 241,359

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D34-31



272,671

LOAD-TRANSFER DEVICE

Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire, England

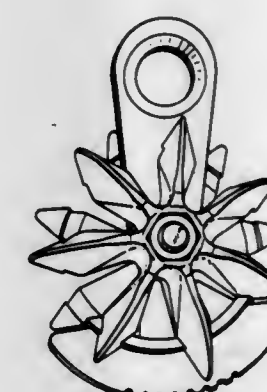
Filed Feb. 23, 1981, Ser. No. 237,417

Claims priority, application United Kingdom, Aug. 28, 1980, 966346

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D34-33



272,669

DISH DRYING RACK FOR USE ON A COUNTERTOP

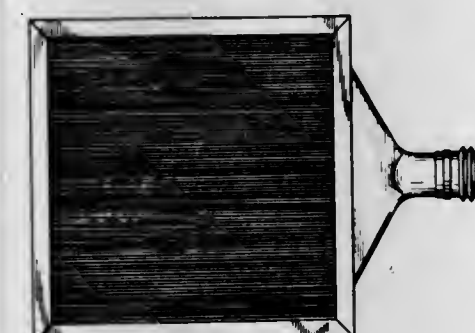
Gertie Lutzker, 5 Saxony Dr., Oakhurst, N.J. 07755

Filed May 8, 1981, Ser. No. 261,973

Term of patent 14 years

Int. Cl. D7-05

U.S. Cl. D32-55



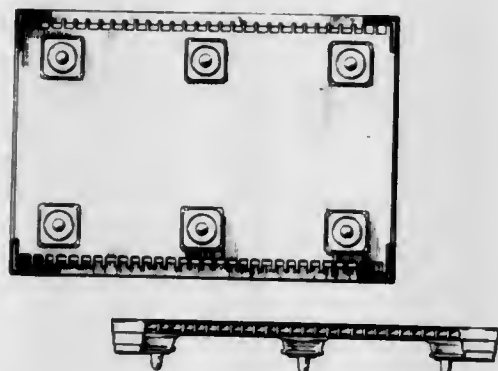
272,672
PALLET OR THE LIKE

John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Nov. 2, 1981, Ser. No. 317,032
Term of patent 14 years

Int. Cl. D9—08

U.S. Cl. D34—38



272,673
FABRIC

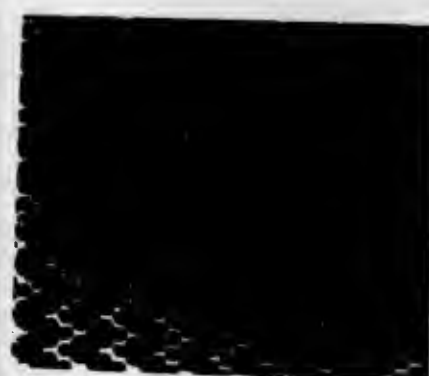
Peggy Bonomo, New York City, N.Y., assignor to National Spinning Co., Inc., New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,315

Term of patent 14 years

Int. Cl. D5—05

U.S. Cl. D92—14



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Duda and Sons: See—
Boots, Vernie A., 4,430,933, Cl. 99-641.000.
- A & L Investment Company: See—
Niznick, Gerald A., 4,431,416, Cl. 433-174.000.
- A. Raymond: See—
Junemann, Dietrich, 4,431,355, Cl. 411-360.000.
- Aasari, Akira; Noyori, Tatsuhiko; Mizoguchi, Yukuo; and Takehata, Tetsuro, to Kabushiki Kaisha Kobe Seiko Sho. Method and cleaning container on indirect extrusion press. 4,430,877, Cl. 72-273.500.
- Abbott, Barry J.; and Silcox, William H., to Chevron Research Company. Sliding leg tower with pile base. 4,431,344, Cl. 405-202.000.
- Abbott Laboratories: See—
Casati, Francois M.; Penaloza, Hernan R.; and Arbir, Francis W., 4,431,753, Cl. 521-121.000.
- Tadanier, John S.; Hallas, Robert; and Martin, Jerry R., 4,431,799, Cl. 536-16.100.
- Abbott, Martyn S.: See—
Thompson, Thomas C.; Abbott, Martyn S.; and Easley, Robert L., 4,431,425, Cl. 604-246.000.
- Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., to Institut Matematiki I Mekhaniki. Hose. 4,431,034, Cl. 138-130.000.
- Abdullah, Sherif; and Baribeau, Gary A., to Minnesota Mining and Manufacturing Company. Insulated terminal and module. 4,431,247, Cl. 339-97.00P.
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- Abrahamson, Carl-Hugo. Disarming apparatus. 4,431,350, Cl. 408-11.000.
- ACF Industries Incorporated: See—
Carlson, Edwin S., 4,431,162, Cl. 251-144.000.
- Hagen, William A., 4,430,983, Cl. 123-585.000.
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- Adams, James B., Jr., to Otis Engineering Corporation. Surface controlled subsurface safety valve. 4,431,051, Cl. 166-72.000.
- Adelmeyer, Dieter; Duschka, Hartmut; and Schott, Helmut, to Siemens Aktiengesellschaft. Radiographic installation comprising a film support transportable from a readiness position into an exposure position. 4,432,095, Cl. 378-181.000.
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- Adidas Sportschuhfabriken Adi Dassler KG: See—
Bente, Alfred, 4,430,810, Cl. 36-32.00R.
- Adrian, Fritz; and Pogrzeba, Hans-Joachim, to Steag AG. Process and apparatus for energy recovery from solid fossil inerts containing fuels. 4,430,854, Cl. 60-39.020.
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Sturzenegger, Christian; Schutz, Willi; Aeschbach, Bruno; and Aeschbach, Heinz, 4,431,887, Cl. 200-148.00A.
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- Afonso, Adriano; and Hon, Frank, to Schering Corporation. Aza penem compounds. 4,431,658, Cl. 424-273.00R.
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Soda, Choichiro; Aoi, Kazuyoshi; Hatsukano, Kanichi; and Sano, Toshio, 4,431,172, Cl. 267-119.000.
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Deconinck, Hugo F., 4,431,176, Cl. 271-22.000.
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Bergstrom, Ronald F.; and Bartko, Philip G., 4,431,107, Cl. 211-49.00S.
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- Air-O-Lator Corporation: See—
Cramer, Barry G.; and Cramer, Roy A., 4,431,597, Cl. 261-93.000.
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Longworth, Ralph C., 4,430,863, Cl. 62-6.000.
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Hayashi, Masaharu; and Hattori, Kenji, 4,431,098, Cl. 192-82.00T.
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- Aisin Warner Kabushiki Kaisha: See—
Kobayashi, Koji; and Kobayashi, Keizo, 4,431,096, Cl. 192-3.310.
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Prewitt, Philip D.; Gowland, Leonard; and Aitken, Keith L., 4,431,137, Cl. 239-690.000.
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Kinoshita, Kazuhisa, 4,431,090, Cl. 188-264.00G.
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Dingfors, Kent; and Heinegard, Christer, 4,431,542, Cl. 210-502.100.
- Jander, Ulf, 4,430,938, Cl. 102-232.000.
- A.G. fur industrielle Elektronik AGIE: See—
Lodetti, Attilio, 4,431,896, Cl. 219-69.00W.
- Akzo NV: See—
Behnke, Joachim; and Huff, Dieter, 4,431,619, Cl. 423-300.000.
- Gunter, Gerhard, 4,431,689, Cl. 427-388.200.
- Akzona Incorporated: See—
Vaden, James L., 4,431,246, Cl. 339-97.00R.
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- Alkem GmbH: See—
Schneider, Volker; Margraf, Gerhard; and Druckenbrodt, Wolf-Gunther, 4,431,580, Cl. 252-631.000.
- Allan, Albert W., to Westinghouse Electric Corp. Resistance thermal unit for thermal electric energy demand meter. 4,431,951, Cl. 318-117.000.
- Allard, Jules N., to Bush Universal, Inc. Techniques for stiffening shoe insoles. 4,430,767, Cl. 12-146.00S.
- Allee, Genevieve L.: See—
Reno, Charles W.; and Allee, Genevieve L., 4,432,085, Cl. 369-93.000.
- Allied Corporation: See—
Schevey, William R.; Calderoni, Frank; Trunk, Raymond E.; Lehman, Harold M.; and Jandura, John J., Jr., 4,431,037, Cl. 141-5.000.
- Allis-Chalmers Corporation: See—
Murray, David L., 4,430,952, Cl. 111-85.000.
- Tourdot, Wayne M.; and Matthes, Larry A., 4,430,847, Cl. 56-10.700.
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Brody, Charles, 4,431,331, Cl. 403-189.000.
- Alpha-Debon Industries, Inc.: See—
Dorsch, Robert; and Matusz, Arnold J., 4,431,435, Cl. 55-241.000.
- Althoff, Heinz J., to Vereinigte Deutsche Metallwerke AG. Alloy and process for manufacturing rolled strip from an aluminum alloy especially for use in the manufacture of two-piece cans. 4,431,463, Cl. 148-11.50A.
- Altomare, Robert E.; Beale, Robert J.; Clausi, Adolph S.; and Romig, William R., to General Foods Corporation. Process for producing a pineapple core bulking agent. 4,431,677, Cl. 426-257.000.
- Aluminum Company of America: See—
Staley, James T.; and Sawtell, Ralph R., 4,431,467, Cl. 148-159.000.
- AM General Corporation: See—
Goodell, Fred L.; and Ellison, Michael J., 4,431,043, Cl. 152-417.000.
- Amana Refrigeration, Inc.: See—
Simpson, James E., 4,431,888, Cl. 219-10.55F.

- Amazeen, Paul G.; and Sutcliffe, Patrick L., to General Electric Company. Referenced real-time ultrasonic image display. 4,431,007, Cl. 128-660.000.
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Ettinger, Ralph, 4,431,031, Cl. 138-109.000.
- Amenson, Christopher J.: See—
Moser, Thomas D.; Amenson, Christopher J.; and Sternheim, Eliezer, 4,431,086, Cl. 187-29.00R.
- American Cyanamid Company: See—
Bhalla, Prithvi R.; and Walworth, Bryant L., 4,431,440, Cl. 71-92.000.
Ellenbogen, Leon, 4,431,634, Cl. 424-147.000.
Lodhi, Shahid A.; and Sims, Bernard, 4,431,833, Cl. 560-2.000.
McKenzie, Thomas C.; Epstein, Joseph W.; and Fanshawe, William J., 4,431,661, Cl. 424-274.000.
Schaub, Robert E.; Upeslakis, Janis; and Bernstein, Seymour, 4,431,636, Cl. 424-180.000.
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Upeslakis, Janis; Schaub, Robert E.; and Bernstein, Seymour, 4,431,637, Cl. 424-180.000.
- American Dental Association Health Foundation: See—
Mabie, Curtis P.; and Menis, Daniel L., 4,431,451, Cl. 106-35.000.
- American Hospital Supply Corp.: See—
Borsanyi, Alexander S., 4,431,539, Cl. 210-232.000.
- American Microsystems, Incorporated: See—
Haque, Yusuf A., 4,431,971, Cl. 330-253.000.
Haque, Yusuf A.; Saleh, Vikram; and Schuler, Jeffrey A., 4,431,986, Cl. 340-347.0AD.
- Amitani, Tatsuo; Kubo, Masayoshi; Maehara, Kenichi; Izumi, Jun; and Tsutaya, Hiroyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Process and apparatus for separating a mixed gas such as air. 4,431,432, Cl. 55-26.000.
- Ammermann, Eberhard: See—
Buschmann, Ernst; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,431,812, Cl. 546-344.000.
- AMP Incorporated: See—
Beinhaur, Ernest L.; and Mountz, Marshall S., 4,431,198, Cl. 277-1.000.
Frantz, Robert H.; and Hawk, Gary W., 4,431,249, Cl. 339-107.000.
- Ampex Corporation: See—
Coleman, Charles H., Jr., 4,432,026, Cl. 360-77.000.
- An-Penn, Inc.: See—
Speicher, John M.; and Voigt, Allan A., 4,431,205, Cl. 280-282.000.
- Anderson, John E.: See—
Kobayashi, Hisashi; Miller, Raymond H.; and Anderson, John E., 4,431,400, Cl. 431-6.000.
- Anderson, Robert S.: See—
Lemieux, George E.; Cochran, John E.; and Anderson, Robert S., 4,430,910, Cl. 74-867.000.
- Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Data recording medium and manufacturing method therefor. 4,432,002, Cl. 346-135.100.
- Andre, Thierry: See—
Melchior, Jean F.; and Andre, Thierry, 4,430,860, Cl. 60-606.000.
- Andrews, Christopher M., to Ciba-Geigy Corporation. Method of increasing the viscosity of epoxide resin compositions. 4,431,756, Cl. 523-414.000.
- Andrews, Gary E. Fastening device. 4,431,352, Cl. 410-101.000.
- Andrews, James S., to Hierath & Andrews Corp. High speed precision weighing and filling method and apparatus. 4,431,070, Cl. 177-102.000.
- Andrews, Thomas L., to Smith International, Inc. Underreamer. 4,431,065, Cl. 175-269.000.
- Angehrn, Peter; and Reiner, Roland, to Hoffmann-La Roche Inc. Thiazolylacetamido compounds. 4,431,804, Cl. 544-27.000.
- Angevine, Philip J.; Kuehl, Guenter H.; and Mizrahi, Sadi, to Mobil Oil Corporation. High nitrogen-containing oil processing. 4,431,518, Cl. 208-111.000.
- Angquist, Lennart, to ASEA Aktiebolag. Drive equipment. 4,431,956, Cl. 318-759.000.
- Angus Chemical Company: See—
Edwards, Donald W.; and Thomas, Ronald D., 4,431,468, Cl. 149-21.000.
Hunsucker, Jerry H., 4,431,699, Cl. 428-270.000.
- Anhalt, John W.; and Gardner, John. Electrical connector with integral latch. 4,431,244, Cl. 339-91.00R.
- Anic, S.p.A.: See—
Olivieri, Roberto; Pansolli, Paolo; Fascetti, Eugenio; and Ciuffolotti, Pierluigi, 4,431,737, Cl. 435-208.000.
- Antronic Corporation: See—
Prusow, Leon W., 4,431,250, Cl. 339-125.00R.
- Aoba, Takashi: See—
Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,431,266, Cl. 350-167.000.
- Aoi, Kazuyoshi: See—
Soda, Chochiro; Aoi, Kazuyoshi; Hatsuano, Kanichi; and Sano, Toshio, 4,431,172, Cl. 267-119.000.
- Aoki, Katashi. Apparatus for adjusting the temperature of a parison for stretch blow molding. 4,431,398, Cl. 425-446.000.
- Aoki, Keichi: See—
Sasaki, Ken; Kinugawa, Kiyoshige; Hanada, Yoshio; Aoki, Keichi; Ishii, Akira; and Koyama, Masaharu, 4,431,683, Cl. 427-39.000.
- Aonuma, Masashi: See—
Matsufuji, Akihito; Kasuga, Akira; Miyatsuka, Hajime; and Aonuma, Masashi, 4,431,712, Cl. 428-692.000.
- Aoshima, Masashi: See—
Maeda, Isamu; and Aoshima, Masashi, 4,431,775, Cl. 525-193.000.
- Aoshima, Terutaka: See—
Oota, Hiroyuki; Aoshima, Terutaka; Narita, Ryuhō; and Yamamori, Kenji, 4,431,906, Cl. 219-441.000.
- Arai, Minoru; and Yamashita, Keitaro, to Hitachi Metals, Ltd. Apparatus for brush development including means for detecting toner in the toner bath and means for supplying toner to the toner bath. 4,431,298, Cl. 355-3.0DD.
- Araki, Shingo; Asai, Keizo; and Ono, Seibei, to Dainippon Ink & Chemicals Inc. Ultraviolet light screening resin composition. 4,431,762, Cl. 524-220.000.
- Arbir, Francis W.: See—
Casati, Francois M.; Penaloza, Hernan R.; and Arbir, Francis W., 4,431,753, Cl. 521-121.000.
- Ardco, Inc.: See—
Niekraz, Frank M.; and Rolek, Matthew, 4,430,770, Cl. 16-80.000.
- Arena, Blaise J., to UOP Inc. Hydrogenation using chitin and chitosan based immobilized metal catalysts. 4,431,836, Cl. 560-105.000.
- Ariki, Yutaka: See—
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,431,656, Cl. 424-273.00R.
- Arild, Tor. Pivotal adjustment mechanism. 4,431,157, Cl. 248-583.000.
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Ito, Tetsuo; and Arita, Setsuo, 4,432,048, Cl. 364-187.000.
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- Armco Inc.: See—
James, Robert G., 4,431,052, Cl. 166-112.000.
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Orlowski, Gerald J.; and Wicklund, Rodney D., 4,431,104, Cl. 198-427.000.
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Boggs, Joseph C., 4,430,958, Cl. 118-668.000.
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Selsted, Walter T., 4,431,538, Cl. 210-169.000.
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Barker, Kenneth D.; and Arnold, Edward P., 4,432,064, Cl. 364-550.000.
- Arnold, Lothar: See—
Janitschke, Lothar; Hoffmann, Werner; Arnold, Lothar; Stroezel, Manfred; and Scheiper, Hans-Juergen, 4,431,844, Cl. 568-390.000.
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Barwise, Robert D.; Arola, Rodger A.; and Matson, Edsel D., 4,431,039, Cl. 144-176.000.
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Walser, Glenn E., 4,430,930, Cl. 99-331.000.
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Philipp, Adolf; Jirkovsky, Ivo; and Martel, Rene, 4,431,657, Cl. 424-273.00P.
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Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, 4,431,702, Cl. 428-422.000.
- Azzopardi, S.: See—
Thomas, J. H.; and Azzopardi, S., 4,430,981, Cl. 123-556.000.
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Foster, David W., 4,431,171, Cl. 266-271.000.
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Spencer, Jack D.; and Salemi, John V., 4,431,058, Cl. 166-312.000.
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Balzer, Claude P.; and Corman, Edward M., 4,430,833, Cl. 52-255.000.
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Hooker, Donald E., 4,431,188, Cl. 273-121.00A.
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- Balog, Margit B.: See—
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- Banno, Akira: See—
Fujimori, Kazuo; and Banno, Akira, 4,430,896, Cl. 73-587.000.
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Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,431,351, Cl. 409-35.000.
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Kern, Josef; Bardong, Helmut; Humpolik, Bohumil; Staffa, Karl-Heinz; and Winterer, Wilfried, 4,430,868, Cl. 62-515.000.
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Abdullah, Sherif; and Baribeau, Gary A., 4,431,247, Cl. 339-97.00P.
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- Barma Barmer Maschinenfabrik AG: See—
Schiminski, Herbert; and Turk, Herbert, 4,431,138, Cl. 242-18.00A.
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Dunn, Robert G.; and Barnard, Kenneth N., 4,431,873, Cl. 179-110.00A.
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Wahlquist, Clayton C.; and Barter, Archie M., 4,431,949, Cl. 315-368.000.
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Bergstrom, Ronald F.; and Bartko, Philip G., 4,431,107, Cl. 211-49.00S.
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Goldner, Tibor; Fotiu, Eustace; Tietjen, Marlene; and Basak, Kalyan K., 4,431,673, Cl. 424-365.000.
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Buschmann, Ernst; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,431,812, Cl. 546-344.000.
Degner, Dieter; Hoffmann, Werner; and Thoenel, Frank, 4,431,490, Cl. 204-59.00R.
Heimlich, Guenther; Tremmel, Gregor; and Lieb, Manfred, 4,431,854, Cl. 585-313.000.
Hoch, Helmut; and Hiller, Heinrich, 4,431,824, Cl. 549-56.000.
Janitschke, Lothar; Hoffmann, Werner; Arnold, Lothar; Stroezel, Manfred; and Scheiper, Hans-Juergen, 4,431,844, Cl. 568-390.000.
Kaack, Hermann; and Baumann, Hans, 4,431,584, Cl. 260-153.000.
Sadlowski, Juergen; Walter, Manfred; and Hinselmann, Klaus, 4,431,794, Cl. 528-232.000.
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Wetzel, Robert; and Bates, Richard, 4,430,795, Cl. 30-382.000.
- Bauer, Karl-Heinz: See—
Labude, Wolfgang; Bauer, Karl-Heinz; and Maisch, Edgar, 4,431,876, Cl. 200-5.00R.
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Kaack, Hermann; and Baumann, Hans, 4,431,584, Cl. 260-153.000.
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Kopp, Clinton V.; Hitchcock, James; and Miller, Martin, 4,431,019, Cl. 137-87.000.
Lake, William; and Schnell, William J., 4,431,560, Cl. 252-142.000.
Lewis, Jerome; and Parsons, George H., Jr., 4,431,741, Cl. 436-500.000.
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Behrens, Hans-Josef; Herold, Heiko; Muschelkautz, Edgar; and Vogelsang, Roland, 4,431,602, Cl. 264-205.000.
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- BBC Brown, Boveri & Company, Limited: See—
Niemeyer, Lutz; and Ragaller, Klaus, 4,431,878, Cl. 200-148.00R.
- Beale, Robert J.: See—
Altomare, Robert E.; Beale, Robert J.; Clausi, Adolph S.; and Romig, William R., 4,431,677, Cl. 426-257.000.
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Kennedy, John H., 4,431,290, Cl. 354-113.000.
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Beckenbach, Ulrich; and Beckenbach, Helmut, 4,431,407, Cl. 432-99.000.
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Michel, Wolfgang; and Becker, Reinhold, 4,430,772, Cl. 17-33.000.
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Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,431,587, Cl. 260-239.00A.
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Grant, Frederic F., 4,431,125, Cl. 226-97.000.
Westover, Dwight G.; and McManaman, Raymond M., 4,431,179, Cl. 271-274.000.
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Hubbard, William M., 4,432,087, Cl. 370-55.000.
Kirschenbaum, Bernard, 4,430,837, Cl. 52-506.000.
- Bellay, Jeffrey D.: See—
McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., 4,432,052, Cl. 364-200.000.
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Marino, Joseph A., Jr.; and Bellin, Matthew E., 4,431,009, Cl. 128-673.000.
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Ovchinnikov, Yuri M.; Solokhina, Valentina G.; Samoshenkova, Xenia G.; Laputukhin, Veniamin S.; Belyaeva, Julia I.; Krikman, Genrietta Y.; Guschina, Izabella I.; Krutikov, Nikolai N.; and Sulakova, Ljubov I., 4,431,724, Cl. 430-302.000.
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Crawford, David L., 4,431,679, Cl. 426-332.000.
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Racki, Daniel J.; Swenson, Clark E.; Bencloski, William A.; and Wineman, Arthur L., 4,431,899, Cl. 219-121.0LG.
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Bruguera, Raimon S., 4,430,905, Cl. 74-493.000.
- Bendix Corporation, The: See—
Burt, David L.; and Krawczyk, Gregory J., 4,431,160, Cl. 251-86.000.
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- Benzing, Lothar: See—
Boehmler, Kurt; Benzing, Lothar; Schneider, Andreas; and Rettinger, Gerhard, 4,431,383, Cl. 417-312.000.
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Shimizu, Isao; Kondo, Yasuo; and Beppu, Koji, 4,431,557, Cl. 252-52.00A.
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Valderrama, Sergio; Cicin-Sain, Ivo; and Berga, Jaime, 4,430,813, Cl. 37-104.000.
- Berger, Jensen & Nicholson, Ltd.: See—
Braithwaite, John D.; King, Derrick O.; Williams, Sidney J.; and Prior, James, 4,431,326, Cl. 401-188.00R.
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Fuller, Nelson; and Bergsma, Rudolph, 4,431,981, Cl. 338-42.000.
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Felder-Schraner, Louis, deceased; Berner, Godwin; and Kirchmayr, Rudolf, 4,431,774, Cl. 525-162.000.
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Schaub, Robert E.; Upeslakis, Janis; and Bernstein, Seymour, 4,431,636, Cl. 424-180.000.
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Inbar, Dan; Bernstein, Tsur; and Shimon, Yair, 4,432,059, Cl. 364-414.000.
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Faedi, Leonardo; and Bertoli, Maurizio, 4,431,955, Cl. 318-696.000.
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Blenkarn, Kenneth A.; and Beynet, Pierre A., 4,431,059, Cl. 166-359.000.
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- Bick, Manfred: See—
Fennemann, Wolfgang; Sander, Ulrich; and Bick, Manfred, 4,431,573, Cl. 502-218.000.
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Marino, Joseph A., Jr.; and Bellin, Matthew E., 4,431,009, Cl. 128-673.000.
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Perco, Daniel D.; and Birke, Paul V., 4,431,860, Cl. 174-34.000.
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Markham, Larry D.; and Magnotta, Vincent L., 4,431,480, Cl. 162-19.000.
- Tetro, Richard S., 4,431,140, Cl. 242-56.00A.
- Black & Decker Inc.: See—
Braithwaite, John D.; King, Derrick O.; Williams, Sidney J.; and Prior, James, 4,431,326, Cl. 401-188.00R.
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Brighton, Carl T.; Black, Jonathan; and Eyerly, Joyce K., 4,430,999, Cl. 128-419.00F.
- Blair, Peter K.: See—
Barton, Paul; Blair, Peter K.; and Waddoup, William D., 4,431,995, Cl. 343-373.000.
- Bleicher, Manfred: See—
Wanner, Karl; and Bleicher, Manfred, 4,431,062, Cl. 173-104.000.
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- Block, Jacob, to W. R. Grace & Co. Drilling fluid viscosifier. 4,431,550, Cl. 252-8.50A.
- Blume, Ernst: See—
Handte, Reinhard; Wilms, Lothar; and Blume, Ernst, 4,431,813, Cl. 548-165.000.
- BOC Group plc, The: See—
Clarke, Ronald A., 4,431,167, Cl. 266-48.000.
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- Bodle, John W.: See—
Dressel, Michael O.; Varner, Horace M.; Brummert, LaValle V.; and Bodle, John W., 4,431,063, Cl. 173-149.000.

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- Boehringer Mannheim GmbH: See—
Kiegel, Einhart; and Lauer, Karl, 4,431,829, Cl. 549-464.000.
- Bofinger, Gunter; and Faupel, Werner, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,430,974, Cl. 123-387.000.
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Baker, Bernard R.; Smith, Richard L.; and Bolmer, Perce W., 4,431,489, Cl. 204-35.00N.
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Hohlein, Bernd; Vorwerk, Manfred; and Boltendahl, Udo, 4,431,751, Cl. 518-706.000.
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Tharman, Paul A., 4,430,984, Cl. 123-647.000.
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Molusis, Anthony J.; and O'Loughlin, Thomas M., 4,431,988, Cl. 340-712.000.
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Geria, Navin, 4,431,837, Cl. 560-112.000.
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Marshall, Michael A.; and Swales, Danvers A., 4,431,625, Cl. 423-607.000.
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- Brown, Harold M., Jr.; and Owen, Jeffrey D. Solid state graphite electrode. 4,431,508, Cl. 204-418.000.
- Brown, James P.; Hampson, Robert S.; and Kelly, Frederick T., to Imperial Chemical Industries PLC. Wax dispersions and their use in the manufacture of sheets or moulded bodies. 4,431,455, Cl. 106-245.000.
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Gutierrez, Antonio; Brownawell, Darrell W.; Portnoy, Robert C.; and Brois, Stanley J., 4,431,551, Cl. 252-8.50C.
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Falendysz, Eugene L.; and Brumbaugh, Eldon M., 4,431,381, Cl. 417-289.000.
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Finnegan, Michael C., 4,431,018, Cl. 132-68.00R.
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Barbero, Aquilino; and Buat, Mario, 4,432,003, Cl. 346-140.00R.
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Brenner, Robert A.; and Buckleitner, Thomas H., 4,430,871, Cl. 68-12.00R.
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Jahnle, Herbert A., 4,431,221, Cl. 293-122.000.
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Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,431,576, Cl. 252-522.00R.
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Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,431,431, Cl. 51-295.000.
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Paramore, Harold W.; and Burkes, Jacky, 4,430,787, Cl. 29-402.110.
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Nightingale, Stanley A.; and Burrows, Harvey P., 4,431,336, Cl. 404-97.000.
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Allard, Jules N., 4,430,767, Cl. 12-146.00S.
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Giuliani, Pierre; Jacquin, Yves; Busson, Christian; and Josserand, Jean-Francois, 4,431,520, Cl. 208-112.000.
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Nally, Robert B.; Evans, Edward R.; Williamson, Lawrence R.; and Calnek, Trevor A., 4,431,322, Cl. 400-605.000.
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East, Anthony J.; and Calundann, Gordon W., 4,431,770, Cl. 524-599.000.
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Campbell, Thomas S.; and Campbell, Robert E., 4,431,124, Cl. 226-15.000.
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Dunn, Robert G.; and Barnard, Kenneth N., 4,431,873, Cl. 179-110.00A.
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Szabo, Alexander, 4,432,071, Cl. 365-124.000.
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Higuchi, Tetsuo, 4,432,027, Cl. 360-104.000.
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Aimura, Harutsugu, 4,432,056, Cl. 364-200.000.
Fujibayashi, Kazuo, 4,431,284, Cl. 354-413.000.
Fushimoto, Hideo, 4,430,935, Cl. 101-93.110.
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Okubo, Yukitoshi, 4,431,271, Cl. 350-334.000.
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Tokumitsu, Jun, 4,432,022, Cl. 358-293.000.
Toyomura, Shigeru, 4,431,866, Cl. 381-51.000.
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- Carl Freudenberg, Firma: See—
Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, 4,431,687, Cl. 427-246.000.
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Weber, Heinrich; Stalherm, Dieter; and Urbye, Klaus, 4,431,484, Cl. 202-141.000.
- Carl Walther GmbH: See—
Fromming, Hans; and Repa, Otto, 4,430,822, Cl. 42-71.00R.
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Weber, Klaus, 4,431,276, Cl. 350-529.000.
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Ives, Milton N., 4,431,880, Cl. 200-315.000.
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Postich, Salvator, 4,431,408, Cl. 432-261.000.
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Cheron, Jean-Marc; and Carre, Jean-Jacques, 4,431,235, Cl. 303-24.00C.
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Briccetti, Mario F., 4,432,030, Cl. 361-92.000.
Griffin, Charles K., 4,431,354, Cl. 411-301.000.
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Schonafinger, Karl, 4,431,830, Cl. 549-464.000.
Tappe, Horst; Buhler, Ulrich; Roth, Kurt; Weyer, Hans-J.; and Kosubek, Uwe, 4,431,585, Cl. 260-158.000.
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Scholl, Roland D.; and Easterling, Gene B., 4,431,060, Cl. 172-4.500.
York, Lyle E., 4,431,083, Cl. 187-9.00E.
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Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,430,784, Cl. 29-157.00C.
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Asagao, Soichi; Nakagawa, Shinsuke; Okada, Naoki; and Yoshikawa, Seizi, 4,431,610, Cl. 423-12.000.
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Vittoz, Eric A., 4,431,929, Cl. 307-490.000.
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Paschke, Edward E.; and Cerrefice, Steven A., 4,431,798, Cl. 528-361.000.
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Jaffrennou, Bernard; and Cessou, Maurice, 4,430,955, Cl. 114-267.000.
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Bingaman, Barrett P., 4,431,950, Cl. 318-7.000.
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Bolus, Daniel M.; and Chea, Ramon C. W., Jr., 4,431,868, Cl. 179-18.0FA.
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Srour, Joseph R.; Curtis, Orlie L.; Othmer, Siegfried; and Chen, Susan C. C., 4,431,920, Cl. 250-370.000.
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Parthuisot, Jean P.; Chevalier, Claude; and Bouvet, Jean M., 4,431,094, Cl. 192-3.300.
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Abbott, Barry J.; and Silcox, William H., 4,431,344, Cl. 405-202.000.
Ferm, Richard L., 4,431,514, Cl. 208-48.0AA.
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Seiver, Robert L.; and Chianelli, Russell R., 4,431,747, Cl. 502-220.000.
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Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Aiki, Kunio; and Umeda, Jun-ichi, 4,432,091, Cl. 372-45.000.
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Di Drusco, Giovanni; Chiolle, Antonio; Danesi, Sergio; and Credali, Lino, 4,431,696, Cl. 428-212.000.
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Fukui, Masahiro; Inoue, Hiromichi; Goto, Yasuyuki; Sato, Hideo; and Inukai, Takashi, 4,431,564, Cl. 252-299.660.
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Maeda, Tadahiko; and Tanaka, Kuniaki, 4,431,738, Cl. 435-240.000.
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Lambert, Eber F.; and Christopher, Todd J., 4,432,015, Cl. 358-181.000.
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Fuller, Nelson; and Bergsma, Rudolph, 4,431,981, Cl. 338-42.000.
Pidgeon, Wilman A., 4,430,980, Cl. 123-497.000.
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Hofer, Arnold; Graf, Rene; and Astbury, James H., 4,431,213, Cl. 282-27.500.
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Andrews, Christopher M., 4,431,756, Cl. 523-414.000.
Back, Gerhard, 4,431,583, Cl. 260-146.00R.
Durr, Dieter, 4,431,439, Cl. 71-88.000.
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Hoyle, William; and Vogel, Rolf, 4,431,438, Cl. 71-86.000.
Jost, Max; and Sieber, Werner, 4,431,721, Cl. 430-37.000.
Mondadori, Cesare; and Schmutz, Markus, 4,431,641, Cl. 424-244.000.
Pfaendler, Hans-Rudolf, 4,431,588, Cl. 260-239.00A.
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Zwillich, Alexander; Merola, Carl R.; and Ciccotelli, Stephen S., 4,432,036, Cl. 361-337.000.
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Valdittera, Sergio; Cicin-Sain, Ivo; and Berga, Jaime, 4,430,813, Cl. 37-104.000.
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Dessere, Jacques; and Helle, Michel, 4,432,028, Cl. 360-113.000.
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Cherbuy, Bernard; and Bongrain, Raymond, 4,430,957, Cl. 118-657.000.
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Resnick, Brian J., 4,432,063, Cl. 364-513.000.
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Olivieri, Roberto; Pansolli, Paolo; Fascetti, Eugenio; and Ciuffolotti, Pierluigi, 4,431,737, Cl. 435-208.000.
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Jones, Robert E., 4,431,084, Cl. 187-9.00R.
Sturtz, Charles R., Jr., 4,431,365, Cl. 414-730.000.
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Kluge, Arthur F.; and Clark, Robin D., 4,431,665, Cl. 424-283.000.
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- Cleary, Arthur L.: See—
Duffield, Peter L.; Cleary, Arthur L.; and Winey, Calvin M., III, 4,432,005, Cl. 346-140.00R.
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- Clipper, Donald; and Norfleet, James, to Colgate-Palmolive Company. Aqueous oral solution. 4,431,631, Cl. 424-53.000.
- Clow, Gary W.: See—
Bailey, David F.; Weidler, Allen J.; Gilmore, Merle L.; and Clow, Gary W., 4,431,991, Cl. 340-825.520.
- Cobb, John F.; and Martin, John W., to Whirlpool Corporation. Method and apparatus for heating plastic sheet material. 4,431,404, Cl. 432-11.000.
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Lemieux, George E.; Cochran, John E.; and Anderson, Robert S., 4,430,910, Cl. 74-867.000.
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- Coleman, Charles H., Jr., to Ampex Corporation. Apparatus and method for determining read head position. 4,432,026, Cl. 360-77.000.
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Clipper, Donald; and Norfleet, James, 4,431,631, Cl. 424-53.000.
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Stemstad, Thomas L., 4,430,760, Cl. 3-1.900.
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Collett, Lee W.; and Collett, Janet, 4,431,394, Cl. 425-177.000.
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Scott, Eddie W.; and Seltzer, Errol N., 4,430,853, Cl. 57-247.000.
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Grange, Hubert; and Meyer, Robert, 4,431,989, Cl. 340-763.000.
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Choe, Eui W.; and Conciatori, Anthony B., 4,431,796, Cl. 528-336.000.
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- Connors, David G.: See—
Cairns, Thomas M.; and Connors, David G., 4,431,252, Cl. 339-176.00P.
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Holm, Claus; and Sirtl, Erhard, 4,431,475, Cl. 156-606.000.
- Continental Can Company, Inc.: See—
Roth, Donald J., 4,431,110, Cl. 215-213.000.
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- Corman, Edward M.: See—
Balzer, Claude P.; and Corman, Edward M., 4,430,833, Cl. 52-255.000.
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Pang, Songja; and New, Maria, 4,431,743, Cl. 436-542.000.
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Adair, Peter J., 4,431,420, Cl. 433-199.000.
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Bourmonville, Jean-Paul; Cosyns, Jean; and Vasudevan, Srinivasan, 4,431,574, Cl. 502-261.000.
- Couch, Philip R., to International Telephone and Telegraph Corporation. Optical data bus receiver with signal waveform restoring means. 4,431,916, Cl. 250-214.00R.
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Weber, Harold J., 4,431,302, Cl. 355-14.00CH.
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Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., 4,431,109, Cl. 212-177.000.
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Boulard, Pierre; Cozic, Jean-Yves; and Fiche, Georges, 4,431,992, Cl. 340-825.530.
- CPC International Inc.: See—
Kaminsky, Walter, 4,431,788, Cl. 527-313.000.
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Eriksson, Sune W.; and Egnelov, Gunnar K., 4,431,225, Cl. 294-86.190.
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Hakansson, Bo H.; Saario, Roy A.; and Saario, Roy A., 4,431,001, Cl. 128-421.000.
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Cramer, Barry G.; and Cramer, Roy A., 4,431,597, Cl. 261-93.000.
- Crawford, David L., to Benckiser-Knapsack GmbH. Composition for treating fish fillet to increase yield and shelf life. 4,431,679, Cl. 426-332.000.
- Credali, Lino: See—
Di Drusco, Giovanni; Chiolle, Antonio; Danesi, Sergio; and Credali, Lino, 4,431,696, Cl. 428-212.000.
- Crespo, Mary R.: See—
Seton, Fenmore R.; Crespo, Mary R.; and Rackliff, Robert F., 4,430,816, Cl. 40-2.00R.
- Crown Cork & Seal Company, Inc.: See—
Aliff, Lawrence E.; and Scheswohl, Edward E., 4,431,320, Cl. 400-130.000.
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Schutz, Rudolph W., 4,431,141, Cl. 242-56.200.
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Lulejian, Donald A., 4,431,436, Cl. 65-159.000.
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Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,431,801, Cl. 536-123.000.
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- Curtis, Orlie L.: See—
Srouf, Joseph R.; Curtis, Orlie L.; Othmer, Siegfried; and Chen, Susan C. C., 4,431,920, Cl. 250-370.000.
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Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,432,061, Cl. 364-480.000.
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- Dadhich, Ghanshyam M., to Westinghouse Electric Corp. Method and apparatus for lubricating turbine bearings. 4,431,372, Cl. 415-175.000.
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Ikegawa, Masahiro; Daikoku, Takahiro; Nakayama, Wataru; and Ueda, Taisei, 4,431,980, Cl. 336-60.000.
- Daimer, Wolfgang: See—
Dworak, Gert; Daimer, Wolfgang; and Lackner, Heinrich, 4,431,780, Cl. 525-444.500.
- Dainippon Ink & Chemicals Inc.: See—
Araki, Shingo; Asai, Keizo; and Ono, Seibei, 4,431,762, Cl. 524-220.000.
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Katsuda, Yoshio; and Minamite, Yoshihiro, 4,431,668, Cl. 424-364.000.
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Yamaguchi, Hisakichi, 4,431,112, Cl. 220-70.000.
- Dallas, Paul R.: See—
Cleveland, Donald C.; and Dallas, Paul R., 4,431,334, Cl. 403-322.000.
- Danesi, Sergio: See—
Di Drusco, Giovanni; Chiolle, Antonio; Danesi, Sergio; and Credali, Lino, 4,431,696, Cl. 428-212.000.
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Valbjorn, Knud V., 4,430,900, Cl. 73-701.000.
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- Date, Naoki: See—
Nakagawa, Seiichi; Ishimori, Yoshio; and Date, Naoki, 4,431,915, Cl. 250-310.000.
- D'Atre, John D.: See—
Chausse, B. Paul; and D'Atre, John D., 4,431,957, Cl. 318-805.000.
- Daviduk, Nicholas; and Haddad, James H., to Mobil Oil Corporation. Fluid zeolite catalyst conversion of alcohols and oxygenated derivatives to hydrocarbons. 4,431,856, Cl. 585-469.000.
- Davis, Robert B., to Union Carbide Corporation. Method for cooling a process gas stream. 4,430,865, Cl. 62-121.000.
- Davis, Thomas E.; and Overman, Dana C., III, to Dow Chemical Company. The Process for drying water-wet membranes. 4,430,807, Cl. 34-9.000.
- Day, William J.: See—
Saponara, Domenick; and Day, William J., 4,431,889, Cl. 219-10.55F.
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Burris, Lee R.; and Hill, James D., Jr., 4,430,801, Cl. 33-174.00E.
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Ovshinsky, Stanford R.; Sapru, Krishna; Dec, Krystyna; and Hong, Kuochih, 4,431,561, Cl. 252-184.000.
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Barnsbee, Clive D.; and Decker, Marvin G., 4,431,139, Cl. 242-55.530.
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Ebert, Russell L.; and Hayes, Stanley G., 4,431,078, Cl. 180-193.000.
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Highstreet, Edward J.; Stannard, Forrest B.; Piper, Louis H.; and Dimitriou, Michael A., 4,431,549, Cl. 210-791.000.
- Deister Concentrator Company, Inc.: See—
Hollingsworth, Clinton A., 4,431,531, Cl. 209-170.000.
- Delalande S.A.: See—
Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., 4,431,851, Cl. 568-808.000.
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- deRivet, Philippe-Hubert: See—
Bogaert, Jean-Louis; deRivet, Philippe-Hubert; and Franklin, Benjamin S., 4,432,051, Cl. 364-200.000.
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Salice, Luciano, 4,430,771, Cl. 16-235.000.
- Deville, Christian; and Payen, Francis, to Thomson-CSF. Delay line having coupled cavities for a traveling-wave tube and a traveling-wave tube equipped with said line. 4,431,944, Cl. 315-3.600.
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- Dexter, Steven T.: See—
Nagao, Jay J.; and Dexter, Steven T., 4,431,073, Cl. 180-6.480.
- Diamond Shamrock Chemicals Company: See—
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,431,548, Cl. 210-732.000.
- Diamond Shamrock Corporation: See—
Gestaut, Lawrence J.; and Solomon, Frank, 4,431,567, Cl. 502-101.000.
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- Dickakian, Ghazi, to Exxon Research and Engineering Co. Aromatic pitch from asphaltene-free steam cracker tar fractions. 4,431,512, Cl. 208-44.000.
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- Dickinson, Robert W.: See—
Dickinson, Ben W. O., III; and Dickinson, Robert W., 4,431,069, Cl. 175-61.000.
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Bock, Erich; and Mosig, Wolfgang, 4,430,943, Cl. 102-522.000.
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Wohlert, Andrew M.; Miller, Frederick A.; and Dietrich, Verne E., 4,432,034, Cl. 361-154.000.
- DiGiovanni, John; and Golden, Donald M., to Ethicon, Inc. Multiple clip applicator. 4,430,997, Cl. 128-326.000.
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Chao, Hu H.; and DiMaria, Donelli J., 4,432,072, Cl. 365-149.000.
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Highstreet, Edward J.; Stannard, Forrest B.; Piper, Louis H.; and Dimitriou, Michael A., 4,431,549, Cl. 210-791.000.
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- Director-General of Agency of Industrial Science & Technology: See—
Suzuki, Masaomi; and Mizuno, Koichi, 4,431,566, Cl. 252-373.000.
- Dirico, Mark A., to Hub Folding Box Co., Inc. One piece blank for nesting double tray, coverable, burger and fries box. 4,431,128, Cl. 229-33.000.
- Disa A/S (Danski Industri Sundikat A/S): See—
Fog, Jorgen L.; and Nielsen, Jorgen, 4,430,922, Cl. 89-37.00H.
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- Displayco Midwest, Inc., a division of Schiftenhaus Packaging Corporation: See—
Kvame, Martin C., 4,430,947, Cl. 108-111.000.
- Dittmer, William H.: See—
Wycoff, Keith H.; and Dittmer, William H., 4,431,990, Cl. 340-825.480.
- Dlabac, Antonin: See—
Protiva, Miroslav; Sindelar, Karel; Dlabac, Antonin; and Metysova, Jirina, 4,431,808, Cl. 546-197.000.
- Doboy Packaging Machinery Inc.: See—
Dohrendorf, Hans A., 4,430,845, Cl. 53-550.000.
- Dockerty, Robert C., to International Business Machines Corporation. Sub-micrometer channel length field effect transistor process. 4,430,791, Cl. 29-571.000.
- Dr. Johannes Heidenhain GmbH: See—
Affa, Alfred, 4,430,799, Cl. 33-125.00R.
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- Dolezal, George E.: See—
Cunningham, Robert A.; and Dolezal, George E., 4,431,066, Cl. 175-372.000.
- Doll, Ronald J.: See—
Smith, Elizabeth M.; Witkowski, Joseph T.; and Doll, Ronald J., 4,431,644, Cl. 424-246.000.
- Dolly Toy Company, The: See—
Marcus, Kenneth N., 4,430,818, Cl. 40-429.000.
- Dolphin, Robert J.: See—
Kostlin, Heiner; Peterek, Manfred; Schaper, Hartwig; Dolphin, Robert J.; and Willmott, Frederick W., 4,431,919, Cl. 250-361.00C.
- Donnelly, Albert J.: See—
Elder, Delbert E.; Forder, Gerald F.; and Donnelly, Albert J., 4,431,948, Cl. 315-276.000.
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Paschke, Edward E.; and Donohue, John A., 4,431,797, Cl. 528-361.000.
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Moinet, Gerard H.; Dostert, Philippe L.; and Bourgery, Guy R., 4,431,851, Cl. 568-808.000.
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Davis, Thomas E.; and Overman, Dana C., III, 4,430,807, Cl. 34-9.000.

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Harris, Robert F.; and Hoffman, Dwight K., 4,431,782, Cl. 525-531.000.
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Hickner, Richard A., 4,431,498, Cl. 204-159.230.
Hoffman, Dwight K., 4,431,754, Cl. 521-137.000.
Krawczyk, Leroy S.; Martin, Charles W.; and Pearce, Roscoe L., 4,431,563, Cl. 252-189.000.
McIntyre, James A.; and Phillips, Robert F., 4,431,494, Cl. 204-83.000.
Mullins, Michael J., 4,431,592, Cl. 260-410.600.
Snoble, Karel A. J., 4,431,493, Cl. 204-79.000.
Tung, Lu H.; and Lo, Grace Y., 4,431,777, Cl. 525-314.000.
Wessling, Ritchie A.; and Klingler, Thomas C., 4,431,768, Cl. 524-543.000.
Dow Corning Corporation: See—
Falender, James R.; and Saam, John C., 4,431,771, Cl. 524-863.000.
Groenhof, Eugene D., 4,431,578, Cl. 252-573.000.
Monroe, Carl M.; and Sweet, Randall P., 4,431,982, Cl. 338-214.000.
Down River International, Inc.: See—
Eatherton, J. Roger, 4,431,405, Cl. 432-72.000.
Drach, John E.; and O'Neal, Cleveland, Jr., to Scott Paper Co. Modified cellulosic fibers and method for preparation thereof, 4,431,481, Cl. 162-100.000.
Drehman, Lewis E.: See—
McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., 4,431,750, Cl. 502-329.000.
Dressel, Michael O.; Varner, Horace M.; Brummert, LaValle V.; and Bodle, John W., to Bendix Corporation, The. Drive mechanism for drill, 4,431,063, Cl. 173-149.000.
Dresser Industries, Inc.: See—
Hart, John E., 4,431,390, Cl. 418-84.000.
Kernion, Mark C.; and Michael, David J., 4,431,744, Cl. 501-99.000.
Walkow, Arnold M., 4,431,963, Cl. 324-65.00R.
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Dreux, Huguette: See—
Grandadam, Jean A.; and Dreux, Huguette, 4,431,640, Cl. 424-243.000.
Driessen, Marcellis H. J.: See—
Habracken, Adrianus M.; Vink, Nicolaas G.; Groothoff, Adriaan J.; and Driessen, Marcellis H. J., 4,431,940, Cl. 313-413.000.
Drooker, Michael S.: See—
Truebe, Jonathan; and Drooker, Michael S., 4,431,340, Cl. 405-82.000.
Druckenbrodt, Wolf-Gunther: See—
Schneider, Volker; Margraf, Gerhard; and Druckenbrodt, Wolf-Gunther, 4,431,580, Cl. 252-631.000.
Du Pont Canada Inc.: See—
Hamilton, Michael A.; and Zboril, Vaclav G., 4,431,784, Cl. 526-116.000.
Dubin, Leonard, to Nalco Chemical Company. Use of acrylamide/acrylic acid copolymers for prevention of fouling by $\text{Ca}_3(\text{PO}_4)_2$, 4,431,547, Cl. 210-701.000.
Dubovitsky, Fedor I.: See—
Merzhanov, Alexander G.; Borovinskaya, Inna P.; Kustova, Lidia V.; and Dubovitsky, Fedor I., 4,431,448, Cl. 75-238.000.
Dubowik, John M.: See—
Harvey, Robert J.; Litwak, Philip; Ribich, William A.; and Dubowik, John M., 4,430,998, Cl. 128-335.000.
Duffield, Peter L.; Cleary, Arthur L.; and Winey, Calvin M., III, to Advanced Color Technology, Inc. Ink control system for ink jet printer, 4,432,005, Cl. 346-140.00R.
Dunn, Richard P.; and Garrels, Wilbur D., to Hydrowell SA. Petroleum pumping unit, 4,430,924, Cl. 91-277.000.
Dunn, Robert G.; and Barnard, Kenneth N., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Diaphragm design for a bender type acoustic sensor, 4,431,873, Cl. 179-110.00A.
Du Pont de Nemours, E. I., and Company: See—
Balmat, Jean L., 4,431,486, Cl. 203-69.000.
Coursen, David L., 4,431,349, Cl. 405-303.000.
Honsberg, Wolfgang, 4,431,776, Cl. 525-194.000.
Patten, Stanley H., 4,431,922, Cl. 250-486.100.
Proskow, Stephen, 4,431,723, Cl. 430-286.000.
Romesser, James A., 4,431,736, Cl. 435-156.000.
Squire, Edward N., 4,431,786, Cl. 526-247.000.
Strohmaier, Alfred J., 4,431,684, Cl. 427-57.000.
Waller, Francis J., 4,431,839, Cl. 562-406.000.
Weyant, Oakley L., Jr., 4,431,423, Cl. 494-20.000.
Duracell Inc.: See—
Fehling, John R.; Mathews, John P.; and Yatabe, Thomas, 4,431,713, Cl. 429-7.000.
Durham, Michael D.: See—
Rinard, George A.; and Durham, Michael D., 4,431,434, Cl. 55-135.000.
Durr, Dieter, to Ciba-Geigy Corporation. Herbicidally active 2-nitro-phenoxyphenyloxazines and dihydrooxazines, 4,431,439, Cl. 71-88.000.
Duschka, Hartmut: See—
Adelmeyer, Dieter; Duschka, Hartmut; and Schott, Helmut, 4,432,095, Cl. 378-181.000.
Dusenbury, Joseph H.; and Gagarine, Dmitry M., to Milliken Research Corporation. Polyester textile materials resistant to undesirable fibrillation, 4,431,759, Cl. 524-108.000.
Dworak, Gert; Daimer, Wolfgang; and Lackner, Heinrich, to Vianova Kunstharz, A.G. Low solvent, water-dilutable binders for air drying coating compositions, 4,431,780, Cl. 525-444.500.
Dybas, Richard A.; Witzel, Bruce E.; and Grier, Nathaniel, to Merck & Co., Inc. 2,4-Disubstituted-1,2,5-thiadiazol-3(2H)-one antimicrobials, 4,431,655, Cl. 424-270.000.
E-C Apparatus Corporation: See—
Gorman, William W., Jr.; and Gorman, Esther M., 4,431,506, Cl. 204-299.00R.
Easley, Robert L.: See—
Thompson, Thomas C.; Abbott, Martyn S.; and Easley, Robert L., 4,431,425, Cl. 604-246.000.
East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Wholly aromatic polyester comprising 4-oxy-4'-carboxybiphenyl moiety which is capable of forming an anisotropic melt phase, 4,431,770, Cl. 524-599.000.
Easterling, Gene B.: See—
Scholl, Rolland D.; and Easterling, Gene B., 4,431,060, Cl. 172-4.500.
Eastman Kodak Company: See—
Barnsbee, Clive D.; and Decker, Marvin G., 4,431,139, Cl. 242-55.530.
Dettly, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,431,586, Cl. 260-239.00R.
Steklenski, David J., 4,431,727, Cl. 430-528.000.
Eatherton, J. Roger, to Down River International, Inc. Gas pollution control apparatus and method and wood drying system employing same, 4,431,405, Cl. 432-72.000.
Eaton Corporation: See—
Morscheck, Timothy J., 4,430,911, Cl. 74-868.000.
Schutten, Herman P.; Sedivy, Jan K.; and Sackett, Robert W., 4,431,958, Cl. 318-816.000.
Eaton, Sargent S., Jr.; and Wooten, David R., to Inmos Corporation. MOS Capacitive bootstrapping trigger circuit for a clock generator, 4,431,927, Cl. 307-269.000.
Ebara Inflico Kabushiki Kaisha: See—
Matsuo, Yoshitaka; Tanaka, Toshihiro; and Miya, Akiko, 4,431,543, Cl. 210-605.000.
Ebata, Hitoshi; and Matunaga, Shigetugu, to Toshiba Kikai Kabushiki Kaisha. Semiconductor vapor phase growing apparatus, 4,430,959, Cl. 118-697.000.
Ebauches S.A.: See—
Portmann, Hubert, 4,431,314, Cl. 368-188.000.
Eber, David H.; and Utter, Robert E., to Trane Company, The. Controlled suction unloading in a scroll compressor, 4,431,388, Cl. 418-55.000.
Ebert, Russell L.; and Hayes, Stanley G., to Deere & Company. Snowmobile suspension system, 4,431,078, Cl. 180-193.000.
EC Erdolchemie GmbH: See—
Schleppinghoff, Bernhard; Reinhardt, Horst; and Tschorn, Herbert, 4,431,528, Cl. 208-255.000.
Eckelman, William C.; Reba, Richard C.; Rzeszotarski, Wacław J.; and Gibson, Raymond E., to Research Corporation. Gamma-emitting receptor-binding 3-quinuclidinyl glycolates; methods of preparation thereof and imaging and assay methods utilizing same, 4,431,627, Cl. 424-1.100.
Edelstein, William A.; and Bottomley, Paul A., to General Electric Company. Method of three-dimensional NMR imaging using selective excitation, 4,431,968, Cl. 324-309.000.
Eder, Hans, to Franz Kuhlmann Präzisionsmechanik und Maschinenbau GmbH & Co. KG. Plotting device, 4,430,797, Cl. 33-1.00M.
Edison International: See—
Lucas, George M., 4,431,369, Cl. 415-36.000.
Edixhoven, Gerardus H., to Hunter Douglas International N.V. Apparatus for making slats for a slatted blind, 4,430,916, Cl. 83-159.000.
Edman, Hans; and Lonnebring, Arne, to IMO AB. Apparatus for oil burners, 4,431,382, Cl. 417-302.000.
Edmundson, Michael J.; Halstead, Christopher; and Hammond, Leslie, to Thorn Gas Appliances Limited. Control valve systems for gas water heaters, 4,431,132, Cl. 236-25.00A.
Edwards, Donald W.; and Thomas, Ronald D., to Angus Chemical Company. TL-170 Blasting agent, 4,431,468, Cl. 149-21.000.
Edwards, Lawrence H. Back flow prevention valve, 4,431,025, Cl. 137-422.000.
Edwards, Peter L.; and Ward, Barry, to International Business Machines Corp. Telecommunication receivers, 4,431,872, Cl. 179-84.0VF.
Edwards, Stephen A.: See—
DeMoss, Larry A., 4,431,203, Cl. 280-270.000.
Eegdeman, Cent M.: See—
v.Schenck, Raban; and Eegdeman, Cent M., 4,431,620, Cl. 423-315.000.
Egawa, Takeshi: See—
Kajita, Hideo; Egawa, Takeshi; and Miki, Yukio, 4,431,285, Cl. 354-405.000.
Egnelov, Gunnar K.: See—
Eriksson, Sune W.; and Egnelov, Gunnar K., 4,431,225, Cl. 294-86.190.
Eguchi, Takeo, to Sony Corporation. Method and apparatus for minimizing non-linear distortion in the recording of a bi-level signal, 4,432,024, Cl. 360-45.000.
Ehrenfreund, Josef, to Ciba-Geigy Corporation. Phenylureas, 4,431,671, Cl. 424-322.000.
Eisfeller, Richard C., to Ex-Cell-O Corporation. Vacuum metallizing a dielectric substrate with indium and products thereof, 4,431,711, Cl. 428-31.000.

- Eitan, Boaz, to Hebrew University of Jerusalem. Electrically programmable non-volatile memory, 4,432,075, Cl. 365-185.000.
Ekenberg, Ake. Shavings—or chips—fired burner unit for heating boilers, 4,430,949, Cl. 110-193.000.
Ekholm, Pertti: See—
Suovaniemi, Osmo; Kaukanen, Esko; and Ekholm, Pertti, 4,431,924, Cl. 250-566.000.
Elazari, Amos; and Levin, Moshe, to Golan Industries Ltd. Reclinable seat and foldable-table assembly, 4,431,231, Cl. 297-163.000.
Elba-Werk Maschinen-Gesellschaft mbH & Co.: See—
Fehler, Jürgen O.; and Griesbach, Rolf, 4,431,386, Cl. 417-517.000.
Elder, Delbert E.; Forder, Gerald F.; and Donnelly, Albert J., to Standun Controls, Inc. Apparatus for control of load power consumption, 4,431,948, Cl. 315-276.000.
Eldon Industries: See—
Riccio, Ronald, 4,431,903, Cl. 219-238.000.
Electric Power Research Institute, Inc.: See—
Nathenson, Richard D.; and Patel, Mukund R., 4,431,932, Cl. 310-208.000.
Electro-Hydraulic Controls, Inc.: See—
Presley, Glen T.; and Lautzenhiser, Lloyd L., 4,430,846, Cl. 56-10.200.
Electro-Petroleum, Inc.: See—
Bell, Christy W.; Titus, Charles H.; and Wittle, John K., 4,431,612, Cl. 422-186.210.
Eli Lilly and Company: See—
Hoehn, Marvin M.; and Michel, Karl H., 4,431,809, Cl. 546-270.000.
Kukolja, Stjepan; and Pfeil, Janice L., 4,431,803, Cl. 544-16.000.
Ellenbogen, Leon, to American Cyanamid Company. Prenatal iron supplements, 4,431,634, Cl. 424-147.000.
Elliott, Robert D.: See—
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,431,805, Cl. 544-279.000.
Ellison, Michael J.: See—
Goodell, Fred L.; and Ellison, Michael J., 4,431,043, Cl. 152-417.000.
Elscent Ltd.: See—
Inbar, Dan; Bernstein, Tsur; and Shimoni, Yair, 4,432,059, Cl. 364-414.000.
Emhart Industries, Inc.: See—
Willits, Benjamin R., 4,430,866, Cl. 62-196.400.
Emori, Hiroshi: See—
Kokubo, Eiichi; Yamazaki, Makoto; and Emori, Hiroshi, 4,431,178, Cl. 271-187.000.
EMPI Inc.: See—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,431,002, Cl. 128-422.000.
Endo, Kenichi: See—
Yazawa, Satoru; Banda, Shunji; and Endo, Kenichi, 4,431,272, Cl. 350-336.000.
Energy Conversion Devices, Inc.: See—
Ovshinsky, Stanford R.; Sapru, Krishna; Dec, Krystyna; and Hong, Kuochih, 4,431,561, Cl. 252-184.000.
Enertec: See—
Merle, Jean P., 4,431,146, Cl. 242-192.000.
Engel, Robert. Cover sleeve for shelving brackets of the blade type, 4,431,155, Cl. 248-243.000.
Engelhard Corporation: See—
Gould, Lawrence J.; and Shen, Yuan-Shou, 4,431,462, Cl. 148-11.50Q.
Epperson, Edwin H., Jr., to General Dynamics, Pomona Division. Gyroscopically steerable bullet, 4,431,150, Cl. 244-3.210.
Eppley, William J.; and Kelley, John A., to Honeywell Inc. Heat activated vent, 4,431,716, Cl. 429-53.000.
Epson Corporation: See—
Karaki, Nobuo; and Nakaya, Teruyuki, 4,431,319, Cl. 400-124.000.
Epstein, Joseph W.: See—
McKenzie, Thomas C.; Epstein, Joseph W.; and Fanshawe, William J., 4,431,661, Cl. 424-274.000.
Equipments Automobiles Marchal: See—
Perrier, Pierre; and Mattei, Mathieu, 4,431,931, Cl. 310-61.000.
Erdelsky, Joseph J.: See—
Genbaffe, Francis S.; Erdelsky, Joseph J.; and Greenwood, Eugene C., 4,431,117, Cl. 222-3.000.
Ericson, Richard J., to Otis Elevator Company. Elevator cab, 4,430,835, Cl. 52-282.000.
Eriksson, Harald, to Svenska Forpackningsforskningsinstitutet. Registering apparatus, 4,432,000, Cl. 346-7.000.
Eriksson, Sune W.; and Egnelov, Gunnar K., to Craelius AB. Releasing device in core barrel grapples, 4,431,225, Cl. 294-86.190.
Ernst, Hans-Hellmut, to Autoflug GmbH. Safety seat for motor vehicles, 4,431,233, Cl. 297-468.000.
Erwin Sick GmbH/Optik-Elektronik: See—
Sick, Erwin; Ross, Dieter; and Mankel, Siegfried, 4,431,309, Cl. 356-431.000.
Eschem Inc.: See—
Werber, Gerhardt P., 4,431,787, Cl. 526-240.000.
Escher Wyss GmbH: See—
Heinbockel, Wolfgang; Selder, Harald; and Linck, Erich, 4,431,482, Cl. 162-243.000.
Estey, Roger S.; and Hanna, Michael F., to United States of America, National Aeronautics and Space Administration. Method and apparatus for precision control of radiometer, 4,431,306, Cl. 356-216.000.
Esveldt, Cornelis J.: See—
Stijntjes, Theodor G. W.; and Esveldt, Cornelis J., 4,431,979, Cl. 335-210.000.
Ethicon, Inc.: See—
DiGiovanni, John; and Golden, Donald M., 4,430,997, Cl. 128-326.000.
Ethyl Corporation: See—
Bossier, Joseph A.; and Vega, Julio J., 4,431,847, Cl. 568-755.000.
Eitlinger, Ralph, to Amco Corporation. Pre-rinse hose, 4,431,031, Cl. 138-109.000.
Euclid, Inc.: See—
Scibbe, Harold R., 4,431,091, Cl. 188-264.00F.
Evans, Edward R.: See—
Nally, Robert B.; Evans, Edward R.; Williamson, Lawrence R.; and Calnek, Trevor A., 4,431,322, Cl. 400-605.000.
Evans, Gary L., to Keyrack Company, Inc. Cabinet for storing and selectively dispensing a variety of paper supplies, 4,431,238, Cl. 312-184.000.
Evans, James A.: See—
Witzig, John W.; and Evans, James A., 4,431,411, Cl. 433-6.000.
Evans, John D.: See—
Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., 4,431,109, Cl. 212-177.000.
Evans, Thomas W. Method of repairing potholes in road surfaces by filling them with fly ash hardened in water, 4,431,335, Cl. 404-75.000.
Everhart, James E. Auctioneer's podium assembly, 4,431,080, Cl. 182-15.000.
Ex-Cell-O Corporation: See—
Eisfeller, Richard C., 4,431,711, Cl. 428-31.000.
Exxon Production Research Co.: See—
Gordon, Michael P., 4,431,534, Cl. 210-110.000.
Moyer, Mark C., 4,431,215, Cl. 285-18.000.
Exxon Research and Engineering Company: See—
Baker, Richard H.; and Glogolia, Miroslav, 4,432,032, Cl. 361-111.000.
Dickakian, Ghazi, 4,431,512, Cl. 208-44.000.
Gutierrez, Antonio; Brownawell, Darrell W.; Portnoy, Robert C.; and Brois, Stanley J., 4,431,551, Cl. 252-8.50C.
Moss, Gerald, 4,431,622, Cl. 423-437.000.
Olmstead, William N., 4,431,511, Cl. 208-11.00R.
Roarty, John C.; and Campbell, Malcolm L., 4,431,521, Cl. 208-134.000.
Seiver, Robert L.; and Chianelli, Russell R., 4,431,747, Cl. 502-220.000.
Wristers, Harry J., 4,431,569, Cl. 502-154.000.
Eydt, Andre J.: See—
Smith, Gordon C.; Hayes, Richard F.; Wendrovsky, Carole G.; and Eydt, Andre J., 4,431,682, Cl. 426-565.000.
Eyerly, Joyce K.: See—
Brighton, Carl T.; Black, Jonathan; and Eyerly, Joyce K., 4,430,999, Cl. 128-419.00F.
Faedi, Leonardo; and Bertoli, Maurizio, to Honeywell Information Systems Italia. Step motor control circuit, 4,431,955, Cl. 318-696.000.
Fahrbach, Erich: See—
Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, 4,431,687, Cl. 427-246.000.
Fair, David L.; Woodard, Kenneth E., Jr.; and Helmstetter, David A., to Olin Corporation. Location of a structurally damaged membrane, 4,431,495, Cl. 204-98.000.
Fairchild Camera & Instrument Corporation: See—
Delfino, Michelangelo; and Lehrer, William I., 4,431,900, Cl. 219-121.0LM.
Fairfield Manufacturing Co., Inc.: See—
Nagao, Jay J.; and Dexter, Steven T., 4,431,073, Cl. 180-6.480.
Falcomato, Rocco, to Niemand Bros. Electrical connection insulator and method of covering an electrical connection therewith, 4,431,469, Cl. 156-86.000.
Falconer, James A.; Jones, Raymond V. H.; and Fleming, Ian G. C., to Imperial Chemical Industries Limited. Halohydrins, 4,431,852, Cl. 568-809.000.
Falender, James R.; and Saam, John C., to Dow Corning Corporation. Polymerization of silicone polymer-filler mixtures as powders, 4,431,771, Cl. 524-863.000.
Falendysz, Eugene L.; and Brumbaugh, Eldon M., to J. I. Case Company. Variable volume hydraulic pump, 4,431,381, Cl. 417-289.000.
Falxa, Martin L., to Polaroid Corporation. Method for preparing photosensitive silver halide emulsions, 4,431,729, Cl. 430-569.000.
Fanshawe, William J.: See—
McKenzie, Thomas C.; Epstein, Joseph W.; and Fanshawe, William J., 4,431,661, Cl. 424-274.000.
Farin, William G. Methods for removing malodorous sulfur compounds from pulp mill flue gases and the like by using green liquor, 4,431,617, Cl. 423-232.000.
Farley, William W., IV: See—
Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., 4,432,053, Cl. 364-200.000.
Fascetti, Eugenio: See—
Olivieri, Roberto; Pansolli, Paolo; Fascetti, Eugenio; and Ciuffolotti, Pierluigi, 4,431,737, Cl. 435-208.000.
Faulkner, Richard D.; and McHose, Robert E., to RCA Corporation. Electron discharge device having a high speed cage, 4,431,943, Cl. 313-533.000.
Faupel, Werner: See—
Bofinger, Gunter; and Faupel, Werner, 4,430,974, Cl. 123-387.000.
Faure, Patrick J.: See—
Deneux, Pierre E.; Faure, Patrick J.; Laffitte, Denis R. G.; and Lemaout, Michel E. M., 4,430,855, Cl. 60-39.030.
Favale, Dennis. Mailing and display package, 4,430,843, Cl. 53-410.000.

- FDX Patents Holding Company, N.V.: See—
Zucker, Oved S. F., 4,431,960, Cl. 323-340.000.
- Federal Paper Board Co., Inc.: See—
Buffington, Veronica A., 4,431,214, Cl. 283-65.000.
- Fehler, Jürgen O.; and Griesbach, Rolf, to Elba-Werk Maschinen-Gesellschaft mbH & Co. Concrete-pump assembly. 4,431,386, Cl. 417-517.000.
- Fehling, John R.; Mathews, John P.; and Yatabe, Thomas, to Duracell Inc. Method for adapting high voltage cells or batteries for lower volt rated applications. 4,431,713, Cl. 429-7.000.
- Fehr, Charles, to Firmenich S.A. Pentadecanolid derivatives. 4,431,827, Cl. 549-271.000.
- Fehrenbach, Siegfried; Utz, Eberhard; and Herbst, Kurt, to Robert Bosch GmbH. Pressure control valve. 4,431,026, Cl. 137-510.000.
- Feige, Fritz; and Krennbauer, Franz, to Voest-Alpine Aktiengesellschaft. Process and apparatus for producing hydraulic cement. 4,431,453, Cl. 106-100.000.
- Feinstein Allen I., to Standard Oil Company (Indiana). Modification of hydrocarbon conversion processes over crystalline borosilicate catalysts by addition of water. 4,431,857, Cl. 585-477.000.
- Felder-Schraner, Louis, deceased (by Felder-Schraner, Rita Gertrud, Marcel Charles Felder, heirs); Berner, Godwin; and Kirchmayr, Rudolf, to Ciba-Geigy Corporation. Process for the curing of stoving lacquers. 4,431,774, Cl. 525-162.000.
- Felder-Schraner, Rita Gertrud, Marcel Charles Felder, heirs: See—
Felder-Schraner, Louis, deceased; Berner, Godwin; and Kirchmayr, Rudolf, 4,431,774, Cl. 525-162.000.
- Feldman, Julian; and Hoyt, John M., to National Distillers and Chemical Corporation. Extractive distillation of alcohol-ester mixtures and transesterification. 4,431,838, Cl. 560-234.000.
- Fennemann, Wolfgang; Sander, Ulrich; and Bick, Manfred, to Metallgesellschaft Aktiengesellschaft. Method of producing an alkali sulfate catalyst V₂O₅. 4,431,573, Cl. 562-218.000.
- Ferm, Richard L., to Chevron Research Company. Heat exchanger antifoulant. 4,431,514, Cl. 208-48.0AA.
- Ferranti, plc: See—
Bell, Melvyn R., 4,432,038, Cl. 361-386.000.
- Ferriss, Lincoln; and Shernoff, Donald, to Singer Company, The. Controlled light source. 4,431,947, Cl. 315-151.000.
- Fiberglas Canada Inc.: See—
Oswitch, Stanley, deceased, 4,431,752, Cl. 521-85.000.
- Fibre-Wound (PTY) Limited: See—
Kirkwood, Peter A., 4,431,197, Cl. 277-1.000.
- Fiche, Georges: See—
Boulard, Pierre; Cozic, Jean-Yves; and Fiche, Georges, 4,431,992, Cl. 340-825.530.
- Fichtel & Sachs AG: See—
Limbacher, Bernhard, 4,431,101, Cl. 192-111.00A.
- Scheer, Erich, 4,431,097, Cl. 192-70.180.
- Fields, Ellis K.: See—
Nimry, Tayseer S.; Fields, Ellis K.; and Paschke, Edward E., 4,431,791, Cl. 528-125.000.
- Filthuth, Heinz A. A. W. Position sensitive proportional counter of high resolution with delay line read out to measure the surface distribution of ionizing radiation. 4,431,921, Cl. 250-374.000.
- Finck, Johan C. J.; and Kessels, Henricus M. M., to U.S. Philips Corporation. Optical system which provides a collimated light beam. 4,431,267, Cl. 350-237.000.
- Findley, John E.: See—
Schroeder, Jack J.; and Findley, John E., 4,431,675, Cl. 426-69.000.
- Finet, Alain, to General Signal. System for generating dry coal weight signal for coal feeder and control system based thereon. 4,430,963, Cl. 122-449.000.
- Finkelstein, Alberto L. Waveless waterbed with buoyant honeycomb core. 4,430,764, Cl. 5-450.000.
- Finken, Kenneth R., to Harris Corporation. Circularly polarized hemispheric coverage flush antenna. 4,431,998, Cl. 343-797.000.
- Finnegan, Michael C., to BS&B Safety Systems, Ltd. Reverse buckling rupture disk apparatus and manufacturing methods. 4,431,018, Cl. 132-68.00R.
- Firestone Tire & Rubber Company, The: See—
Carleton, Randall D., 4,430,798, Cl. 33-1.00N.
- Doshak, John M.; Roodvoets, Mark R.; and Halasa, Adel F., 4,431,765, Cl. 524-426.000.
- Firex Corporation: See—
Pfisterer, Richard E.; and Schultz, Richard M., 4,432,041, Cl. 362-86.000.
- Firmenich S.A.: See—
Fehr, Charles, 4,431,827, Cl. 549-271.000.
- Fischer, Karl; and Goessler, Gerhard, to Fischer, Karl. Electric heating apparatus. 4,431,908, Cl. 219-459.000.
- Fitremann, Jean-Michel: See—
Colonna, Jean; Fitremann, Jean-Michel; Genin, Richard; and Sarda, Jean-Paul, 4,431,057, Cl. 166-285.000.
- Flanders, Thomas E., to General Electric Company. Circuit for levitated ball inclinometer. 4,430,803, Cl. 33-366.000.
- Flatscher, Georg, to Dr. Johannes Heidenhain GmbH. High resolution recording medium. 4,431,695, Cl. 428-209.000.
- Fleming, Ian G. C.: See—
Falconer, James A.; Jones, Raymond V. H.; and Fleming, Ian G. C., 4,431,852, Cl. 568-809.000.
- Fliri, Anton: See—
Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,431,590, Cl. 260-330.900.
- Flumngnan, Dennis P.; Charbonneau, Ben J.; and Zulauf, Gary B., to Gulf & Western Manufacturing Company. Snap action switch. 4,431,884, Cl. 200-67.00D.
- FMC Corporation: See—
Behrendt, Joseph W.; Evans, John D.; and Cox, James W., Jr., 4,431,109, Cl. 212-177.000.
- Boward, Willard L., Jr.; and Wang, Kuei H., 4,431,618, Cl. 423-242.000.
- Langerud, David S., 4,431,074, Cl. 180-9.480.
- Raech, Harry, Jr.; and Kennedy, Donald R., 4,430,941, Cl. 102-496.000.
- Sakai, Kunikazu; Suda, Minoru; and Kondo, Kiyoshi, 4,431,659, Cl. 424-273.00P.
- Witt, Robert L., 4,431,217, Cl. 285-276.000.
- Focke & Co.: See—
Focke, Heinz, 4,430,842, Cl. 53-220.000.
- Focke, Heinz, to Focke & Co. Process for apparatus for the manufacture and filling of packages. 4,430,842, Cl. 53-220.000.
- Fodor, Jozsef; Kolimar, Gyorgy; Szilasi, Gizella M.; and Balog, Margit B., to Autoipari Kutato Intezet. Lubricant composition containing metal oxyquinolate. 4,431,553, Cl. 252-42.700.
- Fog, Jorgen L.; and Nielsen, Jorgen, to Disa A/S (Dansk Industri Sundikat A/S). Gun-mount for machine guns or weapons of a similar kind. 4,430,922, Cl. 89-37.00H.
- Fogelberg, Mark J., to Borg-Warner Corporation. Multiple speed ratio transmission with anti-clash brake. 4,430,904, Cl. 74-411.500.
- Folienwalzwerk bruder Teich Aktiengesellschaft: See—
Prohaska, Helmut, 4,431,111, Cl. 215-256.000.
- Ford, James M. Sealing means for filter press cells. 4,431,502, Cl. 204-252.000.
- Ford Motor Company: See—
Cairns, Thomas M.; and Connors, David G., 4,431,252, Cl. 339-176.00MP.
- Lemieux, George E.; Cochran, John E.; and Anderson, Robert S., 4,430,910, Cl. 74-867.000.
- Stockton, Thomas R., 4,430,908, Cl. 74-688.000.
- Forder, Gerald F.: See—
Elder, Delbert E.; Forder, Gerald F.; and Donnelly, Albert J., 4,431,948, Cl. 315-276.000.
- Foresto, Sam. Incinerator. 4,430,950, Cl. 110-235.000.
- Forstner, Anton; and Bajka, Imre, to Siemens-Albis AG. Arrangement for making contact between the conductor tracks of printed circuit boards with contact pins. 4,431,891, Cl. 219-9.500.
- Foster, Christopher F. Water ski rope storage accessory. 4,431,144, Cl. 242-85.000.
- Foster, David W., to Bailey Industrial Products, Inc. Apparatus for opening the tap hole of a metallurgical furnace. 4,431,171, Cl. 266-271.000.
- Fotiu, Eustace: See—
Goldner, Tibor; Fotiu, Eustace; Tietjen, Marlene; and Basak, Kalyan K., 4,431,673, Cl. 424-365.000.
- Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, to Carl Freudenberg, Firma. Method for the manufacture of a fabric-type artificial leather. 4,431,687, Cl. 427-246.000.
- Fournier, Robert L.: See—
Schonasky, William R., 4,431,151, Cl. 248-27.100.
- Fowler, Robert A.: See—
Redenbarger, Philip D.; and Fowler, Robert A., 4,431,364, Cl. 414-697.000.
- Fox, James D.: See—
Paul, Vernon, Jr.; and Fox, James D., 4,431,218, Cl. 285-305.000.
- Fraenkle, Helmut: See—
Hemmerich, Johann; Kupschus, Peter; and Fraenkle, Helmut, 4,431,488, Cl. 204-9.000.
- Fram Europe Limited: See—
Thomas, J. H.; and Azzopardi, S., 4,430,981, Cl. 123-556.000.
- Frame, Norman J., to W. H. Brady Co. Transparent capacitance membrane switch. 4,431,882, Cl. 200-5.00A.
- Frank, Robert B., to General Automotive Specialty Co., Inc. Dual action switch assembly. 4,431,883, Cl. 200-67.00D.
- Frankel, Robert, to United States of America. Energy. Carrier sense data highway system. 4,432,088, Cl. 370-85.000.
- Franklin, Benjamin S.: See—
Bogaert, Jean-Louis; deRivet, Philippe-Hubert; and Franklin, Benjamin S., 4,432,051, Cl. 364-200.000.
- Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., to Barber-Colman Company. Shape generation by orbiting a rotating shaping cutter. 4,431,351, Cl. 409-35.000.
- Frantz, Robert H.; and Hawk, Gary W., to AMP Incorporated. Male/female cable connector. 4,431,249, Cl. 339-107.000.
- Franz Kuhlmann Präzisionsmechanik und Maschinenbau GmbH & Co. KG: See—
Eder, Hans, 4,430,797, Cl. 33-1.00M.
- Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H.: See—
Theurer, Josef; and Hansmann, Johann, 4,430,946, Cl. 104-7.00B.
- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—
Theurer, Josef, 4,430,944, Cl. 104-7.00R.
- Theurer, Josef, 4,430,945, Cl. 104-7.00B.
- Franz Volki OHG: See—
Volki, Franz; and Muller, Heinz, 4,431,209, Cl. 280-604.000.
- Frear, David L.: See—
Punako, Stephen; Macavoy, David W.; Gallusser, David O.; and Frear, David L., 4,431,243, Cl. 339-59.00M.
- French State, The: See—
Melchior, Jean F.; and Andre, Thierry, 4,430,860, Cl. 60-606.000.

- Freundt, Hildegard: See—
Billenstein, Siegfried; Freundt, Hildegard; Wimmer, Ignaz; Gohlke, Fritz J.; and Macenka, Johannes, 4,431,565, Cl. 252-331.000.
- Frey, Otto: See—
Niederer, Peter G.; and Frey, Otto, 4,430,761, Cl. 3-1.910.
- Fried, Robert P.; Rottman, Bernard; and Stark, Thomas W., Jr. Apparatus for producing molded plastic articles. 4,431,397, Cl. 425-384.000.
- Friedrich, Kenneth L.; and TePastie, Jeffrey H. Manual impact-type log splitter and method for making same. 4,431,040, Cl. 144-193.00C.
- Frisbee, Claude M.; and Logan, Henry R., to J. I. Case Company. Battery jumper cable assembly. 4,431,925, Cl. 307-10.00R.
- Fromming, Hans; and Repa, Otto, to Carl Walther GmbH. Firearm, particularly a rifle. 4,430,822, Cl. 42-71.00R.
- Froom, Thomas W., to Rendell Paper Corporation. Folding ice-cream carton, carton blank, and method. 4,431,129, Cl. 229-33.000.
- Frost, John R.: See—
Hegedus, Elizabeth; Frost, John R.; Glicksman, Martin; and Silverman, Jerry E., 4,431,681, Cl. 426-553.000.
- Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-L. Roche Inc. 1H-Pyrrole-3-carbonitrile-4(2-benzoyl)phenyl derivatives as intermediates for pyrrole[3,4-D][2]benzazepines. 4,431,823, Cl. 548-561.000.
- Fu, Chong-Cheng; and Gerzberg, Levy, to Leland Stanford Junior University. The Board of Trustees of the. Transducer structure for generating uniform and focused ultrasonic beams and applications thereof. 4,431,936, Cl. 310-335.000.
- Fug, Gerrard, to British Petroleum Company p.l.c., The. Process for the production of carbon fibres from petroleum pitch. 4,431,623, Cl. 423-447.100.
- Fuji Electric Co., Ltd.: See—
Yokomori, Shinji, 4,431,014, Cl. 133-3.00R.
- Fuji Jukogyo Kabushiki Kaisha: See—
Shikata, Makoto, 4,430,979, Cl. 123-479.000.
- Yamakawa, Toru, 4,430,862, Cl. 60-718.000.
- Fuji Photo Film Co., Ltd.: See—
Kojima, Tetsuro; Ikeda, Tadashi; Ishimaru, Shingo; and Sugimoto, Naohiko, 4,431,726, Cl. 430-512.000.
- Matsufuji, Akihiro; Kasuga, Akira; Miyatsuka, Hajime; and Aonuma, Masashi, 4,431,712, Cl. 428-692.000.
- Sugimoto, Tadao; Toya, Ichizo; Urabe, Shigeharu; and Sakaguchi, Shinji, 4,431,731, Cl. 430-604.000.
- Urabe, Shigeharu; Sakaguchi, Shinji; Toya, Ichizo; and Sugimoto, Tadao, 4,431,730, Cl. 430-604.000.
- Yamada, Yasuyuki; Tsuji, Nobuo; Tanaka, Yasuyuki; and Yamauchi, Koichi, 4,431,700, Cl. 428-336.000.
- Fuji Xerox Co., Ltd.: See—
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,432,001, Cl. 346-76.0PH.
- Sekimoto, Souichi; and Kato, Ryoki, 4,431,913, Cl. 250-211.00R.
- Fujibayashi, Kazuo, to Canon Kabushiki Kaisha. Light measuring device for camera. 4,431,284, Cl. 354-413.000.
- Fujie, Akira; and Hisamatsu, Minoru, to Dow Chemical Company, The. Foamable polyolefin resin composition. 4,431,575, Cl. 252-502.000.
- Fujimaki, Yoshihide: See—
Takei, Yoshiaki; Fujimaki, Yoshihide; Akashi, Naoko; and Nomori, Hiroyuki, 4,431,722, Cl. 430-57.000.
- Fujimori, Kazuo; and Banno, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for detecting crack produced in workpiece in distortion removal processing. 4,430,896, Cl. 73-587.000.
- Fujisawa Pharmaceutical Co., Ltd.: See—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,431,643, Cl. 424-246.000.
- Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,431,642, Cl. 424-246.000.
- Fujita, Yasushi; and Sato, Hiroshi, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Illumination-type pushbutton switch construction. 4,431,879, Cl. 200-314.000.
- Fujita, Yutaka: See—
Sato, Hisato; Takatsu, Haruyoshi; Takeuchi, Kiyofumi; Fujita, Yutaka; Tazume, Masayuki; and Ohnishi, Hiroyuki, 4,431,853, Cl. 385-20.000.
- Fujitsu Fanuc Limited: See—
Inaba, Hajimu; and Ito, Susumu, 4,430,923, Cl. 91-61.000.
- Inaba, Hajimu; Nakashima, Seiichi; Inagaki, Shigemi; and Ito, Susumu, 4,431,366, Cl. 414-735.000.
- Obara, Haruki, 4,431,895, Cl. 219-69.00P.
- Fujitsu Limited: See—
Goto, Kunihiro; Kobayashi, Kazuhiro; Ito, Akihiko; Tanaka, Hisami; and Saito, Tadahi, 4,431,973, Cl. 330-261.000.
- Takai, Sakan; and Sukeda, Toshiaki, 4,432,068, Cl. 365-6.000.
- Takei, Akira, 4,432,006, Cl. 357-23.000.
- Yamada, Katsuyuki; and Isogai, Hideaki, 4,432,076, Cl. 365-190.000.
- Fukuda, Tsuguo: See—
Watanabe, Masayuki; Ushizawa, Jisaburo; and Fukuda, Tsuguo, 4,431,476, Cl. 156-607.000.
- Fukui, Masahiro; Inoue, Hiromichi; Goto, Yasuyuki; Sato, Hideo; and Inukai, Takashi, to Chisso Corporation. Liquid-crystalline biphenyl or terphenyl derivatives. 4,431,564, Cl. 252-299.660.
- Fukumitsu, Akira; and Kobayashi, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for reproducing signals from a disc. 4,432,084, Cl. 369-77.200.
- Fulger, Charles V.; and Gum, Ernest K., to General Foods Corporation. Enzyme-saccharified all natural, ready-to-eat cereal derived from whole cereal grain. 4,431,674, Cl. 426-18.000.
- Fuller, Nelson; and Bergsma, Rudolph, to Chrysler Corporation. Pressure unit assembly. 4,431,981, Cl. 338-42.000.
- Funada, Fumiaki; Takamatsu, Toshiaki; Yasuda, Shuuhei; and Matsura, Masataka, to Sharp Kabushiki Kaisha. Electrode terminal assembly on a multi-layer type liquid crystal panel. 4,431,270, Cl. 350-332.000.
- Funakoshi, Takashi: See—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,431,421, Cl. 433-228.000.
- Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Koarai, Jiro; and Iwata, Shuji, to Kabushiki Kaisha Kobe Seiko Sho. Steel for machine construction having excellent cold forgeability and machinability. 4,431,445, Cl. 75-123.00R.
- Fushimi, Hitoshi: See—
Okada, Masakazu; Fushimi, Hitoshi; Yasumoto, Seiichi; and Hamada, Takuji, 4,432,054, Cl. 364-200.000.
- Fushimoto, Hideo, to Canon Kabushiki Kaisha. Printer. 4,430,935, Cl. 101-93.110.
- Futakuchi, Yorio; and Oshiro, Nobuaki, to Yamaha Hatsudoki Kabushiki Kaisha. Cylinder head fastening structure for internal combustion engines. 4,430,968, Cl. 123-90.270.
- Futatsudera, Masaomi; Yokoyama, Syoichi; and Yasutome, Osamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Explosion proof cathode-ray tube. 4,432,018, Cl. 358-246.000.
- Fuzii, Koichiro; and Kubo, Sueki, to Nisshin Steel Co., Ltd.; and Kurosaki Refractories Co., Ltd. Method and apparatus for preventing the inclusion of slag into the molten steel tapped from a converter. 4,431,169, Cl. 266-236.000.
- Fye, Donald M., to GTE Laboratories Incorporated. Optical fiber transmission system and dichroic beam splitter therefor. 4,431,258, Cl. 350-1.600.
- G. D. Searle & Co.: See—
Moormann, Alan E.; Pitzele, Barnett S.; Adelstein, Gilbert W.; and Malek, Nancy J., 4,431,802, Cl. 542-416.000.
- G. D. Societa per Azioni: See—
Seragnoli, Enzo, 4,431,010, Cl. 131-94.000.
- Gabra, Georges, to Gouvernement du Quebec. Process for the recovery of magnesium and/or nickel by liquid-liquid extraction. 4,431,615, Cl. 423-139.000.
- Gadzhiev, Yashar A. O.: See—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- GAF Corporation: See—
Kliegman, Jonathan M.; and Williams, James M., 4,431,437, Cl. 71-86.000.
- Gaffar, Maria C. S., to Colgate-Palmolive Company. Natural dye indicator for dental plaque. 4,431,628, Cl. 424-7.100.
- Gagarine, Dmitry M.: See—
Dusenbury, Joseph H.; and Gagarine, Dmitry M., 4,431,759, Cl. 524-108.000.
- Gagnon, Pierre; and LaForest, Pierre. Suspension system for movement under a ceiling. 4,431,081, Cl. 182-36.000.
- Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., to Burroughs Corporation. Address generating apparatus and method. 4,432,053, Cl. 364-200.000.
- Gallagher, Patrick, to Trenton Pipe Nipple Company. Float-controlled valve for toilet flush tanks. 4,431,024, Cl. 137-413.000.
- Gallusser, David O.: See—
Piscitelli, R. Amelia; Hemmer, Valentine J.; and Gattusser, David O., 4,431,256, Cl. 339-258.00R.
- Punako, Stephen; Macavoy, David W.; Gallusser, David O.; and Frear, David L., 4,431,243, Cl. 339-59.00M.
- Ganguly, Ashit K.: See—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Patel, Naginbhai M.; and Liu, Yi-Tsung, 4,431,654, Cl. 424-270.000.
- Gardineer, Bayard, Jr.: See—
Trimmer, William S.; Gardineer, Bayard, Jr.; and Hadjicostis, Andreas, 4,431,006, Cl. 128-660.000.
- Gardner, John: See—
Anhalt, John W.; and Gardner, John, 4,431,244, Cl. 339-91.00R.
- Garito, Anthony F., to University Patents, Inc. Novel nonlinear optical materials and processes employing diacetylenes. 4,431,263, Cl. 350-96.340.
- Garmong, Frank. Gun support. 4,431,122, Cl. 224-268.000.
- Garrels, Wilbur D.: See—
Dunn, Richard P.; and Garrels, Wilbur D., 4,430,924, Cl. 91-277.000.
- Gasanov, Ilgam A. O.: See—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- Gatron Corporation: See—
Butler, Russell B.; Helm, Nancy A.; and MacEachern, A. Walter, 4,431,000, Cl. 128-421.000.
- Gatsis, John G., to UOP Inc. Process for producing hydrogen-enriched hydrocarbonaceous products from coal. 4,431,510, Cl. 208-10.000.
- Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Industries. Hydrocarbonylation/carbonylation of alkyl carboxylates. 4,431,835, Cl. 560-105.000.
- Geeves, Jack, to Messer, Allan G. Trailer walker. 4,431,208, Cl. 280-475.000.

- Gelinas, Raymond C., to Honeywell Inc. Apparatus and method for transfer of information by means of a curl-free magnetic vector potential field. 4,432,098, Cl. 455-41.000.
- Gemin, Robert A., to United States of America. Air Force. Combined radar/barometric altimeter. 4,431,994, Cl. 343-12.00A.
- Genbauffe, Francis S.; Erdelsky, Joseph J.; and Greenwood, Eugene C., to Robertshaw Controls Company. Propellant storage construction, parts therefor and methods of making the same. 4,431,117, Cl. 222-3.000.
- Genentech, Inc.: See—
Riggs, Arthur D., 4,431,739, Cl. 435-253.000.
- General Automotive Specialty Co., Inc.: See—
Frank, Robert B., 4,431,883, Cl. 200-67.00D.
- General Dynamics Corporation: See—
Schuler, Alan L., 4,430,954, Cl. 114-74.00A.
- General Dynamics, Pomona Division: See—
Epperson, Edwin H., Jr., 4,431,150, Cl. 244-3.210.
- Palmer, John P., 4,431,260, Cl. 350-96.150.
- General Electric Company: See—
Amazeen, Paul G.; and Sutcliffe, Patrick L., 4,431,007, Cl. 128-660.000.
- Cady, William R., 4,432,007, Cl. 357-26.000.
- Chausse, B. Paul; and D'Aire, John D., 4,431,957, Cl. 318-805.000.
- Edelstein, William A.; and Bottomley, Paul A., 4,431,968, Cl. 324-309.000.
- Flanders, Thomas E., 4,430,803, Cl. 33-366.000.
- Heft, Eldon B.; and Kelaita, Joseph B., Jr., 4,431,877, Cl. 200-144.00R.
- Lenzing, Richard S., 4,431,978, Cl. 335-132.000.
- Lifshin, Eric; and Gill, Margo E., 4,431,710, Cl. 428-650.000.
- Premierani, William J., 4,432,031, Cl. 361-97.000.
- Roos, Hartog J.; and Price, David I., 4,432,014, Cl. 358-111.000.
- Rosenquist, Niles R., 4,431,793, Cl. 528-198.000.
- Temple, Victor A. K., 4,430,792, Cl. 29-571.000.
- White, Dwain M.; and Matthews, Robert O., 4,431,779, Cl. 525-397.000.
- General Foods Corporation: See—
Altomare, Robert E.; Beale, Robert J.; Clausi, Adolph S.; and Romig, William R., 4,431,677, Cl. 426-257.000.
- Fulger, Charles V.; and Gum, Ernest K., 4,431,674, Cl. 426-18.000.
- Hegedus, Elizabeth; Frost, John R.; Glicksman, Martin; and Silverman, Jerry E., 4,431,681, Cl. 426-553.000.
- Leusner, Steven J.; Katcher, Jay H.; and Joseph, Theodore H., 4,431,800, Cl. 536-111.000.
- Smith, Gordon C.; Hayes, Richard F.; Wendrovsky, Carole G.; and Eyd, Andre J., 4,431,682, Cl. 426-565.000.
- General Motors Corporation: See—
Carpenter, Keith H.; Graham, Donald E.; and Kowalik, James J., 4,431,954, Cl. 318-443.000.
- Sabina, John J., Jr., 4,431,027, Cl. 137-574.000.
- General Products Co., Inc.: See—
McKann, H. Smith, 4,430,836, Cl. 52-455.000.
- General Signal: See—
Finet, Alain, 4,430,963, Cl. 122-449.000.
- Genin, Richard: See—
Colonna, Jean; Fitremann, Jean-Michel; Genin, Richard; and Sarda, Jean-Paul, 4,431,057, Cl. 166-285.000.
- George Koch Sons, Inc.: See—
Koch, Robert L., II, 4,430,956, Cl. 118-326.000.
- Gerhards, Hans-Dieter: See—
Demny, Werner; Moltner, Hermann; and Gerhards, Hans-Dieter, 4,430,875, Cl. 72-205.000.
- Geria, Navin, to Bristol-Myers Company. Long chain aliphatic hydrocarbon ethoxylated alcohol benzoates. 4,431,837, Cl. 560-112.000.
- Gerlach, Charles R.; and Heath, Rodney T. Single stage liquid motor and pump. 4,431,433, Cl. 55-29.000.
- Germain, George D.; and Luby, Donald M., to Simplex Time Recorder Co. Card storage apparatus. 4,430,817, Cl. 40-124.200.
- Gerphagnon, Jean-Louis: See—
Bonny, Paul; Gerphagnon, Jean-Louis; Laboure, Gerard; Keinborg, Maurice; Homs, Pierre; and Langon, Bernard, 4,431,491, Cl. 204-67.000.
- Gerzberg, Levy: See—
Fu, Chong-Cheng; and Gerzberg, Levy, 4,431,936, Cl. 310-335.000.
- Gesellschaft zur Förderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen: See—
Jungo, Charles; and Ledergerber, Guido, 4,431,164, Cl. 252-628.000.
- Gestaut, Lawrence J.; and Solomon, Frank, to Diamond Shamrock Corporation. Process for preparing electrodes using precious metal-catalyst containing partially fluorinated active carbon. 4,431,567, Cl. 502-101.000.
- GFM Gesellschaft für Fertigungstechnik und Maschinenbau Gesellschaft m.b.H.: See—
Kralowicz, Bruno, 4,430,881, Cl. 72-402.000.
- Gibbons, Robert C., to Texas Instruments Incorporated. Compact, high cold shield efficiency optical system. 4,431,917, Cl. 250-332.000.
- Gibbs, Vernon: See—
Hersom, Albert C.; and Gibbs, Vernon, 4,431,676, Cl. 426-131.000.
- Gibson, Raymond E.: See—
Eckelman, William C.; Reba, Richard C.; Rzeszotarski, Waclaw J.; and Gibson, Raymond E., 4,431,627, Cl. 424-1.100.
- Giddings, Bradford E.; and Jorkasky, Richard J., II, to Standard Oil Company. Esters as processing aids for maleic anhydride resins. 4,431,760, Cl. 524-171.000.
- Gill, Margo E.: See—
Lifshin, Eric; and Gill, Margo E., 4,431,710, Cl. 428-650.000.
- Gille, Friedrich: See—
Winter, Karl; Gille, Friedrich; and Lotz, Hans, 4,430,870, Cl. 66-210.000.
- Gillen, Gerard J., Jr. Composite timber pile system. 4,431,347, Cl. 405-251.000.
- Gilmore, Merle L.: See—
Bailey, David F.; Weidler, Allen J.; Gilmore, Merle L.; and Clow, Gary W., 4,431,991, Cl. 340-825.520.
- Gilron, Jack L., to Nalco Chemical Company. Mixtures of organic phosphonates and anionic polymers to improve acid extraction of uranium. 4,431,611, Cl. 423-20.000.
- Ginzburg, Vladimir B., to Tipples Machinery Company, Inc. Continuous tandem hot strip mill and method of rolling. 4,430,876, Cl. 72-234.000.
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Baird, Michael J.; Miller, Jeffrey T.; and Gutberlet, L. Charles, 4,431,516, Cl. 208-111.000.
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Daviduk, Nicholas; and Haddad, James H., 4,431,856, Cl. 585-469.000.
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Barker, Kenneth D.; and Arnold, Edward P., 4,432,064, Cl. 364-550.000.
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Edmundson, Michael J.; Halstead, Christopher; and Hammond, Leslie, 4,431,132, Cl. 236-25.00A.
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Cue, Berkeley W., Jr.; Hammen, Philip D.; and Massett, Stephen S., 4,431,828, Cl. 549-401.000.
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Edmundson, Michael J.; Halstead, Christopher; and Hammond, Leslie, 4,431,132, Cl. 236-25.00A.
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Brown, James P.; Hampson, Robert S.; and Kelly, Frederick T., 4,431,455, Cl. 106-245.000.
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Bewer, Gunter; Harle, Hubertus; and Lieberoth, Dieter, 4,431,686, Cl. 427-125.000.
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Harris, Robert J.; Ryburn, Scott W.; Woods, William E.; and Hartley, Henry F., 4,432,050, Cl. 364-200.000.
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Igel, Wolfgang; Probst, Frieder; Haussmann, Gerhard; and Hartmanngruber, Max, 4,430,850, Cl. 57-130.000.
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Steinhauser, Ulrich, 4,430,882, Cl. 72-405.000.
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Nowak, Leonard G.; and Wojcieszon, Raymond J., 4,431,403, Cl. 431-183.000.
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Igel, Wolfgang; Probst, Frieder; Haussmann, Gerhard; and Hartmanngruber, Max, 4,430,850, Cl. 57-130.000.
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Frantz, Robert H.; and Hawk, Gary W., 4,431,249, Cl. 339-107.000.
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Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, 4,431,310, Cl. 366-8.000.
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Heatherington, Dale A., 4,431,867, Cl. 179-2.00C.
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Smith, Gordon C.; Hayes, Richard F.; Wendrovsky, Carole G.; and Eydt, Andre J., 4,431,682, Cl. 426-565.000.
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James, Robert C., 4,430,844, Cl. 53-450.000.
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Broadhurst, Michael D.; and Heather, James B., 4,431,594, Cl. 260-502.50F.
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Eitan, Boaz, 4,432,075, Cl. 365-185.000.
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Butler, Russell B.; Helm, Nancy A.; and MacEachern, A. Walter, 4,431,000, Cl. 128-421.000.
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Fair, David L.; Woodard, Kenneth E., Jr.; and Helmstetter, David A., 4,431,495, Cl. 204-98.000.
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- Gelinas, Raymond C., 4,432,098, Cl. 455-41.000.
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Case, Edward M.; and Hopper, Chester S., 4,431,698, Cl. 428-244.000.
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Matsui, Kazuhiro, 4,430,919, Cl. 84-299.000.
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Chakrabarti, Jiban K.; Hotten, Terrence M.; and Steggle, David J., 4,431,589, Cl. 260-239.30T.
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Morisaki, Eiichi, 4,431,201, Cl. 279-1.00C.
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- Immell, Raymond G.: See—
Sasser, Bill H.; and Immell, Raymond G., 4,431,997, Cl. 343-770.000.
- IMO AB: See—
Edman, Hans; and Lonnebring, Arne, 4,431,382, Cl. 417-302.000.
- Imperial Chemical Industries Limited: See—
Falconer, James A.; Jones, Raymond V. H.; and Fleming, Ian G. C., 4,431,852, Cl. 568-809.000.
- Imperial Chemical Industries PLC: See—
Brown, James P.; Hampson, Robert S.; and Kelly, Frederick T., 4,431,455, Cl. 106-245.000.
- Cartwright, David, 4,431,834, Cl. 560-56.000.
- Walker, Robert W.; and Stuart-Webb, John, 4,431,783, Cl. 526-62.000.
- Imura, Takeshi: See—
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- Inaba, Hajimu; and Ito, Susumu, to Fujitsu Fanuc Limited. Wrist mechanism in an industrial robot. 4,430,923, Cl. 91-61.000.
- Inaba, Hajimu; Nakashima, Seiichi; Inagaki, Shigemi; and Ito, Susumu, to Fujitsu Fanuc Limited. Industrial robot. 4,431,366, Cl. 414-735.000.
- Inagaki, Shigemi: See—
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- Inbar, Dan; Bernstein, Tsuri; and Shimoni, Yair, to Elscint Ltd. Scanning gamma camera. 4,432,059, Cl. 364-414.000.
- Infilco Degremont Inc.: See—
Highstreet, Edward J.; Stannard, Forrest B.; Piper, Louis H.; and Dimitriou, Michael A., 4,431,549, Cl. 210-791.000.
- Ing, C. Olivetti & C., S.p.A.: See—
Adamoli, Contardo; and Tonengo, Francesco, 4,430,936, Cl. 101-93.480.
- Barbero, Aquilino; and Buat, Mario, 4,432,003, Cl. 346-140.00R.
- Inmos Corporation: See—
Eaton, Sargent S., Jr.; and Wooten, David R., 4,431,927, Cl. 307-269.000.
- Inoue, Hiromichi: See—
Fukui, Masahiro; Inoue, Hiromichi; Goto, Yasuyuki; Sato, Hideo; and Inukai, Takashi, 4,431,564, Cl. 252-299.660.
- Inoue-Japax Research Incorporated: See—
Inoue, Kiyoshi, 4,431,894, Cl. 219-69.00W.
- Inoue, Jiro, to Murata Manufacturing Co., Ltd. Grooved piezoelectric resonating element and a mounting therefor. 4,431,938, Cl. 310-348.000.
- Inoue, Katsuhiro: See—
Kifune, Koji; Inoue, Katsuhiro; and Mori, Shigeru, 4,431,601, Cl. 264-186.000.
- Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for automatically threading a continuous electrode wire in an electroerosion machine. 4,431,894, Cl. 219-69.00W.
- Inoue, Takehisa, to Mitsui Engineering & Shipbuilding Co., Ltd. Method of assembling and testing in dock vertically movable marine working platform structure having groundable support frames. 4,431,345, Cl. 405-204.000.
- Institut Francais du Petrole: See—
Bournonville, Jean-Paul; Cosyns, Jean; and Vasudevan, Srinivasan, 4,431,574, Cl. 502-261.000.
- Colonna, Jean; Fitremann, Jean-Michel; Genin, Richard; and Sarda, Jean-Paul, 4,431,057, Cl. 166-285.000.
- Giuliani, Pierre; Jacquin, Yves; Busson, Christian; and Josserand, Jean-Francois, 4,431,520, Cl. 208-112.000.
- Jaffrennou, Bernard; and Cessou, Maurice, 4,430,955, Cl. 114-267.000.
- Rinaudo, Marguerite; Milas, Michel; and Kohler, Norbert, 4,431,734, Cl. 435-104.000.
- Institut Matematiki i Mekhaniki: See—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- Institute of Gas Technology: See—
Remick, Robert J., 4,431,496, Cl. 204-119.000.
- Tarman, Paul B., 4,431,509, Cl. 208-8.00R.
- Intel Corporation: See—
Rose, Donald K.; and Silverman, Peter J., 4,432,069, Cl. 365-8.000.
- Interlego A.G.: See—
Ryaa, Jan, 4,430,826, Cl. 46-29.000.
- International Business Machines Corporation: See—
Barson, Fred; and Kemplage, Bernard M., 4,431,460, Cl. 148-1.500.
- Bjorklund, Gary C.; Brauchle, Christoph R.; Burland, Donald M.; Hunziker, Heinrich E.; and Wild, Urs P., 4,431,259, Cl. 350-361.000.
- Bornhorst, Randy J.; and Bowen, Arlen J., 4,430,782, Cl. 29-90.00R.
- Burns, Richard W.; and Mahmoud, Issa S., 4,431,707, Cl. 428-629.000.
- Canestaro, Michael J.; McBride, Donald G.; and Welsh, John A., 4,431,685, Cl. 427-89.000.
- Chao, Hu H.; and DiMaria, Donelli J., 4,432,072, Cl. 365-149.000.
- Daniell, Thomas P.; Harding, Robert C., Jr.; Lewis, Neil J.; and Nauckhoff, Sven H. H., 4,432,057, Cl. 364-300.000.
- Dickson, LeRoy D.; Pierce, Charles M.; Stokes, Olen L.; and Woodland, Norman J., 4,431,912, Cl. 235-466.000.
- Dockerty, Robert C., 4,430,791, Cl. 29-571.000.
- Edwards, Peter L.; and Ward, Barry, 4,431,872, Cl. 179-84.0VF.
- Grogan, John M., 4,432,025, Cl. 360-48.000.
- Hsieh, Ning; Irene, Eugene A.; Ishaq, Mousa H.; and Roberts, Stanley, 4,432,035, Cl. 361-322.000.
- Malaviya, Shashi D., 4,431,305, Cl. 365-174.000.
- International Flavors & Fragrances Inc.: See—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,431,577, Cl. 252-522.00R.
- Yoshida, Takao, 4,431,680, Cl. 426-538.000.
- Yoshida, Takao, 4,431,843, Cl. 568-374.000.
- International Machinery Sales, Inc.: See—
Sear, Stuart B.; and Hill, Christopher A., 4,430,780, Cl. 28-272.000.
- International Playtex, Inc.: See—
Young, Roger; and Schoeffler, Klaus E., 4,431,035, Cl. 139-383.00R.
- International Standard Electric Corporation: See—
Barton, Paul; Blair, Peter K.; and Waddoup, William D., 4,431,995, Cl. 343-373.000.
- Gradler, Wilhelm; Klocke, Karl E.; and Linner, Karlheinz, 4,431,317, Cl. 384-192.000.
- International Telephone and Telegraph Corporation: See—
Bolus, Daniel M.; and Chea, Ramon C. W., Jr., 4,431,868, Cl. 179-18.0FA.
- Couch, Philip R., 4,431,916, Cl. 250-214.00R.
- Kozikowski, Carrie L., 4,431,261, Cl. 350-96.200.
- Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat-sensitive recording head driving method. 4,432,001, Cl. 346-76.0PH.
- Inukai, Takashi: See—
Fukui, Masahiro; Inoue, Hiromichi; Goto, Yasuyuki; Sato, Hideo; and Inukai, Takashi, 4,431,564, Cl. 252-299.660.
- Ioffe, Zosim: See—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,431,002, Cl. 128-422.000.
- Irbe, Robert M.: See—
Horwath, Robert O.; and Irbe, Robert M., 4,431,733, Cl. 435-94.000.
- Irene, Eugene A.: See—
Hsieh, Ning; Irene, Eugene A.; Ishaq, Mousa H.; and Roberts, Stanley, 4,432,035, Cl. 361-322.000.

- Ishenber, Arnold O., to Westinghouse Electric Corp. Electrical contact structures for solid oxide electrolyte fuel cell. 4,431,715, Cl. 429-30.000.
- Ishaq, Mousa H.: See—
Hsieh, Ning; Irene, Eugene A.; Ishaq, Mousa H.; and Roberts, Stanley, 4,432,035, Cl. 361-322.000.
- Ishida, Takashi; and Tominari, Noboru, to Mikuni Kogyo Kabushiki Kaisha. Throttle valve actuating system used in ignition type internal combustion engines. 4,430,975, Cl. 123-399.000.
- Ishihama, Takaaki: See—
Uchiyama, Tomoyoshi; Hattori, Youichi; Koyanagi, Kouki; Ohkoshi, Toshio; Ishihama, Takaaki; and Toda, Kouji, 4,431,343, Cl. 405-198.000.
- Ishii, Akira: See—
Sasaki, Ken; Kinugawa, Kiyoshige; Hanada, Yoshio; Aoki, Keiichi; Ishii, Akira; and Koyama, Masaharu, 4,431,683, Cl. 427-39.000.
- Ishii, Satoshi; and Koinuma, Hiroshi, to Pioneer Electronic Corporation. Push-pull amplifier. 4,431,972, Cl. 330-267.000.
- Ishimaru, Shingo: See—
Kojima, Tetsuro; Ikeda, Tadashi; Ishimaru, Shingo; and Sugimoto, Naohiko, 4,431,726, Cl. 430-512.000.
- Ishimori, Yoshio: See—
Nakagawa, Seiichi; Ishimori, Yoshio; and Date, Naoki, 4,431,915, Cl. 250-310.000.
- Ismailov, Tofik K. O.: See—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliyev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- Isobe, Kenichi: See—
Okazaki, Satoshi; and Isobe, Kenichi, 4,431,789, Cl. 528-15.000.
- Isogai, Hideaki: See—
Yamada, Katsuyuki; and Isogai, Hideaki, 4,432,076, Cl. 365-190.000.
- Isomura, Shigenori: See—
Kondo, Toshio; Isomura, Shigenori; Kobayashi, Akio; and Kodama, Katsuhiko, 4,430,976, Cl. 123-440.000.
- Isono, Tokio: See—
Miyakoshi, Shinichi; and Isono, Tokio, 4,431,204, Cl. 280-277.000.
- Isozaki, Kenmatsu: See—
Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe, Yukihiko; Waki, Mitsutaka; and Mizuno, Masuo, 4,431,478, Cl. 156-668.000.
- Itaya, Masahiko: See—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,431,296, Cl. 355-3.000.
- Itek Corporation: See—
Barnes, William P., Jr., 4,431,269, Cl. 350-310.000.
- Ito, Akihiko: See—
Goto, Kunihiko; Kobayashi, Kazuhiro; Ito, Akihiko; Tanaka, Hisami; and Saito, Tadashi, 4,431,973, Cl. 330-261.000.
- Ito, Akira: See—
Kawashima, Kouzou; and Ito, Akira, 4,431,945, Cl. 315-63.000.
- Ito, Susumu: See—
Inaba, Hajimu; and Ito, Susumu, 4,430,923, Cl. 91-61.000.
- Inaba, Hajimu; Nakashima, Seiichi; Inagaki, Shigemitsu; and Ito, Susumu, 4,431,366, Cl. 414-735.000.
- Ito, Tadashi: See—
Hashimoto, Yutaka; Kamei, Masayuki; Umaba, Toshihiko; and Ito, Tadashi, 4,431,595, Cl. 260-513.000.
- Sakai, Shinji; Suzuki, Masayuki; Shinoda, Nobuhiko; Uchidoi, Masanori; Murakami, Hiroyasu; and Ito, Tadashi, 4,431,287, Cl. 354-441.000.
- Ito, Tetsuo; and Arita, Setsuo, to Hitachi, Ltd. Multiple digital control system. 4,432,048, Cl. 364-187.000.
- Ito, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for discharge machining. 4,431,897, Cl. 219-69.000.
- Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, to Ito, Yasuro; and Taisei Corporation. Method of preparing kneaded compositions. 4,431,310, Cl. 366-8.000.
- Itoh, Kunio: See—
Teramoto, Iwao; Sugino, Takashi; and Itoh, Kunio, 4,432,092, Cl. 372-46.000.
- Ives, Milton N., to Carlingswitch, Inc. Rocker switch with integrally defined retention means for resistor and lamp. 4,431,880, Cl. 200-315.000.
- Iwane, Tomochiro. Self-hydraulic pressure generating and maintaining device for shaft-seal mechanism. 4,431,199, Cl. 277-3.000.
- Iwasa, Nobuhiko. Wave dissipation caisson. 4,431,337, Cl. 405-30.000.
- Iwase, Yoshiyuki: See—
Umeda, Arikho; Ota, Seiichi; and Iwase, Yoshiyuki, 4,431,790, Cl. 528-73.000.
- Iwata, Hiroshi; and Yoshino, Tsunemi, to West Electric Co., Ltd. Camera with liquid crystal aperture control means. 4,431,288, Cl. 354-446.000.
- Iwata, Shuji: See—
Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Kora, Jiro; and Iwata, Shuji, 4,431,445, Cl. 75-123.000.
- Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada, Tomio, to Nippon Soda Company Limited. Heterocyclic compounds. 4,431,814, Cl. 548-230.000.
- Izumi, Jun: See—
Amitani, Tatsuo; Kubo, Masayoshi; Machara, Kenichi; Izumi, Jun; and Tsutaya, Hiroyuki, 4,431,432, Cl. 55-26.000.
- J. I. Case Company: See—
Falendysz, Eugene L.; and Brumbaugh, Eldon M., 4,431,381, Cl. 417-289.000.
- Frisbee, Claude M.; and Logan, Henry R., 4,431,925, Cl. 307-10.000.
- Hirsch, Arthur E., 4,430,859, Cl. 60-418.000.
- Langdon, John E., 4,431,379, Cl. 417-274.000.
- Redenbarger, Philip D.; and Fowler, Robert A., 4,431,364, Cl. 414-697.000.
- Waite, Jerry A., 4,431,363, Cl. 414-687.000.
- J. & S. Tool Company: See—
Swenson, Henry F., 4,431,202, Cl. 279-106.000.
- Jackrel, Donald. Glove. 4,430,759, Cl. 2-159.000.
- Jackson, Paul C. Centrifugal clutch mechanism. 4,431,099, Cl. 192-105.000.
- Jackson, William A.; and Jautakis, Karolis, to Whirlpool Corporation. Front drum access and support for dryer. 4,430,809, Cl. 34-133.000.
- Jackstadt, Henry A. Retaining device for fuel pump push rod. 4,430,972, Cl. 123-198.000.
- Jacquin, Yves: See—
Giuliani, Pierre; Jacquin, Yves; Busson, Christian; and Josserand, Jean-Francois, 4,431,520, Cl. 208-112.000.
- Jaffrenou, Bernard; and Cessou, Maurice, to Institut Francais Du Petrole; and Societe Rolba. Flexible floating boom comprising transverse stiffeners of variable stiffness. 4,430,955, Cl. 114-267.000.
- Jahnle, Herbert A., to Budd Company, The. Bumper beam for an automobile. 4,431,221, Cl. 293-122.000.
- James Hardie & Coy Pty. Limited: See—
Willemssen, Albert, 4,431,017, Cl. 137-15.000.
- James, Robert B., Jr., to UOP Inc. Catalytic reforming process. 4,431,522, Cl. 208-134.000.
- James, Robert C., to Hayssen Manufacturing Company. Method of and apparatus for wrapping articles. 4,430,844, Cl. 53-450.000.
- James, Robert G., to Armco Inc. Downhole seal for low profile oil well pumping installations. 4,431,052, Cl. 166-112.000.
- Jander, Ulf, to Aktiebolaget Bofors. Fuze safety device. 4,430,938, Cl. 102-232.000.
- Jandura, John J., Jr.: See—
Schevey, William R.; Calderoni, Frank; Trunk, Raymond E.; Lehman, Harold M.; and Jandura, John J., Jr., 4,431,037, Cl. 141-5.000.
- Janitschke, Lothar; Hoffmann, Werner; Arnold, Lothar; Stroezel, Manfred; and Scheiper, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of polyunsaturated ketones. 4,431,844, Cl. 568-390.000.
- Janner, Karl; and Gregorius, Klaus, to Kraftwerk Union Aktiengesellschaft. Slit nozzle and fast-acting shutoff valve. 4,431,136, Cl. 239-102.000.
- Janney, Clinton D.: See—
Wanner, James F.; and Janney, Clinton D., 4,431,008, Cl. 128-660.000.
- Jaquet, Henri, to Jaquet Orthopedie SA. External bone-anchoring element. 4,430,993, Cl. 128-92.00A.
- Jaquet Orthopedie SA: See—
Jaquet, Henri, 4,430,993, Cl. 128-92.00A.
- Jautakis, Karolis: See—
Jackson, William A.; and Jautakis, Karolis, 4,430,809, Cl. 34-133.000.
- Jenck, Jean, to Rhone-Poulenc Industries. Ester preparation by carbonylation of monoolefins. 4,431,593, Cl. 260-410.90R.
- Jenkner, Erwin. Apparatus for breaking up stacks of boards in power saws or the like. 4,431,358, Cl. 414-114.000.
- Jenn-Air Corporation: See—
White, Donald A., 4,431,892, Cl. 219-10.49R.
- Jenq, Cheng-Yih: See—
Huibers, Derk T. A.; and Jenq, Cheng-Yih, 4,431,850, Cl. 568-805.000.
- Jeol Ltd.: See—
Nakagawa, Seiichi; Ishimori, Yoshio; and Date, Naoki, 4,431,915, Cl. 250-310.000.
- Jermunson, Neil B. Firearm cartridge adapter. 4,430,940, Cl. 102-446.000.
- Jigamian, Gregory Z.; and Uchida, Greenie M., to Christie Electric Corporation. Connector for battery pack. 4,431,245, Cl. 339-91.00R.
- Jirkovsky, Ivo: See—
Philipp, Adolf; Jirkovsky, Ivo; and Martel, Rene, 4,431,657, Cl. 424-273.00P.
- Johansson, Ivar: See—
Nordgren, Bo; and Johansson, Ivar, 4,430,804, Cl. 33-398.000.
- John, Gunter: See—
Weaver, Charles A.; Wierschke, Donald J.; and John, Gunter, 4,431,487, Cl. 204-5.000.
- Johns Hopkins University, The: See—
Avery, William H., 4,430,861, Cl. 60-675.000.
- Johnson, Albert: See—
Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., 4,432,053, Cl. 364-200.000.
- Johnson, Bryce V., to Standard Oil Company (Indiana). Retreating comminuted olefin polymerization catalyst with a titanium (IV) compound and an ester. 4,431,570, Cl. 502-151.000.
- Johnson, Bryce V.: See—
Karayannis, Nicholas M.; and Johnson, Bryce V., 4,431,572, Cl. 502-151.000.
- Johnson, Harry T., to Vickers, Incorporated. Power transmission. 4,431,389, Cl. 418-82.000.

- Johnson, Robert B.: See—
Salas, Edward R.; Nibby, Chester M., Jr.; and Johnson, Robert B., 4,432,055, Cl. 364-200.000.
- Johnson, Stuart J.: See—
Fransson, George E.; Johnson, Stuart J.; and Haug, Edward W., 4,431,351, Cl. 409-35.000.
- Johnson, Wendell D., to Qualitrol Corporation. Pressure relief device. 4,431,023, Cl. 137-316.000.
- Jones, Raymond V. H.: See—
Falconer, James A.; Jones, Raymond V. H.; and Fleming, Ian G. C., 4,431,852, Cl. 568-809.000.
- Jones, Robert E., to Clark Equipment Company. Industrial truck. 4,431,084, Cl. 187-9.00R.
- Jones, Robert F., to B. F. Goodrich Company, The. Spring actuated cam retractor. 4,431,126, Cl. 226-121.000.
- Jorder, Kurt: See—
Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, 4,431,687, Cl. 427-246.000.
- Jorkasky, Richard J., II: See—
Giddings, Brandford E.; and Jorkasky, Richard J., II, 4,431,760, Cl. 524-171.000.
- Josefson, Lars G. Apparatus for pressure treatment of a moving web. 4,431,045, Cl. 162-358.000.
- Joseph, Theodore H.: See—
Leusner, Steven J.; Katcher, Jay H.; and Joseph, Theodore H., 4,431,800, Cl. 536-111.000.
- Josserand, Jean-Francois: See—
Giuliani, Pierre; Jacquin, Yves; Busson, Christian; and Josserand, Jean-Francois, 4,431,520, Cl. 208-112.000.
- Jost, Max; and Sieber, Werner, to Ciba-Geigy Corporation. Use of perylene pigments for photoelectrophoretic imaging. 4,431,721, Cl. 430-37.000.
- Jujo Paper Co., Ltd.: See—
Hasegawa, Akira; and Suzuki, Mamoru, 4,431,450, Cl. 106-21.000.
- Sato, Masuhiko, 4,431,706, Cl. 428-537.000.
- Junemann, Dietrich, to A. Raymond. Fastener for lining panels. 4,431,355, Cl. 411-360.000.
- Jungo, Charles; and Ledergerber, Guido, to Gesellschaft zur Forderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen. Process and apparatus for producing microspheres. 4,431,164, Cl. 252-628.000.
- Juvinall, John W.: See—
Miller, John W. V.; and Juvinall, John W., 4,432,013, Cl. 358-106.000.
- Kaack, Hermann; and Baumann, Hans, to BASF Aktiengesellschaft. Triazinyl reactive dyes containing a 1-naphthol-4,8-disulfonic acid component. 4,431,584, Cl. 260-153.000.
- Kabushiki Kaisha Kobe Seiko Sho: See—
Asari, Akira; Noyori, Tatsuhiko; Mizoguchi, Yukuo; and Takehata, Tetsuro, 4,430,877, Cl. 72-273.500.
- Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Kora, Jiro; and Iwata, Shuji, 4,431,445, Cl. 75-123.00R.
- Hoshino, Kohzoh; Mizuno, Muneco; Murakado, Hiroshi; and Kitao, Yoshinobu, 4,431,461, Cl. 148-2.000.
- Kabushiki Kaisha Komatsu Seisakusho: See—
Kajikawa, Masauemon; Kitajima, Hiroyuki; and Tsuji, Tetsuo, 4,431,100, Cl. 192-106.200.
- Kabushiki Kaisha Meidensha: See—
Sakuma, Shinzo; Warabi, Junichi; and Kashimoto, Yutaka, 4,431,885, Cl. 200-144.00B.
- Kabushiki Kaisha Suwa Seikosha: See—
Yazawa, Satoru; Banda, Shunji; and Endo, Kenichi, 4,431,272, Cl. 350-336.000.
- Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: See—
Hattori, Mitsuhiko; Takenaka, Kenji; and Ikeda, Hayato, 4,431,378, Cl. 417-269.000.
- Kaeriyama, Minoru: See—
Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada, Tomio, 4,431,814, Cl. 548-230.000.
- Kaga, Hideharu: See—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, 4,431,310, Cl. 366-8.000.
- Kaiser Aluminum & Chemical Corporation: See—
Baker, Bernard R.; Smith, Richard L.; and Bolmer, Perce W., 4,431,489, Cl. 204-35.00N.
- Kaiser, Kenneth L.; and Shirley, William C., to Nor-Lake Incorporated. Floor sealing gasket. 4,430,832, Cl. 52-238.100.
- Kaiser Steel Corporation: See—
Williamson, Calvin C., 4,430,913, Cl. 82-70.200.
- Kajikawa, Masauemon; Kitajima, Hiroyuki; and Tsuji, Tetsuo, to Kabushiki Kaisha Komatsu Seisakusho. Torque fluctuation damper. 4,431,100, Cl. 192-106.200.
- Kajimura, Takashi: See—
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Aiki, Kunio; and Umeda, Jun-ichi, 4,432,091, Cl. 372-45.000.
- Kajita, Hideo; Egawa, Takeshi; and Miki, Yukio, to Minolta Camera Kabushiki Kaisha. Movable mirror arrangement for use in single lens reflex camera. 4,431,285, Cl. 354-405.000.
- Kakumoto, Michio, to Otsuka Pharmaceutical Factory, Inc. Turnable electrode. 4,431,961, Cl. 324-54.000.
- Kamei, Masayuki: See—
Hashimoto, Yutaka; Kamei, Masayuki; Umaba, Toshihiko; and Ito, Tadashi, 4,431,595, Cl. 260-513.00F.
- Kaminsky, Walter, to CPC International Inc. Process for producing starch/polyolefin polymer compositions. 4,431,788, Cl. 527-313.000.
- Kamochi, Atsumi: See—
Aya, Masahiro; Saito, Junichi; Kamochi, Atsumi; and Moriya, Koichi, 4,431,441, Cl. 71-92.000.
- Kamoshita, Katsuzo: See—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Oshio, Hiromichi; and Kamoshita, Katsuzo, 4,431,822, Cl. 548-513.000.
- Kanebo, Ltd.: See—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,431,421, Cl. 433-228.000.
- Kanegafuchi Chemical Industry Company Limited: See—
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Aiki, Yutaka; Marushima, Norio; and Watanabe, Kiyoshi, 4,431,656, Cl. 424-273.00R.
- Kaneko, Kenji, to Victor Company of Japan Ltd. Rotary recording medium reproducing apparatus. 4,432,021, Cl. 358-342.000.
- Kaneko, Seiji: See—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, 4,431,310, Cl. 366-8.000.
- Kanmura, Wako: See—
Hiraki, Akio; Imura, Takeshi; and Kanmura, Wako, 4,431,562, Cl. 252-188.250.
- Kannan, Ramamurthi: See—
Sterken, Gordon J.; Kannan, Ramamurthi; and Kassner, James E., 4,431,840, Cl. 562-441.000.
- Kao Soap Co., Ltd.: See—
Yasuda, Yutaka; Tsuchihashi, Kiyoshi; and Nishimura, Toshiro, 4,431,672, Cl. 424-353.000.
- Karaki, Nobuo; and Nakaya, Teruyuki, to Epson Corporation. Method and apparatus for serial dot printing. 4,431,319, Cl. 400-124.000.
- Karayannis, Nicholas M., to Standard Oil Company (Indiana). Retreating comminuted olefin polymerization catalyst with a titanium (IV) compound, a haloalkylchlorosilane and an ester. 4,431,571, Cl. 502-151.000.
- Karayannis, Nicholas M.; and Johnson, Bryce V., to Standard Oil Company (Indiana). Retreating comminuted olefin polymerization catalyst with a titanium (IV) compound, a chlorocarbon and an ester. 4,431,572, Cl. 502-151.000.
- Karl Mayer Textilmaschinenfabrik GmbH: See—
Winter, Karl; Gille, Friedrich; and Lotz, Hans, 4,430,870, Cl. 66-210.000.
- Karol, Herman S., to Westinghouse Electric Corp. Guide rail clamping method and assembly. 4,431,087, Cl. 187-95.000.
- Karpen, King. Flame retardant mattress. 4,430,765, Cl. 5-459.000.
- Kasai, Shozo: See—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoyuki; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,431,758, Cl. 524-104.000.
- Kashimoto, Yutaka: See—
Sakuma, Shinzo; Warabi, Junichi; and Kashimoto, Yutaka, 4,431,885, Cl. 200-144.00B.
- Kashiwada, Yasutoshi: See—
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chinone, Naoki; Aiki, Kunio; and Umeda, Jun-ichi, 4,432,091, Cl. 372-45.000.
- Kasai Kabushiki Kaisha: See—
Kasai, Kenzo, 4,431,145, Cl. 242-107.40B.
- Kasai, Kenzo, to Kasai Kabushiki Kaisha. Emergency locking device for safety belt retractor. 4,431,145, Cl. 242-107.40B.
- Kassner, James E.: See—
Sterken, Gordon J.; Kannan, Ramamurthi; and Kassner, James E., 4,431,840, Cl. 562-441.000.
- Kasuga, Akira: See—
Matsufuji, Akihiro; Kasuga, Akira; Miyatsuka, Hajime; and Aonuma, Masashi, 4,431,712, Cl. 428-692.000.
- Katagiri, Katsuo; and Shimazu, Kiyotaka, to Osaka Gas Company. Gas purification system. 4,431,608, Cl. 422-170.000.
- Kataoka, Hiroshi. Winder having winder shaft extraction device. 4,431,142, Cl. 242-68.100.
- Katayama, Shitomi: See—
Ohno, Akira; Shimabukuro, Hajime; and Katayama, Shitomi, 4,431,268, Cl. 350-288.000.
- Katcher, Jay H.: See—
Leusner, Steven J.; Katcher, Jay H.; and Joseph, Theodore H., 4,431,800, Cl. 536-111.000.
- Kato, Ryoki: See—
Sekimoto, Souichi; and Kato, Ryoki, 4,431,913, Cl. 250-211.00R.
- Katsuda, Yoshio; and Minamite, Yoshihiro, to Dainippon Jochugiku Kabushiki Kaisha. Cyclopropane carboxylic acid ester derivatives. 4,431,668, Cl. 424-364.000.
- Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Aiki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, to Kanegafuchi Chemical Industry Company Limited. 3,5-di-Tert-butylstyrene derivatives, salts thereof, and pharmaceutical compositions containing the same as an active ingredient. 4,431,656, Cl. 424-273.00R.
- Katto, Takayuki; Oota, Masanori; Suzuki, Katsumi; and Satake, Yoshikatsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition. 4,431,772, Cl. 525-80.000.
- Katz, Sol; and Abolins, Andrew, to Strick Corporation. Method for coupling containers end to end. 4,431,368, Cl. 414-786.000.

- Kaukanen, Esko: See—
Suovaniemi, Osmo; Kaukanen, Esko; and Ekholm, Pertti, 4,431,924, Cl. 250-566.000.
- Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, to Kanebo, Ltd. Dental restorative composition. 4,431,421, Cl. 433-228.000.
- Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,431,702, Cl. 428-422.000.
- Kawai, Mituo: See—
Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Honma, Kei, 4,431,446, Cl. 75-128.00A.
- Kawamura Institute of Chemical Research: See—
Hashimoto, Yutaka; Kamei, Masayuki; Umaba, Toshihiko; and Ito, Tadashi, 4,431,595, Cl. 260-513.00F.
- Kawashima, Kouzou; and Ito, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. High pressure metal vapor discharge lamp. 4,431,945, Cl. 315-63.000.
- Kaye, Richard G. Air nozzle and method. 4,431,135, Cl. 239-8.000.
- Keil, Manfred: See—
Mnlik, Reinhold; Keil, Manfred; and Schulte, Lothar, 4,431,224, Cl. 294-87.00R.
- Keim, Karl H., to Gloucester Engineering Co., Inc. Rotary apparatus for advancing a web. 4,430,914, Cl. 83-35.000.
- Keinborg, Maurice: See—
Bonny, Paul; Gerphagnon, Jean-Louis; Laboure, Gerard; Keinborg, Maurice; Homs, Pierre; and Langon, Bernard, 4,431,491, Cl. 204-67.000.
- Keiter, Alfred; and Tappehorn, Bernd, to Olympia Werke AG. Sound damping ribbon cartridge for a typewriter or similar office machine. 4,431,324, Cl. 400-689.000.
- Kelaita, Joseph B., Jr.: See—
Heft, Eldon B.; and Kelaita, Joseph B., Jr., 4,431,877, Cl. 200-144.00R.
- Kelley, John A.: See—
Eppley, William J.; and Kelley, John A., 4,431,716, Cl. 429-53.000.
- Kelley, Stephen H.: See—
Wurzburg, Henry; and Kelley, Stephen H., 4,432,089, Cl. 370-110.100.
- Kelly Bushing Tools, Inc.: See—
Tulloch, Homan C.; and Woods, Dewey W., 4,431,067, Cl. 175-57.000.
- Kelly, Frederick T.: See—
Brown, James P.; Hampson, Robert S.; and Kelly, Frederick T., 4,431,455, Cl. 106-245.000.
- Kemlage, Bernard M.: See—
Barson, Fred; and Kemlage, Bernard M., 4,431,460, Cl. 148-1.500.
- Kemp, Melvin T., to Bowman & Kemp Steel & Supply, Inc. Window buck and frame. 4,430,831, Cl. 52-211.000.
- Kennecke, Mario: See—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,431,732, Cl. 435-61.000.
- Kennedy, Donald R.: See—
Raech, Harry, Jr.; and Kennedy, Donald R., 4,430,941, Cl. 102-496.000.
- Kennedy, John H., to Bechtel Power Corporation. Portable photogrammetry system. 4,431,290, Cl. 354-113.000.
- Kennedy, Paul L., to Veeder Industries Inc. Counter assembly. 4,431,909, Cl. 235-1.00D.
- Keough, William A.: See—
Lincoln, Joseph A.; and Keough, William A., 4,431,464, Cl. 148-15.000.
- Kern, Josef; Bardong, Helmut; Humpolik, Bohumil; Staffa, Karl-Heinz; and Winterer, Wilfried, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Evaporator particularly suitable for air conditioners in automotive vehicles. 4,430,868, Cl. 62-515.000.
- Kernforschungsanlage Julich GmbH: See—
Hohlein, Bernd; Vorwerk, Manfred; and Boltendahl, Udo, 4,431,751, Cl. 518-706.000.
- Kernion, Mark C.; and Michael, David J., to Dresser Industries, Inc. Carbon bonded refractory brick. 4,431,744, Cl. 501-99.000.
- Kessels, Henricus M. M.: See—
Finck, Johan C. J.; and Kessels, Henricus M. M., 4,431,267, Cl. 350-237.000.
- Keyrack Company, Inc.: See—
Evans, Gary L., 4,431,238, Cl. 312-184.000.
- Kiegel, Einhart; and Lauer, Karl, to Boehringer Mannheim GmbH. Process for the preparation of 1,4:3,6-dianhydro-D glucitol 5-nitrate. 4,431,829, Cl. 549-464.000.
- Kienhofer, Rolf. Dental prosthesis. 4,431,418, Cl. 433-183.000.
- Kifune, Koji; Inoue, Katsuhiko; and Mori, Shigeru, to Unitika Ltd. Process for the production of chitin fibers. 4,431,601, Cl. 264-186.000.
- Kikuchi, Hideju, to Sony Corporation. Battery case. 4,431,717, Cl. 429-100.000.
- Kikuchi, Juro, to Olympus Optical Co., Ltd. Optical recording and read-out lens system for optical recording type disks. 4,431,275, Cl. 350-480.000.
- Kikuchi, Mitsuo: See—
Seita, Toru; Satoh, Takao; and Kikuchi, Mitsuo, 4,431,504, Cl. 204-296.000.
- Kim, Dae-Eun. Adjuvant for stimulating production of lymphocytes. 4,431,639, Cl. 424-195.000.
- Kimura, Shigeo: See—
Somezawa, Masashi; Kimura, Shigeo; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,431,703, Cl. 428-447.000.
- King, Derrick O.: See—
Braithwaite, John D.; King, Derrick O.; Williams, Sidney J.; and Prior, James, 4,431,326, Cl. 401-188.00R.
- Kinghorn, John R.: See—
Summers, Christopher P.; and Kinghorn, John R., 4,431,969, Cl. 328-155.000.
- Kinoshita, Kazuhisa, to Akebono Brake Industry Co., Ltd. Boot protector for disc brake. 4,431,090, Cl. 188-264.00G.
- Kinugawa, Kiyoshige: See—
Sasaki, Ken; Kinugawa, Kiyoshige; Hanada, Yoshio; Aoki, Keiichi; Ishii, Akira; and Koyama, Masaharu, 4,431,683, Cl. 427-39.000.
- Kirchmayr, Rudolf: See—
Felder-Schraner, Louis, deceased; Berner, Godwin; and Kirchmayr, Rudolf, 4,431,774, Cl. 525-162.000.
- Kirkwood, Peter A., to Fibre-Wound (PTY) Limited. O-Ring gaskets and method of manufacturing same. 4,431,197, Cl. 277-1.000.
- Kirschenbaum, Bernard, to Bell Telephone Laboratories, Incorporated. Fastening arrangement for abutting structural members. 4,430,837, Cl. 52-506.000.
- Kishida, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Bushing for gas-insulated electrical equipment. 4,431,859, Cl. 174-31.00R.
- Kitagawa, Kiyoshi; and Komatsuzaki, Atsushi, to Unitika Ltd. Shrinkable polyamide film and process for its production. 4,431,705, Cl. 428-476.100.
- Kitajima, Hiroyuki: See—
Kajikawa, Masamemon; Kitajima, Hiroyuki; and Tsuji, Tetsuo, 4,431,100, Cl. 192-106.200.
- Kitao, Yoshinobu: See—
Hoshino, Kohzoh; Mizuno, Munee; Murakado, Hiroshi; and Kitao, Yoshinobu, 4,431,461, Cl. 148-2.000.
- Klamut, Carl: See—
Luhman, Thomas; and Klamut, Carl, 4,431,862, Cl. 174-128.00R.
- Kleinfield, Arnold. Container and removable cover. 4,431,114, Cl. 220-337.000.
- Kleinschmidt, Peter; and Gopfert, Max, to Siemens Aktiengesellschaft. Electrically actuated piezoelectric control element. 4,431,934, Cl. 310-331.000.
- Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Carbomethoxy methyl norbornanes, organoleptic uses thereof and process for preparing same. 4,431,577, Cl. 252-522.00R.
- Kliegman, Jonathan M.; and Williams, James M., to GAF Corporation. Bioactant translocation agent. 4,431,437, Cl. 71-86.000.
- Klingler, Thomas C.: See—
Wessling, Ritchie A.; and Klingler, Thomas C., 4,431,768, Cl. 524-543.000.
- Kloke, Karl E.: See—
Gradler, Wilhelm; Kloke, Karl E.; and Linner, Karlheinz, 4,431,317, Cl. 384-192.000.
- Kloster, Kenneth D. Retaining device for a shock absorber assembly. 4,431,092, Cl. 188-321.110.
- Klotz, Marvin R., to Standard Oil Company (Indiana). Catalytic compositions. 4,431,748, Cl. 502-256.000.
- Kluge, Arthur F.; and Clark, Robin D., to Syntex (U.S.A.) Inc. Acylated laudomycin derivatives. 4,431,665, Cl. 424-283.000.
- Knight, John C.; and Wovcha, Merle G. 24-Nor-1,4-choladiene-3,22-dione. 4,431,591, Cl. 260-397.300.
- Knoll International, Inc.: See—
Unger, Goetz W., 4,431,229, Cl. 297-441.000.
- Knorr-Bremse GmbH: See—
Nadas, Julius; and Sander, Nils B. L., 4,431,089, Cl. 188-196.00D.
- Koarai, Jiro: See—
Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Koarai, Jiro; and Iwata, Shuji, 4,431,445, Cl. 75-123.00R.
- Kobayashi, Akio: See—
Kondo, Toshio; Isomura, Shigenori; Kobayashi, Akio; and Kodama, Katsuhiko, 4,430,976, Cl. 123-440.000.
- Kobayashi, Hisashi; Miller, Raymond H.; and Anderson, John E., to Union Carbide Corporation. Ignition system for post-mixed burner. 4,431,400, Cl. 431-6.000.
- Kobayashi, Kazuhiro: See—
Goto, Kunihiko; Kobayashi, Kazuhiro; Ito, Akihiko; Tanaka, Hisami; and Saito, Tadashi, 4,431,973, Cl. 330-261.000.
- Kobayashi, Keizo: See—
Kobayashi, Koji; and Kobayashi, Keizo, 4,431,096, Cl. 192-3.310.
- Kobayashi, Koichi: See—
Fukumitsu, Akira; and Kobayashi, Koichi, 4,432,084, Cl. 369-77.200.
- Kobayashi, Koji; and Kobayashi, Keizo, to Aisin Warner Kabushiki Kaisha. Direct-coupling clutch control system for an automatic transmission. 4,431,096, Cl. 192-3.310.
- Kobayashi, Tatsuhiko: See—
Abe, Takao; and Kobayashi, Tatsuhiko, 4,431,728, Cl. 430-544.000.
- Kobayashi, Yuko, to Olympus Optical Co., Ltd. Macrolens. 4,431,274, Cl. 350-471.000.
- Koch, Robert L., II, to George Koch Sons, Inc. Spray booth with undeposited coating material collection system. 4,430,956, Cl. 118-326.000.
- Koch, Rudolf: See—
Herbst, Heiner; and Koch, Rudolf, 4,432,074, Cl. 365-183.000.
- Kochi, Hiromu: See—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,431,643, Cl. 424-246.000.
- Kochs, Peter: See—
Hohl, Horst; and Kochs, Peter, 4,431,472, Cl. 156-307.300.

- Kocks Technik GmbH & Co.: See—
Demny, Werner; Moltner, Hermann; and Gerhards, Hans-Dieter, 4,430,875, Cl. 72-205.000.
- Kodama, Katsuhiko: See—
Kondo, Toshio; Isomura, Shigenori; Kobayashi, Akio; and Kodama, Katsuhiko, 4,430,976, Cl. 123-440.000.
- Koelling, Michael N.: See—
Kunst, Theodore F.; and Koelling, Michael N., 4,431,401, Cl. 431-11.000.
- Koenig & Bauer Aktiengesellschaft: See—
Hubner, Heinz W., 4,430,937, Cl. 101-232.000.
- Kohler, Norbert: See—
Rinaudo, Marguerite; Milas, Michel; and Kohler, Norbert, 4,431,734, Cl. 435-104.000.
- Kohoka, Tsuyoshi: See—
Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Koarai, Jiro; and Iwata, Shuji, 4,431,445, Cl. 75-123.00R.
- Koinuma, Hiroshi: See—
Ishii, Satoshi; and Koinuma, Hiroshi, 4,431,972, Cl. 330-267.000.
- Kojima, Tetsuro; Ikeda, Tadashi; Ishimaru, Shingo; and Sugimoto, Naohiko, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive element containing a u.v. absorbing layer. 4,431,726, Cl. 430-512.000.
- Kokoku Steel-Wire Ltd.: See—
Kornmann, Michel, 4,431,688, Cl. 427-310.000.
- Kokubo, Eiichi; Yamazaki, Makoto; and Emori, Hiroshi, to Laurel Bank Machine Co., Ltd. Paper sheet accumulator assembly. 4,431,178, Cl. 271-187.000.
- Kolimar, Gyorgy: See—
Fodor, Jozsef; Kolimar, Gyorgy; Szilasi, Gizella M.; and Balog, Margit B., 4,431,553, Cl. 252-42.700.
- Kollonitsch, Janos: See—
Pachett, Arthur A.; and Kollonitsch, Janos, 4,431,817, Cl. 548-342.000.
- Pachett, Arthur A.; and Kollonitsch, Janos, 4,431,821, Cl. 548-508.000.
- Kolossow, Klaus-Dieter, to Hermann Berstorff Maschinenbau GmbH. Extrusion apparatus for the production of foamed synthetic material. 4,431,311, Cl. 366-79.000.
- Komatsu, Yasuhiro: See—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,431,811, Cl. 546-304.000.
- Komatsuzaki, Atsushi: See—
Kitagawa, Kiyoshi; and Komatsuzaki, Atsushi, 4,431,705, Cl. 428-476.100.
- Kompelien, Arlon D., to Honeywell, Inc. Capacitor monitoring by single resistor adjustment. 4,431,962, Cl. 324-60.00C.
- Kondo, Hideo: See—
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hase, Kazunori; Ariki, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,431,656, Cl. 424-273.00R.
- Kondo, Kiyoshi: See—
Sakai, Kunikazu; Suda, Minoru; and Kondo, Kiyoshi, 4,431,659, Cl. 424-273.00P.
- Kondo, Toshio; Isomura, Shigenori; Kobayashi, Akio; and Kodama, Katsuhiko, to Nippondenso Co., Ltd. Method for controlling air/fuel ratio in internal combustion engines. 4,430,976, Cl. 123-440.000.
- Kondo, Yasuo: See—
Shimizu, Isao; Kondo, Yasuo; and Beppu, Koji, 4,431,557, Cl. 252-52.00A.
- Konishi Co., Ltd.: See—
Okitsu, Toshinao; and Uchida, Tomio, 4,431,757, Cl. 524-25.000.
- Konishiroku Photo Industry Co., Ltd.: See—
Abe, Takao; and Kobayashi, Tatsuhiko, 4,431,728, Cl. 430-544.000.
- Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,431,296, Cl. 355-3.0DD.
- Ikemoto, Isao; and Tamura, Akihiko, 4,431,297, Cl. 355-3.0DD.
- Takei, Yoshiaki; Fujimaki, Yoshihide; Akashi, Naoko; and Nomori, Hiroyuki, 4,431,722, Cl. 430-57.000.
- Konst, Louis C.: See—
Hofmann, William E.; and Konst, Louis C., 4,431,692, Cl. 428-35.000.
- Konsumex Kulkereskedelmi Vallalat: See—
Sztancsik, Tibor, 4,431,003, Cl. 128-594.000.
- Kopp, Clinton V.; Hitchcock, James; and Miller, Martin, to Baxter Travenol Laboratories, Inc. Fluid flow control device. 4,431,019, Cl. 137-87.000.
- Koppers Company, Inc.: See—
Atkinson, Donald C., 4,431,158, Cl. 249-197.000.
- Greco, Nicholas P., 4,431,848, Cl. 568-772.000.
- Leston, Gerd, 4,431,846, Cl. 568-750.000.
- Korea Advanced Institute of Science and Technology: See—
Han, Moon H.; Mheen, Tae-Ick; Seong, Baik L.; and Son, Hyeung-Jin, 4,431,735, Cl. 435-119.000.
- Kornmann, Michel, to Kokoku Steel-Wire Ltd. Process and installation for the high-velocity dip-coating of filament like materials. 4,431,688, Cl. 427-310.000.
- Korpman, Ralf, to Permacel. Process for extruding adhesive films and tapes. 4,431,598, Cl. 264-40.700.
- Kosaka Laboratory Ltd.: See—
Nakagawa, Haruki, 4,430,796, Cl. 33-1.00M.
- Kostlin, Heiner; Peter, Manfred; Schaper, Hartwig; Dolphin, Robert J.; and Willmott, Frederick W., to U.S. Philips Corporation. Detection apparatus, particularly for use in liquid chromatography. 4,431,919, Cl. 250-361.00C.
- Kosubek, Uwe: See—
Tappe, Horst; Buhler, Ulrich; Roth, Kurt; Weyer, Hans-J.; and Kosubek, Uwe, 4,431,585, Cl. 260-158.000.
- Kowalik, James J.: See—
Carpenter, Keith H.; Graham, Donald E.; and Kowalik, James J., 4,431,954, Cl. 318-443.000.
- Kowalski, Slawomir, to Marotta Scientific Controls, Inc. Flow-control system having a wide range of flow-rate control. 4,431,020, Cl. 137-110.000.
- Koyama, Hiroyasu: See—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,431,811, Cl. 546-304.000.
- Koyama, Masaharu: See—
Sasaki, Ken; Kinugawa, Kiyoshige; Hanada, Yoshio; Aoki, Keiichi; Ishii, Akira; and Koyama, Masaharu, 4,431,683, Cl. 427-39.000.
- Koyanagi, Kouki: See—
Uchiyama, Tomoyoshi; Hattori, Youichi; Koyanagi, Kouki; Ohkoshi, Toshio; Ishihama, Takaaki; and Toda, Kouji, 4,431,343, Cl. 405-198.000.
- Kozikowski, Carrie L., to International Telephone and Telegraph Corporation. Fiber optic splitter. 4,431,261, Cl. 350-96.200.
- Kraftwerk Union Aktiengesellschaft: See—
Janner, Karl; and Gregorius, Klaus, 4,431,136, Cl. 239-102.000.
- Kralowetz, Bruno, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H. Swaging machine. 4,430,881, Cl. 72-402.000.
- Krantz, Leonard A., to Bendix Corporation, The. Electrical connector with a built in circuit protection device. 4,431,251, Cl. 339-143.00R.
- Krasberg, Alan. Heating of underwater equipment. 4,430,988, Cl. 126-206.000.
- Krasnoff, Abraham: See—
Pall, David B.; and Krasnoff, Abraham, 4,431,545, Cl. 210-641.000.
- Krawczyk, Gregory J.: See—
Burt, David L.; and Krawczyk, Gregory J., 4,431,160, Cl. 251-86.000.
- Krawczyk, Leroy S.; Martin, Charles W.; and Pearce, Roscoe L., to Dow Chemical Company, The. Inhibitors for acid gas conditioning solutions. 4,431,563, Cl. 252-189.000.
- Krennbauer, Franz, to Voest-Alpine Aktiengesellschaft; and VEB Schwermaschinenbau-Kombinat "Ernst Thälmann". Process and apparatus for producing cement. 4,431,454, Cl. 106-100.000.
- Krennbauer, Franz: See—
Feige, Fritz; and Krennbauer, Franz, 4,431,453, Cl. 106-100.000.
- Kretzschmann, Volker; and Traub, Peter, to Roth-Technik GmbH. Apparatus for extruding concrete. 4,431,392, Cl. 425-64.000.
- Krikman, Genrietta Y.: See—
Ovchinnikov, Yuri M.; Solokhina, Valentina G.; Samoshenkova, Xenia G.; Laputukhin, Veniamin S.; Belyaeva, Julia I.; Krikman, Genrietta Y.; Guschina, Izabella I.; Krutikov, Nikolai N.; and Sulakova, Ljubov I., 4,431,724, Cl. 430-302.000.
- Krimm, Heinrich; Buysch, Hans-Josef; and Botta, Artur, to Bayer Aktiengesellschaft. Copolymers of cyclic carbonic acid esters and lactams and their production. 4,431,795, Cl. 528-323.000.
- Kritske, Victor J., to Mayline Company, Inc. Rotary cam brake. 4,431,153, Cl. 248-188.100.
- Krueser, Michael: See—
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Labude, Wolfgang; Bauer, Karl-Heinz; and Maisch, Edgar, 4,431,876, Cl. 200-5.00R.

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Sick, Erwin; Ross, Dieter; and Mankel, Siegfried, 4,431,309, Cl. 356-431.000.
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Zeltner, Bernard; and Marmonnier, Gaston, 4,430,829, Cl. 47-81.000.
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- Margraf, Gerhard: See—
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- Marotta Scientific Controls, Inc.: See—
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- Marsh, Cecil D. Ejected cartridge case receiver. 4,430,820, Cl. 42-1.00T.
- Marshall, Mark. Aquassage. 4,430,762, Cl. 4-543.000.
- Marshall, Michael A.; and Swales, Danvers A., to British Chrome & Chemicals Limited. Production of chromium trioxide. 4,431,625, Cl. 423-607.000.
- Marshall, Richard W. Garbage can mat. 4,431,166, Cl. 256-1.000.
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- Martin, Charles W.: See—
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- Martin, John J., to Avco Corporation. Stacked-plate heat exchanger made of identical corrugated plates. 4,431,050, Cl. 165-166.000.
- Martin, John W.: See—
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Cue, Berkeley W., Jr.; Hammen, Philip D.; and Massett, Stephen S., 4,431,828, Cl. 549-401.000.
- Massey, Frederick, to Tioxide Group PLC. Metal fiber-containing textile materials and their use in containers to prevent voltage build up. 4,431,316, Cl. 383-113.000.
- Masugi, Takashi: See—
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- Masuko, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,432,073, Cl. 365-182.000.
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Zajac, John, 4,431,477, Cl. 156-643.000.
- Mathews, John P.: See—
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- Matisa Materiel Industriel S.A.: See—
Valditterra, Sergio; Cicin-Sain, Ivo; and Berga, Jaime, 4,430,813, Cl. 37-104.000.
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Barwise, Robert D.; Arola, Rodger A.; and Matson, Edsel D., 4,431,039, Cl. 144-176.000.
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- Matsui, Kazuhiro, to Hoshino Gakki Co., Ltd. Guitar bridge. 4,430,919, Cl. 84-299.000.
- Matsui, Mitsui: See—
Takeshima, Takahiko; Matsui, Mitsui; Ueki, Tadashi; and Ueno, Tsuneo, 4,431,047, Cl. 164-253.000.
- Matsui, Nobuo: See—
Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada, Tomio, 4,431,814, Cl. 548-230.000.
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- Matsushita Electric Industrial Co., Ltd.: See—
Mori, Kunihito; Torigoe, Masao; and Yamamoto, Toshiyoshi, 4,431,048, Cl. 165-88.000.
- Nankai, Shiro; Imai, Akihiro; and Iijima, Takashi, 4,431,507, Cl. 204-403.000.
- Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiko; and Ogawa, Atsushi, 4,431,970, Cl. 329-103.000.
- Teramoto, Iwao; Sugino, Takashi; and Itoh, Kunio, 4,432,092, Cl. 372-46.000.
- Wada, Takahiro; and Yamamoto, Ryoichi, 4,431,558, Cl. 252-70.000.
- Matsushita Electric Works, Ltd.: See—
Toyomi, Yuritsugu; and Wada, Yukio, 4,430,808, Cl. 34-97.000.
- Matsushita Reiki Co., Ltd.: See—
Shimizu, Yoshitaka; and Takahashi, Norio, 4,430,776, Cl. 24-573.000.
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Funada, Fumiaki; Takamatsu, Toshiaki; Yasuda, Shuhei; and Matsuura, Masataka, 4,431,270, Cl. 350-332.000.
- Matsuura, Takashi; Hayashi, Motomu; and Yukimoto, Kazuyoshi, to Aisin Seiki Kabushiki Kaisha. Retractable head lamp structure for automobiles. 4,432,040, Cl. 362-61.000.
- Matt, Timothy S.; and Bruening, Ralph G., to Nordson Corporation. Controller for uniform fluid dispensing. 4,431,690, Cl. 427-424.000.
- Mattei, Mathieu: See—
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- Matthes, Larry A.: See—
Tourdot, Wayne M.; and Matthes, Larry A., 4,430,847, Cl. 56-10.700.
- Matthews, Robert O.: See—
White, Dwain M.; and Matthews, Robert O., 4,431,779, Cl. 525-397.000.
- Matunaga, Shigetugu: See—
Ebata, Hitoshi; and Matunaga, Shigetugu, 4,430,959, Cl. 118-697.000.
- Matusz, Arnold J.: See—
Dorsch, Robert; and Matusz, Arnold J., 4,431,435, Cl. 55-241.000.
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- May, George A.; and Strobel, Henry A. Telephone system with computer generated dial pad and automatic dialing. 4,431,870, Cl. 179-81.00C.
- Mayer, Herbert E. Apparatus for the projection copying of mask patterns on a workpiece. 4,431,304, Cl. 355-54.000.
- Mayline Company, Inc.: See—
Kritske, Victor J., 4,431,153, Cl. 248-188.100.
- Mayumi, Hiroshi, to Nippon Electric Co., Ltd. Counter controlled signal generator. 4,431,926, Cl. 307-260.000.
- Mazzagatti, Concezio. Fast self-adjusting assembling arrangement for shafts and rotary members. 4,431,327, Cl. 403-11.000.
- McArthur, Dennis P.: See—
Simpson, Howard D.; and McArthur, Dennis P., 4,431,526, Cl. 208-211.000.
- McBride, Donald G.: See—
Canestaro, Michael J.; McBride, Donald G.; and Welsh, John A., 4,431,685, Cl. 427-89.000.
- McClure, David E., to Merck & Co., Inc. Method of use of enantiomers of trans-indeno[1,2-b]-1,4-oxazines. 4,431,647, Cl. 424-248.580.

- McClure, Kenneth S. Apparatus and method of converting reciprocating motion to rotary motion. 4,430,902, Cl. 74-31.000.
- McCormick Laboratories, Inc.: See—
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- McCormick, William, to McCormick Laboratories, Inc. Method of and apparatus for determining very accurately the position of a device inside biological tissue. 4,431,005, Cl. 128-656.000.
- McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., to Texas Instruments Incorporated. Microcomputer device using dispatch addressing of control ROM. 4,432,052, Cl. 364-200.000.
- McDonough Power Equipment, Division of Fuqua Industries, Inc.: See—
Wistrom, Wayne M., 4,430,848, Cl. 56-11.300.
- McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., to Phillips Petroleum Company. Platinum group metal catalyst on the surface of a support and a process for preparing same. 4,431,750, Cl. 502-329.000.
- McHose, Robert E.: See—
Faulkner, Richard D.; and McHose, Robert E., 4,431,943, Cl. 313-533.000.
- McInnes, Malcolm B., to Pyrox Limited. Heating arrangements and control systems therefor. 4,431,131, Cl. 236-11.000.
- McIntyre, James A.; and Phillips, Robert F., to Dow Chemical Company. The. Method for electrolytic production of alkaline peroxide solutions. 4,431,494, Cl. 204-83.000.
- McKann, H. Smith, to General Products Co., Inc. Frame assembly for door light. 4,430,836, Cl. 52-455.000.
- McKenzie, Thomas C.; Epstein, Joseph W.; and Fanshawe, William J., to American Cyanamid Company. 5-Aryl-3-azabicyclo[3.2.0]heptan-6-one acetals, and analgesic use therefor. 4,431,661, Cl. 424-274.000.
- McKenzie, Wray V., Jr.: See—
Holtzberg, Matthew W.; Henke, Steven J.; and McKenzie, Wray V., Jr., 4,430,970, Cl. 123-90.510.
- McManaman, Raymond M.: See—
Westover, Dwight G.; and McManaman, Raymond M., 4,431,179, Cl. 271-274.000.
- Mead Corporation: See—
Smith, David W., 4,431,175, Cl. 271-10.000.
- Meeker, Gregory W.; and Scaron, Frank W., Jr., to USM Corporation. Material feed unit for an injection molding machine. 4,431,105, Cl. 198-523.000.
- Mehalek, Glenn M., to Xerox Corporation. Raster scanner control. 4,432,023, Cl. 358-293.000.
- Mehler, Gunter: See—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,432,061, Cl. 364-480.000.
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- Meichsner, Walter: See—
Hammer, Rudolf; Meichsner, Walter; and Rellermeyer, Heinrich, 4,431,444, Cl. 75-53.000.
- Meidensha Electric Mfg., Co., Ltd.: See—
Hiraki, Akio; Imura, Takeshi; and Kanmura, Wako, 4,431,562, Cl. 252-188.250.
- McLampy, Donald F. Method for making armor plate. 4,431,466, Cl. 148-143.000.
- Melchior, Jean F.; and Andre, Thierry, to French State, The. Super-charged internal combustion engines, inter alia diesel engines. 4,430,860, Cl. 60-606.000.
- Mena, Digno. Device for reading in bed. 4,431,156, Cl. 248-445.000.
- Menis, Daniel L.: See—
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- Meno, Frank, to University of Pittsburgh. Electronic musical instrument. 4,430,918, Cl. 84-1.160.
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Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,431,652, Cl. 424-270.000.
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- Machlowitz, Roy A.; and Herman, Alan C., 4,431,633, Cl. 424-89.000.
- McClure, David E., 4,431,647, Cl. 424-248.580.
- Patchett, Arthur A.; and Kollonitsch, Janos, 4,431,817, Cl. 548-342.000.
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- Merle, Jean P., to Enertec. Tape entrainment device with a movable entrainment roller. 4,431,146, Cl. 242-192.000.
- Merola, Carl R.: See—
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- Merritt, William H. Low profile overhead lighting fixture lens shield. 4,432,045, Cl. 362-375.000.
- Mertens, Guy; and Laroche, Pierre, to Glaverbel. Laminated panels. 4,431,471, Cl. 156-103.000.
- Merzhanov, Alexandr G.; Borovinskaya, Inna P.; Kustova, Lidia V.; and Dubovitsky, Fedor I. Tungsten-free hard alloy and process for producing same. 4,431,448, Cl. 75-238.000.
- Messer, Allan G.: See—
Geeves, Jack, 4,431,208, Cl. 280-475.000.
- Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung: See—
Born, Gunthard, 4,431,257, Cl. 350-1.500.
- Messerschmitt-Bolkow Blohm GmbH: See—
Hemmerich, Johann; Kupschus, Peter; and Fraenkle, Helmut, 4,431,488, Cl. 204-9.000.
- Messing, Gilbert S.; Volkov, Grennady; Stanford, Thomas R.; and Lochet, Jean A., to Vanguard Research Associates, Inc. Selective electroplating apparatus. 4,431,500, Cl. 204-206.000.
- Metallgesellschaft Aktiengesellschaft: See—
Fennemann, Wolfgang; Sander, Ulrich; and Bick, Manfred, 4,431,573, Cl. 502-218.000.
- Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,432,061, Cl. 364-480.000.
- Weiss, Hans J., 4,431,406, Cl. 432-85.000.
- Metallurgical, Inc.: See—
Withers, James C.; and Upperman, Gary V., 4,431,503, Cl. 204-294.000.
- Metysova, Jirina: See—
Protiva, Miroslav; Sindelar, Karel; Diabac, Antonin; and Metysova, Jirina, 4,431,808, Cl. 546-197.000.
- Metzler, Allan R., Jr., to Preformed Line Products Company. Protective boot for cables and method of applying same. 4,431,863, Cl. 174-136.000.
- Meyer, Hans. Method of producing a scale. 4,430,781, Cl. 29-25.420.
- Meyer, Robert: See—
Grange, Hubert; and Meyer, Robert, 4,431,989, Cl. 340-763.000.
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Han, Moon H.; Mheen, Tae-Ick; Seong, Baik L.; and Son, Hyeung-Jin, 4,431,735, Cl. 435-119.000.
- Michael, David J.: See—
Kernion, Mark C.; and Michael, David J., 4,431,744, Cl. 501-99.000.
- Michel, Karl H.: See—
Hoehn, Marvin M.; and Michel, Karl H., 4,431,809, Cl. 546-270.000.
- Michel, Wolfgang; and Becker, Reinhold, to Hoechst Aktiengesellschaft. Device for simultaneously deshirring, smoothing and braking a shirred tubular casing. 4,430,772, Cl. 17-33.000.
- Michigan Instruments, Inc.: See—
Barkalow, Clare E., 4,430,893, Cl. 73-168.000.
- MicroComm Corporation: See—
Hendricks, Donald B.; and Larson, Austin R., 4,431,134, Cl. 236-46.00R.
- Midwest Research Institute: See—
Mathiprakasam, Balakrishnan, 4,430,864, Cl. 62-94.000.
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- Miki, Yukio: See—
Kajita, Hideo; Egawa, Takeshi; and Miki, Yukio, 4,431,285, Cl. 354-405.000.
- Mikroyannidis, Ioannis A.: See—
Tsolis, Alexandros K.; and Mikroyannidis, Ioannis A., 4,431,596, Cl. 260-970.000.
- Mikuni Kogyo Kabushiki Kaisha: See—
Ishida, Takashi; and Tominari, Noboru, 4,430,975, Cl. 123-399.000.
- Milas, Michel: See—
Rinaudo, Marguerite; Milas, Michel; and Kohler, Norbert, 4,431,734, Cl. 435-104.000.
- Miller, Collier M.; and Schmitz, Robert, to Honeywell Inc. Rotary valve. 4,431,161, Cl. 251-133.000.
- Miller, Frederick A.: See—
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- Miller, Jeffrey T.; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Process for hydrogen treating high nitrogen content hydrocarbon feeds. 4,431,527, Cl. 208-254.00H.
- Miller, Jeffrey T.: See—
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- Miller, John W. V.; and Juvinall, John W., to Owens-Illinois, Inc. Method and apparatus for comparing data signals in a container inspection device. 4,432,013, Cl. 358-106.000.
- Miller, Martin: See—
Kopp, Clinton V.; Hitchcock, James; and Miller, Martin, 4,431,019, Cl. 137-87.000.
- Miller, Raymond H.: See—
Kobayashi, Hisashi; Miller, Raymond H.; and Anderson, John E., 4,431,400, Cl. 431-6.000.
- Miller, William T. Disposable razor device for cutting and trimming nostril hair. 4,430,794, Cl. 30-29.500.
- Milligan, Thomas A., to United States of America, Air Force. Missile multi-frequency antenna. 4,431,996, Cl. 343-708.000.
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- Minami, Setsuo: See—
Matsui, Yoshiya; Minami, Setsuo; and Mochizuki, Noritaka, 4,431,299, Cl. 355-8.000.

- Minamite, Yoshihiro: See—
Katsuda, Yoshio; and Minamite, Yoshihiro, 4,431,668, Cl. 424-364.000.
- Ministry of International Trade & Industry: See—
Soda, Choichiro; Aoi, Kazuyoshi; Hattukano, Kanichi; and Sano, Toshio, 4,431,172, Cl. 267-119.000.
- Minnesota Mining and Manufacturing Company: See—
Abdullah, Sherif; and Barbeau, Gary A., 4,431,247, Cl. 339-97.00P.
Dillon, Kenneth R.; and Terchek, Richard L., 4,431,449, Cl. 75-246.000.
Huntley, Ted R.; and Huntosh, Ralph E., Jr., 4,431,248, Cl. 339-99.00R.
Reed, Katherine E., 4,431,763, Cl. 524-389.000.
Sundet, Douglas S., 4,430,851, Cl. 57-211.000.
Young, Chung I.; and Barber, Loren L., Jr., 4,431,845, Cl. 568-606.000.
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Hoda, Takeo; Taniguchi, Nobuyuki; and Seigenji, Kiyoshi, 4,431,283, Cl. 354-21.000.
Kajita, Hideo; Egawa, Takeshi; and Miki, Yukio, 4,431,285, Cl. 354-405.000.
Nakamura, Akiyoshi, 4,431,273, Cl. 350-432.000.
- Mira-Zade, Damad M. S. O.: See—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- Miskel, John J., Jr.: See—
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,431,548, Cl. 210-732.000.
- Miszak, Pawel, to Sulzer Brothers Ltd. Forced flow vapor generator plant, 4,430,962, Cl. 122-406.500.
- Mita Industrial Company Limited: See—
Nakajima, Tadanobu, 4,431,180, Cl. 271-274.000.
- Mitsubishi Chemical Industries Limited: See—
Sakamoto, Kunisuke; Yoshimura, Junichi; and Shiga, Isamu, 4,431,600, Cl. 264-176.00R.
- Mitsubishi Denki Kabushiki Kaisha: See—
Ito, Tetsuro, 4,431,897, Cl. 219-69.00G.
Kishida, Mitsuhiro, 4,431,859, Cl. 174-31.00R.
Nishioka, Tadashi, 4,431,967, Cl. 324-158.00R.
Sekii, Tsugio, 4,431,103, Cl. 198-345.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: See—
Amitani, Tatsuo; Kubo, Masayoshi; Maehara, Kenichi; Izumi, Jun; and Tsutaya, Hiroyuki, 4,431,432, Cl. 55-26.000.
- Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha: See—
Arita, Yoji; and Seo, Yuzo, 4,431,492, Cl. 204-67.000.
- Mitsubishi Kinzoku Kabushiki Kaisha: See—
Yoshizumi, Motohiko, 4,431,764, Cl. 524-409.000.
- Mitsubishi Oil Company, Ltd.: See—
Shimizu, Isao; Kondo, Yasuo; and Beppu, Koji, 4,431,557, Cl. 252-52.00A.
- Mitsubishi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, to Seichi Ishizaka, President of Kogyo Gijutsuin; and Honda Giken Kogyo Kabushiki Kaisha. Laser angular speed detector employing non-optical output, 4,431,308, Cl. 356-350.000.
- Mitsui Engineering & Shipbuilding Co., Ltd.: See—
Inoue, Takehisa, 4,431,345, Cl. 405-204.000.
- Miura, Kunihiko: See—
Hashimoto, Shinichi; and Miura, Kunihiko, 4,431,301, Cl. 355-14.00H.
- Miya, Akiko: See—
Matsuo, Yoshitaka; Tanaka, Toshihiro; and Miya, Akiko, 4,431,543, Cl. 210-605.000.
- Miya, Masayoshi; Sakurai, Hisaya; and Ikegami, Tadashi, to Asahi Kasei Kogyo Kabushiki Kaisha. Catalyst for polymerization of olefins and polymerization process employing such catalyst, 4,431,568, Cl. 502-154.000.
- Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bypass air intake control for an internal combustion engine, 4,430,973, Cl. 123-339.000.
- Miyakoshi, Shinichi; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension system for motorcycles, 4,431,204, Cl. 280-277.000.
- Miyamoto, Yukihiko: See—
Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiko; and Ogawa, Atsushi, 4,431,970, Cl. 329-103.000.
- Miyatsuka, Hajime: See—
Matsufuji, Akihiro; Kasuga, Akira; Miyatsuka, Hajime; and Aonuma, Masashi, 4,431,712, Cl. 428-692.000.
- Mizoguchi, Yukuo: See—
Asari, Akira; Noyori, Tatsuhiko; Mizoguchi, Yukuo; and Takehata, Tetsuro, 4,430,877, Cl. 72-273.500.
- Mizrahi, Sadi: See—
Angevine, Philip J.; Kuehl, Guenter H.; and Mizrahi, Sadi, 4,431,518, Cl. 208-111.000.
- Mizuhara, Howard; and Pattanaik, Surya, to GTE Products Corporation. Brazing alloy paste, 4,431,465, Cl. 148-24.000.
- Mizuno, Koichi: See—
Suzuki, Masao; and Mizuno, Koichi, 4,431,566, Cl. 252-373.000.
- Mizuno, Masuo: See—
Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe, Yukihiro; Waki, Mitsutaka; and Mizuno, Masuo, 4,431,478, Cl. 156-668.000.
- Mizuno, Muneco: See—
Hoshino, Kohzoh; Mizuno, Muneco; Murakado, Hiroshi; and Kitao, Yoshinobu, 4,431,461, Cl. 148-2.000.
- Mizutani, Shiro: See—
Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiko; and Ogawa, Atsushi, 4,431,970, Cl. 329-103.000.
- Mnlik, Reinhold; Keil, Manfred; and Schulte, Lothar, to Holstein and Kappert GmbH. Arrangement for displacing piece goods, 4,431,224, Cl. 294-87.00R.
- Mobil Oil Corporation: See—
Alhilali, Khalid A.; and Zemanek, Joseph, Jr., 4,432,077, Cl. 367-31.000.
Angevine, Philip J.; Kuehl, Guenter H.; and Mizrahi, Sadi, 4,431,518, Cl. 208-111.000.
Daviduk, Nicholas; and Haddad, James H., 4,431,856, Cl. 585-469.000.
Dellinger, Thomas B.; and Gravley, Wilton, 4,431,068, Cl. 175-61.000.
LaPierre, Rene B.; and Partridge, Randall D., 4,431,519, Cl. 208-111.000.
Licko, Ervin A.; Lind, Frederick W.; and Richmond, Robert W., 4,432,012, Cl. 358-75.000.
Rollmann, Louis D., 4,431,746, Cl. 502-73.000.
Schwab, Frederick C., 4,431,773, Cl. 525-98.000.
Shu, Winston R., 4,431,056, Cl. 166-263.000.
- Mochizuki, Noritaka: See—
Matsui, Yoshiya; Minami, Setsuo; and Mochizuki, Noritaka, 4,431,299, Cl. 355-8.000.
- Moertel, George B., to Talon, Inc. Continuous injection molding apparatus, 4,431,399, Cl. 425-545.000.
- Moinet, Gerard H.; Dostert, Philippe L.; and Bourgeroy, Guy R., to Delalande S.A. 3-(Hydroxyalkyl)-3,4-dihydro-1-orthohalophenyl naphthalenes, 4,431,851, Cl. 568-808.000.
- Moltnier, Hermann: See—
Demny, Werner; Moltnier, Hermann; and Gerhards, Hans-Dieter, 4,430,875, Cl. 72-205.000.
- Molusis, Anthony J.; and O'Loughlin, Thomas M., to Bristol Babcock Inc. Microprocessor-based keyboard/display unit for configuring control instruments, 4,431,988, Cl. 340-712.000.
- Mondadori, Cesare; and Schmutz, Markus, to Ciba-Geigy Corporation. Pharmaceutical compositions having antiepileptic and antineuralgic action, 4,431,641, Cl. 424-244.000.
- Monolithic Memories, Incorporated: See—
Moss, William E., 4,432,070, Cl. 365-96.000.
- Monroe, Carl M.; and Sweet, Randall P., to Dow Corning Corporation. Electrically conductive polydiorganosiloxanes, 4,431,982, Cl. 338-214.000.
- Monsarrat, William G., to United Technologies Corporation. Flow directing assembly for a gas turbine engine, 4,431,373, Cl. 415-189.000.
- Montedison S.p.A.: See—
Di Drusco, Giovanni; Chiolle, Antonio; Danesi, Sergio; and Credali, Lino, 4,431,696, Cl. 428-212.000.
- Montgomery, John A.: See—
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,431,805, Cl. 544-279.000.
- Monticelli, Dennis M., to National Semiconductor Corporation. Digital time domain noise filter, 4,431,930, Cl. 307-520.000.
- Moore, George G. I., to Riker Laboratories, Inc. Substituted furans, 4,431,831, Cl. 549-498.000.
- Moormann, Alan E.; Pitzele, Barnett S.; Adelstein, Gilbert W.; and Malek, Nancy J., to G. D. Searle & Co. N-Heterocyclyl-N-cyano-N-(heterocyclylthioalkyl)-guanidines, 4,431,802, Cl. 542-416.000.
- Mori, Kunihito; Torigoe, Masao; and Yamamoto, Toshiyoshi, to Matsushita Electric Industrial Co., Ltd. Heat-exchange fan apparatus, 4,431,048, Cl. 165-88.000.
- Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical refractor for diffusing light, 4,431,266, Cl. 350-167.000.
- Mori, Shigeru: See—
Kifune, Koji; Inoue, Katsuhiko; and Mori, Shigeru, 4,431,601, Cl. 264-186.000.
- Moriguchi, Haruhiko: See—
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,432,001, Cl. 346-76.00PH.
- Morisaki, Eiichi, to Howa Kogyo Kabushiki Kaisha. Chuck with centrifugal compensation device, 4,431,201, Cl. 279-1.00C.
- Moriya, Koichi: See—
Aya, Masahiro; Saito, Junichi; Kamochi, Atsumi; and Moriya, Koichi, 4,431,441, Cl. 71-92.000.
- Morohashi, Kazuo, to Nippon Kogaku K.K. Eye periphery portion illuminating device in an ophthalmologic instrument, 4,431,279, Cl. 351-245.000.
- Morris, Thomas E.: See—
Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,430,784, Cl. 29-157.00C.
- Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. High rate magnetron sputtering of high permeability materials, 4,431,505, Cl. 204-298.000.
- Morrow, Ann M., administratrix: See—
Morrow, Timothy N., deceased, 4,431,053, Cl. 166-117.500.
- Morrow, Timothy N., deceased (by Morrow, Ann M., administratrix), to Texaco Inc. Well drilling tool, 4,431,053, Cl. 166-117.500.
- Morschek, Timothy J., to Eaton Corporation. Forward-reverse powershift control, 4,430,911, Cl. 74-868.000.

- Morton, Anthony J., to Colgate-Palmolive Company. Dentifrice composition, 4,431,630, Cl. 424-52.000.
- Morweiser, Karl-Heinz: See—
Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, 4,431,687, Cl. 427-246.000.
- Mosbach, Klaus: See—
Atkinson, Anthony; Lowe, Christopher R.; Mosbach, Klaus; and Small, David A. P., 4,431,544, Cl. 210-635.000.
- Moser, Thomas D.; Amenson, Christopher J.; and Sternheim, Eliezer, to Westinghouse Electric Corp. Elevator system, 4,431,086, Cl. 187-29.00R.
- Mosig, Wolfgang: See—
Bock, Erich; and Mosig, Wolfgang, 4,430,943, Cl. 102-522.000.
- Moss, Elvis W.; and Mack, John J., to Brunswick Corporation. Sliding drag system, 4,431,143, Cl. 242-84.50A.
- Moss, Gerald, to Exxon Research and Engineering Co. Process for producing CO₂ and CO₂ so produced, 4,431,622, Cl. 423-437.000.
- Moss, William E., to Monolithic Memories, Incorporated. High speed PROM device, 4,432,070, Cl. 365-96.000.
- Motorola, Inc.: See—
Bailey, David F.; Weidler, Allen J.; Gilmore, Merle L.; and Clow, Gary W., 4,431,991, Cl. 340-825.520.
- Sasser, Bill H.; and Immell, Raymond G., 4,431,997, Cl. 343-770.000.
- Sokola, Raymond L.; and Choi, Charles, 4,431,977, Cl. 333-206.000.
- Wurzburg, Henry; and Kelley, Stephen H., 4,432,089, Cl. 370-110.100.
- Zobel, Don W.; Main, W. Eric; Pace, W. David; and Welty, Dennis L., 4,431,874, Cl. 179-170.00NC.
- Mott, Richard C., to Honeywell Inc. Stepper motor system for digitally measuring input quantities, 4,431,985, Cl. 340-347.0AD.
- Mouille, Rene L., to Societe Nationale Industrielle Aerospatiale. Simplified anti-resonant suspension device for a helicopter, 4,431,148, Cl. 244-17.270.
- Moulin, Michel: See—
Moyroud, Louis M.; Bongard, Michel; Vernez, Paul A.; and Moulin, Michel, 4,431,295, Cl. 354-5.000.
- Mountz, Marshall S.: See—
Beinhaur, Ernest L.; and Mountz, Marshall S., 4,431,198, Cl. 277-1.000.
- Mourou, Gerard; and Williamson, Steven L., to University of Rochester, The. Photoelectron switching in semiconductors in the picosecond time domain, 4,431,914, Cl. 250-211.00J.
- Moyer, Mark C., to Exxon Production Research Co. Riser connector, 4,431,215, Cl. 285-18.000.
- Moyroud, Louis M.; Bongard, Michel; Vernez, Paul A.; and Moulin, Michel, to Autologic, S.A. Photocomposing machine and method, 4,431,295, Cl. 354-5.000.
- Muhlback, Anton; and Stemmler, Helmut, to USM Corporation. Cement sole attaching presses, 4,430,766, Cl. 12-16.100.
- Mukamal, Harold: See—
Weber, Kenneth E.; and Mukamal, Harold, 4,431,755, Cl. 523-203.000.
- Mukoyama, Yoshiyuki: See—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,431,758, Cl. 524-104.000.
- Muller, Heinz: See—
Volkl, Franz; and Muller, Heinz, 4,431,209, Cl. 280-604.000.
- Muller, Rudolf: See—
Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,431,732, Cl. 435-61.000.
- Mullins, Michael J., to Dow Chemical Company. The. Unsaturated esters and method of preparation, 4,431,592, Cl. 260-410.600.
- Murakado, Hiroshi: See—
Hoshino, Kohzoh; Mizuno, Muneco; Murakado, Hiroshi; and Kitao, Yoshinobu, 4,431,461, Cl. 148-2.000.
- Murakami, Hiroyasu: See—
Sakai, Shinji; Suzuki, Masayuki; Shinoda, Nobuhiko; Uchidoi, Masanori; Murakami, Hiroyasu; and Ito, Tadashi, 4,431,287, Cl. 354-441.000.
- Murata Manufacturing Co., Ltd.: See—
Inoue, Jiro, 4,431,938, Cl. 310-348.000.
- Murray, Bruce J.: See—
Dettly, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,431,586, Cl. 260-239.00R.
- Murray, David L., to Allis-Chalmers Corporation. Planter gauge wheels with adjustable equalizer mechanism, 4,430,952, Cl. 111-85.000.
- Muschelknautz, Edgar: See—
Behrens, Hans-Josef; Herold, Heiko; Muschelknautz, Edgar; and Vogelsang, Roland, 4,431,602, Cl. 264-205.000.
- Mutoh, Hiroshi; Hikawa, Masami; Watanabe, Yoshinori; and Yamazaki, Kouichi, to Mutoh Industry, Ltd. Rail type universal parallel ruler device, 4,430,805, Cl. 33-438.000.
- Mutoh Industry, Ltd.: See—
Mutoh, Hiroshi; Hikawa, Masami; Watanabe, Yoshinori; and Yamazaki, Kouichi, 4,430,805, Cl. 33-438.000.
- Myerhoff, Alfred, to United States of America, Energy. Fuel cell design and assembly, 4,431,714, Cl. 429-26.000.
- Myers, George D., deceased (by Myers, Virginia K., administratrix); and Busch, Lloyd E., to Ashland Oil, Inc. Carbometallic oil conversion with hydrogen in a riser using a high metals containing catalyst, 4,431,515, Cl. 208-108.000.
- Myers, Virginia K., administratrix: See—
Myers, George D., deceased; and Busch, Lloyd E., 4,431,515, Cl. 208-108.000.
- Nabisco Brands, Inc.: See—
Horwath, Robert O.; and Irbe, Robert M., 4,431,733, Cl. 435-94.000.
- Nachazel, Jiri, to Bosch-Siemens Hausgerate GmbH. Fluid timing element, especially a pneumatic timing element for use in household appliances, such as electric toasters, 4,431,030, Cl. 138-45.000.
- Nadas, Julius; and Sander, Nils B. L., to Knorr-Bremse GmbH. Automatic slack adjusting device of brake linkage, 4,431,089, Cl. 188-196.00D.
- Nagai, Yoshiteru: See—
Obora, Masaki; and Nagai, Yoshiteru, 4,431,767, Cl. 524-490.000.
- Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Oshio, Hiromichi; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Tetrahydrophthalimides, and their production and use, 4,431,822, Cl. 548-513.000.
- Nagao, Jay J.; and Dexter, Steven T., to Fairfield Manufacturing Co., Inc. Two speed final drive gear box, 4,431,073, Cl. 180-6.480.
- Nagel, Hans J.; and Schumacher, Egon, to Nagel, Hans Joachim. Arrangement for keeping fattened poultry, 4,430,960, Cl. 119-22.000.
- Nagel, Hans Joachim: See—
Nagel, Hans J.; and Schumacher, Egon, 4,430,960, Cl. 119-22.000.
- Nakagawa, Haruki, to Kosaka Laboratory Ltd. Method and apparatus for determining the location of points on a three dimensional thing, 4,430,796, Cl. 33-1.00M.
- Nakagawa, Seiichi; Ishimori, Yoshio; and Date, Naoki, to Jeol Ltd. Electron beam apparatus, 4,431,915, Cl. 250-310.000.
- Nakagawa, Shinsuke: See—
Asagao, Soichi; Nakagawa, Shinsuke; Okada, Naoki; and Yoshikawa, Seizi, 4,431,610, Cl. 423-12.000.
- Nakajima, Hajime: See—
Okada, Takashi; and Nakajima, Hajime, 4,432,097, Cl. 381-98.000.
- Nakajima, Tadanobu, to Mita Industrial Company Limited. Roller supporting arrangement for electrostatic copying apparatus, 4,431,180, Cl. 271-274.000.
- Nakajima, Youichi: See—
Zamma, Jun; Nishimura, Yoshinori; Nakajima, Youichi; and Sakai, Tadaaki, 4,431,049, Cl. 165-142.000.
- Nakajiri, Takashi: See—
Onose, Yasuichi; Nakajiri, Takashi; and Tsumura, Takeo, 4,432,020, Cl. 358-257.000.
- Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Inverted telephoto type wide angle lens system, 4,431,273, Cl. 350-432.000.
- Nakamura, Yukinobu: See—
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,431,308, Cl. 356-350.000.
- Nakashima, Seiichi: See—
Inaba, Hajimu; Nakashima, Seiichi; Inagaki, Shigemi; and Ito, Susumu, 4,431,366, Cl. 414-735.000.
- Nakaya, Teruyuki: See—
Karaki, Nobuo; and Nakaya, Teruyuki, 4,431,319, Cl. 400-124.000.
- Nakayama, Wataru: See—
Ikegawa, Masahiro; Daikoku, Takahiro; Nakayama, Wataru; and Ueda, Taisei, 4,431,980, Cl. 336-60.000.
- Nalco Chemical Company: See—
Dubin, Leonard, 4,431,547, Cl. 210-701.000.
- Gilron, Jack L., 4,431,611, Cl. 423-20.000.
- Nally, Robert B.; Evans, Edward R.; Williamson, Lawrence R.; and Calnek, Trevor A., to NCR Canada Ltd - NCR Canada LTEE. Multiple path recording means, 4,431,322, Cl. 400-605.000.
- Namdari, Bahram. Attack repellent device, 4,431,118, Cl. 222-39.000.
- Nankai, Shiro; Imai, Akihiro; and Iijima, Takashi, to Matsushita Electric Industrial Co., Ltd. Enzyme electrode, 4,431,507, Cl. 204-403.000.
- Narang, Kamlesh: See—
Narang, Rajendra K.; and Narang, Kamlesh, 4,430,989, Cl. 126-273.00R.
- Narang, Rajendra K.; and Narang, Kamlesh. Gas cooking range, 4,430,989, Cl. 126-273.00R.
- Narda Microwave Corporation, The: See—
Aslan, Edward E., 4,431,965, Cl. 324-95.000.
- Narita, Ryuho: See—
Oota, Hiroyuki; Aoshima, Terutaka; Narita, Ryuho; and Yamamori, Kenji, 4,431,906, Cl. 219-441.000.
- Nathenson, Richard D.; and Patel, Mukund R., to Electric Power Research Institute, Inc. Advanced spiral pancake armature for a dynamoelectric machine, 4,431,932, Cl. 310-208.000.
- National Distillers and Chemical Corporation: See—
Feldman, Julian; and Hoyt, John M., 4,431,838, Cl. 560-234.000.
- National Institute for Metallurgy: See—
Verbaan, Bernard, 4,431,613, Cl. 423-22.000.
- National Nuclear Corporation Limited: See—
Utton, Donald B.; and Sheppard, Mark A., 4,431,315, Cl. 374-29.000.
- National Semiconductor Corporation: See—
Monticelli, Dennis M., 4,431,930, Cl. 307-520.000.
- Teng, Tzu-Chan, 4,431,459, Cl. 148-1.500.
- Nauckhoff, Sven H. H.: See—
Daniell, Thomas P.; Harding, Robert C., Jr.; Lewis, Neil J.; and Nauckhoff, Sven H. H., 4,432,057, Cl. 364-300.000.
- NCR Canada Ltd - NCR Canada LTEE: See—
Nally, Robert B.; Evans, Edward R.; Williamson, Lawrence R.; and Calnek, Trevor A., 4,431,322, Cl. 400-605.000.

- Nederlandse Centrale Organisatie Voor Toegepast Natuurwetenschap-
pelyk onderzoek: See—
Bulten, Eric J.; and Verbeek, Francois, 4,431,666, Cl. 424-287.000.
Nehrkorn, Rolf. Apparatus for dispensing merchandise from a vending
machine and vending machine comprising the apparatus. 4,431,116,
Cl. 221-121.000.
Nelson, Stephen J., to Upjohn Company, The. Imino ethers useful for
controlling insect and arachnid pests. 4,431,667, Cl. 424-298.000.
Nesbitt, R. Dennis, to Questor Corporation. Golf ball and method of
making same. 4,431,193, Cl. 273-235.00R.
Neugroschel, Arnost: See—
Gonzalez, Franklin N.; and Neugroschel, Arnost, 4,431,858, Cl.
136-258.000.
Neulinger, Franz: See—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer,
Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich,
4,432,061, Cl. 364-480.000.
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer,
Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich,
4,432,062, Cl. 364-500.000.
Nevitt, Thomas D.; Tait, A. Martin; and Hopkins, P. Donald, to Stan-
dard Oil Company (Indiana). Process for mild hydrocracking of
hydrocarbon feeds. 4,431,517, Cl. 208-111.000.
New, Maria: See—
Pang, Songja; and New, Maria, 4,431,743, Cl. 436-542.000.
Nezot, Francois: See—
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,431,576, Cl.
252-522.00R.
NHK Spring Co., Ltd.: See—
Ohno, Akira; Shimabukuro, Hajime; and Katayama, Shitomi,
4,431,268, Cl. 350-288.000.
Nibby, Chester M., Jr.: See—
Salas, Edward R.; Nibby, Chester M., Jr.; and Johnson, Robert B.,
4,432,055, Cl. 364-200.000.
Nicholson, Myron D., to Union Carbide Corporation. Tar-depleted
liquid smoke treatment of food casings. 4,431,032, Cl. 138-118.100.
Nicholson, Myron D., to Union Carbide Corporation. Tar-depleted
liquid smoke treatment of food casings. 4,431,033, Cl. 138-118.100.
Niederer, Peter G.; and Frey, Otto, to Sulzer Brothers Limited. Joint
endoprosthesis. 4,430,761, Cl. 3-1.910.
Niedert, David W., to Deers & Company. Port liner and method of
assembly. 4,430,856, Cl. 60-272.000.
Niekraz, Frank M.; and Rolek, Matthew, to Ardeo, Inc. Door operat-
ing mechanism. 4,430,770, Cl. 16-80.000.
Nielsen, Carl J., to Atari, Inc. Memory cartridge for video game system.
4,432,067, Cl. 364-900.000.
Nielsen, Jorgen: See—
Fog, Jorgen L.; and Nielsen, Jorgen, 4,430,922, Cl. 89-37.00H.
Niemand Bros.: See—
Falconato, Rocco, 4,431,469, Cl. 156-86.000.
Niemeyer, Lutz; and Ragaller, Klaus, to BBC Brown, Boveri & Com-
pany, Limited. Compression piston switch. 4,431,878, Cl. 200-
148.00R.
Nifco Inc.: See—
Shimizu, Yoshitaka; and Takahashi, Norio, 4,430,776, Cl.
24-573.000.
Nightengale, Stanley A.; and Burrows, Harvey P. Concrete prefinishing
tool. 4,431,336, Cl. 404-97.000.
Nihon Kaiheiki Kogyo Kabushiki Kaisha: See—
Fujita, Yasushi; and Sato, Hiroshi, 4,431,879, Cl. 200-314.000.
Nihon Tokushu Noyaku Seizo K.K.: See—
Aya, Masahiro; Saito, Junichi; Kamochi, Atsumi; and Moriya,
Koichi, 4,431,441, Cl. 71-92.000.
Nilberg, Hans, to Santa Fe International Corporation. Construction of a
concrete lined chamber. 4,431,341, Cl. 405-133.000.
Nimry, Tayseer S.; Fields, Ellis K.; and Paschke, Edward E., to Stan-
dard Oil Company (Indiana). Fibers from copolyimides and polyim-
ides derived from tetramethylcyclobutane-1,2,3,4-tetracarboxylic
dianhydride and diamines. 4,431,791, Cl. 528-125.000.
Nippon Electric Co., Ltd.: See—
Mayumi, Hiroshi, 4,431,926, Cl. 307-260.000.
Nippon Gakki Seizo Kabushiki Kaisha: See—
Sata, Takeo; Takamura, Masayuki; and Hoshi, Toshiharu,
4,431,604, Cl. 419-23.000.
Nippon Kogaku K.K.: See—
Maida, Osamu, 4,431,291, Cl. 354-127.120.
Morohashi, Kazuo, 4,431,279, Cl. 351-245.000.
Nobda, Masao, 4,431,278, Cl. 351-211.000.
Nippon Kokan Kabushiki Kaisha: See—
Mihara, Yutaka; and Sudo, Tomoshige, 4,430,872, Cl. 72-51.000.
Shishido, Takeyoshi; and Sato, Yoshio, 4,431,483, Cl. 202-99.000.
Nippon Soda Company Limited: See—
Iwataki, Isao; Kaeriyama, Minoru; Matsui, Nobuo; and Yamada,
Tomio, 4,431,814, Cl. 548-230.000.
Nippondenso Co., Ltd.: See—
Kondo, Toshio; Isomura, Shigenori; Kobayashi, Akio; and
Kodama, Katsuhiko, 4,430,976, Cl. 123-440.000.
Nishi, Kyotaro: See—
Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe,
Yukihiro; Waki, Mitsutaka; and Mizuno, Masuo, 4,431,478, Cl.
156-668.000.
Nishimura, Toshiro: See—
Yasuda, Yutaka; Tsuchihashi, Kiyoshi; and Nishimura, Toshiro,
4,431,672, Cl. 424-353.000.
Nishimura, Yoshinori: See—
Zamma, Jun; Nishimura, Yoshinori; Nakajima, Youichi; and Sakai,
Tadaaki, 4,431,049, Cl. 165-142.000.
Nishioka, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Method of
mounting a semiconductor element for analyzing failures thereon.
4,431,967, Cl. 324-158.00R.
Nishizawa, Hiroshi: See—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao;
Oshima, Toyoyuki; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi,
4,431,758, Cl. 524-104.000.
Nissan Motor Company, Limited: See—
Hirabayashi, Hirokazu; Tomioka, Hirotaka; and Yamagata, Shuji,
4,431,212, Cl. 280-762.000.
Suga, Masaaki, 4,431,095, Cl. 192-3.310.
Suzuki, Kunihiko, 4,431,079, Cl. 180-233.000.
Nisshin Flour Milling Co., Ltd.: See—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro;
Kubota, Reiko; and Takahashi, Toshihiro, 4,431,811, Cl.
546-304.000.
Nisshin Steel Co., Ltd.: See—
Fuzii, Koichiro; and Kubo, Sueki, 4,431,169, Cl. 266-236.000.
Nitschko, Theodor, to TMC Corporation. Ski binding jaw, in particular
a front jaw. 4,431,210, Cl. 280-625.000.
Niznick, Gerald A., to A & L Investment Company. Endosseous dental
implant system for overdenture retention, crown and bridge support.
4,431,416, Cl. 433-174.000.
Nohda, Masao, to Nippon Kogaku K.K. Eye examining apparatus.
4,431,278, Cl. 351-211.000.
Nomori, Hiroyuki: See—
Takei, Yoshiaki; Fujimaki, Yoshihide; Akashi, Naoko; and Nomori,
Hiroyuki, 4,431,722, Cl. 430-57.000.
Nor-Lake Incorporated: See—
Kaiser, Kenneth L.; and Shirley, William C., 4,430,832, Cl.
52-238.100.
Nordgren, Bo; and Johansson, Ivar. Device for setting inclination.
4,430,804, Cl. 33-398.000.
Nordson Corporation: See—
Matt, Timothy S.; and Bruening, Ralph G., 4,431,690, Cl.
427-424.000.
Rood, Alvin A., 4,430,886, Cl. 73-37.000.
Noren, Tore H. Glass washer and sterilizer. 4,431,015, Cl. 134-55.000.
Norfleet, James: See—
Clipper, Donald; and Norfleet, James, 4,431,631, Cl. 424-53.000.
Norman, George R. Process for treating used industrial oil. 4,431,524,
Cl. 208-183.000.
Norsk Kjettingindustri A-S Alf Nosted: See—
Daniel, Gordon W. E., 4,431,042, Cl. 152-243.000.
North American Philips Corporation: See—
Bronnes, Robert L.; Sweet, Richard C.; and O'Grady, James D.,
4,431,709, Cl. 428-649.000.
North American Philips Electric Corp.: See—
Thornton, William A., 4,431,942, Cl. 313-487.000.
North Carolina State University: See—
Graham, Larry F.; and Rohrbach, Roger P., 4,431,115, Cl.
221-63.000.
Northern Engineering Industries plc: See—
Logan, Robert J., 4,431,886, Cl. 200-144.00A.
Northern Telecom Limited: See—
Gupta, Vinita, 4,431,871, Cl. 179-84.00A.
Sims, Dewey M., Jr., 4,431,113, Cl. 220-306.000.
Notari, Bruno: See—
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno,
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Novinger, Harry E. Agitator structure for suction cleaners. 4,430,768,
Cl. 15-381.000.
Novo Industri A/S: See—
Olsen, Hans A. S., 4,431,629, Cl. 426-46.000.
Nowak, Leonard G.; and Wojcieszon, Raymond J., to Hauck Manufac-
turing Company. Burner and method. 4,431,403, Cl. 431-183.000.
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Aasari, Akira; Noyori, Tatsuhiko; Mizoguchi, Yukuo; and
Takehata, Tetsuro, 4,430,877, Cl. 72-273.500.
NPC Systems Inc.: See—
Gundy, William P., 4,430,912, Cl. 82-58.000.
Nurmi, Jarkko; and Uusitalo, Leo, to Outokumpu Oy. Device for
straightening suspension bars removed from the cathode plates in
electrolytic refining plants. 4,430,880, Cl. 72-400.000.
O & S Manufacturing Company: See—
Smith, Joseph E., 4,431,328, Cl. 403-36.000.
Obara, Haruki, to Fujitsu Fanuc Limited. Power source arrangement
for electric discharge machining. 4,431,895, Cl. 219-69.00P.
Obora, Masaki; and Nagai, Yoshiteru, to Unitika Ltd. Lubricated aromatic
polyester copolymer composition. 4,431,767, Cl. 524-490.000.
Ogawa, Atsushi: See—
Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiro; and Ogawa,
Atsushi, 4,431,970, Cl. 329-103.000.
Oglevee Computer Systems: See—
Oglevee, James R.; and Oglevee, Kirk A., 4,430,828, Cl. 47-17.000.
Oglevee, James R.; and Oglevee, Kirk A., to Oglevee Computer Sys-
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O'Grady, James D.: See—
Bronnes, Robert L.; Sweet, Richard C.; and O'Grady, James D.,
4,431,709, Cl. 428-649.000.

- Oguino, Masanori, to Hitachi, Ltd. Rear projection apparatus.
4,432,010, Cl. 358-60.000.
O'Hare, Louis R. Solar displacement pump. 4,431,385, Cl. 417-379.000.
Ohkoshi, Toshio: See—
Uchiyama, Tomoyoshi; Hattori, Youichi; Koyanagi, Kouki; Ohko-
shi, Toshio; Ishihama, Takaaki; and Toda, Kouji, 4,431,343, Cl.
405-198.000.
Ohkura, Masatoshi: See—
Yamaguchi, Akihiro; and Ohkura, Masatoshi, 4,430,841, Cl.
52-744.000.
Ohmori, Takashi: See—
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi,
4,432,001, Cl. 346-76.0PH.
Ohnishi, Hiroyuki: See—
Sato, Hisato; Takatsu, Haruyoshi; Takeuchi, Kiyofumi; Fujita,
Yutaka; Tazume, Masayuki; and Ohnishi, Hiroyuki, 4,431,853,
Cl. 585-20.000.
Ohno, Akira; Shimabukuro, Hajime; and Katayama, Shitomi, to NHK
Spring Co., Ltd. Reflector and method for manufacturing the same.
4,431,268, Cl. 350-288.000.
Ohta, Hiroshi, to Rikagaku Kenkyusho; and Science and Technology
Agency. Method of making a Josephson junction. 4,430,790, Cl.
29-569.00R.
Okabe, Yukihiro: See—
Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe,
Yukihiro; Waki, Mitsutaka; and Mizuno, Masuo, 4,431,478, Cl.
156-668.000.
Okada, Hozuma, to Sakashita Co., Ltd. Footwear. 4,430,811, Cl.
36-45.000.
Okada, Masakazu; Fushimi, Hitoshi; Yasumoto, Seiichi; and Hamada,
Takui, to Hitachi, Ltd. Loop data transmission control method and
system. 4,432,054, Cl. 364-200.000.
Okada, Naoki: See—
Asagao, Soichi; Nakagawa, Shinsuke; Okada, Naoki; and Yo-
shikawa, Seizi, 4,431,610, Cl. 423-12.000.
Okada, Takashi; and Nakajima, Hajime, to Sony Corporation. Tone
control circuit. 4,432,097, Cl. 381-98.000.
Okada, Yasunori: See—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao;
Oshima, Toyoyuki; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi,
4,431,758, Cl. 524-104.000.
Okamura, Takeo: See—
Watanabe, Akira; Okamura, Takeo; and Saeki, Goji, 4,431,745, Cl.
501-101.000.
Okano, Haruo; and Horiike, Yasuhiro, to Tokyo Shibaura Denki Kabu-
shiki Kaisha. RIE Apparatus utilizing a shielded magnetron to en-
hance etching. 4,431,473, Cl. 156-345.000.
Okayama, Yoshihiko, to Toshiba Kikai Kabushiki Kaisha. Sequence
control apparatus. 4,432,047, Cl. 364-147.000.
Okazaki, Satoshi; and Isobe, Kenichi, to Shin-Etsu Chemical Co., Ltd.
Novel organopolysiloxane having alcoholic hydroxy groups and a
method for the preparation thereof. 4,431,789, Cl. 528-15.000.
Okitsu, Toshinao; and Uchida, Tomio, to Konishi Co., Ltd. Fast setting
adhesive composition. 4,431,757, Cl. 524-25.000.
Okubo, Yukihiro, to Canon Kabushiki Kaisha. Display device with a
thin film transistor and storage condenser. 4,431,271, Cl. 350-334.000.
Olin Corporation: See—
Fair, David L.; Woodard, Kenneth E., Jr.; and Helmstetter, David
A., 4,431,495, Cl. 204-98.000.
Olivieri, Roberto; Pansolli, Paolo; Fascetti, Eugenio; and Ciuffolotti,
Pierluigi, to Anic, S.p.A. Process for the production of alpha-galac-
tosidase and uses of the enzyme thus obtained. 4,431,737, Cl.
435-208.000.
Olmstead, William N., to Exxon Research and Engineering Co. En-
hanced removal of nitrogen and sulfur from oil-shale. 4,431,511, Cl.
208-11.00R.
O'Loughlin, James P., to United States of America, Air Force. Positive
space-charge closing switch apparatus. 4,431,946, Cl. 315-150.000.
O'Loughlin, Thomas M.: See—
Molusis, Anthony J.; and O'Loughlin, Thomas M., 4,431,988, Cl.
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white substitute material. 4,431,629, Cl. 426-46.000.
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Keiter, Alfred; and Tappehorn, Bernd, 4,431,324, Cl. 400-689.000.
Olympus Optical Co., Ltd.: See—
Kikuchi, Juro, 4,431,275, Cl. 350-480.000.
Kobayashi, Yuko, 4,431,274, Cl. 350-471.000.
Saito, Shoichi; and Shirako, Hideo, 4,431,237, Cl. 312-9.000.
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Drach, John E.; and O'Neal, Cleveland, Jr., 4,431,481, Cl.
162-100.000.
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Araki, Shingo; Asai, Keizo; and Ono, Seibel, 4,431,762, Cl.
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Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric rice
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Yoshikatsu, 4,431,772, Cl. 525-80.000.
Orain, Michel A., to Glaenger Spicer. Apparatus for forming grooves
having a curved axis and a circular cross-sectional shape. 4,430,873,
Cl. 72-75.000.
Orain, Michel A., to Glaenger Spicer. Ball bearing and applications
thereof in particular in a vehicle wheel hub. 4,431,236, Cl.
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Oshima, Toyoyuki; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, to
Hitachi Chemical Company, Ltd. Heat resistant resin composition
comprising reaction product of polyamideimide resin, alcohol and
acid component. 4,431,758, Cl. 524-104.000.
Osaka Gas Company: See—
Katagiri, Katsuo; and Shimazu, Kiyotaka, 4,431,608, Cl.
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Oshima, Toyoyuki: See—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao;
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Oshio, Hiromichi: See—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Oshio, Hiromi-
chi; and Kamoshita, Katsuo, 4,431,822, Cl. 548-513.000.
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Futakuchi, Yorio; and Oshiro, Nobuaki, 4,430,968, Cl. 123-90.270.
Oswitch, Pauline, legal representative: See—
Oswitch, Stanley, deceased, 4,431,752, Cl. 521-85.000.
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to Fiberglas Canada Inc. Unsaturated polyester foams. 4,431,752, Cl.
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Umeda, Arikiko; Ota, Seiichi; and Iwase, Yoshiyuki, 4,431,790, Cl.
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Srouf, Joseph R.; Curtis, Orrie L.; Othmer, Siegfried; and Chen,
Susan C. C., 4,431,920, Cl. 250-370.000.
Otis Elevator Company: See—
Ericson, Richard J., 4,430,835, Cl. 52-282.000.
Otis Engineering Corporation: See—
Adams, James B., Jr., 4,431,051, Cl. 166-72.000.
Otsuka Pharmaceutical Factory, Inc.: See—
Kakumoto, Michio, 4,431,961, Cl. 324-54.000.
Outboard Marine Corporation: See—
Hall, Charles B., 4,431,422, Cl. 440-61.000.
Remmers, Gregry M., 4,431,959, Cl. 320-59.000.
Outokumpu Oy: See—
Leppanen, Ryo T. J., 4,431,501, Cl. 204-224.00R.
Makipirtti, Simo A. I.; Polvi, Veikko M.; Saari, Kaarlo M. J.; and
Setälä, Pekka T., 4,431,614, Cl. 423-29.000.
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Ovchinnikov, Yuri M.; Solokhina, Valentina G.; Samoshenkova, Xenia
G.; Lapatukhin, Veniamin S.; Belyaeva, Julia I.; Krikman, Genrietta
Y.; Guschina, Izabella I.; Krutikov, Nikolai N.; and Sulakova, Ljubov
I. Offset printing plate and process for making same. 4,431,724, Cl.
430-302.000.
Overman, Dana C., III: See—
Davis, Thomas E.; and Overman, Dana C., III, 4,430,807, Cl.
34-9.000.
Ovshinsky, Stanford R.; Sapru, Krishna; Dec, Krystyna; and Hong,
Kuochih, to Energy Conversion Devices, Inc. Hydrogen storage
materials and method of making same. 4,431,561, Cl. 252-184.000.
Owen, Jeffrey D.: See—
Brown, Harold M., Jr.; and Owen, Jeffrey D., 4,431,508, Cl.
204-418.000.
Owens-Corning Fiberglas Corporation: See—
Haynes, Eugene M., 4,430,788, Cl. 29-402.140.
Owens-Illinois, Inc.: See—
Hofmann, William E.; and Konst, Louis C., 4,431,692, Cl.
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Miller, John W. V.; and Juvinall, John W., 4,432,013, Cl.
358-106.000.
Owings, Allen J. Pressure loss identifying apparatus and method for a
drilling mud system. 4,430,892, Cl. 73-151.000.
Paar, Willibald, to Vianova Kunstharz, A.G. Paint binders including
epoxy resins modified to contain oxazolidine groups and process for
producing same. 4,431,781, Cl. 525-502.000.
Paccar Inc.: See—
Magnuson, Roland A., 4,430,909, Cl. 74-705.000.
Pace, W. David: See—
Zobel, Don W.; Main, W. Eric; Pace, W. David; and Welty, Dennis
L., 4,431,874, Cl. 179-170.0NC.
Pacific Scientific Company: See—
Yang, Elmer C., 4,431,093, Cl. 188-378.000.
Page, Derek H.: See—
Barbe, Michel; Seth, Rajinder S.; and Page, Derek H., 4,431,479,
Cl. 162-9.000.
Pako Corporation: See—
Baker, Richard W., 4,431,294, Cl. 354-322.000.
Paley, Isadore R., to Bendix Corporation. The Steerable artillery
projectile. 4,431,147, Cl. 244-3.300.
Pall Corporation: See—
Pall, David B.; and Krasnoff, Abraham, 4,431,545, Cl. 210-641.000.
Pall, David B.; and Krasnoff, Abraham, to Pall Corporation. Micropo-
rous filter system and process. 4,431,545, Cl. 210-641.000.
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fabrication of fiber optic coupler. 4,431,260, Cl. 350-96.150.

- Palsson, Johannes S. Protective casing for a lamp holder. 4,432,046, Cl. 362-376.000.
- Pang, Songja; and New, Maria, to Cornell Research Foundation, Inc. Method for determining steroids in human body liquids. 4,431,743, Cl. 436-542.000.
- Pansolli, Paolo: See—
Olivieri, Roberto; Pansolli, Paolo; Fascetti, Eugenio; and Ciuffolotti, Pierluigi, 4,431,737, Cl. 435-208.000.
- Paramore, Harold W.; and Burkes, Jacky. Sucker rods with improved coupling capability and method. 4,430,787, Cl. 29-402.110.
- Parker, Brian L.: See—
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- Parker, Robert P.: See—
Shanley, Robert L., II; and Parker, Robert P., 4,432,016, Cl. 358-183.000.
- Parly Tools Manufacturing Limited: See—
Yuen, John S., 4,432,043, Cl. 362-184.000.
- Parrish, David R., to Standard Oil Company (Indiana). Method for selective plugging of depleted channels or zones in in situ oil shale reservoirs. 4,431,055, Cl. 166-251.000.
- Parsons, George H., Jr.: See—
Lewis, Jerome; and Parsons, George H., Jr., 4,431,741, Cl. 436-500.000.
- Parthuisot, Jean P.; Chevalier, Claude; and Bouvet, Jean M., to Regie Nationale des Usines Renault. Hydrodynamic torque converter with bridging means. 4,431,094, Cl. 192-3.300.
- Partridge, Randall D.: See—
LaPierre, Rene B.; and Partridge, Randall D., 4,431,519, Cl. 208-111.000.
- Paschke, Edward E.; and Donohue, John A., to Standard Oil Company (Indiana). Preparation of poly(p-methylenebenzoate) copolyesters. 4,431,797, Cl. 528-361.000.
- Paschke, Edward E.; and Cericice, Steven A., to Standard Oil Company (Indiana). Preparation of poly(p-methylenebenzoate) from p-hydroxymethylbenzoic acid. 4,431,798, Cl. 528-361.000.
- Paschke, Edward E.: See—
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- Patchett, Arthur A.; and Kollonitsch, Janos, to Merck & Co., Inc. Fluorinated tryptamines. 4,431,821, Cl. 548-508.000.
- Patel, Mukund R.: See—
Nathenson, Richard D.; and Patel, Mukund R., 4,431,932, Cl. 310-208.000.
- Patel, Naginbhai M.: See—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Patel, Naginbhai M.; and Liu, Yi-Tsung, 4,431,654, Cl. 424-270.000.
- Paterson, David R. Bearing assemblies. 4,431,318, Cl. 384-302.000.
- Paterson, William G.: See—
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,431,785, Cl. 526-207.000.
- Pattanaik, Surya: See—
Mizuhara, Howard; and Pattanaik, Surya, 4,431,465, Cl. 148-24.000.
- Patten, Stanley H., to Du Pont de Nemours, E. I., and Company. Mixed phosphors comprising both Gd₂O₃S and GdTaO₄ and X-ray screens thereof. 4,431,922, Cl. 250-486.100.
- Patterson, Duane M.: See—
Rolinski, Edmund J.; and Patterson, Duane M., 4,431,697, Cl. 428-242.000.
- Pattison, Ian: See—
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- Paul, Vernon, Jr.; and Fox, James D., to Dayco Corporation. Fluid coupling and method of making same. 4,431,218, Cl. 285-305.000.
- Payen, Francis: See—
Deville, Christian; and Payen, Francis, 4,431,944, Cl. 315-3.600.
- Pearce, Roscoe L.: See—
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Bonny, Paul; Gerphagnon, Jean-Louis; Laboure, Gerard; Keinborg, Maurice; Homs, Pierre; and Langon, Bernard, 4,431,491, Cl. 204-67.000.
- Penaloza, Hernan R.: See—
Casati, Francois M.; Penaloza, Hernan R.; and Arbir, Francis W., 4,431,753, Cl. 521-121.000.
- Penn Fishing Tackle Mfg. Co.: See—
Henze, Walter J.; and Purcell, William A., 4,430,823, Cl. 43-43.120.
- Penneck, Richard J.: See—
Claburn, Robin J. T.; and Penneck, Richard J., 4,431,861, Cl. 174-73.00R.
- Pepper, William, Jr., to Peptek, Incorporated. Hand-held musical instrument and systems including a man-machine interface apparatus. 4,430,917, Cl. 84-1.010.
- Peptek, Incorporated: See—
Pepper, William, Jr., 4,430,917, Cl. 84-1.010.
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- Perego, Giovanni: See—
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, 4,431,621, Cl. 423-329.000.
- Perkin-Elmer Corporation, The: See—
Reinberg, Alan R.; Steinberg, George N.; and Zarowin, Charles B., 4,431,898, Cl. 219-121.0PG.
- Perlstein, Jerome H.: See—
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,431,586, Cl. 260-239.00R.
- Permacel: See—
Korpmann, Ralf, 4,431,598, Cl. 264-40.700.
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- Perron, Robert: See—
Gauthier-Lafaye, Jean; and Perron, Robert, 4,431,835, Cl. 560-105.000.
- Peterek, Manfred: See—
Kostlin, Heiner; Peterek, Manfred; Schaper, Hartwig; Dolphin, Robert J.; and Willmott, Frederick W., 4,431,919, Cl. 250-361.00C.
- Petrovic, Vladan; Schmid, Karl; and Schmidt-Traub, Henner, to Krupp-Koppers GmbH. Travelling bed drier apparatus for the operation of a carbonization plant. 4,431,485, Cl. 202-270.000.
- Petry, Rudolf: See—
Becker, Reinhold; and Petry, Rudolf, 4,430,773, Cl. 17-33.000.
- Pfaendler, Hans-Rudolf, to Ciba-Geigy Corporation. 3-Substituted bicyclic agetidinone derivatives. 4,431,588, Cl. 260-239.00A.
- Pfeil, Janice L.: See—
Kukolja, Stjepan; and Pfeil, Janice L., 4,431,803, Cl. 544-16.000.
- Pfisterer, Richard E.; and Schultz, Richard M., to Firex Corporation. Smoke penetrating emergency light. 4,432,041, Cl. 362-86.000.
- Pfizer Inc.: See—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Richiro; and Tone, Junsuke, 4,431,801, Cl. 536-123.000.
- Cue, Berkeley W., Jr.; Hammen, Philip D.; and Massett, Stephen S., 4,431,828, Cl. 549-401.000.
- Schnur, Rodney C., 4,431,810, Cl. 546-291.000.
- Welch, Willard M.; and Harbert, Charles A., 4,431,646, Cl. 424-246.000.
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- Philipp, Adolf; Jirkovsky, Ivo; and Martel, Rene, to Ayerst, McKenna & Harrison Inc. Analgesic compositions consisting of 2H-benzothieno[3,2-c]pyrazol-3-amine derivatives. 4,431,657, Cl. 424-273.00P.
- Phillips, Gunter, to Russ-Elektroofen Produktionsgesellschaft mbH & Co. Automated low-pressure casting mechanism and method. 4,431,046, Cl. 164-119.000.
- Phillips Petroleum Company: See—
Casperson, John R., 4,431,607, Cl. 422-150.000.
- Casperson, John R., 4,431,624, Cl. 423-450.000.
- Hatcher, Charles S., 4,430,852, Cl. 57-247.000.
- McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., 4,431,750, Cl. 502-329.000.
- Reed, Jerry O.; and Senatore, Guy, 4,431,457, Cl. 134-2.000.
- Reusser, Robert E.; and Kuper, Donald G., 4,431,855, Cl. 585-360.000.
- Tabler, Donald C.; and Howell, Jerald A., 4,431,523, Cl. 208-182.000.
- Phillips, Robert F.: See—
McIntyre, James A.; and Phillips, Robert F., 4,431,494, Cl. 204-83.000.
- Phipps, Jack R.: See—
Lewis, Donald J.; and Phipps, Jack R., 4,430,978, Cl. 123-478.000.
- Picard, Peter J. Orthodontic apparatus. 4,431,409, Cl. 433-2.000.
- Pictet, Raymond: See—
Bell, Graeme; Pictet, Raymond; Goodman, Howard M.; and Rutter, William J., 4,431,740, Cl. 435-253.000.
- Pidgeon, Wilman A., to Chrysler Corporation. Fuel pump cut-off circuit. 4,430,980, Cl. 123-497.000.
- Pierce, Charles M.: See—
Dickson, LeRoy D.; Pierce, Charles M.; Stokes, Olen L.; and Woodland, Norman J., 4,431,912, Cl. 235-466.000.
- Pike, Russell E.: See—
Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,431,816, Cl. 548-336.000.
- Pioneer Electronic Corporation: See—
Ishii, Satoshi; and Koinuma, Hiroshi, 4,431,972, Cl. 330-267.000.
- Piper, Louis H.: See—
Highstreet, Edward J.; Stannard, Forrest B.; Piper, Louis H.; and Dimitriou, Michael A., 4,431,549, Cl. 210-791.000.
- Piscitelli, R. Amelia; Hemmer, Valentine J.; and Gallusser, David O., to Bendix Corporation. The Split sleeve socket contact. 4,431,256, Cl. 339-258.00R.
- Pitzele, Barnett S.: See—
Moormann, Alan E.; Pitzele, Barnett S.; Adelstein, Gilbert W.; and Malek, Nancy J., 4,431,802, Cl. 542-416.000.
- Pitzer, Emory W.: See—
McGinnis, Roger N.; Drehman, Lewis E.; and Pitzer, Emory W., 4,431,750, Cl. 502-329.000.
- Plotkowiak, Joseph; and Quillevere, Herve A., to Hispano-Suiza; and Societe Nationale d'Etude et de Construction Moteurs d'Aviation SNECMA. Compressor with pump recycling for isotopic separation through gaseous scattering. 4,431,377, Cl. 417-89.000.
- Podlesny, Richard J., to Ultrasonic Power Corporation. Oscillator circuit for ultrasonic cleaning. 4,431,975, Cl. 331-117.00R.
- Pogrzeba, Hans-Joachim: See—
Adrian, Fritz; and Pogrzeba, Hans-Joachim, 4,430,854, Cl. 60-39.020.

- Polaroid Corporation: See—
Benton, Stephen A., 4,431,265, Cl. 350-132.000.
- Falxa, Martin L., 4,431,729, Cl. 430-569.000.
- Staller, Norman D., 4,431,286, Cl. 354-435.000.
- Polvi, Veikko M.: See—
Makipirtti, Simo A. I.; Polvi, Veikko M.; Saari, Kaarlo M. J.; and Setala, Pekka T., 4,431,614, Cl. 423-29.000.
- Pommer, Ernst-Heinrich: See—
Buschmann, Ernst; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,431,812, Cl. 546-344.000.
- Pont-A-Mousson S.A.: See—
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- Pousette, Ronald D.; and Sanders, John L., to Brunette Machine Works, Ltd. Log-separating lateral transfer apparatus. 4,431,367, Cl. 414-748.000.
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- Powondra, Franz. Force transmission device. 4,431,348, Cl. 405-259.000.
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- Preformed Line Products Company: See—
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- Quick, Leonard M.: See—
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- R. & T. Frames, Inc.: See—
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- Rayburn, Charles C. Cash replacement system including an encoded card and card acceptor. 4,431,911, Cl. 235-444.000.
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- Reinhardt, Kurt A. Panoramic camera. 4,431,289, Cl. 354-96.000.
- Reitmeier, Glenn A.; and Strolle, Christopher H., to RCA Corporation. Video pre-filtering in phantom raster generating apparatus. 4,432,009, Cl. 358-22.000.
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- Remmers, Gregory M., to Outboard Marine Corporation. Regulator for charging a battery with a permanent magnet alternator. 4,431,959, Cl. 320-59.000.
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- Rensch, Eberhard G. Building construction system. 4,430,834, Cl. 52-281.000.
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- Rettinger, Gerhard: See—
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- Reynolds, Francis D. Human free-flight amusement devices. 4,431,182, Cl. 272-65.000.
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- Riccio, Ronald, to Eldon Industries. Soldering iron with flat blade heating element. 4,431,903, Cl. 219-238.000.
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- Richard Wolf GmbH: See—
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- Rider, Billie F., to Rockwell International Corporation. Sensor structure incorporating multiple piezoelectric generators. 4,431,935, Cl. 310-331.000.
- Riehl, Fred, to Robertshaw Controls Company. Electrical ignition probe means, electrode therefor and method of making the same. 4,431,240, Cl. 313-135.000.
- Riekkinen, Martti O. Film developing apparatus including a series of processing tanks and means for indicating and controlling location of film therein. 4,431,293, Cl. 354-322.000.
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- Riker Laboratories, Inc.: See—
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- Rinaudo, Marguerite; Milas, Michel; and Kohler, Norbert, to Institut Français du Pétrole. Enzymatic process for the treatment of xanthan gums to improve the filtrability of their aqueous solutions. 4,431,734, Cl. 435-104.000.
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- Riehl, Fred, 4,431,240, Cl. 313-135.000.
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Lubenstein, Joseph H.; Robideau, Brian A.; and Ross, Alan K., 4,431,376, Cl. 416-223.00A.
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Cleveland, Donald C.; and Dallas, Paul R., 4,431,334, Cl. 403-322.000.
- Colton, Russell F., 4,430,895, Cl. 73-497.000.
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Wallen, H. Bruce, 4,431,902, Cl. 219-125.120.
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Cole, Thomas O., 4,430,802, Cl. 33-203.120.
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- Rogers, Ivor T., to Brown Boveri Kent Limited. Fluid meter. 4,430,901, Cl. 73-861.330.
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Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,431,785, Cl. 526-207.000.
- Rohrbach, Roger P.: See—
Graham, Larry F.; and Rohrbach, Roger P., 4,431,115, Cl. 221-63.000.
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- Rolf Altgenug Corporation: See—
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- Rolland, Burton A., to Hurco Manufacturing Company, Inc. Apparatus for controlling a press brake. 4,430,879, Cl. 72-389.000.
- Rollmann, Louis D., to Mobil Oil Corporation. Preparing metal-exchanged highly siliceous porous crystalline materials. 4,431,746, Cl. 502-73.000.
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- Romig, William R.: See—
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- Rood, Alvin A., to Nordson Corporation. Method and apparatus for sensing clogged nozzle. 4,430,886, Cl. 73-37.000.
- Roodvoets, Mark R.: See—
Doshak, John M.; Roodvoets, Mark R.; and Halasa, Adel F., 4,431,765, Cl. 524-426.000.
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- Rosen, Harold. Method for removing polyvinyl coatings from metal with tetrahydrofuran. 4,431,458, Cl. 134-38.000.

- Rosenblatt, Jack E., to United States of America, Health and Human Services. Radioreceptor assay for benzodiazepines in saliva. 4,431,742, Cl. 436-504.000.
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Lubenstein, Joseph H.; Robideau, Brian A.; and Ross, Alan K., 4,431,376, Cl. 416-223.00A.
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Sick, Erwin; Ross, Dieter; and Mankel, Siegfried, 4,431,309, Cl. 356-431.000.
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- Roth-Technik GmbH: See—
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- Rothchild, Ronald D. Process for expanding tobacco with water. 4,431,011, Cl. 131-296.000.
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Fried, Robert P.; Rottman, Bernard; and Stark, Thomas W., Jr., 4,431,397, Cl. 425-384.000.
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Grandadam, Jean A.; and Dreux, Huguette, 4,431,640, Cl. 424-243.000.
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- Rumble, Joseph W.; and Sprague, William G., to Brunswick Corporation. Golf club shaft. 4,431,187, Cl. 273-80.00R.
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- Ryaa, Jan, to Interlego A.G. Connecting device for adjustably and detachably interconnecting a plurality of elongated building components. 4,430,826, Cl. 46-29.000.
- Rybinski, Matthew: See—
Magnarelli, John; and Rybinski, Matthew, 4,430,928, Cl. 92-187.000.
- Ryburn, Scott W.: See—
Harris, Robert J.; Ryburn, Scott W.; Woods, William E.; and Hartley, Henry F., 4,432,050, Cl. 364-200.000.
- Rzeszotarski, Wacław J.: See—
Eckelman, William C.; Reba, Richard C.; Rzeszotarski, Wacław J.; and Gibson, Raymond E., 4,431,627, Cl. 424-1.100.
- Saam, John C.: See—
Falender, James R.; and Saam, John C., 4,431,771, Cl. 524-863.000.
- Saari, Kaarlo M. J.: See—
Makipirtti, Simo A. I.; Polvi, Veikko M.; Saari, Kaarlo M. J.; and Setälä, Pekka T., 4,431,614, Cl. 423-29.000.
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Hakansson, Bo H.; Saario, Roy A.; and Saario, Roy A., 4,431,001, Cl. 128-421.000.
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- Sabina, John J., Jr., to General Motors Corporation. Reservoir for remote fluid system. 4,431,027, Cl. 137-574.000.
- Sackett, Robert W.: See—
Schutten, Herman P.; Sedivy, Jan K.; and Sackett, Robert W., 4,431,958, Cl. 318-816.000.
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- Saeki, Goji: See—
Watanabe, Akira; Okamura, Takeo; and Saeki, Goji, 4,431,745, Cl. 501-101.000.
- Saeki, Tokuchi: See—
Sawa, Natsuo; and Saeki, Tokuchi, 4,431,818, Cl. 548-343.000.
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- Sailor, Vernon R., to Sailor Manufacturing Company. Door or window jamb assembly. 4,430,830, Cl. 52-211.000.
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- Saito, Shoichi; and Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette storage box. 4,431,237, Cl. 312-9.000.
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- Sakashita Co., Ltd.: See—
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- Sakuma, Shinzo; Warabi, Junichi; and Kashimoto, Yutaka, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,431,885, Cl. 200-144.00B.
- Sakurai, Hisaya: See—
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- Sakurai, Kenjiro: See—
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- Salentine, Christopher G., to Chevron Research Company. Lubricant composition containing an alkali-metal borate and a mixture of phosphates, monothiophosphates and dithiophosphates in a critical ratio. 4,431,552, Cl. 252-32.70E.
- Salerni, John V.: See—
Spencer, Jack D.; and Salerni, John V., 4,431,058, Cl. 166-312.000.
- Saletore, Vikram: See—
Haque, Yusuf A.; Saletore, Vikram; and Schuler, Jeffrey A., 4,431,986, Cl. 340-347.0AD.
- Salice, Luciano, to Deutsche Salice GmbH. Hinge bracket-mounting plate assembly. 4,430,771, Cl. 16-235.000.
- Samoshenkova, Xenia G.: See—
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- Sander, Bo T., to Svenskt Guldsmide i Upplands Vasby AB. Circlip. 4,430,778, Cl. 24-239.000.
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- Sander, Ulrich: See—
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- Sanders, James M.: See—
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- Sanders, John L.: See—
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- Sanderson, Charles H. Method of manufacturing a magnetic fuel or water treatment device. 4,430,785, Cl. 29-157.00R.
- Sangamo Weston, Inc.: See—
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- Sano, Toshio: See—
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- Santa Fe International Corporation: See—
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- SAPHYMO-STEL-Ste. d'Applications de la Physique Moderne et de l'Electronique: See—
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- Saponara, Domenick; and Day, William J., to Raytheon Company. Combination microwave and convection oven. 4,431,889, Cl. 219-10.55F.
- Sapru, Krishna: See—
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Colonna, Jean; Fitremann, Jean-Michel; Genin, Richard; and Sarda, Jean-Paul, 4,431,057, Cl. 166-285.000.
- Sarin, Vinod K.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Carbide coated silicon nitride cutting tools. 4,431,431, Cl. 51-295.000.
- Sasaki, Ken; Kinugawa, Kiyoshige; Hanada, Yoshio; Aoki, Keiichi; Ishii, Akira; and Koyama, Masaharu, to Hitachi, Ltd. Process for producing transparent electroconductive film. 4,431,683, Cl. 427-39.000.

- Sasser, Bill H.; and Immell, Raymond G., to Motorola Inc. Compound element for image element antennas. 4,431,997, Cl. 343-770.000.
- Sata, Takeo; Takamura, Masayuki; and Hoshi, Toshiharu, to Nippon Gakki Seizo Kabushiki Kaisha. Process for producing hard magnetic material. 4,431,604, Cl. 419-23.000.
- Satake, Yoshikatsu: See—
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- Satco Div. of Beco Enterprises, Inc.: See—
Williams, Roy, 4,431,029, Cl. 137-802.000.
- Sato, Hideo: See—
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- Sato, Hiroshi: See—
Fujita, Yasushi; and Sato, Hiroshi, 4,431,879, Cl. 200-314.000.
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- Sato, Masuhiko, to Jujo Paper Co., Ltd. Heat sensitive recording sheet. 4,431,706, Cl. 428-537.000.
- Sato, Yoshio: See—
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- Satoh, Takao: See—
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- Sauer, Heinrich; and Ritthammer, Gunter, to Siemens Aktiengesellschaft. Pushbutton drive for key contacts. 4,431,881, Cl. 200-328.000.
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- Sawtell, Ralph R.: See—
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- Scaramucci, John P. Needle valve. 4,431,021, Cl. 137-205.000.
- Scarson, Frank W., Jr.: See—
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- Scheiper, Hans-Juergen: See—
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Weber, Alfred; Kennecke, Mario; and Muller, Rudolf, 4,431,732, Cl. 435-61.000.
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Afonso, Adriano; and Hon, Frank, 4,431,658, Cl. 424-273.00R.
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- Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,431,816, Cl. 548-336.000.
- Smith, Elizabeth M.; Witkowski, Joseph T.; and Doll, Ronald J., 4,431,644, Cl. 424-246.000.
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- Wright, John J., 4,431,669, Cl. 424-317.000.
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Aliff, Lawrence E.; and Scheswohl, Edward E., 4,431,320, Cl. 400-130.000.
- Schevey, William R.; Calderoni, Frank; Trunk, Raymond E.; Lehman, Harold M.; and Jandura, John J., Jr., to Allied Corporation. Low particulate liquid filling machine and method. 4,431,037, Cl. 141-5.000.
- Schick, Wilbur R., to Southwest Research Institute. Corrosion resistant weld overlay cladding alloy and weld deposit. 4,431,447, Cl. 75-128.00W.
- Schiminski, Herbert; and Turk, Herbert, to Barmag Barmer Maschinenfabrik AG. Method and apparatus for winding yarn. 4,431,138, Cl. 242-18.00A.
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- Schmid, Karl: See—
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- Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. 3-(Pyrrolo and 3-indolyl)-3-diphenylamino substituted phthalides. 4,431,819, Cl. 548-463.000.
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- Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,432,062, Cl. 364-500.000.
- Schmitt, Frederick L.: See—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,431,577, Cl. 252-522.00R.
- Schmitz, Robert: See—
Miller, Collier M.; and Schmitz, Robert, 4,431,161, Cl. 251-133.000.
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Mondadori, Cesare; and Schmutz, Markus, 4,431,641, Cl. 424-244.000.
- Schneider, Andreas: See—
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- Schnell, William J.: See—
Lake, William; and Schnell, William J., 4,431,560, Cl. 252-142.000.
- Schnur, Rodney C., to Pfizer Inc. Intermediates for the preparation of 5-substituted oxazolidine-2,4-diones. 4,431,810, Cl. 546-291.000.
- Schnyder, Markus, to Sulzer Brothers Limited. Mechanism for braking a weft yarn in a weaving machine. 4,431,036, Cl. 139-429.000.
- Schoeffler, Klaus E.: See—
Young, Roger; and Schoeffler, Klaus E., 4,431,035, Cl. 139-383.00R.
- Scholl, Roland D.; and Easterling, Gene B., to Caterpillar Tractor Co. Earth working machine and blade condition control system therefor. 4,431,060, Cl. 172-4.500.
- Schonafinger, Karl, to Cassella Aktiengesellschaft. Process for the preparation of isosorbide-5-nitrate. 4,431,830, Cl. 549-464.000.
- Schonasky, William R., to Fournier, Robert L.; Wade, Carolyn L.; and Schonasky, William R., a part interest. Fixture supporting clip. 4,431,151, Cl. 248-27.100.
- Schott, Helmut: See—
Adelmeyer, Dieter; Duschka, Hartmut; and Schott, Helmut, 4,432,095, Cl. 378-181.000.
- Schray, Hans-Dieter; Taubitz, Bernd; and Wirtz, Rainer, to Robert Bosch GmbH. Circuit for operating a synchronous motor from a dc supply. 4,431,953, Cl. 318-254.000.
- Schroeder, Jack J.; and Findley, John E. Hard solid animal feed supplement. 4,431,675, Cl. 426-69.000.
- Schubert, Bernhard A., to Leuchtturm Albenverlag Paul Koch KG. Method for production of album leaves. 4,431,470, Cl. 156-265.000.
- Schuler, Alan L., to General Dynamics Corporation. Cargo tank support. 4,430,954, Cl. 114-74.00A.
- Schuler, Jeffrey A.: See—
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- Schulte, Lothar: See—
Mnilk, Reinhold; Keil, Manfred; and Schulte, Lothar, 4,431,224, Cl. 294-87.00R.
- Schultz, Richard M.: See—
Pfisterer, Richard E.; and Schultz, Richard M., 4,432,041, Cl. 362-86.000.
- Schumacher, Egon: See—
Nagel, Hans J.; and Schumacher, Egon, 4,430,960, Cl. 119-22.000.
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- Schutten, Herman P.; Sedivy, Jan K.; and Sackett, Robert W., to Eaton Corporation. Control apparatus for single phase AC induction motor. 4,431,958, Cl. 318-816.000.
- Schutz, Rudolph W., to Crown Zellerbach Corporation. Method of making a roll paper product. 4,431,141, Cl. 242-56.200.
- Schutz, Willi: See—
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- Scibbe, Harold R., to Euclid, Inc. Vehicle brake system. 4,431,091, Cl. 188-264.00F.
- Science and Technology Agency: See—
Ohta, Hiroshi, 4,430,790, Cl. 29-569.00R.
- Scott, Eddie W.; and Seltzer, Errol N., to Collins & Aikman Corporation. High temperature resistant sewing thread and method of forming same. 4,430,853, Cl. 57-247.000.
- Scott Paper Co.: See—
Drach, John E.; and O'Neal, Cleveland, Jr., 4,431,481, Cl. 162-100.000.
- Seachman, Ned J.: See—
Stoffel, James C.; Tandon, Jagdish C.; and Seachman, Ned J., 4,432,017, Cl. 358-213.000.
- Sealed Air Corporation: See—
Malwitz, Nelson, 4,430,840, Cl. 52-743.000.
- Sear, Stuart B.; and Hill, Christopher A., to International Machinery Sales, Inc. Fluid flow comingling jet. 4,430,780, Cl. 28-272.000.
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- Seiichi Ishizaka, President of Kogyo Gijutsuin: See—
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- Seita, Toru; Satoh, Takao; and Kikuchi, Mitsuo, to Toyo Soda Manufacturing Co., Ltd. Cation-exchange membrane for electrolyzing alkali metal halide. 4,431,504, Cl. 204-296.000.
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Heinbockel, Wolfgang; Selder, Harald; and Linck, Erich, 4,431,482, Cl. 162-243.000.
- Seliger, Robert L.: See—
Wang, Victor; and Seliger, Robert L., 4,431,923, Cl. 250-491.100.
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Lindmayer, Joseph, 4,431,599, Cl. 264-85.000.
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Barbe, Michel; Seth, Rajinder S.; and Page, Derek H., 4,431,479, Cl. 162-9.000.
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White, Maurice Y., 4,431,937, Cl. 310-344.000.
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Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Aliev, Gabil G.; Ismailov, Tofik K. O.; Mira-Zade, Damad M. S. O.; Gasanov, Ilgam A. O.; Gadzhiev, Yashar A. O.; and Shakhmamedov, Rovshan I. O., 4,431,034, Cl. 138-130.000.
- Shally, Andrew V.: See—
Coy, David H.; and Shally, Andrew V., 4,431,635, Cl. 424-177.000.
- Shanley, Robert L., II; and Parker, Robert P., to RCA Corporation. Translating circuit for television receiver on-screen graphics display signals. 4,432,016, Cl. 358-183.000.
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Funada, Fumiaki; Takamatsu, Toshiaki; Yasuda, Shuuhei; and Matsuura, Masataka, 4,431,270, Cl. 350-332.000.
- Onose, Yasuichi; Nakajiri, Takashi; and Tsumura, Takeo, 4,432,020, Cl. 358-257.000.
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- Shaw, Pern; Tietjen, Donald L.; and Wiles, Michael F. Programmable mode select by reset. 4,432,049, Cl. 364-200.000.
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- Chou, Charles C., 4,431,616, Cl. 423-226.000.
- Shen, Yuan-Shou: See—
Gould, Lawrence J.; and Shen, Yuan-Shou, 4,431,462, Cl. 148-11.50Q.
- Sheppard, Mark A.: See—
Utton, Donald B.; and Sheppard, Mark A., 4,431,315, Cl. 374-29.000.
- Sheppard, William L. Electric powered apparatus. 4,431,952, Cl. 318-135.000.
- Sherhoff, Donald: See—
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- Sherwood, Roger F.: See—
Hughes, Peter; Lowe, Christopher R.; and Sherwood, Roger F., 4,431,546, Cl. 210-656.000.
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Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,431,801, Cl. 536-123.000.
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- Shimada, Junichi: See—
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Katagiri, Katsuo; and Shimazu, Kiyotaka, 4,431,608, Cl. 422-170.000.
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- Shimoni, Yair: See—
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- Shin-Etsu Chemical Co., Ltd.: See—
Okazaki, Satoshi; and Isobe, Kenichi, 4,431,789, Cl. 528-15.000.
- Somezawa, Masashi; Kimura, Shigeo; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,431,703, Cl. 428-447.000.
- Shinoda, Nobuhiko: See—
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Tachikawa, Hiromichi; Takahashi, Yohnosuke; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,431,725, Cl. 430-325.000.
- Shionogi & Co., Ltd.: See—
Masaru, Ogata; and Hiroshi, Matsumoto, 4,431,663, Cl. 424-274.000.
- Shirako, Hideo: See—
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- Shirley, William C.: See—
Kaiser, Kenneth L.; and Shirley, William C., 4,430,832, Cl. 52-238.100.
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- Sho-Bond Construction Co., Ltd.: See—
Yamaguchi, Akihiro; and Ohkura, Masatoshi, 4,430,841, Cl. 52-744.000.
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Yoshida, Eiichi; Tago, Susumu; and Imamura, Kunio, 4,431,769, Cl. 524-555.000.
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- Sieber, Werner: See—
Jost, Max; and Sieber, Werner, 4,431,721, Cl. 430-37.000.

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Adelmeyer, Dieter; Duschka, Hartmut; and Schott, Helmut, 4,432,095, Cl. 378-181.000.
Brabetz, Bernhard, 4,432,037, Cl. 361-410.000.
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Herbst, Heiner; and Koch, Rudolf, 4,432,074, Cl. 365-183.000.
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Kleinschmidt, Peter; and Gopfert, Max, 4,431,934, Cl. 310-331.000.
Sauer, Heinrich; and Riithammer, Gunter, 4,431,881, Cl. 200-328.000.
Siemens-Albis AG: See—
Forstner, Anton; and Bajka, Imre, 4,431,891, Cl. 219-9.500.
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Bewer, Gunter; Harle, Hubertus; and Lieberoth, Dieter, 4,431,686, Cl. 427-125.000.
Silcox, William H.: See—
Abbott, Barry J.; and Silcox, William H., 4,431,344, Cl. 405-202.000.
Silverman, Daniel. Method and apparatus for fracturing a deep borehole and determining the fracture azimuth. 4,432,078, Cl. 367-37.000.
Silverman, Jerry E.: See—
Hegedus, Elizabeth; Frost, John R.; Glicksman, Martin; and Silverman, Jerry E., 4,431,681, Cl. 426-553.000.
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Rose, Donald K.; and Silverman, Peter J., 4,432,069, Cl. 365-8.000.
Simizu, Youzi: See—
Ikenoya, Yasuo; and Simizu, Youzi, 4,430,857, Cl. 60-274.000.
Simokat, Frank L., to TII Corporation. Signalling and channel loop test circuits for station carrier telephone system. 4,431,875, Cl. 179-175.30R.
Simplex Time Recorder Co.: See—
Germain, George D.; and Luby, Donald M., 4,430,817, Cl. 40-124.200.
Simpson, Howard D.; and McArthur, Dennis P., to Union Oil Company of California. Multiple-stage hydroprocessing of hydrocarbon oil. 4,431,526, Cl. 208-211.000.
Simpson, James E., to Amana Refrigeration, Inc. Microwave oven with improved feed structure. 4,431,888, Cl. 219-10.55F.
Simpson, Robert C. Adjustable collapsible wheelchair. 4,431,076, Cl. 180-65.00R.
Sims, Bernard: See—
Lodhi, Shahid A.; and Sims, Bernard, 4,431,833, Cl. 560-2.000.
Sims, Dewey M., Jr., to Northern Telecom Limited. Cover attachment device. 4,431,113, Cl. 220-306.000.
Sindelar, Karel: See—
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Singer Company, The: See—
Ferriss, Lincoln; and Shernoff, Donald, 4,431,947, Cl. 315-151.000.
Singh, Baldev: See—
Leshner, George Y.; Singh, Baldev; and Carabateas, Philip M., 4,431,651, Cl. 424-263.000.
Sirtl, Erhard: See—
Holm, Claus; and Sirtl, Erhard, 4,431,475, Cl. 156-606.000.
Skokan, Zdenek E., to Hewlett-Packard Company. Symmetrical programmable logic array. 4,431,928, Cl. 307-465.000.
Skukowski, William T., to Tropicana Products, Inc. UPC Scannable marking composition and applications thereof. 4,431,693, Cl. 428-35.000.
SKW Trostberg AG: See—
Hammer, Rudolf; Meichsner, Walter; and Rellermeyer, Heinrich, 4,431,444, Cl. 75-53.000.
Skwarek, Jean P.: See—
Schwartz, Herbert; and Skwarek, Jean P., 4,432,081, Cl. 368-35.000.
Sloum, Charles W. Condensate evaporator. 4,431,905, Cl. 219-274.000.
Smale, Terence C.: See—
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,431,587, Cl. 260-239.00A.
Smalheiser, Lawrence A.: See—
Christie, William F.; and Smalheiser, Lawrence A., 4,431,766, Cl. 524-443.000.
Small, David A. P.: See—
Atkinson, Anthony; Lowe, Christopher R.; Mosbach, Klaus; and Small, David A. P., 4,431,544, Cl. 210-635.000.
Smestad, Thomas L., to Collagen Corporation. Nonstress-bearing implantable bone prosthesis. 4,430,760, Cl. 3-1.900.
Smiley, Lockwood L.: See—
Wech, Malcolm H., Jr.; and Smiley, Lockwood L., 4,431,362, Cl. 414-685.000.
Smith, David W., to Mead Corporation. Floating belt friction feeder. 4,431,175, Cl. 271-10.000.
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Andrews, Thomas L., 4,431,065, Cl. 175-269.000.
Hendrick, Fred W., 4,431,028, Cl. 137-625.300.
Smith, Joseph E., to O & S Manufacturing Company. Hemispherical ball and socket joint. 4,431,328, Cl. 403-36.000.
Smith, Paul R.: See—
Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,430,784, Cl. 29-157.00C.
Smith, Richard L.: See—
Baker, Bernard R.; Smith, Richard L.; and Bolmer, Perce W., 4,431,489, Cl. 204-35.00N.
Snamprogetti S.p.A.: See—
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, 4,431,621, Cl. 423-329.000.
SNECMA: See—
Deneux, Pierre E.; Faure, Patrick J.; Laffitte, Denis R. G.; and Lemaoult, Michel E. M., 4,430,855, Cl. 60-39.030.
Snelling, Christopher, to Xerox Corporation. Automatic developability sensing in electrophotographic printing. 4,431,300, Cl. 355-14.00D.
Snoble, Karel A. J., to Dow Chemical Company. The Electrochemical preparation of ether ketones from (poly)propylene glycol monomers. 4,431,493, Cl. 204-79.000.
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Cheron, Jean-Marie; and Carre, Jean-Jacques, 4,431,235, Cl. 303-24.00C.
Societe Anonyme dite: Compagnie Generale d'Electricite: See—
Bernard, Lionel; Lelieur, Jean-Pierre; and Le Mehaute, Alain, 4,431,718, Cl. 429-105.000.
Societe Anonyme dite: Compagnie Industrielle Des Telecommunications Cit-Alcatel: See—
Boulard, Pierre; Cozic, Jean-Yves; and Fiche, Georges, 4,431,992, Cl. 340-825.530.
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Hersom, Albert C.; and Gibbs, Vernon, 4,431,676, Cl. 426-131.000.
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Cartes, Georges, 4,431,254, Cl. 339-177.00R.
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Plotkowiak, Joseph; and Quillevere, Herve A., 4,431,377, Cl. 417-89.000.
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Mouille, Rene L., 4,431,148, Cl. 244-17.270.
Societe Rolba: See—
Jaffrenou, Bernard; and Cessou, Maurice, 4,430,955, Cl. 114-267.000.
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Sokola, Raymond L.; and Choi, Charles, to Motorola, Inc. Ceramic bandpass filter. 4,431,977, Cl. 333-206.000.
Sollich, Helmut. Process for the application of a viscous chocolate mass on a plurality of irregularly-shaped individual objects. 4,431,678, Cl. 426-306.000.
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Solomon, Frank: See—
Gestaut, Lawrence J.; and Solomon, Frank, 4,431,567, Cl. 502-101.000.
Somezawa, Masashi; Kimura, Shigeo; Hinoto, Yuji; and Yoshioka, Hiroshi, to Sony Corporation; and Shin-Etsu Chemical Co. Ltd. Magnetic recording medium. 4,431,703, Cl. 428-447.000.
Son, Hyeung-Jin: See—
Han, Moon H.; Mheen, Tae-Ick; Seong, Baik L.; and Son, Hyeung-Jin, 4,431,735, Cl. 435-119.000.
Sony Corporation: See—
Eguchi, Takeo, 4,432,024, Cl. 360-45.000.
Kikuchi, Hideju, 4,431,717, Cl. 429-100.000.
Okada, Takashi; and Nakajima, Hajime, 4,432,097, Cl. 381-98.000.
Somezawa, Masashi; Kimura, Shigeo; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,431,703, Cl. 428-447.000.
Southern Research Institute: See—
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,431,805, Cl. 544-279.000.
Southgate, Robert: See—
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,431,587, Cl. 260-239.00A.
Southwest Research Institute: See—
Schick, Wilbur R., 4,431,447, Cl. 75-128.00W.
Southwire Company: See—
MacCraven, Joseph, 4,431,168, Cl. 266-104.000.
Spaulding, Lawrence D.: See—
Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,430,906, Cl. 74-595.000.
Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,430,969, Cl. 123-90.390.
Speicher, John M.; and Voigt, Allan A., to An-Penn, Inc. Golf cart. 4,431,205, Cl. 280-282.000.
Spencer, Jack D.; and Salerni, John V., to Baker International Corporation. Wash tool method for subterranean wells. 4,431,058, Cl. 166-312.000.
Sperry Corporation: See—
Butler, L. Dennis, 4,431,357, Cl. 414-24.500.

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Spietschka, Ernst; and Urban, Manfred, to Hoechst A.G. Process for the preparation of pigments of the perylene-3,4,9,10-tetracarboxylic acid diimide series, and their use. 4,431,806, Cl. 546-37.000.
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Protiva, Miroslav; Sindelar, Karel; Dlabac, Antonin; and Metysova, Jirina, 4,431,808, Cl. 546-197.000.
Sprague Electric Company: See—
Rodriguez, George H., 4,431,983, Cl. 338-220.000.
Sprague, William G.: See—
Rumble, Joseph W.; and Sprague, William G., 4,431,187, Cl. 273-80.00R.
Spraying Systems Co.: See—
Wohlert, Andrew M.; Miller, Frederick A.; and Dietrich, Verne E., 4,432,034, Cl. 361-154.000.
Sprecher & Schuh AG: See—
Sturzenegger, Christian; Schutz, Willi; Aeschbach, Bruno; and Aeschbach, Heinz, 4,431,887, Cl. 200-148.00A.
Spring, Gordon W., to Tomy Corporation. Random output device for game. 4,431,190, Cl. 273-138.00R.
Springer, Virgil E., to Regal International, Inc. Composition for blow-out preventer. 4,431,704, Cl. 428-450.000.
Spruiell, Walter L. Centrifugal separator system. 4,431,535, Cl. 210-113.000.
Square D Company: See—
Reed, Thomas W., Jr., 4,431,152, Cl. 248-65.000.
Squire, Edward N., to Du Pont de Nemours, E. I., and Company. Novel fluorodioxoles and fluorodioxole polymers. 4,431,786, Cl. 526-247.000.
Srour, Joseph R.; Curtis, Orrie L.; Othmer, Siegfried; and Chen, Susan C. C., to United States of America, Army. Ionizing radiation dose monitor using silicon-on-sapphire transistor. 4,431,920, Cl. 250-370.000.
Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegraphie en Telefoon): See—
da Silva, Herman, 4,432,090, Cl. 371-32.000.
Staffa, Karl-Heinz: See—
Kern, Josef; Bardong, Helmut; Humpolik, Bohumil; Staffa, Karl-Heinz; and Winterer, Wilfried, 4,430,868, Cl. 62-515.000.
Stageberg, Wilfred E. Needlework scrap receptacle. 4,431,130, Cl. 232-43.100.
Staley, James T.; and Sawtell, Ralph R., to Aluminum Company of America. Aging process for 7000 series aluminum base alloys. 4,431,467, Cl. 148-159.000.
Stalherm, Dieter: See—
Weber, Heinrich; Stalherm, Dieter; and Urbye, Klaus, 4,431,484, Cl. 202-141.000.
Staller, Norman D., to Polaroid Corporation. Photographic exposure control system having selectable ambient and flash modes. 4,431,286, Cl. 354-435.000.
Standard Messgeratefabrik GmbH: See—
Wrede, Franz J., 4,431,533, Cl. 210-87.000.
Standard Oil Company: See—
Blenkarn, Kenneth A.; and Beynet, Pierre A., 4,431,059, Cl. 166-359.000.
Giddings, Bradford E.; and Jorkasky, Richard J., II, 4,431,760, Cl. 524-171.000.
Standard Oil Company (Indiana): See—
Baird, Michael J.; Miller, Jeffrey T.; and Gutberlet, L. Charles, 4,431,516, Cl. 208-111.000.
Bright, Gary R., 4,431,064, Cl. 175-93.000.
Feinstein Allen I., 4,431,857, Cl. 585-477.000.
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,431,525, Cl. 208-210.000.
Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,430,906, Cl. 74-595.000.
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Johnson, Bryce V., 4,431,570, Cl. 502-151.000.
Karayannis, Nicholas M., 4,431,571, Cl. 502-151.000.
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Miller, Jeffrey T.; and Hensley, Albert L., Jr., 4,431,527, Cl. 208-254.00H.
Nevitt, Thomas D.; Tait, A. Martin; and Hopkins, P. Donald, 4,431,517, Cl. 208-111.000.
Nimry, Tayseer S.; Fields, Ellis K.; and Paschke, Edward E., 4,431,791, Cl. 528-125.000.
Parrish, David R., 4,431,055, Cl. 166-251.000.
Paschke, Edward E.; and Donohue, John A., 4,431,797, Cl. 528-361.000.
Paschke, Edward E.; and Cereface, Steven A., 4,431,798, Cl. 528-361.000.
Weber, Kenneth E.; and Mukamal, Harold, 4,431,755, Cl. 523-203.000.
Standard Telephones and Cables Limited: See—
Sweet, Anthony W., 4,431,869, Cl. 317-77.000.
Standun Controls, Inc.: See—
Elder, Delbert E.; Forder, Gerald F.; and Donnelly, Albert J., 4,431,948, Cl. 315-276.000.
Stanford, Thomas R.: See—
Messing, Gilbert S.; Volkov, Grennady; Stanford, Thomas R.; and Lochet, Jean A., 4,431,500, Cl. 204-206.000.
Stannard, Forrest B.: See—
Highstreet, Edward J.; Stannard, Forrest B.; Piper, Louis H.; and Dimitriou, Michael A., 4,431,549, Cl. 210-791.000.
Stark, Thomas W., Jr.: See—
Fried, Robert P.; Rottman, Bernard; and Stark, Thomas W., Jr., 4,431,397, Cl. 425-384.000.
Stauffer Chemical Company: See—
Broadhurst, Michael D.; and Heather, James B., 4,431,594, Cl. 260-502.50F.
Christie, William F.; and Smalheiser, Lawrence A., 4,431,766, Cl. 524-443.000.
Steag AG: See—
Adrian, Fritz; and Pogrzeba, Hans-Joachim, 4,430,854, Cl. 60-39.020.
Bredenbach, Heribert; and Udo, Strauss, 4,430,951, Cl. 110-345.000.
Steckel, Lester M. insecticide impregnated tag for use on an animal's tail or leg. 4,430,961, Cl. 119-156.000.
Steel Engineering Company Limited, The: See—
Wallace, Trevor E., 4,430,926, Cl. 91-516.000.
Steelcase Inc.: See—
Lautzenheiser, Terry L., 4,432,044, Cl. 362-223.000.
Steggles, David J.: See—
Chakrabarti, Jiban K.; Hotten, Terrence M.; and Steggles, David J., 4,431,589, Cl. 260-239.30T.
Steinberg, George N.: See—
Reinberg, Alan R.; Steinberg, George N.; and Zarowin, Charles B., 4,431,898, Cl. 219-121.0PG.
Steinhaus, Ulrich, to Hafeur Umformmaschinen AG. Multi-stage metal-working machine. 4,430,882, Cl. 72-405.000.
Steklenki, David J., to Eastman Kodak Company. Protective overcoats for photographic elements. 4,431,727, Cl. 430-528.000.
Stemmler, Helmut: See—
Muhlbach, Anton; and Stemmler, Helmut, 4,430,766, Cl. 12-16.100.
Stenn, Kurt S., to Research Corporation. Protein, composition and method for enhancing epithelial cell movement. 4,431,582, Cl. 260-112.00B.
Stepp, Sylvan G. Weighing device. 4,431,072, Cl. 177-209.000.
Sterken, Gordon J.; Kannan, Ramamurthi; and Kassner, James E., to Sterling Drug Inc. Process for preparing 2-benzoylbenzoic acids. 4,431,840, Cl. 562-441.000.
Sterling Drug Inc.: See—
Leshner, George Y.; Singh, Baldev; and Carabateas, Philip M., 4,431,651, Cl. 424-263.000.
Schmidt, Paul J.; and Hung, William M., 4,431,819, Cl. 548-463.000.
Sterken, Gordon J.; Kannan, Ramamurthi; and Kassner, James E., 4,431,840, Cl. 562-441.000.
Sternheim, Eliezer: See—
Moser, Thomas D.; Amenson, Christopher J.; and Sternheim, Eliezer, 4,431,086, Cl. 187-29.00R.
Stijntjes, Theodorus G. W.; and Esveldt, Cornelis J., to U.S. Philips Corporation. Synthetic resin-bonded electromagnetic component and method of manufacturing same. 4,431,979, Cl. 335-210.000.
Stockton, Thomas R., to Ford Motor Company. Split path electric vehicle powertrain. 4,430,908, Cl. 74-688.000.
Stoffel, James C.; Tandon, Jagdish C.; and Seachman, Ned J., to Xerox Corporation. Adjacent bilinear photosite imager. 4,432,017, Cl. 358-213.000.
Stokes, Olen L.: See—
Dickson, LeRoy D.; Pierce, Charles M.; Stokes, Olen L.; and Woodland, Norman J., 4,431,912, Cl. 235-466.000.
Stoody, William R. Self-cleaning, aerosol valve for separate fluids. 4,431,119, Cl. 222-129.000.
Stretch Devices, Inc.: See—
Wulc, Stanley S., 4,430,814, Cl. 38-102.910.
Wulc, Stanley S., 4,430,815, Cl. 38-102.910.
Strick Corporation: See—
Katz, Sol; and Abolins, Andrew, 4,431,368, Cl. 414-786.000.
Stringham, Gerald D.: See—
Benstein, Eli H.; Stringham, Gerald D.; and Holbrook, Michael R., 4,431,374, Cl. 415-211.000.
Strobel, Henry A.: See—
May, George A.; and Strobel, Henry A., 4,431,870, Cl. 179-81.00C.
Stroezel, Manfred: See—
Janitschke, Lothar; Hoffmann, Werner; Arnold, Lothar; Stroezel, Manfred; and Scheiper, Hans-Juergen, 4,431,844, Cl. 568-390.000.
Strohmaier, Alfred J., to Du Pont de Nemours, E. I., and Company. Ultrasonic vibrator for applying finish to yarn. 4,431,684, Cl. 427-57.000.
Strolle, Christopher H.: See—
Reitmeier, Glenn A.; and Strolle, Christopher H., 4,432,009, Cl. 358-22.000.
Strube, Richard E.; and LaMontagne, Maurice P., to United States of America, Army. 4-Methyl-5-(unsubstituted and substituted phenoxy)-6-methoxy-8-(aminoalkylamino)quinolines. 4,431,807, Cl. 546-171.000.
Stuart-Webb, John: See—
Walker, Robert W.; and Stuart-Webb, John, 4,431,783, Cl. 526-62.000.
Stubbs, George A., to British Nuclear Fuels Limited. Valve and components therefor. 4,431,159, Cl. 251-63.600.
Stuff, Alfred O., Jr. Golf club head. 4,431,192, Cl. 273-167.00E.

- Sturdevant, Norman J., Jr., to United States of America, Air Force. Communications system input-output converter. 4,431,864, Cl. 178-3.000.
- Sturmer, Berthold: See—
Hochgesang, Gerhard; and Sturmer, Berthold, 4,431,253, Cl. 339-177.00R.
- Sturtz, Charles R., Jr., to Clark Equipment Company. Pressure control mechanism for a grapple skidder. 4,431,365, Cl. 414-730.000.
- Sturzenegger, Christian; Schutz, Willi; Aeschbach, Bruno; and Aeschbach, Heinz, to Sprecher & Schuh AG. Gas-blast switch. 4,431,887, Cl. 200-148.00A.
- Suda, Minoru: See—
Sakai, Kunikazu; Suda, Minoru; and Kondo, Kiyoshi, 4,431,659, Cl. 424-273.00P.
- Sudo, Tomoshige: See—
Mihara, Yutaka; and Sudo, Tomoshige, 4,430,872, Cl. 72-51.000.
- Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: See—
Kern, Josef; Bardong, Helmut; Humpolik, Bohumil; Staffa, Karl-Heinz; and Winterer, Wilfried, 4,430,868, Cl. 62-515.000.
- Suga, Masaaki, to Nissan Motor Co., Ltd. Lock-up type automatic transmission. 4,431,095, Cl. 192-3.310.
- Sugarmann, Meyer L., to Zenith Radio Corp. Imaging screen and coating therefor for rear-projection television. 4,431,720, Cl. 430-17.000.
- Sugimoto, Naohiko: See—
Kojima, Tetsuro; Ikeda, Tadashi; Ishimaru, Shingo; and Sugimoto, Naohiko, 4,431,726, Cl. 430-512.000.
- Sugimoto, Tadao: See—
Urabe, Shigeharu; Sakaguchi, Shinji; Toya, Ichizo; and Sugimoto, Tadao, 4,431,730, Cl. 430-604.000.
- Sugimura, Nobuyuki. Back-up ring with slitted, folded portion for packing of hydraulic apparatus. 4,431,200, Cl. 277-215.000.
- Sugino, Takashi: See—
Teramoto, Iwao; Sugino, Takashi; and Itoh, Kunio, 4,432,092, Cl. 372-46.000.
- Sukeda, Toshiaki: See—
Takai, Sakan; and Sukeda, Toshiaki, 4,432,068, Cl. 365-6.000.
- Sulakova, Ljubov I.: See—
Ovchinnikov, Jury M.; Solokhina, Valentina G.; Samoshenkova, Xenia G.; Laputukhin, Veniamin S.; Belyaeva, Julia I.; Krikman, Genrietta Y.; Guschina, Izabella I.; Krutikov, Nikolai N.; and Sulakova, Ljubov I., 4,431,724, Cl. 430-302.000.
- Sulzer Brothers Ltd.: See—
Mizsak, Pawel, 4,430,962, Cl. 122-406.500.
- Niederer, Peter G.; and Frey, Otto, 4,430,761, Cl. 3-1.910.
- Schnyder, Markus, 4,430,036, Cl. 139-429.000.
- Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiko; and Ogawa, Atsushi, to Matsushita Electric Industrial Co., Ltd.; and Trio Kabushiki Kaisha. Quadrature detector using a double balanced differential circuit and a constant current circuit. 4,431,970, Cl. 329-103.000.
- Sumitomo Bakelite Co. Ltd.: See—
Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe, Yukihiko; Waki, Mitsutaka; and Mizuno, Masuo, 4,431,478, Cl. 156-668.000.
- Sumitomo Chemical Company, Limited: See—
Maeda, Isamu; and Aoshima, Masashi, 4,431,775, Cl. 525-193.000.
- Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Oshio, Hiromichi; and Kamoshita, Katsuzo, 4,431,822, Cl. 548-513.000.
- Summers, Christopher P.; and Kinghorn, John R., to U.S. Philips Corporation. Clock pulse phase shifter. 4,431,969, Cl. 328-155.000.
- Sundet, Douglas C., to Minnesota Mining and Manufacturing Company. Twisted ceramic fiber sewing thread. 4,430,851, Cl. 57-211.000.
- Sung, Rodney L., to Texaco Inc. Composition containing a water soluble alcohol and a corrosion inhibiting additive. 4,431,430, Cl. 44-53.000.
- Suovaniemi, Osmo; Kaukanen, Esko; and Ekholm, Pertti, to Labsystems Oy. Code system in a multi-channel analysis equipment and a device related to the system. 4,431,924, Cl. 250-566.000.
- Suovaniemi, Osmo A., to Labsystems Oy. Set of cuvettes. 4,431,307, Cl. 356-246.000.
- Supran, Lyle D. Micro-computer network systems for making and using automatic line-call decisions in tennis. 4,432,058, Cl. 364-410.000.
- Sutcliffe, Patrick L.: See—
Amazeen, Paul G.; and Sutcliffe, Patrick L., 4,431,007, Cl. 128-660.000.
- Sutton, David L., to Halliburton Company. Dynamic fluid testing apparatus and method. 4,430,889, Cl. 73-61.400.
- Sutton, Robert J. Portable seat device. 4,431,230, Cl. 297-217.000.
- Suzuki, Katsumi: See—
Katto, Takayuki; Oota, Masanori; Suzuki, Katsumi; and Satake, Yoshikatsu, 4,431,772, Cl. 525-80.000.
- Suzuki, Kunihiko, to Nissan Motor Company, Limited. Four-wheel vehicle drive system. 4,431,079, Cl. 180-233.000.
- Suzuki, Mamoru: See—
Hasegawa, Akira; and Suzuki, Mamoru, 4,431,450, Cl. 106-21.000.
- Suzuki, Masaomi; and Mizuno, Koichi, to Director-General of Agency of Industrial Science & Technology. Conversion of methanol into hydrogen and carbon monoxide. 4,431,566, Cl. 252-373.000.
- Suzuki, Masaru, to Seisakusho Kabushiki Kaisha Tokai Rika Denki. Electric cigar lighter. 4,431,904, Cl. 219-265.000.
- Suzuki, Masayuki: See—
Sakai, Shinji; Suzuki, Masayuki; Shinoda, Nobuhiko; Uchidoi, Masanori; Murakami, Hiroyasu; and Ito, Tadashi, 4,431,287, Cl. 354-441.000.
- Svenska Forpackningsforskningsinstitutet: See—
Eriksson, Harald, 4,432,000, Cl. 346-7.000.
- Svenskt Guldsmide i Upplands Vasby AB: See—
Sander, Bo T., 4,430,778, Cl. 24-239.000.
- Svensson, Jan A. Arrangement in a sterilizing coupling. 4,431,424, Cl. 604-33.000.
- Swales, Danvers A.: See—
Marshall, Michael A.; and Swales, Danvers A., 4,431,625, Cl. 423-607.000.
- Swan-Ford Enterprises: See—
Rutherford, Jeffrey D., 4,430,915, Cl. 83-104.000.
- Sweeney, William A., to Chevron Research Company. Process for the preparation of alkenyl succinic anhydride. 4,431,826, Cl. 549-255.000.
- Sweet, Anthony W., to Standard Telephones and Cables Limited. Telephone line feed. 4,431,869, Cl. 179-77.000.
- Sweet, Randall P.: See—
Monroe, Carl M.; and Sweet, Randall P., 4,431,982, Cl. 338-214.000.
- Sweet, Richard C.: See—
Bronnes, Robert L.; Sweet, Richard C.; and O'Grady, James D., 4,431,709, Cl. 428-649.000.
- Swenson, Clark E.: See—
Racki, Daniel J.; Swenson, Clark E.; Bencloski, William A.; and Wineman, Arthur L., 4,431,899, Cl. 219-121.0LG.
- Swenson, Henry F., to J. & S. Tool Company. Pivoted jaw members. 4,431,202, Cl. 279-106.000.
- Swett, H. Darwin: See—
Schaffer, Tony L.; Schaffer, Stephen A.; Schaffer, Gregory L.; and Swett, H. Darwin, 4,430,948, Cl. 110-101.00R.
- Swift, David E.: See—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,431,002, Cl. 128-422.000.
- Swiss Aluminium Ltd.: See—
Baur, Rudolf, 4,431,554, Cl. 252-49.500.
- Syben, Walter, to Trutzschler GmbH & Co. KG. Apparatus for extracting foreign bodies and heavy parts from fiber material. 4,431,530, Cl. 209-138.000.
- Syntex (U.S.A.) Inc.: See—
Kluge, Arthur F.; and Clark, Robin D., 4,431,665, Cl. 424-283.000.
- Synthelabo: See—
Bigg, Dennis, 4,431,648, Cl. 424-251.000.
- Szabo, Alexander, to Canadian Patents & Dev. Limited. Apparatus for fast access to a series of stored images. 4,432,071, Cl. 365-124.000.
- Szilas, Gizella M.: See—
Fodor, Jozsef; Kolimar, Gyorgy; Szilas, Gizella M.; and Balog, Margit B., 4,431,553, Cl. 252-42.700.
- Sztancsik, Tibor, to Konsumex Kulkereskedelmi Vallalat. Self adjusting medicinal sole and/or medicinal instep-raiser. 4,431,003, Cl. 128-594.000.
- Tabler, Donald C.; and Howell, Jerald A., to Phillips Petroleum Company. Upgrading fuel fractions in a re-refined oil process. 4,431,523, Cl. 208-182.000.
- Tachikawa, Hiromichi; Takahashi, Yohnosuke; Shinozaki, Fumiaki; and Ikeda, Tomoaki. Light-sensitive material and image forming processes using the same. 4,431,725, Cl. 430-325.000.
- Tadanier, John S.; Hallas, Robert; and Martin, Jerry R., to Abbott Laboratories. 6'-Modified fortimicin compounds. 4,431,799, Cl. 536-16.100.
- Tago, Susumu: See—
Yoshida, Eiichi; Tago, Susumu; and Imamura, Kunio, 4,431,769, Cl. 524-555.000.
- Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, to Nissin Flour Milling Co., Ltd. Decaprenylamine derivatives. 4,431,811, Cl. 546-304.000.
- Taisei Corporation: See—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, 4,431,310, Cl. 366-8.000.
- Tait, A. Martin: See—
Nevitt, Thomas D.; Tait, A. Martin; and Hopkins, P. Donald, 4,431,517, Cl. 208-111.000.
- Takahashi, Akira, to Ricoh Company, Ltd. Film feeding circuit. 4,431,292, Cl. 354-173.110.
- Takahashi, Norio: See—
Shimizu, Yoshitaka; and Takahashi, Norio, 4,430,776, Cl. 24-573.000.
- Takahashi, Toshihiro: See—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,431,811, Cl. 546-304.000.
- Takahashi, Yohnosuke: See—
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- Takai, Sakan; and Sukeda, Toshiaki, to Fujitsu Limited. Method of controlling a bubble memory device. 4,432,068, Cl. 365-6.000.
- Takamatsu, Toshiaki: See—
Funada, Fumiaki; Takamatsu, Toshiaki; Yasuda, Shuuhei; and Matsuura, Masataka, 4,431,270, Cl. 350-332.000.
- Takamura, Masayuki: See—
Sata, Takeo; Takamura, Masayuki; and Hoshi, Toshiharu, 4,431,604, Cl. 419-23.000.

- Takasugi, Hisashi: See—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,431,643, Cl. 424-246.000.
- Takatsu, Haruyoshi: See—
Sato, Hisato; Takatsu, Haruyoshi; Takeuchi, Kiyofumi; Fujita, Yutaka; Tazume, Masayuki; and Ohnishi, Hiroyuki, 4,431,853, Cl. 585-20.000.
- Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Syn-isomer of 3-substituted-7-[2-cyclopentylxyimino-2-(2-aminothiazol-4-yl)-acetamido]-3-cephem-4-carboxylic compounds. 4,431,643, Cl. 424-246.000.
- Takeda, Tadashi. Socket component for snap fastener. 4,430,777, Cl. 24-681.000.
- Takehata, Tetsuro: See—
Asari, Akira; Noyori, Tatsuhiko; Mizoguchi, Yukuo; and Takehata, Tetsuro, 4,430,877, Cl. 72-273.500.
- Takei, Akira, to Fujitsu Limited. Semiconductor memory device. 4,432,006, Cl. 357-23.000.
- Takei, Yoshiaki; Fujimaki, Yoshihide; Akashi, Naoko; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Photosensitive element for electrophotography produced by sublimation. 4,431,722, Cl. 430-57.000.
- Takenaka, Kenji: See—
Hattori, Mitsuhiro; Takenaka, Kenji; and Ikeda, Hayato, 4,431,378, Cl. 417-269.000.
- Takeshima, Takahiko; Matsui, Mitsuji; Ueki, Tadashi; and Ueno, Tsuneo, to Ube Industries, Ltd. Gas-venting arrangement incorporated with a mold. 4,431,047, Cl. 164-253.000.
- Takeshita, Hideo: See—
Furusawa, Sadayoshi; Takeshita, Hideo; Kohoka, Tsuyoshi; Koirai, Jiro; and Iwata, Shuji, 4,431,445, Cl. 75-123.00R.
- Takeuchi, Kiyofumi: See—
Sato, Hisato; Takatsu, Haruyoshi; Takeuchi, Kiyofumi; Fujita, Yutaka; Tazume, Masayuki; and Ohnishi, Hiroyuki, 4,431,853, Cl. 585-20.000.
- Talon, Inc.: See—
Moertel, George B., 4,431,399, Cl. 425-545.000.
- Tamborski, Christ: See—
Christian, John B.; and Tamborski, Christ, 4,431,555, Cl. 252-49.900.
- Christian, John B.; and Tamborski, Christ, 4,431,556, Cl. 252-49.900.
- Tamura, Akihiko: See—
Ikemoto, Isao; and Tamura, Akihiko, 4,431,297, Cl. 355-3.0DD.
- Tanaka, Hisami: See—
Goto, Kunihiko; Kobayashi, Kazuhiro; Ito, Akihiko; Tanaka, Hisami; and Saito, Tadahi, 4,431,973, Cl. 330-261.000.
- Tanaka, Kuniaki: See—
Maeda, Takahiko; and Tanaka, Kuniaki, 4,431,738, Cl. 435-240.000.
- Tanaka, Toshihiro: See—
Matsuo, Yoshitaka; Tanaka, Toshihiro; and Miya, Akiko, 4,431,543, Cl. 210-605.000.
- Tanaka, Yasuyuki: See—
Yamada, Yasuyuki; Tsuji, Nobuo; Tanaka, Yasuyuki; and Yamauchi, Koichi, 4,431,700, Cl. 428-336.000.
- Tandon, Jagdish C.: See—
Stoffel, James C.; Tandon, Jagdish C.; and Seachman, Ned J., 4,432,017, Cl. 358-213.000.
- Taniguchi, Nobuyuki: See—
Hoda, Takeo; Taniguchi, Nobuyuki; and Seigenji, Kiyoshi, 4,431,283, Cl. 354-21.000.
- Tappe, Horst; Buhler, Ulrich; Roth, Kurt; Weyer, Hans-J.; and Kosubek, Uwe, to Cassella Aktiengesellschaft. Water-insoluble azo dye-stuffs, processes for their manufacture and their use for dyeing and printing synthetic hydrophobic fiber material. 4,431,585, Cl. 260-158.000.
- Tappehorn, Bernd: See—
Keiter, Alfred; and Tappehorn, Bernd, 4,431,324, Cl. 400-689.000.
- Taradejna, Raymond M.: See—
Gronek, Fred J.; Taradejna, Raymond M.; and Watkins, Ray A., 4,431,474, Cl. 156-583.100.
- Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, to Snamprogetti S.p.A. Method for preparing aluminum-silicate having a zeolite-like structure. 4,431,621, Cl. 423-329.000.
- Tarman, Paul B., to Institute of Gas Technology. Hydrocarbon production by free fall countercurrent flow hydroconversion. 4,431,509, Cl. 208-8.00R.
- Taubitz, Bernd: See—
Schray, Hans-Dieter; Taubitz, Bernd; and Wirtz, Rainer, 4,431,953, Cl. 318-254.000.
- Taubner, Fred R.: See—
Roy, Joseph A.; and Taubner, Fred R., 4,431,941, Cl. 313-487.000.
- Tazawa, Eiichi: See—
Ito, Yasuro; Higuchi, Yoshiro; Tsuji, Masanori; Kaga, Hideharu; Yamamoto, Yasuhiro; Kuroha, Kenji; Marushima, Norio; Hayakawa, Mitsutaka; Tazawa, Eiichi; Matsuoka, Yasunori; and Kaneko, Seiji, 4,431,310, Cl. 366-8.000.
- Tazume, Masayuki: See—
Sato, Hisato; Takatsu, Haruyoshi; Takeuchi, Kiyofumi; Fujita, Yutaka; Tazume, Masayuki; and Ohnishi, Hiroyuki, 4,431,853, Cl. 585-20.000.
- TDK Electronics Co., Ltd.: See—
Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, 4,431,702, Cl. 428-422.000.
- Technicare Corporation: See—
Trimmer, William S.; and Vilkomerson, David H. R., 4,430,898, Cl. 73-624.000.
- Trimmer, William S.; Gardineer, Bayard, Jr.; and Hadjicostis, Andreas, 4,431,006, Cl. 128-660.000.
- Tecl, Bohuslav: See—
Fottinger, Walter; Fahrbach, Erich; Jorder, Kurt; Morweiser, Karl-Heinz; and Tecl, Bohuslav, 4,431,687, Cl. 427-246.000.
- Tektronix, Inc.: See—
Wahlquist, Clayton C.; and Barter, Archie M., 4,431,949, Cl. 315-368.000.
- Telediffusion de France: See—
Bernede, Georges G.; and Gregeois, Jean M., 4,431,865, Cl. 178-22.140.
- Teledyne Industries, Inc.: See—
Benstein, Eli H.; Stringham, Gerald D.; and Holbrook, Michael R., 4,431,374, Cl. 415-211.000.
- Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., to Southern Research Institute. Pyrido[2,3-d]-pyrimidines. 4,431,805, Cl. 544-279.000.
- Temple, Victor A. K., to General Electric Company. Minimal mask process for manufacturing insulated-gate semiconductor devices with integral shorts. 4,430,792, Cl. 29-571.000.
- Teng, Tzu-Chan, to National Semiconductor Corporation. Fabrication of MOSFETs by laser annealing through anti-reflective coating. 4,431,459, Cl. 148-1.500.
- TePastte, Jeffrey H.: See—
Friedrich, Kenneth L.; and TePastte, Jeffrey H., 4,431,040, Cl. 144-193.00C.
- Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,431,642, Cl. 424-246.000.
- Teramoto, Iwao; Sugino, Takashi; and Itoh, Kunio, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser. 4,432,092, Cl. 372-46.000.
- Terchek, Richard L.: See—
Dillon, Kenneth R.; and Terchek, Richard L., 4,431,449, Cl. 75-246.000.
- Tetro, Richard S., to Black Clawson Company, The. Continuous pressure roll winder. 4,431,140, Cl. 242-56.00A.
- Texaco Development Corp.: See—
Hunter, Walter D., 4,431,778, Cl. 525-328.500.
- Texaco Inc.: See—
Morrow, Timothy N., deceased, 4,431,053, Cl. 166-117.500.
- Powell, Justin C., 4,431,825, Cl. 549-255.000.
- Sung, Rodney L., 4,431,430, Cl. 44-53.000.
- Umeda, Akihiko; Ota, Seiichi; and Iwase, Yoshiyuki, 4,431,790, Cl. 528-73.000.
- Texas Instruments Incorporated: See—
Gibbons, Robert C., 4,431,917, Cl. 250-332.000.
- McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., 4,432,052, Cl. 364-200.000.
- Texize, Division of MortonThiokol: See—
Ulrich, Robert J., 4,431,559, Cl. 252-99.000.
- Thalis, Jon C. Fuel burning stove with handle operated damper and baffle means. 4,430,986, Cl. 126-60.000.
- Tharman, Paul A., to Briggs & Stratton Corporation. Bracket for breakerless ignition system. 4,430,984, Cl. 123-647.000.
- Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus and method for cleaning ballast supporting a track. 4,430,944, Cl. 104-7.00R.
- Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile tamping, leveling and lining machine. 4,430,945, Cl. 104-7.00B.
- Theurer, Josef; and Hansmann, Johann, to Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H. Mobile machine and method for compacting ballast. 4,430,946, Cl. 104-7.00B.
- Thevoz, Michel: See—
Revillet, Georges; and Thevoz, Michel, 4,431,606, Cl. 422-102.000.
- Thoemel, Frank: See—
Degner, Dieter; Hoffmann, Werner; and Thoemel, Frank, 4,431,490, Cl. 204-59.00R.
- Thomas, J. H.; and Azzopardi, S., to Fram Europe Limited. Temperature responsive air induction apparatus. 4,430,981, Cl. 123-556.000.
- Thomas, Lyell J.: See—
Bessman, Samuel P.; Layne, Ennis C.; and Thomas, Lyell J., 4,431,004, Cl. 128-635.000.
- Thomas, Ronald D.: See—
Edwards, Donald W.; and Thomas, Ronald D., 4,431,468, Cl. 149-21.000.
- Thompson, Thomas C.; Abbott, Martyn S.; and Easley, Robert L., to Quest Medical, Inc. Flow fault sensing system. 4,431,425, Cl. 604-246.000.
- Thompson, Timothy J., to Marathon Oil Company. Skimmer for floating roof storage tanks. 4,431,536, Cl. 210-123.000.
- Thomson-CSF: See—
Deville, Christian; and Payen, Francis, 4,431,944, Cl. 315-3.600.
- Thomson, Wallace B., to Rockwell International Corporation. Gas turbine with blade temperature control. 4,431,371, Cl. 415-116.000.
- Thoratec Laboratories Corporation: See—
Harvey, Robert J.; Litwak, Philip; Ribich, William A.; and Dubowik, John M., 4,430,998, Cl. 128-335.000.
- Thorn Gas Appliances Limited: See—
Edmundson, Michael J.; Halstead, Christopher; and Hammond, Leslie, 4,431,132, Cl. 236-25.00A.

- Thornton, William A., to North American Philips Electric Corp. Color-corrected hid mercury-vapor lamp having good color rendering and a desirable emission color. 4,431,942, Cl. 313-487.000.
- Thorogood, Peter B., to Burroughs Wellcome Co. 1-[3-(2,4-Dichlorophenyl)propyl]imidazole and salts thereof. 4,431,815, Cl. 548-335.000.
- Tichy, Oldrich J.; and Herndon, David G., to Atlas Pacific Engineering Company. Live knife assembly. 4,430,932, Cl. 99-593.000.
- Tietjen, Donald L.: See—
Shaw, Pern; Tietjen, Donald L.; and Wiles, Michael F., 4,432,049, Cl. 364-200.000.
- Tietjen, Marlene: See—
Goldner, Tibor; Fotiu, Eustace; Tietjen, Marlene; and Basak, Kalyan K., 4,431,673, Cl. 424-365.000.
- Tigani, Pasquale. Device for replacing missing teeth in human dentition. 4,431,415, Cl. 433-172.000.
- TII Corporation: See—
Simokat, Frank L., 4,431,875, Cl. 179-175.30R.
- Timex Corporation: See—
Schwartz, Herbert; and Skwarek, Jean P., 4,432,081, Cl. 368-35.000.
- Tioxide Group PLC: See—
Massey, Frederick, 4,431,316, Cl. 383-113.000.
- Tippins, George W.; Ginzburg, Vladimir B.; and Pottmeyer, Wayne G., to Tippins Machinery Company, Inc. Vertical coiler furnace and method of rolling. 4,430,874, Cl. 72-202.000.
- Tippins Machinery Company, Inc.: See—
Ginzburg, Vladimir B., 4,430,876, Cl. 72-234.000.
- Tippins, George W.; Ginzburg, Vladimir B.; and Pottmeyer, Wayne G., 4,430,874, Cl. 72-202.000.
- Titus, Charles H.: See—
Bell, Christy W.; Titus, Charles H.; and Wittle, John K., 4,431,612, Cl. 422-186.210.
- TMC Corporation: See—
Nitschko, Theodor, 4,431,210, Cl. 280-625.000.
- Toda, Kouji: See—
Uchiyama, Tomoyoshi; Hattori, Youichi; Koyanagi, Kouki; Ohkoshi, Toshio; Ishihama, Takaaki; and Toda, Kouji, 4,431,343, Cl. 405-198.000.
- Tojza, Roman A.: See—
Hooker, Donald E.; and Tojza, Roman A., 4,430,903, Cl. 74-153.000.
- Tokumitsu, Jun, to Canon Kabushiki Kaisha. Original reading apparatus. 4,432,022, Cl. 358-293.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Ando, Hideo, 4,432,002, Cl. 346-135.100.
- Fukumitsu, Akira; and Kobayashi, Koichi, 4,432,084, Cl. 369-77.200.
- Futatsudera, Masao; Yokoyama, Syoichi; and Yasutome, Osamu, 4,432,018, Cl. 358-246.000.
- Hashimoto, Shinichi; and Miura, Kunihiko, 4,431,301, Cl. 355-14.0CH.
- Ichikawa, Kentaro; Yamagata, Ichiro; and Tsunoda, Sachio, 4,431,370, Cl. 415-112.000.
- Kawashima, Kouzou; and Ito, Akira, 4,431,945, Cl. 315-63.000.
- Masuo, Fujio, 4,432,073, Cl. 365-182.000.
- Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,431,266, Cl. 350-167.000.
- Okano, Haruo; and Horiike, Yasuhiro, 4,431,473, Cl. 156-345.000.
- Oota, Hiroyuki; Aoshima, Terutaka; Narita, Ryuho; and Yamamoto, Kenji, 4,431,906, Cl. 219-441.000.
- Watanabe, Masayuki; Ushizawa, Jisaburo; and Fukuda, Tsuguo, 4,431,476, Cl. 156-607.000.
- Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Honma, Kei, 4,431,446, Cl. 75-128.00A.
- Yasufuku, Sachio, 4,431,579, Cl. 252-573.000.
- Toledo Stamping & Manufacturing Company: See—
Wherry, Joseph L., 4,430,783, Cl. 29-156.40R.
- Tolles, Walter E. Conformable optical couplers. 4,431,262, Cl. 350-96.150.
- Tominaga, Mamoru: See—
Mori, Leo; Aoba, Takashi; and Tominaga, Mamoru, 4,431,266, Cl. 350-167.000.
- Tominari, Noboru: See—
Ishida, Takashi; and Tominari, Noboru, 4,430,975, Cl. 123-399.000.
- Tomioka, Hirotaka: See—
Hirabayashi, Hirokazu; Tomioka, Hirotaka; and Yamagata, Shuji, 4,431,212, Cl. 280-762.000.
- Tomono, Makoto: See—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,431,296, Cl. 355-3.0DD.
- Tomy Corporation: See—
Spring, Gordon W., 4,431,190, Cl. 273-138.00R.
- Tone, Junsuke: See—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,431,801, Cl. 536-123.000.
- Tonengo, Francesco: See—
Adamoli, Contardo; and Tonengo, Francesco, 4,430,936, Cl. 101-93.480.
- Toniolo, Alberto. Elevator for the handling of containers, particularly in harbors. 4,431,359, Cl. 414-139.000.
- Toray Silicone Company, Ltd.: See—
Hamada, Mitsuo; and Yasuda, Sadami, 4,431,701, Cl. 428-379.000.
- Torigoe, Masao: See—
Mori, Kunihito; Torigoe, Masao; and Yamamoto, Toshiyoshi, 4,431,048, Cl. 165-88.000.
- Torresen, John L.; and Warner, Charles E., to United States of America, Navy. Pivoting pipe layer. 4,431,342, Cl. 405-169.000.
- Toshiba Kikai Kabushiki Kaisha: See—
Ebata, Hitoshi; and Matunaga, Shigetugu, 4,430,959, Cl. 118-697.000.
- Okayama, Yoshihiko, 4,432,047, Cl. 364-147.000.
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- Toya, Ichizo: See—
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- Urabe, Shigeharu; Sakaguchi, Shinji; Toya, Ichizo; and Sugimoto, Tadao, 4,431,730, Cl. 430-604.000.
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- Toyo Soda Manufacturing Co., Ltd.: See—
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- Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic apparatus with vocal output. 4,431,866, Cl. 381-51.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Fujimori, Kazuo; and Banno, Akira, 4,430,896, Cl. 73-587.000.
- Miyagi, Hideo, 4,430,973, Cl. 123-339.000.
- Shimomura, Masuo; and Uchimoto, Tsuneo, 4,430,929, Cl. 98-2.180.
- Trane Company, The: See—
Eber, David H.; and Utter, Robert E., 4,431,388, Cl. 418-55.000.
- Utter, Robert E., 4,431,380, Cl. 417-286.000.
- Traub, Peter: See—
Kretschmann, Volker; and Traub, Peter, 4,431,392, Cl. 425-64.000.
- Travel Accessories Manufacturing Co., Inc.: See—
Burney, Charles F., 4,431,077, Cl. 180-176.000.
- Tremco, Incorporated: See—
Greenlee, Thomas W., 4,431,691, Cl. 428-34.000.
- Tremmel, Gregor: See—
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- Trenton Pipe Nipple Company: See—
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- Trimble, Roy L., to Product Identification Corporation. Computer controlled marking apparatus. 4,431,321, Cl. 400-130.000.
- Trimedyn, Inc.: See—
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- Trimmer, William S.; and Vilkomerson, David H. R., to Technicare Corporation. Pulse-echo ultrasound system utilizing conjugate emitting and receiving apertures. 4,430,898, Cl. 73-624.000.
- Trimmer, William S.; Gardineer, Bayard, Jr.; and Hadjicostis, Andreas, to Technicare Corporation. Passive ultrasound needle probe locator. 4,431,006, Cl. 128-660.000.
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Sumi, Tatsumi; Mizutani, Shiro; Miyamoto, Yukihiko; and Ogawa, Atsushi, 4,431,970, Cl. 329-103.000.
- Tropicana Products, Inc.: See—
Skukowski, William T., 4,431,693, Cl. 428-35.000.
- Truebe, Jonathan; and Drooker, Michael S., to Lakeside Engineering. Fish elevator and method of elevating fish. 4,431,340, Cl. 405-82.000.
- Trull, Olin C.: See—
Wilson, Robert W.; and Trull, Olin C., 4,430,849, Cl. 56-12.800.
- Trunk, Raymond E.: See—
Schevey, William R.; Calderoni, Frank; Trunk, Raymond E.; Lehman, Harold M.; and Jandura, John J., Jr., 4,431,037, Cl. 141-5.000.
- Trutzschler GmbH & Co. KG: See—
Syben, Walter, 4,431,530, Cl. 209-138.000.
- Trybulski, Eugene J.: See—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,431,823, Cl. 548-561.000.
- Tschorn, Herbert: See—
Schleppinghoff, Bernhard; Reinhardt, Horst; and Tschorn, Herbert, 4,431,528, Cl. 208-255.000.
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- Tsuji, Masanori: See—
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- Tsuji, Nobuo: See—
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- Tsuji, Tetsuo: See—
Kajikawa, Masauemon; Kitajima, Hiroyuki; and Tsuji, Tetsuo, 4,431,100, Cl. 192-106.200.
- Tsumura, Takeo: See—
Onose, Yasuichi; Nakajiri, Takashi; and Tsumura, Takeo, 4,432,020, Cl. 358-257.000.

- Tsunoda, Sachio: See—
Ichikawa, Kentaro; Yamagata, Ichiro; and Tsunoda, Sachio, 4,431,370, Cl. 415-112.000.
- Tsutaya, Hiroyuki: See—
Amitani, Tatsuo; Kubo, Masayoshi; Maehara, Kenichi; Izumi, Jun; and Tsutaya, Hiroyuki, 4,431,432, Cl. 55-26.000.
- Tullos, Homan C.; and Woods, Dewey W., to Kelly Bushing Tools, Inc. Wireline protector with clamping mechanism. 4,431,067, Cl. 175-57.000.
- Tung, Lu H.; and Lo, Grace Y., to Dow Chemical Company, The. Block copolymers of diene having their terminal end blocks of a random copolymer of styrene or alkylstyrene and an alpha-methylstyrene. 4,431,777, Cl. 525-314.000.
- Turk, Herbert: See—
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- Turnbull, William S., to Rubery Owen (Hydraulics) Limited. Hydraulic valves. 4,430,927, Cl. 91-530.000.
- Tuthill Corporation: See—
Darnell, Raymond E., 4,431,330, Cl. 403-122.000.
- Ube Industries, Ltd.: See—
Takeshima, Takahiko; Matsui, Mitsui; Ueki, Tadashi; and Ueno, Tsuneo, 4,431,047, Cl. 164-253.000.
- Uchida, Greenie M.: See—
Jigamian, Gregory Z.; and Uchida, Greenie M., 4,431,245, Cl. 339-91.00R.
- Uchida, Tomio: See—
Okitsu, Toshinao; and Uchida, Tomio, 4,431,757, Cl. 524-25.000.
- Uchidoi, Masanori: See—
Sakai, Shinji; Suzuki, Masayuki; Shinoda, Nobuhiko; Uchidoi, Masanori; Murakami, Hiroyasu; and Ito, Tadashi, 4,431,287, Cl. 354-441.000.
- Uchigasaki, Isao: See—
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- Uchiyama, Tomoyoshi; Hattori, Youichi; Koyanagi, Kouki; Ohkoshi, Toshio; Ishihama, Takaaki; and Toda, Kouji, to Hitachi Shipbuilding & Engineering Limited. Leg clamping device for jack up platform. 4,431,343, Cl. 405-198.000.
- Udo, Strauss: See—
Breidenbach, Heribert; and Udo, Strauss, 4,430,951, Cl. 110-345.000.
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- Ueki, Tadashi: See—
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- Ulrich, Robert J., to Texize, Division of Morton Thiokol. Dishwashing composition and method. 4,431,559, Cl. 252-99.000.
- Ultrasonic Power Corporation: See—
Podlesny, Richard J., 4,431,975, Cl. 331-117.00R.
- Umaba, Toshihiko: See—
Hashimoto, Yutaka; Kamei, Masayuki; Umaba, Toshihiko; and Ito, Tadashi, 4,431,595, Cl. 260-513.00F.
- Umeda, Arikiko; Ota, Seiichi; and Iwase, Yoshiyuki, to Texaco Inc. Curing agents for polyurethane and process using same. 4,431,790, Cl. 528-73.000.
- Umeda, Jun-ichi: See—
Kuroda, Takao; Kajimura, Takashi; Kashiwada, Yasutoshi; Chino, Naoki; Aiki, Kunio; and Umeda, Jun-ichi, 4,432,091, Cl. 372-45.000.
- Unger, Goetz W., to Knoll International, Inc. Webbing tensioning assembly. 4,431,229, Cl. 297-441.000.
- Union Carbide Corporation: See—
Davis, Robert B., 4,430,865, Cl. 62-121.000.
- Kobayashi, Hisashi; Miller, Raymond H.; and Anderson, John E., 4,431,400, Cl. 431-6.000.
- Lewis, Irwin C., 4,431,513, Cl. 208-44.000.
- Nicholson, Myron D., 4,431,032, Cl. 138-118.100.
- Nicholson, Myron D., 4,431,033, Cl. 138-118.100.
- Urry, Lewis F., 4,431,719, Cl. 429-105.000.
- Wheeler, Thomas N., 4,431,650, Cl. 424-263.000.
- Union Oil Company of California: See—
Simpson, Howard D.; and McArthur, Dennis P., 4,431,526, Cl. 208-211.000.
- Union Special Corporation: See—
Dispennett, David; and Zorn, Robert, 4,430,878, Cl. 72-340.000.
- Uniroyal, Inc.: See—
Malz, Russell E., Jr.; and Greenfield, Harold, 4,431,841, Cl. 564-398.000.
- United Kingdom Atomic Energy Authority: See—
Prewitt, Philip D.; Gowlan, Leonard; and Aitken, Keith L., 4,431,137, Cl. 239-690.000.
- United States of America
Agriculture: See—
Barwise, Robert D.; Arola, Rodger A.; and Matson, Edsel D., 4,431,039, Cl. 144-176.000.
- Air Force: See—
Albert, William C.; and Zoltan, Bart J., 4,430,894, Cl. 73-497.000.
- Brislawn, Mark G.; Bryant, David W.; and Rayburn, Gerald A., 4,431,149, Cl. 244-75.00R.
- Christian, John B.; and Tamborski, Christ, 4,431,555, Cl. 252-49.900.
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- Gemin, Robert A., 4,431,994, Cl. 343-12.00A.
- Heyman, Roy J., 4,430,942, Cl. 102-520.000.
- Milligan, Thomas A., 4,431,996, Cl. 343-708.000.
- O'Loughlin, James P., 4,431,946, Cl. 315-150.000.
- Rolinski, Edmund J.; and Patterson, Duane M., 4,431,697, Cl. 428-242.000.
- Sturdevant, Norman J., Jr., 4,431,864, Cl. 178-3.000.
- Army: See—
Gutleber, Frank S., 4,431,999, Cl. 343-381.000.
- Huskins, Chester W.; and Williams, Leroy J., 4,430,885, Cl. 73-35.000.
- Srou, Joseph R.; Curtis, Orlie L.; Othmer, Siegfried; and Chen, Susan C. C., 4,431,920, Cl. 250-370.000.
- Strube, Richard E.; and LaMontagne, Maurice P., 4,431,807, Cl. 546-171.000.
- Energy: See—
Carver, Gary E.; and Seraphin, Bernhard O., 4,431,708, Cl. 428-641.000.
- Frankel, Robert, 4,432,088, Cl. 370-85.000.
- Hecht, Samuel L., 4,431,603, Cl. 376-352.000.
- Henager, Charles H., Jr., 4,431,499, Cl. 204-192.00E.
- Hull, Donald E., 4,431,901, Cl. 219-121.0PR.
- Luhman, Thomas; and Klamut, Carl, 4,431,862, Cl. 174-128.00R.
- Myerhoff, Alfred, 4,431,714, Cl. 429-26.000.
- Racki, Daniel J.; Swenson, Clark E.; Bencloski, William A.; and Wineman, Arthur L., 4,431,899, Cl. 219-121.0LG.
- Scheitlin, Frank M., 4,431,609, Cl. 423-2.000.
- Health and Human Services: See—
Rosenblatt, Jack E., 4,431,742, Cl. 436-504.000.
- National Aeronautics and Space Administration: See—
Chandler, Joseph A., 4,431,333, Cl. 403-322.000.
- Estey, Roger S.; and Hanna, Michael F., 4,431,306, Cl. 356-216.000.
- Hergenrother, Paul M., 4,431,761, Cl. 524-171.000.
- St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D., 4,431,792, Cl. 528-183.000.
- Navy: See—
Hains, Franklin D., 4,430,890, Cl. 73-147.000.
- Mackelburg, Gerald R.; Watson, Stanley J.; and Gordon, Alan, 4,432,079, Cl. 367-132.000.
- Torresen, John L.; and Warner, Charles E., 4,431,342, Cl. 405-169.000.
- Wardle, William F., 4,432,080, Cl. 367-163.000.
- U.S. Philips Corporation: See—
Auphan, Michel J., 4,430,883, Cl. 73-1.0DV.
- Benschop, Nico F., 4,432,066, Cl. 364-758.000.
- Bunge, Ernst, 4,432,096, Cl. 381-43.000.
- Finck, Johan C. J.; and Kessels, Henricus M. M., 4,431,267, Cl. 350-237.000.
- Glattli, Alfred, 4,432,004, Cl. 346-140.00R.
- Habraken, Adrianus M.; Vink, Nicolaas G.; Groothoff, Adriaan J.; and Driessen, Marcellus H. J., 4,431,940, Cl. 313-413.000.
- Hart, Cornelis M., 4,430,793, Cl. 29-578.000.
- Kostlin, Heiner; Peterer, Manfred; Schaper, Hartwig; Dolphin, Robert J.; and Willmott, Frederick W., 4,431,919, Cl. 250-361.00C.
- Stijntjes, Theodor G. W.; and Esveldt, Cornelis J., 4,431,979, Cl. 335-210.000.
- Summers, Christopher P.; and Kinghorn, John R., 4,431,969, Cl. 328-155.000.
- Voorman, Johannes O., 4,431,976, Cl. 333-166.000.
- United Technologies Corporation: See—
Lubenstein, Joseph H.; Robideau, Brian A.; and Ross, Alan K., 4,431,376, Cl. 416-223.00A.
- Monsarrat, William G., 4,431,373, Cl. 415-189.000.
- Warner, John L., 4,430,867, Cl. 62-402.000.
- Unitika Ltd.: See—
Kifune, Koji; Inoue, Katsuhiko; and Mori, Shigeru, 4,431,601, Cl. 264-186.000.
- Kitagawa, Kiyoshi; and Komatsuzaki, Atsushi, 4,431,705, Cl. 428-476.100.
- Obora, Masaki; and Nagai, Yoshiteru, 4,431,767, Cl. 524-490.000.
- University of California, The Regents of the: See—
Bell, Graeme; Pictet, Raymond; Goodman, Howard M.; and Rutter, William J., 4,431,740, Cl. 435-253.000.
- Henze, Eberhard, 4,431,626, Cl. 424-1.100.
- University of Delaware: See—
Lefren, Karl E.; and Yolles, Seymour, 4,431,427, Cl. 604-285.000.
- University of Denver, Colorado Seminary: See—
Rinard, George A.; and Durham, Michael D., 4,431,434, Cl. 55-135.000.
- University of Florida: See—
Gonzalez, Franklin N.; and Neugroschel, Arnost, 4,431,858, Cl. 136-258.000.
- University of Pennsylvania, Trustees of the: See—
Brighton, Carl T.; Black, Jonathan; and Eyerly, Joyce K., 4,430,999, Cl. 128-419.00F.
- University of Pittsburgh: See—
Meno, Frank, 4,430,918, Cl. 84-1.160.

- University of Rochester, The: See—
Mourou, Gerard; and Williamson, Steven L., 4,431,914, Cl. 250-211.00J.
- University Patents, Inc.: See—
Garito, Anthony F., 4,431,263, Cl. 350-96.340.
- UOP Inc.: See—
Arena, Blaise J., 4,431,836, Cl. 560-105.000.
Carson, Don B., 4,431,529, Cl. 208-343.000.
Gatsis, John G., 4,431,510, Cl. 208-10.000.
James, Robert B., Jr., 4,431,522, Cl. 208-134.000.
Kulprathipanja, Santi, 4,431,456, Cl. 127-46.300.
- Upeslakis, Janis; Schaub, Robert E.; and Bernstein, Seymour, to American Cyanamid Company. Polycation salts of bis (or tris) [4-O-polyhexose-oxyl]-arylene sulfate derivatives. 4,431,637, Cl. 424-180.000.
- Upeslakis, Janis: See—
Schaub, Robert E.; Upeslakis, Janis; and Bernstein, Seymour, 4,431,636, Cl. 424-180.000.
Schaub, Robert E.; Upeslakis, Janis; and Bernstein, Seymour, 4,431,638, Cl. 424-180.000.
- Upjohn Company, The: See—
Nelson, Stephen J., 4,431,667, Cl. 424-298.000.
Wierenga, Wendell, 4,431,820, Cl. 548-491.000.
- Upperman, Gary V.: See—
Withers, James C.; and Upperman, Gary V., 4,431,503, Cl. 204-294.000.
- Urabe, Shigeharu; Sakaguchi, Shinji; Toya, Ichizo; and Sugimoto, Tadao, to Fuji Photo Film Co., Ltd. Process for the preparation of internal latent image type silver halide photographic emulsions. 4,431,730, Cl. 430-604.000.
- Urabe, Shigeharu: See—
Sugimoto, Tadao; Toya, Ichizo; Urabe, Shigeharu; and Sakaguchi, Shinji, 4,431,731, Cl. 430-604.000.
- Urban, Manfred: See—
Spietschka, Ernst; and Urban, Manfred, 4,431,806, Cl. 546-37.000.
- Urbye, Klaus: See—
Weber, Heinrich; Stalherm, Dieter; and Urbye, Klaus, 4,431,484, Cl. 202-141.000.
- Urry, Lewis F., to Union Carbide Corporation. Liquid cathode cell with cathode collector having recesses. 4,431,719, Cl. 429-105.000.
- Ushizawa, Jisaburo: See—
Watanabe, Masayuki; Ushizawa, Jisaburo; and Fukuda, Tsuguo, 4,431,476, Cl. 156-607.000.
- Usine de Metallurgie du Berry (UMB): See—
Bruneau, Paul, 4,431,044, Cl. 160-117.000.
- USM Corporation: See—
Meeker, Gregory W.; and Scarson, Frank W., Jr., 4,431,105, Cl. 198-523.000.
Muhlbach, Anton; and Stemmler, Helmut, 4,430,766, Cl. 12-16.100.
- Utter, Robert E., to Trane Company, The. Scroll compressor with controlled suction unloading using coupling means. 4,431,380, Cl. 417-286.000.
- Utter, Robert E.: See—
Eber, David H.; and Utter, Robert E., 4,431,388, Cl. 418-55.000.
- Utton, Donald B.; and Sheppard, Mark A., to National Nuclear Corporation Limited. Determination of heat transfer from a surface. 4,431,315, Cl. 374-29.000.
- Utz, Eberhard: See—
Fehrenbach, Siegfried; Utz, Eberhard; and Herbst, Kurt, 4,431,026, Cl. 137-510.000.
- Uusitalo, Leo: See—
Nurmi, Jarkko; and Uusitalo, Leo, 4,430,880, Cl. 72-400.000.
- v. Schenck, Raban; and Eggeman, Cent M., to Hoechst Aktiengesellschaft. Production of sodium tripolyphosphate. 4,431,620, Cl. 423-315.000.
- Vac-Tec Systems, Inc.: See—
Morrison, Charles F., Jr., 4,431,505, Cl. 204-298.000.
- Vaden, James L., to Akzona Incorporated. Insulation piercing contact. 4,431,246, Cl. 339-97.00R.
- Vainikka, Matti. Pivot means. 4,431,239, Cl. 312-231.000.
- Valbjorn, Knud V., to Danfoss A/S. Pressure responsive switching device particularly pressostat or thermostat. 4,430,900, Cl. 73-701.000.
- Valditterra, Sergio; Cicin-Sain, Ivo; and Berga, Jaime, to Matisa Materiel Industriel S.A. Railroad track relaying machine comprising a plough. 4,430,813, Cl. 37-104.000.
- Van der Ent, Arie, to IHC Holland N.V. Endless belt dredger. 4,430,812, Cl. 37-69.000.
- Van Der Mark, Jacobus, to Hollandse Signaalapparaten B.V. Threshold voltage generator. 4,431,993, Cl. 343-5.0CE.
- Vanguard Research Associates, Inc.: See—
Messing, Gilbert S.; Volkov, Grennady; Stanford, Thomas R.; and Lochet, Jean A., 4,431,500, Cl. 204-206.000.
- Vapofier Corporation: See—
Kunst, Theodore F.; and Koelling, Michael N., 4,431,401, Cl. 431-11.000.
- Varden, Arnold. Vice. 4,431,174, Cl. 269-211.000.
- Varian Associates, Inc.: See—
Balkwill, John T., 4,431,694, Cl. 428-188.000.
- Varner, Horace M.: See—
Dressel, Michael O.; Varner, Horace M.; Brummert, LaValle V.; and Bodle, John W., 4,431,063, Cl. 173-149.000.
- Vasudevan, Srinivasan: See—
Bourmonville, Jean-Paul; Cosyns, Jean; and Vasudevan, Srinivasan, 4,431,574, Cl. 502-261.000.
- VEB Schwermaschinenbau-Kombinat "Ernst Thälmann": See—
Krennbauer, Franz, 4,431,454, Cl. 106-100.000.
- Veeder Industries Inc.: See—
Kennedy, Paul L., 4,431,909, Cl. 235-1.00D.
- Vega, Julio J.: See—
Bossier, Joseph A.; and Vega, Julio J., 4,431,847, Cl. 568-755.000.
- Verbaan, Bernard, to National Institute for Metallurgy. Leaching of sulphidic mattes containing non-ferrous metals and iron. 4,431,613, Cl. 423-22.000.
- Verbeek, Francois: See—
Bulten, Eric J.; and Verbeek, Francois, 4,431,666, Cl. 424-287.000.
- Vereinigte Deutsche Metallwerke AG: See—
Althoff, Heinz J., 4,431,463, Cl. 148-11.50A.
- Vernez, Paul A.: See—
Moyroud, Louis M.; Bongard, Michel; Vernez, Paul A.; and Moulin, Michel, 4,431,295, Cl. 354-5.000.
- Vianova Kunstharz, A.G.: See—
Dworak, Gert; Daimer, Wolfgang; and Lackner, Heinrich, 4,431,780, Cl. 525-444.500.
- Paar, Willibald, 4,431,781, Cl. 525-502.000.
- Vickers, Incorporated: See—
Johnson, Harry T., 4,431,389, Cl. 418-82.000.
- Victor Company of Japan Ltd.: See—
Kaneko, Kenji, 4,432,021, Cl. 358-342.000.
- Vilkomerson, David H. R.: See—
Trimmer, William S.; and Vilkomerson, David H. R., 4,430,898, Cl. 73-624.000.
- Vinals, Joaquin F.: See—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,431,577, Cl. 252-522.00R.
- Vincent, William A. Ammunition clip. 4,430,821, Cl. 42-50.000.
- Vink, Nicolaas G.: See—
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- Vittoz, Eric A., to Centre Electronique Horloger S.A. CMOS Dynamic amplifier. 4,431,929, Cl. 307-490.000.
- Vock, Manfred H.: See—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,431,577, Cl. 252-522.00R.
- Voest-Alpine Aktiengesellschaft: See—
Feige, Fritz; and Krennbauer, Franz, 4,431,453, Cl. 106-100.000.
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- Vogel, Rolf: See—
Hoyle, William; and Vogel, Rolf, 4,431,438, Cl. 71-86.000.
- Vogelsgesang, Roland: See—
Behrens, Hans-Josef; Herold, Heiko; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,431,602, Cl. 264-205.000.
- Voigt, Allan A.: See—
Speicher, John M.; and Voigt, Allan A., 4,431,205, Cl. 280-282.000.
- Volk, Franz; and Muller, Heinz, to Franz Volkl OHG. Ski. 4,431,209, Cl. 280-604.000.
- Volkov, Grennady: See—
Messing, Gilbert S.; Volkov, Grennady; Stanford, Thomas R.; and Lochet, Jean A., 4,431,500, Cl. 204-206.000.
- Voorman, Johannes O., to U.S. Philips Corporation. Adaptive filter. 4,431,976, Cl. 333-166.000.
- Vorwerk, Manfred: See—
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- W. H. Brady Co.: See—
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- White, Donald A., to Jenn-Air Corporation. Ventilated modular cook-top cartridge. 4,431,892, Cl. 219-10.49R.

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- White, William J., to Honeywell Inc. Etchable glass cold shield for background limited detectors. 4,431,918, Cl. 250-338.000.
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- Whitehead, Larry W., to Leggett & Platt, Incorporated. Bed frame. 4,430,763, Cl. 5-200.00C.
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Duffield, Peter L.; Cleary, Arthur L.; and Winey, Calvin M., III, 4,432,005, Cl. 346-140.00R.
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Dybas, Richard A.; Witzel, Bruce E.; and Grier, Nathaniel, 4,431,655, Cl. 424-270.000.
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Harris, Robert J.; Ryburn, Scott W.; Woods, William E.; and Hartley, Henry F., 4,432,050, Cl. 364-200.000.
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- Wu, Edward W. J. Method for manufacture of target boards for darts or archery. 4,430,789, Cl. 29-527.100.
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- Yamakawa, Toru, to Fuji Jukogyo Kabushiki Kaisha. Internal combustion engine for vehicles. 4,430,862, Cl. 60-718.000.
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- Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Honma, Kei, to Tokyo Shibaura Denki Kabushiki Kaisha. High cavitation erosion resistance stainless steel and hydraulic machines being made of the same. 4,431,446, Cl. 75-128.00A.
- Yamamoto, Ryoichi: See—
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- Yamamoto, Shuzo. Composite-picture forming play kit. 4,430,824, Cl. 46-16.000.
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- Yamaoka, Shigenori; Isozaki, Kenmatsu; Nishi, Kyotaro; Okabe, Yukihiro; Waki, Mitsutaka; and Mizuno, Masuo, to Sumitomo Bakelite Co. Ltd. Etching agent for polyimide type resins and process for etching polyimide type resins with the same. 4,431,478, Cl. 156-668.000.
- Yamashita, Katsuji: See—
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Arik, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,431,656, Cl. 424-273.00R.
- Yamashita, Keitaro: See—
Arai, Minoru; and Yamashita, Keitaro, 4,431,298, Cl. 355-3.0DD.
- Yamashita, Toshiaki: See—
Katsumi, Ikuo; Kondo, Hideo; Yamashita, Katsuji; Hidaka, Takayoshi; Hosoe, Kazunori; Arik, Yutaka; Yamashita, Toshiaki; and Watanabe, Kiyoshi, 4,431,656, Cl. 424-273.00R.
- Yamauchi, Koichi: See—
Yamada, Yasuyuki; Tsuji, Nobuo; Tanaka, Yasuyuki; and Yamauchi, Koichi, 4,431,700, Cl. 428-336.000.
- Yamazaki, Kouichi: See—
Mutoh, Hiroshi; Hikawa, Masami; Watanabe, Yoshinori; and Yamazaki, Kouichi, 4,430,805, Cl. 33-438.000.
- Yamazaki, Makoto: See—
Kokubo, Eiichi; Yamazaki, Makoto; and Emori, Hiroshi, 4,431,178, Cl. 271-187.000.
- Yang, Elmer C., to Pacific Scientific Company. Motion snubber. 4,431,093, Cl. 188-378.000.
- Yanmar Diesel Engine Co., Ltd.: See—
Shimada, Minoru, 4,430,977, Cl. 123-449.000.
- Yasuda, Sadami: See—
Hamada, Mitsuo; and Yasuda, Sadami, 4,431,701, Cl. 428-379.000.
- Yasuda, Shuuhei: See—
Funada, Fumiaki; Takamatsu, Toshiaki; Yasuda, Shuuhei; and Matsuura, Masataka, 4,431,270, Cl. 350-332.000.
- Yasuda, Yutaka; Tsuchihashi, Kiyoshi; and Nishimura, Toshiro, to Kao Soap Co., Ltd. Novel 2-(α -substituted alkyl)-2-imidazoline and process for producing the same. 4,431,672, Cl. 424-353.000.
- Yasufuku, Sachio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of improving anti-inflammability of dimethyl silicone oil for use in static electric apparatus. 4,431,579, Cl. 252-573.000.
- Yasumoto, Seiichi: See—
Okada, Masakazu; Fushimi, Hitoshi; Yasumoto, Seiichi; and Hamada, Takuji, 4,432,054, Cl. 364-200.000.
- Yasutome, Osamu: See—
Futatsudera, Masao; Yokoyama, Syoichi; and Yasutome, Osamu, 4,432,018, Cl. 358-246.000.
- Yatabe, Thomas: See—
Fehling, John R.; Mathews, John P.; and Yatabe, Thomas, 4,431,713, Cl. 429-7.000.
- Yazawa, Satoru; Banda, Shunji; and Endo, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display device. 4,431,272, Cl. 350-336.000.
- Yebisuya, Takashi: See—
Yamamoto, Masao; Yebisuya, Takashi; Kawai, Mituo; and Honma, Kei, 4,431,446, Cl. 75-128.00A.
- Yokomori, Shinji, to Fuji Electric Co., Ltd. Coin sorting machine. 4,431,014, Cl. 133-3.00R.
- Yokoyama, Syoichi: See—
Futatsudera, Masao; Yokoyama, Syoichi; and Yasutome, Osamu, 4,432,018, Cl. 358-246.000.
- Yolles, Seymour: See—
Lefren, Karl E.; and Yolles, Seymour, 4,431,427, Cl. 604-285.000.
- York, Lyle E., to Caterpillar Tractor Co. Apparatus for lifting a member using parallelogram mounted links. 4,431,083, Cl. 187-9.00E.
- Yoshida, Eiichi; Tago, Susumu; and Imamura, Kunio, to Showa Denko Kabushiki Kaisha. Binder composition for paper-coating materials. 4,431,769, Cl. 524-555.000.
- Yoshida, Ryo: See—
Nagano, Eiichi; Hashimoto, Shunichi; Yoshida, Ryo; Oshio, Hiromichi; and Kamoshita, Katsuo, 4,431,822, Cl. 548-513.000.
- Yoshida, Takao, to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma or taste of a peppermint oil based oral hygiene flavor by adding thereto methyl substituted oxobicyclo-4,4,0-decane derivatives. 4,431,680, Cl. 426-538.000.
- Yoshida, Takao, to International Flavors & Fragrances Inc. Methyl substituted oxobicyclo-4,4,0-decane derivatives, process for preparing same and organoleptic uses thereof. 4,431,843, Cl. 568-374.000.
- Yoshikawa, Seizi: See—
Asagao, Soichi; Nakagawa, Shinsuke; Okada, Naoki; and Yoshikawa, Seizi, 4,431,610, Cl. 423-12.000.
- Yoshimura, Junichi: See—
Sakamoto, Kunisuke; Yoshimura, Junichi; and Shiga, Isamu, 4,431,600, Cl. 264-176.00R.
- Yoshino, Tsunemi: See—
Iwata, Hiroshi; and Yoshino, Tsunemi, 4,431,288, Cl. 354-446.000.
- Yoshioka, Hiroshi: See—
Somezawa, Masashi; Kimura, Shigeo; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,431,703, Cl. 428-447.000.
- Yoshizumi, Motohiko, to Mitsubishi Kinzoku Kabushiki Kaisha. Anti-static transparent coating composition. 4,431,764, Cl. 524-409.000.
- Young, Chung I.; and Barber, Loren L., Jr., to Minnesota Mining and Manufacturing Company. Method for the preparation of 1-hydroxyl-terminated poly(haloalkylene ethers). 4,431,845, Cl. 568-606.000.
- Young, Frederick J.: See—
Hughes, William F.; and Young, Frederick J., 4,430,921, Cl. 89-8.000.
- Young, Roger; and Schoeffler, Klaus E., to International Playtex, Inc. Woven fabric with covered edges and method of a manufacture. 4,431,035, Cl. 139-383.00R.
- Yuen, John S., to Parly Tools Manufacturing Limited. Combined fluorescent lamp and spotlight. 4,432,043, Cl. 362-184.000.
- Yukimoto, Kazuyoshi: See—
Matsuura, Takashi; Hayashi, Motomu; and Yukimoto, Kazuyoshi, 4,432,040, Cl. 362-61.000.
- Zajac, John, to Matheson Gas Products, Inc. Plasma etching with nitrous oxide and fluoro compound gas mixture. 4,431,477, Cl. 156-643.000.
- Zajeski, Robert B.: See—
Wieneczek, Donald C.; and Zajeski, Robert B., 4,431,189, Cl. 273-138.00A.
- Zamma, Jun; Nishimura, Yoshinori; Nakajima, Youichi; and Sakai, Tadaaki, to Toyo Engineering Corporation. Bayonet tube heat exchanger. 4,431,049, Cl. 165-142.000.
- Zarowin, Charles B.: See—
Reinberg, Alan R.; Steinberg, George N.; and Zarowin, Charles B., 4,431,898, Cl. 219-121.0PG.
- Zboril, Vaclav G.: See—
Hamilton, Michael A.; and Zboril, Vaclav G., 4,431,784, Cl. 526-116.000.
- Zeller, Noel E. Portable book light. 4,432,042, Cl. 362-183.000.
- Zeltner, Bernard; and Marmonnier, Gaston, to Manufacture Provencale de Matieres Plastiques. Moisture control apparatus. 4,430,829, Cl. 47-81.000.
- Zemanek, Joseph, Jr.: See—
Alhaili, Khalid A.; and Zemanek, Joseph, Jr., 4,432,077, Cl. 367-31.000.
- Zener, Clarence. Method and apparatus for foam lubrication. 4,431,016, Cl. 137-1.000.
- Zenith Radio Corporation: See—
Lehnert, Stanley E., 4,432,011, Cl. 358-60.000.
- Sugarman, Meyer L., 4,431,720, Cl. 430-17.000.
- Zimmer, Inc.: See—
Brighton, Carl T.; Black, Jonathan; and Eyerly, Joyce K., 4,430,999, Cl. 128-419.00F.
- Zinni, Domenic A., to B.B. Greenberg Company. Pendant frame with retained elements. 4,430,869, Cl. 63-23.000.
- Zinser Textilmaschinen GmbH: See—
Bothner, Jakob, 4,430,774, Cl. 19-105.000.
- Igel, Wolfgang; Probst, Frieder; Haussmann, Gerhard; and Hartmannsgruber, Max, 4,430,850, Cl. 57-130.000.
- Zobel, Don W.; Main, W. Eric; Pace, W. David; and Welty, Dennis L., to Motorola, Inc. Balanced current multiplier circuit for a subscriber loop interface circuit. 4,431,874, Cl. 179-170.0NC.
- Zoltan, Bart J.: See—
Albert, William C.; and Zoltan, Bart J., 4,430,894, Cl. 73-497.000.
- Zorn, Robert: See—
Dispenetti, David; and Zorn, Robert, 4,430,878, Cl. 72-340.000.
- Zucker, Oved S. F., to FDX Patents Holding Company, N.V. Current amplifying apparatus. 4,431,960, Cl. 323-340.000.
- Zulauf, Gary B.: See—
Flumignan, Dennis P.; Charbonneau, Ben J.; and Zulauf, Gary B., 4,431,884, Cl. 200-67.00D.
- Zwillich, Alexander; Merola, Carl R.; and Cicotelli, Stephen S., to Westinghouse Electric Corp. Switchgear with stab-positioning system. 4,432,036, Cl. 361-337.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF FEBRUARY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baker, William, to Masco Corporation of Indiana. Crystalline scanning radio receiver and transmitter. Re. 31,523, Cl. 455-76.000.
Cincinnati Milacron Inc.: See—
Rieder, Walter E., Re. 31,522, Cl. 252-34.000.
Lightner, Theodore P. Combination lawn mower tool. Re. 31,520, Cl. 7-138.000.

Masco Corporation of Indiana: See—
Baker, William, Re. 31,523, Cl. 455-76.000.
Rengo Co., Ltd.: See—
Tokuno, Masateru, Re. 31,521, Cl. 83-106.000.
Rieder, Walter E., to Cincinnati Milacron Inc. Salt of a polyamide and functional fluid containing same. Re. 31,522, Cl. 252-34.000.
Tokuno, Masateru, to Rengo Co., Ltd. Slitter-scorer apparatus. Re. 31,521, Cl. 83-106.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

Berriman, Lester P.: See—
Eversole, James F.; and Berriman, Lester P., B1 3,952,776, Cl. 138-39.000.
Eversole, James F.; and Berriman, Lester P., B1 4,231,383, Cl. 137-1.000.
Dresser Industries, Inc.: See—
Eversole, James F.; and Berriman, Lester P., B1 3,952,776, Cl. 138-39.000.

Eversole, James F.; and Berriman, Lester P., B1 4,231,383, Cl. 137-1.000.
Eversole, James F.; and Berriman, Lester P., to Dresser Industries, Inc. Fluid flow device. B1 3,952,776, 2-14-84, Cl. 138-39.000.
Eversole, James F.; and Berriman, Lester P., to Dresser Industries, Inc. Method for controlling mass flow rate. B1 4,231,383, 2-14-84, Cl. 137-1.000.
Lapp Insulator Co., Inc.: See—
Wilson, Lawrence F., B1 3,551,076, Cl. 417-385.000.
Wilson, Lawrence F., to Lapp Insulator Co., Inc. Tubular diaphragm pump. B1 3,551,076, 2-14-84, Cl. 417-385.000.

LIST OF DESIGN PATENTEEES

Aeronautical Accessories, Inc.: See—
McNab, Robert B.; and Wolfe, James A., 272,618, Cl. D12-345.000.
American Standard Inc.: See—
Fabian, Wolfgang, 272,642, Cl. D23-25.000.
Fort, George E., 272,593, Cl. D6-191.000.
Stairs, Henry M., Jr., 272,643, Cl. D23-69.000.
Anderson, Roland E. Building. 272,652, 2-14-84, Cl. D25-22.000.
Aoijs, Dieudonne G., to U.S. Philips Corporation. Clock radio receiver. 272,623, 2-14-84, Cl. D14-73.000.
Armstrong, Clyde: See—
Warren, Charles A.; and Armstrong, Clyde, 272,644, Cl. D23-77.000.
B. F. Goodrich Company, The: See—
Krupa, Dennis W., 272,614, Cl. D12-147.000.
Ball Corporation: See—
Haag, John H., Sr., 272,672, Cl. D34-38.000.
Barber, James W. Cassette tape holder. 272,584, 2-14-84, Cl. D6-25.000.
Barbieri, Raul; and Marianelli, Giorgio. Mail tray. 272,637, 2-14-84, Cl. D19-92.000.
Baumer, Alvin A., Jr., to Baumer Foods, Inc. Bottle or similar article. 272,601, 2-14-84, Cl. D9-350.000.
Baumer Foods, Inc.: See—
Baumer, Alvin A., Jr., 272,601, Cl. D9-350.000.
Bayerische Motoren Werke Aktiengesellschaft: See—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,616, Cl. D12-187.000.
Bloch, Stuart. Exerciser for orifice muscles. 272,649, 2-14-84, Cl. D24-36.000.
Bloch, Stuart. Exerciser for orifice muscles. 272,650, 2-14-84, Cl. D24-36.000.
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., to Zimmer, Inc. Reamer/rasp tool with disposable, debris retaining cutting surface. 272,648, 2-14-84, Cl. D24-28.000.
Bonomo, Peggy, to National Spinning Co., Inc. Fabric. 272,673, 2-14-84, Cl. D92-14.000.
Boudreaux, Mark D., to CPG Products Corp. Toy vehicle. 272,641, 2-14-84, Cl. D21-131.000.

BP Refining & Marketing Canada Limited/Raffinage et Marketing BP Canada Limitee: See—
Gregory, Wolfgang, 272,602, Cl. D9-375.000.
Braun, Hans: See—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,616, Cl. D12-187.000.
Breslau, Steven M.; and Grossman, M. Gary, to Sima Products Corporation. Camera lens. 272,634, 2-14-84, Cl. D16-134.000.
Brown, Dwight C. Combined garment hanger and retainer for skirts, slacks or trousers. 272,594, 2-14-84, Cl. D6-256.000.
Caldwell, John W. Lantern. 272,657, 2-14-84, Cl. D26-87.000.
Cascone, Ernesto; and Cascone, Vincent. Hinge. 272,597, 2-14-84, Cl. D8-329.000.
Cascone, Vincent: See—
Cascone, Ernesto; and Cascone, Vincent, 272,597, Cl. D8-329.000.
Chase, David O.; and Pfuhl, Paul H., to Mobil Oil Corporation. Covered food storage container. 272,595, 2-14-84, Cl. D7-16.000.
Cindrich, Nicholas: See—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 272,648, Cl. D24-28.000.
Claman, Mike T. Chaise. 272,586, 2-14-84, Cl. D6-57.000.
Continental Group, Inc., The: See—
Hasegawa, Gary K.; and Richardson, Donald R., 272,607, Cl. D9-438.000.
Cox, John A., to Liqui-Box Corporation. Plastic container for liquids. 272,604, 2-14-84, Cl. D9-391.000.
CPG Products Corp.: See—
Boudreaux, Mark D., 272,641, Cl. D21-131.000.
Cutler, Alfred. Applicator for lotions and ointments. 272,661, 2-14-84, Cl. D28-7.000.
Dinand, Pierre. Bottle. 272,603, 2-14-84, Cl. D9-384.000.
Doll, Michael H.: See—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 272,648, Cl. D24-28.000.
Dooley, Thomas E.: See—
Morton, Edward W.; O'Mullan, Daniel W.; and Dooley, Thomas E., 272,653, Cl. D26-3.000.

LIST OF DESIGN PATENTEEES

PI 49

Drag Specialties, Inc.: See—
Stahel, Alwin J., 272,610, Cl. D11-107.000.
Dresser Industries, Inc.: See—
Monigle, Glenn W.; and Roecker, David W., 272,627, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,628, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,629, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,631, Cl. D15-9.200.
Efuti Giken Company Limited: See—
Kawai, Tsutomu, 272,620, Cl. D14-11.000.
ElectroDynamics, Inc.: See—
Kazara, James H., 272,667, Cl. D30-43.000.
Elmenyawi, Salam. Control panel face plate. 272,619, 2-14-84, Cl. D13-35.000.
Fabian, Wolfgang, to American Standard Inc. Sanitary fitting for a bidet. 272,642, 2-14-84, Cl. D23-25.000.
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., to Siemens Corporation. Large telephone keyset. 272,622, 2-14-84, Cl. D14-58.000.
Forsberg, John R., to Helene Curtis Industries, Inc. Hair styling accessories container. 272,663, 2-14-84, Cl. D28-38.000.
Fort, George E., to American Standard Inc. Rocker glide or similar article. 272,593, 2-14-84, Cl. D6-191.000.
Funai Electric Company Limited: See—
Kawai, Tsutomu, 272,620, Cl. D14-11.000.
Gale, William L. Statuette. 272,612, 2-14-84, Cl. D11-157.000.
Genaro, Donald M.; and Tilley, Alvin R., to Teletype Corporation. Teletypewriter keyboard. 272,624, 2-14-84, Cl. D14-93.000.
Grant, Perry J.: See—
Israel, Leonard H.; and Grant, Perry J., 272,640, Cl. D21-51.000.
Gregory, Wolfgang, to BP Refining & Marketing Canada Limited/Raffinage et Marketing BP Canada Limitee. Bottle. 272,602, 2-14-84, Cl. D9-375.000.
Grossman, M. Gary: See—
Breslau, Steven M.; and Grossman, M. Gary, 272,634, Cl. D16-134.000.
Haag, John H., Sr., to Ball Corporation. Pallet or the like. 272,672, 2-14-84, Cl. D34-38.000.
Hasegawa, Gary K.; and Richardson, Donald R., to Continental Group, Inc. The. Pull tab for a container end. 272,607, 2-14-84, Cl. D9-438.000.
Haskell of Pittsburgh, Inc.: See—
Tolleson, Thomas E., 272,585, Cl. D6-31.000.
Helene Curtis Industries, Inc.: See—
Forsberg, John R., 272,663, Cl. D28-38.000.
Hnatyshyn, Stephen P. Eye drop solution bottle. 272,599, 2-14-84, Cl. D9-337.000.
Ho, Simon M. H. Torch. 272,654, 2-14-84, Cl. D26-48.000.
Honda Giken Kogyo Kabushiki Kaisha: See—
Ito, Jun, 272,615, Cl. D12-182.000.
International Business Machines Corporation: See—
Lahey, Donald F.; and Molerin, Dallas G., 272,626, Cl. D14-113.000.
Israel, Leonard H.; and Grant, Perry J. Game playing piece. 272,640, 2-14-84, Cl. D21-51.000.
Ito, Jun, to Honda Giken Kogyo Kabushiki Kaisha. Fairing for motor tricycle. 272,615, 2-14-84, Cl. D12-182.000.
James, Michael H. Aquarium. 272,665, 2-14-84, Cl. D30-8.000.
James, Michael H. Aquarium. 272,666, 2-14-84, Cl. D30-8.000.
John Manufacturing, Ltd.: See—
Se-Kit, Yuen, 272,636, Cl. D19-76.000.
Jones, William F. Tweezer. 272,664, 2-14-84, Cl. D28-55.000.
Kawai, Tsutomu, to Funai Electric Company Limited; and Efuti Giken Company Limited. Tape cassette. 272,620, 2-14-84, Cl. D14-11.000.
Kazara, James H., to ElectroDynamics, Inc. Animal identification transponder tag. 272,667, 2-14-84, Cl. D30-43.000.
Klaiber, Gerhart F.: See—
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 272,622, Cl. D14-58.000.
Koppens, Leonardus P. Combined multiple-unit motor fuel dispenser. 272,630, 2-14-84, Cl. D15-9.200.
Krupa, Dennis W., to B. F. Goodrich Company, The. Tire. 272,614, 2-14-84, Cl. D12-147.000.
Kubas, Robert J. Suture package. 272,600, 2-14-84, Cl. D9-346.000.
Lahey, Donald F.; and Molerin, Dallas G., to International Business Machines Corporation. Interactive terminal display. 272,626, 2-14-84, Cl. D14-113.000.
Leach, Kant F. Tire chain applicator. 272,596, 2-14-84, Cl. D8-14.000.
Lee, Alan Y. T. Dart. 272,639, 2-14-84, Cl. D21-49.000.
Liqui-Box Corporation: See—
Cox, John A., 272,604, Cl. D9-391.000.
Lopez, Mark P. Dashboard cover. 272,617, 2-14-84, Cl. D12-192.000.
Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Outer rear view mirror for automobile. 272,616, 2-14-84, Cl. D12-187.000.
Lutzker, Gertie. Dish drying rack for use on a countertop. 272,669, 2-14-84, Cl. D32-55.000.
Mahurkar, Sakharan D. Double lumen catheter. 272,651, 2-14-84, Cl. D24-54.000.
Marianelli, Giorgio: See—
Barbieri, Raul; and Marianelli, Giorgio, 272,637, Cl. D19-92.000.
McAlpine, Melvyn D. Toothbrush. 272,583, 2-14-84, Cl. D4-25.000.

McNab, Robert B.; and Wolfe, James A., to Aeronautical Accessories, Inc. Combined step and hand hold for use on a helicopter. 272,618, 2-14-84, Cl. D12-345.000.
Medley, Richard C., to Square D Company. Lamp holder. 272,659, 2-14-84, Cl. D26-138.000.
Mobil Oil Corporation: See—
Chase, David O.; and Pfuhl, Paul H., 272,595, Cl. D7-16.000.
Mole-Richardson Co.: See—
Parker, Lawrence M., 272,656, Cl. D26-65.000.
Molerin, Dallas G.: See—
Lahey, Donald F.; and Molerin, Dallas G., 272,626, Cl. D14-113.000.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 272,627, 2-14-84, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 272,628, 2-14-84, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 272,629, 2-14-84, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., to Dresser Industries, Inc. Fuel dispenser. 272,631, 2-14-84, Cl. D15-9.200.
Morton, Edward W.; O'Mullan, Daniel W.; and Dooley, Thomas E., to North American Philips Electric Corp. Compact fluorescent lamp. 272,653, 2-14-84, Cl. D26-3.000.
Muller, Ronald L., to North American Philips Corporation. Air cleaner. 272,645, 2-14-84, Cl. D23-149.000.
Muller, Ronald L.: See—
Tsuji, Masao; and Muller, Ronald L., 272,646, Cl. D23-149.000.
Munoz, Juan: See—
Trujillo, Ramon; and Munoz, Juan, 272,611, Cl. D11-133.000.
Muzumdar, Deepak R.: See—
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 272,622, Cl. D14-58.000.
Nathanson, Eric. Game board. 272,638, 2-14-84, Cl. D21-32.000.
National Spinning Co., Inc.: See—
Bonomo, Peggy, 272,673, Cl. D92-14.000.
Noma, Haruki: See—
Suzuki, Masatsugu; and Noma, Haruki, 272,625, Cl. D14-94.000.
North American Philips Corporation: See—
Muller, Ronald L., 272,645, Cl. D23-149.000.
Tsuji, Masao; and Muller, Ronald L., 272,646, Cl. D23-149.000.
North American Philips Electric Corp.: See—
Morton, Edward W.; O'Mullan, Daniel W.; and Dooley, Thomas E., 272,653, Cl. D26-3.000.
Ofiesh, Gabriel D., II. Ring-pendant. 272,609, 2-14-84, Cl. D11-2.000.
Oki Electric Industry Co., Ltd.: See—
Suzuki, Masatsugu; and Noma, Haruki, 272,625, Cl. D14-94.000.
Oles, Henry J. Front projection device. 272,632, 2-14-84, Cl. D16-11.000.
O'Mullan, Daniel W.: See—
Morton, Edward W.; O'Mullan, Daniel W.; and Dooley, Thomas E., 272,653, Cl. D26-3.000.
Pamberg, Eberhard. Stackable chair. 272,587, 2-14-84, Cl. D6-78.000.
Parker, Lawrence M., to Mole-Richardson Co. Floodlight or the like. 272,656, 2-14-84, Cl. D26-65.000.
Pedersen, Dane. Embossing tool. 272,635, 2-14-84, Cl. D18-19.000.
Pelletier, Francois. Container for liquids or the like. 272,605, 2-14-84, Cl. D9-431.000.
Pelletier, Francois. Container for liquids or the like. 272,606, 2-14-84, Cl. D9-431.000.
Percival, William H.; and Wilkins, Henry R., to Servis Realisations Limited. Drum for a laundry machine. 272,668, 2-14-84, Cl. D32-29.000.
Petroff, Barbara A. Medical supply pack. 272,581, 2-14-84, Cl. D3-71.000.
Pfuhl, Paul H.: See—
Chase, David O.; and Pfuhl, Paul H., 272,595, Cl. D7-16.000.
Raymond, Gary E. Photographic sheet materials cassette. 272,633, 2-14-84, Cl. D16-32.000.
Rennen, Manfred: See—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,616, Cl. D12-187.000.
Richardson, Donald R.: See—
Hasegawa, Gary K.; and Richardson, Donald R., 272,607, Cl. D9-438.000.
Roecker, David W.: See—
Monigle, Glenn W.; and Roecker, David W., 272,627, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,628, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,629, Cl. D15-9.100.
Monigle, Glenn W.; and Roecker, David W., 272,631, Cl. D15-9.200.
Schluge, Gregory: See—
Wesner, Charles R.; and Schluge, Gregory, 272,608, Cl. D10-74.000.
Schneider, Rolf E.: See—
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 272,622, Cl. D14-58.000.
Schoenig, Darrell A. Lighting support assembly. 272,658, 2-14-84, Cl. D26-138.000.
Se-Kit, Yuen, to John Manufacturing, Ltd. Telephone index. 272,636, 2-14-84, Cl. D19-76.000.
Senco Products, Inc.: See—
Warman, Thomas E.; and Spreckelmeir, Lawrence E., 272,647, Cl. D24-27.000.

- Servis Realisations Limited: See—
Percival, William H.; and Wilkins, Henry R., 272,668, Cl. D32-29.000.
- Shames, Harold: See—
Shames, Sidney J.; and Shames, Harold, 272,588, Cl. D6-90.000.
Shames, Sidney J.; and Shames, Harold, 272,589, Cl. D6-92.000.
Shames, Sidney J.; and Shames, Harold, 272,590, Cl. D6-99.000.
Shames, Sidney J.; and Shames, Harold, 272,591, Cl. D6-103.000.
Shames, Sidney J.; and Shames, Harold. Soap dish fixture. 272,588, 2-14-84, Cl. D6-90.000.
Shames, Sidney J.; and Shames, Harold. Standing holder for tumbler and toothbrushes. 272,589, 2-14-84, Cl. D6-92.000.
Shames, Sidney J.; and Shames, Harold. Towel ring fixture. 272,590, 2-14-84, Cl. D6-99.000.
Shames, Sidney J.; and Shames, Harold. Bar support bracket. 272,591, 2-14-84, Cl. D6-103.000.
Shepherd, Charles G. Dental kit container. 272,582, 2-14-84, Cl. D4-18.000.
- Siemens Corporation: See—
Foggia, Donald A.; Muzumdar, Deepak R.; Klaiber, Gerhart F.; and Schneider, Rolf E., 272,622, Cl. D14-58.000.
- Sima Products Corporation: See—
Breslau, Steven M.; and Grossman, M. Gary, 272,634, Cl. D16-134.000.
- Smal, Henri, to Societe Anonyme F A C O. Retractable heating brush. 272,662, 2-14-84, Cl. D28-35.000.
- Smith, Martha: See—
Smith, Robert, 272,655, Cl. D26-51.000.
- Smith, Robert, to Smith, Martha. Illuminated marine utility pedestal. 272,655, 2-14-84, Cl. D26-51.000.
- Snyder, Robert G., to Specialty Phones, Inc. Telephone. 272,579, 2-14-84, Cl. D14-53.000.
- Snyder, Robert G., to Specialty Phones, Inc. Telephone. 272,621, 2-14-84, Cl. D14-53.000.
- Sociedad de Dispositivos Reductores de Tabaco, S.A.: See—
Torreblanca Cervantes, Raphael, 272,660, Cl. D27-38.000.
- Societe Anonyme F A C O: See—
Smal, Henri, 272,662, Cl. D28-35.000.
- Specialty Phones, Inc.: See—
Snyder, Robert G., 272,579, Cl. D14-53.000.
Snyder, Robert G., 272,621, Cl. D14-53.000.
- Sperry Corporation: See—
Wesner, Charles R.; and Schluge, Gregory, 272,608, Cl. D10-74.000.
- Spreckelmeir, Lawrence E.: See—
Warman, Thomas E.; and Spreckelmeir, Lawrence E., 272,647, Cl. D24-27.000.
- Square D Company: See—
Medley, Richard C., 272,659, Cl. D26-138.000.
- Stahel, Alwin J., to Drag Specialties, Inc. Motorcycle emblem or the like. 272,610, 2-14-84, Cl. D11-107.000.
- Stairs, Henry M., Jr., to American Standard Inc. Anti-slip bathtub bottom. 272,643, 2-14-84, Cl. D23-69.000.
- Stewart, John P. Trophy figure. 272,613, 2-14-84, Cl. D11-160.000.
- Stubblefield, Jerry D. Shoe sole. 272,580, 2-14-84, Cl. D2-320.000.
- Suzuki, Masatsugu; and Noma, Haruki, to Oki Electric Industry Co., Ltd. Facsimile transceiver. 272,625, 2-14-84, Cl. D14-94.000.
- Teletype Corporation: See—
Genaro, Donald M.; and Tilley, Alvin R., 272,624, Cl. D14-93.000.
- Tilley, Alvin R.: See—
Genaro, Donald M.; and Tilley, Alvin R., 272,624, Cl. D14-93.000.
- Tolleson, Thomas E., to Haskell of Pittsburgh, Inc. Chair. 272,585, 2-14-84, Cl. D6-31.000.
- Torreblanca Cervantes, Raphael, to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Combined lighter and cigar/cigarette filter perforator. 272,660, 2-14-84, Cl. D27-38.000.
- Trujillo, Ramon; and Munoz, Juan. Standing plaque. 272,611, 2-14-84, Cl. D11-133.000.
- Tsuiji, Masao; and Muller, Ronald L., to North American Philips Corporation. Room air cleaner. 272,646, 2-14-84, Cl. D23-149.000.
- Tsujimura, Tozaburo, to Yasui Sangyo Co., Ltd. Lifting jack. 272,670, 2-14-84, Cl. D34-31.000.
- Tupper, Alan W. Load-transfer device. 272,671, 2-14-84, Cl. D34-33.000.
- U.S. Philips Corporation: See—
Aoijs, Dieudonne G., 272,623, Cl. D14-73.000.
- Warman, Thomas E.; and Spreckelmeir, Lawrence E., to Senco Products, Inc. Surgical stapling instrument. 272,647, 2-14-84, Cl. D24-27.000.
- Warren, Charles A.; and Armstrong, Clyde. Snow skiing boot drying device. 272,644, 2-14-84, Cl. D23-77.000.
- Wesner, Charles R.; and Schluge, Gregory, to Sperry Corporation. Compass heading display. 272,608, 2-14-84, Cl. D10-74.000.
- Westbury Foundation, The: See—
Torreblanca Cervantes, Raphael, 272,660, Cl. D27-38.000.
- Wilkins, Henry R.: See—
Percival, William H.; and Wilkins, Henry R., 272,668, Cl. D32-29.000.
- Wolfe, James A.: See—
McNab, Robert B.; and Wolfe, James A., 272,618, Cl. D12-345.000.
- Woods, Matthew B. Adjustable record holder. 272,592, 2-14-84, Cl. D6-185.000.
- Yasui Sangyo Co., Ltd.: See—
Tsujimura, Tozaburo, 272,670, Cl. D34-31.000.
- Zaloumis, Angelos. Wrapper for a can or the like. 272,598, 2-14-84, Cl. D9-305.000.
- Zimmer, Inc.: See—
Bolesky, Richard C.; Cindrich, Nicholas; and Doll, Michael H., 272,648, Cl. D24-28.000.

LIST OF PLANT PATENTEES

- Duffett, William E.: See—
Meek, Jack M., deceased; Meek, Sandra J., executrix; and Duffett, William E., 5,192, Cl. 74.000.
- Fischer, Arnold, to Pan American Plant Company. African violet plant. 5,190, 2-14-84, Cl. 69.000.
- Fischer, Arnold, to Pan American Plant Company. African violet plant. 5,191, 2-14-84, Cl. 69.000.
- Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Le Reve. 5,189, 2-14-84, Cl. 68.000.
- Meek, Jack M., deceased; by Meek, Sandra J., executrix; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 5,192, 2-14-84, Cl. 74.000.
- Meek, Sandra J., executrix: See—
Meek, Jack M., deceased; Meek, Sandra J., executrix; and Duffett, William E., 5,192, Cl. 74.000.
- Pan American Plant Company: See—
Fischer, Arnold, 5,190, Cl. 69.000.
Fischer, Arnold, 5,191, Cl. 69.000.
- Sun Valley Bulb Farms, Inc.: See—
Kirsch, Ted T., 5,189, Cl. 68.000.
- Yoder Brothers, Inc.: See—
Meek, Jack M., deceased; Meek, Sandra J., executrix; and Duffett, William E., 5,192, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 14, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	104	4,430,813	CLASS 65	277	4,430,924	497	4,430,980	2	4,431,461		
159	4,430,759	CLASS 38	159	4,431,436	516	4,430,926	556	4,430,981	11.5 A	4,431,463	
CLASS 3	102.91	4,430,814	CLASS 66	210	4,430,927	530	4,430,927	568	4,430,982	11.5 Q	4,431,462
1.9	4,430,760	4,430,815	CLASS 68	187	4,430,928	CLASS 92	647	585	4,430,983	15	4,431,464
1.91	4,430,761	CLASS 40	210	4,430,870	CLASS 98	25 A	4,430,984	647	4,430,984	24	4,431,465
CLASS 4	2 R	4,430,816	CLASS 68	12 R	4,430,871	CLASS 99	273 R	141	4,430,987	143	4,431,466
543	4,430,762	124.2	86	4,431,437	CLASS 71	2.18	4,430,929	206	4,430,988	159	4,431,467
CLASS 5	429	4,430,818	88	4,431,438	330	4,430,925	CLASS 126	141	4,430,987	CLASS 149	
200 C	4,430,763	564	92	4,431,439	331	4,430,930	20	4,430,986	21	4,431,468	
450	4,430,764	CLASS 42	111	4,431,440	589	4,430,931	33	4,430,987	52 J	4,431,041	
459	4,430,765	50 T	86	4,431,441	593	4,430,932	92 A	4,430,988	CLASS 150		
CLASS 7	71 R	4,430,822	405	4,431,442	641	4,430,933	203.27	4,430,989	CLASS 152		
138	Re.31,520	CLASS 43	CLASS 72	51	4,430,872	CLASS 100	46.3	4,431,456	243	4,431,042	
CLASS 8	43.12	4,430,823	51	4,430,872	53	4,430,934	1 R	4,430,990	417	4,431,043	
477	4,431,429	CLASS 44	75	4,430,873	CLASS 101	93.11	20	4,430,991	CLASS 156		
CLASS 12	53	4,431,430	202	4,430,874	93.48	4,430,935	33	4,430,992	86	4,431,469	
16.1	4,430,766	CLASS 46	205	4,430,875	232	4,430,936	32 A	4,430,993	103	4,431,471	
146 S	4,430,767	16	234	4,430,876	CLASS 102	307	203.27	4,430,994	265	4,431,470	
CLASS 15	245	4,430,769	273.5	4,430,877	307	4,430,938	204.21	4,430,995	307.3	4,431,472	
381	4,430,768	202	340	4,430,878	446	4,430,939	303.15	4,430,996	345	4,431,473	
CLASS 16	80	4,430,770	389	4,430,879	496	4,430,940	326	4,430,997	583.1	4,431,474	
235	4,430,771	81	400	4,430,880	520	4,430,941	335	4,430,998	606	4,431,475	
CLASS 17	33	4,430,772	402	4,430,881	522	4,430,942	419 F	4,430,999	607	4,431,476	
CLASS 19	105	4,430,774	405	4,430,882	CLASS 73	4,430,943	421	4,431,000	643	4,431,477	
CLASS 24	20 CW	4,430,775	CLASS 73	1 DV	4,430,883	CLASS 104	422	4,431,001	668	4,431,478	
239	4,430,778	281	4 R	4,430,884	7 B	4,430,945	594	4,431,002	CLASS 160		
573	4,430,776	282	35	4,430,885	7 R	4,430,946	635	4,431,003	117	4,431,044	
681	4,430,777	455	37	4,430,886	CLASS 106	21	656	4,431,005	CLASS 162		
CLASS 26	18.5	4,430,779	49.5	4,430,887	21	4,431,450	660	4,431,006	9	4,431,479	
CLASS 28	272	4,430,780	61.1 R	4,430,888	35	4,431,451	673	4,431,007	19	4,431,480	
CLASS 29	25.42	4,430,781	61.4	4,430,889	38.22	4,431,452	40 R	4,431,008	100	4,431,481	
90 R	4,430,782	450	147	4,430,890	100	4,431,453	68 R	4,431,009	243	4,431,482	
156.4 R	4,430,783	550	149	4,430,891	245	4,431,454	3 R	4,431,014	358	4,431,045	
157 C	4,430,784	CLASS 55	151	4,430,892	111	4,430,947	CLASS 132	42	4,431,012	119	4,431,046
157 R	4,430,785	26	168	4,430,893	101 R	4,430,948	40 R	4,431,013	253	4,431,047	
159 A	4,430,786	29	197	4,430,894	193	4,430,949	68 R	4,431,018	88	4,431,048	
402.11	4,430,787	135	235	4,430,895	235	4,430,950	CLASS 133	4,431,018	142	4,431,049	
402.14	4,430,788	241	345	4,430,896	345	4,430,951	3 R	4,431,014	166	4,431,050	
527.1	4,430,789	CLASS 56	85	4,430,897	CLASS 111	4,430,952	CLASS 134	2	4,431,457	CLASS 166	
569 R	4,430,790	10.2	165	4,430,898	CLASS 112	4,430,953	258	4,431,458	38	4,431,458	
571	4,430,791	10.7	258	4,430,899	CLASS 114	74 A	1	4,431,459	55	4,431,015	
578	4,430,792	11.3	74 A	4,430,900	74 A	4,430,954	CLASS 136	4,431,459	CLASS 136		
CLASS 30	29.5	4,430,794	267	4,430,901	267	4,430,955	1	4,431,016	258	4,431,858	
382	4,430,795	130	326	4,431,444	CLASS 118	326	BI	4,431,383	CLASS 137		
CLASS 33	1 M	4,430,796	657	4,431,443	326	4,430,956	15	4,431,017	CLASS 137		
1 N	4,430,798	4,430,797	668	4,431,445	657	4,430,957	87	4,431,019	BI	4,431,383	
125 R	4,430,799	39.02	697	4,431,446	668	4,430,958	110	4,431,020	15	4,431,017	
141 E	4,430,800	39.03	CLASS 75	4,431,447	697	4,430,959	205	4,431,021	87	4,431,019	
174 E	4,430,801	272	53	4,431,444	CLASS 119	22	315	4,431,022	110	4,431,020	
203.12	4,430,802	398	102 R	4,431,443	22	4,430,960	205	4,431,022	205	4,431,021	
366	4,430,803	418	123 R	4,431,445	156	4,430,961	316	4,431,023	315	4,431,022	
398	4,430,804	606	128 A	4,431,446	CLASS 122	406.5	413	4,431,024	316	4,431,023	
438	4,430,805	675	128 W	4,431,447	CLASS 123	449	118.1	4,431,024	316	4,431,024	
CLASS 34	1	4,430,806	238	4,431,448	25 B	4,430,964	130	4,431,025	510	4,431,026	
9	4,430,807	4,430,807	246	4,431,449	41.1	4,430,966	574	4,431,027	574	4,431,027	
97	4,430,808	4,430,808	CLASS 82	58	4,430,912	90.27	625.3	4,431,028	625.3	4,431,028	
133	4,430,809	4,430,809	CLASS 83	70.2	4,430,913	90.34	802	4,431,029	802	4,431,029	
CLASS 36	32 R	4,430,810	CLASS 84	1.01	4,430,917	90.39	138	4,431,030	138	4,431,030	
45	4,430,811	515	1.16	4,430,918	198 R	90.51	45	4,431,031	45	4,431,031	
CLASS 37	69	4,430,812	CLASS 85	299	4,430,919	328	109	4,431,031	109	4,431,031	
			CLASS 86	382	4,430,920	339	118.1	4,431,032	118.1	4,431,032	
			CLASS 87	8	4,430,921	387	130	4,431,033	130	4,431,034	
			CLASS 88	37 H	4,430,922	399	CLASS 139	4,431,033	CLASS 139		
			CLASS 89	61	4,430,923	440	383 R	4,431,035	383 R	4,431,035	
			CLASS 90			478	429	4,431,036	429	4,431,036	
			CLASS 91			479	5	4,431,037	5	4,431,037	
			CLASS 92			479	28.1	4,431,038	28.1	4,431,038	
			CLASS 93			479	176	4,431,039	176	4,431,039	
			CLASS 94			479	193 C	4,431,040	193 C	4,431,040	
			CLASS 95			479	1.5	4,431,459	1.5	4,431,459	
			CLASS 96			479		4,431,460		4,431,460	
			CLASS 97			479		4,431,461		4,431,461	
			CLASS 98			479		4,431,462		4,431,462	
			CLASS 99			479		4,431,463		4,431,463	
			CLASS 100			479		4,431,464		4,431,464	
			CLASS 101			479		4,431,465		4,431,465	
			CLASS 102			479		4,431,466		4,431,466	
			CLASS 103			479		4,431,467		4,431,467	
			CLASS 104			479		4,431,468		4,431,468	
			CLASS 105			479		4,431,469		4,431,469	
			CLASS 106			479		4,431,470		4,431,470	
			CLASS 107			479		4,431,471		4,431,471	
			CLASS 108			479		4,431,472		4,431,472	
			CLASS 109			479		4,431,473		4,431,473	
			CLASS 110			479		4,431,474		4,431,474	
			CLASS 111			479		4,431,475		4,431,475	
			CLASS 112			479		4,431,476		4,431,476	
			CLASS 113			479		4,431,477		4,431,477	
			CLASS 114			479		4,431,478		4,431,478	
			CLASS 115			479		4,431,479		4,431,479	
			CLASS 116			479		4,431,480		4,431,480	
			CLASS 117			479		4,431,481		4,431,481	
			CLASS 118			479		4,431,482		4,431,482	
			CLASS 119			479		4,431,483		4,431,483	
			CLASS 120			479		4,431,484		4,431,484	
			CLASS 121			479		4,431,485		4,431,485	
			CLASS 122			479		4,431,486		4,431,486	
			CLASS 123			479		4,431,487		4,431,487	
			CLASS 124			479		4,431,488		4,431,488	
			CLASS 125			479		4,431,489		4,431,489	
			CLASS 126			479		4,431,490		4,431,490	
			CLASS 127			479		4,431,491		4,431,491	
			CLASS 128			479		4,431,492		4,431,492	
			CLASS 129			479		4,431,493		4,431,493	
			CLASS 130			479		4,431,494		4,431,494	
			CLASS 131			479		4,431,495		4,431,495	
			CLASS 132			479		4,431,496		4,431,496	
			CLASS 133			479		4,431,497		4,431,497	
			CLASS 134			479		4,431,498		4,431,498	
			CLASS 135			479		4,431,499		4,431,499	
			CLASS 136			479		4,431,500		4,431,500	
			CLASS 137			479		4,431,501		4,431,501	
			CLASS 138			479		4,431,502		4,431,502	
			CLASS 139			479		4,431,503		4,431,503	
			CLASS 140			479		4,431,504		4,431,504	
			CLASS 141			479		4,431,505		4,431,505	
			CLASS 142			479		4,431,506		4,431,506	
			CLASS 143			479		4,431,507		4,431,507	
			CLASS 144			479		4,431,508		4,431,508	
			CLASS 145			479		4,431,509		4,431,509	
			CLASS 146			479		4,431,510		4,431,510	
			CLASS 147			479		4,431,511		4,431,511	
			CLASS 148			479		4,431,512		4,431,512	
			CLASS 149		</						

CLASSIFICATION OF PATENTS

18 FA	4,431,868	48 AA	4,431,513	CLASS 232	158	4,431,585	86.19	4,431,225	CLASS 335	132	4,431,978
77	4,431,869	108	4,431,514	43.1	4,431,130	239 A	4,431,587	87 R	4,431,224	210	4,431,979
81 C	4,431,870	111	4,431,515	CLASS 235	239 R	4,431,588	150	4,431,226	CLASS 336	60	4,431,980
84 A	4,431,871		4,431,516	1 D	239.3 T	4,431,589	33	4,431,227	CLASS 337	42	4,431,981
84 VF	4,431,872		4,431,517	96	4,431,909	4,431,590	100	4,431,228	CLASS 338	214	4,431,982
110 A	4,431,873		4,431,518	444	4,431,910	4,431,591	214	4,431,229	CLASS 339	220	4,431,983
170 NC	4,431,874		4,431,519	466	4,431,911	4,431,592	43	4,431,241	CLASS 340	107	4,431,984
175.3 R	4,431,875		4,431,520	CLASS 236	410.6	4,431,593	48	4,431,242	CLASS 341	125 R	4,431,985
			4,431,521	11	410.9 R	4,431,594	143 R	4,431,251	CLASS 342	177 E	4,431,986
			4,431,522	25 A	502.5 F	4,431,595	177 R	4,431,252	CLASS 343	5 CE	4,431,993
			4,431,523	46 R	513 F	4,431,596	347 DA	4,431,253	CLASS 344	12 A	4,431,994
			4,431,524	345	970	4,431,597	712	4,431,254	CLASS 345	373	4,431,995
			4,431,525	8	CLASS 261	4,431,598	4,431,935	4,431,255	CLASS 346	7 PH	4,432,000
			4,431,526	102	CLASS 264	4,431,598	10 R	4,431,925	CLASS 347	135.1	4,432,002
			4,431,527	690	CLASS 269	4,431,599	260	4,431,926	CLASS 348	140 R	4,432,003
			4,431,528	18 A	CLASS 271	4,431,175	269	4,431,927	CLASS 349	140 R	4,432,004
			4,431,529	55.53	CLASS 272	4,431,181	465	4,431,928	CLASS 350	1.5	4,431,257
			4,431,530	56 A	CLASS 273	4,431,182	490	4,431,929	CLASS 351	1.6	4,431,258
			4,431,531	56.2	CLASS 274	4,431,183	520	4,431,930	CLASS 352	96.15	4,431,260
			4,431,532	68.1	CLASS 275	4,431,184	190	4,431,236	CLASS 353	96.34	4,431,263
			4,431,533	84.5 A	CLASS 276	4,431,185	311	4,431,241	CLASS 354	132	4,431,265
			4,431,534	85	CLASS 277	4,431,186	331	4,431,242	CLASS 355	167	4,431,266
			4,431,535	107.4 B	CLASS 278	4,431,187	335	4,431,243	CLASS 356	237	4,431,267
			4,431,536	192	CLASS 279	4,431,188	344	4,431,244	CLASS 357	288	4,431,268
			4,431,537	CLASS 244	CLASS 280	4,431,196	348	4,431,245	CLASS 358	310	4,431,269
			4,431,538	3.21	CLASS 281	4,431,197	9	4,431,246	CLASS 359	332	4,431,270
			4,431,539	3.3	CLASS 282	4,431,197	184	4,431,247	CLASS 360	334	4,431,271
			4,431,540	17.27	CLASS 283	4,431,198	231	4,431,248	CLASS 361	336	4,431,272
			4,431,541	75 R	CLASS 284	4,431,199	239	4,431,249	CLASS 362	337	4,431,273
			4,431,542	CLASS 248	CLASS 285	4,431,215	331	4,431,250	CLASS 363	338	4,431,274
			4,431,543	27.1	CLASS 286	4,431,216	335	4,431,251	CLASS 364	339	4,431,275
			4,431,544	65	CLASS 287	4,431,217	344	4,431,252	CLASS 365	340	4,431,276
			4,431,545	188.1	CLASS 288	4,431,218	348	4,431,253	CLASS 366	341	4,431,277
			4,431,546	215	CLASS 289	4,431,219	9	4,431,254	CLASS 367	342	4,431,278
			4,431,547	243	CLASS 290	4,431,220	184	4,431,255	CLASS 368	343	4,431,279
			4,431,548	445	CLASS 291	4,431,221	231	4,431,256	CLASS 369	344	4,431,280
			4,431,549	583	CLASS 292	4,431,222	239	4,431,257	CLASS 370	345	4,431,281
			4,431,550	CLASS 249	CLASS 293	4,431,223	331	4,431,258	CLASS 371	346	4,431,282
			4,431,551	211 J	CLASS 294	4,431,224	335	4,431,259	CLASS 372	347	4,431,283
			4,431,552	211 R	CLASS 295	4,431,225	344	4,431,260	CLASS 373	348	4,431,284
			4,431,553	214 R	CLASS 296	4,431,226	348	4,431,261	CLASS 374	349	4,431,285
			4,431,554	310	CLASS 297	4,431,227	9	4,431,262	CLASS 375	350	4,431,286
			4,431,555	332	CLASS 298	4,431,228	184	4,431,263	CLASS 376	351	4,431,287
			4,431,556	338	CLASS 299	4,431,229	231	4,431,264	CLASS 377	352	4,431,288
			4,431,557	361 C	CLASS 300	4,431,230	239	4,431,265	CLASS 378	353	4,431,289
			4,431,558	370	CLASS 301	4,431,231	331	4,431,266	CLASS 379	354	4,431,290
			4,431,559	374	CLASS 302	4,431,232	335	4,431,267	CLASS 380	355	4,431,291
			4,431,560	374	CLASS 303	4,431,233	344	4,431,268	CLASS 381	356	4,431,292
			4,431,561	486.1	CLASS 304	4,431,234	348	4,431,269	CLASS 382	357	4,431,293
			4,431,562	491.1	CLASS 305	4,431,235	9	4,431,270	CLASS 383	358	4,431,294
			4,431,563	566	CLASS 306	4,431,236	184	4,431,271	CLASS 384	359	4,431,295
			4,431,564	CLASS 251	CLASS 307	4,431,237	231	4,431,272	CLASS 385	360	4,431,296
			4,431,565	63.6	CLASS 308	4,431,238	239	4,431,273	CLASS 386	361	4,431,297
			4,431,566	86	CLASS 309	4,431,239	331	4,431,274	CLASS 387	362	4,431,298
			4,431,567	133	CLASS 310	4,431,240	335	4,431,275	CLASS 388	363	4,431,299
			4,431,568	144	CLASS 311	4,431,241	344	4,431,276	CLASS 389	364	4,431,300
			4,431,569	367	CLASS 312	4,431,242	348	4,431,277	CLASS 390	365	4,431,301
			4,431,570	CLASS 252	CLASS 313	4,431,243	9	4,431,278	CLASS 391	366	4,431,302
			4,431,571	8.5 A	CLASS 314	4,431,244	184	4,431,279	CLASS 392	367	4,431,303
			4,431,572	8.5 C	CLASS 315	4,431,245	231	4,431,280	CLASS 393	368	4,431,304
			4,431,573	32.7 E	CLASS 316	4,431,246	331	4,431,281	CLASS 394	369	4,431,305
			4,431,574	Re.31.522	CLASS 317	4,431,247	335	4,431,282	CLASS 395	370	4,431,306
			4,431,575	42.7	CLASS 318	4,431,248	344	4,431,283	CLASS 396	371	4,431,307
			4,431,576	49.5	CLASS 319	4,431,249	348	4,431,284	CLASS 397	372	4,431,308
			4,431,577	49.9	CLASS 320	4,431,250	9	4,431,285	CLASS 398	373	4,431,309
			4,431,578	52 A	CLASS 321	4,431,251	184	4,431,286	CLASS 399	374	4,431,310
			4,431,579	70	CLASS 322	4,431,252	231	4,431,287	CLASS 400	375	4,431,311
			4,431,580	306	CLASS 323	4,431,253	331	4,431,288	CLASS 401	376	4,431,312
			4,431,581	337	CLASS 324	4,431,254	335	4,431,289	CLASS 402	377	4,431,313
			4,431,582	CLASS 221	CLASS 325	4,431,255	344	4,431,290	CLASS 403	378	4,431,314
			4,431,583	63	CLASS 326	4,431,256	348	4,431,291	CLASS 404	379	4,431,315
			4,431,584	121	CLASS 327	4,431,257	9	4,431,292	CLASS 405	380	4,431,316
			4,431,585	CLASS 222	CLASS 328	4,431,258	184	4,431,293	CLASS 406	381	4,431,317
			4,431,586	3	CLASS 329	4,431,259	231	4,431,294	CLASS 407	382	4,431,318
			4,431,587	4	CLASS 330	4,431,260	331	4,431,295	CLASS 408	383	4,431,319
			4,431,588	159.2	CLASS 331	4,431,261	335	4,431,296	CLASS 409	384	4,431,320
			4,431,589	159.23	CLASS 332	4,431,262	344	4,431,297	CLASS 410	385	4,431,321
			4,431,590	192 E	CLASS 333	4,431,263	348	4,431,298	CLASS 411	386	4,431,322
			4,431,591	206	CLASS 334	4,431,264	9	4,431,299	CLASS 412	387	4,431,323
			4,431,592	224 R	CLASS 335	4,431,265	184	4,431,300	CLASS 413	388	4,431,324
			4,431,593	252	CLASS 336	4,431,266	231	4,431,301	CLASS 414	389	4,431,325
			4,431,594	294	CLASS 337	4,431,267	331	4,431,302	CLASS 415	390	4,431,326
			4,431,595	296	CLASS 338	4,431,268	335	4,431,303	CLASS 416	391	4,431,327
			4,431,596	298	CLASS 339	4,431,269	344	4,431,304	CLASS 417	392	4,431,328
			4,431,597	299 R	CLASS 340	4,431,270	348	4,431,305	CLASS 418	393	4,431,329
			4,431,598	300	CLASS 341	4,431,271	9	4,431,306	CLASS 419	394	4,431,330
			4,431,599	301	CLASS 342	4,431,272	184	4,431,307	CLASS 420	395	4,431,331
			4,431,600	302	CLASS 343	4,431,273	231	4,431,308	CLASS 421	396	4,431,332
			4,431,601	303	CLASS 344	4,431,274	331	4,431,309	CLASS 422	397	4,431,333
			4,431,602	304	CLASS 345	4,431,275	335	4,431,310	CLASS 423	398	4,431,334
			4,431,603	305	CLASS 346	4,431,276	344	4,431,311	CLASS 424	399	4,431,335
			4,431,604	306	CLASS 347	4,431,277	348	4,431,312	CLASS 425	400	4,431,336
			4,431,605	307	CLASS 348	4,431,278	9	4,431,313	CLASS 426	401	4,431,337
			4,431,606	308	CLASS 349	4,431,279	184	4,431,314	CLASS 427	402	4,431,338
			4,431,607	309	CLASS 350	4,431,280	231	4,431,315	CLASS 428	403	4,431,339
			4,431,608	310	CLASS 351	4,431,281	331	4,431,316	CLASS 429	404	4,431,340
			4,431,609	311	CLASS 352	4,431,282	335	4,431,317	CLASS 430	405	4,431,341
			4,431,610	312	CLASS 353	4,431,283	344	4,431,318	CLASS 431	406	4,431,342
			4,431,611	313	CLASS 354	4,431,284	348	4,431,319	CLASS 432	407	4,431,343
			4,431,612	314	CLASS 355	4,431,285	9	4,431,320	CLASS 433	408	4,431,344
			4,431,613	315	CLASS 356	4,431,286	184	4,431,321	CLASS 434	409	4,431,345
			4,431,614	316	CLASS 357	4,431,287	231	4,431,322	CLASS 435	410	4,431,346
			4,431,615	317	CLASS 358	4,431,288	331				

CLASSIFICATION OF DESIGNS

D2—	320	272.580	D8—	14	272.596		157	272.612	D15—	9.1	272.627		69	272.643				D27—		272.659
D3—	71	272.581		329	272.597		160	272.613			272.628		77	272.644				D28—	38	272.660
D4—	18	272.582	D9—	305	272.598		182	272.614			272.629		149	272.645					7	272.661
	25	272.583		337	272.599		187	272.615		9.2	272.630			272.646					35	272.662
D6—		272.584		346	272.600		187	272.616			272.631		D24—	27	272.647				38	272.663
	31	272.585		350	272.601		192	272.617		D16—	11	272.632		28	272.648				55	272.664
	57	272.586		375	272.602		345	272.618			32	272.633		36	272.649					
	78	272.587		384	272.603		35	272.619		D18—	134	272.634			272.650			D30—	8	272.665
	90	272.588		391	272.604		11	272.620		D19—	19	272.635		54	272.651					
	92	272.589		431	272.605		53	272.621			76	272.636		22	272.652				43	272.666
	99	272.590			272.606			272.622		D18—	92	272.637		3	272.653			D32—	29	272.667
	103	272.591		438	272.607		58	272.623		D21—	32	272.638		48	272.654				55	272.668
	185	272.592	D10—	74	272.608		73	272.623			49	272.639		51	272.655			D34—	31	272.670
	191	272.593	D11—	2	272.609		93	272.624			51	272.640		65	272.656				33	272.671
	256	272.594		107	272.610		94	272.625			131	272.641		87	272.657				38	272.672
D7—	16	272.595		133	272.611		113	272.626		D23—	25	272.642		138	272.658			D92—	14	272.673

CLASSIFICATION OF PLANTS

P—	68	5,189	69	5,190	5,191	74	5,192
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GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,430,885	4,431,871	4,431,708	4,431,187	4,431,227	4,430,956
	4,431,181	4,431,900	4,431,997	4,431,376	4,431,312	4,431,073
4 :	4,430,821	4,431,903	4,431,404	4,431,646	4,431,331	4,431,152
	4,431,503	4,431,920	Re.31,522	4,431,733	4,431,351	4,431,203
	4,431,874	4,431,930	4,430,794	4,431,810	4,431,356	4,431,228
5 :	4,431,061	4,431,936	4,430,913	4,431,828	4,431,387	4,431,330
6 :	4,430,760	4,431,948	4,430,932	4,431,988	4,431,401	4,431,364
	4,430,764	4,431,950	4,430,941	4,432,080	4,431,422	4,431,487
	4,430,765	4,431,960	4,430,998	4,431,035	4,431,456	4,431,525
	4,430,793	4,431,971	4,431,015	4,431,427	4,431,474	4,431,632
	4,430,807	4,431,986	4,431,022	4,431,684	4,431,496	4,431,699
	4,430,820	4,432,008	4,431,058	4,431,723	4,431,509	4,431,793
	4,430,897	4,432,025	4,431,093	4,431,736	4,431,510	4,431,803
	4,430,994	4,432,026	4,431,106	4,431,776	4,431,516	4,431,809
	4,431,004	4,432,035	4,431,107	4,431,839	4,431,517	4,431,890
	4,431,007	4,432,069	4,431,119	4,431,415	4,431,522	4,431,892
	4,431,028	4,432,075	4,431,205	4,430,933	4,431,527	4,432,015
	4,431,038	4,432,079	4,431,206	4,431,076	4,431,529	4,432,016
	4,431,041	4,432,083	4,431,238	4,431,133	4,431,547	4,432,086
	4,431,052	4,430,768	4,431,244	4,431,192	4,431,560	4,430,856
	4,431,054	4,430,837	4,431,245	4,431,194	4,431,570	4,430,895
	4,431,065	4,431,063	4,431,247	4,431,218	4,431,571	4,431,074
	4,431,069	4,431,070	4,431,264	4,431,295	4,431,572	4,431,109
	4,431,077	4,431,165	4,431,281	4,431,391	4,431,611	4,431,207
	4,431,080	4,431,184	4,431,332	4,431,395	4,431,618	4,431,393
	4,431,120	4,431,385	4,431,341	4,431,500	4,431,720	4,431,888
	4,431,125	4,431,434	4,431,405	4,431,506	4,431,748	4,431,925
	4,431,141	4,431,505	4,431,409	4,431,531	4,431,753	4,431,935
	4,431,149	4,431,927	4,431,412	4,431,670	4,431,787	4,431,974
	4,431,150	4,430,816	4,431,419	4,431,693	4,431,791	4,430,833
	4,431,157	4,430,835	4,431,465	4,431,858	4,431,797	4,430,864
	4,431,179	4,430,840	4,431,489	4,431,991	4,431,798	4,430,902
	4,431,186	4,430,867	4,431,526	4,431,998	4,431,799	4,431,154
	4,431,190	4,430,907	4,431,552	4,430,848	4,431,802	4,431,937
	4,431,259	4,431,135	4,431,665	4,431,168	4,431,836	4,430,802
	4,431,260	4,431,373	4,431,694	4,431,429	4,431,857	4,431,084
	4,431,289	4,431,423	4,431,739	4,431,867	4,431,911	4,431,515
	4,431,306	4,431,582	4,431,755	4,431,166	4,431,959	4,431,749
	4,431,313	4,431,594	4,431,861	4,431,280	4,431,977	4,430,762
	4,431,342	4,431,649	4,431,923	4,430,770	4,431,985	4,431,053
	4,431,344	4,431,698	4,431,928	4,430,843	4,432,011	4,431,067
	4,431,357	4,431,801	4,432,053	4,430,878	4,432,012	4,431,219
	4,431,371	4,431,841	4,432,057	4,430,903	4,432,034	4,431,347
	4,431,416	4,431,868	4,432,060	4,430,990	4,432,041	4,431,534
	4,431,459	4,431,877	4,432,067	4,431,019	Re.31,523	4,431,635
	4,431,477	4,431,880	4,432,070	4,431,031	4,430,775	4,431,747
	4,431,514	4,431,898	4,432,082	4,431,032	4,430,785	4,431,847
	4,431,538	4,431,909	4,430,942	4,431,033	4,430,830	4,430,914
	4,431,539	4,431,978	4,431,185	4,431,060	4,430,846	4,430,861
	4,431,626	4,430,980	4,431,336	4,431,083	4,430,859	4,430,917
	4,431,675	4,431,805	4,431,996	4,431,188	4,430,879	4,430,986
	4,431,740	4,431,104	4,431,050	4,431,189	4,430,904	4,431,230
	4,431,826	4,431,250	4,431,110	4,431,211	4,430,952	4,431,255

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,431,290	4,431,013	4,431,821	4,432,023	4,430,814	4,431,066
4,431,451	4,431,039	4,431,823	4,432,030	4,430,815	4,431,068
4,431,550	4,431,072	4,431,837	4,432,031	4,430,823	4,431,108
4,431,599	4,431,078	4,431,843	4,432,042	4,430,828	4,431,144
4,431,627	4,431,130	4,431,850	4,432,072	4,430,838	4,431,173
4,431,742	4,431,134	4,431,856	4,432,088	4,430,863	4,431,175
4,430,767	4,431,248	4,431,883	3,551,076	4,430,874	4,431,215
4,430,817	4,431,294	4,431,905	3,952,776	4,430,876	4,431,217
4,430,884	4,431,411	4,431,939	4,231,383	4,430,918	4,431,241
4,430,954	4,431,449	4,431,942	4,430,763	4,430,921	4,431,333
4,431,000	4,431,763	4,431,947	4,430,780	4,430,999	4,431,339
4,431,005	4,431,845	4,431,966	4,430,784	4,431,016	4,431,375
4,431,128	4,431,893	4,431,999	4,430,806	4,431,037	4,431,384
4,431,193	4,431,962	4,432,009	4,430,849	4,431,086	4,431,425
4,431,258	4,430,991	4,432,085	4,430,853	4,431,117	4,431,433
4,431,265	4,430,801	4,432,087	4,431,115	4,431,122	4,431,447
4,431,269	4,430,847	4,431,024	4,431,246	4,431,124	4,431,498
4,431,286	4,430,972	4,431,901	4,431,390	4,431,158	4,431,535
4,431,302	4,430,983	4,431,946	4,431,662	4,431,161	4,431,563
4,431,325	4,431,162	4,430,759	4,431,912	4,431,171	4,431,569
4,431,396	4,431,226	4,430,779	4,431,951	4,431,198	4,431,616
4,431,420	4,431,321	4,430,791	4,430,948	4,431,221	4,431,704
4,431,431	4,431,352	4,430,792	4,430,783	4,431,229	4,431,707
4,431,462	4,431,458	4,430,865	4,430,788	4,431,240	4,431,778
4,431,729	4,431,597	4,430,928	4,430,818	4,431,263	4,431,842
4,431,741	4,430,940	4,430,931	4,430,886	4,431,349	4,431,917
4,431,918	4,430,961	4,430,950	4,430,947	4,431,362	4,431,963
4,431,941	4,431,990	4,430,987	4,430,963	4,431,368	4,431,964
4,431,983	4,430,912	4,431,023	4,430,989	4,431,372	4,432,049
4,432,005	4,431,340	4,431,075	4,431,091	4,431,399	4,432,052
4,432,032	4,431,711	4,431,105	4,431,092	4,431,403	4,432,077
4,432,050	4,430,827	4,431,114	4,431,126	4,431,414	4,432,089
4,432,055	4,430,866	4,431,129	4,431,195	4,431,436	4,430,831
4,432,098	4,430,894	4,431,139	4,431,323	4,431,466	4,431,183
4,430,786	4,430,898	4,431,140	4,431,353	4,431,467	4,431,468
4,430,809	4,430,906	4,431,177	4,431,374	4,431,481	4,431,508
4,430,871	4,430,969	4,431,234	4,431,480	4,431,486	4,431,949
4,430,891	4,430,970	4,431,243	4,431,513	4,431,612	4,431,008
4,430,893	4,430,997	4,431,251	4,431,524	4,431,633	4,430,836
4,430,908	4,431,006	4,431,256	4,431,540	4,431,647	4,430,890
4,430,910	4,431,011	4,431,300	4,431,555	4,431,652	4,431,151
4,430,911	4,431,020	4,431,303	4,431,556	4,431,660	4,431,261
4,430,978	4,431,029	4,431,305	4,431,567	4,431,714	4,431,262
4,431,027	4,431,085	4,431,335	4,431,690	4,431,715	4,431,452
4,431,040	4,431,087	4,431,354	4,431,691	4,431,716	4,431,761
4,431,043	4,431,102	4,431,369	4,431,692	4,431,744	4,431,792
4,431,082	4,431,147	4,431,397	4,431,697	4,431,785	4,431,807
4,431,113	4,431,155	4,431,400	4,431,719	4,431,786	4,431,825
4,431,121	4,431,156	4,431,410	4,431,760	4,431,846	4,431,916
4,431,123	4,431,202	4,431,417	4,431,765	4,431,848	4,431,957
4,431,160	4,431,214	4,431,430	4,431,819	4,431,889	4,430,909
4,431,252	4,431,220	4,431,443	4,431,838	4,431,899	4,430,964
4,431,277	4,431,222	4,431,460	4,431,840	4,431,922	4,431,182
4,431,328	4,431,320	4,431,469	4,431,849	4,431,932	4,431,394
4,431,334	4,431,437	4,431,511	4,431,863	4,431,943	4,431,428
4,431,365	4,431,440	4,431,541	4,431,907	4,431,975	4,431,499
4,431,389	4,431,518	4,431,545	4,431,954	4,432,036	4,431,532
4,431,435	4,431,519	4,431,586	4,431,994	4,432,013	4,431,603
4,431,464	4,431,521	4,431,634	4,432,013	4,432,033	4,431,750
4,431,493	4,431,548	4,431,637	4,432,063	4,432,063	4,431,862
4,431,494	4,431,551	4,431,651	4,430,798	4,431,408	4,432,045
4,431,536	4,431,577	4,431,661	4,430,889	4,431,497	4,431,650
4,431,561	4,431,598	4,431,673	4,430,985	4,431,512	4,430,832
4,431,578	4,431,628	4,431,674	4,431,021	4,431,549	4,430,844
4,431,591	4,431,631	4,431,677	4,431,055	4,431,559	4,430,845
4,431,592	4,431,636	4,431,681	4,431,059	4,431,759	4,430,851
4,431,605	4,431,682	4,431,685	4,431,064	4,430,958	4,430,984
4,431,667	4,431,644	4,431,709	4,431,099	4,431,495	4,431,118
4,431,754	4,431,653	4,431,710	4,431,143	4,431,502	4,431,153
4,431,768	4,431,654	4,431,713	4,431,402	4,431,609	4,431,196
4,431,771	4,431,655	4,431,727	4,431,457	Re. 31,520	4,431,223
4,431,777	4,431,658	4,431,743	4,431,523	4,430,787	4,431,363
4,431,782	4,431,669	4,431,779	4,431,607	4,430,803	4,431,379
4,431,820	4,431,680	4,431,833	4,431,624	4,430,819	4,431,380
4,431,884	4,431,746	4,431,864	4,431,855	4,430,858	4,431,381
4,431,952	4,431,766	4,431,875	4,432,064	4,430,887	4,431,388
4,431,981	4,431,770	4,431,914	4,432,078	4,430,892	4,431,617
4,431,982	4,431,773	4,431,965	4,430,915	4,430,924	4,431,831
4,431,987	4,431,796	4,431,968	4,431,426	4,430,930	4,431,882
4,432,044	4,431,800	4,432,007	4,431,679	4,430,967	4,431,958
4,430,782	4,431,816	4,432,017	4,431,984	4,431,051	4,432,014
4,431,002	4,431,817	4,432,019	4,430,795	4,431,056	4,431,902
4,431,009					

DESIGN PATENTS

06 : 272,617	09 : 272,631	13 : 272,585	30 : 272,612	272,590	272,604
272,626	272,658	17 : 272,607	34 : 272,622	272,591	272,621
272,635	272,592	272,634	272,624	272,595	272,659
272,640	272,600	272,651	272,643	272,638	47 : 272,618
272,656	272,639	272,663	272,649	272,673	48 : 272,632
272,657	272,645	18 : 272,593	272,650	272,644	51 : 272,594
272,661	272,646	272,648	272,653	272,614	272,598
08 : 272,581	272,652	272,672	272,669	272,641	272,608
272,596	272,664	22 : 272,601	36 : 272,586	272,647	272,609
272,627	272,611	25 : 272,613	272,588	41 : 272,580	53 : 272,584
272,628	272,633	27 : 272,610	272,589	42 : 272,579	56 : 272,667
272,629	272,655				

PLANT PATENTS

06 : 5,192	41 : 5,189				
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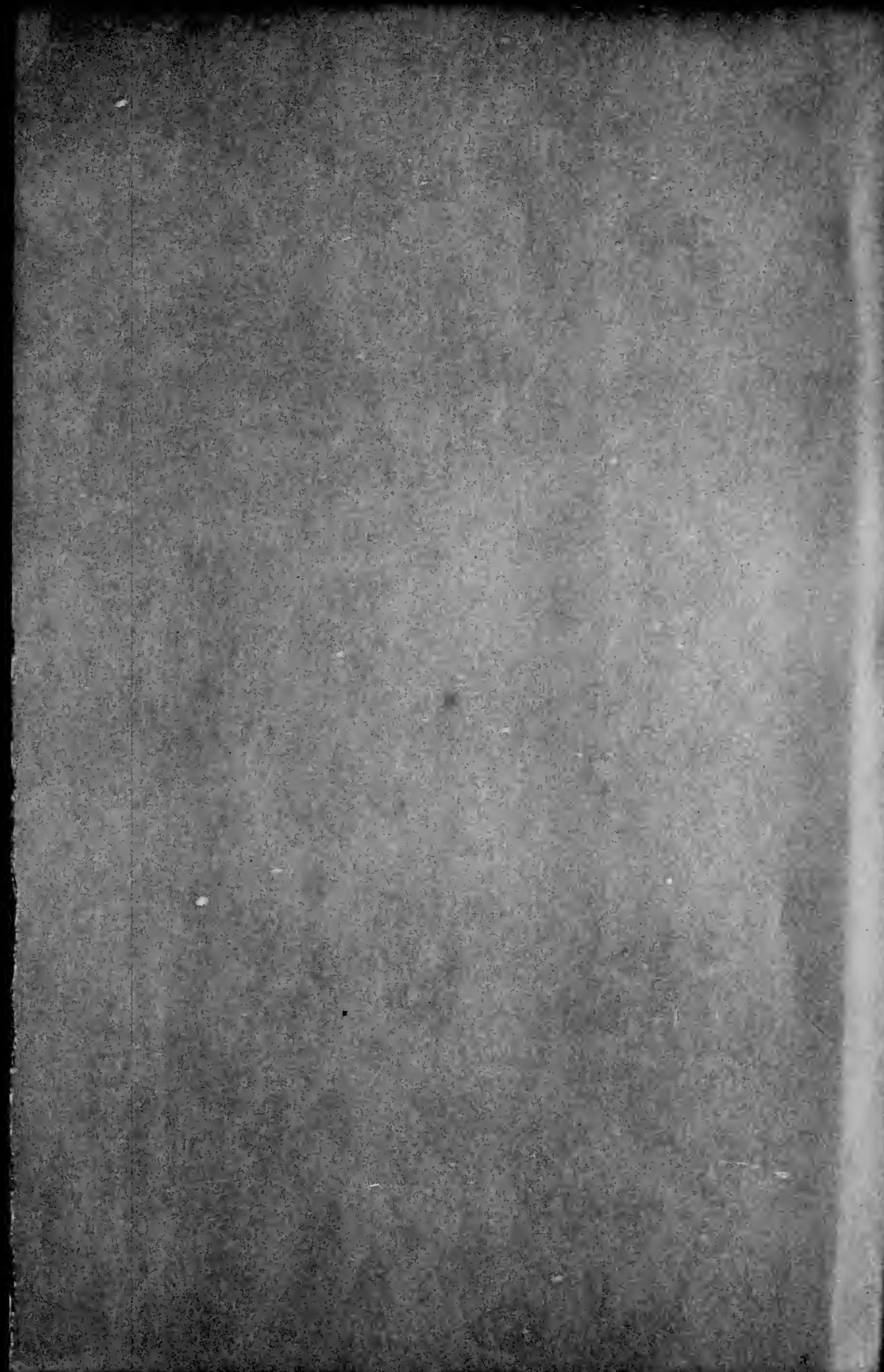
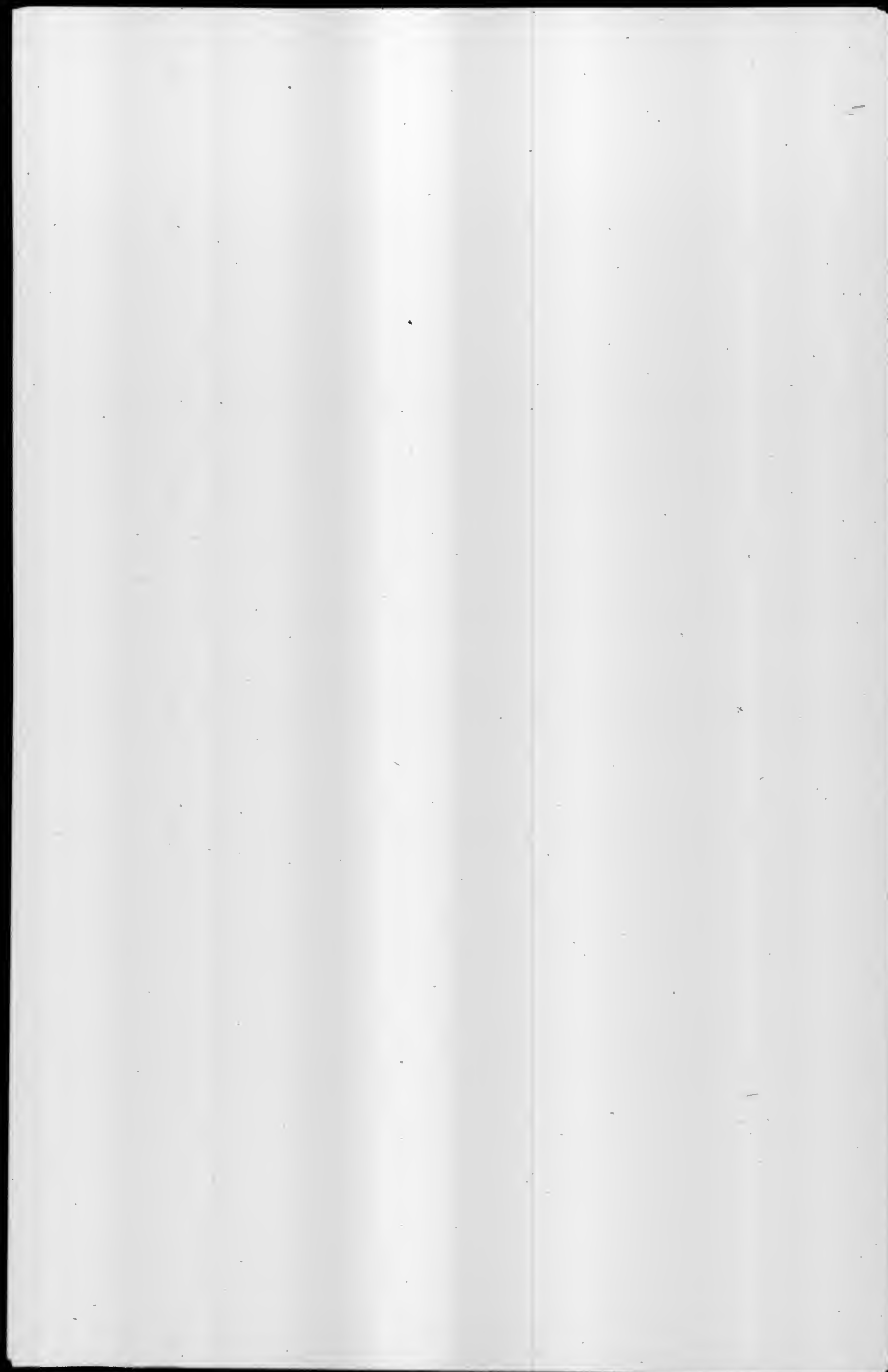
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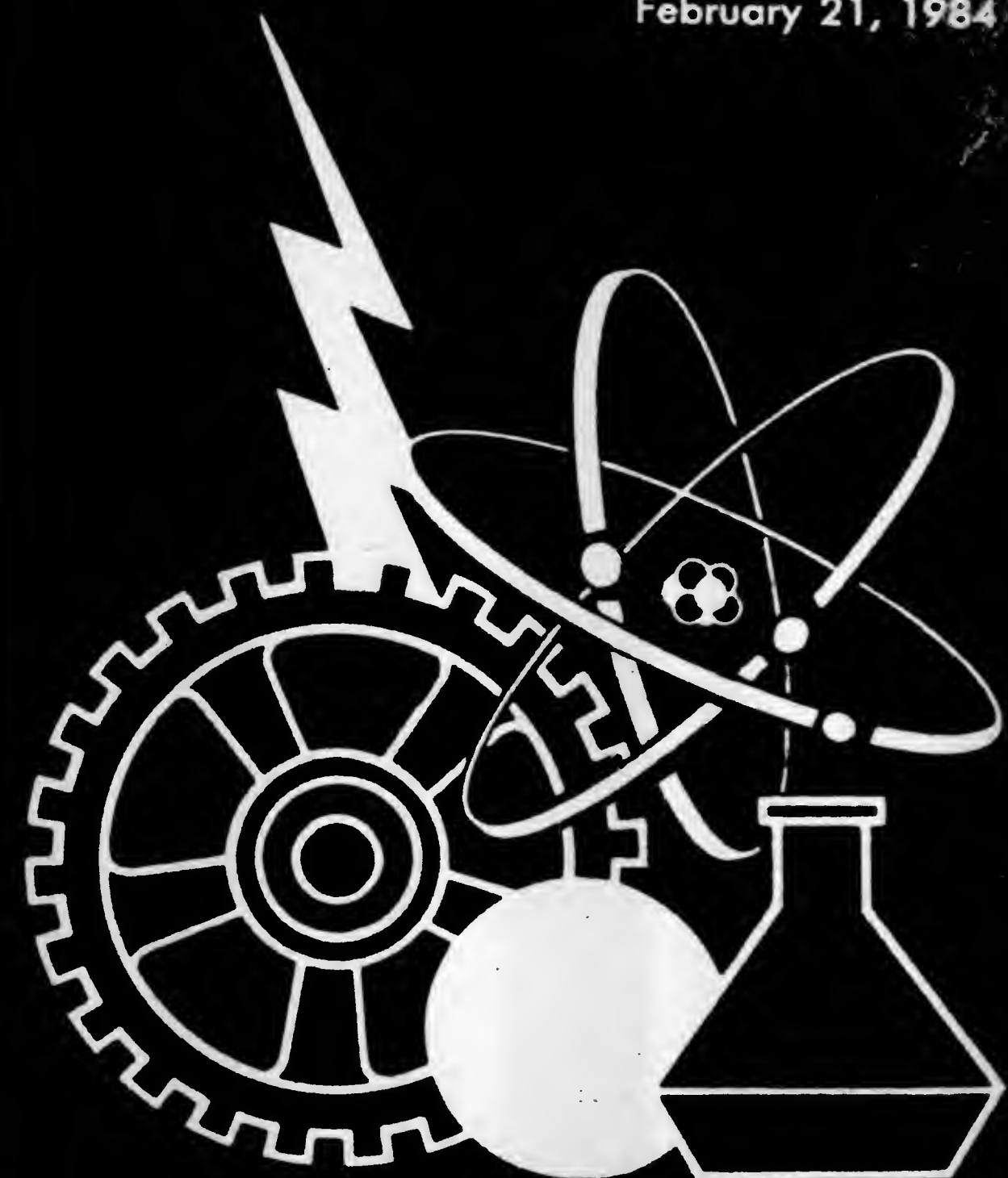
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February 21, 1984



U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, Commissioner

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OF COMMERCE

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and
Trademark
Office

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CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1039 OG 142
Reissue Applications Filed	1039 OG 142
Request for Reexamination Filed	1039 OG 142
Change in Search Fee for the European Patent Office as	
International Searching Authority	1039 OG 142
Certified Copies of Trademark Applications/Registrations	1039 OG 142
Extension of Time for Filing Notices of Opposition to Marks	
Published in the Official Gazette dated Jan. 17, 1984	1039 OG 143
Trademark Exposition	1039 OG 143
New Patent Granted Cover	1039 OG 144
Patent Certificates of Correction	1039 OG 145
Disclaimers	1039 OG 145
Disclaimers and Dedications	1039 OG 145
Reference Collections of U.S. Patents Available for Public Use in	
Patent Depository Libraries	1039 OG 146
Condition of Patent Applications	1039 OG 147
Reexaminations	923
Reissue Patents Granted (31,524)	925
Plant Patents Granted (5,193)	927
Patents Granted	
General and Mechanical (4,432,099)	929
Chemical (4,432,769)	1155
Electrical (4,433,198)	1273
Design Patents Granted (272,674)	1357
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 50
Classification of	
Patents (Including Reissues and Reexaminations)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at \$1.00 each; PLANT PATENTS in color, \$8.00 each; copies of TRADEMARKS at \$1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly, effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The Search fee for the European Patent Office was changed as of Feb. 14, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	\$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,

Jan. 30, 1984. Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,282,255, Re. S.N. 519,391, Filed Aug. 1, 1983, Cl. 426/7, METHOD AND STARTER COMPOSITIONS FOR THE GROWTH OF ACID PRODUCING BACTERIA AND BACTERIAL COMPOSITIONS PRODUCED THEREBY, William E. Sandine, et al., Owner of Record: *The State of Oregon by and Through the Oregon State Board of Higher Education on Behalf of Oregon State University, Corvallis, Ore.*, Attorney or Agent: Kenneth S. Klarquist, et al., Ex. Gp.: 172

4,287,021, Re. S.N. 519,369, Filed Aug. 1, 1983, Cl. 162/358, EXTENDED NIP PRESS, Edgar J. Justus, et al., Owner of Record: *Beloit Corp., Beloit, Wis.*, Attorney or Agent: Benjamin H. Sherman, et al., Ex. Gp.: 173

4,296,014, Re. S.N. 407,284, Filed Aug. 11, 1983, Cl. 260/29.659, AQUEOUS DISPERSION TYPE THERMOSETTING COATING COMPOSITION, Masaaki Hayashi, et al., Owner of Record: *Inventor*, Attorney or Agent: Albert L. Jacobs, et al., Ex. Gp.: 144

4,324,245, Re. S.N. 535,088, Filed Sept. 23, 1983, Cl. 128/287, COMFORTABLE DISPOSABLE DIAPERS HAVING ABSORBENT PANEL WITH BULGED SIDE MEMBERS, Frederick K. Mesek, et al., Owner

of Record: *Johnson & Johnson, New Brunswick, N.J.*, Attorney or Agent: Leonard P. Prusak, et al., Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for re-examination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,238,568, Reexam. No. 90/000,490, Requested: Jan. 23, 1984, Cl. 435/285, ROLLER BOTTLE, Robert W. Lynn, Owner of Record: *Becton, Dickinson and Co., Rutherford, N.J.*, Attorney or Agent: Kane, Dalsimer, et al., Ex. Gp.: 174, Requester: James W. Badie, New York, N.Y.

4,396,391, Reexam. No. 90/000,489, Requested: Jan. 23, 1984, Cl. 8/181, TREATING CELLULOSE TEXTILE FABRICS WITH DIMETHYLOL DIHYDROXYETHYLENEUREAPOLYOL, Bernard F. North, Owner of Record: *Requester*, Attorney or Agent: Cynthia Berlow, Ex. Gp.: 144, Requester: Sun Chemical Corp., New York, N.Y.

Change in Search Fee for the European Patent Office as International Searching Authority

The International Bureau has informed the U.S. Patent and Trademark Office that, due to a more favorable exchange rate for the US dollar, the International Search Fee for the European Patent Office as International Searching Authority will decrease from \$670 to \$620 for United States applicants. The reduced Search Fee becomes effective on Feb. 14, 1984.

Other PCT fees remain unchanged as follows:

Transmittal fee	\$ 125.00
Search fee for the	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
Basic Fee (first 30 pages)	295.00
Basic Supplemental Fee (each page over 30)	6.00
Designation fee (each country or region)	70.00

GERALD J. MOSSINGHOFF,

Jan. 30, 1984. Commissioner of Patents and Trademarks.

Certified Copies of Trademark Applications/Registrations

The Trademark Operation is in the process of microfilming its records and, as this proceeds, requests for certified copies of applications and, eventually, registrations, will be furnished from the microfilmed records. Such certified copies will not contain copies of the file jacket.

MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Jan. 17, 1984.

FEBRUARY 21, 1984

U.S. PATENT AND TRADEMARK OFFICE

1039 OG 143

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Jan. 17, 1984

Copies of the Official Gazette dated Jan. 17, 1984 were not mailed until Jan. 23, 1984. Therefore, for marks published in the Official Gazette dated Jan. 17, 1984, Notices of Opposition filed by Feb. 22, 1984 will be considered timely.

MARGARET M. LAURENCE

Jan. 27, 1984. Assistant Commissioner for Trademarks.

Trademark Exposition

The Patent and Trademark Office is holding its Second

Annual National Trademark Exposition in the Tourist Information Center (formerly the "Great Hall" and the Patent Office Search Room) in the Herbert C. Hoover Bldg. (Main Commerce), 14th St. and Constitution Ave., N.W., Washington, D.C., on Saturday and Sunday, July 7th and 8th, 1984.

There will be a \$100.00 fee for exhibitors. Parties wishing to exhibit should contact Peter Harab, at (703) 557-5237.

MARGARET M. LAURENCE,

Dec. 16, 1983. Assistant Commissioner for Trademarks.

NEW PATENT GRANT COVER

The Patent and Trademark Office is pleased to announce the winner of the contest recently conducted for a new design of the patent grant document.

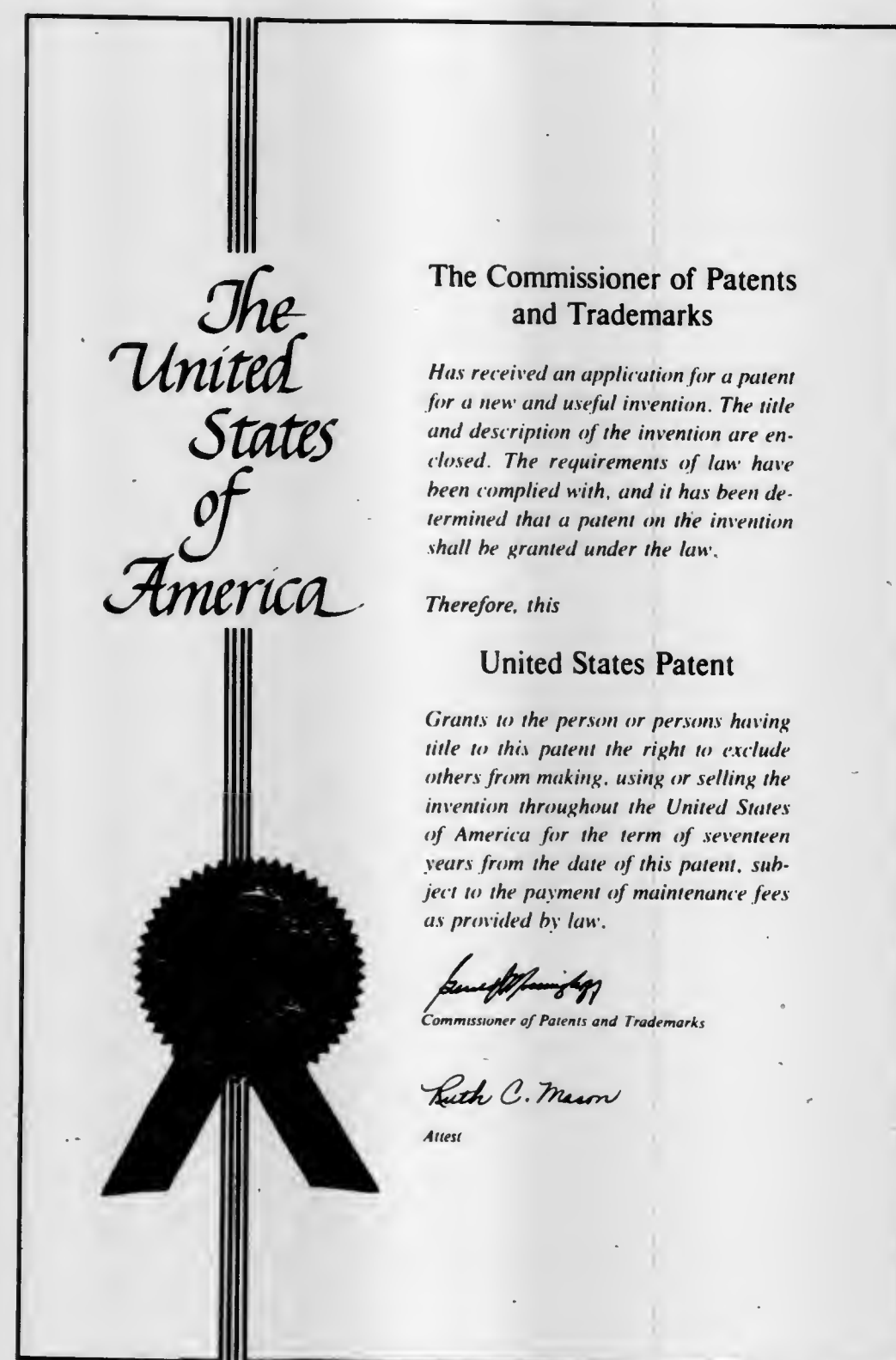
A distinguished panel of impartial judges selected the entry submitted by Mrs. Marina Kazragis of Chevy Chase, Maryland. Mrs. Kazragis received \$500 for the winning entry and an invitation to appear at the National Inventors Day ceremonies for the unveiling of the new design.

The new covers will be printed on off-white paper. The border and distinctive vertical rules will be printed in blue, and the text will be printed in black. The grant will be bound with brass fasteners, and the red ribbon will be sealed with a gold seal. The new covers will be used on patents issued on or after July 3, 1984.

A reduced size of the new patent cover is illustrated below.

February 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and
Trademarks.



PATENT NOTICES

Certificates of Correction for the Week of Feb. 21, 1984

3,663,706	4,377,862	4,401,225	4,409,460
4,001,836	4,377,923	4,401,506	4,409,672
4,199,919	4,378,308	4,402,056	4,409,706
4,224,209	4,382,083	4,402,796	4,410,249
4,259,472	4,383,135	4,403,578	4,410,417
4,288,297	4,384,071	4,404,085	4,410,685
4,288,355	4,384,362	4,404,217	4,411,268
4,291,549	4,385,347	4,404,221	4,412,300
4,299,856	4,385,414	4,404,271	4,413,017
4,301,119	4,386,099	4,404,305	4,413,319
4,320,750	4,388,315	4,404,321	4,413,399
4,324,798	4,389,317	4,404,557	4,413,467
4,342,078	4,389,734	4,404,871	4,413,945
4,351,834	4,390,528	4,404,919	4,414,988
4,352,275	4,391,409	4,405,035	4,415,970
4,355,101	4,391,908	4,405,094	4,417,528
4,356,328	4,391,967	4,405,597	4,417,573
4,356,366	4,392,141	4,405,618	4,417,662
4,360,458	4,392,152	4,405,631	4,419,116
4,362,078	4,392,423	4,406,166	4,419,308
4,362,506	4,393,538	4,407,149	4,419,402
4,367,199	4,396,975	4,407,333	4,420,166
4,368,136	4,398,268	4,407,500	4,420,675
4,368,413	4,398,315	4,408,066	4,421,067
4,370,390	4,398,708	4,408,235	4,421,885

Disclaimers

4,311,806.—*Daniel L. Dufour*, Longmeadow, Mass.
POLYBLENDS OF PVC AND STYRENE-MA-

LEIC ANHYDRIDE-RUBBER COPOLYMERS.
Patent dated Jan. 19, 1982. Disclaimer filed Sept. 12, 1983, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to all claims of said patent.

4,413,895.—*James K. Lee*, Pittsford, N.Y. ELECTRO-MAGNETIC ACTUATOR HAVING A COMPLIANT ARMATURE. Patent dated Nov. 8, 1983. Disclaimer filed Dec. 21, 1983, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to claims 1-24 of said patent.

Disclaimers and Dedications

Des. 267,145.—*Hogara Kaneko*, Fujisawa, Japan. STRAP TIGHTENER AND CUTTER. Patent dated Dec. 7, 1982. Disclaimer and Dedication filed Dec. 15, 1983, by the inventor.

Hereby disclaims and dedicates all claims of said patent.

4,390,047.—*Hogara Kaneko*, Fujisawa, Japan. TOOL FOR STRAP TENSIONING AND CUTTING. Patent dated June 28, 1983. Disclaimer and Dedication filed Dec. 15, 1983, by the inventor.

Hereby disclaims and dedicates all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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	Springfield: Illinois State Library	(217) 782-5430
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New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
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Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS RENE D. TEGTMEYER, Assistant Commissioner WILLIAM FELDMAN, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal-lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

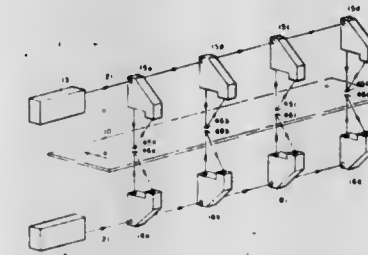
Patents Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

FEBRUARY 21, 1984

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,671,726 (165th)
**ELECTRO-OPTICAL APPARATUS FOR PRECISE
ON-LINE MEASUREMENT OF THE THICKNESS OF
MOVING STRIP MATERIAL**
James R. Kerr, Tigard, Oreg., assignor to Coe Manufacturing
Co., Painesville, Ohio
Reexamination Request No. 90/000,205, May 25, 1982.
Reexamination Certificate for Patent No. 3,671,726, issued Jun.
20, 1972, Ser. No. 827,266, May 23, 1969.
Int. Cl.³ G01B 11/06
U.S. Cl. 364—563



AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

The patentability of claims 6-13 is confirmed.

Claims 14-16 were previously disclaimed.

Claims 1 and 17 are determined to be patentable as amended:

Claims 2-5, dependent on amended claims, are determined
to be patentable.

New claims 18-20 are added and determined to be patent-
able.

1. Apparatus for monitoring and determining the instanta-
neous position of a surface of a [moving] strip of material
moving in a path of travel past said apparatus, comprising:

- (a) means for projecting a [spot] point of light on [the]
said surface of said moving strip [material];
- (b) means for gathering [reflected] light reflected from said
projected point [spot formed on said surface] and project-
ing said gathered light to form a real image of said [spot]
point on a plane; and
- (c) photodetection means for determining the position of
said image on said plane relative to a predetermined point
on said plane, said photodetection means providing a
quantified electrical signal output indicative of said image
position and representative of the instantaneous relative
position of said [strip] surface at the [cross-sectional]
location of said projected point of light [where said light
spot is incident thereon].

B1 3,903,158 (166th)
**PROCESS FOR REDUCING THE BIURET CONTENT IN
UREA**
Jose C. Fuentes, Mixcoac, and Ramon X. Marin, Satellite, both
of Mexico, assignors to Guanos y Fertilizantes de Mexico,
S.A., Mexico Reexamination Request No. 90/000,218,
Jun. 16, 1982.
Reexamination Request No. 90/000,218, Jun. 16, 1982.
Reexamination Certificate for Patent No. 3,903,158, issued Sep.
2, 1975, Ser. No. 361,008, May 16, 1973.
Int. Cl.³ C07C 126/00
U.S. Cl. 564—073

AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

Claims 1-6, having been finally determined to be unpatenta-
ble, are cancelled.

[1. A process for preferentially reducing any undesirable
biuret content in urea having a low amount of biuret in the
range of 2.92 per cent or less on a dry weight basis as an impu-
rity relative to said urea, said urea comprising either molten
urea or urea in aqueous solution having concentrations of 1.0
to 99.9% of urea, in which said molten urea or said urea in
solution is placed in contact with acidic or basic ion exchang-
ers.]

B1 4,123,415 (167th)
**REINFORCED THERMOPLASTIC POLYESTER
COMPOSITIONS HAVING IMPROVED RESISTANCE TO
HEAT DEFLECTION**
Allen D. Wambach, Evansville, Ind., assignor to General Elec-
tric Company, Pittsfield, Mass.
Reexamination Request No. 90/000,203, May 24, 1982.
Reexamination Certificate for Patent No. 4,123,415, issued Oct.
31, 1978, Ser. No. 747,636, Dec. 6, 1976.
The portion of the term of this patent subsequent to Jul. 27,
1983, has been disclaimed and dedicated (1035 O.E. 28).
Int. Cl.³ C08K 3/40
U.S. Cl. 524—451

AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

Claims 1-13, having been finally determined to be unpatent-
able, are cancelled.

[1. A reinforced thermoplastic composition having im-
proved retention of heat deflection temperature, said composi-
tion comprising:

- (a) a high molecular weight polyester resin; and
- (b) a reinforcement therefor comprising glass fibers, said
glass fibers having an average standard diameter of no
greater than about 0.0005 inches, wherein the glass fibers
are present in an amount at least sufficient to provide
reinforcement and to improve the resistance to deflection
by heat of said composition in comparison with a rein-
forced composition including glass fibers having an aver-
age standard diameter of greater than about 0.0005
inches.]

B1 4,349,070 (168th)

TUBE MAT HEAT EXCHANGER

Michael F. Zinn; Steven E. Krulick, and Ronald W. Leonard, all of Ellenville, N.Y., assignors to Bio-Energy Systems, Inc., Ellenville, N.Y.

Reexamination Request No. 90/000,397, Jun. 6, 1983.

Reexamination Certificate for Patent No. 4,349,070, issued Sep. 14, 1982, Ser. No. 178,885, Aug. 18, 1980.

Division of Ser. No. 17,728, Mar. 5, 1979, Pat. No. 4,270,596.

Int. Cl.³ F28F 9/02

U.S. Cl. 165—173

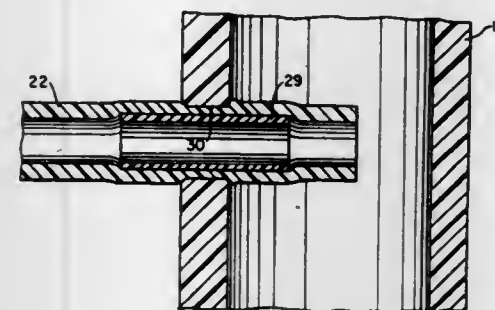
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-4 is confirmed.

1. In a heat exchanger wherein at least one fluid-conducting tube of elastomeric material having a certain inside and outside diameter communicates with the interior of a hollow manifold through a cylindrical hole in the wall thereof, connecting means joining the tube to the manifold comprising:

(a) a rigid cylindrical insert having an outside diameter at least as great as the inside diameter of the tube and an axial length greater than the axial length of the cylindrical hole in the manifold wall and pre-fitted within an end portion of the tube;

(b) the hole in the manifold wall having a diameter greater than the insert outside diameter and less than the tube diameter around said insert; and



(c) the tube end portion around the insert being located and compressed within said hole entirely from the exterior of the hollow manifold with the respective ends of the insert extending inwardly and outwardly of the manifold wall.

REISSUES

FEBRUARY 21, 1984

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,524

APPARATUS FOR THE DETECTION AND PROCESSING OF ELECTRIC SIGNALS

Peter Hoeberl, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

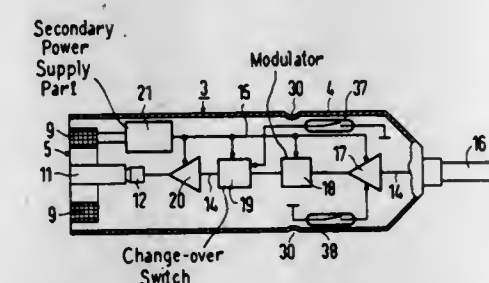
Original No. 4,236,086, dated Nov. 25, 1980, Ser. No. 953,189, Oct. 20, 1978. Application for reissue Mar. 26, 1981, Ser. No. 247,839

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752783

Int. Cl.³ H02J 3/00

U.S. Cl. 307—149

38 Claims



1. Apparatus for the detection and processing of electric signals, comprising a signal transmitter part and a signal processing part, primary and secondary coupling members providing signal path interconnection of said signal transmitter part and said signal processing part, and comprising a galvanically separative coupling location in the signal path interconnection between said primary and secondary coupling members, de-

tachably interengageable contact plug means adjoining each other at the galvanically separative coupling location and comprising a contact plug part (2, 2') on the side of the signal processing part (1) and a plug-in contact part (3, 3') on the side of the signal transmitter part (16), each pair of interconnected primary and secondary coupling members (8, 9; 10, 11) of the contact plug means having one of the pair of interconnected coupling members (8; 10) disposed in the contact plug part (2, 2') on the side of the signal processing part (1) and having the other of the pair of interconnected coupling members (9; 11) disposed in the corresponding plug-in contact part (3, 3') of the signal transmitter part (16) so that upon establishment of the signal path interconnection between the signal transmitter part (16) and the signal processing part (1) each pair of coupling members (8, 9; 10, 11) join together in spatial proximity as primary and secondary coupling members to form a galvanically separative coupling location, the coupling location of the contact plug means having associated therewith at a common interface (5, 40) primary and secondary coupling members (10; 11) for a use signal transmission and further primary and secondary coupling members (8; 9) providing energy transmission for power supply coupling, characterized in that, as primary and secondary coupling members for the use signal transmission, fiber optic light guide port elements (11; 10) are provided, of which a first port element (10) is disposed in the contact plug part (2, 2') on the side of the signal processing part (1) and the other fiber optic light guides port element (11) is located in the corresponding plug-in contact part (3, 3') of the signal transmitter (16), so that in the plugged-in state the fiber optic light guide port elements of the one and the other side are positioned relative to one another to provide an essentially continuous (seamless) signal transmission path.

PLANT PATENTS

GRANTED FEBRUARY 21, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,193

AFRICAN VIOLET PLANT

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Jun. 21, 1982, Ser. No. 390,799

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. A new and distinct cultivar of African violet known by the cultivar name Fairy Princess, and described and illustrated, and particularly characterized by its profuse flowering and vigorous growth habit, with the flowers being held above the foliage on erect peduncles to form a massive colorful bouquet, its flowers which range in color from essentially entirely purple to entirely white, and all ranges of variegation of these colors.

5,194

DIGITARIA DIDACTYLA GRASS PLANT

Hubert F. Whiting, Fallbrook, Calif., assignor to AMFAC Garden Perry's Inc., Ventura, Calif.

Filed Dec. 15, 1982, Ser. No. 432,977

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—88

1 Claim

1. A new variety of Digitaria Didactyla grass plant herein shown and described by a moderate bluish-green color as defined by the ISCC-NBS centroid color chart; this new variety has an earlier spring green color of a more open and upright growth habit with stolons that are glabrous except for a few hairs around the nodes; the anthers are a dark purple color as defined by the ISCC-NBS centroid color chart; the stigmas are of a strong reddish-purple color as defined by the ISCC-NBS centroid color chart.

PATENTS

GRANTED FEB. 21, 1984

ERRATA

For CLASS	See PATENT NO.
502-005	4,432,889
502-062	4,432,890
528-045	4,433,017
381-001	4,433,209
381-053	4,433,210
290-044	4,433,248
377-116	4,433,372

PATENTS

GRANTED FEBRUARY 21, 1984

GENERAL AND MECHANICAL

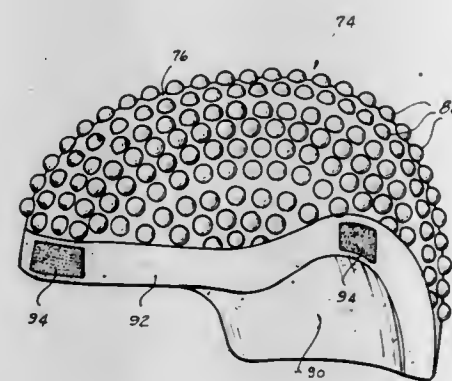
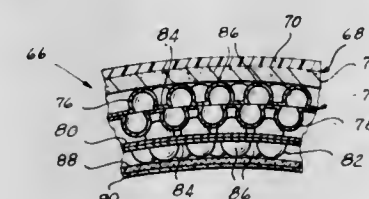
4,432,099

INDIVIDUALLY FITTED HELMET LINER

Shelly J. Grick, Jermyn, and Joseph A. Beautz, Forest City, both of Pa., assignors to Gentex Corporation, Carbondale, Pa.
Filed Jul. 9, 1982, Ser. No. 396,777
Int. Cl.³ A42B 3/02

U.S. Cl. 2-412

6 Claims



4. A helmet liner including in combination a plurality of layers conforming generally to the top of a wearer's head, said layers being assembled in superposed contacting relationship with one another and each comprising a sheet formed with spaced pockets on at least one side thereof, said sheets being elastic at normal temperatures and plastically deformable at elevated temperatures to permit adjustment of the effective thickness of said liner, said pockets being open and unfilled to allow their deformation in response to compressive contact with an adjacent layer.

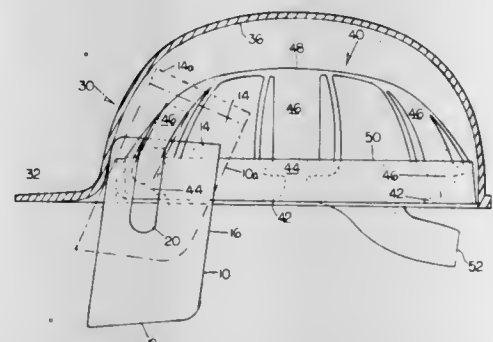
4,432,100

PROTECTIVE HELMET VISOR

Ronald E. Bates, Rte. 1, Box 23, Midland, Va. 22728
Filed Apr. 16, 1982, Ser. No. 369,010
Int. Cl.³ A42B 3/00; A61F 9/04

U.S. Cl. 2-424

6 Claims



6. A protective transparent visor for a hard hat helmet including an inverted bowl and a liner cap releasably joined at a plurality of points spaced apart along the interior circumference of said inverted bowl, said visor comprising a transparent plastic sheet defining at least a pair of elongated linear slots having a substantially vertical orientation, said slots being spaced apart and each said slot being adapted to surround one said point at which said liner cap joins said bowl, so that the

upper edge of said visor rests against said bowl between said liner cap and said bowl, and a lower edge of said visor extends beneath said bowl to provide a gripping surface for single-handed movement of said visor into and out of said bowl, and wherein said visor is pressed against the interior of said bowl by said liner cap so that friction between said bowl and said visor maintains said visor in a stationary position until adjusted by a wearer.

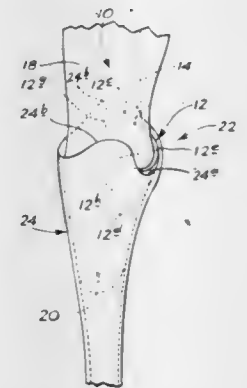
4,432,101

CUSHIONING PATELLAR SUPPORT DEVICE

Betty J. Johnson, P.O. Box 453, La Grande, Oreg. 97850
Filed Mar. 1, 1982, Ser. No. 353,618
Int. Cl.³ A61F 1/12, 1/02

U.S. Cl. 3-20

2 Claims



1. An adjustable, cushioning, non-limb-surrounding, patellar support device for use in conjunction with a prosthesis of the type designed for below-the-knee amputees, where such prosthesis includes a stump-receiving cavity defined with an upwardly facing rim having a valley portion therein at the front side of the prosthesis joined integrally with a pair of lateral-support hill portions which extend above the valley portion on opposite lateral sides of the prosthesis, said device comprising an insertable/removable, generally butterfly-shaped, flexible, inflatable/deflatable bag having enlarged, spaced wings which are joined through a central reduced-dimension neck, said bag being freely placeable within such cavity on the front side thereof, with upper marginal portions of the bag extending along a path generally following that of the above-mentioned valley and hill rim portions in the prosthesis slightly above the valley rim portion, and with opposite extremities of said wings extending to positions along the lateral sides of the prosthesis short of the back side, conduit means communicating with said bag for supplying and exhausting inflation fluid therefor, and user-manipulatable inflation/deflation means coupled for fluid communication with said conduit means, actuatable reversibly and infinitely to inflate and deflate said bag.

4,432,102

DISPENSING PACKAGE FOR AUTOMATICALLY RELEASING A CONTROLLED AMOUNT OF AN ADDITIVE SOLUTION INTO A WATER TANK AND BOWL

Keith Woodruff, Mountainside, and Arturo A. Villamarin, Mine Hill, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

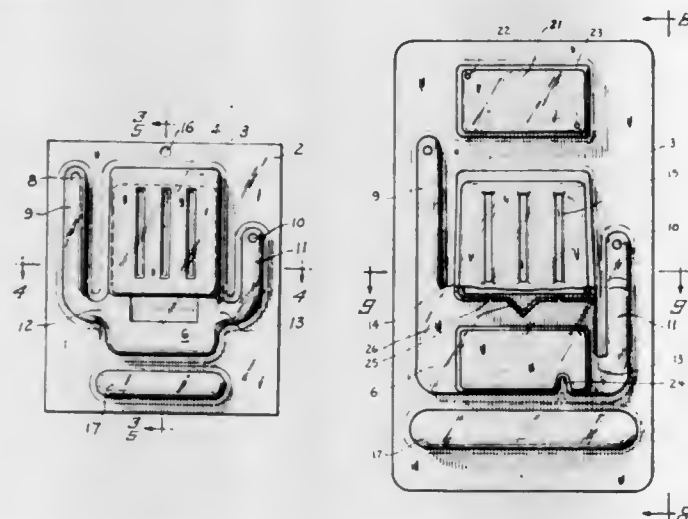
Filed Oct. 21, 1981, Ser. No. 313,408
Int. Cl.³ E03D 9/02, 9/01

U.S. Cl. 4-228

16 Claims

1. A dispensing device for a flushable toilet tank comprising

means to contain a compressed tablet of a solid additive, means to contain an aqueous solution of said solid additive, said aqueous solution containing means being positioned below said tablet containing means with an opening communicating between said additive tablet containing means and said solution containing means, means to admit water into said device, means to pass a predetermined quantity of said aqueous solution out of said device during a flush cycle, and means to control contact between said tablet and said aqueous solution to obtain a desired concentration of said aqueous solution; said water admitting means and said means to pass a predetermined quantity of said aqueous solution out of said device being in liquid contact with the water in the toilet tank during quiescent periods.



16. A dispensing device for a flushable toilet tank comprising a first cavity adapted to contain a tablet of a solid, water-soluble additive, a second cavity adapted to contain an aqueous solution of said additive and positioned below said first cavity, an opening communicating between said first and second cavities, a pair of standpipes each being positioned separately adjacent to said cavities, and having a port in the upper portion thereof opening to said tank, the bottom of each standpipe being in communication with the second cavity and the port of one standpipe being positioned above the second cavity and the other port such that a predetermined quantity of said aqueous solution is passed out of said second cavity into said tank during a flush cycle, said standpipes being connected to the second cavity in such a manner that contact between said tablet and said aqueous solution is controlled to obtain a desired concentration of said aqueous solution.

4,432,103

STEAM BATH APPARATUS AND LIQUID OR STEAM TREATMENT EQUIPMENT

Walter Hunziker, Villastrasse 14, 6010 Kriens, Switzerland
Filed Aug. 25, 1981, Ser. No. 296,230

Claims priority, application European Pat. Off., Aug. 26, 1980, 80810265.1

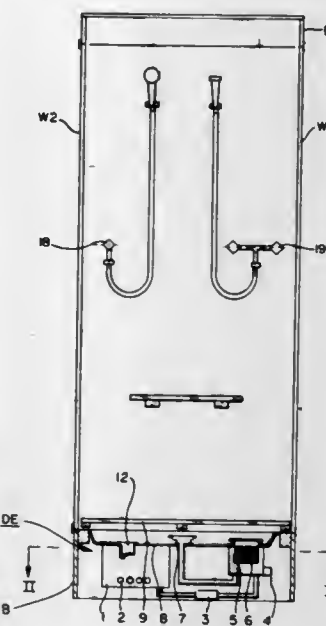
Int. Cl.³ A61H 33/06

U.S. Cl. 4—525

18 Claims

1. A steam bath apparatus comprising a cabinet with an access opening adapted to be closed by door means; a steam generating system located in said cabinet and including an evaporation surface, heating means for heating said evaporation surface and for heating liquid to be evaporated, a liquid outlet for supplying liquid to be evaporated onto said evaporation surface, collecting means for collecting any non-evaporated liquid from said evaporation surface, and pumping means having an inlet and an outlet for recirculating said non-evaporated liquid to said liquid outlet; said collecting means comprising a tub having a floor and disposed at the bottom of said cabinet and covered by a grating, said evaporation surface comprising at least a part of said floor of said tub, said liquid

outlet comprising nozzle means located above said floor of said tub and below said grating for dispensing a heated layer of



liquid flowing over said evaporation surface for generating steam within said cabinet.

4,432,104

BATHING EQUIPMENT FOR THE HANDICAPPED

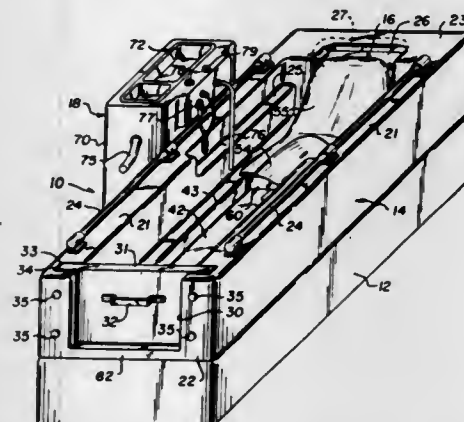
Jack S. Sasaki, 3231 Wellington Ave., Vancouver, British Columbia, Canada V5R 3X9

Filed Jun. 28, 1982, Ser. No. 393,181

Int. Cl.³ A47K 3/12

U.S. Cl. 4—555

10 Claims



1. Bathing equipment for a handicapped bather normally requiring a wheelchair, said equipment comprising: a tub having a bottom surface extending between foot and head ends of the tub, a base supporting the tub to dispose the bottom surface substantially at the height of a seat on the wheelchair, said tub having an entrance opening at the foot end, a gate mounted on the foot end to close the entrance opening and contain the bath water, a bath chair installed in the tub, and guide means within the tub supporting the bath chair for movement along the bottom surface between the head and foot ends whereby a bather transferred to the bath chair at the foot end from the wheelchair is movable back first and in a sitting, legs outstretched, position to the head end of the tub, said guide means comprising a guide channel extending longitudinally of the bottom surface, said guide channel having a level portion for supporting the bath chair near the gate and a ramp portion for supporting the bath chair near the head end of the tub, said bath chair having a wheel base frame endwise movable within the guide channel and a seat projecting laterally of the base frame over the bottom surface.

4,432,105

SHOWER DEVICE

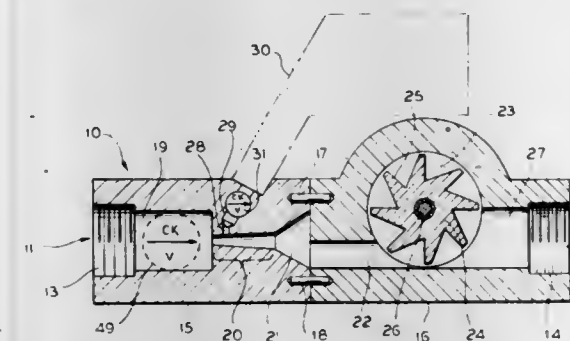
Pravin G. Pitroda, 401 Fairlane Dr., Joliet, Ill. 60435

Filed Nov. 18, 1981, Ser. No. 322,467

Int. Cl.³ A47K 3/22

U.S. Cl. 4—597

8 Claims



1. A shower device apparatus for combining a first liquid stream with selected secondary liquids into a mixed liquid outflow comprising:

an inlet for said first liquid stream at its first end;
an outlet for said outflow at its second end;

fluid conduit means for the passage of said liquid stream therethrough communicating with said inlet at its upstream end and with said outlet at its downstream end;

injection means interposed between said inlet and said outlet to inject selected ones of said secondary liquids into said first liquid stream within said fluid conduit;

said injection means having venturi means along a portion of its length so as to result in said secondary liquids being drawn into said fluid conduit; and

main mixing means positioned intermediate said injection means and said outlet in a position, substantially within said fluid conduit and cooperating with said venturi means to deliver said outflow in mixed fashion;

said main mixing means including rotatable impeller means positioned proximate said outlet for contact with and mixing of said first and second liquids into said liquid stream.

4,432,106

CLAMP ASSEMBLY FOR SELF-RIMMING SINKS OR BASINS

Ronald A. Smith, Willowdale, Canada, assignor to Arro-Mac Manufacturing Inc., Mississauga, Canada

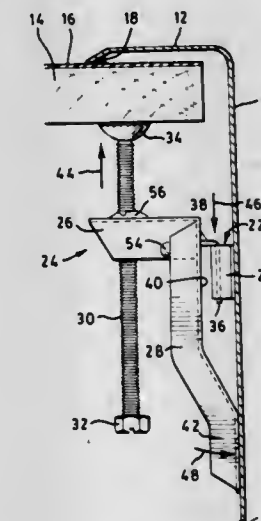
Filed Sep. 20, 1982, Ser. No. 420,266

Claims priority, application Canada, Jun. 23, 1982, 405816

Int. Cl.³ A47K 3/16; E03C 1/33

U.S. Cl. 4—633

11 Claims



1. A clamp assembly for use with a self-rimming sink or basin intended for mounting through an opening in a supporting counter structure which has an upper surface over which the rim of said sink or basin will fit, and having an under surface, where said sink or basin has a bowl and a plurality of brackets secured at least intermittently around the outer surface of said

bowl at positions intermediate the height of said bowl, and where each of said brackets has a downwardly facing opening from the top thereof adjacent the outer surface of said bowl at said bracket, comprising:

a generally L-shaped clamp structure having a first, generally horizontally disposed arm, and a second, generally vertically disposed leg depending downwardly from said arm;

a bolt threadably received in and passed substantially perpendicularly through said arm, and having engageable means at the lower end of said bolt by which said bolt may be turned, and means at the upper end of said bolt for engaging the under surface of said supporting structure; and a clamp arm spaced from the side of said leg opposite said arm, and depending downwardly from a clamping shoulder upstanding from said leg, said clamp arm being substantially parallel to the contiguous portions of said leg and being spaced therefrom a sufficient distance to accommodate one of said brackets;

where the lower portion of said leg is offset from the upper portion thereof in a direction away from said arm and to an extent that it will contact the outer surface of said bowl at a place below the bracket with which said clamp arm is engaged, and so as to keep said bolt substantially in a vertical orientation.

4,432,107

NECK SUPPORT REST

Robert F. Clark, 180 George St., Rockwood, Ontario, Canada (N0B 2K0), and Hugh A. Smythe, 2 Heathbridge Park Rd., Toronto, Ontario, Canada (M4G 2Y6)

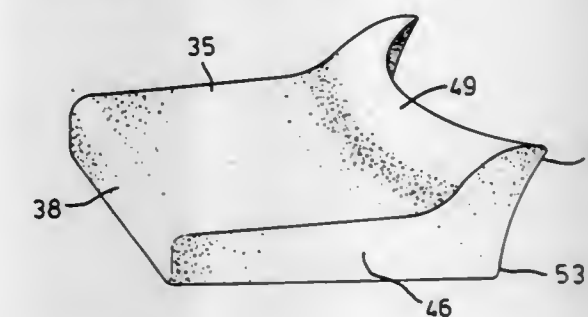
Filed Oct. 1, 1981, Ser. No. 307,639

Claims priority, application United Kingdom, Oct. 7, 1980, 8032331

Int. Cl.³ A47G 9/00

U.S. Cl. 5—436

5 Claims



1. A neck support rest comprising a unitary body of resilient material, the body having a base portion with top and bottom surfaces, a rear edge and a front edge, and an upstanding ridge along the said front edge, the top of the ridge projecting forwardly with respect to the bottom of the front edge of the body in order to ensure that the ridge can tuck into and hence support the lower neck region of a person lying on his side with his head on the base portion, the front edge of the base portion merging smoothly into the ridge, to define a forwardly and upwardly sloping profile, the forwardly projecting top of the ridge tending to deform downwardly and forwardly under the imposition of downward pressure thereon.

4,432,108

THERAPEUTIC LEG SUPPORT

Gerda L. Chapman, 1805 Montana Ave., Coeur d'Alene, Id. 83814

Filed Oct. 9, 1981, Ser. No. 309,922

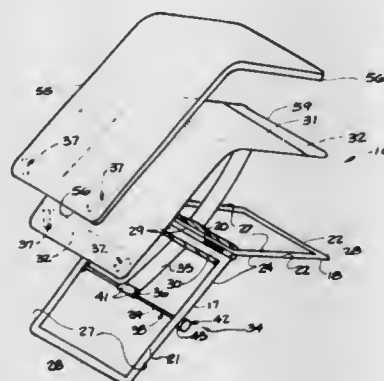
Int. Cl.³ A47C 21/00

U.S. Cl. 5—443

13 Claims

1. An adjustable therapeutic leg support, comprising: a pair of rigid frame members hinged for pivotal motion about a transverse hinge axis and including an upper leg support frame member with an upper leg support surface and an opposed bottom surface on one side of the hinge

axis and a lower leg support frame member with a lower leg support surface and an opposed bottom surface on an opposite side of the hinge axis; said rigid frame members including free outside end edges with surfaces thereon for directly contacting a supporting surface such as a bed;



means interconnecting the frame members on opposite sides of the hinge axis for adjustably positioning the frame members about the hinge axis at any desired angular relationship between an unfolded orientation wherein both frame members are substantially flat and a folded orientation wherein both frame members are substantially up-right and face one another.

4,432,109

PLASTIC SUPPORT PLATFORM FOR MATTRESS STRUCTURE

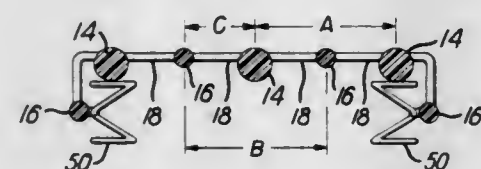
Paul J. Huspeni, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Jan. 25, 1982, Ser. No. 342,216

Int. Cl.³ A47C 23/32

U.S. Cl. 5—478

11 Claims



1. A mattress comprising a plurality of spaced springs, a plastic support platform having a plurality of extruded unoriented plastic spaced longitudinal support members and a plurality of extruded unoriented plastic spaced longitudinal stabilizing members, at least one of said stabilizing members being in position in each space between said longitudinal support members, said stabilizing members being smaller than said support members, a plurality of extruded plastic spaced cross-stabilizing members that intersect said support and stabilizing members substantially at a right angle and are integrally joined at the crossings, said cross-stabilizing members being oriented and smaller than said longitudinal support members, said support platform being in position on top of said springs with said longitudinal support members extending along the length of the mattress in contact with a majority of said plurality of springs, said longitudinal members having a breaking load of at least about 35 pounds for a strip having one large longitudinal member and one small longitudinal stabilizing member and said cross-stabilizing members having a breaking load of at least about 75 pounds for a strip having twelve said cross-stabilizing members and cushioning material positioned on top of said plastic support platform.

4,432,110 CUSHIONING STRUCTURE

James B. Sutton, Longton, England, assignor to Harrison & Jones (Brookside) Limited, Oldham, England

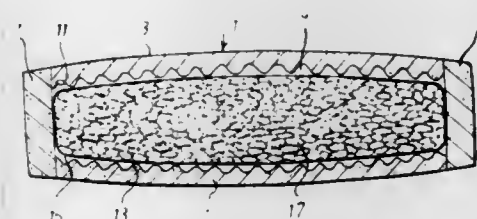
Filed Jul. 10, 1981, Ser. No. 282,154

Claims priority, application United Kingdom, Jul. 11, 1980, 8022774

Int. Cl.³ A47C 27/22, 27/14

U.S. Cl. 5—481

7 Claims



1. A cushioning structure comprising a flexible foam plastic casing having an internal face which is formed with a finger profile, a stockinette bag received within the casing, and a filling of shredded flexible foam plastic loosely packed within the bag.

4,432,111

PROCEDURE FOR WASHING CLOTHES

Ernst H. Hoffmann, Dortmund, and Hans F. Arendt, Sersheim, both of Fed. Rep. of Germany, assignors to Estel-Hoesch Werke Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 149,116, May 12, 1980, Pat. No. 4,344,198. This application Jun. 29, 1981, Ser. No. 278,108

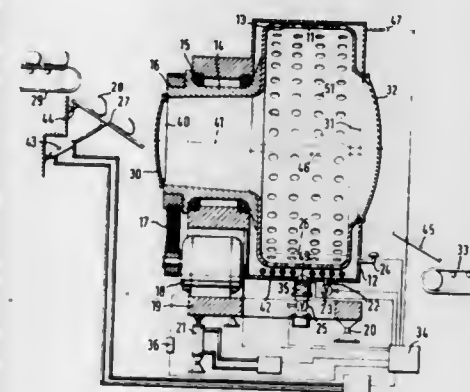
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024571; Nov. 8, 1980, 3042198

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ D06F 23/02

U.S. Cl. 8—158

14 Claims



1. Procedure for the washing of textiles through a wash and rinse cycle in a tub-type washing machine with a horizontally arranged tub, in which during the washing and rinsing cycles the tub is driven with a rotational velocity at which the centrifugal velocity at the tub case is between 0.4 and 0.95 g, so that the textiles, during the washing and rinsing cycles, are repeatedly lifted up, and then fall in a trajectory path onto the lower portion of the tub and that between washing and rinsing cycles and after the last rinsing cycle they are spun, characterized in that when the machine is loaded, the tub rotates at a rotational velocity at which the centrifugal velocity at the tub case is 0.2–0.6 g, that washing liquid is constantly supplied until all textiles are wetted with an amount of washing liquid equal to between 45 and 100% of the maximum amount that can be absorbed by the textiles, that following the washing cycle the tub is driven at a certain spin speed until a first amount of washing liquid is completely spun out, then spinning is continued until a further amount of liquid is spun out, that during the subsequent rinsing cycle water is led in in the same manner as washing liquid is led in for the washing cycle, and that the tub

is driven with the same speed during washing, and that after each subsequent rinsing cycle spinning is done in the same manner as after washing.

4,432,112

MACHINE FOR CLEANING SHOE SOLES

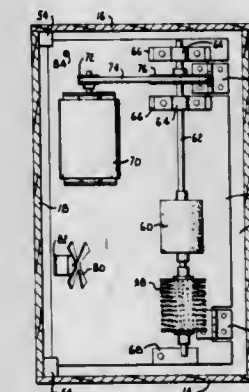
Max Muller, 10920 W. 100th Ter., Overland Park, Kans. 66214; Eugene B. Lilly, 4209 W. 104th Ter., Overland Park, Kans. 66207, and Richard E. Bott, R.R. 2, Box 214, Peculiar, Mo. 64078

Filed Nov. 24, 1980, Ser. No. 209,672

Int. Cl.³ A47L 23/22

U.S. Cl. 15—36

13 Claims



1. A machine for cleaning shoe soles comprising: a frame presenting a foot panel thereon for receiving a shoe sole and a floor panel spaced beneath the foot panel, said foot panel presenting an opening therein; a platform; a hinge structure mounting said platform for pivotal movement relative to said floor panel about a generally horizontal hinge axis; a rotary shoe cleaning element supported for rotation on said platform at a location to extend partially through said opening; a drive motor on said platform drivingly coupled with said cleaning element to effect rotation thereof, said floor panel and platform being removable from said frame as a unit together with the drive motor and cleaning element on the platform; a removable back panel on said frame providing access to the floor panel and platform for removal thereof as a unit when the back panel is removed from the frame; and resilient means urging said platform about said hinge axis in a direction to position said cleaning element in projection through said opening to rotate against a shoe sole for cleaning of same, said resilient means yielding upon application of foot pressure to said cleaning element, thereby permitting depression of the cleaning element into the opening.

4. A machine for cleaning shoe soles, comprising: a frame presenting a foot panel thereon for receiving a shoe sole, said panel presenting an opening therein; a rotary shoe cleaning element supported for rotation on the frame at a location to protrude through said opening in the foot panel; a two speed motor drivingly coupled with said cleaning element to effect rotation thereof at a relatively low speed when the motor is in a low speed mode of operation and at a relatively high speed when the motor is in a high speed mode of operation; first electronic audio means for emitting background sound electronically simulating a motor operating at a relatively low speed when said motor is in the low speed mode; manual switch means for effecting the high speed mode of the motor; and second electronic audio means for emitting background sound electronically simulating a motor operating at a

relatively high speed when said motor is in the high speed mode.

4,432,113

BACK WASHER

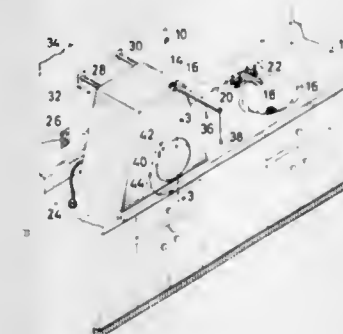
Howard W. Gouge, Rte. 1, Box 256, Unicoi, Tenn. 37692

Filed Mar. 8, 1982, Ser. No. 356,112

Int. Cl.³ A61H 33/00

U.S. Cl. 15—97 R

5 Claims



1. Apparatus for providing automatic back washing for a user comprising: an external electrical power source; an electrical driving means for receiving electrical power from said external electrical power source and for providing rotational power to a drive shaft; gearing means having an input connected to said power source drive shaft and an output power shaft extending from a first end to a further end, said gearing means receiving the output rotational power of said electrical drive means and providing selected motion to said output power shaft; switching means connected between said external electrical power source and said electrical driving means for selectively turning said electrical driving means on and off; a housing having an upper portion, lower portion and a front face for supporting, containing therein, and protecting said electrical driving means, said gearing means and said switching means, said housing further defining an aperture in said front face to allow said further end of said power shaft of said gearing means to extend through said aperture and external to said housing; a mounting member detachably connected to said output power shaft such that motion of said power shaft causes a corresponding motion of said mounting member; padding attached to said mounting member; an outside cover readily attachable and detachable to and from said padding to allow easy exchange, said automatic back washing apparatus operating to provide movement to said padding and cover to allow said user to place the back against said padding and cover, and thereby wash their back; and wherein said switching means includes an insulated actuating member external to said housing extending from said front face at said upper portion of said housing to a position readily accessible by said user to allow ready operation of said switching means by said user while said apparatus is actively washing said user's back.

4,432,114

DENTAL-CARE DEVICE AND BRUSH BODY SUITABLE THEREFOR

Johan H. Goudsmit, Rijnsburgerweg 48, 2333 AB Leiden, Netherlands

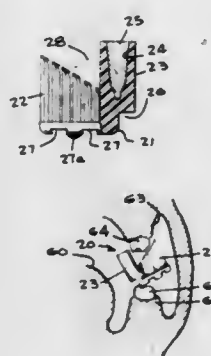
Continuation-in-part of Ser. No. 81,921, Oct. 4, 1979, Pat. No. 4,346,493. This application Aug. 27, 1982, Ser. No. 412,581

Claims priority, application Netherlands, Oct. 10, 1978, 7810204

Int. Cl.³ B08B 1/00; A46B 904

U.S. Cl. 15—104.93

20 Claims



1. A dental care device for insertion entirely within the mouth of a human for effecting a cleaning action by bristles on tooth surfaces by chewing comprising:

- (a) a chewable brush body of non-edible pliable, material
- (b) said brush body comprising:
 - (i) a single support body,
 - (ii) bristles extending from a surface of said support body only substantially in the same direction, and
 - (iii) a pliable and resilient projection extending from said surface of said support body, adjacent the edge thereof, substantially in the same direction as said bristles,
- (c) said brush having such dimensions that it can be inserted entirely into the human mouth and manipulated within the mouth by chewing upon the pliable and resilient projection.

4,432,115

JOINTER FOR COMPACTING AND SMOOTHING MORTAR JOINTS OF MASONRY WALLS

Henry P. Fehler, P.O. Box 194, Wolseley, Saskatchewan, Canada (SOG 5H0)

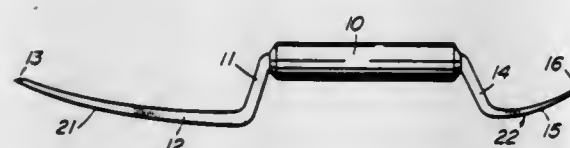
Filed Jul. 12, 1982, Ser. No. 397,225

Claims priority, application Canada, Feb. 5, 1981, 370148

Int. Cl.³ E04G 21/20

U.S. Cl. 15—105.5

16 Claims



1. A jointer for compacting and smoothing mortar joints of masonry walls, of the type comprising, in combination:

- (a) an elongate handle;
- (b) a first smoothing trowel portion at one end of said handle and fixedly secured to same;
- (c) a second smoothing trowel portion at the other end of said handle and fixedly secured to same;
- (d) at least one of said first and second trowel portions having an elongate smoothing surface whose width gradually decreases in the direction away from the respective end of said handle;
- (e) said first trowel portion being convexly curved along an arcuate line generally coplanar with the axis of elongation of said handle but offset relative to said axis.

4,432,116

CASTER SHIMMY DAMPER INCLUDING A VISCOUS DAMPING MEDIUM

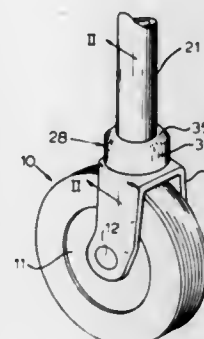
John C. Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 251,064, Apr. 6, 1981, abandoned. This application Jul. 19, 1983, Ser. No. 514,852

Int. Cl.³ B60B 33/00

U.S. Cl. 16—35 D

6 Claims



1. In a damper comprising a small diameter axially elongate annular assembly especially useful for attenuating shimmy of a wheelchair caster relative to a caster-supported cylindrical chair leg member to which the caster is mounted for swiveling about a vertical axis:

- a first axially extending annular damper portion arranged to engage concentrically about said leg member and having at one end radially inwardly directed means for holding said first annular damper portion fixed against rotation with respect to said leg member;
- said first damper portion having an annular axially elongate cylindrical first working surface of substantial axial length and arranged to be coaxial with said axis;
- a second axially extending annular damper portion arranged to fit concentrically about said leg member and having at one end radially inwardly directed means for holding said second damper portion fixedly corotative with the caster;
- said second damper portion having an annular axially elongate second working surface complementary to and facing toward said first working surface of said first damper portion;
- said working surfaces being in narrowly radially spaced apart relation and thereby defining an axially elongated essentially straight working chamber gap having axially opposite ends;
- a viscous damping medium in said working chamber gap and providing a viscous shear coupling for yieldably resisting relative rotary movements of said working surfaces;
- dynamic sealing ring means carried by and between said damper portions and extending across and sealing said axially opposite ends of said working chamber gap against leakage of said damping medium;
- said first annular damper portion comprising an axially extending ring member having opposite ends, and said second damper portion comprising a pair of annular parts one of which is axially elongate and of generally L-shape in cross section and the other of which is a retainer ring, means securing said pair of annular parts corotatively together and defining a cavity which is complementary to said ring member and in which the ring member is received with said working surfaces in opposed relation, and radially extending surfaces of said parts extending across said opposite ends of said gap and also across said opposite ends of said ring member;
- said ring member having respective sealing ring grooves at the ends of said first working surface and opening not only toward said second working surface but also toward said radially extending surfaces, and said sealing ring means engaging sealingly in said grooves and projecting from said grooves into sealing engagement with the respective

opposite end portions of said second working surface and also with said radially extending surfaces; and said retainer ring projecting radially inwardly to underly said ring member and having a radially inwardly opening keying slot within which is adapted to be engaged, as a key, the radially outwardly projecting portion of a set screw carried by the caster for thereby locking said second damper portion corotatively with the caster.

4,432,117

FISH SCALER

Metro Isklw, 9511-75 St., Edmonton, Alberta, Canada T6C 2H8

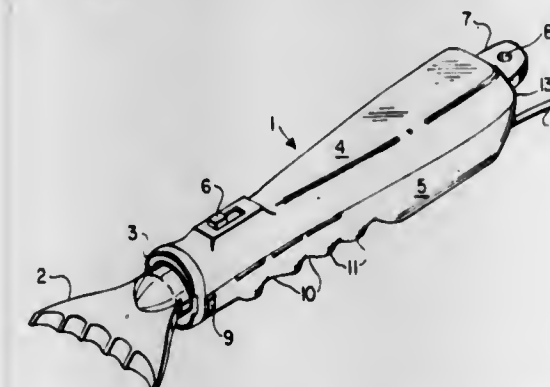
Filed Jan. 25, 1982, Ser. No. 342,183

Claims priority, application Canada, Oct. 8, 1981, 387576

Int. Cl.³ A22C 25/02

U.S. Cl. 17—66

5 Claims



1. A fish scaler comprising a casing having a longitudinal axis; motor means in said casing; shaft means in said casing for driving by said motor means; transmission means in said casing for changing rotary motion of said shaft into longitudinal reciprocating motion along said axis; blade holder means connected to said transmission means; scaling blade means for mounting in said blade holder means, and a scaling edge at the distal end of said blade means extending transverse to said axis, whereby actuation of said motor results in reciprocating motion of said blade means for dislodging fish scales.

4,432,118

SLIVER COILER

Albert Rosink, Nordhorn, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

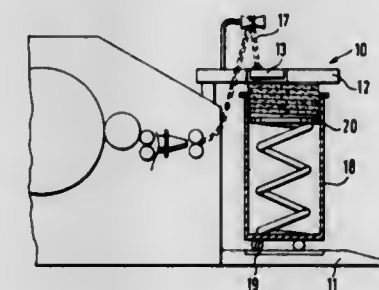
Filed Mar. 12, 1982, Ser. No. 357,674

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110440

Int. Cl.³ B65H 54/80

U.S. Cl. 19—159 R

7 Claims



1. In a sliver coiler including a can having an open top and a central axis; a support for positioning the can in a generally upright orientation; means for rotating said can about said axis on said support; a rotary head having an axis of rotation and guide means arranged eccentrically with respect to said axis of rotation, said central axis of said can being spaced from said axis of rotation of said rotary head, whereby during rotation of said rotary head and said can said rotary head deposits sliver in said can in superposed continuous circular coils being eccentric with respect to said central axis; the improvement comprising

4,432,119

ELECTRICALLY RELEASED SEAT BELT BUCKLE

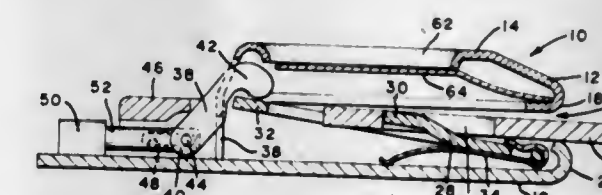
O. Jay Schwark, Utica, Mich., and Yogendra S. Loomba, Knoxville, Tenn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 8, 1978, Ser. No. 940,543

Int. Cl.³ A44B 19/00

U.S. Cl. 24—603

10 Claims



1. In a seat belt buckle comprising a housing, an opening in said housing adapted to receive a cooperating tongue having a locking portion, a locking member provided in said housing for locking engagement with said locking portion of said tongue when said tongue is inserted into said opening, and releasing means for releasing said locking member from locking engagement with said locking portion of said tongue, the improvement comprising:

- said releasing means being comprised of
 - (a) an electrically energizable actuator; and
 - (b) connecting means in contact with said actuator and said locking member, said connecting means being rotatably movable upon energization and deenergization of said actuator;
- said locking member being movable in response to movement of said connecting means between a first position at which said locking member is in locking engagement with said locking portion of said tongue and a second position at which said locking member is out of locking engagement with said locking portion of said tongue, said release means being operable to release said locking member following each energization and deenergization of said actuator.

4,432,120

CAP RETAINING DEVICE

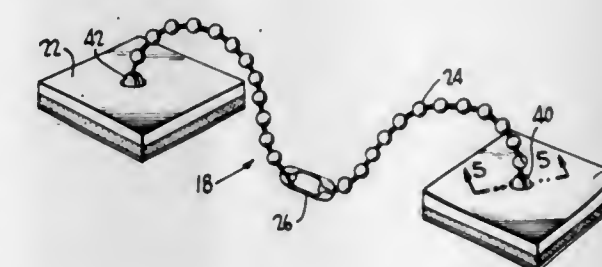
Benjamin F. Sherman, Jr., 6329 Mori St., and Samuel Francis, 1202 Perry William Rd., both of McLean, Va. 22101

Filed Aug. 3, 1982, Ser. No. 404,650

Int. Cl.³ B65D 55/16

U.S. Cl. 24—299

1 Claim



1. A cap retaining device for the fuel tank cap of an automobile comprising

a first mounting block (20) adapted to be secured to a fuel tank cap (16),
 a second mounting block (22) adapted to be secured to a surface of an automobile (10) adjacent the fuel tank cap (16),
 each mounting block (20 and 22) including a support layer (30), a first thin adhesive layer (32) secured to said support layer (30), a layer of resilient foam (34) secured to said first thin adhesive layer (32), a second thin adhesive layer (36) secured to said layer of resilient foam (34) and a paper layer (38) removably secured to said second thin adhesive layer (36), said support layer (30) and said foam layer (34) being permanently secured together as a unit by said first adhesive layer (32),
 each support layer (30) having a central aperture (46) and a bell-shaped sleeve (40) therein,
 said bell-shaped sleeve (40) having a closed end, an open end and an outer diameter lesser than the diameter of said central aperture (46) whereby said bell-shaped sleeve (40) extends through said aperture (46) with its closed end protruding out of said aperture (46),
 an opening in the closed end of said bell-shaped sleeve (40), an annular flange (48) on the open end of said bell-shaped sleeve (40) abutting against the support layer (30) and being retained thereagainst by the first adhesive layer (32) and by the foam layer (34) bearing against said flange (48) whereby said bell-shaped sleeve (40) and the support layer (30) are permanently connected together,
 an elongate flexible bead chain (24) having one end bead permanently disposed in the bell-shaped sleeve (40) on the first mounting block (20) and an opposite end bead permanently disposed in the bell-shaped sleeve (42) on the second mounting block (22),
 a splicing link (26) intermediate the ends of said bead chain (24) whereby shortening of said bead chain (24) may be accomplished by cutting several beads therefrom and reconnecting the splicing link (26),
 said paper layer (38) on said first mounting block (20) being removed from said second thin adhesive layer (36) which is then adhesively applied to a fuel tank cap (16), and
 said paper layer (38) on said second mounting block (22) being removed from said second thin adhesive layer (36) which is then adhesively applied to an automobile surface adjacent the fuel tank cap (16).

4,432,121

SAFETY HOOK OR ELASTIC FASTENING AND SECURING CABLES OF THE SANDOW TYPE

Armand Dupre, Saint-Etienne, France, assignor to Societe Dupre, France

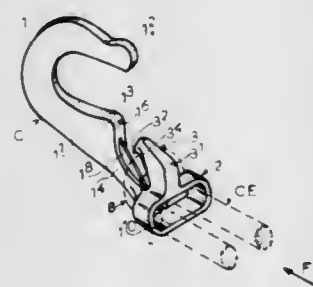
Filed Jun. 18, 1981, Ser. No. 275,112

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 8014580

Int. Cl.³ A44B 13/00; F16G 11/04

U.S. Cl. 24—343

3 Claims



1. A safety hook which is attached to elastic cables, said hook comprising:
 a head forming a hook having a curved portion with an open end, and a lower base portion;
 a transverse guide tunnel is located on both sides of said

lower base portion and permits the passage of two strands of elastic cable forming a loop; and
 anchoring means for holding an elastic cable having a projection part forming a beak having a first central rib which is disposed adjacent to said lower base portion of said head, said beak starts at said lower base portion of said head and extends towards said curved portion of said head whereby said beak defines together with said lower base portion an offset cavity having a progressively widening profile from said lower base portion of said head towards said curved portion of said head, said cavity has successive contiguous zones with a more reduced section to assure proper positioning and pinching by crimping of an elastic cable held thereon, the lower base portion of said head is provided with a second central rib which together with said first central rib of said beak assures pinching of elastic cable held in the offset cavity.

4,432,122

METHOD FOR PRODUCING A CONNECTING ROD FOR A RADIAL PISTON MOTOR

Yoshio Iijima, Nagoya, Japan, assignor to Daido Metal Co. Ltd., Japan

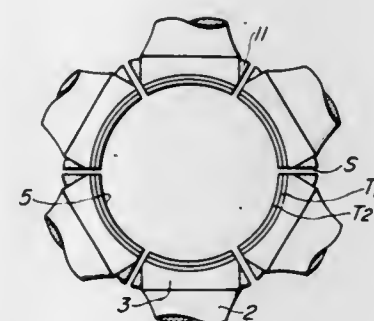
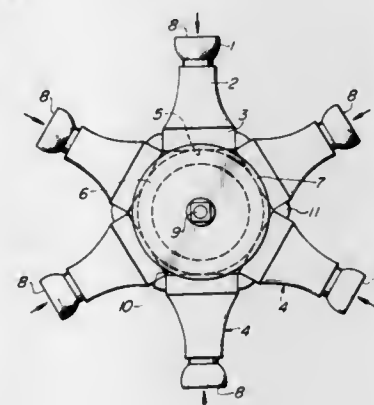
Filed Mar. 11, 1981, Ser. No. 242,767

Claims priority, application Japan, Oct. 8, 1980, 55-141779

Int. Cl.³ B23P 15/00

U.S. Cl. 29—156.5 A

4 Claims



1. A method for producing a connecting rod for a radial piston motor, comprising the steps of:

- producing from a steel material a plurality of blanks (4), each blank including a one piece structure having a spherical surface portion (1), a rod portion (2) and a pad portion (3) having a planar sliding surface (5);
- producing a ring-shaped blank (12) by means of assembling a plurality of said blanks (4) in a ring form and joining them at joints (10) by welding (11);
- machining said planar sliding surfaces (5) of said pad portions (3) in said ring-shaped blank (12) to form curved sliding surfaces;
- applying by centrifugal casting a bearing alloy (13) onto said machined, curved sliding surfaces;
- machining the surface of said bearing alloy applied by centrifugal casting; and

(F) dividing said ring-shaped blank (12) at said joints (10) formed by said welding (11).

4,432,123

PROCESS FOR THE MANUFACTURE OF DOUBLE WALLED PIPE

Rudolf Minning, Dortmund, and Heribert Dierkes, Hagen, both of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

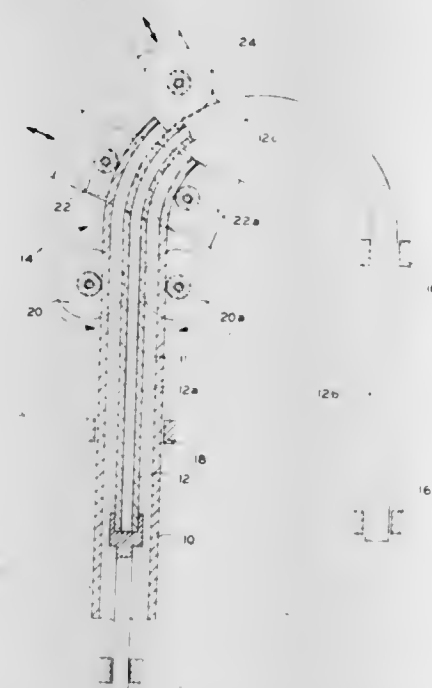
Continuation-in-part of Ser. No. 94,647, Nov. 15, 1979,

abandoned. This application Jul. 27, 1981, Ser. No. 287,192

Int. Cl.³ B21D 21/00, 9/10, 53/06

U.S. Cl. 29—157 A

4 Claims



- A process for manufacturing an elbow-shaped double pipe having an inner rigid pipe generally concentrically spaced from an outer rigid pipe to define a hollow space extending between the inner and outer pipes, comprising the steps of:
 (a) providing a prebent inner rigid pipe having a straight shank portion extending from each end of a bent elbow portion;
 (b) providing a straight section of outer rigid pipe;
 (c) supporting the prebent inner rigid pipe in a pipe bending apparatus by gripping one straight shank portion of the inner pipe with the elements of the pipe bending apparatus so that the center of curvature of the bent elbow portion of the inner pipe is congruent with the center of curvature of the bending element of the pipe bending apparatus;
 (d) slipping one end of the straight section of outer pipe over the other straight shank portion of the inner pipe;
 (e) supporting the straight section of outer pipe in the pipe bending apparatus in generally concentric, hollow spaced relationship with the other straight shank portion of the inner pipe; and
 (f) advancing the outer pipe further onto the inner pipe and into the pipe bending apparatus and contacting only the exterior of the outer pipe with the pipe bending apparatus as the pipe bending apparatus bends the outer pipe around the bent elbow portion of the inner pipe while maintaining a generally concentric, hollow spaced relationship between the inner and outer pipes thereby forming an elbow-shaped double wall pipe.

4,432,124

MARKER RING INSTALLATION TOOL

Manfred O. Breuers, Rödermark, Fed. Rep. of Germany, assignor to Ident-Gesellschaft für Industrielle Kennzeichnung mbH, Rödermark, Fed. Rep. of Germany

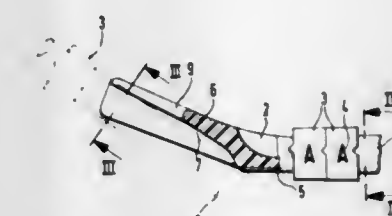
Filed Aug. 19, 1981, Ser. No. 294,174

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 3031987

Int. Cl.³ B23P 19/02

U.S. Cl. 29—235

3 Claims



1. A marker ring installation tool for applying resilient split rings provided with marking signs onto electrical wires, comprising a supply rod for supporting a series of marking rings, a flared contact shoe formed at one end of the rod and having a front side of a width which exceeds the diameter of the rod and a bottom recess communicating with the free end of the shoe and converging toward the rod for engaging wires of different diameters, and an elongated notch formed at the front side and communicating with the free end of the shoe to split the latter in the range of said recess into a flexible fork-like configuration suitable for resiliently adjusting the shoe to wires of different diameters.

4,432,125

HINGE PIN REMOVAL TOOL

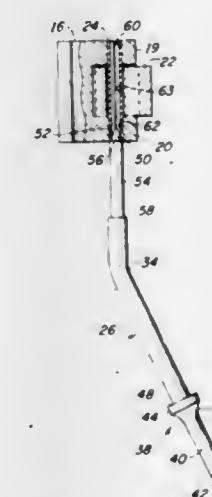
Nick Monteleone, 1142 Centoni Dr., Lake Zurich, Ill. 60047; Jerry Monteleone, 4840 N. Greenwood, Norridge, Ill. 60615, and Lorenzo Monteleone, 808 Roppolo Dr., Elk Grove Village, Ill. 60007

Continuation of Ser. No. 282,411, Jul. 13, 1981. This application May 26, 1983, Ser. No. 498,393

Int. Cl.³ B22D 19/10; B23P 19/04

U.S. Cl. 29—402.08

1 Claim



1. A method of disassembling and subsequently assembling doors to automotive vehicles, which doors are secured to said vehicles by means of hinges having first and second mutually parallel ears fixedly secured to the body of the vehicle and a third ear fixedly attached to the door and adapted to be disposed between said first and second ears, a longitudinally split, tubular hinge pin being compressed near its respective ends in mutually aligned holes in said ears and loosely extending through a hole in said third ear, said last mentioned hole being

aligned with said holes in said first and second ears when said door is assembled to said vehicle, comprising the steps of providing a unitary rigid metal members having elongated, enlarged attachment means at one end for reception in the chuck of a fluid operated impact device, said member having at its other end a short pilot projection having an external diameter which slidably fits into said spring pin when said spring pin is compressed in said openings, said member having adjacent to said pilot projection a rectilinear, cylindrical portion having an external diameter which slidably fits into said openings and is greater than the internal diameter of said spring pin when said spring pin is compressed in said openings thereby to provide an annular shoulder adjacent said pilot projection for engaging an end of said spring pin, said member having a bend between said attachment means and said cylindrical portion such that the included angle between the principal longitudinal axes of said cylindrical portion and said attachment is no more than about 150°, and a stop shoulder on said rectilinear, cylindrical portion facing toward said pilot projection to limit the distance said cylindrical portion is insertable into said first or second ears, said stop shoulder being spaced from said annular shoulder by a distance less than the combined lengths of said holes,

attaching said attachment means to a fluid operated impact device,

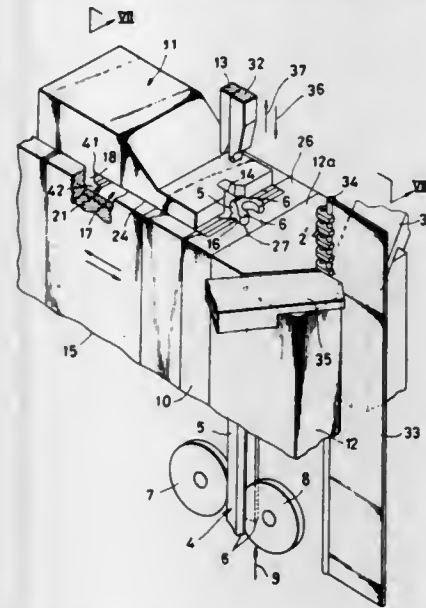
inserting said pilot projection into the one end of said spring pin adjacent said first ear,

energizing said impact device while pressing said annular shoulder against said one end of said spring pin to push said spring pin completely through said first and third ears to press said stop shoulder against said first ear,

removing said rigid metal member from between said first and second ears and then removing said door from said vehicle without removing said spring pin from said second ear,

subsequently assembling said door to said vehicle with said third ear positioned between said first and second ears with said holes in said ears in mutual alignment, and pushing said spring pin through said hole in said third ear into said hole in said first ear.

one coupling element which head has a projection from one face and a coacting socket in the other face at such a



position that the chamfered portion is disposed around the socket.

4,432,127

PROCESS OF MOLDING AND ASSEMBLING A PAIR OF HANDLES OF A PLASTIC BAG

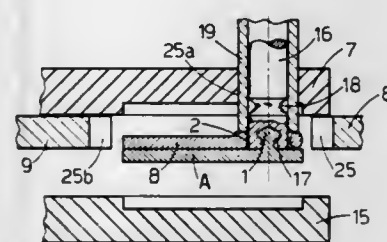
Mauro Diazi, Via Chiesa Sud, 243/A-Rovereto sul Secchia, Italy

Filed Mar. 8, 1982, Ser. No. 356,107

Int. Cl.³ B28B 7/10; B29C 27/00

U.S. Cl. 29—436

3 Claims



1. A method for automatically molding, assembling and expelling two separate plastic handles provided with snap interlockable male and female fastener means respectively on facing surfaces thereof adapted to be connected to a plastic bag, comprising the steps of molding at least a pair of substantially identical handles each provided with respective male and female interlockable fastener means in first and second molding cavities respectively, the molding cavities being in spaced apart face-to-face relationship and while the molding cavities are closed by intervening reciprocity plates, and while a plurality of spaced means to shape the interlockable male and female fastener means is extending through the first molding cavity, between opposing ends of said plates and is terminated substantially at the second molding cavity, each last-named means to shape having an end cavity formed to shape the male fastener means and being in communication with the second molding cavity and also having an annular recess formed to shape the female fastener means and being in communication with the first molding cavity, the axes of said means to shape being parallel and being across a plane common to the reciprocity plates and the first and second molding cavities, said molding of the handles consisting of injecting plastic material into said first and second molding cavities and curing the injected plastic material therein, opening the first and second spaced apart molding cavities by separating the opposing ends of the intervening reciprocity plates, stripping the handle having the male fastener means out of the second molding

4,432,126 METHOD OF AND APPARATUS FOR MANUFACTURING SLIDE FASTENER COUPLING ELEMENTS

Sadanobu Sugahara, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,144

Claims priority, application Japan, Dec. 29, 1981, 56-215060

Int. Cl.³ B21D 53/52; A41H 37/06

U.S. Cl. 29—410

8 Claims

1. A method of manufacturing coupling elements for a slide fastener, comprising the steps of:

- providing a rod of metal of a generally Y-shaped cross section having a base, as a prospective coupling head, and a pair of legs divergently extending from the base;
- feeding the rod stepwise in a longitudinal direction;
- transversely slicing the rod into a plurality of coupling element blanks in timed relation to said stepwise feeding;
- placing the coupling element blanks, one at a time, in a coupling-head forming station remote from the rod in a direction perpendicular to said longitudinal direction;
- forming a chamfered portion on the base of the rod each time each coupling element blank is sliced off from the rod and then placed in said coupling-head forming station, each coupling element blank thus having a chamfered base; and
- at said coupling-head forming station, forming the base of each coupling element blank into a final coupling head of

cavity by withdrawal of all of the spaced means to shape and thereby moving such handle toward the facing handle remaining in the first molding cavity and causing snap interlocking of the male and female fastener means of the two handles with the latter in face-to-face contact, and separating the means to shape from the two united handles.

4,432,129

METHOD OF TERMINATING A LIGHT CONDUCTIVE RIBBON

Wendell P. Featsent, Hubbard, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1982, Ser. No. 342,185

Int. Cl.³ B23P 11/02

U.S. Cl. 29—447

4 Claims



4,432,128

METHOD AND SYSTEM FOR INSTALLING A LAYERED VESSEL ON LOCATION

Raymond E. Pechacek, and Eugene J. Clay, both of Houston, Tex., assignors to Hahn & Clay, Houston, Tex.

Filed Nov. 24, 1980, Ser. No. 209,846

Int. Cl.³ B21D 39/03; E04G 3/00; B23K 31/02

U.S. Cl. 29—429

10 Claims



1. Method of construction of a layered vessel on final location, comprising:

- construction of a bottom head section and mounting of said bottom head section on a vessel foundation;
- erection of a generally cylindrical construction frame about said bottom head, said construction frame extending upwardly to substantially the height of the vessel to be constructed;
- providing with said construction frame a plurality of vertically spaced, annular work stations;
- substantially simultaneously with erection of said cylindrical construction frame, constructing onto said bottom head a cylindrical shell liner and a hemispherical inside, top head liner mounted on said cylindrical shell liner;
- utilizing said annular work stations, initiating construction of said shell layers by welding in place a plurality of curved plates from the bottom head upwardly;
- adding layers of such curved plates to said shell from the bottom head upwardly with the addition of such layers occurring substantially simultaneously at various of said annular work stations, with each additional layer being started at said shell portion adjacent to said bottom head; and
- continuing some of said layers as they are completed on said shell onto said top head by the addition of layers of gores thereto.

4,432,130

SIX STATION BROACHING MACHINE

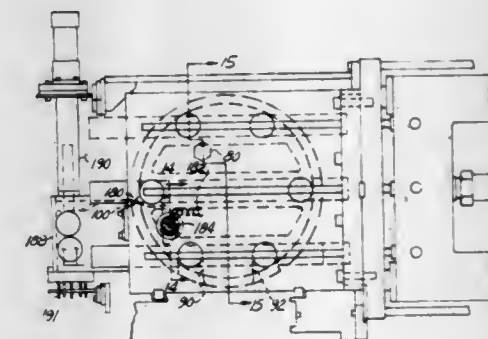
Leonard A. Gabriele, Warren, Mich., assignor to Lear Siegler, Inc., Calif.

Filed Jul. 20, 1981, Ser. No. 285,052

Int. Cl.³ B23Q 39/04; B23D 37/06

U.S. Cl. 29—563

11 Claims



1. A machine tool for machining a plurality of relatively angularly disposed surfaces on each of a plurality of identical workpieces in a succession of identical repeated machine cycles, which comprises:

- a stationary frame,
- a rotatable table,
- index mechanism for successively rotatively indexing said table about an axis in predetermined equal steps such that said table completes exactly 360° rotation in a predetermined number of index rotations,
- a plurality of machining mechanism mounted on said frame for rectilinear traverse relative to said table in identical

parallel forward machining strokes perpendicular to the axis of said table and return idle strokes, a plurality of work holders on said table each effective to clamp a workpiece on said table in fixed relation thereto, said work holders being equally spaced radially from the axis of rotation of said table and equally angularly spaced thereon,

each of said machining mechanisms comprising means for machining surfaces at each traverse stroke on a plurality of workpieces which are perpendicular to the axis of the table but which surfaces, due to the different indexed positions of the workpieces, are angularly positioned with respect to each other on each workpiece by an amount related to the index rotation of each workpiece between successive cuts,

means for alternately actuating said machining mechanisms in rectilinear machining strokes and for actuating said index mechanism in repeated cycles to machine surfaces of said workpieces at each cycle which are angularly disposed to surfaces machined during a contiguous cycle.

4,432,131

METHOD FOR MANUFACTURING DISPLAY DEVICE
Tetsuo Sadamasa, Kawasaki, and Osamu Ichikawa, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

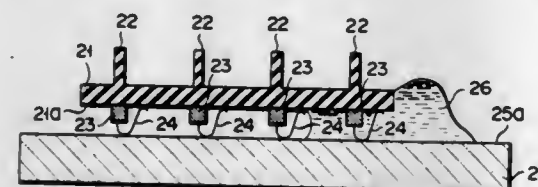
Filed Sep. 3, 1982, Ser. No. 414,897

Claims priority, application Japan, Sep. 22, 1981, 56-148835.

Int. Cl.³ H01L 33/00

U.S. Cl. 29—569 L

18 Claims



1. A method for manufacturing a display device, comprising the steps of:

disposing a substrate having a surface on which a plurality of light-emitting diodes are two-dimensionally aligned such that said surface of said substrate opposes a surface of a table which is substantially horizontal;

placing a resin of a light-transmitting and electrically insulating material which is kept in a fluid state on said table so as to bring said resin into contact with at least one side end of said substrate;

filling by capillarity said resin into a space between said surface of said table and said surface of said substrate while said resin is kept in the fluid state;

hardening said resin which is filled in said space; and removing said table from a hardened resin.

4,432,132

FORMATION OF SIDEWALL OXIDE LAYERS BY REACTIVE OXYGEN ION ETCHING TO DEFINE SUBMICRON FEATURES

Eliezer Kinsbron, Highland Park, and William T. Lynch, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1981, Ser. No. 328,368

Int. Cl.³ H01L 21/42; 21/423; C23C 15/00

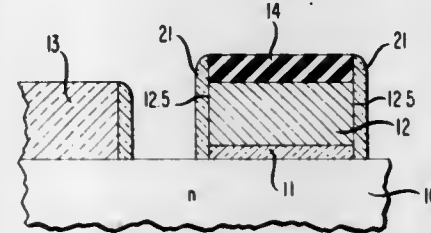
U.S. Cl. 29—571

16 Claims

1. A method for fabricating a semiconductor structure comprising the steps of forming, overlying a horizontal surface in a structure, a patterned layer having a vertical sidewall at the bottom of which is located an exposed surface of a first layer of first material, said first material containing atoms of a first kind, and forming on the vertical sidewall a masking layer of predetermined submicron horizontal thickness dimension, and using

the masking layer to define a feature of the structure underlying the masking layer,

the masking layer being formed by bombarding said horizontal surface portion with oxygen for a predetermined time to react with atoms of said first material, located at the



exposed surface of the first layer, whereby the masking layer, comprising a chemical compound of oxygen and said atoms, is deposited on the vertical sidewall to the predetermined submicron thickness, and whereby the thickness of the first layer is reduced.

4,432,133

METHOD OF PRODUCING A FIELD EFFECT TRANSISTOR

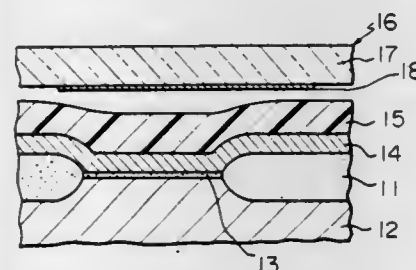
Toshikazu Furuya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1982, Ser. No. 406,978

Int. Cl.³ H01L 21/265; 21/28

U.S. Cl. 29—571

9 Claims



1. A method of producing a field effect transistor including a semiconductor substrate having an active region with a middle portion and end portions, and a field region, comprising the steps of:

(a) forming a thick insulating layer on the field region of the semiconductor substrate, the thick insulating layer having an inclined surface and surrounding the active region of the semiconductor substrate;

(b) forming a thin insulating layer on the active region of the semiconductor substrate;

(c) forming a gate electrode on the thin and thick insulating layers, the gate electrode formed on a portion of the thin insulating layer and extending onto the thick insulating layer, and having first portions and a second portion, the first portions lying above the end portions of the active region and having a larger width than of the second portion lying above the middle portion of the active region; and

(d) forming a source region and a drain region in the active region by selectively introducing impurities into the active region.

4,432,134

PROCESS FOR IN-SITU FORMATION OF NIOBIUM-INSULATOR-NIOBIUM JOSEPHSON TUNNEL JUNCTION DEVICES

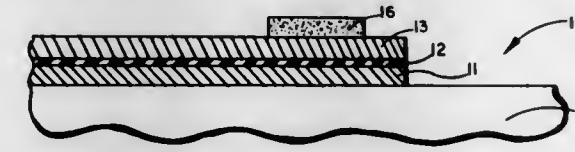
Addison B. Jones, Yorba Linda, and Francis M. Erdmann, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 10, 1982, Ser. No. 376,483

Int. Cl.³ H01L 39/24; 39/22

U.S. Cl. 29—578

10 Claims



1. A method of forming a superconductor-barrier-superconductor junction device comprising the steps of:

depositing a first superconductive layer on a substrate; forming a barrier layer on said first superconductive layer; depositing a superconductive layer on said barrier layer; depositing a layer of photoresist over said second superconductive layer;

patterning said layer of photoresist to form a mask;

etching said second superconductive layer, said barrier layer, and a small portion of said first superconductive layer using said layer of photoresist as a mask to form a mesa structure;

depositing a dielectric layer over said mesa structure; and dissolving said photoresist layer, thereby lifting off the portion of said dielectric layer overlying said second superconductive layer.

4,432,135

METHOD OF LOCKING CONDUCTORS IN A DYNAMOELECTRIC MACHINE ROTOR

Paul W. Greenlee, Hendersonville, Tenn., assignor to General Electric Company, Fort Wayne, Ind.

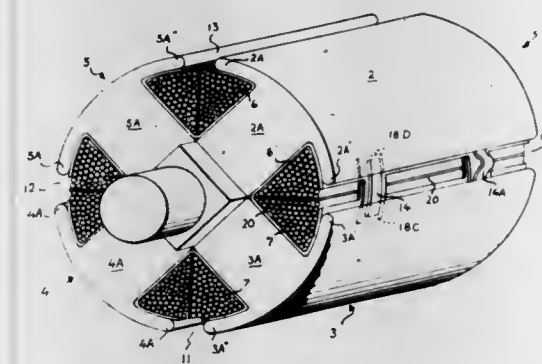
Division of Ser. No. 965,034, Nov. 30, 1978. This application

Sep. 24, 1982, Ser. No. 423,417

Int. Cl.³ H02K 15/10

U.S. Cl. 29—598

1 Claim



1. A method of locking coiled conductors in a slot of a dynamoelectric machine rotor that has a plurality of slots defined respectively by adjacent salient poles of the rotor, each of said poles having a tip portion the extremities of which extend generally perpendicular to, and beyond, opposite sides

of the outer end of a shank portion of the pole, which method comprises the steps of:

(1) placing one of a plurality of sheets of insulating paper, respectively, between the pole surfaces defining each of said slots and the coiled conductors disposed therein, before the locking members described below are placed over said conductors,

(2) providing each of said sheets of insulating paper with tabs that extend, respectively, over the part of the coiled conductors located beneath said locking members when they are placed as described below in step (4), thereby to insulate the locking members from the conductors while leaving a major part of the outer coils of the conductors uncovered by said sheets of insulating paper,

(3) providing a plurality of generally V-shaped, stiff, deformable locking members and bending the ends of each of said locking members outward before the locking members are placed over said conductors thereby to position the bent portions of the locking members against said insulating paper while the outermost ends of the locking members are driven into engagement with the pole tip portions,

(4) placing at least one of said generally V-shaped, stiff, deformable locking members over a plurality of said coiled conductors disposed within said slot, the ends of each of said locking members being placed closer than the base thereof to the conductors, and

(5) forcing each locking member into a generally flat configuration to drive its ends under the extremities of the pole tip portions disposed on opposite sides thereof, thereby to secure the respective ends of each locking member under the pole tip portions adjacent thereto and to position substantially the entire length of each locking member snugly against the outermost coiled conductors within the slot beneath it.

4,432,136

RAZOR AND HANDLE COUPLING MEANS

John B. Taylor, Reading, England, assignor to The Gillette Company, Boston, Mass.

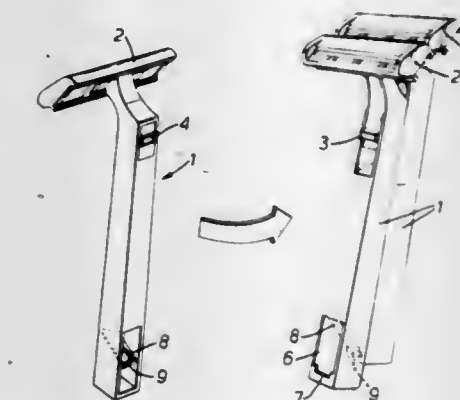
Filed Jun. 11, 1982, Ser. No. 387,584

Claims priority, application United Kingdom, Jun. 22, 1981, 8119146

Int. Cl.³ B26B 21/00

U.S. Cl. 30—32

3 Claims



1. A disposable safety razor comprising an elongated handle and a shaving head coupled to the top of said elongated handle, said elongated handle adapted for secure but releasable engagement with an identical adjacent razor handle, said handle including front and back faces, a first, upwardly directed hook formed on one of said faces, and a second, downwardly directed hook formed on the other of said faces, and also including a resilient latch member formed on one of said faces and a ledge formed on the other of said faces spaced along said handle from said hooks, and wherein said handle and said adjacent handle are releasably secured together by interengagement of said first hook of said handle with said second

hook of said adjacent handle, and engagement of said latch member of said handle with said ledge of said adjacent handle, said latch member being yieldable to permit separation of said handles.

4,432,137

ROTARY CUTTER

Yoshio Okada, Osaka, Japan, assignor to Okada Kogyo Kabushiki Kaisha, Osaka, Japan

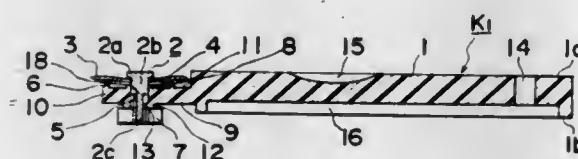
Filed Aug. 16, 1982, Ser. No. 408,718

Claims priority, application Japan, Sep. 29, 1981, 56-145180[U]

Int. Cl.³ B26B 29/00

U.S. Cl. 30—292

15 Claims



1. A rotary cutter comprising: an elongated handle having an aperture extending through one end thereof; said handle being formed with a bearing projection coaxial with said aperture; a shaft having a head portion at one end thereof, which extends through said aperture so as to be supported by said handle; a disc blade having a central opening, which is rotatably mounted on said shaft in a plane perpendicular to the longitudinal axis of said shaft with said shaft extending through said central opening so that said disc blade may be caused to roll on a material to be cut during a cutting operation; said disc blade being interposed between said head portion and said bearing projection, said bearing projection and said head portion respectively bearing on said disc blade at radially spaced locations on opposite sides of said disc blade; and a fastening member engagable with said shaft for urging said head portion against said disc blade so as to urge said disc blade against said bearing projection, whereby said disc blade is subjected to curved elastic deformation between said radially spaced locations and is caused to rotate in the curved state.

4,432,138

CUTTING BLADE

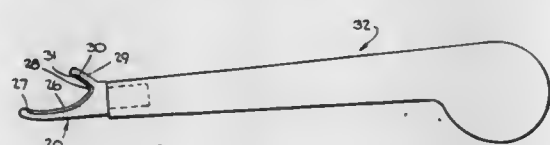
Albert V. Piccolo, Jr., 70-25 Yellowstone Blvd., Forest Hills, N.Y. 11376

Filed Jun. 4, 1982, Ser. No. 385,084

Int. Cl.³ B26B 29/00

U.S. Cl. 30—294

3 Claims



1. A hand-held cutter for cutting a cover from a roller comprising: a handle; a cutting blade having a longitudinally extending bottom edge portion, an upwardly curved front bottom edge portion extending forwardly of said longitudinally extending bottom edge portion, a convexly curved front tip portion, a concavely curved upwardly extending cutting edge portion, and a longitudinally extending rear portion set in said handle, said cutting blade including an upper

portion extending forwardly and upwardly from the upper region of said upwardly extending cutting edge portion and having a downwardly extending concavely curved cutting edge portion which joins said upwardly extending cutting edge portion and which extends upwardly from the uppermost region of said longitudinally extending rear portion a distance equal to approximately one-third the maximum height of said uppermost portion of said longitudinally extending rear portion.

4,432,139

SAFETY DEVICE ON A POWER SAW

Gisbert Köhler, Fellbach; Hermann Weiss, Grossbottwar, and Götz Landwehr, Berglen-Rettelsburg, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

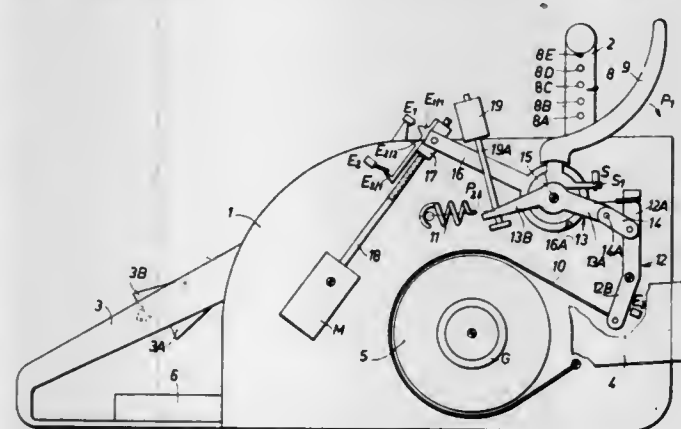
Filed Oct. 27, 1981, Ser. No. 315,487

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040516

Int. Cl.³ B27B 17/02; B27G 19/00

U.S. Cl. 30—381

24 Claims



1. A safety device for a power saw which has a housing to which are attached two handles, and also has an engine, a cutting tool, a drive member associated with said engine and said cutting tool, and a brake which in its operative position engages said drive member under the effect of a spring or other force retainer to stop the movement of said cutting tool, said safety device comprising: a stop associated with said housing for holding said brake in an inoperative position while said stop is in a locked position; an adjustment device associated with said housing and said stop for releasing the latter from its locked position when said adjustment device is actuated; an energy source, associated with said housing and energized by said saw engine, for driving said adjustment device; an electric control device, associated with said housing for controlling said adjustment device; operating elements in the form of contact switches respectively associated with said handles and said control device for actuating said adjustment device; and a drivable resetting device which is coupled with said stop and is also controlled by said control device.

4,432,140

DEVICE FOR COPYING PANORAMIC IMAGES

Tomas Santamaria Ulecia, Avda. de Bruselas, 58, Madrid - 28, Spain

Filed Mar. 11, 1982, Ser. No. 357,320

Claims priority, application Spain, Mar. 24, 1981, 257,100

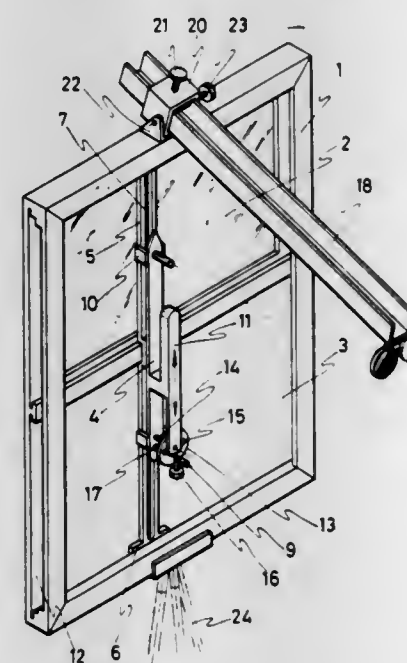
Int. Cl.³ B43L 13/16

U.S. Cl. 33—20 C

11 Claims

1. An apparatus for copying panoramic images, said apparatus comprising:

- a frame member defining a screen including a first section having a surface for imaging a panoramic image to be copied and a second section having means forming a surface for supporting a copy of the image, said first and second sections being separated by means extending longitudinally in a first direction;
- a longitudinal ruler member extending in a second direction transverse to said first direction, said ruler member having opposite ends spaced in said second direction and slidably mounted on said frame member, each said end having means for enabling said ruler member to be slidable with respect to said frame member in said first direction, while maintaining the alignment of said ruler member extending in said second direction, and said ruler member having therein a longitudinal slot extending in said second direction;
- a transfer member mounted on said ruler member for sliding movement with respect thereto in said second direction,



- said transfer member having first and second ends spaced from each other in said second direction;
- a tracking point fixed to said first end of said transfer member and adapted to trace along an image imaged on said surface of said first section;
- a writing point fixed to said second end of said transfer member and adapted to write on said surface of said second section;
- said tracking point and said writing point being spaced from each other in said second direction by a distance substantially equal to the dimension in said second direction of either of said first or second sections; and
- means, integral with said transfer member, for enabling said transfer member and thereby said ruler member to be moved over said screen, thereby moving said tracking point along the image on said surface of said first section and correspondingly moving said writing point along said surface of said second section, and thereby copying thereon the image.

4,432,141

HIGH PRECISION HEIGHT COMPARATOR APPARATUS

Stanley T. Marcyan, 515 W. Windsor Rd., Glendale, Calif. 91204

Filed Jun. 3, 1983, Ser. No. 500,937

Int. Cl.³ G01B 7/14

U.S. Cl. 33—169 R

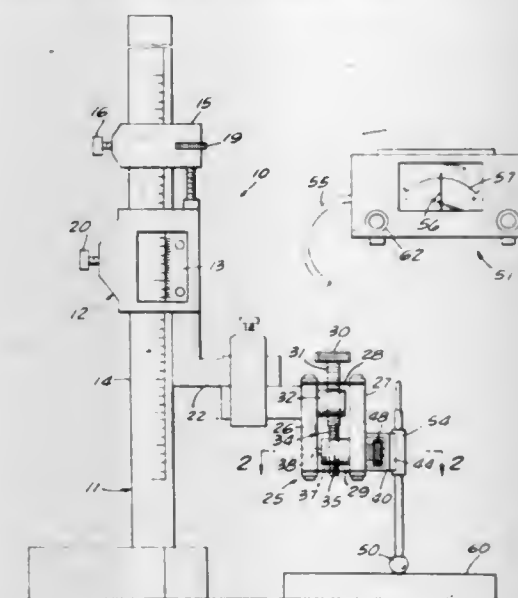
9 Claims

1. A self-contained unitary micro-adjuster for supporting a precision height sensor while in use to compare the height of a specimen surface with the height of a Johansson block, or the like, and comprising in combination:

first and second elongated rigid members held flexibly inter-

connected in spaced apart parallel relation by a pair of parallel leaf springs secured to a respective pair of ends of said rigid members;

said first rigid member having a rigid support extending therefrom and adapted to be clamped immovably to the adjustable carriage of a transfer stand;



- said second rigid member having means for rigidly clamping a height sensor thereto; and
- manually adjustable differential screw means supported between and parallel to said first and second members with the threads at the opposite ends thereof mateable with threaded bores through means rigidly fixed to a respective one of said first and second members.

4,432,142

KEY CODE

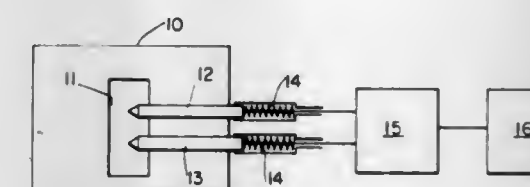
Andrew J. Korsak, Redwood City, Calif., assignor to All-Lock Electronics, Inc., North Brunswick, N.J.

Filed Feb. 26, 1982, Ser. No. 352,547

Int. Cl.³ G01B 7/00; E05B 35/04

U.S. Cl. 33—174 F

3 Claims



1. A key reading system comprising: a key having a plurality of rows, each row having a plurality of reading positions along its length, each reading position in one row cooperating with a reading position in each other row to form a cooperating set of reading positions, there being a plurality of such sets along the length of the key;
- each reading position being constructed with either a first physical characteristic or a second physical characteristic, except that no one of said sets has only second physical characteristics at every one of its reading positions;
- a key reading apparatus having reading means for reading the physical characteristics of the reading positions of each of said sets, taken in succession from the first set to the last set, said reading means including a clock line means for distinguishing the presence of each set at the reading means, said clock line means being responsive to distinguish the presence of a set, in response to a reading of any combination of first or second physical characteristics except all second physical characteristics.

4,432,143

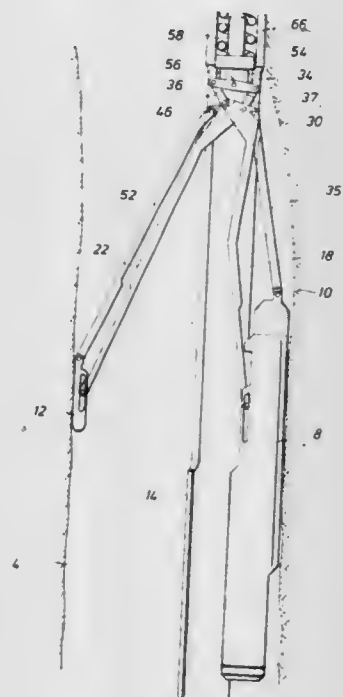
WELL LOGGING APPARATUS

Keith A. Moriarty, and Lowell R. Milligan, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 22, 1982, Ser. No. 360,747

Int. Cl.³ G01B 7/12; G01V 5/00

U.S. Cl. 33—178 F



1. A well logging instrument for use in an earth borehole, comprising:

- an elongated body member adapted to traverse said borehole;
- a first crank arm pivotally attached intermediate the ends thereof to a first location on said body member;
- a second crank arm pivotally attached intermediate the ends thereof to a second location on said body member;
- a first contact pad adapted for contacting the sidewalls of said borehole, said first contact pad pivotally and slidably attached to a first end of said first crank arm;
- a second contact pad adapted for contacting the sidewalls of said borehole, said second contact pad pivotally and slidably attached to a first end of said second crank arm;
- a first support arm having a first end pivotally attached to said first contact pad and a second end pivotally attached to said first location on said body member;
- a second support arm having a first end pivotally attached to said second contact pad and a second end pivotally attached to said second location on said body member;
- a first coupling link having a first end pivotally attached to a second end of said first crank arm;
- a second coupling link having a first end pivotally attached to a second end of said second crank arm;
- a drive link pivotally attached proximate its ends to the second ends of said first and second coupling links;
- a piston attached to said drive link;
- drive means for causing said piston to move longitudinally within said body member whereby said first and second contact pads are generally laterally extended relative to said body member; and
- retraction means for causing said piston to move longitudinally within said body member such that said first and second contact pads are generally laterally retracted relative to said body member.

4,432,144
ARRANGEMENT FOR MEASURING AND CHECKING MOTORCYCLE FRAMES

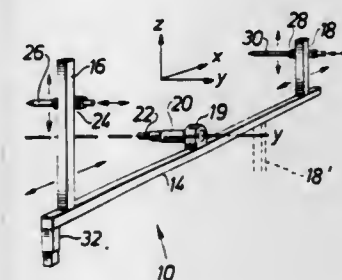
Harry Carlsson, Köping, Sweden, assignor to AB Samefa, Kungsoer, Sweden

Filed Feb. 22, 1982, Ser. No. 350,833

Claims priority, application Sweden, Mar. 12, 1981, 8101597
Int. Cl.³ G01B 5/25

U.S. Cl. 33—180 AT

12 Claims



1. Apparatus including an arrangement for measuring and checking motorcycle frames of the kind incorporating structure defining a pair of reference points on opposite sides of the lower part of the motorcycle frame defining a reference axis (y—y) extending through the width of the motorcycle frame, said arrangement being suitable for measuring both a motorcycle frame completely or partially exposed by removal of other components of the motorcycle and a frame of a complete motorcycle, said measuring arrangement comprising:

- a measuring beam connectable to the motorcycle frame at right-angles to said reference axis (y—y) with the measuring beam extending in the longitudinal direction of the motorcycle frame;
- fixing means extending along said reference axis (y—y) between said reference point on said motorcycle frame and a fixed point on said beam;
- at least one upright extending from the measuring beam at right-angles to a plane parallel to both the measuring beam and the reference axis (y—y), said upright being mounted for displacement (x) so that it can be moved along the beam;
- at least one mounting member mounted for displacement (z) along the upright;
- a measuring point displaceable in the mounting member at right-angles to both the measuring beam and the upright, with calibrations on at least the measuring beam and the upright for determining the amount of the displacement (x) of the upright along the beam in relation to the reference axis (y—y) and also the displacement (z) of the measuring point along the upright in relation to the measuring beam, and thus also the perpendicular distance of the measuring point from the reference axis (y—y).

4,432,145

APPARATUS FOR INSPECTING THE GEOMETRY OF THE WHEELS OF A VEHICLE

Yves Caroff, Saint Mande, France, assignor to Facom, Morangis, France

Filed Nov. 20, 1981, Ser. No. 323,255

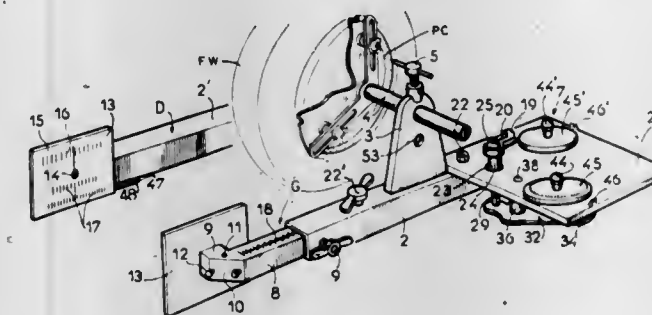
Claims priority, application France, Nov. 21, 1980, 80 24762
Int. Cl.³ G01B 11/275

U.S. Cl. 33—288

9 Claims

1. An apparatus for inspecting the geometry of wheels of a vehicle, comprising, in combination, two measuring devices adapted to be fixed respectively to two front wheels of the vehicle and which, in use, have a generally symmetrical shape with respect to each other, each of said devices comprising in combination a first hollow tubular rigid bar, a projector carrier adapted to be mounted on one of said front wheels, means for fixing the bar to the projector carrier whereby said bar extends substantially parallel to said wheel, means inside the bar for projecting a beam of light longitudinally of the bar, a unit

disposed at one of the bar and comprising a screen, a mirror rigid with the screen and disposed in such manner as to reflect said beam and project said beam transversally of the apparatus toward the screen pertaining to the opposite device of said two devices, said apparatus further comprising, on at least one of said devices, a second tubular bar having one end portion telescopically and slidably mounted in said first bar so that the second bar is movable toward and away from said fixing



means, a locking means for arresting telescopic movement of said second bar in said first bar, said unit comprising the mirror and the screen being mounted on the second bar adjacent an end of the second bar opposed to said one end portion, whereby relative telescopic movement of said first and second bars allows for compensation of set-back of the rear wheels of said vehicle, the apparatus further comprising means on each of said devices for receiving a sub-assembly for inspecting the kingpin inclination and the castor angle of the vehicle wheels.

4,432,146

INTEGRATED DRILL LEVELING APPARATUS

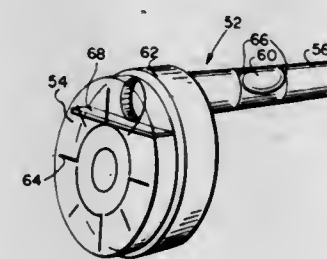
Albert M. Klein, 96 Harmony Ave., East Keansburg, N.J. 07734

Filed May 26, 1983, Ser. No. 498,550

Int. Cl.³ G01C 9/28

U.S. Cl. 33—334

2 Claims



1. An integrated drill leveling apparatus comprising:

- a bi-directional orienting means attachable to said drill for simultaneously assisting in the leveling of said drill in two orthogonal directions, said bi-directional leveling means comprising a circular bubble-type level, said circular level including a convex interior cavity which is tapered so as to be wider in the center of said circular level and thinner near the edges thereof;

further leveling means attached to the periphery of said circular level for determining the orientation of said drill in a direction perpendicular to the two orthogonal directions determined by said circular level, said further leveling means comprising a tubular-type level, said tubular type level including a cavity that is tapered so as to be wider near the center thereof and thinner near the ends thereof with one of said ends being closed and the other end being open, the open end of said tubular cavity and the cavity of said circular level communicating with each other so as to form a continuous cavity;

liquid means housed within said continuous cavity; bubble means carried by said liquid means and also housed within said continuous cavity, and barrier means in said cavity of said circular level located adjacent the point of communication of said cavities for preventing said bubble means from escaping into said

tubular level when said circular level is inverted so that said tubular level points upwards away from the earth, wherein said integrated level measures orientations in three mutually orthogonal directions.

4,432,147

ENERGY EFFICIENT LUMBER DRY KILN USING SOLAR COLLECTORS AND REFRIGERATION SYSTEM

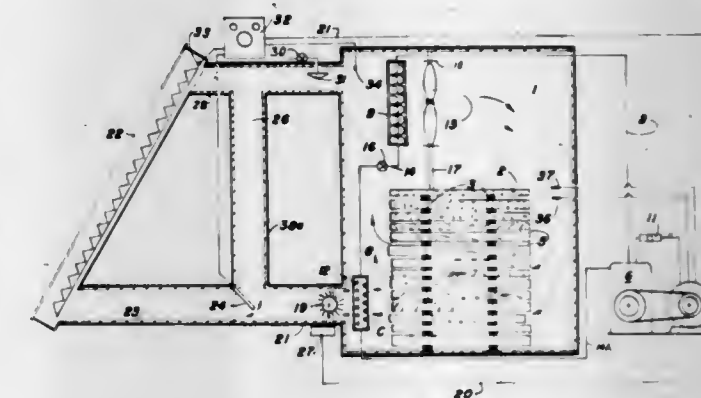
Peter Y. S. Chen; Wayne A. Helmer, and Howard N. Rosen, all of Carbondale, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,764

Int. Cl.³ F26B 21/08

U.S. Cl. 34—46

13 Claims



1. Apparatus to control temperature and humidity in drying selected material, including a chamber to receive the material to be dried, a refrigeration system having a refrigerant compressor, evaporator means and a condenser where the condenser is disposed within the chamber, blower means to circulate air from the condenser over and through the material to be dried, first conduit means communicating with the chamber and providing a flow path for a portion of the air passing over the material to be dried where the evaporator means is disposed to receive at least a portion of the air flowing through the first conduit, solar cell means to receive radiant heat and having an inlet communicating with the first conduit and an outlet communicating with the chamber, a duct directly connecting the chamber to the outlet of the solar cell means to convey heated air from the solar cell means directly to the chamber, second conduit means having an inlet communicating with the first conduit and an outlet communicating with the chamber, damper means downstream from said evaporator means to selectively direct air flowing from the first conduit to the second conduit and to the solar cell means, and fan means to supply air from the chamber to the first conduit.

4,432,148

CONTINUOUSLY OPERATING HYDRO-EXTRACTOR

Luc Darbonne, Le Prieure, Oncy sur Ecole, and Hubert Darbonne, Chemin de Peronne, Oncy sur Ecole, both of 91490 Milly, France

Filed Oct. 14, 1981, Ser. No. 311,262

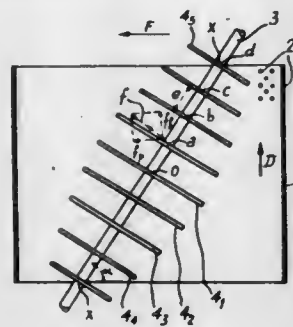
Claims priority, application France, Mar. 31, 1981, 81 06427
Int. Cl.³ F26B 11/04

U.S. Cl. 34—58

10 Claims

1. A continuously operating hydro-extractor with a perforated wall which is a figure of revolution driven in rotation about its axis so that a layer of material collects on the wall, comprising advancing members acting on the material layer to advance the material layer in a downstream direction, the path of travel of any one point on the advancing members in the

region where said members cooperate with the material layer on the perforated wall comprising a component in the diamet-



rial plane and an axial component in said downstream direction.

4,432,149

CALENDER IRONING MACHINE WITH ADJUSTABLE ROLL PRESSURE

Clifford G. Banks, Sunderland, England, assignor to Neil and Spencer Limited, United Kingdom

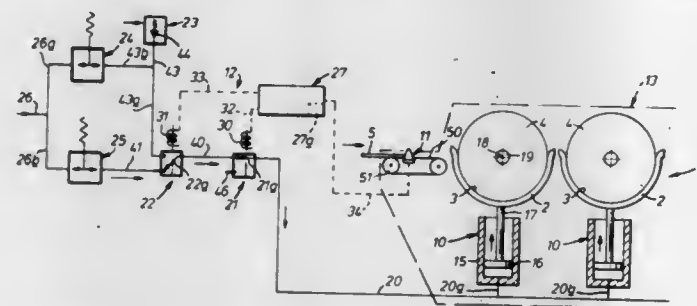
Filed Apr. 21, 1981, Ser. No. 256,026

Claims priority, application United Kingdom, Nov. 27, 1980, 8038148

Int. Cl.³ D06F 65/10

U.S. Cl. 38—55

6 Claims



1. A calendar ironing machine of the type comprising at least one heated ironing bed defining a concave ironing surface cooperating with a padded ironing roller rotatable within the concavity of the surface, comprising actuating means for creating relative movement between the padded roller and the concave surface so as to vary contact pressure therebetween, sensing means for determining the presence or absence of a laundry workpiece en route to the roller, and pressure control means for operating the actuating means whereby a relatively high padded roller/concave surface pressure is provided when a workpiece is present and a relatively low roller/concave surface pressure is provided when a workpiece is absent, while maintaining a contiguous relationship between said padded roller and said concave surface.

4,432,150

STRETCHER FRAME FOR AN ARTIST'S CANVAS

Russell A. Swonger, Rte. 3, Box 3112, Spooner, Wis. 54801

Filed Jun. 9, 1982, Ser. No. 386,713

Int. Cl.³ D06C 3/08

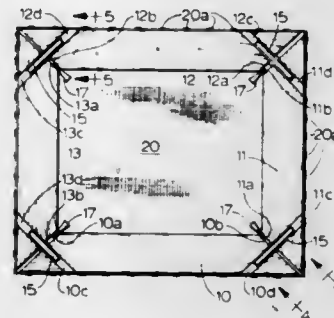
U.S. Cl. 38—102.5

8 Claims

1. A stretcher frame for an artist's painting canvas, said frame comprising,

- a plurality of frame members adapted to receive a layer of canvas attached to the outer edges thereof across the front of the frame members,
- adjacent frame members having mating ends with the mating surfaces thereof beveled, said adjacent frame members having passages formed therein which are sloped forwardly toward the mating surfaces,
- a connecting bridge slidably mounted in each of said passages and extending across the mating ends from one frame member to another to slidably connect the same in a manner to produce a tilting of said frame members to

displace the inner edges thereof rearwardly from the plane of the canvas attached to said frame, the bevel of the frame members being such that the mating surfaces of adjacent frame members are generally parallel



one to the other with the bridges respectively mounted in said passages, and wedges driven between said parallel mating surfaces to expand the space between the mating ends and stretch the canvas attached to said frame members.

4,432,151

ADVERTISING DISPLAY APPARATUS

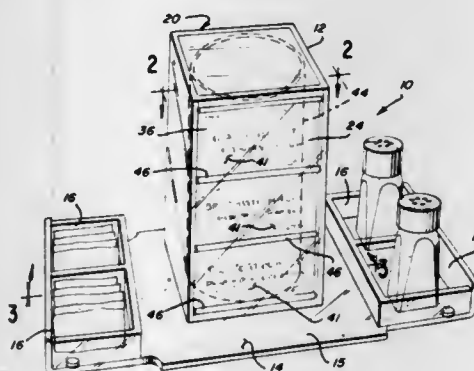
Stanley Morris, 13 Woodside Rd., Springfield, N.J. 07079

Filed Jul. 30, 1982, Ser. No. 403,575

Int. Cl.³ G09F 3/18

U.S. Cl. 40—10 D

16 Claims



1. In combination:

- a base;
- means on said base for holding condiments;
- a plurality of support members on said base, each support member facing in a different respective direction;
- means for mounting at least one advertisement on each of said support members;
- means mounting said support members for movement relative to said base to change the direction in which a given advertisement faces;
- a hollow, transparent tube having a plurality of walls and constituting transparent cover means for enclosing and protectively covering said support members;
- each support member and its respective advertisement facing a respective wall on said transparent tube; and,
- a resilient, strip-like member located within said tube and resiliently deformable between an expanded, open first condition and a second condition in which said strip-like member is at least partially closed for urging the advertisement on each support member toward its respective wall on the transparent tube.

4,432,152

PICTURE FRAME ARRANGEMENT

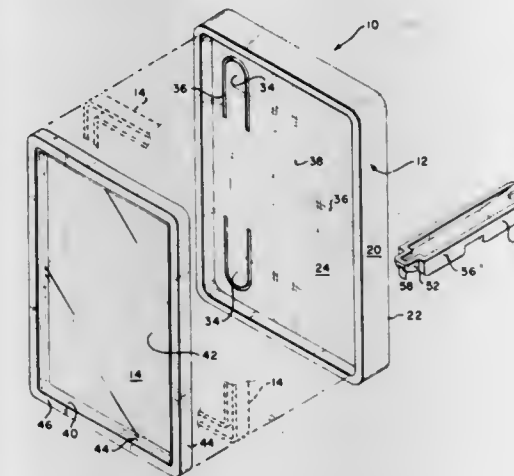
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Feb. 3, 1981, Ser. No. 231,187

Int. Cl.³ A47G 1/24

U.S. Cl. 40—152.1

10 Claims



1. A picture frame arrangement comprising: a frame having a planar principal support member of lateral and longitudinal extent and a peripherally extending boundary element projecting approximately perpendicularly from both the frontal and rearward surfaces of said support member;
- first and second pairs of web means, each of said pairs in spaced parallel relationship extending in straight line fashion between opposed areas along said boundary element projecting substantially perpendicularly from the rearward surface of said support member, said first pair disposed laterally, and said second pair disposed longitudinally;
- a plurality of tabs integral with said web means extending transversely between said first pair of web means and between said second pair of web means at positions juxtaposed to said boundary element;
- a window positioned across the frontal side of said support member and including a peripheral rim that interengages said boundary element to retain the frame and window in a fixed yet separable, relationship; and
- a hanger/holder comprising an elongate body portion having a pair of opposed parallel sides, a pair of parallel spaced apart elements depending substantially perpendicularly from said body portion along said pair of sides, and a tongue projecting from an end of said body portion, said tongue and said spaced apart elements being selectively engageable with each of said pairs of web means to provide an appropriate means for supporting said frame arrangement atop a surface and hanging said frame arrangement on a wall.

4,432,153

CUP WITH DETACHABLE BOTTOM

Gilbert Bachman, and Byrne Heninger, both of Atlanta, Ga., assignors to Dittler Brothers, Inc., Atlanta, Ga.

Filed May 27, 1982, Ser. No. 382,624

Int. Cl.³ G09F 3/00

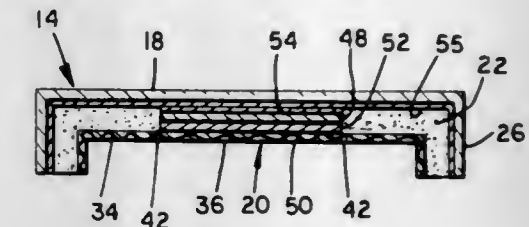
U.S. Cl. 40—324

5 Claims

1. A nestable and stackable beverage cup for carrying and relinquishing a contest game piece on the bottom thereof, said cup comprising:

- a single layered, substantially frustoconically tapered wall portion defining an open top end and an open bottom cavity;
- a laminated cup bottom mounted in said open bottom cavity of said wall portion to close said open bottom cavity, said laminated cup bottom including a downwardly disposed

annular flange so that said cup bottom will be held spaced apart from the cup bottom of an adjacent one of said cups in a nested stack of said cups, said laminated cup bottom comprising a fluid retaining layer and a game piece layer, said game piece layer comprising a sheet of material having perforations formed therethrough and defining a boundary partitioning said game piece layer into a mount-



ing portion and a game piece portion, indicia printed on at least one side of said game piece portion, and adhesive set between said fluid retaining layer and said mounting portion of said game piece layer, said game piece portion being selectively removable at said boundary of perforations from said laminated cup bottom; and means for joining said wall portion to said cup bottom to provide a seal therebetween.

4,432,154

PAGE MANIPULATION APPARATUS IN APPARATUS FOR AUTOMATICALLY TURNING PAGES

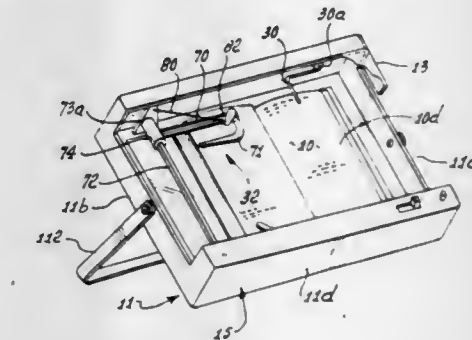
James A. D'Arcy, Laguna Beach, Calif., assignor to Dejon Corporation, Long Beach, Calif.

Filed Mar. 8, 1982, Ser. No. 355,347

Int. Cl.³ G09F 19/00

U.S. Cl. 40—531

17 Claims



1. In apparatus for sequentially turning pages of a book or the like, the combination comprising

- (a) structure forming a zone to receive said pages,
- (b) a turned page holder located proximate said zone to hold down a turned page, and
- (c) actuator driven means operatively connected with the holder for displacing same between down and up positions, the down position characterized in that the holder is maintained in clamping engagement with an edge portion of a turned page while a page to be turned is being displaced in the turn direction, said up position characterized in that the holder is temporarily raised to allow the turning page to be displaced downwardly onto a previously turned page, after which the holder returns to said down position,
- (d) the improvement comprising said holder including a first part movable up and down, and a second part carried by the first part for swinging movement relative thereto during holder displacement between said up and down positions.

4,432,155

FISHING ROD

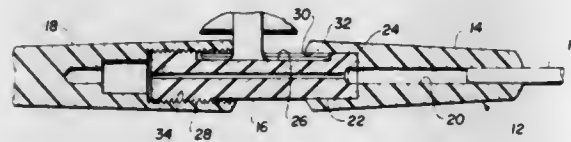
Earl Miller, Miami, Fla., assignor to Larco Products, Inc., Miami, Fla.

Filed Mar. 23, 1982, Ser. No. 361,062

Int. Cl.³ A01K 87/06

U.S. Cl. 43—22

6 Claims



1. In a fishing rod having a rod blank and a handle portion, the improvement wherein
- said handle portion is formed of a plastic foregrip portion made unitary with the end of said rod blank; a reel seat portion made integral with the rear portion of said foregrip; and a rear grip portion engageable and disengageable with the rear portion of said reel seat;
 - said reel seat having a flat portion for the seating thereon of the foot of a reel;
 - the back portion of said foregrip and the front portion of said reel seat cooperating to form a gap for receiving there-within the front end of the foot of a reel; and
 - said rear grip being engageable with the rear portion of said reel seat in such a way as to cause the forward end of said rear grip to overly said flat portion of said reel seat to thereby overly and clamp therebetween the rear portion of a reel foot, and thereby hold a reel firmly in place on said flat portion.

4,432,156

FISHING LURE

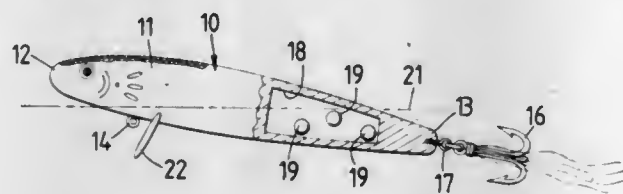
James R. Gowing, Altus, Ark., assignor to EBSCO Industries, Inc., Birmingham, Ala.

Filed Sep. 13, 1982, Ser. No. 417,031

Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.31

3 Claims



1. A fishing lure comprising,
- (a) an elongated body having means subjacent the front end portion thereof for connecting the body to a fishing line and having at least one fishing hook carried by the rear end portion thereof,
 - (b) there being an elongated cavity within the rear portion of said body, and
 - (c) a plurality of movable weights within said cavity with said cavity and said weights being constructed and arranged for said weights to move within said cavity while said body is floating at rest to urge said body to a generally upstanding position with its front end portion extending above the surface of the water and for said weights to move within said cavity upon retrieval of said body along the surface of the water to impart oscillation to said body about an elongated axis extending along the surface of the

water and through the lower surface of said front end portion and the upper surface of said rear end portion in opposite directions with said weights being below said elongated axis and said oscillating movement of said body producing a rattling sound that attracts fish.

4,432,157

FISHING LURE

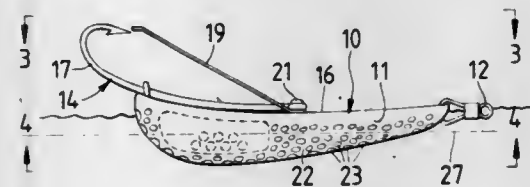
James R. Gowing, Altus, Ark., assignor to EBSCO Industries, Inc., Birmingham, Ala.

Filed Sep. 27, 1982, Ser. No. 424,325

Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.31

4 Claims



1. A fishing lure comprising,
- (a) an elongated body having means at the front end thereof for attaching a fishing line,
 - (b) a rearwardly and upwardly extending fishing hook carried by the upper rear portion of said body,
 - (c) there being at least one enclosed cavity within said body, and
 - (d) a plurality of movable weights within said cavity with said cavity and said weights being formed and arranged for said weights to move within said cavity in response to movement of said body through the water with the movement of said weights oscillating said body about an elongated axis of rotation extending above the longitudinal center line of said body to produce a rattling sound attractive to fish.

4,432,158

BALANCING BIRD

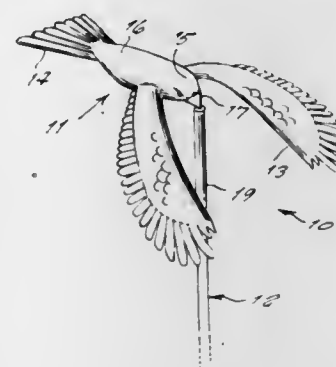
William M. Nicholas, Route 2, Box 660-K, Golden, Colo. 80403

Filed Feb. 28, 1983, Ser. No. 470,547

Int. Cl.³ A63H 13/00

U.S. Cl. 46—131

1 Claim



1. A balancing bird assembly, comprising, in combination, a bird figurine depicting a bird in flight and a pole upon which said bird figurine is supported in a balanced condition; said bird figurine including a body having a head at a forward end thereof, a downward beak on said head, a rearward tail and a pair of opposite, sideward wings, said tail and said wings forming spread-apart, balancing counterweights for said figurine when said beak is rested upon said post; said body comprising a hollow, rigid shell including said head, said beak, and base portions of said tail and said wings, an independently pivotable unit inside said body comprising a rigid frame including a downwardly spur protruding out of a hole through a tip of said

beak for resting also upon said post, and outward end portions of said tail and said wings protruding out of wide openings through ends of said tail base portion and said wing base portions; an upper end of said post including a horizontal, small surface upon which said beak and said spur may pivot; and a lower end of said post is mounted upon a rigid base.

4,432,159

TOY AND ASSOCIATED NOISE PRODUCING MECHANISM

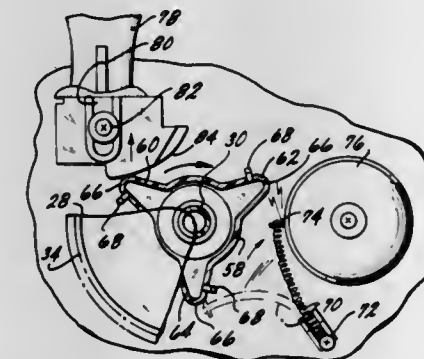
Hideyuki Kanno, Tokyo, Japan, assignor to Tomy Corporation, Carson, Calif.

Filed Jul. 13, 1981, Ser. No. 282,583

Int. Cl.³ A63H 5/00

U.S. Cl. 46—177

11 Claims



1. A sound producing device which comprises:
- a base;
 - a rotating means rotatively mounted on said base, said rotating means capable of rotating on said base in both a clockwise and a counterclockwise direction;
 - an elongated member having ends, said member located on said base adjacent to said rotating means with one of said ends connected to said base in a position such that the other of said ends of said member comprises a movable end which is capable of being contacted by said rotating means;
 - said rotating means contacting and engaging said member and moving said movable end of said member in a first direction in response to rotation of said rotating means in one of said clockwise or counterclockwise directions;
 - said rotating means contacting and engaging said member and moving said movable end of said member in a second direction in response to rotation of said rotating means in the other of said clockwise or counterclockwise directions;
 - a noise emitting means mounted on said base and operatively associated with said movable end of said member, said noise emitting means capable of emitting noise of at least two different types;
 - said movable end of said member interacting with said noise emitting means in response to movement of said movable end of said member in said first direction to cause said noise emitting means to emit a noise of a first type, said movable end of said member interacting with said noise emitting means in response to movement of said movable end of said member in said second direction to cause said noise emitting means to emit a noise of a second type.

4,432,160

MICROORGANISM INHIBITION OF FROST DAMAGE TO PLANTS

Steven E. Lindow, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 20, 1981, Ser. No. 294,604

Int. Cl.³ A01G 1/00

U.S. Cl. 47—2

17 Claims

1. A method for inhibiting frost injury to a plant host suscep-

tible to frost injury due to ice nucleation capable bacteria which comprises:

applying to said host plant or a part thereof antagonistic nucleation deficient bacteria capable of substantially diminishing the availability of a limited nutrient provided by said host plant, whereby said antagonistic bacteria colonize said plant and inhibit colonization by ice nucleation capable bacteria.

4,432,161

RECEPTACLE FOR CUT FLOWERS

Peter de Bruin, Maarheze, Netherlands, assignor to Coöperatieve Vereniging "Verenigde Bloemenveilingen Aalsmeer" (V.B.A.) W.A., Aalsmeer, Netherlands

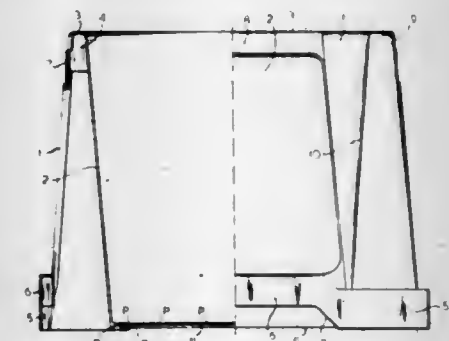
Filed Nov. 19, 1981, Ser. No. 322,762

Claims priority, application Netherlands, Nov. 20, 1980, 8006327

Int. Cl.³ A01G 5/00; B65D 85/50

U.S. Cl. 47—41 R

13 Claims



1. A receptacle for the storage and shipment of cut flowers, said receptacle forming a stackable unitary structure molded of a synthetic material, comprising
- an inner container body in the shape of a truncated pyramid of substantially rectangular cross-sectional shape and having a flat horizontal bottom wall and four flat side walls upwardly and outwardly sloping from said bottom wall to terminate in an upper circumferential upper edge enclosing a rectangular opening of larger area than said bottom wall,
 - an outer skirt structure enclosing said inner container body and having the general shape of a four-sided truncated pyramid of rectangular cross-section with downwardly and outwardly sloping sides, said skirt structure having a circumferential upper edge integrally connected to said container body upper edge, and a circumferential lower edge having support edge portions extending substantially in the plane of said container body bottom wall,
 - said skirt structure in the region of said lower edge thereof having a stiffening section including a lower handgrip and including a circumferentially extending double-walled reinforcing rim of inverted U-shaped cross-section, said reinforcing rim having, at each side of said skirt structure, a raised central portion, the lower edge of which being at a level sufficiently above said lower edge support portions to form the lower handgrip allowing the insertion of a hand therebelow,
 - each of said sides of said skirt structure having a central opening occupying the greater part of the surface area of said side, the central opening being enclosed by a top peripheral portion, bottom peripheral portion and opposed side peripheral portions defining upper, lower, and side edges, said central opening bounded at its lower edge by said raised central reinforcing rim portion and said opening having a flanged upper edge as a ridge forming an upper handgrip,
 - said outer skirt structure forming, between said central openings in said four sides thereof, four corner posts each comprising a reinforcing rib portion in the shape of a 90° sector of a truncated upwardly tapering cone extending

between said reinforcing rim and said upper edge of said skirt structure.

4,432,162

PORTAL GUARD

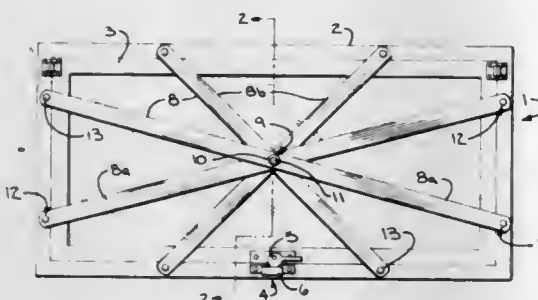
Daniel J. Foote, 7323 Wellauer Dr., Wauwatosa, Wis. 53213

Filed Apr. 12, 1982, Ser. No. 367,397

Int. Cl.³ E06B 9/01

U.S. Cl. 49—55

2 Claims



1. A security device for preventing entry through a portal comprising:

- a plurality of elongated arms pivotally connected to each other at a single centrally located point intermediate their ends so that said arms may be rotated independently of each other about said single pivot point and be positioned at various angles relative to each other, and
- said arms being of at least two different lengths so that rotation of said arms about said single pivot point allows the ends of said arms to substantially conform to all four sides of rectangular openings of various sizes and said arms having mounting means approximate their ends to secure said arms to the frame of the portal.

4,432,163

ADJUSTABLE MOUNTING SYSTEM FOR PATIO DOORS AND THE LIKE

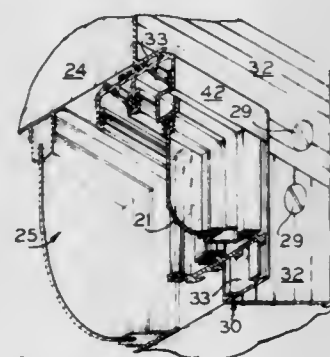
Gerald D. Cassiere, Chicago, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Mar. 17, 1982, Ser. No. 358,849

Int. Cl.³ E05B 65/04

U.S. Cl. 49—63

4 Claims



1. An adjustable framework system for mounting a storm glass assembly adjacent a prime assembly contained within a preformed wall opening comprising first and second separate, interconnectable pieces, said first piece being a flange having first and second surfaces connected together at an angle along a common edge, said first surface having opposed planar sides for alternately facing flush against the exterior of said wall surrounding said opening, said second surface having a planar exterior side facing said first surface and an opposed interior side formed with a pair of longitudinally extending L-shaped plan profile ribbings which are in mirror image relation to one another, and said second piece being a frame having a first side facing said second surface interior side formed with longitudinally extending L-shaped plan profile channel members comprising at least a pair of end channel members disposed respectively at opposite ends of said first side in mirror image relation

to one another and two spaced-apart pairs of adjacent intermediate channel members disposed between said end channel members, each pair of intermediate channel members being in mirror image relation to one another, and said frame having a second side facing into said opening formed with longitudinally extending mounting means for supporting said storm glass assembly for sliding movement in said opening, each said channel member pairing with a second adjacent one of the remaining channel members which is in mirror image relation to that each said channel member to define a mounting track for engagingly receiving said ribbings such that plural alternative said mounting tracks are provided overlapping one another for selective adjustable positioning of said frame on said flange in said opening.

4,432,164

DEVICE FOR CONTROLLING THE OPENING AND CLOSING OF FLUIDTIGHT DOORS

Paul R. Baguet, Le Taillan, France, assignor to S.A.R.L. Comodore International, Blanquefort, France

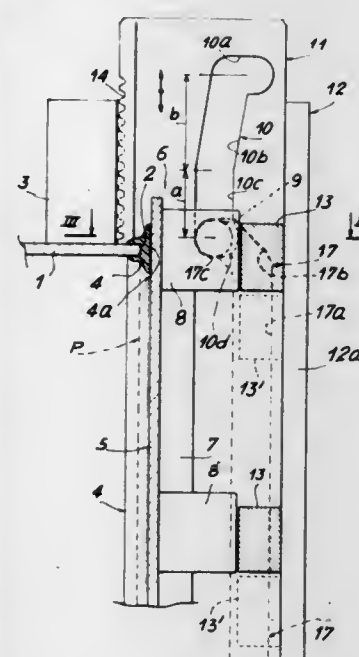
Filed Jun. 21, 1982, Ser. No. 390,654

Claims priority, application European Pat. Off., Jun. 25, 1981, 81450008

Int. Cl.³ E05D 15/10

U.S. Cl. 49—209

8 Claims



1. A device for controlling the opening and closing of a pressure-resistant door mounted on a frame for translation relative to the plane of an associated access opening, said door controlling device comprising planar slides provided on said door and disposed in planes parallel and perpendicular to said access opening plane, said slides having first guideways defined by slots, said slides being displaceable by translation in their planes parallel to said access opening plane, means for controlling the displacement of said slides, lateral guide members in parallel spaced relation on opposite sides of said door freely displaceable in said first guideways, second guideways receiving said lateral guide members, said second guideways being formed in two wall members fixed to said frame, facing and parallel to said slides, said first and second guideways having paths determined to constrain the movement of said guide members and thereby the panel of said door during displacement of said slides, such that for engagement and disengagement with the edge defining said access opening, said door panel being displaceable at right angles to said access opening and at a distance from said access opening edge, said door panel being displaceable by translation parallel to said access opening plane.

4,432,165

WINDOW REGULATOR FOR AN AUTOMOTIVE VEHICLE

Kinichi Ishii, Yokohama, Japan, assignor to Kabushiki Kaisha Johnan Seisakusho, Japan

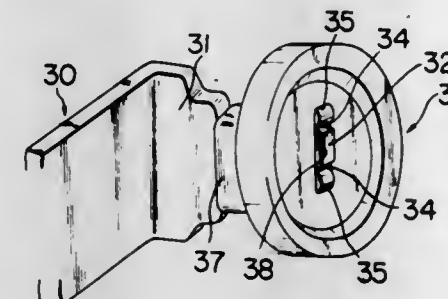
Filed Nov. 23, 1981, Ser. No. 324,091

Claims priority, application Japan, Dec. 15, 1980, 55-179933[U]

Int. Cl.³ E05F 11/44

U.S. Cl. 49—351

6 Claims



1. A window regulator for an automotive vehicle for moving a window pane for a vehicle door up and down, comprising:

- (a) a movable guide rail (8) attached to a lower edge of the window pane;
- (b) a fixed guide rail (9) fixed to the vehicle door;
- (c) a main arm (1), a first end of which moves along said movable guide rail and a second end of which is pivotally supported on the vehicle door;
- (d) a first subarm (61), a first end of which moves along said movable guide rail and a second end of which is pivotally supported at a central portion of said main arm;
- (e) a second subarm (62), a first end of which moves along said fixed guide rail and a second end of which is pivotally supported at the central portion of said main arm coaxially with said first subarm; and
- (f) a plurality of sliders (36) fixedly connected to the respective first ends of said main arm, said first subarm, and said second subarm so as to be slidable along said movable guide rail and said fixed guide rail, said main arm, said first subarm and said second subarm each include at the first end thereof, respectively, a bent portion (31) having a slider-fixing portion (32) formed with a pair of shoulder portions (33) on either side thereof for supporting said slider and a pair of bendable tabs (35) at a free end surface thereof for fixing said slider thereto.

4,432,166

TRIMMING OR SEALING STRIPS

Erich Weimar, Viersen, Fed. Rep. of Germany, assignor to Drahtex Development AG, Zug, Switzerland

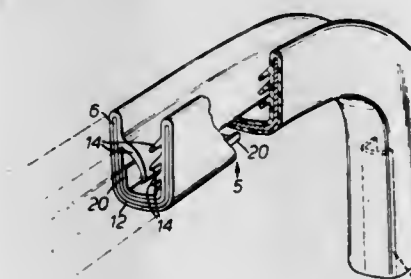
Filed Nov. 24, 1981, Ser. No. 324,778

Claims priority, application United Kingdom, Nov. 29, 1980, 8038398

Int. Cl.³ E06B 7/16

U.S. Cl. 49—491

7 Claims



1. A channel-shaped trimming or sealing strip which is shaped so that the side walls of the channel-shape embrace a mounting flange for the strip and which is in the form of a

channel-shaped flexible metal carrier covered with flexible covering material defining gripping lips running longitudinally along the inside of the channel on the opposite inside walls thereof so as to grip the said flange, the strip being in combination with a separate, relatively straight, reinforcing member which is fitted within the channel and which is stiff but sufficiently long and pliable to enable it to be bent slightly, with the strip, to hold the strip in a slight curve.

4,432,167

CORNER COVER FOR A WINDOW

Yoshio Watanuki, Zama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

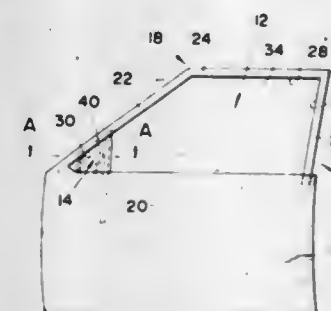
Filed Jun. 3, 1982, Ser. No. 384,587

Claims priority, application Japan, Jun. 24, 1981, 56-98049

Int. Cl.³ B60J 5/04

U.S. Cl. 49—502

11 Claims



1. A corner cover for a window unit having a window frame which forms an opening with a corner, comprising:

- (a) a panel attached to the window frame and covering the corner of the opening, the panel and the window frame forming a first recess facing in a direction parallel to the panel;
- (b) an outer member covering one surface of the panel;
- (c) a flange formed on the outer member, the flange pointing in the direction opposite that of the first recess and fitting into the first recess to engage the panel;
- (d) a hooked portion formed on the outer member and defining a second recess which faces in the direction opposite that of the first recess, part of the panel fitting into the second recess to engage the hooked portion, whereby the outer member can be attached to the panel by moving the outer member in one direction along the panel from an offset position to insert the flange and the part of the panel into the corresponding recesses; and
- (f) means for preventing movement of the outer member when the outer member would be moved from its attached position in the direction opposite that of attaching movement of the outer member.

4,432,168

FINISHING APPARATUS WITH IMPROVED DISCHARGE DOOR STRUCTURE

John F. Rampe, Mayfield Heights, Ohio, assignor to Rampe Research, Cleveland, Ohio

Filed May 11, 1981, Ser. No. 262,552

Int. Cl.³ B24B 31/06

U.S. Cl. 51—163.1

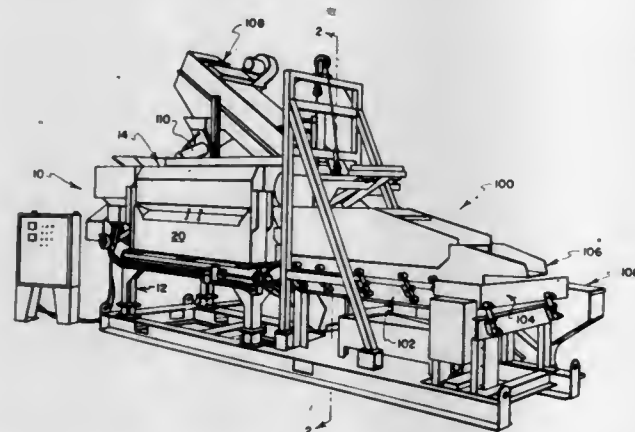
12 Claims

1. A vibratory finishing machine, comprising:
- (a) a frame structure;
 - (b) a vibratory tub structure carried on the frame structure but free to vibrate relative to the frame structure;
 - (c) means for vibrating the vibratory tub structure relative to the frame structure for imparting a vibratory finishing action to such workpieces and finishing media as may be inserted into the vibratory tub structure;
 - (d) the vibratory tub structure having portions which vibrate with the vibratory tub structure and which define a discharge opening through which workpieces and finish-

ing media may discharge from the vibratory tub structure; and.

(e) discharge means for selectively permitting and preventing discharge of workpieces and finishing media from the vibratory tub structure through the discharge opening including:

(i) a closure member movable along a path of travel between an open position wherein workpieces and finishing media are permitted to discharge in a substantially unobstructed manner from the discharge opening, and a retaining position substantially adjacent the discharge



opening of the vibratory tub structure wherein the closure member extends entirely across the discharge opening and serves to retain workpieces and finishing media within the vibratory tub structure when the vibratory tub structure is moving relative to the closure member during operation of the machine; and,

(ii) mounting means, separate from said frame, mounting the closure member for movement along said path of travel and supporting the closure member so that it does not move with the vibratory movements of the vibratory tub structure.

4,432,169

GLASS WARE ETCHING APPARATUS

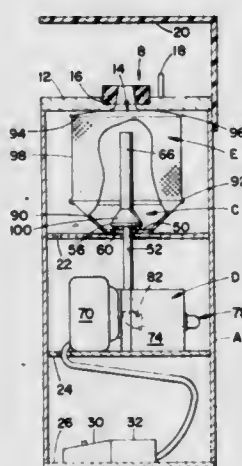
James R. Schultz, Akron; Francis E. Smith, South Russell, and Ralph J. Jurecki, Cleveland, all of Ohio, assignors to Cole National Corporation, Cleveland, Ohio

Filed May 15, 1981; Ser. No. 264,034

Int. Cl.³ B24C 3/04, 5/04, 9/00

U.S. Cl. 51-424

15 Claims



1. An abrading apparatus for abrading workpieces with abrasive grit, the apparatus comprising:

a workholder for holding a workpiece to be abraded, the workholder having an aperture which is adapted to pass abrasive grit to impinge on a selected region of the held workpiece;

entraining means for entraining abrasive grit in a flow of air, the entraining means including:

a base, an air inlet tube extending through the base and terminating in a lip having a preselected vertical extension above the base,

an annular disc disposed proximate to the base for defining a generally horizontal, peripheral gap annularly around the inlet tube and adjacent the base, the peripheral gap being disposed between the base and the annular disc, the peripheral gap having a preselected vertical width which is substantially the same as the inlet tube lip vertical extension above the base,

a directing tube of substantially unrestricted internal cross section extending vertically from adjacent and aligned with the inlet tube lip to adjacent and aligned with the workholder aperture for directing the air flow with entrained grit from adjacent the inlet tube lip and the peripheral gap toward the workholder aperture;

air flow supplying means operatively connected with the air inlet tube for supplying the air flow thereto; and,

grit collecting means for collecting grit rebounding from the workpiece held in the workholder, the grit collecting means being disposed adjacent the workholder and being operatively connected with the entraining means to return collected grit to the base to be drawn through the peripheral gap.

4,432,170

OUTDOOR TELEPHONE BOOTH

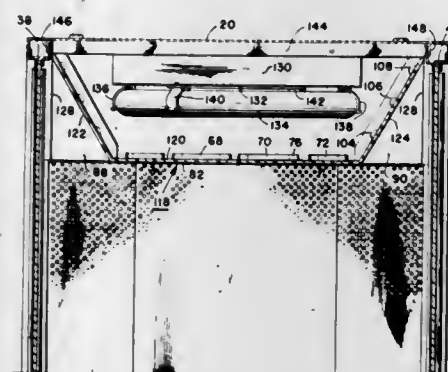
Gerald M. Hewell, Dewy Rose, Ga., assignor to Royston Manufacturing Corporation, Royston, Ga.

Filed Jun. 28, 1982; Ser. No. 393,092

Int. Cl.³ E04H 1/14

U.S. Cl. 52-28

11 Claims



1. A telephone booth comprising an enclosure having two vertically elongated translucent side panels extending uninterrupted substantially from the bottom to the top of the booth, a source of illumination located between said side panels near, but below, the top of the booth, and a semitransparent diffuser comprising a substantially horizontal panel located underneath said source of illumination, a first oblique panel located between said source of illumination and one of the two side panels, and a second oblique panel located between said source of illumination and the other of the two side panels, said oblique panels extending in a continuously oblique direction from said horizontal panel upwardly and outwardly toward said side panels.

4,432,171

BUILDING MODULES

Phillip H. Boot, N. Turramurra, NS, Australia, assignor to Hanford Pty. Ltd., New South Wales, Australia

Continuation of Ser. No. 158,230, Jun. 10, 1980, abandoned.

This application Sep. 13, 1982; Ser. No. 417,340

Claims priority, application Australia, Jun. 14, 1979, PD9214

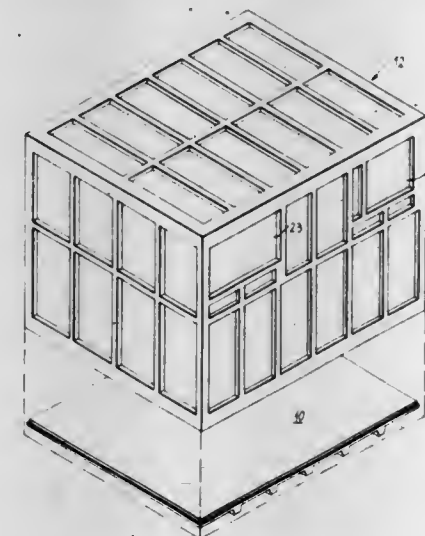
Int. Cl.³ E04H 1/00; E04B 1/348

U.S. Cl. 52-79.1

8 Claims

1. A method of making a room sized building module having walls and a ceiling comprising the following steps:

- (1) providing premade sheet lining material;
- (2) erecting formwork to support said premade sheet lining material;
- (3) temporarily fastening said lining material to the formwork to form the interior surface of the module;
- (4) erecting reinforcing steel around said lining material appropriate to a three dimensional skeletal frame of reinforced concrete matrix material, said skeletal frame of reinforced concrete matrix material including a perimeter beam surrounding said ceiling and extending along the top of each wall, a vertical column at each wall corner, a beam extending along the bottom of each wall and connecting adjacent vertical columns, a plurality of spaced apart



ceiling frame members in the ceiling forming a grid and extending between sides of the perimeter beam, and a plurality of spaced apart wall frame members forming a grid and extending between adjacent columns and between the perimeter beam and the beam along the bottom of the

- (5) applying concrete matrix material to said reinforcing steel and to said lining material to form said skeletal frame around the reinforcing steel thereby bonding said concrete matrix material in the form of a skeletal frame to said lining material;
- (6) cutting door and window openings in said lining material; and
- (7) removing said formwork.

4,432,172

BREAKAWAY TIMBER SUPPORT POLES

Charles R. Kuykendall, Burnsville, and Richard B. Castle, St. Paul, both of Minn., assignors to Minnesota Mining & Manufacturing Company, Saint Paul, Minn.

Filed Jan. 11, 1982; Ser. No. 338,250

Int. Cl.³ B24B 7/00

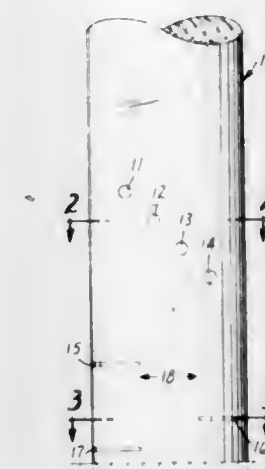
U.S. Cl. 52-98

11 Claims

1. A method for modifying a timber support pole prior to or after insertion in the ground near a roadway to reduce impact forces if a vehicle collides with the pole, comprising the steps of

- (1) cutting one or more recesses in the pole to weaken the pole under dynamic stresses, whereby the pole will break upon impact by a 1000-kilogram vehicle traveling 30 or more kilometers per hour, and unrestrained occupants in the vehicle will be projected forward at less than 12 meters/second; and

- (2) filling at least one of the recesses with a polymeric filler composition to increase the bending strength of the pole



by at least one-third over the bending strength of the pole in its cut unfilled form.

4,432,173

SWIMMING POOL INTEGRAL STRUCTURAL WALL BRACE SYSTEM

Werner L. Kleinert, Sterling Heights, Mich., assignor to Carl R. Meyer; Carol S. Meyer, both of Port Isabel, Tex.

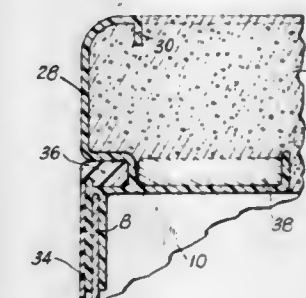
Continuation of Ser. No. 131,800, Mar. 19, 1980. This

application Feb. 25, 1982; Ser. No. 352,266

Int. Cl.³ E02D 27/00

U.S. Cl. 52-167.7

10 Claims



1. In an inground swimming pool wall construction comprised of a plurality of upstanding substantially identical modular units secured together, the improvement comprising:

- (a) each modular unit being defined by a sheet of bendable material having an integral vertical flange, at one end thereof, extending substantially perpendicular thereto and outwardly of the pool for imparting rigidity to the wall construction and sustaining vertical compression loading imposed from above, outwardly directed forces imposed by water contained within the pool and inwardly directed forces imposed by surrounding earth;
- (b) each modular unit having its opposite end secured to the flanged end of an adjacent unit;
- (c) the end portion of each modular unit, adjacent its flange, being offset outwardly by an amount substantially equal to the thickness of the bendable material, with the opposite end of an adjacent unit being seated in the offset;
- (d) the offset and the opposite end having mutually nested inwardly open depressions therein;
- (e) adjacent modular units being secured together by headed fasteners, the heads of which are seated within the depressions of the innermost of the modular units whereby the nested depressions serve as means for absorbing shear forces developed between the modular units; and
- (f) the inner faces of the modular units collectively defining a substantially smooth and continuous interior surface.

4,432,174

SELF-SUPPORTING INSULATION ELEMENT

Paul Grether, Seuzach; Kurt Brader, Winterthur, and Bruno Keller, Zurich, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

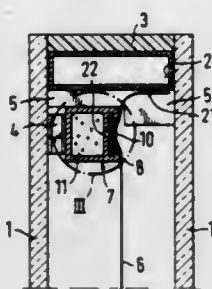
Filed Jun. 22, 1982, Ser. No. 390,946

Claims priority, application Switzerland, Jul. 14, 1981, 4607/81

Int. Cl.³ E04B 1/00

U.S. Cl. 52—222

10 Claims



1. A self-supporting insulation element for a double-paned window, said element comprising a frame consisting of a torsionally rigid section member having a guide ledge on one side; at least one longitudinally expansive rubbing strip disposed in said guide ledge for movement relative to said frame; a single coated foil coaxially stretched over said frame in a plane; and a plurality of spots connecting said foil to said strip in offset relation to said plane towards said frame.

4,432,175

POST-TENSIONED CONCRETE SLAB

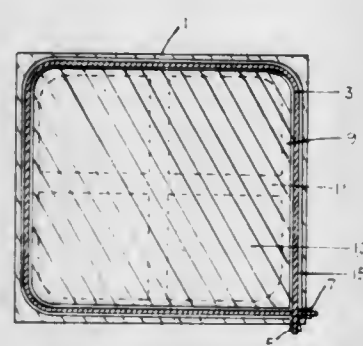
Rodney I. Smith, Midland, Va. 22728

Filed Feb. 17, 1981, Ser. No. 234,730

Int. Cl.³ E04B 1/06

U.S. Cl. 52—224

7 Claims



1. A post-tensioned concrete slab assembly comprising a concrete slab, a tendon member, and a pair of anchor means, said tendon member being pre-formed in a loop to define an enclosed area within said slab, said tendon member having ends adjacent one another which extend outside said slab, the tendon member being positioned within the periphery of said slab to form said enclosed area bounded by the tendon member and an exterior slab portion surrounding the enclosed area of the tendon member, said anchor means being secured to the ends of said tendon member so that said tendon member is placed under an original tension of around 28,000 p.s.i.

4,432,176

VERTICAL MODULAR CONSTRUCTION ELEMENT AND CONSTRUCTION METHOD USING THE SAME

M. Edmond H. M. Balzer, 42, Allee Francois-Verdier, 31000 Toulouse, France

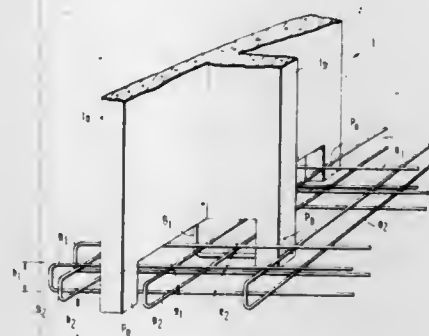
Filed Dec. 29, 1980, Ser. No. 220,903

Claims priority, application France, Dec. 28, 1979, 79 32164

Int. Cl.³ E02D 27/00

U.S. Cl. 52—293

2 Claims



1. A method for constructing a masonry retaining wall, comprising disposing a plurality of modular masonry construction elements side by side on end, each said element being of T-shaped cross section in which the crosspiece of the T comprises a principal rib and the stem of the T comprises at least one secondary rib joined thereto at right angles, said element having at least three supporting feet each in prolongation of a free edge of a said rib, said feet being spaced apart by recesses, and at least one U-shaped steel rod embedded in said element in the plane of a said secondary rib and having two vertical legs one of which is embedded in the free edge of said secondary rib and extends down into said foot of said secondary rib but is spaced above the lower end of said foot, the other said leg being embedded in the junction between said at least one secondary rib and said primary rib, a portion of the bottom of said loop being exposed within said recesses, said principal ribs of said modular elements being disposed in edge-to-edge relationship with each other, threading horizontal steel reinforcing rods through said exposed portions of said U-shaped rods and through said recesses from element to element with each horizontal reinforcing rod extending between a plurality of said elements, threading further steel horizontal reinforcing rods parallel to the first-mentioned steel horizontal reinforcing rods and disposed on opposite sides of the plane of said principal ribs, threading horizontal steel reinforcing rods through said recesses parallel to the plane of said U-shaped rod and on opposite sides thereof and above the first-mentioned said rods, and casting concrete about the lower ends of said elements to embed said exposed portions and feet and reinforcing rods in said concrete.

4,432,177

BUILDING BLOCK FOR FLOORS AND WALLS OF A BUILDING

Claudio Amesso, Monza, and Paolo Donaggio, Salo, both of Italy, assignors to Industrie Pirelli, Milan, Italy

Filed Nov. 6, 1981, Ser. No. 318,931

Claims priority, application Italy, Nov. 6, 1980, 25800 A/80

Int. Cl.³ E04F 13/02

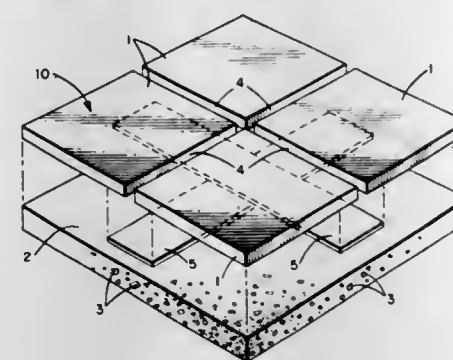
U.S. Cl. 52—309.17

10 Claims

1. A building block for laying a floor or wall comprising a plurality of tile blocks bonded to a surface of a synthetic resin base, characterized by the fact that said base comprises a mixture of resin and pieces of acoustical insulation dispersed therein, and means for regulating the quantity of base material which flows to between adjacent edges of the tile blocks, said

means for regulating the quantity of resin composition between the adjacent edges of the tile blocks being a paper sheet dis-

posed between the base and the tile blocks having a hole therein centered below each tile block.



4,432,178

COMPOSITE STEEL AND CONCRETE FLOOR CONSTRUCTION

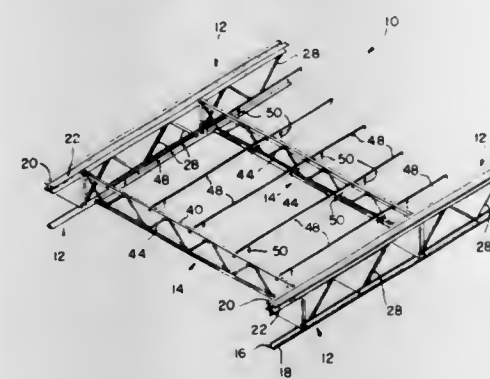
Buckie A. Taft, Bellevue, Wash., assignor to Steel Research Incorporated, Bellevue, Wash.

Filed Jun. 1, 1982, Ser. No. 383,530

Int. Cl.³ E04B 5/16

U.S. Cl. 52—334

9 Claims



1. In a composite steel truss and concrete floor construction having primary steel open web truss framing members, secondary joist framing members supported at their ends on said truss framing members, and a concrete slab, the improvements comprising:

- a top chord means for said primary open web truss framing members including generally horizontally disposed support means for supporting the ends of said secondary framing members,
- bottom chord means for said primary open web truss framing members and web means structurally interconnecting said top and bottom chord means; and
- said concrete slab means being formed so as to extend from a level above the uppermost point of said top chord to a level below the uppermost point of said top chord so as to at least partially embed said top chord means in said concrete and thereby causing said top chord means to function as a continuous shear transfer connector means in said composite floor construction.

4,432,179

LOW HEAT TRANSMISSION FRAMING RAIL STRUCTURE, PARTICULARLY DOOR OR WINDOW FRAMING

Otto Bachmann, Birkenweg 2, CH-6280 Hochdorf, Switzerland

Filed Nov. 16, 1981, Ser. No. 321,404

Claims priority, application Switzerland, Dec. 8, 1980, 9036/80

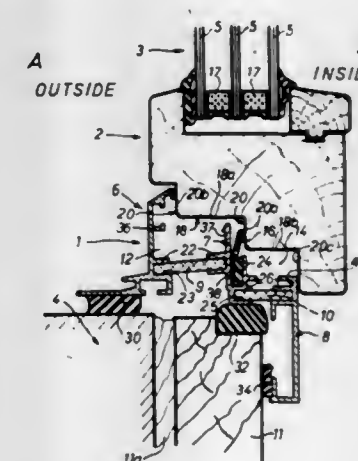
Int. Cl.³ E04B 1/62

U.S. Cl. 52—396

15 Claims

1. Low heat transmission framing rail combination structure,

particularly to form aluminum window or door framing elements, for cooperation with a window or door counter element (2) comprising, in accordance with the invention, three separate elongated, parallel-oriented metal rails (6, 7, 8) forming a first, outer metal rail (6), a second intermediate metal rail (7), and a third, inner rail (8); a first insulating material connecting strip (9) secured to the outer rail (6) and to the side of the second, intermediate rail (7) facing the outer rail, and structurally connecting said first, outer and second, intermediate rails together and forming an assembly; a second insulating material connecting strip (10) secured to the other side of the second, intermediate rail (7) and to the facing side of the third, inner rail (8), and structurally connecting said assembly of the first (6) and the second (7) rails and the first strip (9) to the third rail (8),



the connecting strips (9, 10) extending outwardly from opposite sides of said second, intermediate strip (7), offset with respect to each other along the width of the rail so as to be out-of-alignment with respect to each other to prevent direct heat transmission between said strips through the intermediate rail (7) and forming continuous structural connection strips between said intermediate metal rail (7) and the first, outer metal rail and the third, inner metal rail (8), respectively, while inhibiting metal-to-metal heat transfer between said rails, and projecting rail strips (36, 37, 40) extending from said separate rails (6, 7, 8) to form, with the window or door counter element, two air chambers (12, 14) separated from each other by the projecting rail strip (37) from the intermediate or second rail (7) and by said two connecting insulating strips (9, 10).

4,432,180

THERMAL INSULATING SYSTEM PARTICULARLY ADAPTED FOR BUILDING CONSTRUCTION

Harrison G. Dyar, P.O. Box 185, Tampa, Fla. 33601

Division of Ser. No. 215,083, Dec. 10, 1980, Pat. No. 4,334,395.

This application May 3, 1982, Ser. No. 374,258

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

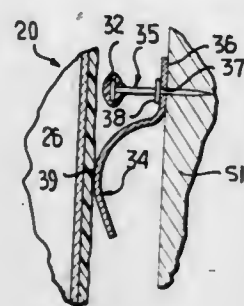
Int. Cl.³ E04B 1/78

U.S. Cl. 52—407

6 Claims

1. A system for insulating building walls, ceilings, floors or like structure comprising wall means for forming a hollow insulating panel defining an interior chamber under negative pressure, means contacting a limited exterior surface area of said panel for supporting said panel in generally spaced relationship from an associated building wall, ceiling, floor or like structure, means normally spaced from the exterior surface of said panel for contacting a limited exterior surface area of said panel only upon said first-mentioned contacting means becoming inoperative which would in the absence of said second-mentioned contacting means result in direct contact between

said panel and the associated building wall, ceiling, floor or like structure, said second-mentioned contacting means being an elongated pin-like element of relatively small cross-sectional configuration whereby thermal conduction transfer there-



through is substantially negligible, said first-mentioned contacting means being a leaf spring and said pin-like element and leaf spring being disposed in immediate adjacent relationship to each other.

4,432,181

WALL CONSTRUCTION FOR ARCHITECTURAL STRUCTURE

Motokatsu Funaki, 430 Shimo-Tsuchidana, Fujisawa-shi, Kanagawa-ken, Japan

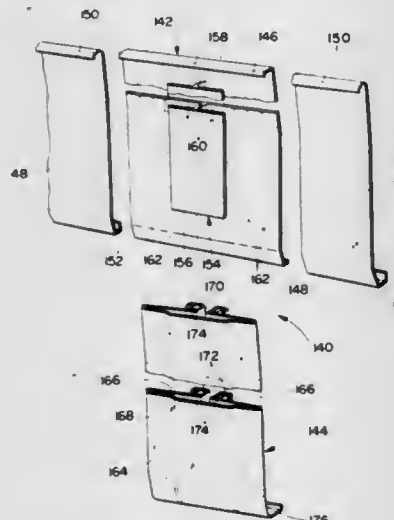
Filed May 5, 1982, Ser. No. 375,253

Claims priority, application Japan, Aug. 13, 1981, 56-119347; Sep. 30, 1981, 56-144186; Sep. 30, 1981, 56-153786; Nov. 11, 1981, 56-167130

Int. Cl.³ E04F 13/08; E04B 1/54

U.S. Cl. 52-459

7 Claims



1. A wall construction for an architectural structure comprising:

- base means;
- first coat means laid on said base means;
- a plurality of elongated supporting members each formed of metal sheet by bending and disposed on said first coat means in the vertical direction of said wall construction so as to be spaced from each other at a predetermined interval in the lateral direction of said wall construction;
- a plurality of sheathing members each fixedly supported at both ends thereof on said adjacent supporting members to cover said first coat means and define a space between said sheathing members and said first coat means, and
- face means laid on said sheathing members,
- said face means including a plurality of face members disposed adjacent to one another in the lateral direction of said wall construction, said laterally adjacent face members being connected to each other by connecting means, said face members including engaging portions at the upper and lower ends thereof,
- said connecting means comprising a connecting member provided at the upper and lower ends thereof with engag-

ing portions respectively fitted with respect to said upper and lower engaging portions of said laterally adjacent face members, and a holding member for holding said adjacent face members with respect to said connecting member; said holding member having a front wall and a rear wall separated into two sections with a gap interposed therebetween and being formed at the upper and lower ends thereof with engaging portions respectively fitted with respect to said upper and lower engaging portions of said adjacent face members;

ends adjacent to each other of said sections of said rear wall being formed at the outside portion thereof with receiving means which respectively receive therein ends opposite to each other of said adjacent face members; and

said receiving means being filled at the portions thereof adjacent to each other with a calking material

4,432,182

CEILING TILE SUSPENSION SYSTEM

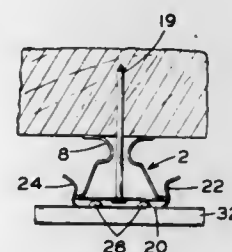
Lee W. Addie, and James C. Ollinger, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Sep. 17, 1981, Ser. No. 302,981

Int. Cl.³ E04B 5/52; E06B 3/54

U.S. Cl. 52-480

1 Claim



1. A ceiling suspension system comprising
 - (a) a runner structure having:
 - (1) a generally trapezoidal cross section with a flat base having a plurality of holes of a certain diameter therein and two parallel edges forming flanges;
 - (2) inwardly of the flanges and fastened to the flat base there are two leg members resiliently mounted and inclined slightly toward each other and each having a lip structure;
 - (3) the lips of the two legs being spaced apart a distance ranging from slightly less than to the same as the diameter of the holes through the flat base of the runner;
 - (b) a clip structure comprising:
 - (1) a flat body having on two opposite sides thereof flange means projecting from the flat base generally perpendicular therefrom and being of an S-shaped configuration, the spacing between said flange means being such that said flange means will spring away from the edge of the flanges of the runner structure and then spring around the edge of the flange of the runner structure to hold the flat body of the clip adjacent the flat base of the runner;
 - (2) a C-shaped projection fastened to a third side of the clip flat body, said C-shaped projection having two parallel sides and one perpendicular connecting side with one parallel side being positioned in the plane of the flat body, said perpendicular side extending from the plane of the flat body in a direction opposite from the direction that the flange means extend from the flat body, and the second parallel side of the C-shaped projection being in a plane parallel to the flat body and spaced therefrom;
 - (c) a ceiling tile positioned adjacent the flat body of the clip and the edge of said ceiling tile being engaged by the side of the C-shaped projection in the plane spaced from, and parallel to, the flat body of the clip; and
 - (d) a fastening means passing through a hole of the flat base of the runner and between the lips of the legs of the runner into an overlying ceiling structure to mount the runner adjacent

a ceiling structure with the clip being mounted on the runner and a ceiling tile being retained by said clip.

4,432,183

ROOFING TILE

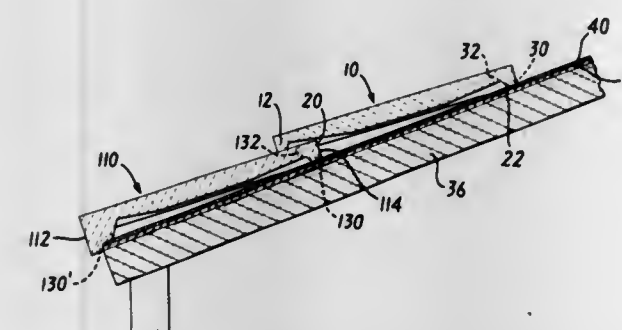
Robert D. Pike, Lake Placid, and Elroy F. Bobolts, Pembroke Pines, both of Fla., assignors to Gory Associated Industries, Inc., Ft. Lauderdale, Fla.

Filed Apr. 3, 1981, Ser. No. 249,002

Int. Cl.³ E04D 1/00

U.S. Cl. 52-533

4 Claims



1. In a flat shingle style concrete roofing tile adapted to be laid over an underlayment in a series of courses on a roof and fastened to said roof by mechanical fastening means, the tile having thickened edges along the front, back and sides molded to the underside of the tile, a front edge and a front portion of the side edges forming a step of reduced thickness relative to an adjacent part of the side edges which is adapted to resist a tile in an upper course from sliding down an inclined roof when engaged with the course immediately below it, a rear portion of said side edges and the back edge being shaped so as to provide an extended bearing surface along the back edges and rear portion of the side edges of the tile when said tiles are lapped in successive courses, and complementary flanges extending from each side of the tile, each flange forming a ridge and a groove, the groove of each tile being adapted to receive the ridge of an adjacent tile, the improvement wherein; said roofing tile further comprises:

weep holes molded in a bottom surface of said back edge and having beveled areas along said back edge leading into said weep holes, and a sealant being applied at said extended bearing surface, said beveled areas and said sealant being located so as to divert the flow of water through said weep holes and away from said mechanical fastening means and to provide means for draining water which accumulates between the tile and the underlayment, thereby prolonging the useful life of said underlayment.

4,432,184

SUPPORT FOR THE CONSTRUCTION OF BUILDINGS
Heinrich Holdschlag, Burloerstrasse 63, D-4280 Borken 1, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,059

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 8008815[U]

Int. Cl.³ E04C 3/30

U.S. Cl. 52-732

15 Claims

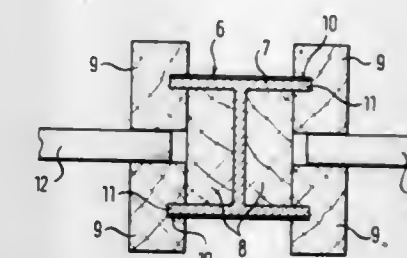
1. A support for upholding at least one building element, said support comprising

four corner elements, with distances of said corner elements from each other in one orthogonal direction at least the size of the building element, and

an intermediate element engaged with each of said four corner elements through a tongue and groove arrangement, said intermediate element receding in at least one orthogonal direction relative to the external side of said corner elements and bearing the load of at least one building element that said support upholds,

said four corner elements at least a height of two building stories and said intermediate element being interrupted at

a position where the building element is guided across the intermediate element and between the corner elements,



4,432,186

AUTOMATIC BAG HANGER

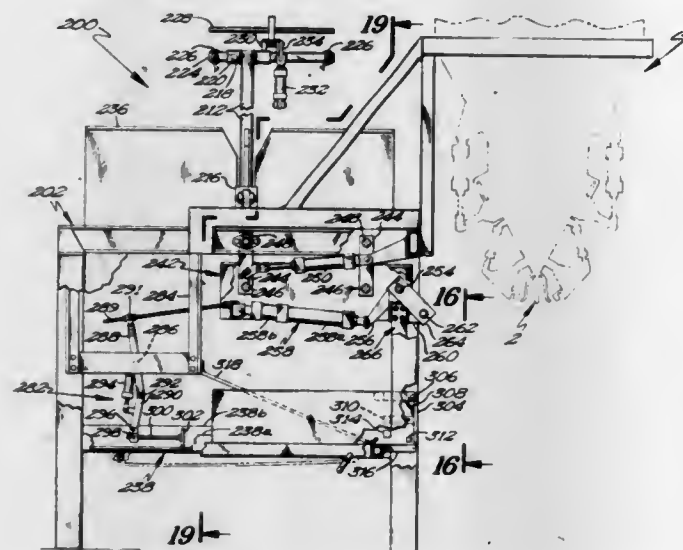
Harold R. McGregor, 1234 Brady Blvd. P.O. Box 710, Owatonna, Minn. 55060

Continuation-in-part of Ser. No. 146,303, May 5, 1980, Pat. No. 4,322,932. This application Aug. 3, 1981, Ser. No. 289,803

Int. Cl.³ B65B 43/18

U.S. Cl. 53—69

10 Claims



1. An automatic bag hanger for handling and accurately hanging bags to be filled on a filling apparatus comprising gripping means, said hanger comprising: means for picking a bag to be filled off a stack of bags; means for transferring said bag from said picking means to a registry position; and hanging means for hanging said bag on said filling apparatus from said registry position, said hanging means comprising a first moving means movable between a first position adjacent said registry position and a second position closely adjacent to and spaced from said filling apparatus; a second moving means for moving said hanging means between said second position and a third position located for filling by said filling apparatus; and clamping means for clamping a bag to said hanging means, said clamping means being independent of said filling apparatus gripping means allowing said clamping means to hold a first bag in said second position waiting to be filled while said gripping means grips a second bag at said filling apparatus during filling, said hanging means maintaining clamping contact continuously from said registry position until said filling apparatus gripping means grips said bag.

4,432,187

ROLL-WRAPPING APPARATUS AND METHOD

Bertram F. Elsner, and Robert E. Molison, both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Nov. 5, 1981, Ser. No. 318,622

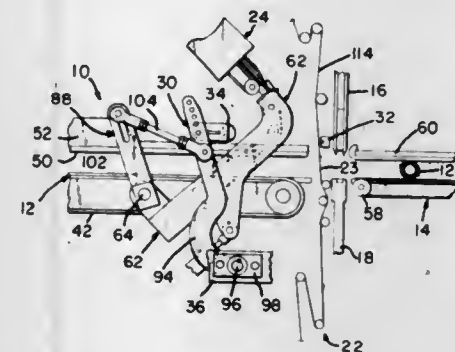
Int. Cl.³ B65B 9/02, 61/20

U.S. Cl. 53—137

9 Claims

1. Roll-wrapping apparatus including roll feed means for moving a roll through a work zone, film means for maintaining a film curtain extending across one side of the work zone, a label feeder located on the side of the film curtain away from the work zone for supplying individual labels for pickup, label transfer means movable between a label presentation position in the path of movement of the roll to the work zone adjacent said side of the film curtain away from the work zone and a label pickup position adjacent the label feeder such that individual labels supplied by the feeder are moved to the presentation position with part of the label closely adjacent the film, film seal means at the work zone whereby the label transfer means moves individual labels to said position and the roll feed means moves rolls downstream against the label and film to

wrap the label and film around the roll and the film seal means seals the wrapped film to form a film envelope surrounding the roll, wherein the improvement comprises first and second electrostatic charging members positioned on opposite sides of the film curtain and the label when the label is in the presentation position for providing opposite polarity electrostatic charges to the adjacent portions of the label and film curtain,



and a charging member shifting mechanism driven by the apparatus responsive to the position of the label transfer assembly for moving the one charging member on said side of the film curtain away from the work zone to a position away from the film and out of the path of movement of the label transfer assembly to and from the label presentation position, the position of the said charging one member adjacent the curtain lying in the path of movement of the label transfer assembly.

4,432,188

METHOD OF STRETCH BAGGING

Harold D. Andrews, College Park, Ga., assignor to Star Packaging Corporation, College Park, Ga.

Continuation of Ser. No. 60,939, Jul. 26, 1979, Pat. No.

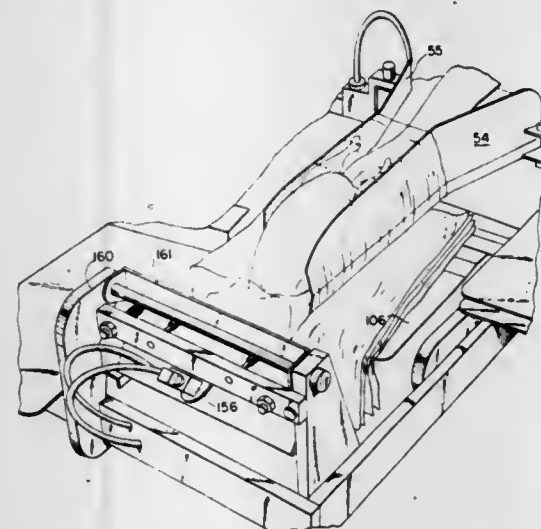
4,219,989. This application Jun. 6, 1980, Ser. No. 156,985

The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.

Int. Cl.³ B65B 5/04, 25/02, 43/36

U.S. Cl. 53—436

6 Claims



1. Method of stretch bagging of a fowl carcass comprising: A. supporting a plurality of open-ended stretch bags in superposed array; B. forcing pressurized air into the top open-ended stretch bag, so as to open the top bag; C. axially entering the top bag and transversely stretching from within, while vertically supporting the top bag; D. stuffing the top bag with an inverted fowl carcass such that the breast plate is uppermost and the legs protrude rearwardly; E. relaxing said transverse stretching and vertical supporting of the top bag; F. compressing the fowl within the top bag by interposing a restraining force in the path of longitudinal advance and at

the forward end of said carcass, such that the leg joints of the carcass are broken and the legs are made to conform to the body of the carcass; and G. removing said top bag from said superposed array of remaining bags.

of the row to the other end thereof, concurrently with such translating, swinging the leading ends of the striker elements back and forth about an axis that is parallel to the row; and concurrently with the translating of the elongate striker elements, swinging the rear ends of the striker elements about an

4,432,189

SHIFTING GRID STYLE PACKER WITH LANE HOLDBACK

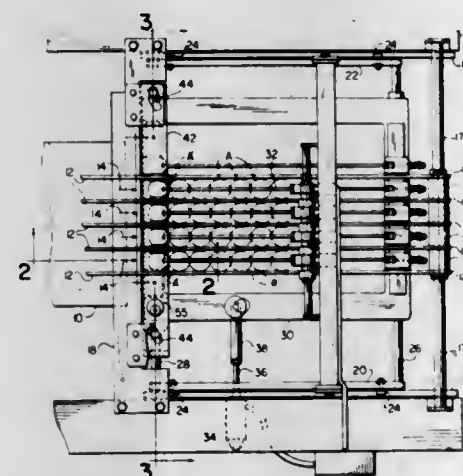
John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Jun. 1, 1981, Ser. No. 269,389

Int. Cl.³ B65B 21/06, 21/16

U.S. Cl. 53—497

10 Claims



1. In a shifting grid style packer of the type wherein columns of articles are received from an infeed conveyor between side-by-side longitudinally extending lane guides to be formed into discrete charges for deposit downwardly into upwardly open packing cases, the improvement comprising a fixed frame having longitudinally extending ways oriented parallel to the longitudinally extending lane guides, a grid assembly movable mounted on said ways and itself defining cross slide means oriented transversely to said ways, a shifting grid frame on said cross slide means and having riding strips to support the articles when said grid frame is in one limit position and to allow the articles to drop downwardly in another grid frame limit position, means for shifting said grid frame transversely between said limit positions, article abutment means associated with each column of articles between said lane guides and movable from and to positions wherein said abutment means are aligned with certain of said lane guides, means for causing initial transverse grid frame movement from said one position to achieve corresponding movement of said abutment means as the latter move initially from said lane guide aligned positions, camming means for said grid frame to cause said grid assembly to move downstream in the longitudinal direction in response to further transverse movement of said grid frame toward said another grid frame limit position and means for preventing further movement of said abutment means in response to said further movement of said grid frame toward said another grid frame limit position.

4,432,190

CONTINUOUS HARVESTER FOR PLANTS GROWN IN ROWS

Franklin P. Orlando, Morgan Hill, Calif., assignor to FMC Corporation, Chicago, Ill.

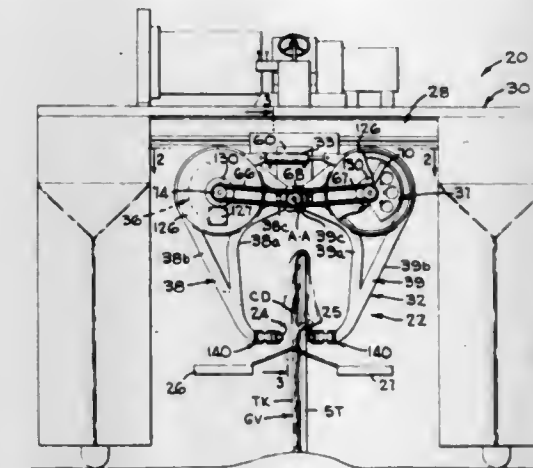
Division of Ser. No. 178,327, Aug. 15, 1980. This application Mar. 18, 1982, Ser. No. 359,558

Int. Cl.³ A01D 46/26

U.S. Cl. 56—1

4 Claims

1. A method of harvesting plants that are grown in rows, such as grapevines, the method comprising the steps of: positioning a pair of elongate striker elements on opposite sides of a plant in a row of plants; translating the elongate striker elements forwardly relative to the plants in the row from one end



axis that is parallel to the row and at a rate relative to the swinging of the front ends of the elements so that the rear ends impart a different shaking action to a plant therebetween than the shaking action simultaneously imparted by the front ends of the striker elements.

4,432,191

METHOD AND APPARATUS FOR CONTROLLING BLADE CLUTCH ASSEMBLY

Larry D. Schmitt, Newton, Kans., assignor to Conchemco Incorporated, Lenexa, Kans.

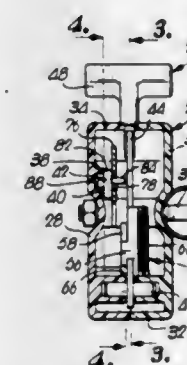
Division of Ser. No. 256,902, Apr. 23, 1981, Pat. No. 4,363,206.

This application Aug. 30, 1982, Ser. No. 412,498

Int. Cl.³ A01D 69/08; F16D 23/00

U.S. Cl. 56—11.8

4 Claims



1. A method of engaging the clutch of a power lawnmower to initiate rotation of the blade thereof, there being a shiftable operating cable coupled to the clutch for engaging the same, said method comprising the steps of: shifting a handle member, and, during and as a result of said shifting thereof, causing a shiftable coupling element to come into operative connection with said cable; shifting another handle member operatively coupled with said element for shifting of said cable to engage said clutch.

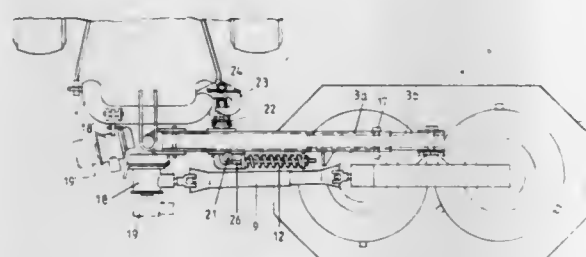
4,432,192
MOWER

Martin Maier, Gottmadingen, and Hermann Ruprecht, Singen, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Gottmadingen, Fed. Rep. of Germany
Filed Aug. 13, 1982, Ser. No. 407,919
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134389

Int. Cl.³ A01D 35/264

U.S. Cl. 56—15.3

2 Claims



1. A mower comprising in combination, a mower support mount for carrying at least one rotating mowing device on its underside, a support mount carrying beam pivotable between a mowing position and a transport position, a hitching mount for coupling the mower carrying beam to traction means for moving the mowers forward with the traction means, a flexible coupling arrangement on the carrying beam for biasing the mower support mount resiliently toward its mowing position, and comprising a prestressed spring element for said biasing of the mower toward its working position coupled for flexibly permitting the mower support mount to move away from the mowing position when striking an obstacle and to swing back after the obstacle is overcome and to absorb blows when the mower is returned to its transport position by said carrying beam, and a latching mechanism for attaching the carrying beam to the hitching mount to retain it in the mowing position comprising a clasp pocket on the hitching mount for receiving a connecting member on the carrying beam and a locking member for locking the mower into the mowing position and pull cord means permitting a traction means operator to unlatch the carrying beam to return it to the transport position, and means for positioning the spring element parallel to the carrying beam, means for positioning the clasp pocket perpendicular to and on the opposite side of the carrying beam from the spring, and means for coupling the spring element to the locking member in the clasp pocket by means of a flexible chain connected to said connecting member.

4,432,193

METHOD OF GRADING RADIATING TRANSMISSION LINES

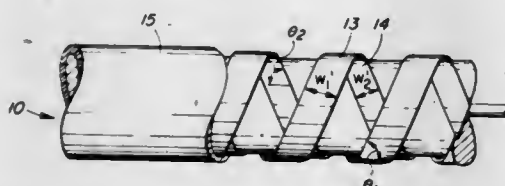
Melvin C. Maki, Kanata, Canada, assignor to 501 Control Data Canada, Ltd., Ottawa, Canada

Filed Sep. 20, 1982, Ser. No. 420,069

Int. Cl.³ H01Q 13/22; H01P 3/06

U.S. Cl. 57—3

10 Claims



1. A method of manufacturing a leaky coaxial cable comprising the steps of:
providing a core having an inner conductor or conductors surrounded by a dielectric layer;
winding at least two conductive tapes therearound, the tape widths and pitch angles being initially selected to provide predetermined coupling and attenuation characteristics;
varying the tape width of at least one of the conductive tapes

along the cable length to vary said coupling and attenuation.

4,432,194

METHOD AND APPARATUS FOR SPLICING THREAD ENDS

Rudolf Luz, Horgen, Switzerland, assignor to Maschinenfabrik Schweizer AG, Switzerland

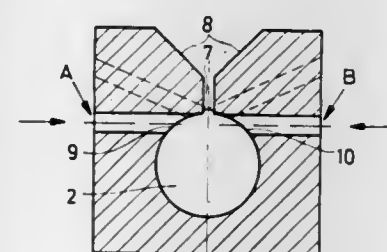
Filed Dec. 10, 1981, Ser. No. 329,331

Claims priority, application Switzerland, Jan. 16, 1981, 300/81

Int. Cl.³ D01H 15/00

U.S. Cl. 57—22

10 Claims



1. A method for splicing two thread ends comprising the steps of
providing a splicing head having a turbulence chamber with a generally circular cross-section for receiving the thread ends to be spliced,
inserting the thread ends into the chamber,
tangentially injecting a fluid medium under pressure into the turbulence chamber through at least one first inlet opening to cause generally circular fluid flow in the chamber in one circumferential direction,
terminating flow through the first inlet opening,
tangentially injecting a fluid medium under pressure into the turbulence chamber through at least one second inlet opening to cause generally circular fluid flow in the chamber in the opposite circumferential direction,
terminating flow through the second inlet opening, and
repeating the steps of tangentially injecting and terminating flow alternately through the first and second openings.

4,432,195

DEVICE FOR INTERRUPTING THE FEED OF A ROVING TO DRAWING FRAMES

Gerd Stahlecker, Geislingen-Stotten, Fed. Rep. of Germany, assignor to Spinnfabrik Suessen, Schurr, Stahlecker & Grill GmbH, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,281

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048481

Int. Cl.³ D01H 13/16, 13/18

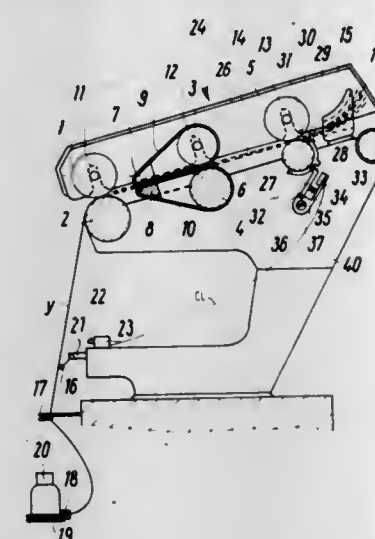
U.S. Cl. 57—87

9 Claims

1. Device for interrupting the feed of a roving to the drawing frames of a spinning machine of the type having drawing frames which each comprise a plurality of upper and lower drawing rollers disposed pairwise, said device comprising:

- a clamping segment including an engagement means located on one of said drawing rollers adjacent the feed side of the roving, said clamping segment being movable from an operative position permitting the driving of said drawing rollers and feed of said roving to an interrupting position interrupting the feeding of said roving,
- a locking device including a locking lever, engageable with said engagement means for maintaining said clamping segment in said operative position,
- a broken-end detector means for monitoring breaks in thread being spun at the spinning machine,
- actuator means responsive to a brief input from a control

means for controlling disengagement of said locking device from said engagement means, and
control means responsive to said broken-end detector means



for controlling said actuator means, wherein movement of the clamping segment to said interrupting position is in response to detection of a broken thread by said broken-end detector means.

4,432,196

TELEPHONE CABLE

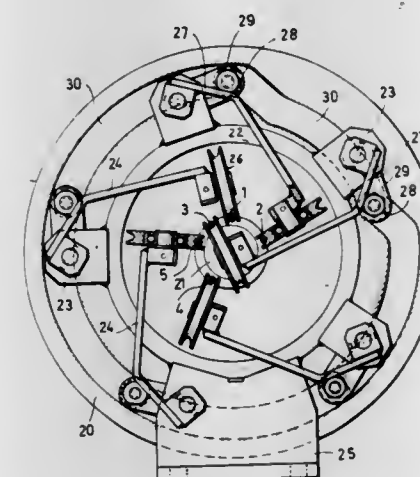
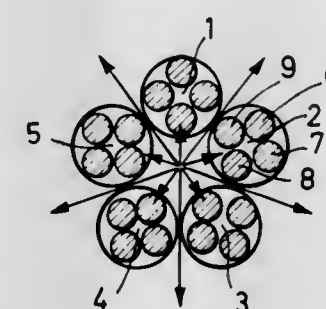
H.-Joachim Schmitz, Sindorf; Dieter Braun, Berg. Gladbach; Dieter Trodler, Düren, and Hugo Cramer, Cologne, all of Fed. Rep. of Germany, assignors to Felten & Guillaume Carlswerk Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Filed Dec. 18, 1981, Ser. No. 332,360

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110504

Int. Cl.³ H01B 13/04, 11/02

U.S. Cl. 57—204

12 Claims



1. A telephone cable having a center axis and comprising at least one basic group of conductors assembled of at least three component conductors, each component conductor including at least two SZ stranded pairs or quads of wires, and portions

of the component conductors in said group being radially transposed across each other so as to periodically change their radial position relative to the center axis of the cable.

5. A method of manufacturing a telephone cable including at least one basic group of at least three component conductors assembled respectively of stranded wires, comprising the steps of feeding simultaneously the individual wires from supply reels to as many stranding stations as there are component conductors assembled in the cable, laying in each stranding station the wires by a SZ stranding process into respective component conductors, and feeding simultaneously the component conductors into a transposing station where the basic group of component conductors is assembled by radially transposing portions of the component conductors across each other.

4,432,197

METHOD FOR PREVENTING ABNORMAL SPLICING IN WINDER

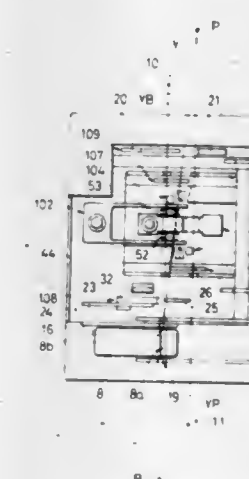
Yutaka Ueda, Nara, and Isamu Ikeda, Kyoto, all of Japan, assignors to Murata Kikai Kabusiki Kaisha, Kyoto, Japan
Filed Dec. 10, 1981, Ser. No. 329,386

Claims priority, application Japan, Dec. 13, 1980, 55-176306

Int. Cl.³ D01H 15/00

U.S. Cl. 57—261

8 Claims



1. A method for preventing abnormal splicing in a winder, in which a yarn taken out from a bobbin through a guide is given an appropriate tension by a tenser, passed through a detecting device for performing detection and cutting of uneven yarn and for performing detection of the running yarn, and then wound on a package, characterized in that a first yarn guide suction arm for a yarn on a package side, a splicing apparatus located at a position apart from the normal yarn passage and a second yarn guide suction arm for a yarn on a bobbin side are arranged along the yarn passage and when a plurality of yarn ends sucked by the first suction arm or a slub or other disorder exceeding the allowable range are detected by the detecting device during the splicing operation, a cutter of the detecting device is actuated by a yarn cutting signal from the detecting device to cut the yarn and the yarn is forcibly cut again just after completion of the splicing operation in response to a yarn cutting signal fed from the outside through a timer.

4,432,198

DEVICE FOR CONVEYING COPS

Armando D'Agnolo, Porcia, Italy, assignor to Officine Savio S.p.A., Italy

Filed Mar. 16, 1982, Ser. No. 358,618

Claims priority, application Italy, Mar. 25, 1981, 83350 A/81

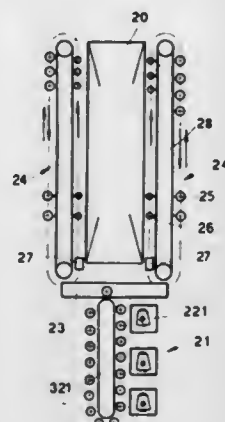
Int. Cl.³ D01H 9/18, 9/02

U.S. Cl. 57—276

16 Claims

1. Device for conveying cops and tubes at the same time between a spinning frame and relative winding heads, comprising a closed-ring powered conveyor means revolving in a substantially horizontal plane along each side of the spinning

frame between one end of said spinning frame and a point of delivery of the cops to the winding heads pre-arranged downstream from said spinning frame; a plurality of pins for bearing the cops or tubes anchored to said conveyor means; guide means for said pins, and a loading/unloading station where the



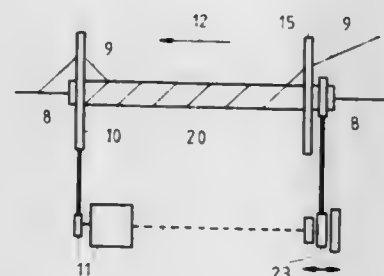
tubes are loaded and said cops are doffed from spindles of the spinning frame, said cops being conveyed on a side of the closed-ring conveyor means away from said spinning frame while said tubes to be fitted to the spindles of said spinning frame are conveyed on the side of said conveyor means adjacent said spinning frame.

4,432,199

MACHINE FOR SZ-TWISTING BY MEANS OF A TWISTING DISC AND A TUBULAR ACCUMULATOR
Wolfgang Dzyck, Neustadt; Bernd Hoppe, Berlin; Martin Loczenski, Neustadt; Dieter Vogelsberg, Coburg, and Fred Wolf, Rödental, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,121
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3123171

Int. Cl.³ D07B 3/00, 7/00
U.S. Cl. 57—294



1. In a machine for SZ-twisting by means of a stationary aperture guide disc and a reversibly driven twisting disc, where the elements to be twisted are fed to the twisting disc along a tubular guide and tubular accumulator arranged concentrically to the twisting axis and extending from the aperture guide disc to the twisting disc, the improvement comprising drives for the twisting disc and the tubular accumulator designed so that the tubular accumulator can be driven at a speed of rotation which differs from the speed of the twisting disc.

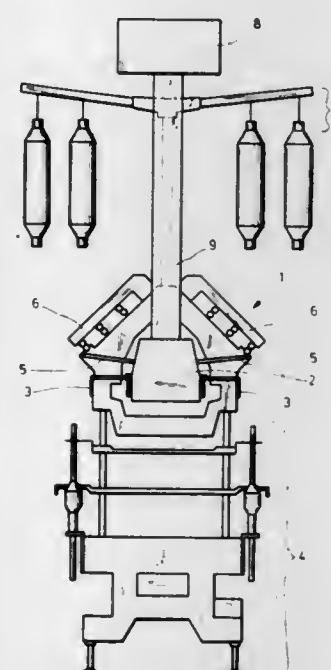
4,432,200
METHOD FOR THE SUCTION REMOVAL OF THREAD BREAKS AND THREAD SUCTION APPARATUS

Jürg Bischofberger, Heftenbach, and Herbert Stalder, Kollbrunn, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland
Filed Jun. 28, 1982, Ser. No. 392,625

Claims priority, application Switzerland, Jul. 17, 1981, 4705/81

U.S. Cl. 57—304
Int. Cl.³ D01H 11/00

9 Claims



1. A method for removal by suction of thread breaks, in particular at a double-sided ring spinning machine, comprising the steps of:
conducting a first air stream which is at a negative pressure through a suction duct provided with suction nozzles and extending over essentially the entire length of the ring spinning machine;
sucking away by means of the first air stream fibre and thread particles through the suction nozzles;
forming a second air stream in a duct which is arranged substantially parallel to the suction duct through which flows the first air stream; and
branching-off the second air stream from the first air stream at a location where the first air stream has attained an air velocity of at most approximately 18 m/sec.

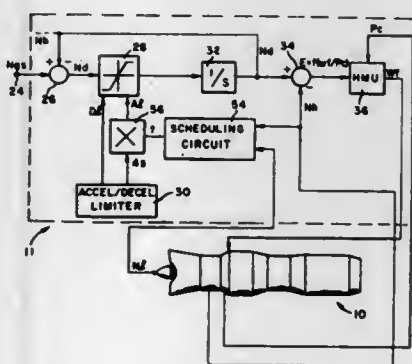
4,432,201

ACCELERATION LIMIT RESET
David J. Hawes, Pierrefonds, Canada, assignor to Aviation Electric Ltd., Montreal, Canada

Filed Jan. 14, 1981, Ser. No. 224,977
Int. Cl.³ F02C 3/10, 9/28

U.S. Cl. 60—39.161

3 Claims



1. An acceleration limit reset means for a fuel control of a

two-spool gas turbine engine during mismatched spool speeds including means for generating an acceleration limit, said reset means characterized by:

means for generating a high spool speed signal proportional to the actual speed of the high pressure compressor;
means for generating a low spool speed signal proportional to the actual speed of the low pressure compressor;
means, receiving said high and low spool speed signals, for generating a multiplication factor as a function of said high and low spool speed signals; and
means for multiplying said acceleration limit by said factor.

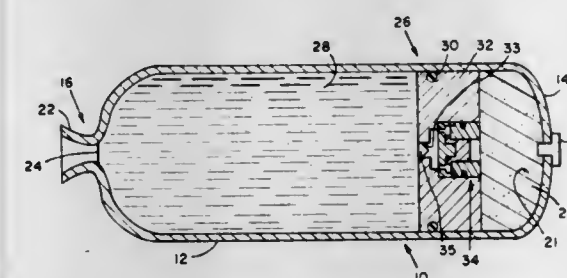
4,432,202

FLOW-THROUGH PYROTECHNIC DELAY
Robert E. Betts; Nathan P. Williams, and Arnold T. Stokes, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1981, Ser. No. 261,347
Int. Cl.³ F02K 9/10, 9/28

U.S. Cl. 60—221

7 Claims



1. A delay device for controlling the time between initiation of a first impulse to initiation of a second impulse comprising:
a. a first housing having igniter means carried therein;
b. a sleeve and a base plate disposed in mating relation to form a chamber therebetween, said sleeve and said base plate forming a second housing, said second housing carried in said first housing;
c. a pyrotechnic carried in said chamber;
d. a plurality of vent passages extending through said base plate, said vent passages arranged in a circle in said base plate;
e. a transition zone disposed in said second housing to vent gases from said chamber responsive to ignition of said pyrotechnic by said igniter means, said transition zone defined by passages disposed between said base plate and said sleeve, said transition zone passages disposed adjacent said chamber and said vent passages and in direct communication therewith.

4,432,203

ROTARY EXTERNAL COMBUSTION ENGINE
Victor H. Fischer, Artarmon, Australia, assignor to Thermal Systems Limited, Cayman Islands

Filed Dec. 12, 1980, Ser. No. 215,866

Claims priority, application Australia, Jul. 16, 1980, PE4553
Int. Cl.³ F01K 21/04

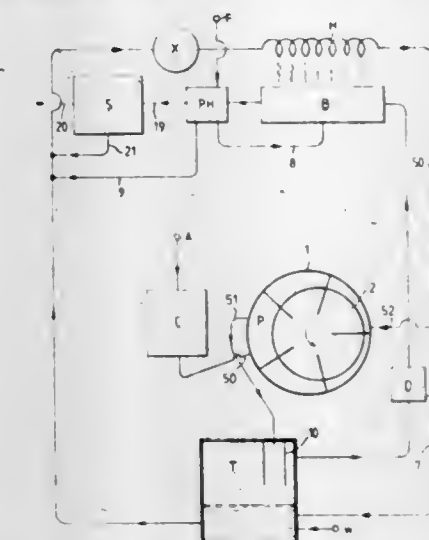
U.S. Cl. 60—511

30 Claims

1. A method of operating a rotary external combustion engine having a stator and a rotor therein defining a working space, wherein energy is transferred to a working gas from a heated vaporizable liquid heat-transfer medium, which comprises

(1) inducing working gas into the working space;
(2) generating externally of the working space heated transfer medium under a pressure such as to maintain the medium in the liquid state;
(3) after induction, injecting heated liquid medium into the working gas and allowing at least part of the liquid medium to vaporize, so as to raise the internal energy of the gas;
(4) in an expansion cycle wherein the volume of the working

space increases, allowing the wet gas containing the heat-transfer medium to expand thereby driving the rotor;
(5) exhausting wet gas from the working space near the end of the expansion cycle;



(6) separating liquid heat-transfer medium from wet exhaust gas containing heat-transfer medium vapor; and
(7) recycling the separated liquid medium to stage (2) above.

4,432,204

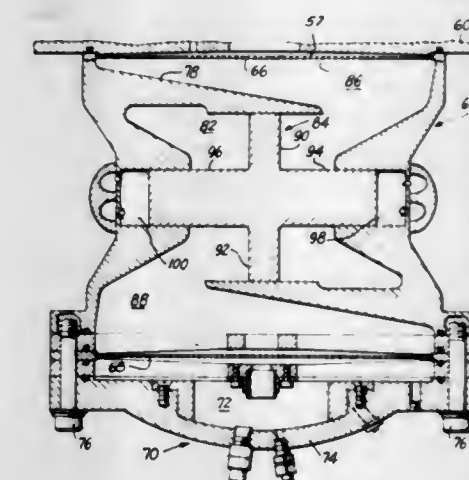
LINEAR HYDRAULIC DRIVE SYSTEM FOR A STIRLING ENGINE

Michael M. Walsh, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 2, 1982, Ser. No. 384,303

Int. Cl.³ F02G 1/04
U.S. Cl. 60—520

10 Claims



1. A hydraulic drive system for transferring power from a periodic pressure wave directed along a first axis to the movable member of a load means, comprising:

a housing filled with an incompressible fluid and sealed at its opposite ends by first and second flexible diaphragms, said first diaphragm being arranged to be exposed to the periodic pressure wave and said second diaphragm being arranged as part of a gas spring means; and means within said housing for directing the pressure wave produced in said incompressible fluid by action of said periodic pressure wave along an axis which is substantially at right angles to said first axis, said means including a cylinder which is transverse to said first axis and a drive member disposed within said cylinder for sealed, reciprocating movement therein.

4,432,205

SUPERCHARGER APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kazuo Inoue, Tokyo; Minoru Matsuda, Chofu, and Kentaro Kato, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

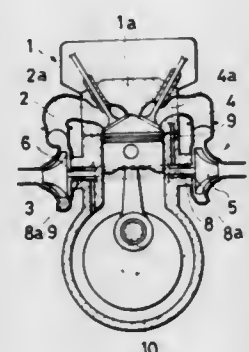
Filed Apr. 20, 1981, Ser. No. 255,856

Claims priority, application Japan, Apr. 25, 1980, 55/54351; Apr. 25, 1980, 55/55987[U]

Int. Cl.³ F02B 37/00, 61/02

U.S. Cl. 60—605

4 Claims



1. A supercharger apparatus for a vehicle comprising a reciprocating type internal combustion engine having a block, an exhaust passage and an intake passage, an exhaust port connected to said exhaust passage and an intake port connected to said intake passage, wherein said exhaust port and said intake port are disposed on opposite sides of said engine block, such that there is a crossflow therebetween, and having an exhaust turbine provided in said exhaust passage, a compressor provided in said intake passage and a shaft other than the engine crankshaft, extending through said block for interconnecting said turbine and said compressor, said shaft being supported in a single bearing hole formed in the engine block and said turbine being disposed in front of said engine and exposed to air flow caused by movement of the vehicle, for cooling purposes, and a lubrication oil passage, which is in communication with the bearing hole, being formed in said engine block.

4,432,206

SUPERCHARGED INTERNAL COMBUSTION ENGINES, IN PARTICULAR DIESEL ENGINES, AND IN METHODS FOR STARTING UP AND REGULATING THE SPEED OF THESE ENGINES

Jean F. Melchior, Neuilly-sur-Seine, and Thierry M. Andre, Paris, both of France, assignors to The French State, Paris, France

Continuation of Ser. No. 272,292, Jun. 10, 1981, abandoned.

This application Apr. 4, 1983, Ser. No. 481,267

Claims priority, application France, Jun. 17, 1980, 80 13402

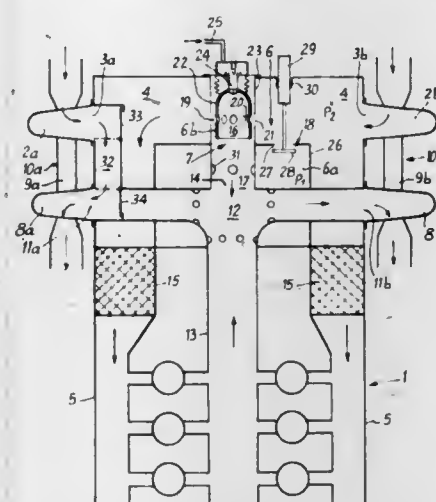
Int. Cl.³ F02B 33/44

U.S. Cl. 60—606

24 Claims

1. In a supercharged internal combustion engine comprising air intake means and exhaust means, at least two compressors having outlets which are capable of being connected in parallel through a common connection passage to said air intake means, a plurality of turbines each mechanically drivingly connected to an associated one of said compressors to form therewith a turbocharger unit, said turbines having inlets which are capable of being connected in parallel through a common transfer passage to said exhaust means, means which are responsive to a parameter of operation of the engine which represents a ratio between the air flow through the engine and the total air flow discharged by said compressors and are arranged to selectively interrupt or ensure communication between the outlet of the compressor of one of said turbocharger units and said connection passage and between the inlet of the turbine of said one turbocharger unit and said transfer passage in accordance with the value of said parameter; the improvement comprising bypass means between said

compressor outlet and said turbine inlet of said one turbocharger unit, and valve means cooperative with said bypass means and associated with said parameter responsive means so as to be controlled by said parameter responsive means in such manner that at the same time as said parameter responsive means interrupt said communication with said outlet of said compressor and with said inlet of said turbine of said one



turbocharger, said parameter responsive means also directly connect through said bypass means said outlet of said compressor to said inlet of said turbine of said one turbocharger unit and, inversely at the same time as said parameter responsive means ensure said communication, said parameter responsive means interrupt said connection through said bypass means of said outlet of said compressor to said inlet of said turbine of said one turbocharger unit.

4,432,207

MODULAR CATALYTIC COMBUSTION BED SUPPORT SYSTEM

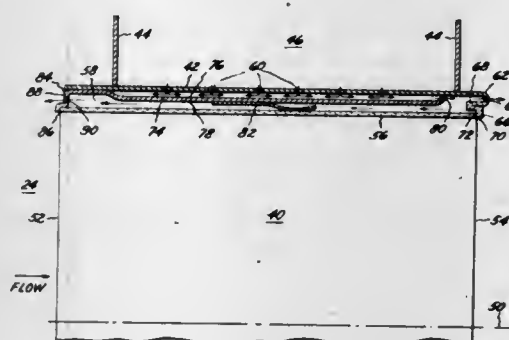
Lewis B. Davis, Jr., Schenectady, and Charles E. Steber, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,696

Int. Cl.³ F03B 00/00

U.S. Cl. 60—723

14 Claims



1. A support structure for a cylindrical ceramic catalyst bed for use with a gas turbine combustor, comprising: an outer cooled support cylinder; said outer cooled support cylinder including apertures there-through effective for permitting entry of compressed air from a surrounding space; a cylindrical outer ceramic shell concentric within said outer support cylinder and spaced therefrom to form an annular space therebetween; a sheet metal heat shield in said annular space interposed between and concentric with said outer cooled support cylinder and said cylindrical outer ceramic shell, said heat shield being effective to form a first passageway for permitting air entering through said apertures to flow gener-

ally along an outer surface of said heat shield in a first axial direction, apertures for permitting said air to flow around an end of said heat shield, and a second passageway for permitting said air to flow in a second opposite axial direction along an inner surface of said heat shield and apertures to permit said air to exit into a main stream of gas flowing through said combustor, whereby entry of a fuel-air mixture into said annular space is prevented and said support cylinder and said heat shield are cooled without unduly cooling said outer ceramic shell.

4,432,208

COLD TRAP

Osamu Onuki, Kasama, and Toyohiko Kirisawa, Mito, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu, Jigyodan, Tokyo, Japan

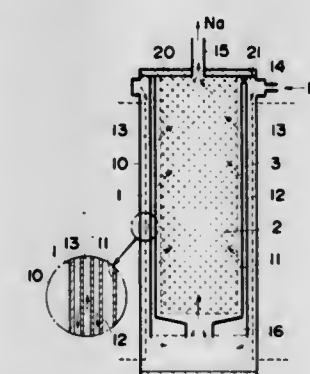
Filed Sep. 23, 1982, Ser. No. 422,287

Claims priority, application Japan, Sep. 25, 1981, 56-143107[U]

Int. Cl.³ B01D 8/00

U.S. Cl. 62—55.5

5 Claims



1. A cold trap including a section for cooling inflowing liquid sodium, a section for trapping precipitated impurities in said liquid sodium, a sodium inlet nozzle communicated with said cooling section, a sodium outlet nozzle communicated with said trapping section, and a double-walled cylindrical structure disposed between said cooling section and said trapping section, said double-walled structure being filled with a heat-insulating gas, characterized in that said double-walled cylindrical structure is closed at its upper end but open at its lower end and that an expanded portion for storing the heat insulating gas is formed at the open lower end and/or in the vicinity thereof of said double-walled structure.

4,432,209

SECONDARY COOLING SYSTEM FOR GAS COMPRESSORS

James E. Landry, 107 F Williamsburg Cir., Lafayette, La. 70508, and Richard B. Babb, Rte. 2, Box 5, No. 124, Scott, La. 70583

Filed Jun. 21, 1982, Ser. No. 390,322

Int. Cl.³ F25D 25/00

U.S. Cl. 62—62

16 Claims

1. A method for independently cooling various components of a gas compressor, comprising the steps of: a. providing a primary cooling system; b. interrupting the flow of coolant within the primary cooling system into the components to be cooled; c. providing a secondary source of coolant; d. providing an inlet flow line into the components to be cooled and an outlet flow line out from the components to be cooled; e. flowing said coolant through said components to be cooled within said inlet and outlet lines; f. providing a first cooling means; g. routing said coolant from said components to be cooled into a first cooling means;

h. providing at least a second cooling means; i. routing said coolant from said first cooling means into at least said second cooling means; and

j. routing said coolant from said second cooling means into said inlet line of said components to be cooled.

4,432,210

AIR CONDITIONING CONTROL METHOD

Takao Saito, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

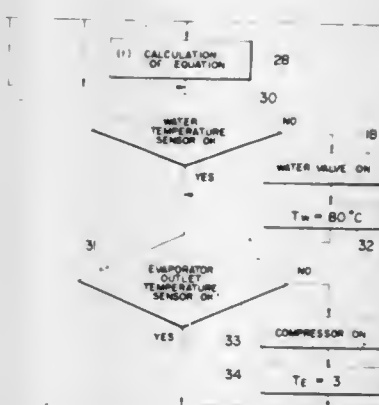
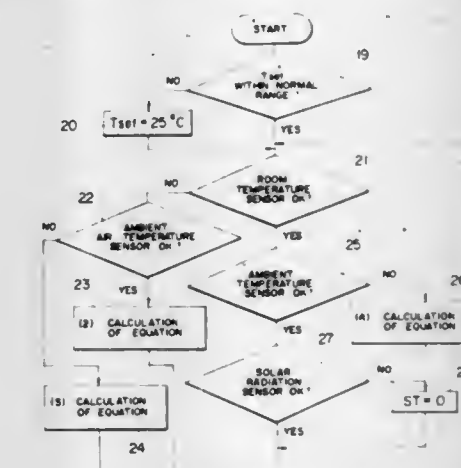
Filed Feb. 24, 1982, Ser. No. 352,065

Claims priority, application Japan, Apr. 3, 1981, 56-50348

Int. Cl.³ F25B 49/00

U.S. Cl. 62—126

18 Claims



1. A method of controlling an air conditioning apparatus comprising the steps of: monitoring the operating condition of at least one sensor which detects an ambient condition about an area to be air conditioned; selecting one of a plurality of calculation formulae for obtaining a desired outlet air temperature within an allow-

able range on the basis of the operating condition of said at least one sensor; and
adjusting said air conditioning apparatus in accordance with said one of said plurality of calculation formulae.

4,432,211

DEFROSTING APPARATUS

Tetsu Oishi; Makoto Oda, both of Yokohama, and Hisao Futaki, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

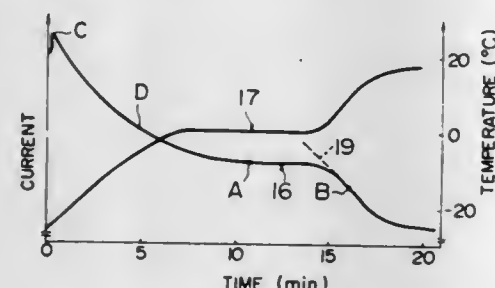
Filed Nov. 9, 1981, Ser. No. 319,313

Claims priority, application Japan, Nov. 17, 1980, 55-160788; Mar. 20, 1981, 56-39437; Mar. 20, 1981, 56-39438; Mar. 20, 1981, 56-39439; Mar. 20, 1981, 56-39440; Mar. 20, 1981, 56-39442

Int. Cl.³ F25D 21/06

U.S. Cl. 62—155

21 Claims



1. A defrosting apparatus for removing frost deposited on a cooler comprising:

a heater exhibiting a positive temperature coefficient of resistance which changes sharply at a specific temperature;

a current detecting circuit detecting current flowing through said heater and providing an output indicative thereof;

signal processing means connected to said current detecting circuit for generating a reference signal at one point during the defrost operation based upon the detected heater current and for generating an output signal indicative of a predetermined relation of heater current detected at a later point in the defrost operation to the reference signal; and

control means for controlling the current supplied to said heater on the basis of the output signal from said signal processing means.

4,432,212

HERMETIC TURBO-REFRIGERATOR APPARATUS

Keiji Tachibana, Tokyo; Masatoshi Terasaki, Ibaraki; Yoshihiko Nakayama, Ibaraki, and Junichi Kaneko, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

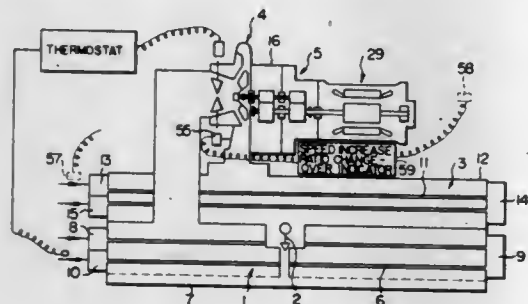
Filed Nov. 8, 1979, Ser. No. 92,510

Claims priority, application Japan, Nov. 13, 1978, 53-138882

Int. Cl.³ F25B 1/00; F04B 49/00

U.S. Cl. 62—229

12 Claims



1. A hermetic turbo-refrigerator apparatus comprising:
a turbocompressor for raising a pressure of a refrigerant in a gaseous state in a predetermined level;

a condenser for cooling and at least condensing the refrigerant in a gaseous state having its pressure raised;
a pressure reducing means for reducing the pressure of the refrigerant changed into a liquid state from the gaseous state by condensation;

an evaporator vaporizing the refrigerant in the liquid state having its pressure reduced to thereby cool a refrigerant to be cooled;

an electric motor for driving an impeller of said turbocompressor;

a speed increasing gear system for increasing the number of revolutions of an output shaft of said electric motor when rotation of said output shaft is transmitted to said impeller, said speed increasing gear system being adapted to change the speed increase ratio at least in two stages, said speed increasing gear system comprises a gear box, at least one support means supported by said gear box, said support means including a cylindrical portion of said support means, at least two bearings mounted on an outer side of said cylindrical portion of said support means, said rotary shafts including a first shaft supporting the impeller of said turbocompressor rotatably journaled by said gear box through bearings, the second shaft rotatably journaled by said bearing mounted on the inner side of said cylindrical portion of said support means, at least two second gears coupled to said first shaft, and at least two second gears rotatably supported by said bearings mounted on the outer side of said cylindrical portion of said support means, said second gears being adapted to mesh with said first gears; operating means for switching from outside the speed increasing gear system from one speed increase ratio to another;

a detector for detecting external conditions of the atmosphere in which said hermetic turbo-refrigerator apparatus is installed;

means for indicating an optimum speed increase ratio in accordance with the external conditions detected by said detector; and

wherein housings of said turbocompressor, said speed increasing gear system and said electric motor are connected together in such a manner that the output shaft of said electric motor, rotary shafts of said speed increasing gear system including a shaft for supporting the impeller of said turbocompressor are arranged hermetically sealed in the respective housings to avoid a leakage of working fluid of the turbo-refrigerator to the outside.

4,432,213

AIR-CONDITIONING SYSTEM OF MOTOR VEHICLE

Hiroaki Katahira, and Shigeru Kobayashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 17, 1982, Ser. No. 349,462

Claims priority, application Japan, Feb. 28, 1981, 56-28800

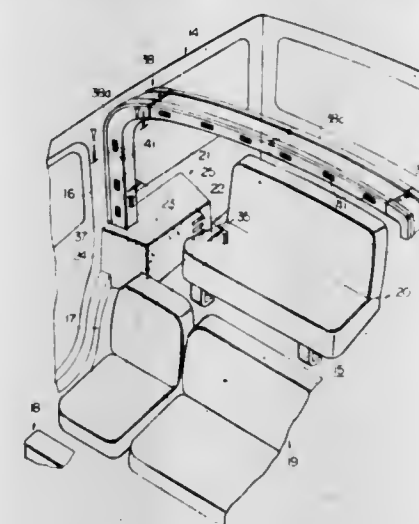
Int. Cl.³ B60H 3/04

U.S. Cl. 62—239

10 Claims

1. An air-conditioning system for use in a motor vehicle having a vehicle body including a floor panel, a roof panel, and a side wall member and a seat structure mounted on the floor panel and located inside and adjacent said side wall member, the air-conditioning system comprising an air-conditioner assembly which is positioned between said seat structure and said side wall member and which includes at least one heat exchanger unit and a covering member having the heat exchanger unit enclosed in a space which is defined by the covering member, said floor panel and said side wall member and which is located above the floor panel, said covering member having a substantially horizontal upper panel portion located sidewise inwardly of said side wall member and outwardly of

said seat structure and above a horizontal plane flush with the upper surface of the cushion portion of said seat structure so U-shaped pushing means from said conveying means at any point between said freezer outlet and said freezer inlet.



that the covering member is operable as an armrest for an occupant of said seat structure.

4,432,214

DEVICE FOR INSERTION AND FEED OF PRODUCTS

ON THE PLATES IN A HORIZONTAL PLATE FREEZER
Angelo Richelli, and Guido Battistella, both of Brugherio, Italy, assignors to Samifl Babcock Samifl Internationale S.A., Paris, France

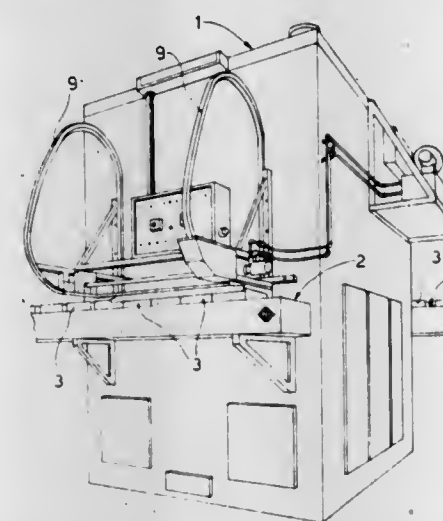
Continuation of Ser. No. 167,111, Jul. 9, 1980, abandoned. This application Aug. 19, 1981, Ser. No. 294,561

Claims priority, application France, Jul. 23, 1979, 79 18968

Int. Cl.³ F25C 5/14

U.S. Cl. 62—341

6 Claims



1. An apparatus comprising a freezer including a plurality of vertically-movable horizontal plates, inlet means and outlet means on substantially the same plane within said freezer, and means for sequentially moving said horizontal plates to the inlet/outlet planes; a plurality of U-shaped pushing means, each pushing means having at least one seating area within its periphery; means for conveying said U-shaped pushing means to the surface of said horizontal plates through said freezer inlet with the legs of each U-shaped pushing means facing away from said freezer inlet, and means for conveying said pushing means away from said freezer outlet; said conveying means delivering said pushing means to the surface of each plate in sequence such that each succeeding pushing means delivered to the surface of said plate drives all pushing means ahead of it on said plate across said surface substantially exclusively through forces exerted by the pushing means, said conveying means carrying each of said U-shaped pushing means from said freezer outlet to said freezer inlet with substantially no frictional engagement between said freezer and said U-shaped pushing means and with no disengagement of said

4,432,215
PRESSURE DIFFERENTIAL AUTOMATIC TRANSFER
TYPE THREE-WAY VALVES

Shoichi Yoshida, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

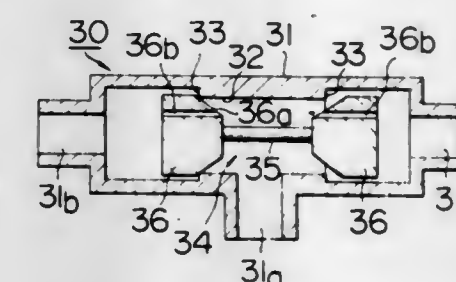
Filed Jul. 26, 1982, Ser. No. 401,564

Claims priority, application Japan, Aug. 3, 1981, 56-121627

Int. Cl.³ F25B 13/00

U.S. Cl. 62—324.6

15 Claims



1. In a pressure differential automatic transfer type three-way valve utilized in a heat pump type refrigeration system together with a transfer valve for transferring an operation state of said refrigeration system, said three way valve including a casing and a slider contained therein, said slider being moved by a difference in pressures of refrigerant acting upon opposite sides of said slider caused by transfer operation of said transfer valve for changing flow of said refrigerant through said refrigeration system, the improvement wherein said pressure differential automatic transfer type three-way valve is formed with a leakage passage having a leakage resistance R_4 expressed by a relation

$$R_4 < \frac{R_2 R_3}{R_1}$$

where R_1 represents flow resistance of said transfer valve, R_2 leakage resistance thereof, and R_3 flow resistance of said pressure differential automatic transfer type three-way valve.

4,432,216

CRYOGENIC COOLING APPARATUS

Toshiharu Matsuda; Kenjiro Kasai; Seichi Kikkawa, all of Kudamatsu; Norihide Saho, Yamaguchi, and Kouzo Matsumoto, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,464

Claims priority, application Japan, Nov. 6, 1981, 56-177195

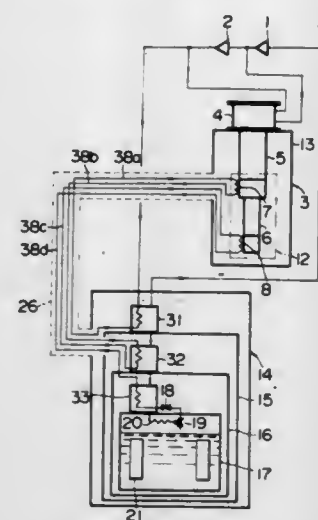
Int. Cl.³ F25B 19/00

U.S. Cl. 62—514 R

6 Claims

1. A split type cryogenic cooling apparatus comprising: compressor means for compressing a working gas of a low pressure to discharge a working gas of a high pressure; a refrigerator having an expansion means for expanding said high pressure working gas to generate cold heat; a cryostat utilizing said cold heat generated by said refrigerator to cool an object to be cooled, said cryostat containing a vessel for receiving liquified working gas together with said object to be cooled, and at least one shield plate surrounding said vessel; a communication pipe system for connecting said refrigerator and said cryostat to each other; said cryostat accommodating heat exchangers arranged in at least two stages, said heat exchangers having cold ends thereof respectively held in thermal

contact with said shield plate and said vessel such that the shield and the vessel temperatures are maintained at prede-



4,432,217

COLORED YARN PRINTING APPARATUS

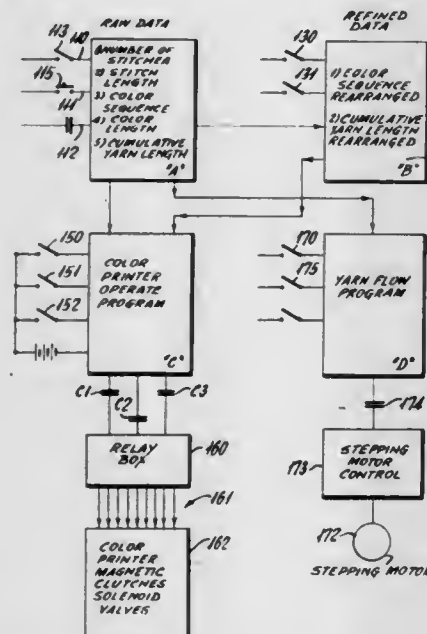
Arnold Ochsner, 3200 Fort Charles Dr., Naples, Fla. 33940

Filed Dec. 14, 1981, Ser. No. 330,683

Int. Cl.³ D06B 1/14, 11/00

U.S. Cl. 68—5 D

8 Claims



2. In a system for color printing and processing multiple yarn fibers by mechanized means in response to signals derived from computerized control means indicative of fabrics having select color patterns or designs the system comprising:

- (1) needle stitching means including a sample pattern for producing new data in the form of electrical impulses responsive to the tracing of said pattern by the said needle stitching means indicative of the pattern and color thereof;
- (2) computer means for receiving said new data electrical impulses derived from said needle stitching means and referring the raw data electrical impulses with command signals indicative of the pattern to be duplicated;
- (3) power control means including reciprocal controllable pneumatic means responsive to the command signals from the said computer for developing fluid streams disposed to produce driving forces in a direction to produce the patterns to be duplicated by the mechanical means;
- (4) mechanized apparatus including dual abutting printing roller means disposed to receive said pneumatic fluid forces to activate said roller means to uniformly color print circumferentially the multiple yarn fibers, and color saturate same

- in accordance with the pattern to be duplicated as the yarns pass through the dual abutting roller means;
- (5) multiple yarns processing means for receiving said yarns to fix the colors printed thereon and to separate the multiple yarn fibers into individual strands; and
- (6) means for receiving and playing back the said printed yarns directly into a loom type apparatus for producing fabrics duplicating the original pattern or in the alternative storing said yarns for later usage in said loom apparatus.

4,432,218

LOCKING KEY WITH MEMORY

Jost Hoener, Bühlackerstrasse 19/B, Vörsstetten, Fed. Rep. of Germany

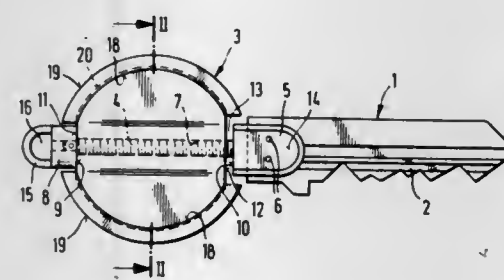
Filed Dec. 3, 1981, Ser. No. 327,235

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046215; Aug. 4, 1981, 3130744

Int. Cl.³ E05B 19/00, 19/04, 41/00

U.S. Cl. 70—395

7 Claims



1. A locking key comprising:
 - a head member grippable by fingers of a user;
 - a shank member provided with a lock-operating bit;
 - coupling means enabling relative rotation of said members about an axis extending in longitudinal direction of said shank member, said coupling means being constituted by an axially extending threaded bolt rigid with said shank member received in a matingly threaded bore axially traversing said head member; and
 - abutment means on said members restricting said relative rotation by establishing two axially spaced positions of positive contact between said shank member and said head member to enable entrainment of the former by the latter in respective directions of rotation; said abutment means comprising a first transverse shoulder on said shank member and a second transverse shoulder on a terminal element secured to a projecting extremity of said bolt remote from said shank member, said first and second shoulders respectively confronting first and second lands of said head member at the ends of said bore, said shoulders being separated from each other by a distance exceeding the mutual separation of said lands by a fractional pitch of the threading of said bolt whereby a gap equal to said fractional pitch exists between said first shoulder and said first land in a first limiting position and between said second shoulder and said second land in a second limiting position.

4,432,219

KEY CONCEALMENT ATTACHMENT

Robert F. Bassett, 126 Grandview Ter., Batavia, N.Y. 14020

Filed Aug. 31, 1981, Ser. No. 298,089

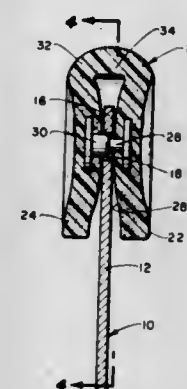
Int. Cl.³ A47G 29/10

U.S. Cl. 70—456 R

1 Claim

1. In combination with a key, said key having a shank section attached to an enlarged handle section, an opening formed within said enlarged handle section, an attachment connectable to said key to facilitate concealment of said key, said attachment comprising:
 - a bifurcated housing having a pair of spaced apart legs form-

ing a slot therebetween, an apex section connecting together said legs; a mass of magnetic particles embedded in said apex section of said bifurcated housing to facilitate mounting of said housing to an exterior metallic structure; and fastening means connected between said legs, said fastening means to pass through said opening to tightly bind together said legs and said handle section of said key, said fastening means to be movable between an open position and a closed position, said fastening means being easily moved



into said closed position but difficult to be moved to said open position, said fastening means comprising a male member and a female member, said closed position being when said male member is imbedded within said female member tightly securing said male member to said female member, movement of said fastening means to said closed position causes the exterior wall of each of said legs to be deflected inwardly to form recesses to thereby form thumb and finger cavities to facilitate operation of said key.

4,432,220

SHOT PEENING APPARATUS

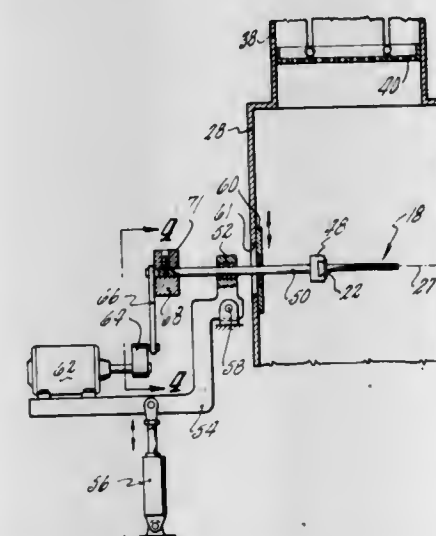
Joseph F. Loersch, Bolton, and James W. Neal, Columbia, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 10, 1981, Ser. No. 300,726

Int. Cl.³ B21J 5/00

U.S. Cl. 72—53

12 Claims



1. Apparatus for shot peening a workpiece comprised of an enclosure for containing shot moving along a streamline, means for recirculating shot, a holder mounted within the enclosure to position a workpiece in a workpiece holding zone along the shot streamline, and means for discharging shot into the enclosure at a low vertical velocity from a multiplicity of openings located vertically above the workpiece holding zone, to enable the discharged shot to be accelerated by gravity toward the workpiece holding zone; characterized by discharge means providing to the shot a small lateral velocity component, to cause the shot discharged from the multiple

points to merge to a substantially uniform stream, so that a workpiece is evenly impacted by the shot without the need for lateral movement thereof; a movable holder adapted to position a workpiece so that a first axis is transverse to the shot streamline; and means for rotationally oscillating the workpiece about the first axis.

4,432,221

ROLLING MILL WITH CONVEYING MEANS FOR STRIP AND FOIL MATERIALS

Ernst H. Barten, Siegener Strasse 152, D-5910 Kreuztal, Fed. Rep. of Germany

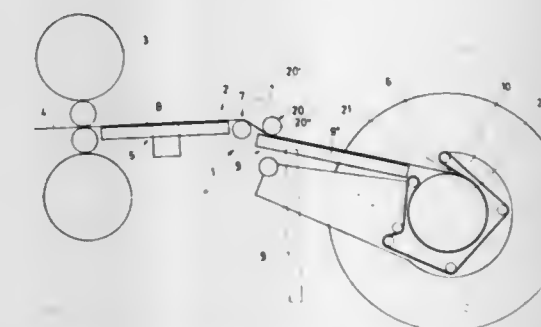
Filed Sep. 30, 1981, Ser. No. 307,200

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036794

Int. Cl.³ B21C 47/12; B21B 39/14

U.S. Cl. 72—148

6 Claims



1. A rolling mill for strip and foil material, comprising a roll stand, a coiler for rolled material downstream of the roll stand, and endless belt, means to train the endless belt about material on the coiler, air cushion conveyor means for introducing material between the coiler and the endless belt, a frame on which both said air cushion conveyor means and said endless belt are mounted, and means mounting said frame for swinging movement between an operative position in which said air cushion conveyor means is disposed adjacent the path of said material and the endless belt is trained about the material on the coiler, on the one hand, and on the other hand an inoperative position in which the frame is swung away from the material and the coiler.

4,432,222

STRETCH DRAWING APPARATUS

Shin Ujihara, Yokohama, and Takashi Yoshizawa, Ayase, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 28, 1982, Ser. No. 343,472

Claims priority, application Japan, Feb. 13, 1981, 56-20349

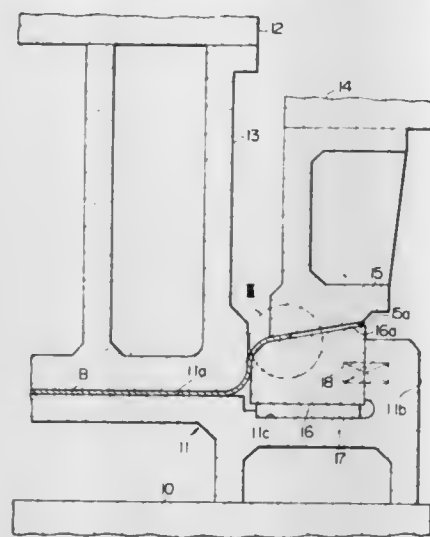
Int. Cl.³ B21D 22/00

U.S. Cl. 72—350

10 Claims

1. A stretch drawing apparatus comprising
 - a constraining die having an inner die portion and an outer wall portion spaced apart from the die portion;
 - a drawing punch positioned in conjunction with said die portion;
 - a blank-holding block positioned in conjunction with said outer wall portion of the constraining die;
 - the constraining die and each of said drawing punch and said blank-holding block being movable relative to each other in a predetermined direction so that said die portion and each of the drawing punch and the blank-holding block are movable toward and away from each other; and
 - at least one wedge member having a blank-holding surface and movable in a direction perpendicular to said predetermined direction;
 - said wedge member engaging said constraining die and said

blank-holding block in a direction parallel with said predetermined direction and having in the parallel direction a



thickness which increases away from the die portion toward the outer wall portion of the constraining die.

4,432,223

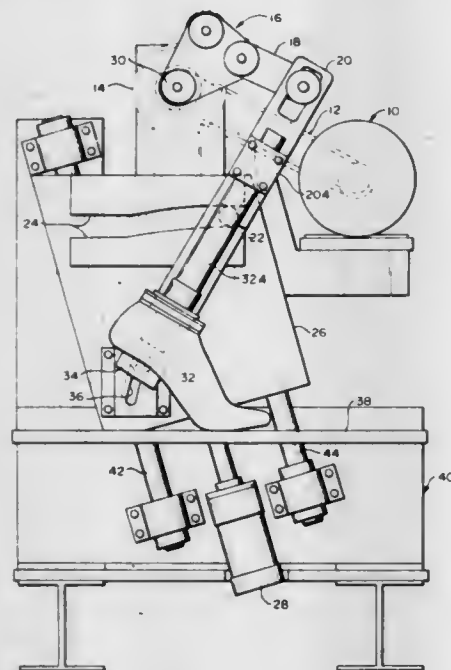
FOOTWEAR TESTING APPARATUS AND METHOD
Elmer G. Paquette; Michael J. Maloney, both of Madison, Wis.; Douglas S. Swain, Brockton; Richard F. LaCerte, Hudson, both of Mass.; James B. Peters, Madison, and Robert E. Mast, Dalton, both of Wis., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1982, Ser. No. 405,672

Int. Cl.³ G01M 3/00, 19/00; G01N 3/56

U.S. Cl. 73—7

10 Claims



1. Apparatus for simulating terrain traversing movements of human foot comprising:
artificial foot means;
a platform, said platform having a generally planar upper surface;
elongated leg pylon means, said foot means being attached to said pylon means adjacent a first end thereof;
first means for imparting motion to said pylon means, said first motion imparting means being coupled to said pylon means at a point displaced from said simulated foot;
second means for imparting motion to said pylon means;
first cam means, said first cam means including a cam track and cam follower, said first cam means coupling said second motion imparting means to said pylon means at a point intermediate the ends thereof, the direction of motion of said pylon means second end resulting from opera-

tion of said first motion imparting means being determined by said first cam means and said second motion imparting means, the motion of said pylon means second end simulating the action of the human knee; and
second cam means, said second cam means including a cam track and cam follower, said second cam means coupling said second motion imparting means to said pylon means adjacent the first end thereof, the motion of said foot means relative to said platform being determined by said second cam means in response to operation of said first and second motion imparting means, said second cam means simulating the action of the human ankle.

4,432,224

HYDROGEN SULFIDE MEASURING SYSTEMS AND THE LIKE

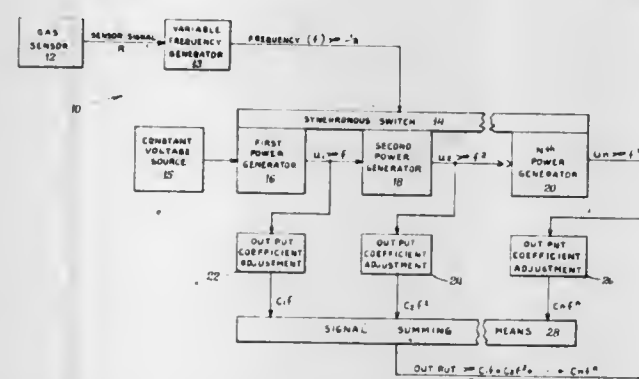
Pekka M. Typpo, Cupertino, Calif., assignor to Delphian Corporation, Sunnyvale, Calif.

Filed Apr. 19, 1982, Ser. No. 369,896

Int. Cl.³ G01N 27/12

U.S. Cl. 73—23

10 Claims



1. Apparatus for detecting and measuring a physical phenomenon such as a gas concentration or the like, comprising a sensor element which provides an analog output signal responsive to the physical phenomenon desired to be measured, variable frequency generator means for receiving the sensor element output signal and generating an output signal having a frequency which is a predetermined function of the sensor output signal, power series signal generating means responsive to the output signal of the variable frequency generator means for generating a plurality of output signals respectively proportional to different powers of the frequency of the output signal of the variable frequency generator means, and combining means for providing a combined plurality of the different output signals of the power series signal generating means having predetermined respective combination coefficients to provide an output signal having a predetermined functional correlation to the sensor output signal.

4,432,225

DETECTION SYSTEM FOR A GAS CHROMATOGRAPH
John M. Hayes, and Gerald J. Small, both of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1982, Ser. No. 371,743

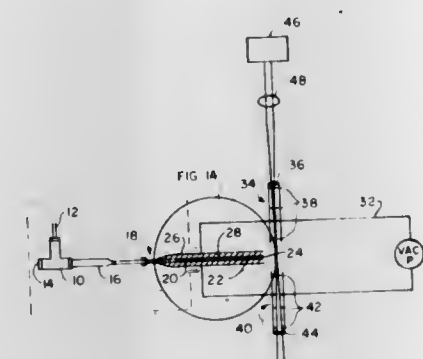
Int. Cl.³ G01N 31/08

U.S. Cl. 73—23.1

13 Claims

1. A method for quantitatively analyzing a sample of vaporizable molecules comprising
providing a gas chromatography column,
vaporizing said sample,
eluting said vaporized sample through said column,
cooling said eluted sample to substantially depopulate the excited rotational and vibrational levels of the sample molecules while said sample molecules remain vaporized,

irradiating said cooled sample to induce the sample to emit characteristic spectral peaks, and



determining the intensity and retention times of said characteristic spectral peaks, said intensity and retention times being indicative of the quantitative analysis of said sample.

4,432,226

METHOD AND APPARATUS FOR MEASURING GASEOUS OXYGEN

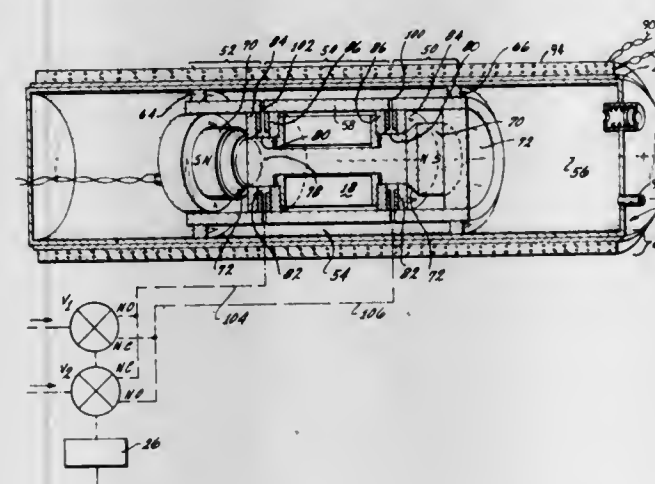
Philip T. Dempster, 644 McCorkle Ave., St. Helena, Calif. 94574

Filed Feb. 5, 1982, Ser. No. 346,010

Int. Cl.³ G01R 33/14

U.S. Cl. 73—27 A

7 Claims



1. In a system for measuring the percentage content of oxygen gas in an unknown or sample gas by comparison with a reference gas, the combination of a magnetic bridge including means forming a pair of major flux circuits, each having a gap therein, valve means for synchronously and alternately filling said gaps with the reference and sample gases, means interconnected between said major flux circuits for forming a null magnetic bridge arm for deriving a magnetic flux proportional to the difference in circuit reluctance of the major magnetic circuits, sense coil means coupled to said null arm for generating a time varying electrical signal proportional to the magnetic flux in said null arm.

4,432,227

VALVE TESTING APPARATUS

Emmett L. Dunn, 103 Lazy Springs (April Sound), Montgomery, Tex. 77356

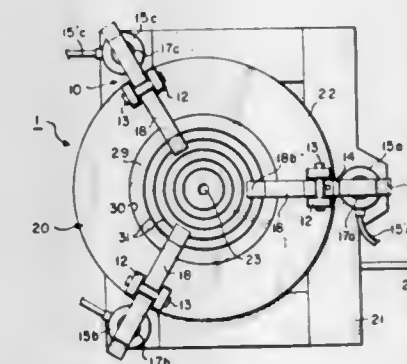
Continuation of Ser. No. 146,172, May 2, 1980, Pat. No. 4,311,038, and a continuation-in-part of Ser. No. 19,813, Mar. 12, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,462

The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.

Int. Cl.³ G01M 3/04

U.S. Cl. 73—49.8

7 Claims



1. An apparatus for testing a device having an annular flange, said apparatus including:
a test plate for supporting said annular flange, said plate having a fluid inlet;
at least one clamping unit comprising:
(a) a lever disposed in a radial direction relative to said annular flange, said lever having an outer end detachably resting on an underlying support and an inner end adapted to grip a portion of said flange,
(b) a fulcrum fixedly mounted above said lever intermediate the lever's inner and outer ends, said lever being adapted to pivot about said fulcrum, and
(c) force-producing means exerting a controllable vertical force against one end of said lever.

4,432,228

FUEL INJECTION ARRANGEMENT

Heinz Kuschmierz, Gerlingen, and Wilhelm Vogel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

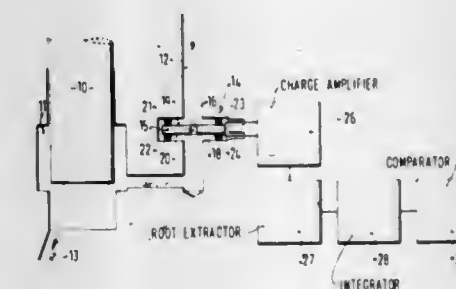
Filed Jan. 11, 1982, Ser. No. 338,566

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101902; Mar. 25, 1981, 3111669; Oct. 22, 1981, 3141899

Int. Cl.³ G01M 15/00

U.S. Cl. 73—119 A

12 Claims



1. A fuel injection control arrangement for an internal combustion engine, comprising means for receiving an electrical signal corresponding to a quantity of a supplied fuel, comparing an actual value with a nominal value of the supplied fuel quantity, and producing a correcting signal for fuel supply; and means for measuring the quantity of a supplied fuel and producing the corresponding electrical signal, said measuring means including a quartz pressure measuring diaphragm producing the corresponding electric signal by a piezoelectric effect on quartz because of a differential pressure on said mea-

asuring diaphragm, said quartz pressure measuring diaphragm including a monocrystal quartz plate with a diaphragm opening of an identical diameter over its entire length and with two outer surfaces exposed to the differential pressure, and electrode means provided on said outer surfaces.

4,432,229

WHEEL WEAR MEASUREMENT SYSTEM

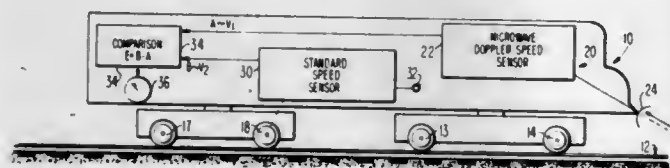
Markus Nowogrodzki, Sussex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 4, 1982, Ser. No. 385,055

Int. Cl.³ G01M 17/00

U.S. Cl. 73-146

4 Claims



1. A system for measuring wear of a wheel on a moving vehicle comprising in combination: first means for providing a signal V_1 indicative of the measurement of the actual velocity of said vehicle independent of wheel motion; second means of providing a signal V_2 indicative of revolutions per unit time of said wheel; and means responsive to signals V_1 and V_2 for determining the difference between V_1 and V_2 at time spaced points at least one value of V_1 to determine therefrom wear of said wheel.

4,432,230

METHOD AND APPARATUS FOR CALIBRATING PUMPS

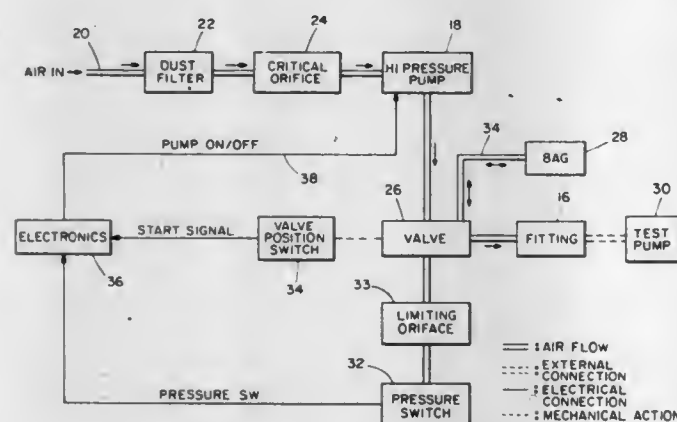
John A. Stahler, 609 Maple La., Elk Grove, and Takashi Yamaguchi, 875 Tree La., Prospect Heights, both of Ill. 60070

Filed May 25, 1982, Ser. No. 381,799

Int. Cl.³ G01M 19/00; G01F 25/00

U.S. Cl. 73-168

14 Claims



1. A method of determining the flow rate of a pump under test comprising the steps of:

- (a) pumping fluid into a receptacle for a selected period of time via an orifice having a known maximum flow rate, said fluid being under sufficient pressure to maintain the said maximum flow rate through said orifice so that the volume of fluid pumped into the receptacle during said selected time period is known;
- (b) evacuating the receptacle using the pump under test;
- (c) measuring the time period required to perform step (b);
- (d) calculating the flow rate of the pump under test from the known volume of fluid evacuated and the time period required to perform step (b).

4,432,231

ULTRASONIC LEVEL DETECTOR

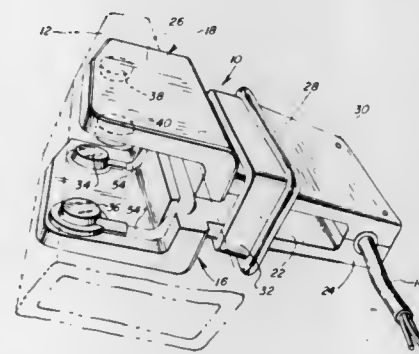
E. Thomas Napp, Lake Zurich; R. C. Stauber, Hawthorn Woods, and Thomas R. Lillegard, Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 28, 1982, Ser. No. 392,984

Int. Cl.³ G01F 23/28

U.S. Cl. 73-290 V

14 Claims



13. An ultrasonic detector, which comprises: a pair of opposed arms for connection to a container which carries fluid to be sensed; one of the arms carrying a transmitting transducer and the other arm carrying a receiving transducer which faces the transmitting transducer; a clamping ring that is slidable on both arms for forcing the arms toward each other when the ring is moved in one direction and for enabling the arms to move apart from each other when the ring is moved in a direction opposite to the one direction; each arm comprising a front portion carrying one of the transducers and adapted for engagement with the container, a contiguous intermediate portion on which the clamping ring is slidable, and a contiguous rear portion that is fastened to the rear portion of the other arm; each of the transducers being potted in a resilient material which deforms to substantially comply with the surface of the container; and said rear portions operating to provide a hinge for the front and intermediate portions.

4,432,232

DEVICE AND METHOD FOR MEASURING THE COEFFICIENT OF PERFORMANCE OF A HEAT PUMP

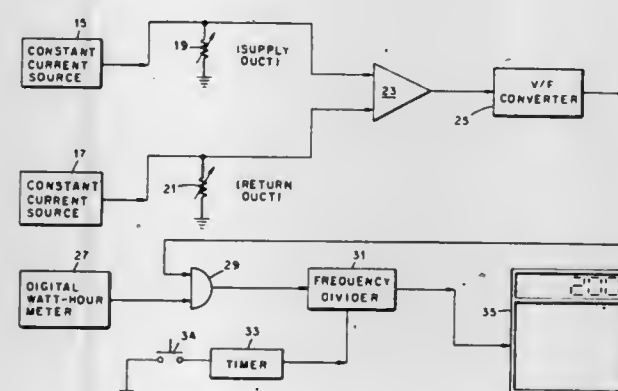
Vanston R. Brantley, Knoxville, and Donald R. Miller, Kingston, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 18, 1982, Ser. No. 379,418

Int. Cl.³ G01M 19/02

U.S. Cl. 73-432 R

7 Claims



1. A device for measuring the coefficient of performance of an electrically operated heat pump having a supply air stream and a return air stream, comprising:

means for measuring the temperature differential between said return air stream and said supply air stream and generating a first signal having a frequency proportional to the temperature difference of said streams; means for measuring the operating energy input to said heat pump and generating a second signal having a frequency proportional to said energy input; means for determining the ratio of said first signal frequency to said second signal frequency and generating a third signal having a frequency proportional to said ratio; and a programmable counting means for counting the cycles of said third signal over a preselected time period to register counts according to a preselected counting increment for each of said cycles of said third signal so that the registered count value at the end of said time period is directly indicative of the coefficient of performance of said heat pump over said time period.

4,432,233

APPARATUS FOR SIMULATING SOIL MECHANICAL IMPEDANCE ON ROOT GROWTH POTENTIAL

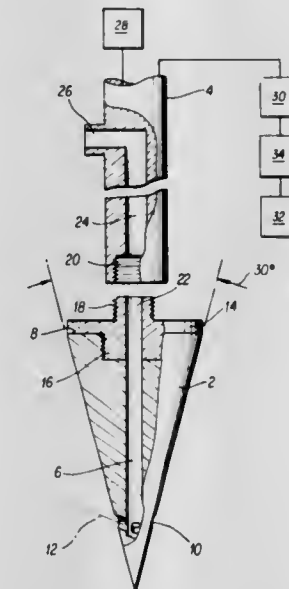
Ernest W. Tollner, Experiment, Ga., assignor to The University of Georgia, Athens, Ga.

Filed Jun. 24, 1982, Ser. No. 391,833

Int. Cl.³ G01M 3/00

U.S. Cl. 73-432 SD

8 Claims



1. An apparatus for simulating soil mechanical impedance on root growth potential, said apparatus comprising: a penetration probe comprising a right conical element having a longitudinal axis; means for advancing said probe along said longitudinal axis; means for supplying a lubricating fluid to the conical surface of said probe; and means for measuring resistance of said probe to movement along said axis.

4,432,234

DETERMINATION OF PLASTIC ANISOTROPY IN SHEET MATERIAL

Alun Jones, Neath, Wales, assignor to British Steel Corporation, London, England

Filed Jan. 21, 1982, Ser. No. 341,571

Claims priority, application United Kingdom, Jan. 23, 1981, 8102185

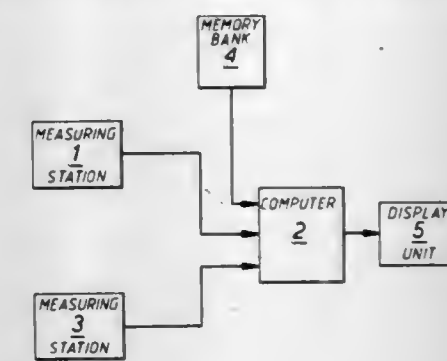
Int. Cl.³ G01N 29/00

U.S. Cl. 73-597

9 Claims

8. Apparatus for determining the average plastic strain ratio (r) of sheet material, comprising a first station having means for propagating mechanical vibrations through the thickness of the sheet, a second station having means for measuring sheet thickness independently of the elastic property of the sheet material, computer means for processing the outputs from the

first and second stations and comparing the processed output with stored values representative of r and predetermined by



conventional means for that sheet material, and a display unit having means for providing a direct reading of r upon identity between said processed output and a said stored value.

4,432,235

ULTRASONIC INSTRUMENT WITH TIME AND AMPLITUDE GATE BAR DISPLAY

Peter Renzel, Duren, and Hanno Jacobs, Langenfeld, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Lewistown, Pa.

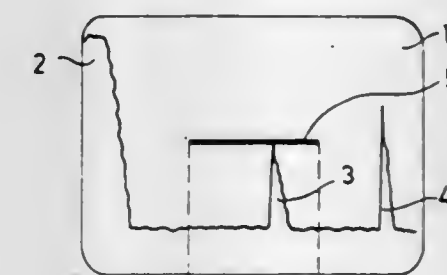
Filed Jul. 26, 1982, Ser. No. 402,152

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3139570

Int. Cl.³ G01N 29/04

U.S. Cl. 73-611

9 Claims



1. An ultrasonic test instrument including pulse generator means for periodically applying electrical pulses to a test probe adapted to be coupled to a workpiece for causing ultrasonic search pulses to be transmitted into such workpiece; receiver means coupled to said probe for receiving echo pulses arising from the search pulses intercepting a defect in the workpiece; display means including a cathode ray tube for displaying on the screen of the tube said echo pulses; time gate means coupled to said pulse generating means and receiver means for causing repetitive gated time intervals for providing to the display means only such echo pulses which are received by said receiver means from a predetermined workpiece region; means coupled to said time gate means, said receiver means and said display means for causing said cathode ray tube screen to display a variable length horizontal gate bar the length of which is commensurate with the duration of said gated time interval, and the height of which above a zero line is commensurate with the value of a predetermined reference voltage provided by means for generating a reference voltage, the improvement comprising:

means coupled to said receiver means and said means for generating a reference voltage for causing repetitively received echo pulses within corresponding gated time intervals to be compared with an incrementally increasing reference voltage provided by said means for generating a reference voltage; means coupled to said means for generating a reference voltage and said display means for causing said bar to be

displayed on said screen at the height commensurate with the value of said reference voltage;
means for causing the height of said gate bar to be retained at a constant amplitude on said screen responsive to the amplitude of the echo pulse having the maximum amplitude relative to additional received echo pulses, and switch means coupled to said means for generating a reference voltage for resetting said reference voltage to said predetermined reference voltage.

4,432,236

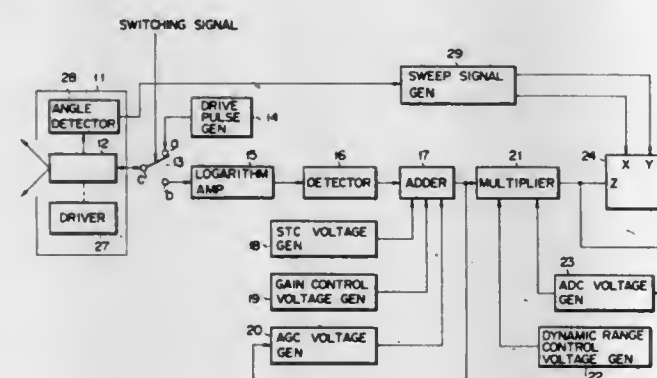
SIGNAL PROCESSING CIRCUIT OF ULTRASONIC DIAGNOSTIC APPARATUS

Tatsuo Nagasaki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 331,125

Int. Cl.³ G01N 29/00

U.S. Cl. 73—631



1. A signal processing circuit for an ultrasonic diagnostic apparatus, comprising:
means for detecting an echo signal from ultrasonic scanning means and for providing a detected echo signal output;
gain-controlling means connected to said detecting means for controlling the level of gain provided an echo signal detected by said detecting means and for providing a corresponding gain-controlled echo signal output;
dynamic range control means connected to said gain-controlling means and including means for generating a dynamic range control voltage and a multiplier for multiplying the gain-controlled echo signal output from said gain-controlling means by the dynamic range control voltage and a negative feedback voltage to provide a compressed output signal; and
feedback means connected to said dynamic range control means for producing the negative feedback voltage, said feedback means including means for sequentially integrating, inverting and amplifying the output signal from said dynamic range control means to obtain the negative feedback voltage and to feed back said voltage to said dynamic range control means.

4,432,237

ULTRASONIC TRANSDUCER

Dieter Schmidt, and Rolf Engler, both of Göttingen, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,085

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103357

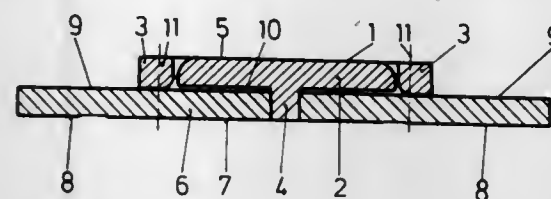
Int. Cl.³ G01N 29/00

U.S. Cl. 73—632

12 Claims

1. Ultrasonic measurement transducer in form of an electrical capacitor for measurements of a flow field, comprising: a counter-electrode and a film lying thereon; said film comprising synthetic material metallized on one side; a clamping ring for holding said film, said counter-electrode and film of synthetic material being arranged electrically insulated from each other; a conductor plate with conductor track portions, said

counter-electrode and said clamping ring holding said synthetic material film electrically insulated therefrom being fastened to said conductor plate and being electrically connected conductively with a respective conductor track portion provided on said conductor plate.



tened to said conductor plate and being electrically connected conductively with a respective conductor track portion provided on said conductor plate.

4,432,238

CAPACITIVE PRESSURE TRANSDUCER

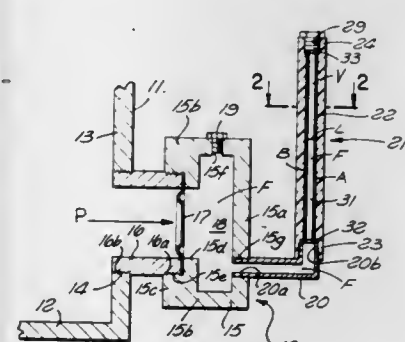
Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,754

Int. Cl.³ G01L 9/12

U.S. Cl. 73—724

9 Claims



1. A capacitive type pressure sensing transducer assembly comprising:

- a transducer housing with walls defining a fluid chamber and incompressible fluid within and filling said chamber;
- a pressure sensitive element spanning a port in one wall of said housing, said element interfacing with an applied pressure force to be sensed and measured and being deflectable in response to said pressure force to vary the volume of the fluid chamber of said transducer housing;
- a multi-capacitor fluid level sensor formed of a first pair of plate type capacitors having like fixed electrical capacitive value and a second pair of plate type capacitors having like open dielectric spaces in fluid flow communication with the fluid chamber of said housing within which fluid from said chamber is maintained as like variable height fluid columns of dielectric material whereby the electrical capacitive value of said second pair of capacitors varies directly with the increasing or decreasing volume of said fluid chamber and corresponding decreasing or increasing height of said fluid columns in response to a pressure force applied to said pressure sensitive element;
- means electrically connecting the first and second pairs of capacitors of said sensor together to form the four capacitive sides of a Wheatstone bridge circuit, the first pair of capacitors connected as two opposing sides of said bridge and the second pair of capacitors connected as the remaining two opposing sides of said bridge;
- a source of alternating current of constant voltage and set frequency connected across said bridge circuit to a first set of terminals at opposite corners of the bridge, each of said terminals located between a capacitor of the first pair of capacitors and a capacitor of the second pair of capacitors of said sensor; and
- a current detection circuit connected across the bridge to a second set of terminals independent of said first set of terminals and at opposite corners of the bridge, each of said sec-

ond terminals located between a capacitor of the first pair of capacitors and a capacitor of the second pair of capacitors of said sensor, said detection circuit including current value measuring and current value indication circuitry for expressing in direct relationship said current value as a pressure force value.

4,432,239

APPARATUS FOR MEASURING DEFORMATION

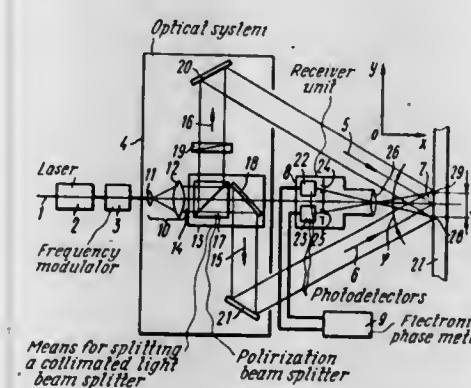
Anatoly P. Bykov, ulitsa Stroitel'naya, 6, kv. 16, Zhukovsky Moskovskoi oblasti, U.S.S.R.

Filed Dec. 8, 1981, Ser. No. 328,477

Int. Cl.³ G01L 1/24

U.S. Cl. 73—800

3 Claims



1. Apparatus for measuring deformation of the surface of a test specimen comprising:

- a laser and an optical system arranged on a common optical axis for forming two light beams intersecting each other and forming an interference pattern;
- a modulator for shifting the frequency of light produced by said laser interposed between said laser and said optical system;
- a system of markers formed on the surface of said test specimen in the region of intersection of said light beams;
- a receiver unit including first and second photodetectors, each of said photodetectors being optically aligned with a corresponding first and second marker of said system of markers; and
- an electronic phase meter connected to outputs of said photodetectors for measuring the difference in the phase of electrical signals thereof to determine the relative displacement of the first and the second of said markers and hence the amount of deformation to which the surface of said test specimen has been subjected.

4,432,240

ELASTOMERIC TESTING APPARATUS

John O. Adams, Madisonville, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 2, 1982, Ser. No. 345,171

Int. Cl.³ G01N 3/08

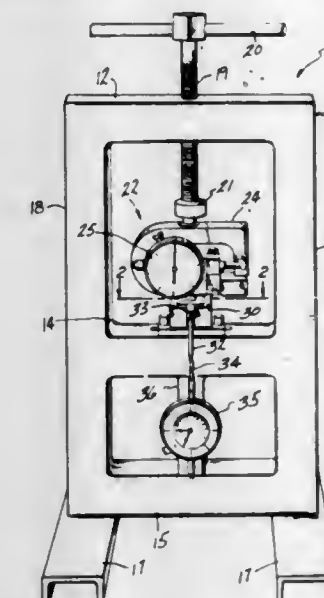
U.S. Cl. 73—822

8 Claims

1. Apparatus for determining the amount of compressive force exerted on an elastomeric material of generally rectangular configuration; comprising in combination:

- a frame;
- an elongate generally rectilinear elastomeric material retainer connected to the frame having a hollowed out central area adapted to receive and retain at least partially along two sides the elastomeric material during compression;
- compression means connected to the frame cooperative with the elastomeric material retainer effective to selectively exert a predetermined amount of compressive force on the elastomeric material;
- compressive force measuring means connected to the frame having a pressure plate contactable with the elastomeric material and cooperative with the elastomeric mate-

rial retainer to measure the amount of compressive force exerted on the elastomeric material; and
e. deflection measuring means mounted to the frame including a deflector arm and cooperative with the elastomeric material retainer and the elastomeric material to measure



the amount of compression which the elastomeric material experiences as a function of the deflector arm in response to the selective exertion of compressive force, the amount of compression being transmitted as a deflection through the deflector arm.

4,432,241

KARMAN VORTEX TYPE FLOW MEASURING APPARATUS

Toru Kita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

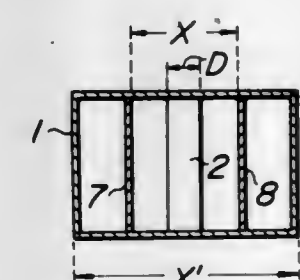
Filed Dec. 14, 1979, Ser. No. 103,742

Claims priority, application Japan, Dec. 15, 1978, 53-154104

Int. Cl.³ G01F 1/32

U.S. Cl. 73—861.22

2 Claims



1. A Karman vortex type flow measuring apparatus comprising a duct through which flows a fluid whose flow rate or flow velocity is to be measured, and a columnar vortex shedding member extending within the duct transversely of the flow direction of the fluid, the flow rate or flow velocity of the fluid being measured by detecting the frequency of the vortex shedding induced by the vortex shedding member, characterized in that planar partitions are disposed within the duct on both sides of the vortex shedding member in parallel with the flow direction of the fluid and with the longitudinal direction of the vortex shedding member, the partitions being arranged such that the following condition is satisfied:

$$3 \leq X/D \leq 4$$

wherein X is the distance between the inner surfaces of the partitions and D is the width of the vortex shedding member as measured in a direction perpendicular to the flow direction of

the fluid and to the longitudinal direction of the vortex shedding member.

4,432,242

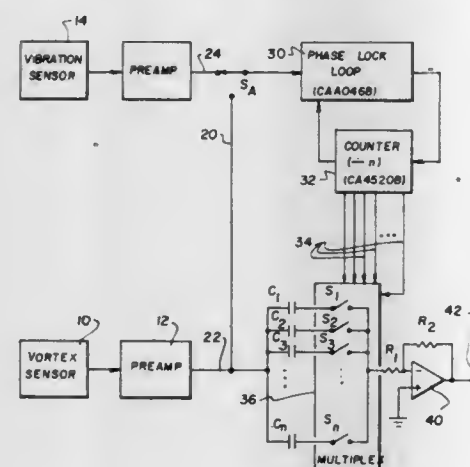
TUNABLE NOTCH FILTER FOR REDUCING VIBRATION SENSITIVITY FOR VORTEX SHEDDING FLOWMETER GENERATOR

William L. Thompson, Chardon, and Michael S. Willey, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 10, 1981, Ser. No. 329,539

Int. Cl.³ G01F 1/32

U.S. Cl. 73—861.22



1. A filter circuit for reducing vibration sensitivity in a vortex shedding flowmeter signal generator comprising: means for providing a vibration signal having a fundamental frequency with a vibration signal period; means for providing a vortex shedding frequency; a phase lock loop connected for receiving the vibration signal and multiplying the vibration signal by a selected number; dividing means connected to an output of the phase lock loop for dividing the vibration signal by the same selected number as the multiplying in said phase lock loop; multiplexer means connected to the dividing means for sequentially preserving the voltage of each part of the vibration signal period as divided by the selected number in said dividing means, the vibration signal period being divided into a number of increments equal to the selected number; and means for subtracting each average voltage from the vortex shedding frequency during each respective time increment.

4,432,243

FLOW CALCULATOR WITH VELOCITY CURVE FITTING CIRCUIT MEANS

Francis C. Lowell, and Thomas K. Campbell, both of Falmouth, Mass., assignors to Ocean Research Equipment, Inc., Falmouth, Mass.

Continuation of Ser. No. 16,096, Feb. 28, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 198,119

Int. Cl.³ G01F 1/66

U.S. Cl. 73—861.31

7 Claims

1. A flow meter for measuring volume of flow in a conduit, said flowmeter comprising

(a) acoustic means for obtaining measurements of fluid velocity along a plurality of paths in said conduit

(b) signal processing means for

(1) fitting said velocity measurements to a general relationship of the form

$$x(x) = a_0 + a_1 f_1(x) + a_2 f_2(x) + \dots + a_n f_n(x)$$

where x represents a position along an axis transverse to the direction of said flow, the "a" values are coefficients

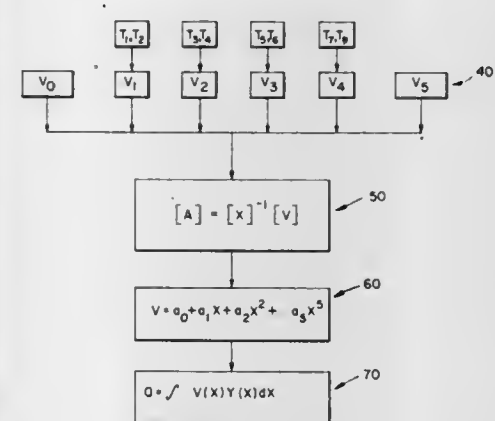
whose values depend on the velocity and its distribution along the x axis and $v(x)$ represents the velocity at that position, by solving for the "a" values in said relationship, and

(2) integrating said relationship according to the formula

$$Q = \int v(x) y(x) dx$$

where $y(x)$ represents the dimension of the flowing fluid transverse to both said axis and said flow and Q is the volumetric flow rate.

7. A flow meter for measuring volume of flow in a conduit, said flowmeter comprising



(a) acoustic means for obtaining measurements of fluid velocity along a plurality of paths in said conduit,

(b) signal processing means for

(1) fitting said velocity measurements to a polynomial expression relating velocity to position along an axis transverse to the direction of said flow, and

(2) forming a product by multiplying said polynomial expression by an expression relating the transverse dimension of said conduit as a function of position along said axis and transverse to the direction of flow, and

(3) integrating said product over said axis.

4,432,244

FLOW RATE TRANSDUCER

Masami Kataoka, Kariya, and Nobumasa Higo, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

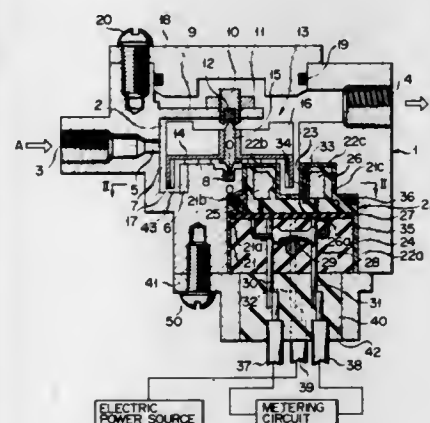
Filed May 26, 1982, Ser. No. 382,118

Claims priority, application Japan, May 29, 1981, 56-78927

Int. Cl.³ G01F 1/06, 1/08

U.S. Cl. 73—861.77

10 Claims



1. A flow rate transducer comprising:

a housing in which are formed a cylindrical fluid chamber, a fluid inlet substantially tangentially connected to said fluid chamber and a fluid outlet connected to said fluid chamber;

a support portion which is surrounded by an annular guide

groove formed coaxially with said fluid chamber in said housing and communicating with said fluid chamber; a vane wheel which is rotatably and coaxially supported by said support portion in said fluid chamber; plate pieces formed on that end face of said vane wheel which are disposed in said guide groove and are arranged circumferentially of said vane wheel at regular intervals; rotation detecting means disposed adjacent to said guide groove for detecting that each of said plate pieces passes by said detecting means; and notch-shaped vane wheel speed adjusting chambers formed in said support portion to communicate with said guide groove and said fluid chamber for making the rotational speed of said vane wheel substantially equal to the flow rate of a fluid in said fluid chamber.

4,432,245

GRINDING MACHINE MOTOR WITH A TORQUE SENSOR

Mitsuro Hattori, Ibaragi; Koosuke Harad, Fukuoka, and Tadahiko Goto, Kita-Kyushu, all of Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade & Industry, both of Tokyo, Japan

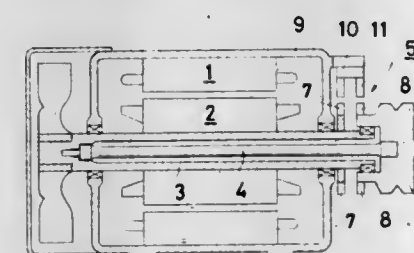
Filed Mar. 18, 1981, Ser. No. 244,916

Claims priority, application Japan, Mar. 24, 1980, 55-37273

Int. Cl.³ G01L 3/04

U.S. Cl. 73—862.32

2 Claims



1. A grinding machine motor with a torque sensor, comprising:

a stator;

a rotor rotatable relative to said stator;

a hollow drive shaft rotatably supporting said rotor, the drive shaft defining an axial bore;

a torsion bar disposed in the axial bore of said hollow drive shaft and having two ends, one end of the torsion bar being fixed to said hollow drive shaft and the other end thereof being connected to a pulley for transmitting its rotation to a grinding wheel spindle, said torsion bar having a first portion twistable by a small torque substantially equivalent to the predetermined motor torque just before the grinding wheel touches a workpiece, and a second portion twistable by a large torque in a range substantially equivalent to the predetermined torque range normally encountered in grinding;

means for bringing said second portion into direct engagement with said hollow drive shaft after said first portion has been twisted by the small torque; and dual-sensitivity detector means for detecting the transmission torque in terms of the twisting angle of said torsion bar, said detector means being capable of detecting the rise in motor torque just before the grinding wheel touches the workpiece by sensing the twisting angle of said first portion of said torsion bar, and of detecting the torque range encountered in ordinary grinding by sensing the twisting angle of said second portion.

4,432,246

DISPLACEMENT AND/OR FORCE MEASURING DEVICE AND METHOD

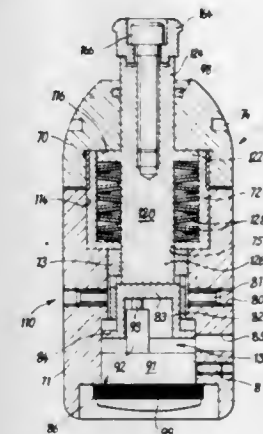
Rodney J. Granat, Caulfield, Australia, assignor to ACI Australia Limited, Victoria, Australia

Filed Dec. 9, 1981, Ser. No. 329,136

Claims priority, application Australia, Dec. 12, 1980, PE6928 Int. Cl.³ G01L 1/04, 5/00

U.S. Cl. 73—862.53

14 Claims



1. A device for measuring the distance moved by an applicator head of a container filling and capping station and, hence, a force applied by the head, the device having a housing member, a plunger member telescopically inter-fitted with the housing member so as to be substantially linearly movable relative thereto, biasing means biasing said members to a rest position, and indicator means mounted on said members; said indicator means having at least one component thereof movable such that, during one stage of relative movement of the members from their rest position against the bias of said biasing means and return to their rest position under said bias, said at least one component is fixed relative to one of said members and movable relative to the other member, and such that during the other stage of that movement said at least one component is fixed relative to the other of said members and movable relative to the one member to thereby provide a measure of the relative movement of the members in one of said stages, and wherein the external form of the device corresponds to a standard container in which a closure member is to be fitted by an applicator head of a container filling and capping machine, such that the device can be inserted upstream from the applicator head in a process line for containers passed through said machine and thereby subjected to the action of the applicator head to obtain a read-out of distance moved or pressure applied by the applicator head.

4,432,247

LOAD CELL HAVING THIN FILM STRAIN GAUGES

Shozo Takeno, Yokohama, and Koichiro Sakamoto, Mishima, both of Japan, assignors to Tokyo Electric Co., Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 323,726

Claims priority, application Japan, Nov. 29, 1980, 55-0168533; Nov. 29, 1980, 55-168534; Dec. 2, 1980, 55-169854; May 21, 1981, 56-77310; May 27, 1981, 56-80602

Int. Cl.³ G01L 1/22; G01B 7/20

U.S. Cl. 73—862.67

14 Claims

1. A load cell comprising:

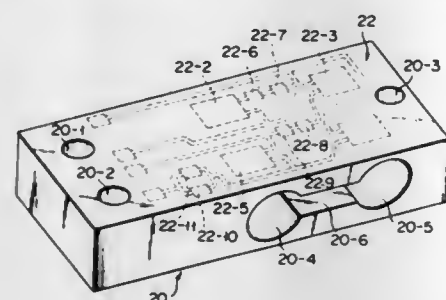
a beam body;

a coating film of heat-resistant insulating resin formed on one surface of said beam body, said coating film having a substantially flat surface; and

a load cell element formed on said substantially flat surface of said coating film;

said load cell element including first and second power source terminals, first and second output terminals, a first strain gauge resistor and a first bridge balancing resistor connected in series between said first power source terminal and said first output terminal, a second strain gauge

resistor and a second bridge balancing resistor connected in series between said first power source terminal and said second output terminal, a third strain gauge resistor connected between said second power source terminal and said first output terminal, and a fourth strain gauge resistor connected between said second power source terminal



and said second output terminal, wherein a resistive layer is formed over a pattern region including said first to fourth strain gauge resistors, said first and second bridge balancing resistors and connecting means for connecting these resistors, and a conductive layer is formed on said resistive layer over a pattern area of the connecting means.

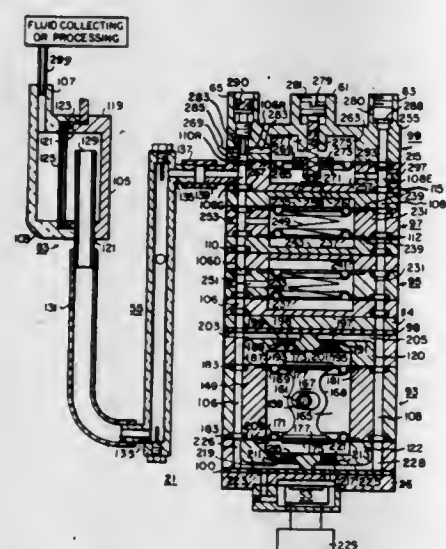
4,432,248 FLUID SAMPLING

Hill S. Lalin, Wayne, N.J., assignor to Gilian Instrument Corporation, Wayne, N.J.

Filed Oct. 29, 1980, Ser. No. 201,823
Int. Cl.³ G01N 1/24

U.S. Cl. 73—863.03

14 Claims

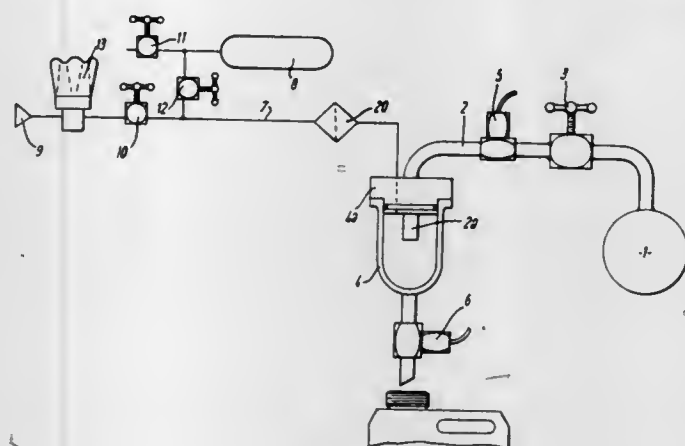


1. A fluid sampler including a fluid channel having an inlet branch and an outlet branch, a pump connected to said fluid channel, for conducting fluid from said inlet branch through said outlet branch, means, connected to said fluid channel, restricting the flow of fluid therethrough to a magnitude less than the capacity of said pump, whereby a pressure differential is produced in said channel across said restricting means, and a pressure regulator directly interconnected between said inlet branch and outlet branch, responsive to said differential, for regulating the quantity of fluid delivered by said pump at said outlet to said magnitude permitted by said restricting means, said regulator including valve means operable to interconnect said inlet branch, said pump and said outlet branch in a closed circuit when the pressure difference between said outlet branch and said inlet branch exceeds said pressure differential so that, under this circumstance, the fluid in said branches is circulated by said pump in said closed circuit, and to interrupt said closed circuit when pressure difference is less than said pressure differential so that, under this latter circumstance, said fluid flows out through said outlet branch.

**4,432,249
LIQUID SAMPLING**
George Levey, 250 Tottington Rd., Bolton, and Peter J. Smith, 20 Ladybridge Ave., Worsley, Manchester, both of England
Filed May 26, 1982, Ser. No. 382,028
Claims priority, application United Kingdom, Jun. 1, 1981, 8116629; Feb. 16, 1982, 8204436
Int. Cl.³ G01N 1/14

U.S. Cl. 73—863.83

6 Claims



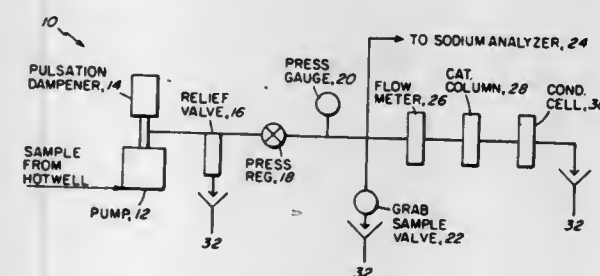
5. A method of obtaining a sample of liquid from a liquid flow line, said method comprising introducing a purging fluid at a pressure higher than the pressure in the liquid flow line, through second line means, to sample containing means and first line means, causing a volume of sample liquid from the flow line to enter the sample containing means, and supplying a further volume of purging fluid to the sample containing means whereby both purging fluid and sample liquid in excess of a desired amount are discharged into the liquid flow line, opening first valve means in the first line means after introduction of the purging fluid to the sample containing means and the first line means, and subsequently closing the first valve means after the further volume of purging fluid has been supplied, whereby the first valve means is prevented from operating in contact with liquid from the liquid flow line.

**4,432,250
HOTWELL SAMPLING SYSTEM**
Leland J. Albrecht, Marlborough, and Richard L. Briere, Hopkinton, both of Mass., assignors to High Voltage Engineering Corporation, Burlington, Mass.

Filed Jul. 6, 1982, Ser. No. 395,330
Int. Cl.³ G01N 1/14

U.S. Cl. 73—864.34

14 Claims



13. A steam condensate analyzing system for testing condensate from a power plant hotwell comprising:

- a positive displacement pump, having an inlet in fluid connection with the condensate and an outlet discharging a volume of condensate per pump stroke;
- a pulsation dampener in fluid connection with the pump outlet, said dampener comprising a sealed canister substantially filled with a flexible, closed-cell material having sufficient volumetric flexibility to substantially dampen the pressure surge of the pump stroke and said dampener being mounted substantially vertically above the pump outlet;

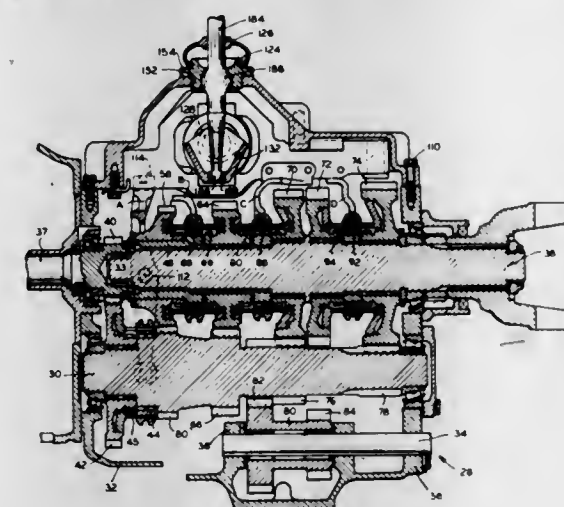
- a pressure-regulating valve located downstream of both the pump and dampener for extracting the condensate discharged by the pump;
- A relief valve situated between the pump and the regulating valve for discharging excess condensate and relieving pressure; and
- a least one, on-line, analyzing component in fluid connection with the regulating valve, whereby steam condensate from the hotwell may be extracted and tested for contaminants.

**4,432,251
LOST MOTION TRANSMISSION CONTROL CAMS**
Theodore A. Malott, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 29, 1981, Ser. No. 229,402
Int. Cl.³ G05G 9/12, 5/10; F16H 53/00

U.S. Cl. 74—337.5

25 Claims



1. A transmission including:
 - a shift rail having a first position;
 - a cam follower surface on the shift rail;
 - a rotatable shaft, the shaft having a neutral rotative position;
 - a cam follower mounted on the shaft, the cam member having an actuator portion;
 the shaft being rotatable a first portion in a chosen direction to a first rotative position and being further rotatable a second portion in the chosen rotative direction to a final rotative position;
 the actuator portion being spaced from the cam follower surface during one of the portions of shaft rotation and the actuator portion being in cooperation with the cam follower surface during the other portion of shaft rotation so that the shift rail moves from its first position in a selected direction.

**4,432,252
MANIPULATOR FOR CHARGING DEVICES**
Eberhard Brücher, Lohweg 35, D-5900 Siegen 21, Fed. Rep. of Germany

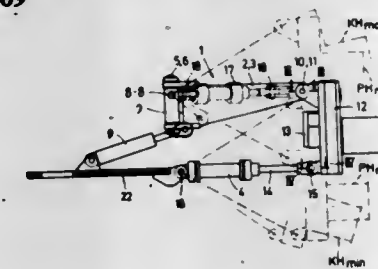
Filed Nov. 16, 1981, Ser. No. 321,551

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043145

Int. Cl.³ G05G 1/04; B25J 15/02

U.S. Cl. 74—469

3 Claims



1. An adjustable support with articulated parallelogram linkage, comprising a carrier, a base, parallelogram linkage

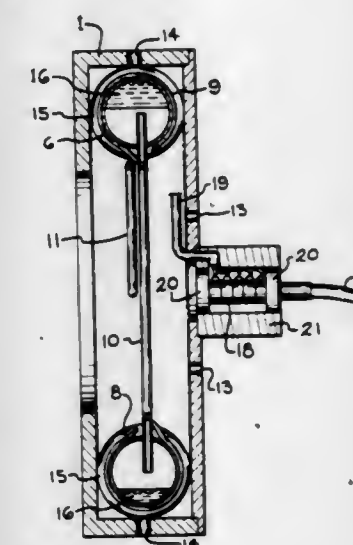
interconnecting the carrier and the base, and spherical bearings interconnecting the parallelogram linkage and the carrier, the parallelogram linkage comprising two arms disposed in the same horizontal plane and interconnected at their forward ends by spherical bearings to an upper portion of said carrier, the rear ends of the arms being pivotally interconnected for horizontal swinging movement about spaced vertical axes on a hinge plate, means mounting the hinge plate for vertical swinging movement about a horizontal axis on the base, and a fluid pressure cylinder disposed below and parallel to the arms and interconnected at its forward end by a spherical bearing to a lower portion of the carrier and at its rear end by a spherical bearing to the base.

**4,432,253
UNBALANCE COMPENSATOR**
Jack H. Kerlin, Ann Arbor, Mich., assignor to Balance Dynamics Co., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 255,477, Apr. 20, 1981, abandoned. This application Jan. 25, 1982, Ser. No. 342,450
Int. Cl.³ F16F 15/22; G01B 7/14

U.S. Cl. 74—573 R

35 Claims



1. In a machine having a rotary mass including a spindle shaft containing two axially spaced apart mass portions requiring balancing, an unbalance compensator having a central through-aperture extending between two opposite axial ends thereof, means mounting the unbalance compensator on the rotary mass with the spindle shaft passing through the through-aperture so that one of said mass portions of the rotary mass requiring balancing is disposed adjacent one of said opposite axial ends of the unbalance compensator, and the other of said mass portions is disposed adjacent the other of said opposite axial ends, wherein the unbalance compensator comprises a rotary portion mounted on the rotary mass and a stationary portion, and including an air gap between the stationary and rotary portions allowing the rotary portion to rotate free of contact with the stationary portion, and wherein said stationary and rotary portions comprises respective electrical coils concentrically arranged and inductively coupled.

**4,432,254
VISCIOUS DAMPER HAVING RIGID PLASTIC STRUCTURE**

John C. Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Mar. 23, 1981, Ser. No. 246,901

Int. Cl.³ F16F 15/10

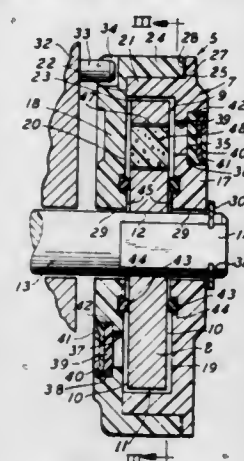
U.S. Cl. 74—574

9 Claims

1. A viscous damper, functioning on the principle of the resistance to shearing of a film of viscous damping medium in a shear film space between relatively parallel movable surfaces, which damper comprises:

- a radially extending member having at least one radially extending and axially facing planar working surface and means for attachment of the member to a first of relatively movable parts to be damped;

- (b) an annular housing which defines a working chamber having a radially facing opening through which said member extends into said working chamber, said member having within said chamber a radially extending working planar surface facing axially toward a housing planar working surface in said working chamber in shear film spaced relation;
- (c) a viscous damping medium in said chamber providing a shear film of the damping medium between said working surfaces;
- (d) means for attaching said housing to a second relatively movable part so that, when said first and second parts move relatively with respect to each other and cause said housing and member and thereby said surfaces to move in relative parallel relation, said shear film will damp the relative movement of said surfaces and, thereby, the relative movement of said housing and member and thus the parts to which they are attached;



- (e) annular resilient seal means between and in engagement with said member and said housing adjacent to said opening for preventing leakage of said damping medium through said opening from said working chamber, and said seal means functioning for normally maintaining said shear film spaced relation; and
- (f) a bearing projection on said housing projecting from a plane of said housing working surface, less than said shear film spaced relation, toward said planar working surface of said member and normally remaining spaced from said planar working surface of said member, but functioning upon displacement of said surfaces toward one another, as may be caused by external forces on the damper, to limit movement of said surfaces toward one another to the extent of the projecting of said projection from said plane of said housing working surface.

4,432,255

HYDRAULIC CONTROL FOR A POWER TRANSMISSION

August H. Borman, Farmington, and Mark A. Perlick, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1980, Ser. No. 200,959

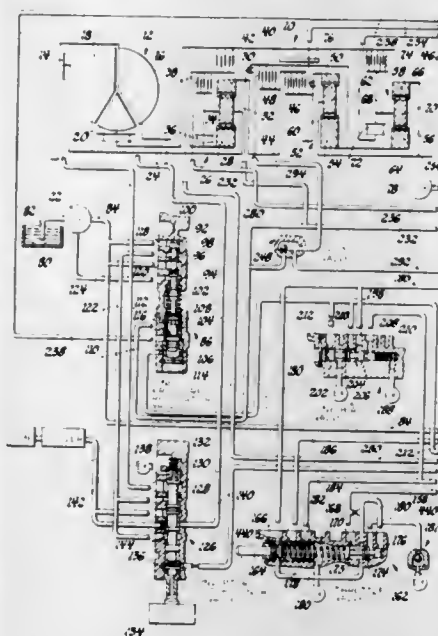
Int. Cl.³ B60K 41/16

U.S. Cl. 74-869

1 Claim

1. A hydraulic control for a multispeed transmission adapted to be driven by a throttle controlled engine, said hydraulic control comprising; shift valve means movable between upshifted and downshifted positions for controlling the speed ratio in the transmission including upshift pressure chamber means, downshift pressure chamber means, and downshift bias spring means; speed responsive pressure means for supplying an upshift bias to said upshift pressure chamber means; throttle position responsive pressure means for supplying a pressure which varies when the engine throttle position varies; first modulator pressure valve means in fluid communication between said throttle position responsive pressure means and said downshift pressure chamber means for supplying a variable bias pressure to said downshift pressure chamber means when the pressure of the throttle position responsive pressure means

is above a first predetermined level and said shift valve means is in the downshifted position; and second modulator pressure valve means in fluid communication between said throttle position responsive pressure means and said downshift pressure chamber means for supplying a bias pressure to said downshift pressure chamber means when the pressure of the throttle position responsive pressure means is above a second predetermined level, which is higher than said first predetermined level and, said shift valve means is in the upshifted position, the



4,432,256

ADJUSTABLE POWERED WRENCH

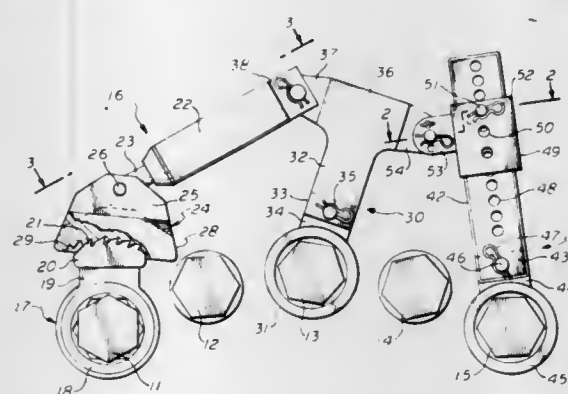
Thomas Aparicio, Jr., Houston, Tex., and Ron Graham, Norco, Calif., assignors to Gratec, Inc., Norco, Calif.

Filed Sep. 28, 1981, Ser. No. 305,934

Int. Cl.³ B25B 13/46

U.S. Cl. 81-57.39

8 Claims



1. An adjustable powered wrench for turning threaded members comprises
a wrench member adapted to be positioned over a threaded member for applying a torque thereto and having an operating arm for transmission of power,
a fluid operated cylinder and operating piston extending therefrom,
said piston being operatively connected to said wrench operating arm,

a first reaction arm having one end with a pivotal connection thereon adapted to fit over one of said threaded members for support thereon, and having an opposite end pivotally connected to said cylinder for supporting the same,
said first reaction arm being T-shaped including a cylindrical ring at the base thereof providing said pivotal connection to one of said threaded members and having a clevis or tongue member being positioned at opposite ends of the cross arm thereof,
said first reaction arm being removably connected to said cylindrical ring for servicing, one part having a clevis and the other a tongue member, and including a removable pin securing the connection together,
an adjustable anchor member comprising a second reaction arm having one end with a pivotal connection thereon adapted to fit over another one of said threaded members for support thereon,
said second reaction arm having a cylindrical ring at one end providing said pivotal connection to one of said threaded members,
said second reaction arm being removably connected to said cylindrical ring for servicing, one part having a clevis and the other a tongue member, and including a removable pin securing the connection together,
an adjustable sleeve member slidably positioned on said second reaction arm and including means for selectively positioning the same in different positions along the length thereof,
means pivotally connecting said sleeve member to said first reaction arm, whereby adjustment of said sleeve member is operable to adjust the position of said first reaction arm and said fluid operated cylinder relative to said wrench,
said pivoted connection of said first reaction arm to said cylinder comprising said clevis on one and said tongue member on the other and a removable pin securing the same together for pivotal movement, and
said pivoted connection of said first reaction arm to said sleeve member comprises a clevis on one and a tongue member on the other and a removable pin securing the same together for pivotal movement.

4,432,257

SHOE BOLT SECURING AND REMOVING APPARATUS

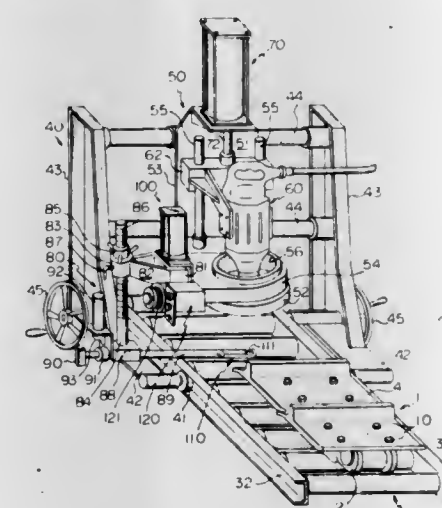
Kazuyoshi Yamamoto, and Tadashi Sato, both of Sagami, Japan, assignors to Caterpillar Mitsubishi Limited, Kanagawa, Japan

Filed May 17, 1982, Ser. No. 379,020

Int. Cl.³ B25B 23/00

U.S. Cl. 81-464

7 Claims



1. A shoe bolt securing and removing apparatus comprising a carriage movable along rails, a mounting framework movably supported on said carriage for movement transversely of said rails, a power driven rotary bolt turning tool mounted on said mounting framework for upward and downward movement, means supported on said mounting framework for mov-

ing said bolt turning tool upwardly and downwardly, a nut holder support supported on said mounting framework for upward and downward movement, means supported on said mounting framework for moving said nut holder support upwardly and downwardly and a nut holder supported on said nut holder support below said bolt turning tool for movement back and forth transversely of said rails, said nut holder including a nut receiving portion having the center axis adapted to align with the center axis of said bolt turning tool in a vertical plane in the advanced position of the nut holder.

4,432,258

CONTROLLABLE TOOL FEEDING APPARATUS

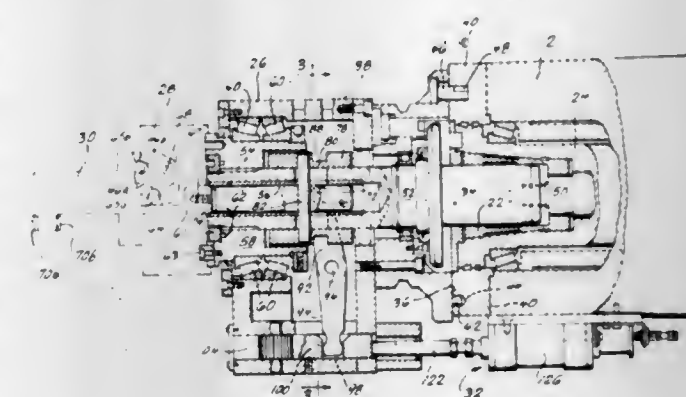
John T. Currer, Wauwatosa, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Aug. 26, 1981, Ser. No. 296,501

Int. Cl.³ B23B 3/26

U.S. Cl. 82-1.2

1 Claim



1. A tool head apparatus including a tool head adapted to be removably mounted on a machine tool having a rotary spindle; a cutting tool supported by said tool head for movement in a rectilinear path transverse to the axis of rotation of the spindle; means locking said tool head to the machine tool in a predetermined angular position; means coupling said cutting tool to the machine tool spindle when the tool head is mounted on the machine tool so that said cutting tool rotates with the spindle; moving means connected to said cutting tool and operable when actuated to move said cutting tool in its path of travel in either direction; an actuator rod slidably supported in the tool head for rectilinear movement and coupled to said moving means so that the rectilinear movement of said actuator rod serves to actuate said moving means; a lever pivotally supported in said tool head and coupled to said actuator rod so that pivotal movement of said lever will produce rectilinear movement of said actuator rod; a bar slidably supported in the tool head for rectilinear movement; means coupling said bar to said lever so that rectilinear movement of said bar produces a pivotal movement of said lever; a piston and cylinder mechanism mounted on the exterior of the machine in position to be engaged by said bar when the tool head is mounted on the machine tool in the predetermined angular position for actuating said bar to adjust the position of the cutting tool.

4,432,259

REMOTE CONTROLLED TOOL ARM ADJUSTMENT

Carl H. Werth, Jr., Bridgeport, Mich., assignor to Werth Engineering, Inc., Bridgeport, Mich.

Filed Jul. 13, 1981, Ser. No. 283,026

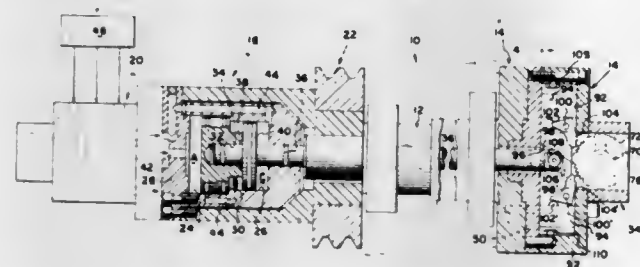
Int. Cl.³ B23B 3/26

U.S. Cl. 82-2 E

8 Claims

1. In a tool arm assembly having a rotary spindle including a face plate, and tool mounting means supported on said face plate for adjustably shifting a tool in predetermined step-by-step increments radially of said spindle while said face plate is rotating;
the improvement wherein said tool mounting means comprises a bar member supported by said face plate and

extending radially of said spindle, said bar member having a pair of end portions fixedly secured to said face plate and a central portion resiliently coupled to and between said end portions for movement relative to said end portions radially of said spindle, means for fixedly mounting a tool on said central portion of said bar member, screw means operable when rotated to shift said central portion relative to said spindle, bi-directional pawl and ratchet means operable when actuated to drive said screw means in a predetermined increment of rotation, remotely controlled



means for selectively actuating said pawl and ratchet means to drive said screw means through one increment of rotation in either direction while the spindle is rotating, said remotely controlled means comprising a piston rod mounted within said spindle for coaxial movement relative to said spindle, piston means coupled to said piston rod, and fluid pressure supply means for normally maintaining said piston rod in a predetermined neutral position and selectively operable to drive said piston rod in a stroke of predetermined length in either direction from said neutral position to actuate said pawl and ratchet means.

4,432,260

METHOD AND APPARATUS FOR CONTROLLING THE FEEDING OF A BANDSAW BLADE OF HORIZONTAL BANDSAW MACHINES

Nobuo Sarurai, Yokohama, and Morimasa Kobayashi, Isehara, both of Japan, assignors to Amada Company, Limited, Isehara, Japan

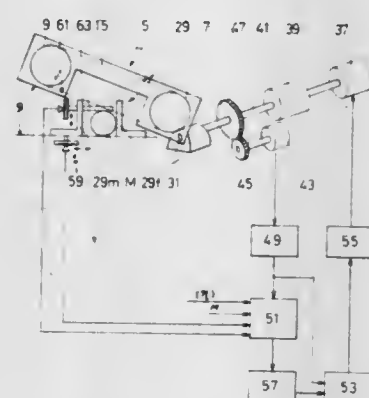
Filed Jun. 10, 1980, Ser. No. 158,256

Claims priority, application Japan, Jun. 11, 1979, 54-72222; Jun. 11, 1979, 54-72223

Int. Cl.³ B23D 55/08

U.S. Cl. 83—13

4 Claims



1. A method for controlling the cutting rate of a blade of a bandsaw machine; said method comprising the steps of:

- (a) driving a bandsaw blade;
- (b) positively feeding the bandsaw blade into a material to be cut;
- (c) detecting the feeding position of the bandsaw blade in a material to be cut;
- (d) generating first signals from the detected feeding position, said first signals defining the detected feeding position;
- (e) generating second signals defining the length of the cross-sectional cut in the material at a time corresponding to the feeding position as defined by said first signals; and
- (f) controlling the feeding of the bandsaw blade into the

material to be cut as a function of the length of the cross-sectional cut defined by said second signals and maintaining a constant cutting rate.

4,432,261

SEVERING WEB PLIES IN MULTIPLE ROLL MATERIAL DISPENSERS

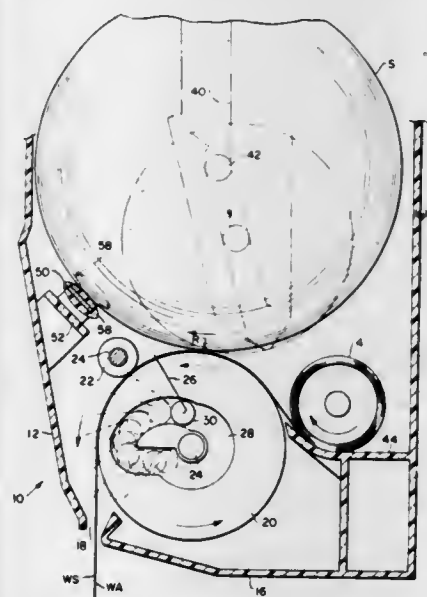
Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Dec. 23, 1981, Ser. No. 333,938

Int. Cl.³ B65H 19/06; A47K 10/36

U.S. Cl. 83—37

13 Claims



1. In a dispenser for rolled flexible sheet material wherein several plies of material fed from multiple source rolls are to be jointly severed, a cut-web dispensing method comprising: resting one source roll on a dispensing feed roller; jointly passing web plies over said feed roller from each of said one source roll and another source roll; continuously applying a retarding force to the exterior of said one source roll at a fixed point remote from the point where said one source roll rests on said feed roller; jointly cutting said web plies as they pass over said feed roller; and discontinuing application of said retarding force upon depletion of a predetermined portion of web material from said one source roll.

4,432,262

DRIVING UNIT FOR THE KNIFE HOLDERS OF CROSS CUTTERS OR THE LIKE

Alfred Besemann, Hamburg, and Willi Rehwald, Böblingen, both of Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,782

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024603

U.S. Cl. 83—311

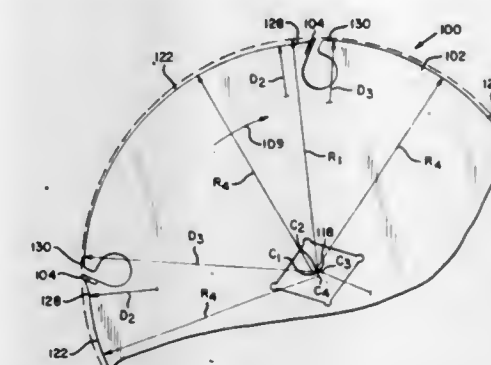
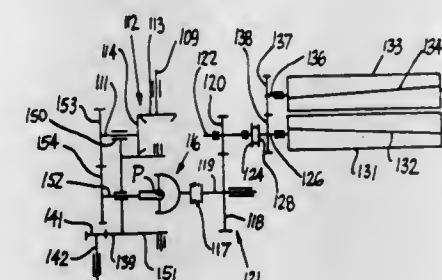
Int. Cl.³ D06H 7/02

12 Claims

1. A driving unit for a rotary member in a cross cutter for running webs of paper or the like, comprising an angle drive having a rotary input element and a rotary output element receiving torque from said input element; means for rotating said input element; a universal joint including a rotary input shaft driven by said angle drive and having a first axis and a rotary output shaft driven by said input shaft and having a second axis intersecting said first axis at a predetermined point, one of said shafts being movable with reference to the other of said shafts to thereby change the angle between said axes and said input element having a third axis intersecting said first and

second axes at said point; carrier means rotatably mounting said output element and said input shaft and turnable about said

tooth which is spaced radially outwardly from the center of rotation of the blade a second distance which is less than said first radius, with said peripheral edge extending from said first region toward the forward surface of the following tooth in a



third axis; and means for transmitting torque from said output shaft to the rotary member of the cross cutter.

4,432,263

DUPLICATING FENCE FOR ATTACHMENT TO A RIP SAW FENCE OF A TABLE SAW

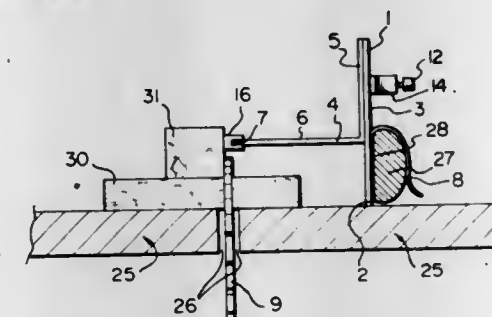
Paul G. Kowalchuk, 680 Agnew St., S6V 2P1 Prince Albert, Sask., Canada

Filed Sep. 29, 1982, Ser. No. 427,182

Int. Cl.³ B27B 27/02

U.S. Cl. 83—438

8 Claims



1. A duplicating fence for use as an attachment to a rip saw fence of a table saw that includes a table top and a circular saw extending upwardly therethrough, said duplicating fence comprising, in combination:

- (a) a backing member which includes an elongate and straight horizontal bottom edge portion and a vertical and straight rear wall portion;
- (b) a guide member which is disposed on a side opposite said rear wall portion of said backing member and which extends outwardly therefrom and which includes an elongate and straight vertical side guide edge portion which is parallel to said rear wall portion and perpendicular to said bottom edge portion; and
- (c) attaching and supporting means for fixedly attaching said rear wall portion of said backing member in abutting relationship to said rip saw fence and for supporting said vertical side guide edge portion in a horizontal plane above said circular saw.

4,432,264

CIRCULAR SAW BLADE

Lewis A. Scott, Lake Oswego, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 292,572, Aug. 13, 1981,

abandoned. This application Aug. 3, 1982, Ser. No. 404,850

Int. Cl.³ B27B 33/08; B23D 61/04

U.S. Cl. 83—835

14 Claims

1. A saw blade comprising a generally circular main body having a plurality of circumferentially-spaced cutter teeth arrayed about the periphery thereof, the outer ends of said teeth being positioned to describe an arc at a preselected first radius during operation of said blade, a tooth having a front surface facing in the direction of rotation of said blade during operation and a rear surface facing in the opposite direction, a peripheral portion of said body intermediate adjacent cutter teeth having a first region adjacent the rear surface of one

substantially continuous curve to terminate adjacent the forward surface of the following tooth at a second region which is spaced radially outwardly from said center of rotation a third distance which is intermediate said first radius and said second distance.

4,432,265

ELECTRONIC MUSICAL INSTRUMENT CONTROLLING TONE PROPERTIES BY CONTROL DATA SIGNALS

Akiyoshi Oya, and Tomoaki Sekiguchi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

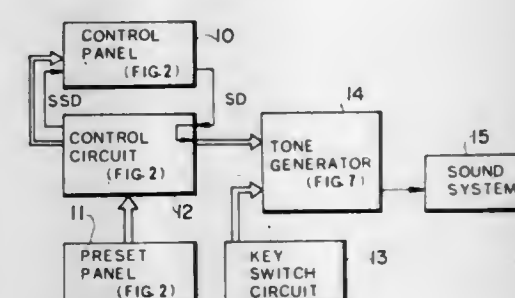
Filed Jun. 30, 1982, Ser. No. 393,751

Claims priority, application Japan, Jul. 9, 1981, 56-101166[U]

Int. Cl.³ G10H 1/053, 1/18

U.S. Cl. 84—1.01

11 Claims



6. An electronic musical instrument comprising: a key switch circuitry including playing keys capable of being operated by a player of the instrument for designating respective notes, and including key switches and circuits associated with said keys and producing key identifying signals indicating operated ones among said keys; tone generator means connected to said key switch circuitry for generating tone signals of the notes as respectively designated by said key identifying signals and having tone properties as determined by control data signals applied thereto; control data setting means for setting a plurality of control data signals exhibiting values for determining said tone properties; and interpolation means connected to said control data setting means for receiving at least one of said control data signals and providing, when the value of the received signal varies from a first value to a second value, an interpolating value which varies gradually from said first value to said second value, said interpolated signal and other control data signals which are not subjected to interpolation being applied to said tone generator means.

4,432,266

**AUTOMATIC MUSICAL PERFORMANCE DEVICE
CAPABLE OF CONTROLLING THE TEMPO**Akira Nakada, Hamamatsu, Japan, assignor to Nippon Gakki
Seizo Kabushiki Kaisha, Shizuoka, Japan

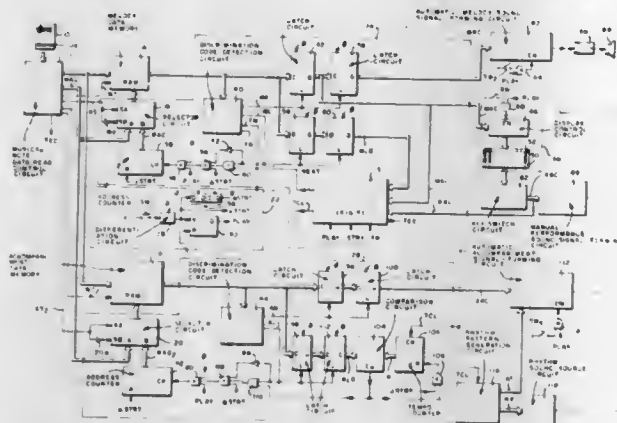
Filed Jul. 2, 1982, Ser. No. 394,624

Claims priority, application Japan, Jul. 6, 1981, 56-105273

Int. Cl.³ G10H 1/42

U.S. Cl. 84—1.03

6 Claims



1. An automatic musical performance device having a plurality of keys, comprising:
 - means for generating a tempo clock signal having a frequency which determines a tempo of an automatic performance of said device;
 - store means for storing a set of musical note data supplied from an external recording medium for an automatic performance;
 - read means for sequentially reading said musical note data from said store means in accordance with said tempo clock signal;
 - musical tone generation means for generating musical tone signals in accordance with said musical note data read out from said store means;
 - data generation means for generating reference tempo data;
 - tempo return instruction means for generating a tempo return instruction;
 - tempo control means for controlling the frequency of said tempo clock signal to follow up a tempo of a manual performance effected on said keys and controlling in response to said return instruction the frequency of said tempo clock signal in accordance with said reference tempo data.

4,432,267

**ADJUSTABLE NECK-BODY JOINT FOR GUITAR-LIKE
INSTRUMENT**

Terry L. Feller, 610 Lima Ave., Findlay, Ohio 45840

Filed Apr. 29, 1982, Ser. No. 373,031

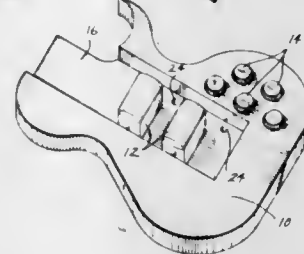
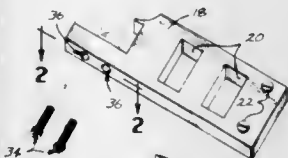
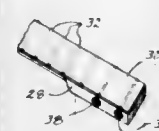
Int. Cl.³ G10D 1/08

U.S. Cl. 84—293

10 Claims

1. A guitar-like instrument comprising, in combination:
 - a main body portion;
 - an elongated neck portion having at least two threaded apertures formed transversely therein near one end;
 - a mounting frame adapted to receive said one end of said neck portion, said frame including respective apertures formed therein for generally aligning with said threaded apertures when said one end of said neck portion is received by said frame;
 - threaded fastener means extending through each of said frame apertures into cooperation with said threaded apertures for frictionally securing said neck portion to said frame, said fastener means being smaller in diameter than

said frame apertures such that said neck portion can be adjusted relative to said frame; and



means for integrally securing said frame to said main body portion of the instrument.

4,432,268

DETONATION CUT-OFF DEVICE

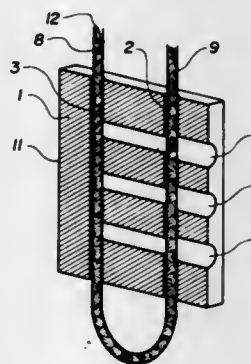
Kenneth A. Miller, West Jordan, Utah, assignor to Ireco Chemicals, Salt Lake City, Utah

Filed Aug. 16, 1982, Ser. No. 408,340

Int. Cl.³ F42B 33/00; F42D 5/00

U.S. Cl. 86—1 R

9 Claims



1. A directionally controlled, detonation pressure actuated explosives line detonation cutoff device comprising a body having two through holes extending through the body and at least one blast hole connecting the through hole and extending from one of the through holes to the outside of the body, whereby detonation pressure is directed through the blast hole to sever an explosive line contained in the through holes.

4,432,269

WEAPON SYSTEM

Bernard Castagner, Coupvray par Esbly; Paul Carre, Gif sur Yvette, and Gervais Moise, Choisy le Roi, all of France, assignors to Societe d'Etudes, de Realisations et d'Applications Techniques (S.E.R.A.T.), Paris, France

Filed Sep. 29, 1981, Ser. No. 306,937

Claims priority, application France, Oct. 14, 1980, 80 21901

Int. Cl.³ F41F 3/04

U.S. Cl. 89—1.816

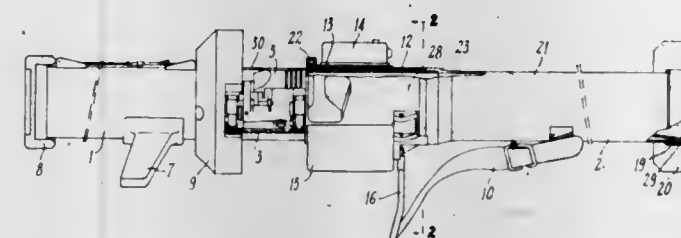
12 Claims

1. A weapon system, particularly a light weight anti-tank weapon for use by infantry, said weapon system comprising:
 - a barrel member for launching a projectile such as a rocket;
 - a container member extending rearwardly from said barrel member for containing the projectile prior to firing;
 - first and second shoulder-piece mountings spaced circumferentially about said container member;

a shoulder-piece selectively connectable to either of said first and second shoulder-piece mountings;

first and second aiming device mountings spaced circumferentially about said barrel member;

an optical aiming device selectively connectable to either of said first and second aiming device mountings;



said shoulder-piece mountings and said aiming device mountings being relatively positioned such that when said shoulder-piece and said aiming device are connected to the respective said first mountings thereof the weapon system is suitable for a right-hand operator, and such that when said shoulder-piece and said aiming device are connected to the respective said second mountings thereof the weapon system is suitable for a left-handed operator.

4,432,270

**HYDROSTATIC CONTROL DEVICE PARTICULARLY A
STEERING DEVICE**

Erik Kyster, Augustenborg, and Svend E. Thomsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

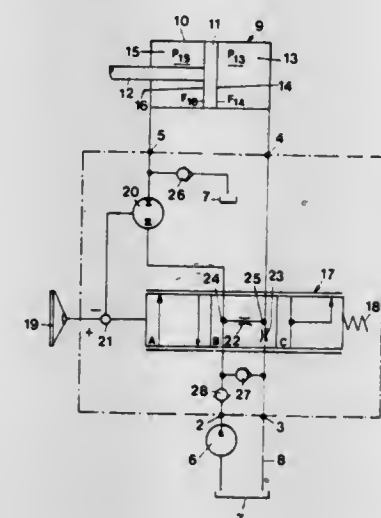
Filed May 7, 1981, Ser. No. 261,595

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018792

Int. Cl.³ F15B 15/18

U.S. Cl. 91—436

1 Claim



1. A hydraulic steering control system, comprising, a differential type bidirectional servomotor having a piston with rod and nonrod sides forming smaller and larger effective areas, said servomotor having rod side and nonrod side ports on opposite sides thereof, pump means and tank means, steering control means connected between said servomotor on one side thereof and said pump and tank means on the other side thereof, said steering control means including first and second throttle valve means extending in series between said pump means and said tank means, a control element for said steering control means, said valve means being oppositely operable between opened and closed positions responsive to movement of said control element, directionally operable metering motor means connected to said rod side port of said servomotor and to the junction between said pump means and said first throttle valve means, said servomotor nonrod side port being connected to the junction between said first and second throttle valve means, said first and second throttle valve means having effective respective flow resistances related to the relative

areas on the opposite sides of said servomotor piston to equalize the steering forces required to operate said servomotor.

4,432,271

**LOCOMOTION UNIT FOR A TOOL SUPPORT ADAPTED
FOR PROGRESSION THROUGH PASSAGEWAYS**

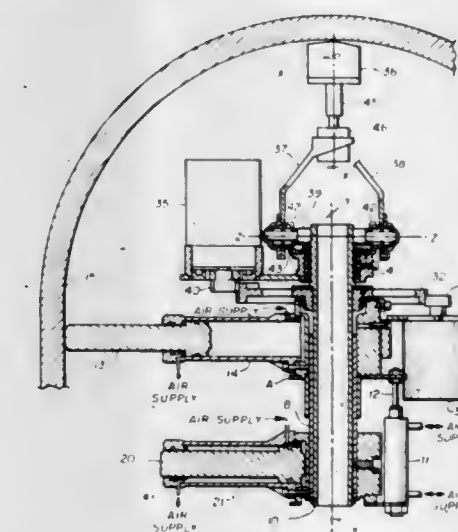
Timothy H. Wentzell, South Windsor, and Charles B. Innes, Jr., Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 17, 1981, Ser. No. 293,541

Int. Cl.³ F15B 13/06

U.S. Cl. 91—527

7 Claims



1. A locomotion unit adapted to travel between facing surfaces of a passageway in positioning and supporting a special tool which carries out operations within the passageway, including:

- a passageway having a pair of facing surfaces,
- a shaft oriented to extend its axis lengthwise between the pair of facing surfaces,
- a first fixture connected to the shaft at a position intermediate the ends of the shaft,
- a first set of fluid pressured cylinders mounted on the first fixture from which pistons are reciprocated radially from the shaft axis into and out of engagement with the facing surfaces,
- a second journaled over and slidable along the shaft,
- a second set of fluid pressured cylinders mounted on the second fixture from which pistons are reciprocated radially from the shaft axis into and out of engagement with the facing surfaces,
- a piston-cylinder structure connected between the first and second fixtures,
- a first fluid pressure means connected to the cylinders of the first and second fixtures controlled to alternately extend and retract the pistons of the first fixture relative to the pistons of the second fixture,
- a second fluid pressure means for the cylinder of the piston-cylinder connecting the fixtures controlled to alternately move the fixtures toward and away from each other along the shaft axis in coordination with the alternate reciprocation of the pistons of each fixture to cause locomotion of the shaft between the facing surfaces,
- and a tool mounted on an end of the shaft to carry out a predetermined function at a position within the passageway to which the tool is moved by the locomotion of the shaft.

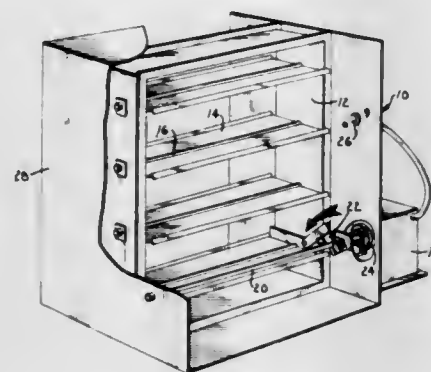
4,432,272

MOTOR OPERATED FIRE DAMPER

Robert M. Van Becelaere, Prairie Village, Kans., assignor to
Ruskin Manufacturing Company, Grandview, Mo.
Filed Nov. 29, 1982, Ser. No. 444,836
Int. Cl.³ F24F 7/00

U.S. Cl. 98—1

5 Claims



1. A protective damper for controlling the flow of fluid through a ventilation conduit for a building, said damper comprising:

- a frame adapted to be mounted in said conduit;
- a barrier carried by the frame and movable between an open position permitting fluid flow through the damper, and a closed position blocking said flow;
- spring means operably coupled with the barrier biasing the latter into said closed position;
- electric motor means operably coupled with the barrier and adapted to be coupled with a source of power for moving the barrier to said open position against the bias of said spring means when the motor is energized;
- thermal responsive switch means mounted on the frame and exposed to the fluid flowing therethrough, said switch means being operably coupled with the motor means to permit the latter to remain energized to hold the barrier in said flow permitting position when the ambient temperature at the switch is below a predetermined level and to deenergize the motor to permit the barrier to be moved to said flow blocking position when the ambient temperature at the switch is elevated to said predetermined level; and
- an overriding switch operably coupled with the motor means and adapted to be coupled with said power source, whereby to permit optional energizing of the motor to open the barrier irrespective of operation of the thermal responsive switch to deenergize the motor.

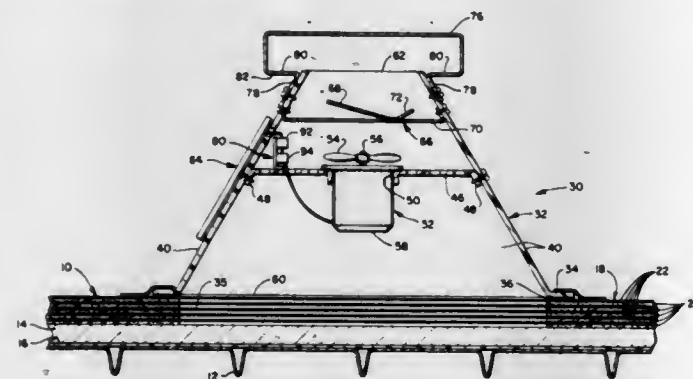
4,432,273

FAN POWERED ROOF VENTING METHOD AND APPARATUS

Gerald J. Devitt, Port Jefferson Station, N.Y., assignor to Revere Products Corporation, Solon, Ohio
Filed Dec. 7, 1981, Ser. No. 327,807
Int. Cl.³ F24F 7/02

U.S. Cl. 98—43 C

7 Claims



1. A flat roof dryer for removing moisture from an insulation

cavity formed in a built-up flat roof having a layer of insulation underlying a roof mat having a plurality of plies of roof felt, comprising:

- a housing having a lower, flat peripheral base flange adapted for sealingly mounting the housing to the surface of the built-up roof;
- a cover means covering the top of said housing to prevent the entry of rain and other foreign matter into the housing; at least one outlet opening disposed generally below said cover means;
- a fan means mounted in said housing to produce a generally upward airflow through said housing;
- a one-way flow valve means mounted in the housing and interposed between the cover means and the fan means to permit airflow only in a generally upward direction from said fan means;
- an energizing means to automatically energize said fan means; and
- a control means to prevent energizing of the fan means when the temperature in the housing is below a predetermined temperature.

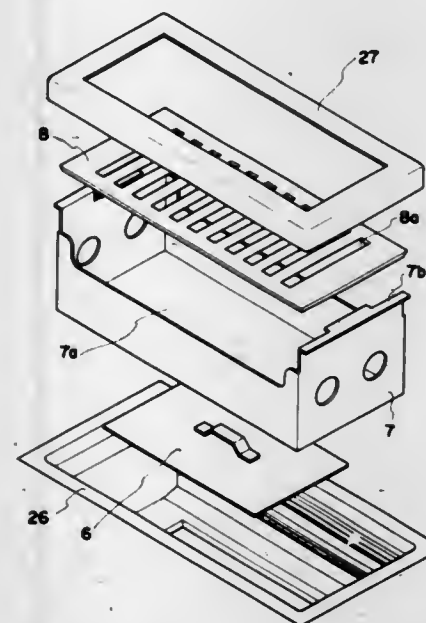
4,432,274
ROASTER

Kiyomitsu Kurotaki, 20-8, 1-chome, Jinnan, Shibuya-ku, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,005
Int. Cl.³ A47J 37/06; F24C 15/20

U.S. Cl. 99—400

7 Claims



1. A roaster comprising a roaster body having an inner body portion and an outer body portion; a mesh-like cooking plate removably mounted on said inner body portion to place cooking material thereon; a juice receiver containing water therein and disposed under said cooking plate; a gas burner disposed in a spaced manner from said juice receiver to direct a flame toward openings in said juice receiver; a smoke exhaust passage formed between said inner and outer body portions; a water jet type cleaning nozzle disposed at an upper portion of said smoke exhaust passage; an exhaust gas guide passage provided between said cooking plate and said inner body portion so as to communicate with said smoke exhaust passage; a mesh-like filter provided at a lower opening of said outer body portion; and an exhaust casing provided so as to communicate with said outer body portion and also collecting exhaust duct including sucking means and having a filter provided to remove oil out of the cleaning water.

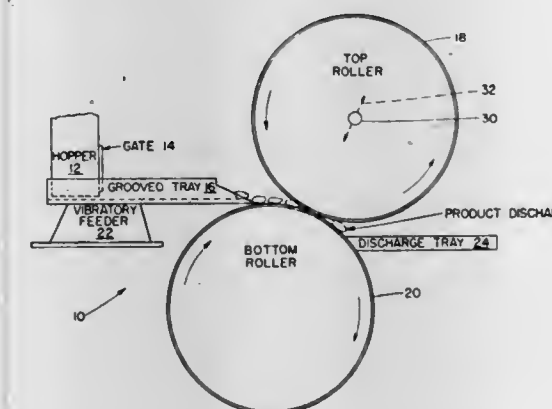
4,432,275

NUT BLANCHING APPARATUS

Gerhard C. Zekert, and Donald K. DeArment, both of Suffolk, Va., assignors to Nabisco Brands, Inc., Parsippany, N.J.
Filed Nov. 3, 1980, Ser. No. 202,961
Int. Cl.³ A23N 5/00, 5/01, 12/00

U.S. Cl. 99—625

11 Claims



1. A nut blanching arrangement, comprising first and second spaced, adjacent counter-rotating rollers between which the nuts are passed as they are blanched; and a plurality of elastic rings, having rounded cross sections, extending around the outer circumference of each said roller and being positioned adjacent to each other such that circumferentially extending grooves are formed between adjacent elastic rings, said elastic rings on the first roller being radially aligned with respect to the elastic rings on the second roller, said counter-rotating rollers being spaced apart from each other a sufficiently close distance such that nuts passing between the counter-rotating rollers are forced into grooves defined by adjacent elastic rings on one of said rollers while positioned in grooves defined by adjacent elastic rings on the other counter-rotating roller to thereby remove the outer skins of said nuts.

4,432,276

CONTRIVANCE FOR HEATING, PASTEURIZING AND STERILIZING FLUID FOODSTUFFS

Camillo Catelli, Parma, Italy, assignor to Rossi & Catelli S.P.A., Parma, Italy

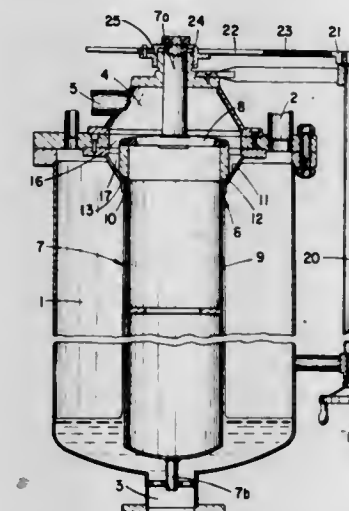
Filed May 7, 1982, Ser. No. 375,972

Claims priority, application Italy, May 29, 1981, 40055 A/81

Int. Cl.³ A23C 3/02

U.S. Cl. 99—453

10 Claims



1. Apparatus for heating and/or pasteurizing and/or sterilizing fluid foodstuffs of the type comprising a main chamber furnished with an inlet through which to admit heating fluid and with an outlet through which to draw off the end product, wherein the substance to be heated comes into direct contact with the heating fluid, characterized by the fact that it comprises: a transit chamber having an entry aperture through

which to admit the substance and an exit aperture disposed with a vertical axis and opening into said main chamber through which the substance passes from within said transit chamber, said transit chamber being located uppermost of said main chamber; a tubular element disposed coaxially with said exit aperture and part-contained by said transit chamber whilst issuing therefrom by way of same exit aperture thus creating an annular exit collar therewith of predetermined and uniform perimeter width; the inner wall of said transit chamber and the outer wall of said tubular element being of a shape such as to establish an annular passage lying immediately up-flow of said exit collar and determining flow rate through the apparatus and said fluid foodstuff flowing through said main chamber along said outer wall of said tubular element.

4,432,277

PRESSURE ROLLING NIP LINE PRESSURE CONTROL

Werner Hartmann, Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

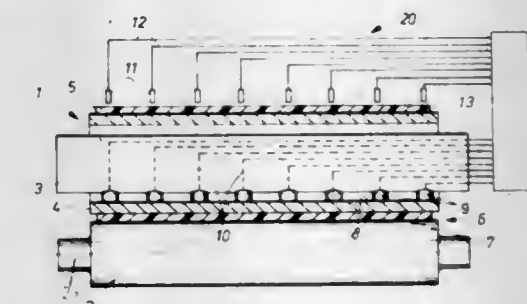
Filed May 21, 1981, Ser. No. 265,967

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020669

Int. Cl.³ B30B 13/00, 3/04

U.S. Cl. 100—37

5 Claims



1. A method for controlling the line pressure of a pressure rolling nip formed between two rotative pressure rolling rolls of which one has a pressure rolling surface formed by elastically deformable material which is deformed by the nip line pressure while rolling through the nip and thereafter resiliently recovers with consequent heating of the material dependent on the degree of its deformation and recovery, said method comprising measuring the temperature of said rolling surface at a plurality of zones extending along the rolling surface's length, and controlling said line pressure by causing one of said rolls to radially flex locally at each of said zones in the direction of the other roll so as to hold said zones at predetermined temperatures as a function of the measured temperature distribution.

4,432,278

CAN CRUSHING APPARATUS

Walter J. Skipworth, Ashley, Ohio, assignor to Glassco, Inc., Ashley, Ohio

Filed Mar. 23, 1982, Ser. No. 360,831

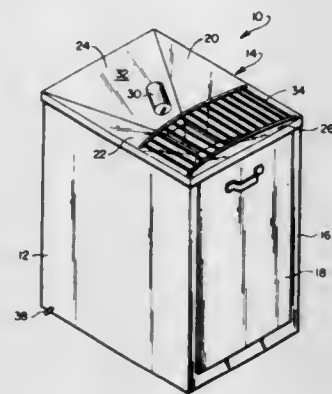
Int. Cl.³ B30B 9/32, 3/04

U.S. Cl. 100—53

13 Claims

1. Can crushing apparatus comprising:
a support housing having a can receiving opening formed within a surface thereof;
first and second disk members having circular outer peripheries and each having mutually inwardly facing convex conical engaging surfaces of slope of about 9° each disk member being rotatable about a respective first and second shaft having an axis of rotation;
disk support means mounted within said housing for rotatably supporting said first and second disk members for driven rotation about said first and second axes, said first and second shafts being supported to angularly orient said axes thereof with respect to each other locating said engaging surfaces to define a wedge-shaped can receiving

region accessible to said can receiving opening, and wherein the included angle between said engaging surfaces is about 33°, said engaging surfaces further defining a continuously diminishing spacing therebetween extending from said can receiving opening to a region of minimum said spacing at a crushed can exit location; said disk support means further including an upwardly disposed confining member supported adjacent said first and second disk member outer peripheries and extending in



arcuate fashion from said can receiving region toward said exit location, and an input guide component positioned beneath said can receiving region and extending intermediate said engaging surfaces for guiding cans into engagement therewith;

motor means for effecting the simultaneous, synchronized driven rotation of said first and second disk members; and collecting means an opening adjacent said crushed can exit location for receiving crushed cans.

4,432,279

CAN FLATTENER

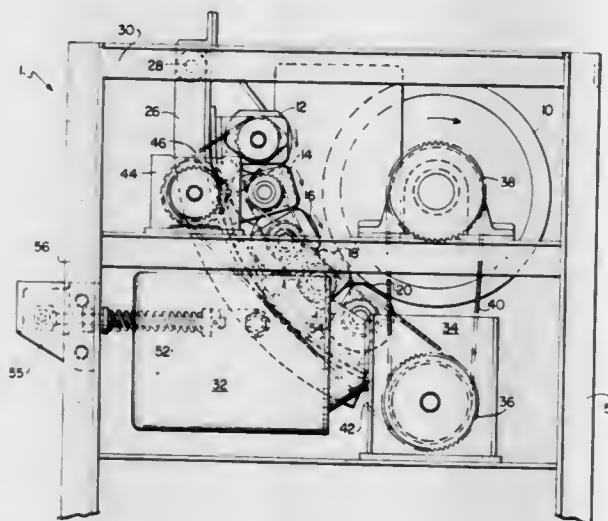
Jim M. Swendeman, New Braunfels, Tex., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 24, 1982, Ser. No. 422,656

Int. Cl.³ B30B 3/04

U.S. Cl. 100—171

8 Claims



1. A can flattener comprising a rotatable drum, a plurality of rotatable roller assemblies and means for rotating said drum and said roller assemblies, said roller assemblies being mounted in a converging arc with respect to said drum, with the last of said roller assemblies being tangent to said drum, thereby providing a progressively decreasing nip between said drum and said roller assemblies, each of said roller assemblies comprising a plurality of spaced disks, the disks of each roller assembly being interleaved with the disks of its immediate adjacent roller assembly or roller assemblies, the disks of each roller assembly, except the roller assembly which is tangent to said drum, having a chordal portion removed therefrom.

4,432,280 CONTROL SYSTEM FOR SHEET-FED MULTI-COLOR ROTARY PRINTING MACHINES

Volker Eichler, Weinbohl, and Hilmar Trinks, Radebeul, both of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

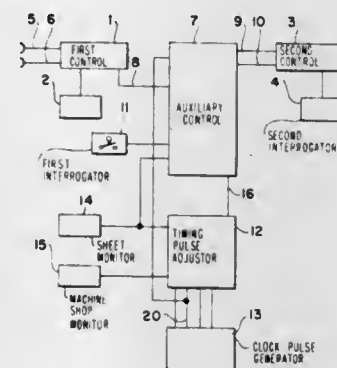
Filed Jun. 29, 1982, Ser. No. 393,356

Claims priority, application German Democratic Rep., Jun. 30, 1981, 231299

Int. Cl.³ B41F 5/02

U.S. Cl. 101—230

3 Claims



1. A control system for changing over a first printing mode of operation to first and second printing mode of operation in a multi-color, sheet-fed rotary printing machine including a plurality of consecutive printing units and a sheet-turning device between the printing units, said system comprising a first control circuit for controlling the operation of functional elements in a first printing unit, said first control circuit including a data input, a data output, a clock pulse input and a clock pulse output; an auxiliary control circuit having a plurality of inputs and two outputs, said clock pulse output of said first control circuit being connected to one input of the auxiliary control circuit; a switching device for delivering a logic control signal according to the selected mode of operation of the printing machine; a second control circuit having a data input and a clock pulse input connected respectively to said outputs of the auxiliary control circuit; a timing pulse generator having a plurality of outputs, one of said outputs being connected to an input of said auxiliary control circuit for delivering a comparison clock signal thereto; and timing pulse adjuster connected between the outputs of said timing pulse generator and said auxiliary control circuit; a sheet-control circuit arranged on said sheet-turning device to deliver a signal corresponding to the presence or absence of a sheet, said signal being applied to said auxiliary control circuit and to said timing pulse adjuster.

4,432,281

SELF-INKING STAMPING DEVICE

Alexander C. Wall, Nokomis, Fla., and Leonard H. Sculler, Englishtown, N.J., assignors to M & R Seal Press Co., Inc., Roselle, N.J.

Filed Mar. 10, 1982, Ser. No. 356,842

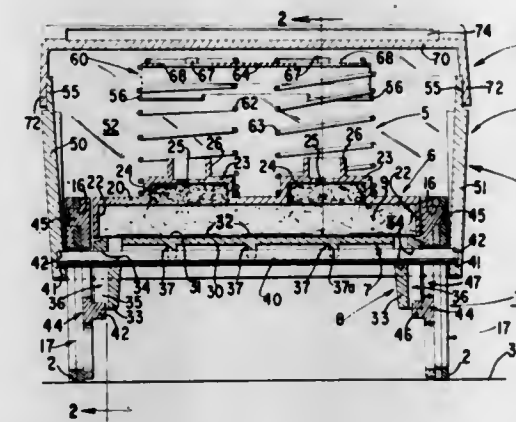
Int. Cl.³ B41K 1/40; B41F 31/24

U.S. Cl. 101—334

13 Claims

1. In a stamping device comprising an upright hollow frame member having an open lower end to bear against a supporting surface, an operating member interfitting with and displaceable vertically relative to said frame member, spring means normally holding said operating member in an upward position from which by one's hand it can be pressed downward relative to said frame member to a stamping position, an ink pad holder supported by said frame member at a distance above said lower end, a displaceable stamp-carrying platen inside said frame member, and coating means connected respectively with said platen, said frame member and said operating member for disposing said platen in an inking position at said holder when said operating member is depressed to stamping position; the improvement wherein said operating member comprises

an upright wall forming a hollow encasement that surrounds and has a height greater than that of said frame member, has a closure fitted removably onto its upper end, and encompasses substantially the entirety of said frame member when depressed to stamping position, whereby the stamping device can be easily grasped, placed for use and operated by a person's hand engaged with opposite sides of the device from any direction and at any location



about the operating member, said encasement wall sloping outward substantially from its bottom to a rim on its upper end, said closure having a skirt portion engaging about said rim and merging with the top of said wall, and spring seating means bridging and fixed to said rim, said spring means being compressed between said ink pad holder and said seating means and thus continuing to be active upon removal of said closure.

4,432,282

PRINTING PRESS

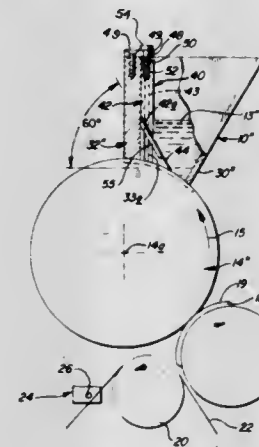
Edward L. Jurinak, Prospect Heights, Ill., assignor to Apollo Label Company, Worth, Ill.

Filed Apr. 5, 1982, Ser. No. 385,880

Int. Cl.³ B41F 31/04, 31/06

U.S. Cl. 101—350

13 Claims



1. In a printing press for printing with an ink that is adapted to be dried by exposure to ultraviolet light, and including an ink fountain means defined in part by spaced front and rear walls and with a lower, axially elongated, end outlet for feeding said ink by gravity through said lower end outlet directly onto an axially elongated section of a rotatable anilox form roller, whose diameter is larger than the transverse size of said lower end outlet of the ink fountain means, and wherein said anilox roller is adapted, constructed, and arranged to transfer a desired layer of ink through tangent moving engagement, to a printing plate carried on a print cylinder that is rotated in synchronism with said anilox form roller; the improvement comprising, in combination:

doctor blade means, separate from and positioned between the fountain's front and rear walls, and positioned within the ink fountain means, and relative to an upper surface

portion of the anilox roller that has already received ink thereonto from said fountain means, the doctor blade means being positioned so as to block further flow of ink onto that upper surface portion of the anilox roller that is adjacent said roller's apex trace region, said doctor blade means including an axially elongated, and downwardly inclined, doctor blade whose axial length is substantially the same as that of the portion of the anilox form roller which is exposed to ink that is being deposited onto the rotating form roller by said roller's exposure to the lower end outlet of the fountain means; and the axially elongated lowermost edge of said downwardly inclined doctor blade being constructed and positioned to engage the longitudinal outer surface of said rotating anilox roller, so as to remove excess ink from the anilox roller's cylindrical surface, and to return and maintain such excess ink as part of the ink supply of the fountain means.

4,432,283

PROJECTILE FUSE RESPONSIVE TO THE SPINNING MOTION OF A PROJECTILE

Erich Duffner, Schramberg, Fed. Rep. of Germany, assignor to Gebrüder Junghans GmbH, Schramberg, Fed. Rep. of Germany

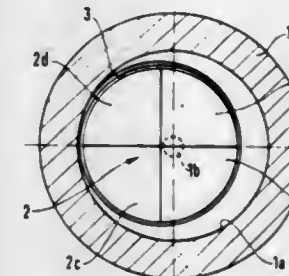
Filed Nov. 30, 1981, Ser. No. 325,862

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046620

Int. Cl.³ F42C 15/34

U.S. Cl. 102—244

4 Claims



1. In a projectile fuse of the type comprising a housing, a bore in said housing, a vent arranged substantially concentrically in said bore, and closure means which is openable to expose the vent, the improvement wherein said closure means comprises:

a disk formed of a plurality of sectors and normally disposed in said bore in front of said vent, said disk being of smaller cross-section than said bore, and spring means mounted on said disk and acting upon said sectors to retain said sectors together, the size relationship between the cross-sections of said disk and said bore being such that with said sectors retained together by said spring means said vent is covered by a portion of said disk in any given position of said disk in said bore, said spring means being centrifugally responsive to allow said sectors to separate and expose said vent, said disk and spring means defining a unit which is freely movable within said bore transversely relative to the axis of said vent in the absence of centrifugal forces.

4,432,289

FURNACE BRICK TIE BACK ASSEMBLY

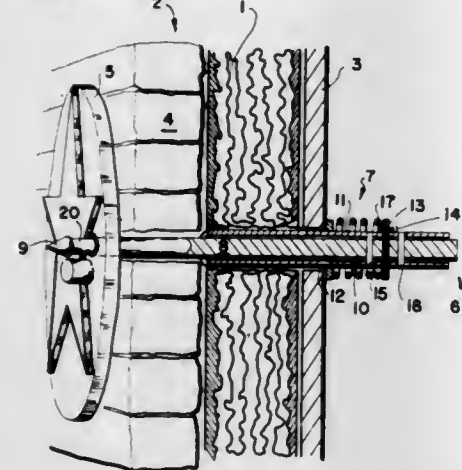
Deumite Norman, P.O. Box 14849, Baton Rouge, La. 70808; James P. Brannagan, 2120 N. Airline Hwy., Gonzales, La. 70737, and Wesley McLane, Rte. 1, Box 485H-1, Prairieville, La. 70769

Filed Jul. 23, 1981, Ser. No. 286,341

Int. Cl.³ F23M 5/00; E04B 1/62

U.S. Cl. 110—336

3 Claims



1. A tie back assembly for holding in place a loosened brick which form part of an interior furnace wall which comprises:
 - (a) a hold back plate;
 - (b) a holder assembly comprising:
 - (i) a stud shaft attachable at one end to said plate; said shaft has a series of shaft openings positioned along its horizontal axis at its end opposite said end, attachable to said plate;
 - (ii) a hollow sleeve member through which said shaft can pass, said sleeve fitting through an opening in said wall and extendable past the exterior of said furnace wall; said sleeve member has a series of sleeve openings positioned along its horizontal axis;
 - (iii) means for fixing the position of said shaft in said sleeve member; said means is a pin that is of length and diameter to allow said pin to pass through both aligned said shaft opening and said sleeve openings; and
 - (c) a locking means positioned outside the furnace, but operationally connectable to said shaft for fixing said plate against said loosened brick; said locking means comprises a coil spring fitting over said sleeve member and in contact at one end with the exterior furnace wall surface and in contact at its other end with said pin.

4,432,290

METHOD OF PYROLYZING ORGANIC MATERIAL USING A TWO-BED PYROLYSIS SYSTEM

Yoshiaki Ishii; Naoyoshi Ando; Tsutomu Kume, and Shosaku Fujinami, all of Tokyo, Japan, assignors to The Agency of Industrial Science and Technology, Japan

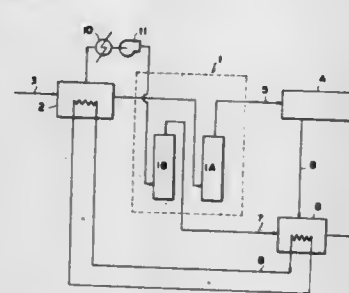
Continuation-in-part of Ser. No. 199,543, Oct. 22, 1980, Pat. No. 4,344,373. This application Jan. 7, 1982, Ser. No. 337,708

Claims priority, application Japan, Oct. 30, 1979, 54-139271; Oct. 30, 1979, 54-139272; Jan. 13, 1981, 56-2632

Int. Cl.³ F23G 00/00

U.S. Cl. 110—346

13 Claims



1. In a method of pyrolysis of organic material, such as municipal waste, utilizing a two-bed pyrolysis system includ-

ing a fluidized bed type pyrolysis reactor and combustion reactor and wherein the pyrolysis gas produced in the method is burned and its energy recovered, the improvement comprising the steps of:

- recovering the heat of a first combustion exhaust gas produced when the energy is recovered;
- heating a fluid heat medium with the heat thus recovered; and
- heating organic material prior to the pyrolysis thereof with the heated fluid heat medium, whereby the organic material can be dried before it is pyrolyzed.

4,432,291

UNDERGROUND IRRIGATOR

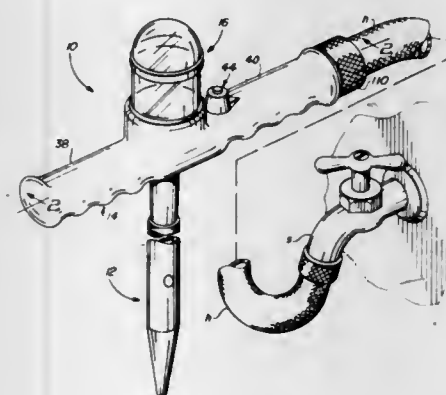
Dewey D. Shirley, 2223 W. Rovey, Phoenix, Ariz. 85015

Filed Feb. 1, 1982, Ser. No. 344,476

Int. Cl.³ A01C 11/00

U.S. Cl. 111—7.1

8 Claims



1. Apparatus for underground irrigation comprising, in combination:

- (a) ground penetrating means for being inserted into ground to be irrigated;
- (b) handle means connected to the ground penetrating means for assisting in forcing the latter into ground to be irrigated; and
- (c) fluid means associated with the ground penetrating means and the handle means for providing a fluid flow under pressure to facilitate insertion into ground to be irrigated of the ground penetrating means and subsequently a redirected flow to irrigate ground in which the ground penetrating means is inserted, the ground penetrating means including a nozzle providing a hollow, ground-insertion assisting tip, and orifice means disposed on the ground penetrating means adjacent the nozzle for diverting a fluid laterally of the ground penetrating means, the latter forming a central passage communicating with the nozzle and an outer annular passage communicating with the orifice means, the fluid means including valve means connectible to a source of fluid for alternately directing fluid to the central passage and the annular passage, the valve means including the handle means being provided with a fluid receiving void and a pair of passageways each in communication with the void and a respective one of the central passage and the annular passage of said ground penetrating means, a valve element rotatably mounted in the void of the handle means adjacent the passageways thereof and provided with a pair of ports disposed at approximately 90° with respect to one another and selectively alignable with an associated one of the passageways; a bypass means for bleeding a predetermined amount of the fluid to the control passage of said ground penetrating means when said valve means connected to direct the fluid to the annular passage of said ground penetrating means.

4,432,292

FLOATING PLANTER

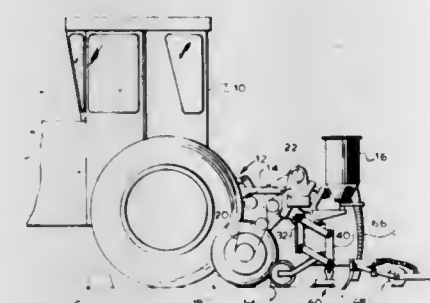
Kenneth G. Scott, Rte. 5, Tahoka, Tex. 79373

Filed Jan. 18, 1982, Ser. No. 340,331

Int. Cl.³ A01C 5/00

U.S. Cl. 111—52

3 Claims



1. In a planter having a tool bar, draft means on the tool bar for drafting it through a field to be planted, a plurality of seed boxes on the tool bar, tool bar gage wheels on the tool bar to run on the ground for maintaining the tool bar at proper height, mechanical transmission means connecting the gage wheels to the seed boxes for driving the seed boxes, and for each seed box: an earthworking implement to move the dry dirt from the seed row, an opening plow to form a furrow, a seed chute extending from the seed box and attached behind the opening plow, and cover means for closing the furrow thus covering the seed in the furrow; wherein the improved structure for each seedbox comprises: a subframe with said implement, opening plow, and cover means attached to the subframe, a parallel motion four-bar linkage connecting the subframe to said tool bar with
 - (i) a first link operatively connected to the tool bar,
 - (ii) a third link connected to the subframe, and
 - (iii) a second and fourth link connected to the first and third link,
 a planter gage wheel attached to the subframe in front of the implement, a clamp attached to the tool bar for each of said seed boxes, said seed box attached to said clamp, an adapter beam attached to said clamp, said first link operatively connected to said adapter beam thus connecting said first link to the tool bar as recited above, and means for angularly adjusting the first link to the adapter beam.

4,432,293

VERTICAL AXIS ROTARY LOOP TAKER

Joseph M. Arendash, Cleveland, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 205,197, Nov. 10, 1980, abandoned.

This application Dec. 27, 1982, Ser. No. 452,929

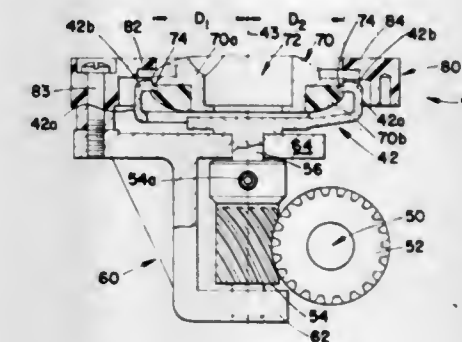
Int. Cl.³ D05B 57/08, 57/26

U.S. Cl. 112—231

14 Claims

1. In a sewing machine having a vertically extending needle bar, a loop taker mechanism comprising: a rotatably driven loop taker having an axis of rotation generally parallel to the vertically extending needle bar, the loop taker including an eccentric drive portion spaced from and revolving about the loop taker axis of rotation as the loop taker rotates; a pair of spaced stop members generally fixed in position relative to the loop taker axis of rotation; and a non-rotatable bobbin carrier driven by said eccentric drive portion for reciprocating planar movement into engage-

ment against one and then the other of the fixed stops, the stops cooperating to preclude rotation of the bobbin carrier, the bobbin carrier alternately disengaging from one and then the other of the stops to permit free passage of a



thread loop about the bobbin carrier, at least one or the other of the stops always engaging the bobbin carrier when the loop taker is rotating, the bobbin carrier planar movement being in a plane perpendicular to said axis of rotation.

4,432,294

GARMENT FORMING METHOD AND APPARATUS

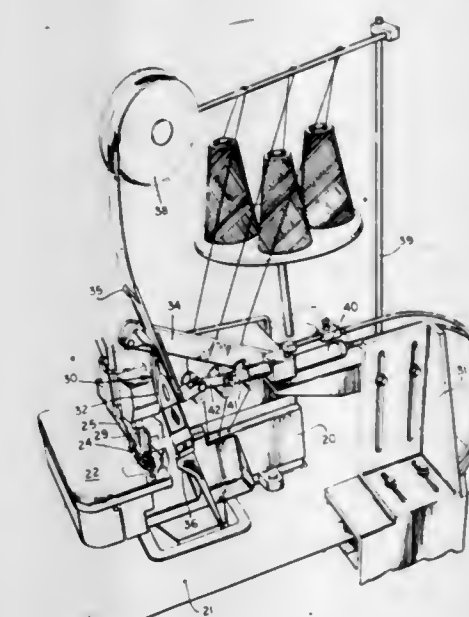
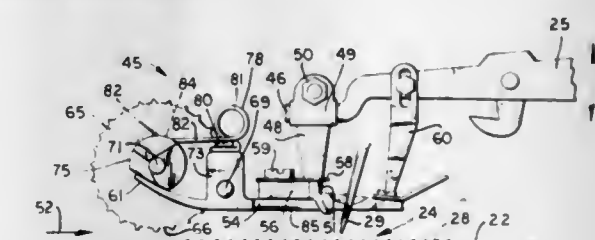
Elvin C. Price, and Preston B. Dasher, both of Lawrenceville, Ga., assignors to Atlanta Attachment Company, Lawrenceville, Ga.

Filed May 15, 1981, Ser. No. 263,974

Int. Cl.³ D05B 35/06, 97/00

U.S. Cl. 112—262.3

7 Claims



1. A method of forming a garment part and the like comprising progressively moving a base material across a work surface from in front of a sewing station through the sewing station, supporting a wheel and presser foot assembly at a position in front of the sewing station, biasing the wheel downwardly with respect to the presser foot assembly into engagement with the base material, freely rotating the wheel about a horizontal

axis extending across the direction of movement of the base material in response to the movement of the base material toward the sewing station, moving a portion of a length of tape material laterally from beside alignment with the wheel and sewing station to a position in front of the wheel and in alignment with the wheel and sewing station and in contact with the base material so that the wheel rides over and holds the tape material against the base material and the movements of the base material and the wheel tend to feed the length of tape material under the wheel and beneath the presser foot assembly and into the sewing station in unison with the base material, sewing through the base material and the length of tape material at the sewing station, and then moving the portion of the length of tape material feeding toward the wheel laterally away from the position aligned with the wheel and sewing station so that the wheel rides off the tape material and the length of tape material is no longer fed by the base material and wheel into the sewing station.

6. Apparatus for forming garment parts and the like for attachment to a sewing machine that includes a sewing station and feed means at the sewing station to move base material from in front of the sewing station across a work surface through the sewing station, said apparatus comprising a presser foot assembly, a wheel rotatably mounted to said presser foot assembly for positioning in alignment with and in front of the sewing station, said presser foot assembly including a skid extending from said wheel for projecting toward the sewing station, tape feed means including a tape exit end movable back and forth from a position out of alignment with said wheel and to a position closely adjacent and in front of said wheel, whereby as base material is moved across the work surface and beneath the wheel and through the sewing station by the sewing machine feed means the movement of the base material causes the wheel to rotate and the movement of the free end of tape by the exit end of the tape feed means to the position in front of the wheel on the base material results in the wheel rolling over the tape material and the tape material moving with the base material beneath the skid into the sewing station.

4,432,295

PROCESSING METHOD AND APPARATUS FOR RECTANGULAR PIECES OF FABRIC

Jean-Pierre Raisin, Troyes; Bernard Helffer, Saint Andre-les-Vergers, and Jean L. Chirouze, Chomerac, all of France, assignors to Institut Textile de France, Boulogne; Agence Nationale de Valorisation de la Recherche (Anvar), Paris and Meca, Chomerac, all of France

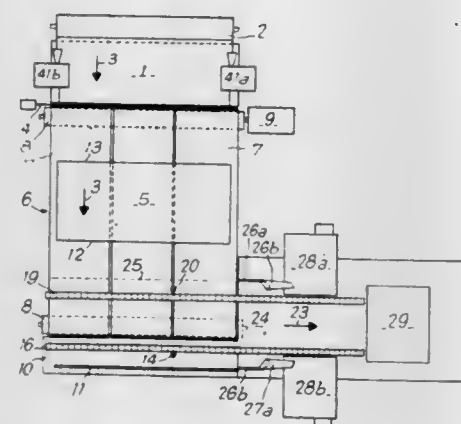
Filed Jan. 15, 1982, Ser. No. 339,415

Claims priority, application France, Jan. 16, 1981, 81 00832

Int. Cl.³ D05B 35/02, 19/00, 1/08

U.S. Cl. 112-262.3

26 Claims



1. Method for processing a piece of fabric having rear and front parallel edges, of the type which consists in moving the piece in a first direction perpendicular to the two parallel edges, said piece being driven in a second direction substantially perpendicular to the first without the orientation of the edges being altered, and in simultaneously hemming the two

edges while the piece is moved in said second direction, method wherein:

- (a) the piece of fabric is moved in the first direction until the front edge of said piece reaches a predetermined front position and said front edge is kept in that predetermined position;
- (b) while said front edge is so held, the remaining part of the pieces is moved in the first direction until the rear edge reaches a predetermined rear position, and the remaining part of the piece moving in the first direction is stopped and the rear edge is held in its predetermined position;
- (c) the piece is moved in the second direction, the edges being kept apart, at a distance which corresponds to the distance separating the predetermined front and rear positions.

4,432,296

APPARATUS AND METHOD FOR REDUCING WASTE IN TUFTING

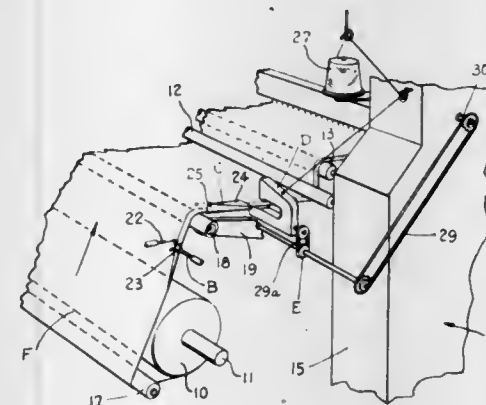
Edward A. Grondin, 7 Hiawatha Dr., Greenville, S.C. 29615

Filed Apr. 6, 1982, Ser. No. 366,082

Int. Cl.³ D05C 15/00

U.S. Cl. 112-266.2

11 Claims



1. The method of tufting reducing yarn waste comprising the steps of: feeding a backing fabric lengthwise toward transversely disposed tufting needles; folding at least one of the edges of said backing fabric inwardly to form a multi-layered edge; positioning the layers of said multi-layered edge together for reception of a portion of said backing fabric inwardly of said multi-layered edge by said transversely disposed tufting needles; forming loops of tufted yarn in said portion of said backing fabric inwardly of said multi-layered edge; and trimming away said edge of said backing fabric together with adjacent loops of tufted yarn; whereby excess width portions of said loops are unnecessary.

4,432,297

LOW THREAD SUPPLY MONITOR IN A SEWING MACHINE

Patrice J. Kemmel, Stutensee, Fed. Rep. of Germany, assignor to Pfaff Haushalmaschinen GmbH, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,781

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014753

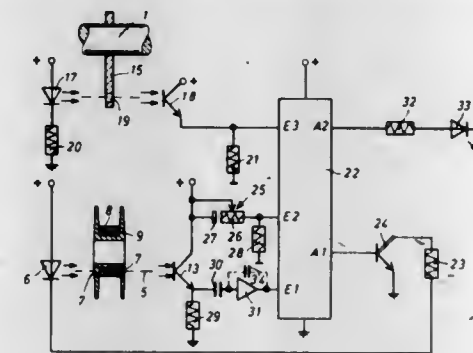
Int. Cl.³ D05B 45/00, 69/36

U.S. Cl. 112-278

14 Claims

1. A device for monitoring low thread supply in a sewing machine equipped with a rotary hook for lock-stitching and a light emitter delivering light pulses to a light receiver through apertures which are provided in the body of the rotary hook, the bobbin case and the bobbin, comprising, a pulse generator

connected to and controlling the light emitter, and a pulse transmitter connected to said pulse generator and responsive to



at least one definite position of a drive shaft of the sewing machine for controlling operating time of the light emitter.

4,432,298

HYDROFOIL SAILING CRAFT

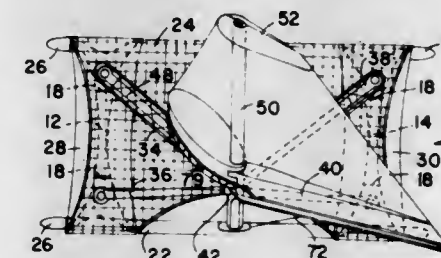
Patrick J. Cudmore, Box 1243, Duxbury, Mass. 02332

Filed Oct. 1, 1981, Ser. No. 307,548

Int. Cl.³ B63B 35/00

U.S. Cl. 114-39

10 Claims



1. A rudderless, bidirectionally sailable, hydrofoil sailing craft comprising:

- (a) substantially identical first and second, laterally extending, parallel, high aspect ratio, surface-piercing, buoyant hydrofoils, each said hydrofoil having a continuously curved inverted arch configuration, each said hydrofoil having similar streamlined longitudinal edges and a longitudinally extending cross-section which is symmetrical relative to a vertical laterally extending plane, each said hydrofoil having a zero degree angle of attack;
- (b) at least two laterally spaced-apart skegs extending downwardly from the convex lower surface of each said hydrofoil, each said skeg acting as a centerboard to resist side-slip;
- (c) means for interconnecting and supporting said first and second hydrofoils in a parallel, longitudinally aligned, vertically level relationship;
- (d) a mast mounted at its lower end to said interconnecting means at a location which is midway between said first and second hydrofoils and which is laterally offset to the leeward side relative to the longitudinal centerline of said sailing craft, said mast extending upwardly and laterally at an acute angle not exceeding 80° relative to the horizontal, the upper end of said mast being laterally aligned with said lower end of said mast, said mast upper end being laterally offset to the windward side relative to the longitudinal centerline of said sailing craft; and
- (e) an upper sail frame carried adjacent said mast upper end, an articulated lower sail frame having a relatively small leading member and a relatively large trailing member carried adjacent said mast lower end, a sail supported by said upper and lower sail frames, and control means for pivotally repositioning said sail frames about the mast axis, and for pivotally repositioning said leading and trailing lower sail frame members relative to each other about the mast axis, said sailing craft sailing equally well in both

directions under the influence of hydrofoil buoyant lift at low speeds, hydrofoil upper surface hydrodynamic lift at medium speeds, hydrofoil lower surface hydroplaning lift at higher speeds, and increasing canted sail lift at increasing speeds.

4,432,299

IMPULSE NOISE GENERATOR

Ralph N. Smith, Cockatoo Valley, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU81/00043, § 371 Date Dec. 22, 1981, § 102(e)

Date Dec. 22, 1981, PCT Pub. No. WO81/03081, PCT Pub.

Date Oct. 29, 1981

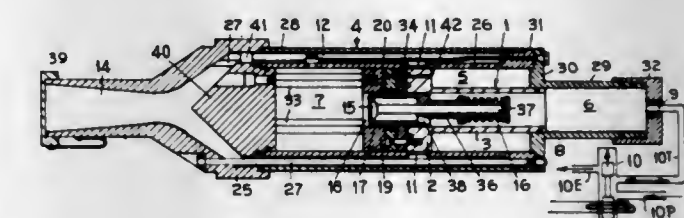
PCT Filed Apr. 10, 1981, Ser. No. 339,446

Claims priority, application Australia, Apr. 24, 1980, PE3277

Int. Cl.³ G10K 10/00

U.S. Cl. 116-137 R

10 Claims



1. The method of generating a noise using a hollow body having freely movable within it a stepped piston in a stepped bore in the body and including a pressure gas inlet to the smaller part of the bore in the body and annular ports through the wall of the larger part of the stepped bore in the body, which method comprises forcing the said piston forwardly in the said bore by applying the gas pressure through a supply line to the small diameter part of the said bore, thereby causing the larger part of the said piston to seal to a pressure chamber at the end of the said larger part of the bore, causing a valve in the said stepped piston to open to bring the pressure chamber to the pressure of the supply, holding the device in readiness for producing the sound by maintaining pressure to the said smaller bore, releasing gas stored in the small bore to cause the gas pressure in the said pressure chamber to act against the larger part of the said piston to drive the piston back to allow the high pressure gas from at least the said pressure chamber to pass with high velocity through the said annular ports in the wall of the said bore, and venting the said gas through a discharge nozzle so as to create a high intensity noise.

4,432,300

PILL DISPENSER WITH SEQUENTIAL DISPENSING AND INDICATING CAP

Esther B. Lyss, 722 S. Meramec, St. Louis, Mo. 63105

Filed Jun. 1, 1981, Ser. No. 268,782

Int. Cl.³ B65D 83/56; G09F 9/00

U.S. Cl. 116-308

16 Claims



1. A pill dispenser having provisions for sequential dispensing operation, said dispenser being comprised of a cylindrical integral hollow housing constituting a reservoir for pills cooperating with a fill cap and a turn cap, said housing having a top wall bridging a circumferential downwardly extending side wall, said housing being provided with a plurality of circumferential housing openings and a plurality of first ratchet means, said turn cap rotatably seated on top of said housing, said cap being provided with a cap opening and a plurality of

second ratchet means circumferentially arranged on an inner surface of said turn cap, said first and second ratchet means coacting so as to facilitate unidirectional registering of said cap opening with a selected one of said housing openings, indicia on the top wall of the housing corresponding to designate separate times for dispensing said pills, said indicia being positioned between said housing openings to provide a separate time indicia for dispensing in advance of each of said openings, said cap being rotatable in one direction through said ratchet means to progressively present the cap opening in registry with the indicia on the housing and the housing openings.

4,432,301

APPARATUS FOR AFFIXING MARKER TO FABRIC
Nelson P. Diesel, 816 Dutch Mill, Ballwin, Mo. 63011

Continuation-in-part of Ser. No. 51,836, Jun. 6, 1979, abandoned. This application Aug. 21, 1980, Ser. No. 180,114
Int. Cl.³ A41D 1/00; A23L 1/16; B65C 11/04

U.S. Cl. 118—315

1 Claim

1. Apparatus for applying adhesive to a pre-printed paper garment-making marker pre-rolled on a feed roll and having an unprinted back side and a blank end, comprising

means to spray adhesive downward, and to discontinue spraying while the apparatus is operating, said means to spray comprising a plurality of linearly aligned spray nozzles surrounded by a vertical spray tunnel elongated in the direction of such linear aligned nozzles,

feed means including roll support means having an axis of rotation parallel to said linearly aligned spray nozzles said axis being in advance of the area over which they so spray downward, whereby to define a path of travel transverse to said axis of rotation,

take-up roll support means positioned immediately downstream from said roll support means, so in advance, being parallel thereto and at a distance substantially less than the width of either said roll support means, whereby to provide a planar area beneath said means to spray and elongated transverse to the direction in which the marker is so drawn,

said take-up roll support means having an axis below said planar spray area, together with power drive means coupled to said take-up roll support means, to draw such marker downstream, in such driving sense as to re-roll such marker with its sprayed side presented upward and outward,

whereby upward presentation of the unprinted back side of such marker when in said planar area beneath said spray nozzles, results in re-rolling the marker with its sprayed adhesive side outward, thereby affording it an additional length of travel, before being overlaid, equal to the perimeter so being re-rolled, and whereby on discontinuance of spraying when the unprinted blank end of the marker is reached, continued re-rolling causes such marker blank end to protectively cover the outward presented adhesive sprayed surface.

4,432,302

RESIN IMPREGNATION RING

John R. Farris, Long Beach, and Allan T. Tucci, Orange, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 5, 1982, Ser. No. 374,984

Int. Cl.³ B05C 5/02

U.S. Cl. 118—410

3 Claims

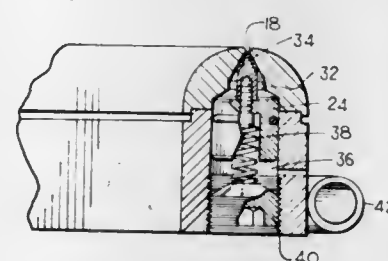
1. An impregnation device for coating roving fibers with a binder comprising:

a hollow 360° ring for distribution of said binder under pressure, said ring having a continuous circumferential slot along said ring;

a circular seal located within said hollow ring to engage and close said slot;

spring bias means located within said hollow ring and contacting said seal to force said seal into engagement with

said slot; and means to supply binder under different pressures to said hollow ring said binder forcing said seal out



of engagement with said slot at a higher pressure permitting said binder to flow through said slot from said ring onto the roving fibers.

4,432,303

BIRDBATH HOUSE

Herbert Ellerstorfer, Flurstrasse 18, Eckenheid 8501, Fed. Rep. of Germany

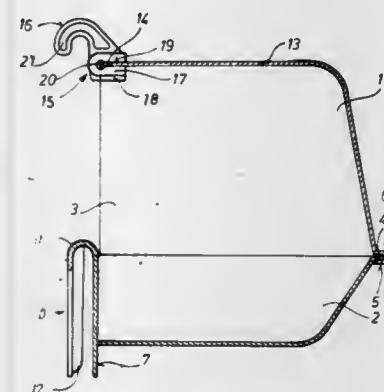
Filed May 26, 1982, Ser. No. 382,237

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 8116459; Mar. 11, 1982, 8206785

Int. Cl.³ A01K 31/06, 45/00

U.S. Cl. 119—17

16 Claims



1. A birdbath house having a front side with a pass-through opening, hanging hooks on said front side for hanging the house on a cage, and a bowl shaped roof part installed over a bath part, comprising a lip along the lower part of the roof part, means defining a guide and support groove extending around the lip, the bath part is bowl shaped and has a flange type lip along its upper edge removably engaging said guide groove by sliding engagement therein in a direction transverse to the front side, a catch device for releasably retaining said bath part lip in said guide groove comprising at least one cooperating catch recess and projection provided between said guide groove and said bath part lip positioned near the front side to interengage when assembled, said recess and projection having rounded corners and said recess not penetrating through the member on which it is located, the hanging hooks being located on the bath part underneath the pass-through opening, and said bath part lip and said guide groove extend in their transverse dimension outwardly to the side.

4,432,304

FEED STUFF ADMINISTRATION DEVICE FOR MINKS

Bengt D. Johnsson, Fremmenaryd Pl. 2359, S-280 60 Broby, Sweden

Continuation of Ser. No. 254,260, Apr. 15, 1981, abandoned.

This application Oct. 26, 1982, Ser. No. 436,723

Claims priority, application Sweden, Apr. 18, 1980, 8002914

Int. Cl.³ A01K 5/00

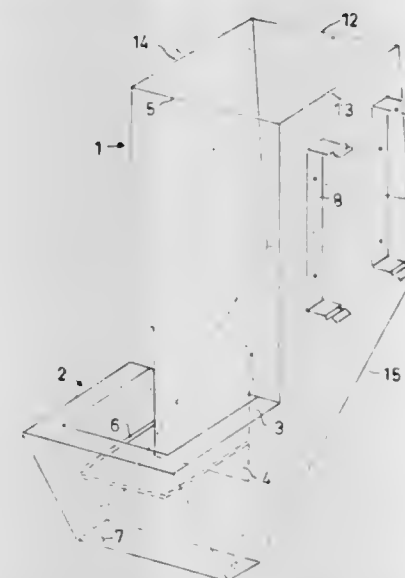
U.S. Cl. 119—18

4 Claims

1. In an animal feeding device comprising:
a feed container having a front;

a bowl shaped feeding part connected to the front of said feed container, being adapted to receive feed from said container and present it to an animal to be fed, said bowl having an internal surface wherein said feed accumulates and an upper edge defines an opening through which the animal has access to said feeder;

a tongue extending downwardly from the front of said container and separating said container and said feeding part creating an underflow passage through which feed is dispensed from said container to said bowl shaped feeding part and regulates the position of the upper surface of feed within said bowl relative to said edges;



the improvement wherein said feeding device further has a bow means which lies within and substantially conforms with the interior surface of said bowl shaped feeding part, said bow being attached to at least one of said bowl and said tongue and being of a size and location close to the interior surface of said bowl shaped feeding part and in or at some distance above the surface of the feed stuff effective to prevent the animal being fed from removing food from said bowl by pawing it up the sides of the internal surface of the bowl.

4,432,305

ADJUSTABLE LIVESTOCK CHUTE

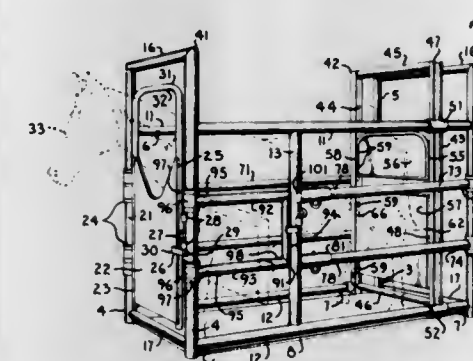
Michael P. Vernese, Paxico, Kans., assignor to Circle V, Inc., Paxico, Kans.

Filed Mar. 31, 1982, Ser. No. 363,963

Int. Cl.³ A01K 1/06

U.S. Cl. 119—98

23 Claims



1. A livestock chute, which comprises:

(a) a pair of opposite side frames placed in spaced relation and each having a first and a second end;

(b) a first end panel extending transversely between and interconnecting said side frames; and

(c) a second end panel extending transversely between and interconnecting said side frames, said second end panel

being longitudinally movable relative to said side frames between said first and second ends thereof and said second end panel including:

(1) a second end panel frame movably mounted on said side frames and forming a gate opening providing access to said enclosure;

(2) a gate swingably mounted on said second end panel frame, said gate being movable between an open position providing access to said enclosure through said gate opening and a closed position substantially blocking said gate opening; and

(3) said latch means for releasably securing said gate in its closed position;

(d) an enclosure for an animal formed by said side frames and said first and second end panels.

4,432,306

PORTABLE HUMANE COW LIFT

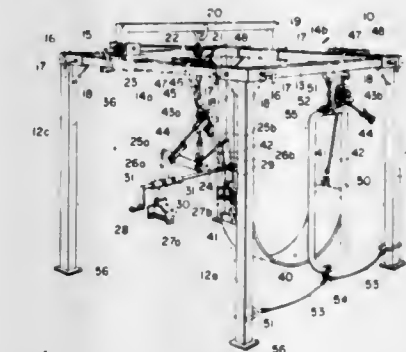
Dennis J. Rossa, Rte. 2, Arcadia, Wis. 54612

Filed Aug. 30, 1982, Ser. No. 413,236

Int. Cl.³ A61D 3/00

U.S. Cl. 119—100

14 Claims



1. Apparatus for lifting a down animal comprising:

a. a freestanding frame including a plurality of generally vertical legs connected by a plurality of cross members, said frame being adapted to straddle the down animal with a cross member disposed above each side of the animal, and including connecting means for readily attaching two or more of removable cross members to the legs in sliding engagement therewith, to effect easy assembly and disassembly of the frame, whereby it may be hand-carried in parts to the site of a down animal and there readily reassembled;

b. a sling adapted to be passed under the down animal's thorax, immediately behind its front legs;

c. winch means connected to each end of said sling and to cross members that extend between the legs of each side of the frame, for lifting the front portion of the animal;

d. a hip clamp including a yoke having two downwardly depending arms mounted thereon with means for adjusting the spacing between the arms, the lower end of the arms being adapted to clamp the hind quarters of the animal, engaging its pelvic bone as the spacing between the arms is reduced by said adjustment means; and

e. hoist means connected to the yoke and to the frame, for lifting the posterior of the animal; said hip clamp being suspended from a cross member which spans the width of the frame between the two cross members adjacent each side of the animal, where said spanning cross member slidably engages each side of the frame and includes means for both adjusting its position along the length of the frame and for mounting the hoist means so that the hip clamp may be properly positioned adjacent the pelvic bone of the animal.

4,432,307

GAS-OR LIQUID-FIRED HOT WATER BOILER

Pascal Godin, Eu, France, assignor to Societe Industrielle Auer, Paris, France

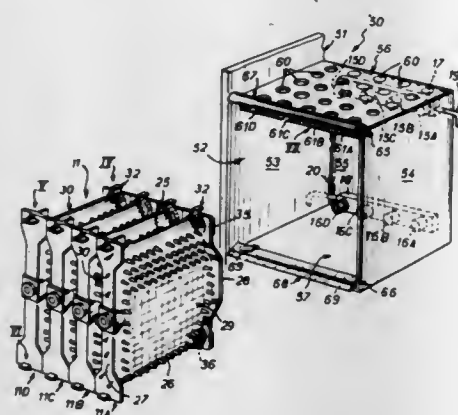
Filed Jul. 30, 1982, Ser. No. 403,426

Claims priority, application France, Aug. 3, 1981, 81 15027

Int. Cl.³ F22B 5/00

U.S. Cl. 122—14

16 Claims



1. A gas- or liquid-fired hot water boiler for a central heating system, said boiler comprising a housing containing a combustion chamber; a heat exchanger communicating with said combustion chamber and connected between an inlet header and an outlet header adapted to be connected respectively to a return pipe and a supply pipe of a central heating circuit; and gas flue means for exhausting combustion gases, the improvement wherein:

said heat exchanger comprises at least two plug-in exchanger modules, means for coupling each of said modules to each of said headers, and hand-operable latch means cooperable with said exchanger modules for locking said exchanger modules in their plugged-in position.

4,432,308

FUEL FOR COMBUSTION ENGINES

Peter J. Sullivan, Fort Wayne, Ind., assignor to Erad Inc., Fort Wayne, Ind.

Division of Ser. No. 809,913, Jun. 24, 1977. This application

Nov. 24, 1980, Ser. No. 210,143

Int. Cl.³ F02M 25/00; F02B 75/12

U.S. Cl. 123—1 A

6 Claims

1. A method for operating an internal combustion engine, comprising burning in said engine a mixture consisting of acetone and water in which said mixture contains from 25% to 75% by volume of acetone.

4,432,309

COOLING SYSTEM FOR AIR-COOLED ENGINE

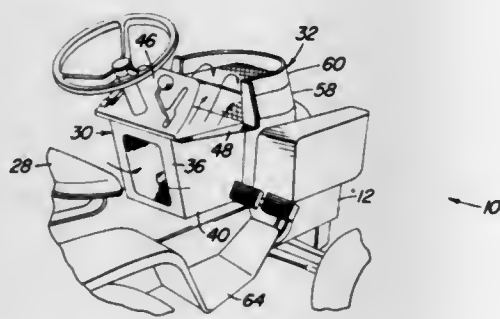
Wayne R. Hutchison, Mayville, and John G. Meylink, Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Feb. 9, 1982, Ser. No. 347,121

Int. Cl.³ F01P 5/06

U.S. Cl. 123—41.66

7 Claims



1. In a lawn and garden tractor embodying an air-cooled

engine and a cooling system therefor, the engine having a shroud, defining an upwardly opening inlet, and a cooling air fan for drawing air into the inlet, an operator's station located rearwardly of the engine and including a hollow pedestal, a hood extending over the engine and having a rearward end portion closing the top of the pedestal, an improved cooling system, comprising: an upright, air impervious baffle extending forwardly of and along opposite sides of the shroud inlet and having upper and lower edges respectively engaged throughout their length with the hood and the engine; and air inlet means formed in the pedestal.

4,432,310

PARALLEL CYLINDER INTERNAL COMBUSTION ENGINE

Francis E. Waller, Clearwater, Fla., assignor to Leonard J. E. Waller

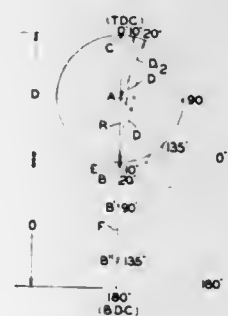
Continuation-in-part of Ser. No. 265,259, May 19, 1981,

abandoned. This application Nov. 12, 1981, Ser. No. 320,213

Int. Cl.³ F02B 75/26

U.S. Cl. 123—58 AB

14 Claims



1. In a multiple cylinder engine comprising:

a. a mainshaft;

b. a cam lobe extending outwardly from the cylindrical periphery of said mainshaft; said lobe having its outer annular periphery substantially cylindrical in shape concentric with said mainshaft and having two opposite sinusoidal surfaces extending near the annular surface of said cam lobe, each of said sinusoidal surfaces having two rises at points 180° from each other and each sinusoidal surface having two reverse rises at points 90° from each of said rises with curved surfaces connecting said rises with said reverse rises on the same sinusoidal surface, the rises in one of said sinusoidal surfaces being opposite the reverse rises in the other of said sinusoidal surfaces and the reverse rises in one of said sinusoidal surfaces being opposite the rises in the other of said sinusoidal surfaces;

c. a multiplicity of pairs of enclosed cylindrical openings having their respective axes parallel to and positioned in a circle around the axis of said mainshaft with the two cylindrical openings in each pair having a common axis and an open end facing each other and having the other ends of said cylinders closed;

d. a corresponding number of pistons with a piston positioned in each said cylinder;

e. a series of connecting rods, the individual connecting rod connecting the two pistons in each respective pair of cylinders, with the length of each said connecting rod being of a length to reach one piston while that piston is positioned to give its cylinder maximum unoccupied volume and to reach the other piston of said pair while said other piston is in a position to give its cylinder minimum unoccupied volume;

f. a multiplicity of cylindrical bearings connected to said connecting rods and each positioned against one or the other of said sinusoidal surfaces so that when either of the pistons attached to the piston rod to which said bearing is attached moves it will cause a bearing to press against one of said sinusoidal surfaces, said cylindrical bearings being arranged so that two of said bearings are attached to each

connecting rod, spaced from each other and positioned so that the two bearings on a connecting rod are on opposite sides of said cam lobe with one bearing being adjacent to one of said sinusoidal surfaces of said cam lobe and the other of said two bearings being adjacent to the other of said sinusoidal surfaces of said cam lobe, each bearing being positioned so that when the piston to which it is more closely attached is moving toward said cam lobe that bearing will be pressed against the adjacent sinusoidal surface of said cam lobe;

g. a power means for sequentially moving one of each pair of said pistons along the path of its linear axis and thereafter alternately moving the other piston of said pair in the opposite direction, whereby the sequential pressure of said bearings on said sinusoidal surfaces will cause a rotation of the mainshaft on its linear axis;

the improvement wherein the contact areas of said cam lobe surfaces with said bearings are designed so that the area in contact with the outer edge or that edge of the bearing farthest from the axis of said mainshaft has a lesser slope in the sinusoidal surface between each said rise and the adjacent reverse rises as compared with the greater slope in the cam lobe surface area in contact with the inner edge of said bearing or that edge of the bearing closest to the axis of said mainshaft, with a gradual increase in said slope progressing from said outer edge contact area to said inner edge contact area, whereby imaginary planes passed through and coincident with the axis of said mainshaft intercept the cam lobe at various angles around the periphery of said lobe, with the cross-section of the bearing contact areas of the cam lobe at the respective rises and reverse rises comprising at the outer surfaces of the cam three sides of a rectangular shape and the respective cross-sections at the midway points between a rise and an adjacent reverse rise comprising three sides of substantially a truncated trapezoid with the bottom line of said trapezoid being in the annular periphery of said cam lobe and with the wider portion of the said trapezoid being the portion of the cam lobe with which the outer edges of said bearings come into contact, with the cross-sections intermediate between said midway cross-section and each said rise cross-section or reverse rise cross-section changing gradually from substantially a truncated trapezoid to said rectangular shape as the respective planes progress from said midway point to a rise or reverse rise.

4,432,311

COMPOSITE VALVE SPRING RETAINER AND PROCESS

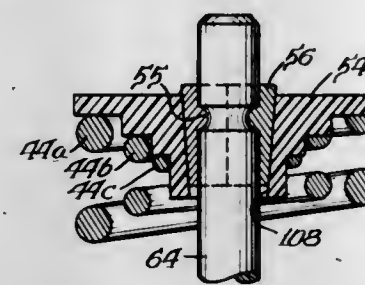
Matthew W. Holtzberg, Ringwood, N.J.; Steven J. Henke, Woodridge, Ill.; Lawrence D. Spaulding, Naperville, Ill., and Billy W. Cole, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,324

Int. Cl.³ F01L 3/10

U.S. Cl. 123—90.67

32 Claims



1. A composite engine part, comprising:

a thermoplastic, amide-imide resinous polymeric, valve spring retainer comprising a reaction product of a trifunctional carboxylic acid compound and at least one diprimary aromatic diamine, said amide-imide valve spring retainer having at least one annular flange for abutting against and engaging a compression spring and a neck integrally extending from said flange, said neck and said

flange cooperating to define an axial opening for receiving a valve stem and substantially maintaining their shape and structural integrity at engine operating conditions.

20. A process for forming a composite valve spring retainer for use in an engine comprising the steps of:

inserting a core pin in a cavity of a mold providing a die to define generally valve spring retainer-shaped molding chamber;

injection molding a thermoplastic, amide-imide resinous polymer to form a valve spring retainer-shaped blank having a neck, at least one annular flange, and a diaphragm covering an axial opening, said injection molding including injecting said amide-imide polymer into said cavity at a location generally opposite said core pin to generally fill said molding chamber and substantially minimize knit lines in said amide-imide valve spring retainer-shaped blank;

allowing said amide-imide valve spring retainer-shaped blank to cool below its plastic deformation temperature; removing said core pin from said die;

post curing said amide-imide valve spring retainer-shaped blank by solid state polymerization to enhance the strength and integrity of said amide-imide valve spring retainer-shaped blank; and

removing said diaphragm covering the axial opening of said amide-imide valve spring retainer-shaped blank.

4,432,312

ENGINE INTAKE PORT WITH VARIABLE SWIRL VANES

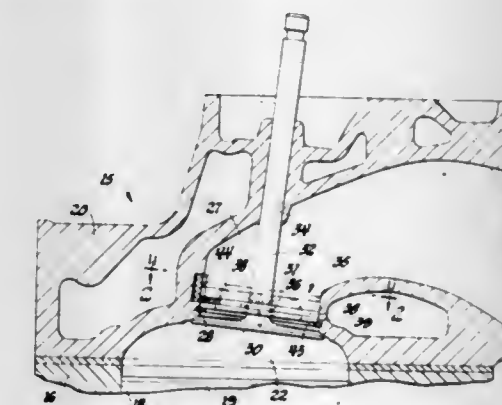
Edward D. Klomp, and David A. Stevens, both of Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,565

Int. Cl.³ F01L 3/00

U.S. Cl. 123—188 VA

2 Claims



1. The combination in an internal combustion engine of a cylinder having a closed end, means defining an intake port opening to the cylinder through the cylinder closed end, the port having an end portion adjacent to the cylinder, a poppet valve in the port having a head engageable with the port defining means near the cylinder closed end to close communication between the port and the cylinder and a stem connected with the head and extending centrally of the port end portion, the stem being reciprocally supported by the port defining means for movement of the valve longitudinally of the stem into open and closed positions, and

adjustable swirl means in said port end portion adjacent to the valve head, said swirl means comprising means supporting a plurality of flexible vanes in annularly spaced relation around said valve stem in said port end portion and extending in directions generally outwardly from the valve stem and longitudinally along the direction of flow through the port end portion, said vanes being received in

curved slots of slotted guide means disposed within the port, said vane supporting means and said slotted guide means being relatively moveable to flex portions of said vanes to vary their angular relation with respect to the longitudinal axis of the valve, whereby a rotational swirl component of fluid flow within the port is increased or decreased.

4,432,313

ALUMINUM BASE MATERIAL WITH HARD FACING DEPOSIT

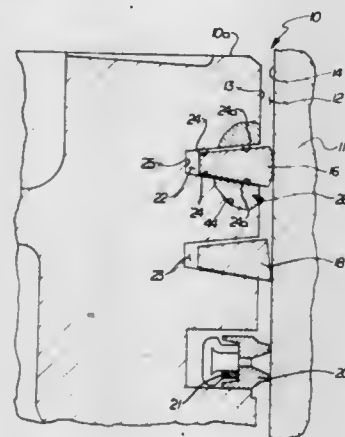
Wallace M. Matlock, Highland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 27, 1982, Ser. No. 382,726

Int. Cl.³ F02F 3/10

U.S. Cl. 123—193 P

27 Claims



1. An aluminum base material with a hard facing weld deposit thereon, said aluminum base material comprising an aluminum-silicon alloy with at least about 65% aluminum, said hard facing weld deposit consisting essentially of an aluminum alloy including, by weight, (i) about 54% to about 65% aluminum (ii) about 34% to about 17% of materials selected from a group consisting of nickel, manganese, iron, cobalt, and combinations of the foregoing, and (iii) a balance of materials selected from a group consisting of copper, silicon, and combinations of the foregoing, said aluminum alloy comprising at least about 2% of materials selected from a group consisting of iron, manganese, and combinations of the foregoing.

4,432,314

INTERNAL COMBUSTION ENGINE

Emmanouil A. Pelekis, Athens, Greece, assignor to General Supply (Construction) Co., Ltd., Athens, Greece

Division of Ser. No. 180,309, Aug. 22, 1980, Pat. No. 4,321,897.

This application Dec. 2, 1981, Ser. No. 326,478

Int. Cl.³ F02B 53/08

U.S. Cl. 123—238

17 Claims

1. Apparatus for combusting fuel with a compressible oxidizing gas to produce combustion gases, the apparatus comprising:

compressor means for increasing the pressure of the oxidizing gas;

a housing having at least one chamber for combustion situated herein, and further including (i) intake means communicating with said compressor means for admitting to said chamber the compressed oxidizing gas and (ii) exhaust means for releasing combustion gases from said chamber;

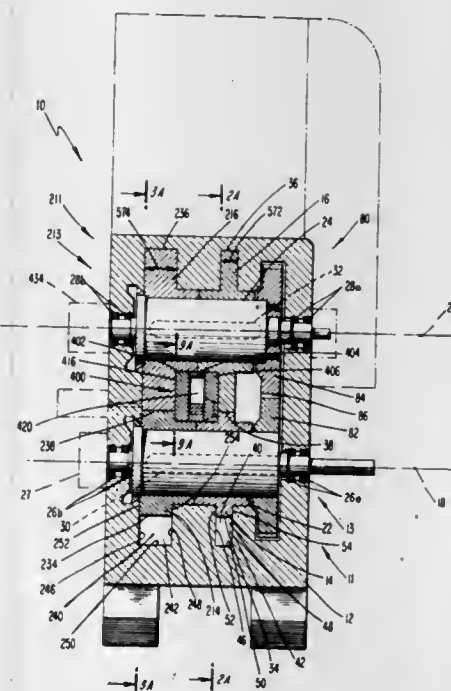
expander means communicating with said exhaust means for decreasing the pressure of the combustion gases, wherein at least said expander means includes cooperating rotor means for forming a gas-tight region in the shape of a segment of an annulus, a portion of said region being separately confineable, the volume of said region portion being variable only in the tangential direction, the pres-

sure within said region portion changing when the volume of said region portion is varied;

means for introducing fuel into said combustion chamber for combustion with said compressed oxidizing gas;

wherein the exhaust means further includes exhaust valve means for intermittently releasing combustion gases to the expander means at predetermined intervals during each combustion cycle, said exhaust valve means including a valve member pneumatically moveable alternately into a closed and an open position, said exhaust valve means further including pneumatic control means for initiating movement of said valve member to said open position when said expander rotors are in a predetermined angular position;

wherein said intake means includes an intake valve for admitting the compressed oxidizing gas to the combustion chamber during a second predetermined interval during each combustion cycle, said intake valve including an intake valve member pneumatically moveable alternately



into closed and open positions and wherein said compressor means includes means for activating said intake valve means prior to the activation of said exhaust valve means during each combustion cycle;

said compressor means including a pair of cooperating rotors synchronized with said expander rotors, one of said compressor rotors having a vane; wherein said exhaust valve pneumatic control means includes a control channel in flow communication with said compressor means, said communication being interruptible by said vane whereby movement of said valve member to an open position is initiated during each combustion cycle; wherein said intake valve is openable by the gas pressure ahead of said compressor vane and closeable by the gas pressure behind said compressor vane; and wherein said intake valve means and said exhaust valve control channel are positioned adjacent to one another with said intake valve means being located upstream with respect to said exhaust valve control channel in the direction of travel of the vane of said compressor rotor.

4,432,315

IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

Yasuyuki Morita, and Hiroyuki Oda, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

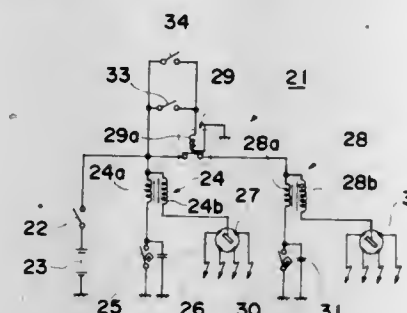
Filed Aug. 20, 1981, Ser. No. 294,507

Claims priority, application Japan, Sep. 1, 1980, 55-121631

Int. Cl.³ F02P 1/00, 3/02; F02M 7/00, 25/06

U.S. Cl. 123—310

8 Claims



1. An ignition arrangement for an internal combustion engine which comprises:

a cylinder head forming a combustion chamber together with a cylinder block;

a guide wall formed to extend into said combustion chamber along part of an outer periphery of an intake valve seat and having a first guide surface for causing an air-fuel mixture taken in from an intake port to swirl in a circumferential direction of the combustion chamber, a second guide surface formed to confront an exhaust valve seat for an exhaust port and also to extend into said combustion chamber, and a third surface connected between said first and second guide surfaces;

a first ignition plug provided between said intake port and exhaust port so as to confront said guide wall;

a second ignition plug provided on said second guide surface of said guide wall; and

electrical circuit means for causing said first ignition plug to function over the entire engine operating range and for causing said second ignition plug to function only in a predetermined engine operation range where engine knocking is apt to occur.

4,432,316

COLD HC EMISSION CONTROLLING DEVICE FOR AUTOMOBILE EQUIPPED WITH CATALYST TYPE DISPOSAL SYSTEM

Tamotsu Ogita, Shizuoka, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 49,988, Jun. 19, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,051

Claims priority, application Japan, Jul. 10, 1978, 53-83007

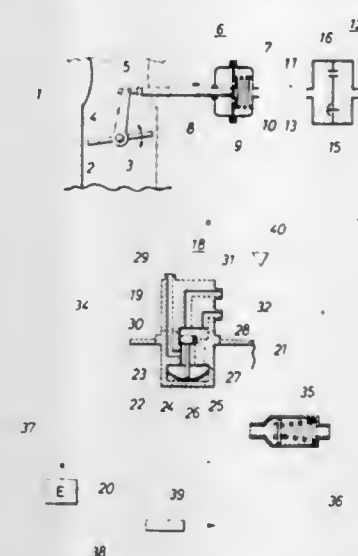
Int. Cl.³ F02D 31/00

U.S. Cl. 123—328

5 Claims

1. A cold HC emission controlling apparatus for use in an automobile equipped with a catalytic type disposal system, the apparatus comprising a deceleration emission control device having a delaying rod positioned to be moved into and out of engagement with a throttle valve lever in a carburetor of an engine of the automobile, a vacuum control device for operating said deceleration emission control device through a vacuum-transmitting valve; whereby said vacuum-transmitting valve operates said deceleration emission control device; said vacuum control device comprising a bimetal temperature sensitive actuating member and a change-over valve operatively connected to said bimetal member for moving from said vacuum transmitting valve from a position in which said vacuum control device is put in communication with a vacuum source to a position in which said vacuum control device is put in communication with the atmosphere both in said vacuum-transmitting valve, means to locate at least that portion of said

vacuum transmitting valve housing said bimetal member directly in the coolant flow stream in the cooling water jacket of



the engine, and a vacuum check valve positioned between said vacuum source and said vacuum-transmitting valve.

4,432,317

METHOD AND APPARATUS FOR CONTROLLING THE IDLING ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

Takahide Kawamura, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

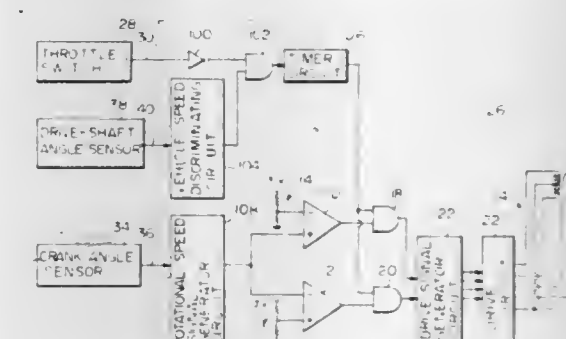
Filed Jul. 14, 1981, Ser. No. 283,196

Claims priority, application Japan, Jul. 16, 1980, 55-96244

Int. Cl.³ F02P 1/04, 3/00; F02M 3/00

U.S. Cl. 123—339

16 Claims



1. A method of controlling the idling rotational speed of an internal combustion engine by adjusting idle air flow thereto, said method comprising the steps of:

generating an idling state signal when said engine is in a predetermined idling condition;

generating a rotational speed signal related to the actual rotational speed of said engine;

after a predetermined period of time after said idling state signal is generated, comparing said rotational speed signal with upper and lower limit speed signals to generate a control signal which indicates a change in idle air flow to the engine to maintain the actual rotational speed of said engine within a desired range; and

adjusting the idle air flow to the engine in response to said control signal.

4,432,318

DEVICE OF CONTROLLING THE IDLING SPEED OF AN ENGINE

Mamoru Kobashi, Aichi; Shinichiro Tanaka, Susono, and Hideo Saji, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota

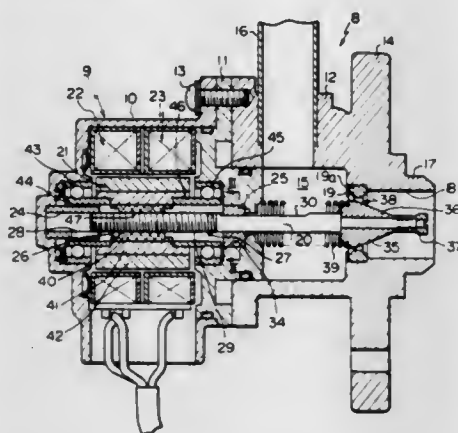
Filed Dec. 30, 1981, Ser. No. 335,819

Claims priority, application Japan, May 19, 1981, 56-74104

Int. Cl.³ F02D 11/10

U.S. Cl. 123—339

6 Claims



1. A device of controlling the idling speed of an engine comprising a main intake passage, a throttle valve arranged in the main intake passage, a bypass passage branched off from the main intake passage upstream of the throttle valve and connected to the main intake passage downstream of the throttle valve, and a control valve arranged in the bypass passage, said device comprising:

a step motor actuating the control valve and comprising a stator which has exciting coil means and a plurality of spaced pole pieces polarized by said exciting coil means, and a rotor having polarities the pitch of which is two times the pitch of the pole pieces;

first means for detecting the engine speed to produce an output signal indicating the engine speed;

second means for detecting the operating condition of the engine to produce an output signal indicating that the engine is operating in an idling state, and;

an electronic control unit operated in response to the output signal of said first means and the output signal of said second means and exciting said exciting coil means for rotating the step motor in a rotating direction wherein the engine speed approaches a predetermined desired idling speed when the engine is operating in an idling state and for stopping the exciting operation of said exciting coil means and retaining the step motor stationary when the engine speed becomes equal to the desired idling speed, wherein said electronic control unit comprises a first waiting means for exciting said exciting coil means when a predetermined first waiting time has elapsed after the idling speed of the engine is increased beyond or reduced below said desired engine speed.

4,432,319

FUEL INJECTION CONTROL SYSTEM FOR A FUEL INJECTION PUMP

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 23, 1981, Ser. No. 246,620

Claims priority, application Japan, Mar. 26, 1980, 55-39979[U]; Oct. 31, 1980, 55-152022

Int. Cl.³ F02D 31/00

U.S. Cl. 123—357

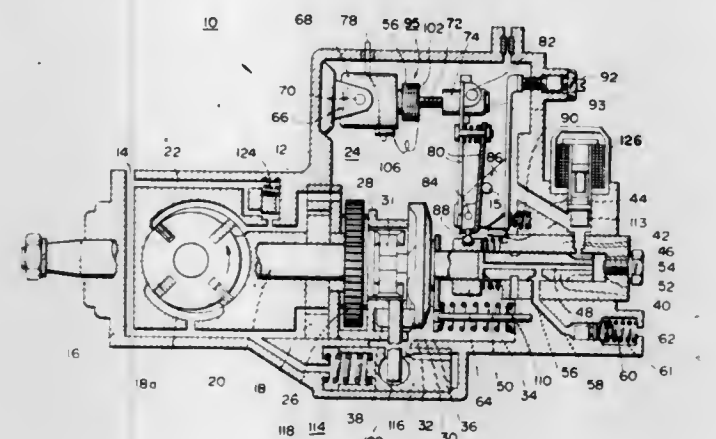
37 Claims

1. In a fuel injection control system for a fuel injection pump of an internal combustion engine comprising:

(a) an electric actuator for controlling the fuel injection rate of the pump, the actuator being responsive to a command

for taking an operational position corresponding to the command; and

(b) a position sensor including a multi-turn potentiometer coupled to the actuator for sensing the operational position of said actuator, the position being indicated as a varying resistance at a slider of the potentiometer so that there is derived at the slider a feedback control signal corresponding to the actuator position, the potentiometer



having first and second segments over which the slider moves, the first segment having a first rate of change of resistance corresponding to the fuel injection rate in a range from zero to a fuel injection rate required under full load, the second segment having a second rate of change of resistance, the first rate of change being different from the second rate of change in a fuel injection range extending from the rate required under full load to the rate required during starting of the engine.

4,432,320

CONTROL EQUIPMENT FOR ADJUSTING THE MOMENT OF FUEL INJECTION AND/OR AMOUNT OF FUEL SUPPLIED BY A FUEL INJECTION PUMP, FOR INTERNAL COMBUSTION ENGINES

Georg Brasseur, Vienna; Gerhard Lehner, Hallein; Peter Herzog, Hallein; Heinz Rathmayr, Hallein, and Theodor Stipek, Hallein, all of Austria, assignors to Friedmann & Maier Aktiengesellschaft, Hallein, Austria

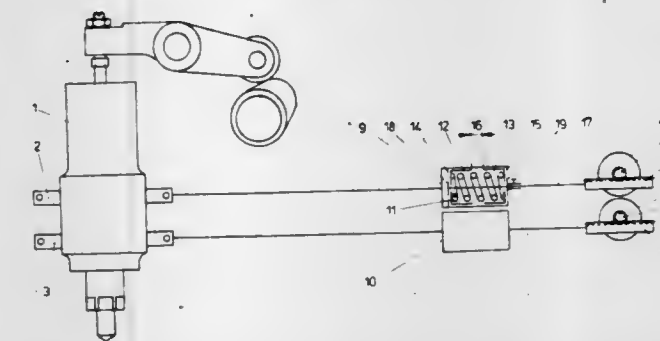
Filed May 17, 1982, Ser. No. 378,728

Claims priority, application Austria, Jun. 10, 1981, 2585/81

Int. Cl.³ F02D 31/00

U.S. Cl. 123—357

11 Claims



1. Control apparatus for a fuel injection pump for an internal combustion engine, said apparatus comprising independent control means for changing the timing of fuel injection and for changing the quantity of fuel injected, at least one of said control means including an adjusting member, an electrical servomotor, connecting means connecting the servomotor with the adjusting member for adjusting the position of the adjusting member in either of two directions, said connecting means including a mechanical energy accumulator, said accumulator comprising a pre-stressed compression spring through which adjusting force is transmitted from the servomotor to

the adjusting member in either of two directions, the spring being disposed between two collars which are mutually movable relative to each other, the spring having opposite ends engageable with the collars, and abutment means for limiting the maximum distance between the collars.

4,432,321

FUEL INJECTION PUMP DEVICE FOR INTERNAL COMBUSTION ENGINE

Yasushi Matsuda, Anjo, and Shizuo Kawai, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

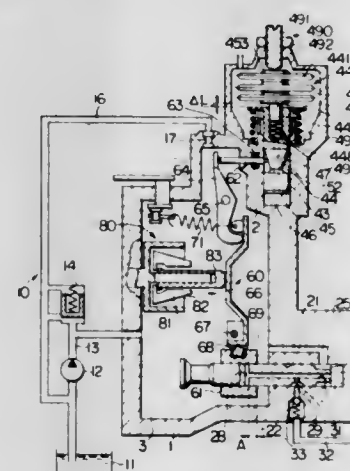
Filed Oct. 19, 1981, Ser. No. 312,915

Claims priority, application Japan, Oct. 22, 1980, 55-151242[U]

Int. Cl.³ F02D 1/02

U.S. Cl. 123—380

4 Claims



1. A fuel injection pump device for an internal combustion engine, comprising:

an injection pump for forcedly delivering fuel into the engine;

means for sensing atmospheric pressure to continuously generate a mechanical correcting signal in response to change in the atmospheric pressure, said sensing means including a bellows expandable and contractible in response to change in atmospheric pressure in order for at least one end of said bellows to move to generate said correcting signal;

means operative in response to the correcting signal for adjusting the amount of liquid fuel delivered by said pump into the engine so as to increase and decrease the amount of fuel in accordance with the increase and decrease in atmospheric pressure, respectively, said adjusting means including an adjusting member associated with said pump and a linkage mechanism connecting said sensing means to said adjusting member for transmitting the correcting signal through said linkage mechanism for adjusting the amount of fuel delivered by said pump into the engine;

said sensing means further including a rod connected to said one end of said bellows for movement therewith and having a profile surface, said linkage mechanism continuously engaging with said profile surface, and means for floatingly supporting an assembly of said bellows and said rod;

signal-transmission limiting means for limiting the transmission of the correcting signal from said sensing means to said adjusting means such that the correcting signal from said sensing means is allowed to be transmitted to said adjusting means within a first range in which the atmospheric pressure is below a predetermined level, but is prevented from being transmitted to said adjusting means within a second range in which the atmospheric pressure is above said predetermined level, said rod of said sensing means being connected in a lost-motion manner to said one end of said bellows, said signal-transmission limiting means comprising a predetermined gap between said one end of said bellows and rod and a stopper engaging with

said the other end of said bellows to maintain said predetermined gap between said one end of said bellows and said rod, the change in the atmospheric pressure within said second range causing said one end of said bellows to move within said predetermined gap, said one end of said bellows engaging with said rod when the atmospheric pressure reaches said predetermined level, and the first change in the atmospheric pressure within said first range causing said rod to move.

4,432,322

METHOD AND SYSTEM FOR CONTROLLING IGNITION TIMING IN A MULTICYLINDER INTERNAL COMBUSTION ENGINE

Shingo Inoue, Anjo; Toshiharu Iwata, Aichi, and Yasuhito Takasu, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

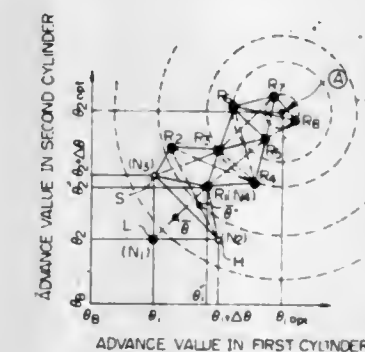
Filed Jul. 30, 1982, Ser. No. 403,816

Claims priority, application Japan, Aug. 1, 1981, 56-120026; Sep. 9, 1981, 56-142004; Sep. 11, 1981, 56-144435

Int. Cl.³ F02P 5/04; F02D 5/00, 1/04

U.S. Cl. 123—416

28 Claims



1. A method, in a multicylinder internal combustion engine, for obtaining the optimum combination of ignition timings for the individual cylinders, comprising the steps of:

(a) detecting at least one engine running condition parameter;

(b) selecting a group of combination of ignition timings, each combination comprising ignition timings for the individual cylinders of the engine, which timings are determined in accordance with the running condition parameter;

(c) successively operating the engine by the combinations of ignition timings for a predetermined period;

(d) detecting, at each period, a parameter value corresponding to the engine output characteristic;

(e) determining, by comparing the detected parameter values obtained at the combinations in said group, the combination of ignition timings θ_{min} producing an output characteristic most distant from the optimum output characteristic;

(f) calculating, by using a predetermined formula, a new combination of ignition timings θ_{new} ;

(g) operating the engine at the new combination of ignition timings for the predetermined period;

(h) detecting the engine output characteristic parameter value, obtained in the operation in step (g);

(i) substituting, in said group of combinations of ignition timings in (b), the new combination of ignition timings θ_{new} for the combination of ignition timings θ_{min} ; and

(j) repeating the above-mentioned steps (c) through (i) so that the new combination of ignition timings progressively approaches the single combination of ignition timings.

4,432,323

IGNITION SYSTEM

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

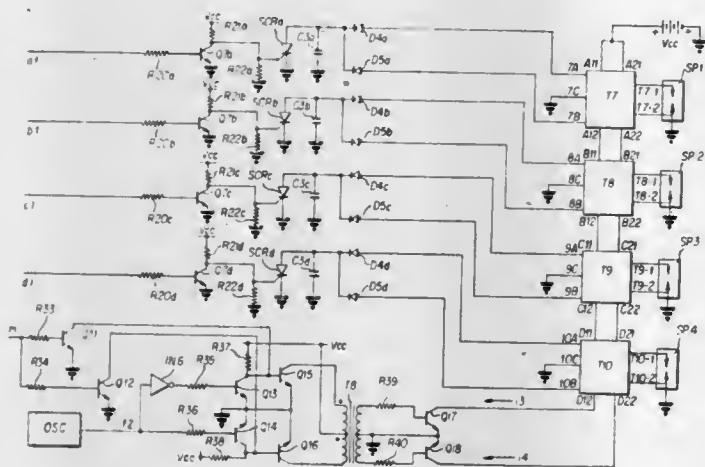
Division of Ser. No. 268,889, Jun. 1, 1981, Pat. No. 4,382,430.

This application Jan. 4, 1983, Ser. No. 455,574

Int. Cl.³ F02P 1/00

U.S. Cl. 123—427

3 Claims



1. An ignition system for an internal combustion engine, comprising:

crankshaft position sensor means coupled to a crankshaft of said engine for sequentially supplying an output signal to each of a plurality of output terminals in synchronism with the rotation of said crankshaft, one of said output terminals being associated with each cylinder of said engine;

a plurality of switch means, each of said switch means being coupled to receive said output signal from one of the output terminals of said position sensor means for coupling a first and second output terminal of said each of said switch means to ground each time said output signal is received from said position sensor means;

ignition timing generator means coupled to receive said output signal from each of said output terminals of said position sensor means for integrating over time each of said output signals appearing at each of said output terminals of said position sensor means and for generating an ignition pulse during the period of each output signal received from said position sensor means, said ignition pulse beginning when the results of each of said integrations over time reaches a first predetermined value and ending when the results of each integration reaches a second predetermined value;

oscillator means for producing an AC output signal; control means coupled to receive said AC output signal from said oscillator means and coupled to receive said ignition pulse generated by said timing generator means for alternately grounding a first and second output terminal of said control means in synchronism with said AC oscillator output signal during the period of said ignition pulse;

a plurality of high voltage generator means, one of said high voltage generator means being associated with each cylinder of said engine, each of said high voltage generator means being coupled to said first and second terminals of one of said switch means and coupled to said first and second output terminals of said control means for generating a high voltage signal at an output terminal when said first and second terminals of said switch means are grounded simultaneously with the grounding of said first output terminal or said second output terminal of said control means;

a plurality of spark plug means, one of said spark plug means being associated with each cylinder of said engine, each spark plug means being coupled to receive the high voltage output of one of said high voltage generator means for producing an arc upon receipt of said high voltage output.

4,432,324

AIR-FUEL RATIO CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Norikatsu Ishikawa, Mishima; Haruyuki Obata; Takao Tate, both of Susono; Toshio Tanahashi, Susono, and Hiromi Ot-suki, Anjo, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of Japan

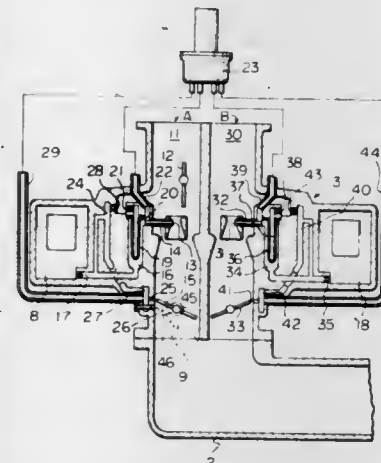
Filed Apr. 1, 1982, Ser. No. 364,455

Claims priority, application Japan, Apr. 8, 1981, 56-51747; Apr. 8, 1981, 56-51748

Int. Cl.³ F02B 33/00; F02M 7/00

U.S. Cl. 123—438

16 Claims



1. An air-fuel ratio control device of an internal combustion engine having at least one cylinder, an intake passage and an exhaust passage, said device comprising:

a carburetor arranged in the intake passage and having a float chamber, a main nozzle, a main fuel passage connecting said float chamber to said main nozzle, a main air bleed passage connecting said main fuel passage to the atmosphere, a slow fuel port, a slow fuel passage connecting said float chamber to said slow fuel port, a slow air bleed passage connecting said slow fuel passage to the atmosphere;

valve means having a first valve arranged in said slow air bleed passage for controlling the flow area of said slow air bleed passage, a second valve arranged in said main air bleed passage for controlling the flow area of said main air bleed passage, and an electromagnetic device common to said first valve and said second valve and simultaneously actuating said first valve and said second valve while maintaining the flow area of said slow air bleed passage at an area which is larger than the flow area of said main air bleed passage;

an oxygen concentration detector arranged in the exhaust passage and detecting the oxygen concentration of the exhaust gas in the exhaust passage for producing a detecting signal, and;

an electronic control unit operated in response to the detecting signal of said oxygen concentration detector and producing a control signal for operating said electromagnetic device to actuate said first valve and said second valve so that an air-fuel ratio of the mixture fed into the cylinder becomes equal to a predetermined air-fuel ratio,

wherein said first valve is a reed valve, and said second valve is a reed valve, said electromagnetic device comprising an axially movable rod which is actuated in response to the control signal of said electronic control unit and is engageable with said first reed valve and said second reed valve, and

wherein said valve means comprises a valve chamber connected to the atmosphere and having an inner wall on which said first reed valve and said second reed valve are mounted, said slow air bleed passage having an air inlet formed on the inner wall of said valve chamber and closed by said first reed valve, said main air bleed passage having

an air inlet formed on the inner wall of said valve chamber and closed by said second reed valve.

for movement by said cam surface in a third direction perpendicular to said first and second directions, and control means

4,432,325

ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Gerd Auracher, Grossbottwar; Albrecht Clement, Kornwestheim; Rolf Däumer, Weil d. Stadt; Helmut Schwarz; Thomas Thiel, both of Vaihingen; Wilfried Venzke, Möglingen; Gustav Virgilio, Winnenden; Bernhard Weichel, Stuttgart, and Thomas Wilfert, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

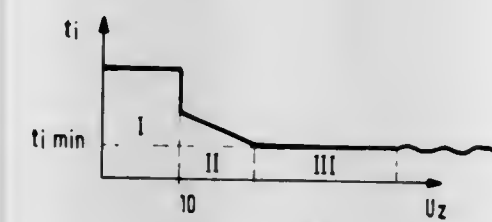
Filed Nov. 6, 1981, Ser. No. 318,765

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042245

Int. Cl.³ F02N 17/00; F02P 5/04

U.S. Cl. 123—491

14 Claims



1. An electronic control system for an internal combustion engine having fuel metering means for metering fuel to the engine in accordance with a fuel metering signal and ignition means for initiating combustion of fuel within the engine in accordance with an ignition signal, which comprises:

fuel metering control means for generating said fuel metering signal during an engine starting period such that the metered fuel quantity is maintained at a first constant value during a first phase of an engine starting period, the metered fuel quantity is changed from a second value to a threshold in accordance with at least one of the engine variables of temperature, rpm, and total number of revolutions during a second phase of the engine starting period, and the metered fuel quantity is maintained at said threshold value during a third phase of said engine starting period, the duration of said first phase depending upon the occurrence of one of selected values of the engine variables of rpm and total number of revolutions; and ignition control means for generating said ignition signal such that the time of ignition is adjusted toward "early" from a reference ignition time in accordance with at least one of the engine variables of rpm and temperature.

4,432,326

DEVICE FOR CONTROLLING THE ANGLE OF ADVANCE IN A FUEL-INJECTION PUMP OF AN INTERNAL-COMBUSTION ENGINE

Manuel Roca-Nierga, Barcelona, Spain, assignor to SPICA S.p.A., Leghorn, Italy

Filed Apr. 14, 1982, Ser. No. 368,117

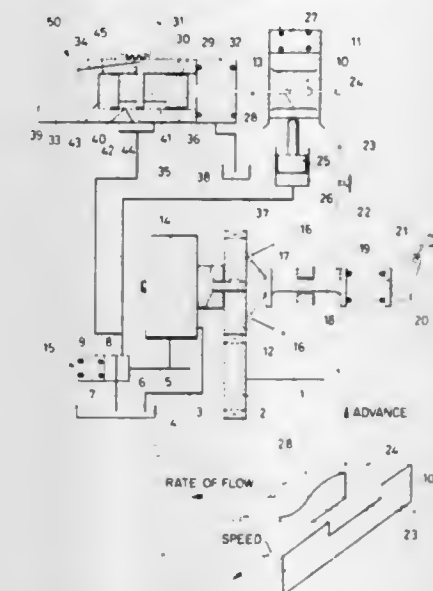
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115718

Int. Cl.³ F02M 59/20

U.S. Cl. 123—501

11 Claims

1. A control device for adjusting the instant of time of the start of the delivery in an injection pump for an internal combustion engine comprising means responsive to the rpm of a fuel pump for displacing a slider in a first direction, said slider slidably carrying a cam body thereon, means responsive to the rate of flow delivered by an injection pump for moving said cam body in a second direction perpendicular to said first direction relative to said slider, said cam body having a cam surface against which rests a feeler, said feeler being mounted



responsive to movement of said feeler for effecting the start of the delivery of said injection pump.

4,432,327

TIMING CONTROL FOR FUEL INJECTION PUMP

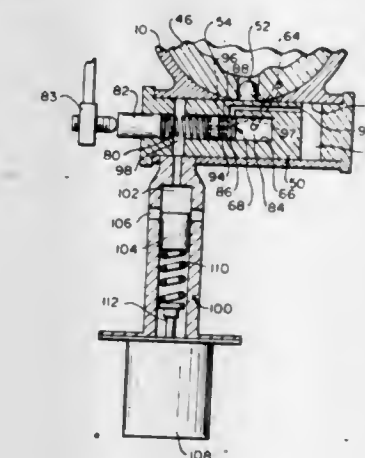
Daniel E. Salzgeber, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Mar. 4, 1982, Ser. No. 354,649

Int. Cl.³ F02M 59/20

U.S. Cl. 123—502

15 Claims



1. For use in association with an internal combination engine having a plurality of engine cylinders, a fuel injection pump having a housing, a charge pump to deliver measured charges of liquid fuel in successive pumping strokes to the cylinders of the associated engine, timing means to vary the timing of the pumping relative to the operation of the associated engine, and actuating means for actuating the timing means for advancing and retarding the timing of the pumping strokes responsive to the operating parameters of the associated engine, said actuating means comprising a spring biased piston for actuating the timing means and having fluid chambers at opposite ends thereof, a source of fluid under pressure correlated with engine speed in communication with one of said chambers and acting against the bias of the spring to advance the timing of the pumping strokes with increased engine speed, a fluid under pressure in the second of said chambers, a drainage passage for releasing fluid from the second chamber to reduce the pressure therein, and failsafe valve means for selectively controlling the release of fluid through said passage, said failsafe valve means comprising a bleed valve member and bleed valve control means operable by at least one set of continuous measurements of an operating parameter of the associated engine for operat-

ing the bleed valve member to continually bleed fluid from said second chamber in accordance with said continuous measurements.

4,432,328

VAPOR LOCK AND PERCOLATION PHENOMENA INHIBITING SYSTEM

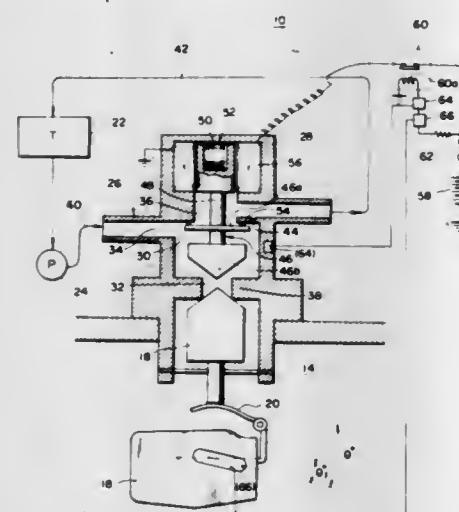
Seichi Shimizu, Higashimurayama, and Kouichi Iguchi, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 4, 1980, Ser. No. 203,850

Claims priority, application Japan, Nov. 6, 1979, 54-142753
Int. Cl.³ F02M 37/20

U.S. Cl. 123—516

8 Claims



1. A vapor lock and percolation phenomenon inhibiting system of an engine fuel supply system having a fuel tank and a carburetor with a float chamber, comprising:

- a housing having a chamber and first, second and third openings communicating with said chamber, said first opening being connected with said float chamber, said second opening being connected with said fuel tank through a fuel supply passage;
- a fuel return passage leading from said third opening to said fuel tank;
- an orifice connecting said chamber with said fuel return passage, bypassing said third opening;
- a valve element capable of selectively closing and opening said third opening, said valve element being constructed to open said first opening when closing said third opening and to close said first opening when opening said third opening, said valve element including separate first and second valve element sections, said first valve element section functioning to open and close said third opening, and said second valve element section functioning to open and close said first opening;
- a temperature sensor for sensing the temperature of fuel in said chamber; and
- control means for actuating said valve element to open said third opening when the temperature sensor senses that the temperature of the fuel in the chamber is higher than a predetermined value.

4,432,329

APPARATUS FOR HEATING FUEL INJECTED INTO A DIESEL ENGINE

Jean E. A. Rédélé, Paris, France, assignor to Scoma Energie, Paris, France

Filed Jul. 1, 1982, Ser. No. 394,150

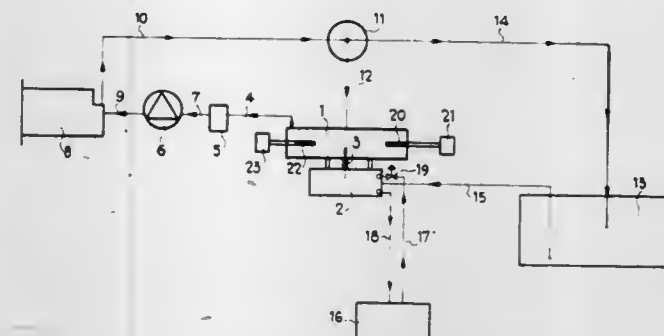
Claims priority, application France, Jul. 8, 1981, 81 13417
Int. Cl.³ F02M 31/00

U.S. Cl. 123—557

8 Claims

1. An apparatus for heating fuel injected into Diesel engine fuel tank, said apparatus comprising a heat exchanger, heat-carrying fluid supply means, pipe means connecting the heat-

carrying fluid supply means to the heat exchanger, means for connecting the heat exchanger to the fuel tank, a vessel for containing a reserve supply of hot fuel and containing at least one auxiliary source of heat, an injection pump having an inlet and an outlet, a thermostat valve comprising three ways, first pipe means connecting a first of said ways to the outlet of the



injection pump, second pipe means connecting a second of said ways to the vessel and third pipe means connecting a third of said ways to the fuel tank, pipe means connecting the inlet of the injection pump to the vessel, the thermostat valve being arranged to connect the outlet of the injection pump to the vessel below a previously-fixed temperature of the fuel in the vessel.

4,432,330

EXHAUST GAS RECIRCULATION SYSTEM HAVING ELECTRICAL CONTROL MEANS

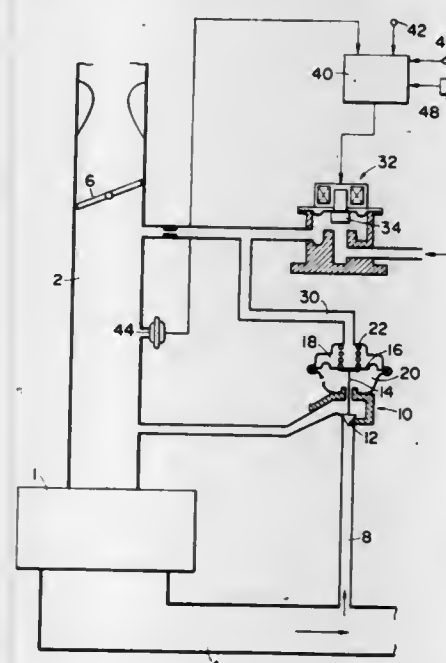
Kazutoshi Otsuka, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 25, 1982, Ser. No. 342,344

Claims priority, application Japan, Jan. 27, 1981, 56-10528
Int. Cl.³ F02M 25/06

U.S. Cl. 123—571

7 Claims



1. An exhaust gas recirculation system for an internal combustion engine having intake and exhaust systems, said recirculation system comprising gas recirculation passage means for directing a part of the engine exhaust gas from the exhaust system to the intake system, recirculation rate control valve means provided in said gas recirculation passage means and adapted to be actuated by an engine intake suction pressure, pressure adjusting means for adjusting the intake suction pressure applied to said control valve means, first sensing means for sensing engine operating conditions and producing engine operating condition signals, control means for producing a control signal in response to the signals from said first sensing means, second sensing means for sensing engine intake suction pressure and producing suction pressure signals which are

applied to said control means, third sensing means for sensing special engine conditions and producing special condition signals which are applied to said control means, first memory means associated with said control means and containing first compensating factors corresponding to various values of the suction pressure signals, second memory means associated with said control means and containing second compensating factors corresponding to various values of the special condition signals, said control means taking an appropriate one of said first compensating factors in accordance with the suction pressure signal and an appropriate one of said second compensating factors in accordance with the special condition signal to compensate said control signal, said control signal being applied to said pressure adjusting means to operate the same.

4,432,331

ENGINE CONTROL SYSTEM

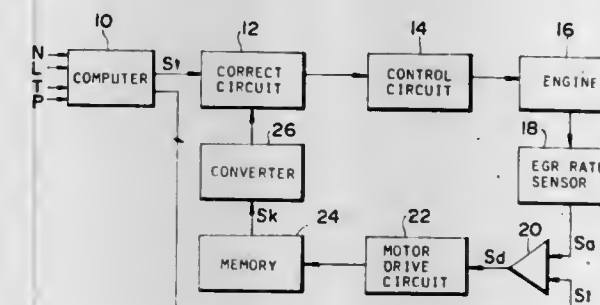
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 21, 1982, Ser. No. 390,687

Claims priority, application Japan, Jun. 30, 1981, 56-101841
Int. Cl.³ F02M 25/06

U.S. Cl. 123—571

17 Claims



8. An engine control system for use with an internal combustion engine including an EGR device for recirculating engine exhaust gases to combustion chambers of said engine, said engine control system being responsive to engine operating parameters for determining a target value of EGR rate and controlling said EGR device to achieve EGR rate of said target value, said engine control system including a sensor associated with said EGR device for sensing an actual value of EGR rate, a comparator for detecting a difference between said actual and target EGR rate values, a memory for storing a correction factor corresponding to said detected difference, and means for connecting said target EGR rate value for said stored correction factor, said memory comprising:

- (a) a potentiometer having a resistor and a wiper movable in sliding contact with said resistor;
- (b) a reversible motor drivingly connected to said potentiometer wiper for moving said wiper on said resistor; and
- (c) a motor drive circuit for rotating said reversible motor in one or reverse direction in accordance with said detected difference so as to permit said wiper to tap off a resistance corresponding to said detected difference.

4,432,332

FUEL ECONOMIZER DEVICES

John McFarlane, Johnstone, and Andrew Guy, Linwood, both of England, assignors to Sonell Products Limited, Thetford, England

Filed Jul. 17, 1981, Ser. No. 284,228

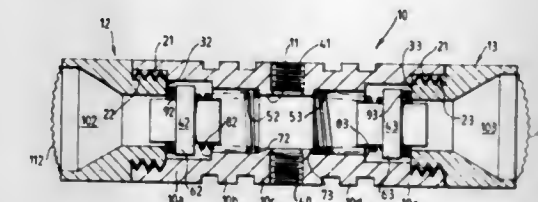
Int. Cl.³ F02M 23/08

U.S. Cl. 123—587

1 Claim

1. A fuel economiser device for use in combustion engines comprising a main body, a circular bore in said body extending axially thereof, an outlet in said body for communication with an inlet to said engine for a combustible mixture said outlet being in the form of a radial aperture in said body, each end of said bore defining a respective one of two inlets in said body, a pressure operated valve associated with each inlet in the

body, each valve having an adjustable valve seat against which a valve member is urged by means of a spring whereby, on occurrence of a predetermined vacuum level in said engine inlet, air may pass from the said inlets in the body to said outlet



in the body thus to weaken the combustible mixture being supplied to the engine, wherein the valve members of the valves are urged against their respective seats by means of a single counter-balance spring.

4,432,333

ELECTROMAGNETIC PROJECTILE ACCELERATOR

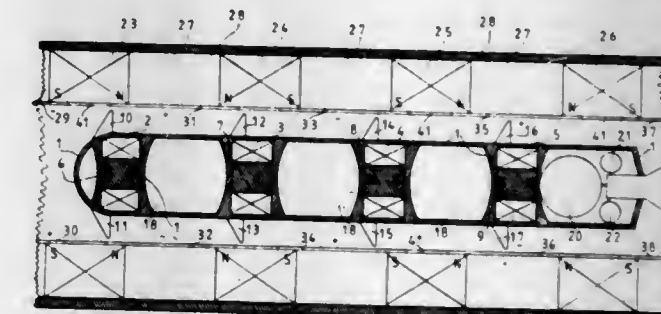
Waldemar H. Kurberr, Heerdt Landstr. 201, D-4000 Duesseldorf 11, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 833,131

Int. Cl.³ F41F 1/02

U.S. Cl. 124—3

8 Claims



1. Electromagnetic projectile accelerator comprising: means for rigidly mounting stationary coreless electromagnetic coils spaced apart along a row, the spaces therebetween being sealed with tightly fitted electrically and magnetically nonconductive rigid spacer-rings, said coils and rings together forming an acceleration tube having exterior and interior wall surfaces, the exterior wall surface being surrounded with a ferromagnetic material, the interior wall surface consists of an electrically and magnetically nonconductive material on which wall surface a plurality of electrically conductive plates are mounted so as to be spaced apart along the interior of said tube, said plates being electrically connected and electrically isolated from each other and electrically poled opposite to each other, said stationary coils being electrically connected and energized such that the stationary coils face each other with opposing magnetic poles; free floating projectile means disposed within said acceleration tube comprising a magnetically and preferably electrically nonconductive projectile body, a plurality of electromagnetic coil means rigidly mounted in a spaced apart manner within said projectile, said electromagnetic coils including cores therein whereby said electromagnetic coils are electrically connected to conductors mounted on upper and lower exterior surfaces of the projectile body whereby electric current is conducted from at least one of said electrically positive poled plates through the respective conductor thus energizing the electrically connected electromagnetic coil within the projectile thereby leaving via arcing from the other conductor into at least one of the electrically negative poled plates, whereby consecutive alternating switching due to the forward motion of the projectile through the electric field of the alternatingly electrically poled plates a continuous acceleration of the projectile within the preferably evacuated acceleration tube is performed.

4,432,334

FOLDABLE GRID FOR COOKER

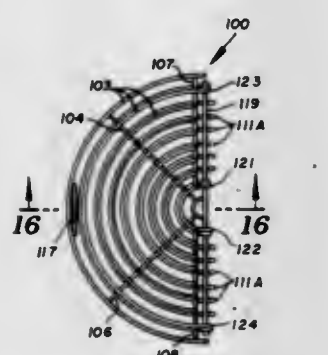
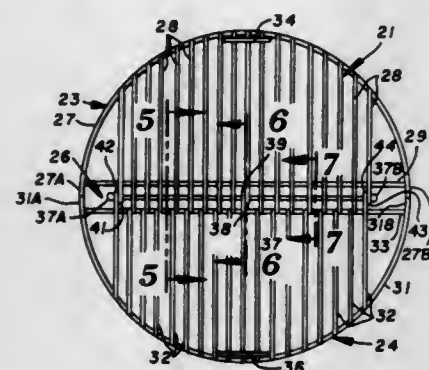
Jon R. Holt, 18212-24th Ave. North, Plymouth, Minn. 55447

Filed Jun. 7, 1982, Ser. No. 385,537

Int. Cl.³ F24C 15/08; A47J 0/00

U.S. Cl. 126—9 B

15 Claims



1. A grid assembly for use with a cooker comprising: first grid means having first rods for supporting food, second grid means having second rods for supporting food, and hinge means pivotally connecting the first grid means to the second grid means, said first and second grid means being movable relative to each other, between an aligned open position and a folded position, wherein said first and second grid means are in spaced side-by-side positions, said hinge means including a hinge rod permanently connected to a plurality of said first and second rods to pivotally mount said plurality of first and second rods on said hinge rod, a first transverse member secured to said first rods adjacent on side of the hinge rod, said second rods having end sections engageable with the first transverse member when the first and second grid means are in the aligned position, a second transverse member secured to said second rods adjacent said hinge rod and on the side opposite said one side of the hinge rod, said first transverse member being engageable with the second transverse member when the first and second grid means are in the folded position to locate the first and second grid means in said spaced side-by-side positions.

4,432,335

STOVE CONSTRUCTION FOR ACHIEVING COMPLETE FUEL COMBUSTION

Peter Kilham, Mill Rd., Foster, R.I. 02825

Filed Dec. 3, 1981, Ser. No. 327,028

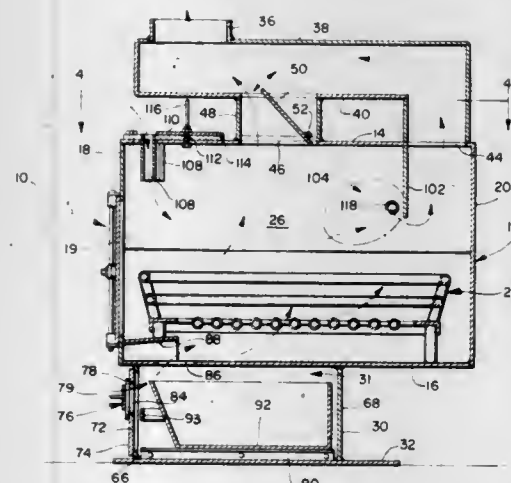
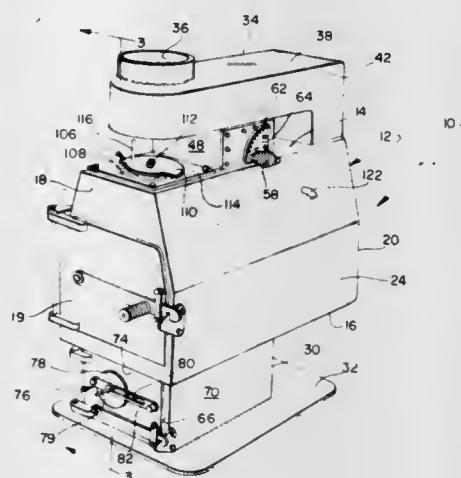
Int. Cl.³ F24C 1/00

U.S. Cl. 126—60

2 Claims

1. A heating stove for the efficient burning of a suitable fuel such as coal or wood comprising, a stove housing defining a combustion chamber wherein combustion gases from said burning pass upwardly through a primary flue opening positioned through said housing at an upper rear portion of said chamber, a baffle disposed in said chamber at a position forward and below said primary flue opening so as to downwardly deflect said combustion gases from upper parts of said chamber into an exit zone adjacent said baffle and located

within said chamber, primary draft means for introducing primary combustion air into said chamber and means for introducing secondary combustion air directly into said exit zone so as to more completely burn combustible material in said combustion gases to as to in turn reduce creosote therein and to raise the combustion efficiency of said stove, said housing including top, bottom, front, rear and connecting walls which define said combustion chamber, said primary flue opening disposed in said top wall at a position adjacent said rear wall,



said primary draft means including a plurality of separate draft tubes downwardly extending from the forward portion of said top wall into said combustion chamber for directing primary combustion air downwardly towards the housing bottom wall and the base of the burning fuel supported thereby, including a swivable plate mounted on said top wall and movable to progressively cover the tops of one or more of said tubes so as to regulate the amount of primary combustion air passing into said combustion chamber.

4,432,336

ENERGY CONVERSION SYSTEM

Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

Division of Ser. No. 105,277, Dec. 19, 1979, Pat. No. 4,353,348, which is a division of Ser. No. 813,667, Jul. 7, 1977, Pat. No. 4,197,831, which in turn is a continuation of Ser. No. 620,327, Oct. 7, 1975, now abandoned, which in turn is a continuation-in-part of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which in turn is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270.

This application Nov. 23, 1981, Ser. No. 324,266

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.³ F24C 3/00

U.S. Cl. 126—91 R

2 Claims

1. A system for use in heating solid, liquid or gaseous materi-

4,432,338

STACKABLE MULTI-PURPOSE HEATER WITH CONTROLLABLE HEAT ACTION

Rudolf C. Buchmann, Battertweg 1, Baden-Baden, Fed. Rep. of Germany

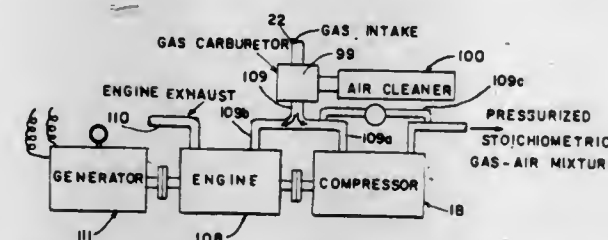
Filed May 21, 1982, Ser. No. 380,848

Claims priority, application Switzerland, May 26, 1981, 3436/81

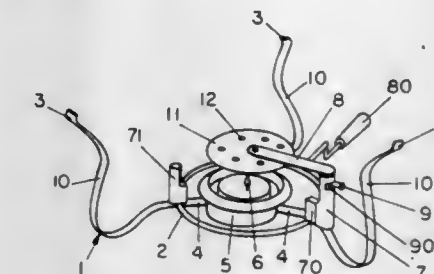
Int. Cl.³ F24C 5/04; A47G 23/02

U.S. Cl. 126—256

14 Claims



retor, the manifold being branched to separately deliver portions of said mixture to said prime mover and to said pressurizer, a supply line for delivering the pressurized mixture from the pressurizer to the inlet port of the burner element, and an adjustable valve in the supply line.



4,432,337

METHOD AND APPARATUS FOR EFFICIENTLY CAPTURING AND DISTRIBUTING HEAT PRODUCED BY GAS LOGS

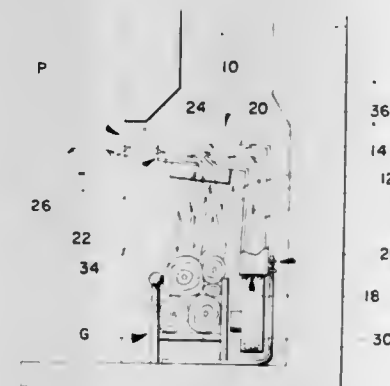
Willis H. Gregory, Rte. 2, Angier, N.C. 27501

Filed May 8, 1981, Ser. No. 261,880

Int. Cl.³ F24B 7/00

U.S. Cl. 126—121

2 Claims



1. An apparatus for use in conjunction with a fireplace having gas logs for effectively receiving heat generated by said gas logs and disbursing the same outwardly from said fireplace in a forced air fashion, comprising:

- (a) a duct structure adapted to be situated within a fireplace, said duct structure having:
 - (i) an inlet end and exhaust end;
 - (ii) an intermediate duct portion disposed between said inlet and exhaust ends and normally assuming a position over said gas logs when said duct structure is situated in said fireplace;
 - (iii) an opening formed in and across a selected area of said intermediate duct portion over the area normally occupied by said gas logs; and
 - (iv) an inclined plate extending generally over said opening at an incline in the general direction of air passing within said duct structure; and
- (b) fan means operatively associated with said duct structure for generating and directing a system of air into said inlet end and causing the system of air to move through said duct structure and to rush over said plate and the opening underlying said plate whereby to draw heated air from said gas logs into said duct structure opening to combine with said system of air generated by said fan means to form a warm system of air that is exhausted out said exhaust end of said duct structure into a surrounding area about said fireplace.

4,432,339

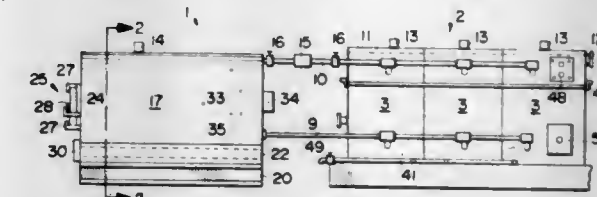
SOLID FUEL BURNING HEATING SYSTEM

Carlton A. Hebert, R.F.D. #1, Box 430 (Starks), Anson, Me. 04911

Continuation-in-part of Ser. No. 157,074, Jun. 6, 1980, abandoned. This application Jan. 24, 1983, Ser. No. 460,174
Int. Cl.³ F24B 9/00

U.S. Cl. 126—368

20 Claims



1. A solid fuel burning heating system, comprising furnace means including a firebox, water jacket means having a given water volume encasing said firebox and including an inner jacket wall forming a heat exchange surface for separating water in said water jacket means from the interior of said firebox means, separate hot water storage tank means having a volume which is substantially larger than said given water volume in said water jacket means, first pipe means (9) connecting said water jacket means (4) to said hot water storage tank means (3) at a first relatively low elevational level, second

pipe means (10) connecting said water jacket means to said hot water storage tank means at a second elevational level sufficiently higher than said first low elevational level yet below the water level in said hot water storage tank means for assuring a gravity water circulation flow between said water jacket means and said hot water storage tank means, said water jacket means, said hot water storage tank means and said first and second pipe means forming an interconnected container system having a common water level (11), door means including a door opening operatively connected to said firebox means for charging fuel into said firebox means, flue discharge means operatively connecting said firebox means to a chimney, and vent means operatively connecting the entire interconnected container system at all times during its operation to the atmosphere at a third elevational level located above said common water level (11) in said interconnected container system to assure said gravity water circulation flow.

4,432,340

ENERGY SAVING HEATING VESSEL

Louis A. Conant; Wilbur M. Bolton, both of Rochester, and James E. Wilson, Livonia, all of N.Y., assignors to Intertec Associates Inc., Rochester, N.Y.

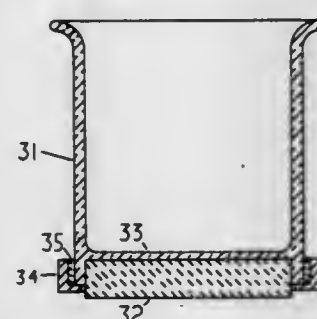
Continuation of Ser. No. 207,082, Nov. 14, 1980, abandoned.

This application Oct. 5, 1982, Ser. No. 432,629

Int. Cl.³ A47J 27/00

U.S. Cl. 126—390

12 Claims



1. An energy efficient heating vessel having thermally insulative sidewalls of a plastic material, and a thermally conductive bottom, said bottom including:

an inner film of a plastic material integral with said sidewalls, said film being thin for minimal resistance to heat transfer but of sufficient substance as to be liquid impervious to separate liquid from said conductive bottom, and an outer layer of thermally conductive graphitic material in thermal contact with and supporting said inner film, and adapted for thermal contact with a heating surface, said vessel effective to transmit heat from said heating surface through said bottom to the contents of said vessel, and to retard the transfer of heat from said contents through said sidewalls, for enhanced efficiency of liquid heating.

4,432,341

SOLAR HEATER AND ROOF ATTACHMENT MEANS

Gary L. Howe, Mankato, and Samuel G. Koutavas, Faribault, both of Minn., assignors to Future Tech, Inc., Mankato, Minn.

Continuation-in-part of Ser. No. 375,366, May 6, 1982, abandoned. This application May 5, 1983, Ser. No. 489,867

Int. Cl.³ F24J 3/02

U.S. Cl. 126—417

13 Claims

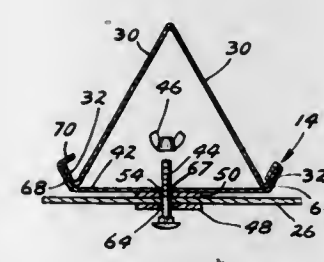
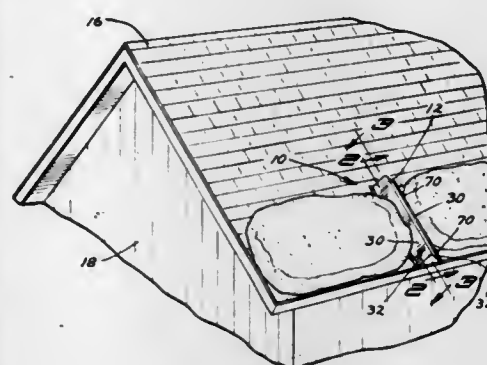
1. A solar heater and deicer for use on a slanted roof includes:

A. a solar collector including two elongated solar panels of heat conductive material fixedly connected to each other along first edges of each to lie in angular relation to each other;

B. said panels each being provided with an upturned gutter

portion along a second edge thereof parallel to and opposite the first edge;

C. each gutter portion lying in acute angular relation to its panel and extending in direction away from the other panel; and



D. roof attachment means to support the solar collector in slightly spaced, parallel relation to a slanted roof to have a first end of the collector in adjacent relation to a bottom edge of the roof and a second end of the collector higher up the roof.

4,432,342

INFLATABLE SOLAR COLLECTOR

Jean Lucas, Antony, and Lancine Sylla, Korotoumou, both of France, assignors to Centre National D'Etudes et D'Experimentation de Machinisme Agricole, Antony, France

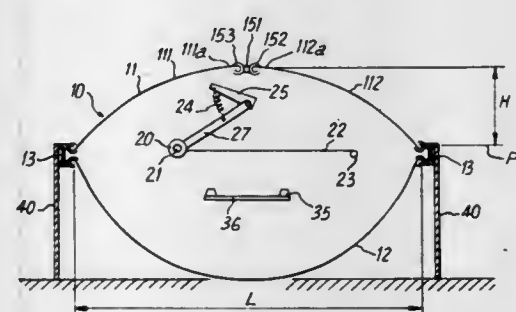
Filed Dec. 1, 1980, Ser. No. 212,191

Claims priority, application France, Nov. 30, 1979, 79 29576

Int. Cl.³ F24J 3/02

U.S. Cl. 126—418

7 Claims



1. In a solar collector of the mirror type which is shaped by superatmospheric gaseous pressure on its surface, comprising a rigid frame defining at least two longitudinal edges (13) with at least one sheet (12) secured by its edges on said longitudinal edges of said frame, the surface of said sheet (12) being reflective, a transparent element (11) which is at least partly spaced from said at least one sheet and is impervious to the superatmospheric fluid pressure that shapes said at least one sheet, and means closing the space between the transparent element and said at least one sheet and which enclose with said at least one sheet and transparent element the interior of the collector; the improvement in which

the frame is stationary, and a housing (40) which is rigid against the pressure of the wind and which comprises a

pair of upright stationary walls that are parallel to said longitudinal edges and that extend from the ground up to the edges of said at least one sheet (12).

4,432,343

SOLAR ENERGY COLLECTOR SYSTEM

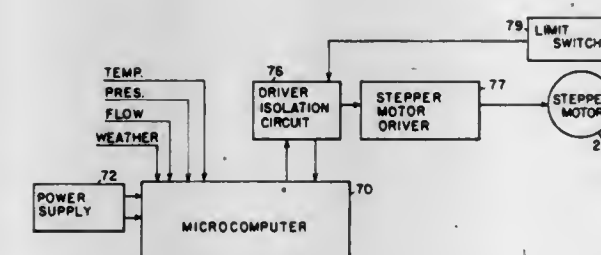
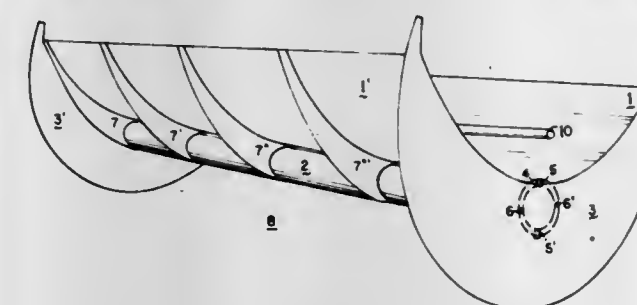
H. Norman Riise; George G. Goranson, both of La Canada, and Henry P. Karwan, Fountain Valley, all of Calif., assignors to Viking Solar Systems, Incorporated, Glendale, Calif.

Continuation of Ser. No. 126,243, Mar. 3, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 369,673

Int. Cl.³ F24J 3/02

U.S. Cl. 126—424

18 Claims



1. A solar energy collector system, comprising:

(a) a transmissive-reflective trough-like quasi-parabolic integrally rigid concentrator (8) having a linear focus,

(b) an elongated tubular support (2) having a sector (3) centrally supporting said concentrator, said tubular support attached to but optically removed from said concentrator,

(c) a geometrically fixed at one end highly-elongated stationary linear energy-receiver essentially wholly disposed at said linear focus, and having a hydraulic use circuit (61,62),

(d) elongated means-to-rotate (29,25) said concentrator about said energy-receiver, disposed at right-angles to said concentrator,

(e) a prime mover (24,24' or 52),

(f) means-to-couple (30,32) said prime mover to said sector (3) for the rotation of said concentrator, and

(g) microcomputer means (70) for control of said prime mover, including means, structured and programmed for fixed and variable parameters of spherical geometry relative to the rotation of the earth, for calculating the position of the sun and accounting for atmospheric refraction, and structural deflections, according to the program equation $ROT = -TAN^{-1}(SJ/SI)$ to exclusively control said prime mover and to maintain an image of the sun essentially wholly upon said energy-receiver by essentially continuous recomputation.

4,432,344

METHOD AND APPARATUS FOR SOLAR DESTRUCTION OF TOXIC AND HAZARDOUS MATERIALS

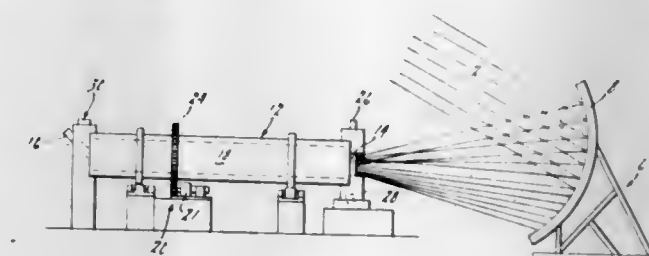
James E. Bennington, Ann Arbor, Mich.; Gerald E. Bennington, Vienna, Va.; Frederick E. Bernardin, Jr.; Donald J. Patterson, both of Ann Arbor, Mich., and Walter J. Weber, Jr., Ypsilanti, Mich., assignors to Focus Environmental Systems, Ann Arbor, Mich.

Filed Jul. 15, 1981, Ser. No. 283,642

Int. Cl.³ F24J 3/02

U.S. Cl. 126—438

11 Claims



1. In a system including a working chamber, a method for destruction of toxic and hazardous materials, comprising: feeding said materials into a working chamber; collecting and filtering solar energy and focusing said filtered solar energy into said working chamber to directly act upon said materials in said working chamber; and exhausting the byproducts of said materials out of said working chamber while minimizing any need for any large volumes of gaseous throughput through said working chamber.

4. An apparatus for the destruction of toxic and hazardous materials, said materials having specific chemical bonding energies, comprising:

a reactor comprising a reaction chamber, including means for withdrawing material from said chamber and having a reaction zone within said chamber;

a transparent window set in one surface of said reactor, said window being transparent to solar radiation at the wavelengths corresponding to the bonding energies of said materials;

means for collecting solar radiation, directing solar radiation into said reaction chamber through said transparent window, concentrating said solar radiation to within said reaction zone, and focusing solar energy in said zone; and means for feeding toxic or hazardous materials primarily by gravity into the interior of said reactor at said reactor zone;

wherein the high intensity specific wavelength energy present in said concentrated sunlight breaks chemical bonds in said toxic or hazardous materials and accelerates decomposition of the chemical compounds of said toxic or hazardous materials, degrading said compounds in direct proportion to the original concentration of the compounds.

4,432,345

RECEIVER FOR SOLAR ENERGY COLLECTOR HAVING IMPROVED APERTURE ASPECT

William R. McIntire, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,308

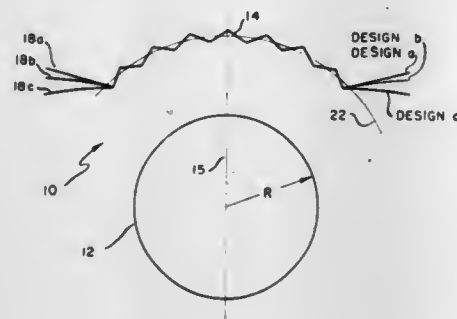
Int. Cl.³ F24J 3/02

U.S. Cl. 126—439

10 Claims

1. In a solar energy collector having a primary concentrator which includes a rim portion and a center portion, said primary concentrator directing solar energy toward a solar energy receiver which comprises an absorber means having an apparatus aperture when viewed from the primary concentrator, said solar energy receiver further comprising:

a secondary concentrator located adjacent said absorber means for reflecting solar energy directed from the primary concentrator onto said absorber means, said secondary concentrator including a reflector surface having a predetermined contour and at least one edge portion; and



a reflector wing located adjacent said edge portion of the contour of the reflector surface and outwardly bent therefrom so as to lie at an angle to the extended contour of said reflector surface of said second concentrator, to increase the apparent aperture of said absorber means when viewed from said rim portion of said primary concentrator.

4,432,346 SOLAR COLLECTOR

Björn V. Westerstrandh, Rotxyvägen 7, S-752 48 Uppsala, and Arne V. Karlsson, Näckrosgratan 7C, S-754 37 Uppsala, both of Sweden

PCT No. PCT/SE80/00252, § 371 Date Jun. 17, 1981, § 102(e) Date Jun. 3, 1981, PCT Pub. No. WO81/01188, PCT Pub. Date Apr. 30, 1981

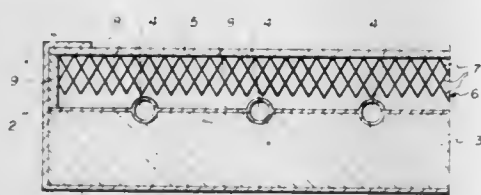
PCT Filed Oct. 16, 1980, Ser. No. 268,986

Claims priority, application Sweden, Oct. 17, 1979, 7908582

Int. Cl.³ F24J 3/02

U.S. Cl. 126—445

9 Claims

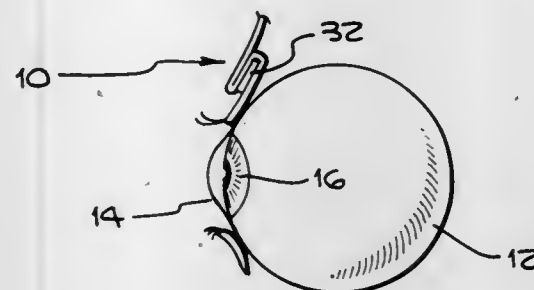


1. In a solar collector comprising a solar radiation absorbing surface means for transferring heat from the absorbing surface to at least one heat carrying fluid, a transparent cover spaced apart from the absorbing surface, and a convection and heat radiation suppressing structure positioned between the absorbing surface and the transparent cover, the improvement comprising, said convection and heat radiation suppressing structure being substantially self-supporting and comprising at least two thin, corrugated transparent foils numbering in a range of from 2 to about 20 foils placed adjacent to and on top of each other, such that adjacent foils define between themselves a system of long narrow ducts extending parallel to the absorbing surface, with the corrugations of adjacent foils extending at substantially right angles to each other; said means for transferring heat comprising at least one tube in heat exchange contact with the absorbing surface, said at least one heat carrying fluid comprising a liquid passing through said at least one tube, and/or a gas passing through the ducts of said foil structure.

4,432,347
COSMETIC TAPE AND METHOD
Harold D. Clavin, 2001 Santa Monica Blvd., Suite 890-West, Santa Monica, Calif. 90404
Filed Nov. 12, 1982, Ser. No. 440,846
Int. Cl.³ A61B 17/00

U.S. Cl. 128—1 R

6 Claims



1. A method for non-surgically taking a tuck in loose skin in an eyelid comprising the steps of:
(a) attaching one side of an adhesive strip having adhesive on both sides along one side of the intended tuck area; and
(b) folding the skin of the intended tuck that is not yet adheased over the adhesive strip and attaching it to the exposed adhesive on the other side of the adhesive strip.

4,432,348
ENHANCER OF ANTI-TUMOR EFFECT
Shigekazu Nakatsugawa, Kyoto, Japan, assignor to Yamasa Shoyu Kabushiki Kaisha, Japan
Filed Sep. 9, 1981, Ser. No. 300,977
Claims priority, application Japan, Sep. 17, 1980, 55-128001
Int. Cl.³ A61K 31/505

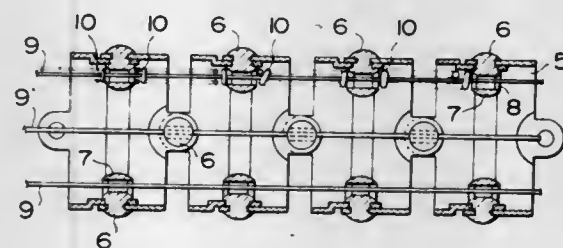
U.S. Cl. 128—1.1

12 Claims

1. A method of enhancement of anti-tumor effect which comprises administering to a tumor-bearing animal under an anti-tumor treatment an enhancer of the anti-tumor effect selected from the group consisting of 3'-deoxyguanosine-5'-monophosphate, 3'-deoxyadenosine-5'-monophosphate and pharmaceutically-acceptable salts thereof.

4,432,349
ARTICULATED TUBE STRUCTURE FOR USE IN AN ENDOSCOPE
Susumu Oshiro, Iwatsuki, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan
Continuation of Ser. No. 136,727, Apr. 2, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,602
Claims priority, application Japan, Apr. 3, 1979, 54-43183
Int. Cl.³ A61B 1/00; F16L 11/00
U.S. Cl. 128—4

2 Claims



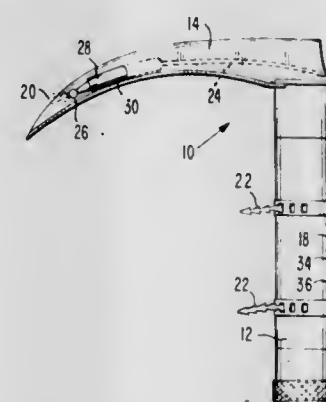
1. An articulated tube structure for use in an endoscope connected between a head for inspection and a flexible tube which is connected with a manipulating box, said articulated tube structure comprising a number of elementary tubes connected in end-to-end relationship to form an articulated tube, connecting means for connecting the elementary tubes in such a manner that the articulated tube composed thereof is bend-

able, spring means for urging the articulated tube to bend in one direction, and manipulating means including pull wires extending through the elementary tubes along several sides of the articulated tube for bending the articulated tube in one direction by pulling one of the pull wires on one side of the tube and in another direction by pulling another pull wire on another side thereof, for allowing the articulated tube to bend by the force of said spring means, said spring means comprising a number of coil springs each inserted between adjacent elementary tubes, one coil spring being close to the head and another close to the manipulating box, the spring constant of the coil spring close to the head being larger than that of the coil spring close to the manipulating box.

4,432,350
MEANS FOR APPLYING TOPICAL ANESTHESIA FOR USE WITH A LARYNGOSCOPE
Alan J. Breslau, 11 Rust Hill Rd., and Bernard Broad, 2 Silverbell Rd., both of Levittown, Pa. 19056
Filed Apr. 17, 1981, Ser. No. 255,125
Int. Cl.³ A61B 1/24

U.S. Cl. 128—10

16 Claims



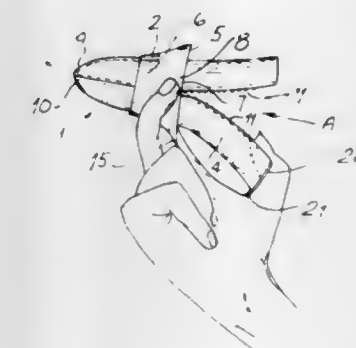
1. In laryngoscope having a blade and a handle, the improvement comprising means for applying topical anesthesia, said application means comprising:

- a reservoir means for containing a predetermined amount of topical anesthetic fluid therein, said reservoir means defining a fluid chamber therein to hold the topical anesthetic fluid;
- an attachment means for detachably securing said reservoir means directly to the handle of said laryngoscope;
- a supply conduit means being attached to said reservoir means at a particular point and extending outwardly therefrom, said supply conduit means having two ends, one of which is at the point of attachment with respect to the reservoir means, said supply conduit means being in fluid flow communication with respect to said fluid chamber and adapted to receive topical anesthetic fluid therein for movement therealong;
- a conduit tip means located at the end of said supply conduit means opposite from the point of attachment with respect to said reservoir means, said conduit tip means adapted to release topical anesthetic fluid received from said supply conduit means;
- a retainer means attached with respect to said blade of said laryngoscope and detachably securing said supply conduit means with respect thereto;
- a delivery means being engageable with respect to said reservoir means to compress said fluid chamber defined therein to cause the topical anesthetic fluid to be expelled from said fluid chamber through said supply conduit means for release through said conduit tip means.

4,432,351
VAGINAL SPECULUM
Marto J. Hoary, Eyrecourt, Ireland, assignor to Institute for Industrial Research and Standards, Dublin, Ireland
Filed Jun. 16, 1981, Ser. No. 274,317
Claims priority, application Ireland, Jun. 26, 1980, 1324/80
Int. Cl.³ A61B 1/32

U.S. Cl. 128—17

8 Claims

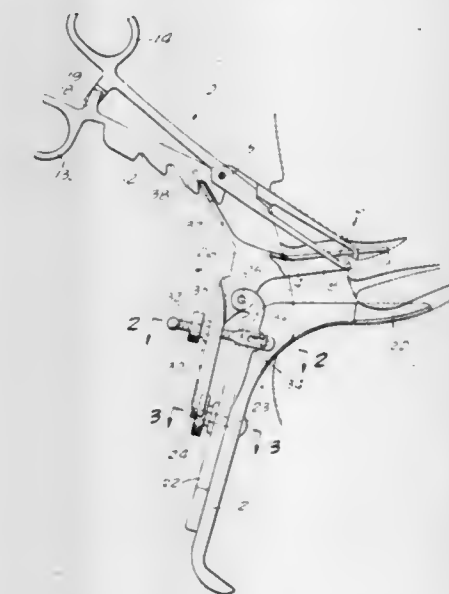


1. A vaginal speculum comprising:
an introitus engaging ring member having a longitudinally extending outer surface to project partly into the introitus, and
a pair of elongated vagina engaging members slideable longitudinally through the introitus engaging ring member to engage the interior of the vagina, at least one of the vagina engaging members being of arcuate shape in longitudinal cross-section over at least a portion of its length so that on sliding longitudinally through the ring member the vagina engaging members move apart relative to one another to engage the vagina.

4,432,352
CERVICAL TRACTION KIT
Richard D. Wineland, 500 E. Olive Ave., Burbank, Calif. 91501
Filed Mar. 8, 1982, Ser. No. 354,921
Int. Cl.³ A61B 1/32

U.S. Cl. 128—17

9 Claims



1. A speculum comprising:
first and second elongated blades extending lengthwise of one another each having a forward and a rear end and including means interconnecting the same for movement of the forward ends thereof toward and away from one another, said second blade being substantially shorter than said first blade and having a slot extending lengthwise thereof and opening through the forward end of said second blade;
the rear ends of said blades including handgrip means manipulatable to move said blades relative to one another; and

means on said second blade adapted to engage a tenaculum and support the same in an inclined position relative to and lengthwise of said second blade with the tenaculum jaws extending through said slot and generally into the space between the forward ends of said first and second blades.

4,432,353

KINETIC TREATMENT PLATFORM

John H. Vrzalik, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

Filed Jan. 19, 1981, Ser. No. 226,118

Int. Cl.³ A61H 1/00

U.S. Cl. 128—24 R

16 Claims



1. A therapeutic bed for immobilized patients having an oscillating patient support platform mounted for controlled oscillation about longitudinally extending axes, comprising: a releasable locking means connecting a drive means with a patient support platform for controllably oscillating the platform about a longitudinal extending axis thereof; said releasable locking means having releasing and engaging settings so that it can be placed in either setting at any position of oscillation of the platform to release or engage the drive means and the patient support platform when friction forces acting on the releasable locking means are relieved.

4,432,354

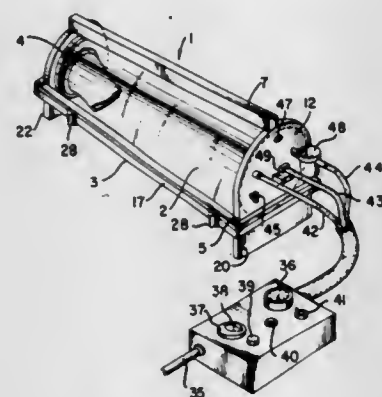
HYPERBARIC OXYGEN CHAMBER WITH FLUIDIC CONTROL

Robert A. Lasley, 11 Wardell Ave., Rumson, N.J. 01760
Continuation of Ser. No. 42,114, May 24, 1979, Pat. No. 4,296,743. This application Mar. 31, 1981, Ser. No. 249,482
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.³ A61H 31/02

U.S. Cl. 128—30

3 Claims



1. A low pressure hyperbaric device for treatment of a patient comprising a two part chamber, means for holding the two parts in assembled and sealed condition, the chamber having an entrance adapted to allow the introduction of a body part, means associated with the entrance to seal the body part to thereby provide an air tight chamber, a pressurized source of gas and means for cyclically pressurizing the hyperbaric cham-

ber with gas and exhausting the hyperbaric chamber said means including:

timing means connected in series with the pressurized source of gas for controlling on-off gas flow for the overall treatment time, valve means connected to the flow from the timing means, said valve means being moveable to the moveable position upon receiving the gas flow from the timing means, a flow control means connected on its inlet side to the valve means and to the hyperbaric chamber on its outlet side, said flow control means controlling flow into the hyperbaric chamber, an exhaust valve in fluid communication with the chamber, a second flow line extending from the valve means to the exhaust valve for the hyperbaric chamber, pressure control means having an inlet in communication with the pressure in the hyperbaric chamber and an outlet in communication with the valve means whereby when the prescribed pressure is reached within the hyperbaric chamber the pressure control means closes the valve means thereby releasing the exhaust valve so that the hyperbaric chamber pressure will be exhausted and whereby upon the return of the chamber to ambient pressure the valve means is returned to open position for a new cycle.

4,432,355

HYDROMECHANICAL MASSAGING DEVICE

Rene Delluc, 2, Square du Berry, 91300 Massy, France

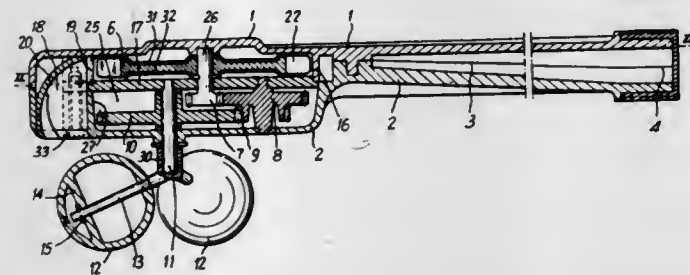
Filed Feb. 10, 1982, Ser. No. 347,677

Claims priority, application France, Mar. 10, 1981, 81 04739

Int. Cl.³ A61H 7/00

U.S. Cl. 128—56

11 Claims



1. An hydromechanical massaging device for simultaneously applying mechanical and hydrotherapeutic massage to a patient's skin, comprising freely rotating balls carried on individual studs driven by a common shaft and at least one guided stream of water, and the features which consist of a shaft (11) driven by means of a paddle wheel (6) energized by water flowing at a pressure comprised between approximately 4 and 8 bars (58-116 psi) through a distributor (5) comprising a slide wall (16) which extends along a tangent to the circular path of the tips of the vanes (22) of said wheel (6) so as to form an extension of an annular cavity portion comprised between the periphery of the turbine wheel (6), a platen (17) forming the bottom of the turbine chamber and an upper wall (1), said platen (17) and said upper wall (1) respectively lying in close vicinity to the lower and upper edges of the vanes (22) of the turbine wheel, said side wall (16) gradually spreading out away from said annular portion so as to guide the water stream which has been driving the wheel (6) along a path which brings it directly to an exhaust channel (18) which is separated from, and located downstream from, the turbine wheel, and which exhausts a jet of water external to the device in a direction toward said balls and with sufficient kinetic energy to apply an hydrotherapeutic massage to the patient's skin; and a further feature consisting in transmitting the rotary motion of the turbine wheel (6) to the drive shaft (11) driving the rotary balls (12) by means of a reduction gear linking the shaft (26) of said wheel with said drive shaft (11), said reduction gear being isolated from the water circuit.

4,432,356

THERAPEUTIC TRACTION APPARATUS WITH MONITORING CIRCUIT MEANS

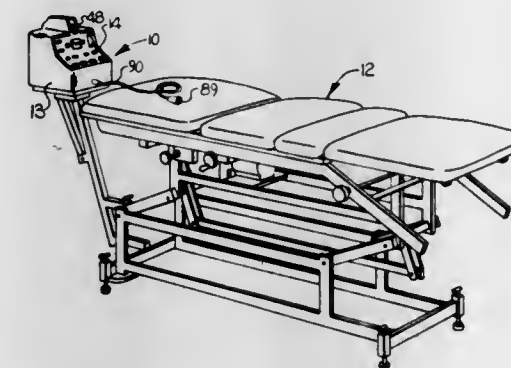
Ivan D. Sarrell, Rising Fawn, Ga.; David B. Bley, Chattanooga, and David W. Tibbets, Hixson, both of Tenn., assignors to Chattanooga Corporation, Chattanooga, Tenn.

Filed Sep. 5, 1980, Ser. No. 184,379

Int. Cl.³ A61H 1/02

U.S. Cl. 128—75

8 Claims



1. In a therapeutic traction applying apparatus adapted to intermittently apply a traction force to the body of a patient, and comprising a rotatably mounted drum, a length of cord having one end wound upon said drum and an opposite end adapted to be affixed to a traction appliance positioned on a patient, power means for rotating said drum in either direction to thereby selectively either wind-up or wind-down the cord on said drum, and control means for cyclically reversing the direction of rotation of said drum upon predetermined minimum and maximum forces being present in said cord, the improvement wherein said control means comprises

means including a control transducer having a resistance component for continuously monitoring the tension in said cord and for generating an electrical output signal (Eo) which is linearly proportional to such tension, first force controlling means including a second transducer having a resistance component for generating an electrical output signal (Emax) representing a desired maximum tension in said cord,

second force controlling means including a third transducer having a resistance component for generating an electrical output signal (Emin) representing a desired minimum tension in said cord,

comparator circuit means for cyclically connecting said power means for rotation of said drum in the wind-up direction upon Eo equaling or being less than Emin, and connecting said power means for rotation of said drum in the wind-down direction upon Eo equaling or exceeding Emax, and

monitoring circuit means for detecting the failure of the resistance component of any one of said three transducers, and for generating an output signal upon such failure being detected which is operable to preclude operation of said power means in the wind-up direction.

4,432,357

CONDOM WITH RHEOPEXIC FILLED DEFORMABLE CHAMBER

Mark L. Pomeranz, 9760 Viceroy Dr. East, Jacksonville, Fla. 32217

Filed Jun. 15, 1982, Ser. No. 388,107

Int. Cl.³ A61F 5/00

U.S. Cl. 128—79

17 Claims

16. A penis stiffening device comprising: means defining an elongated generally tubular member of thin, flexible material; means defining at least one deformable sealed chamber in said elongated tubular member; rheopexic fluid filled in said at least one deformable sealed chamber such that when said deformable sealed chamber is deformed during use, shear stress is applied to said

rheopexic fluid due to deformation of said sealed chamber to cause said rheopexic fluid to increase its consistency as a function of increasing shear stress supplied thereto,



thereby providing a stiffening effect to said elongated tubular member; and means for coupling said elongated tubular member to a penis.

4,432,358

COMPRESSION HIP SCREW APPARATUS

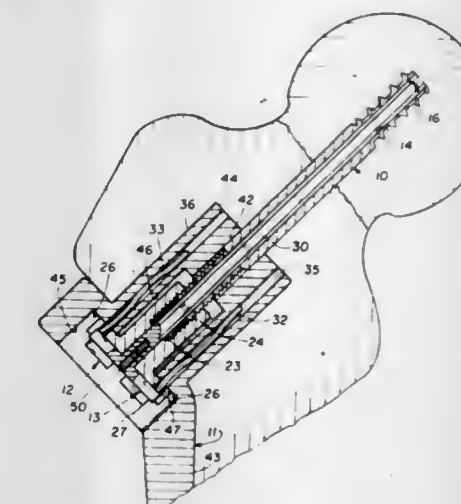
Irving E. Fixel, 111 N. 31st Ave., Hollywood, Fla. 33021

Filed Jan. 22, 1982, Ser. No. 341,863

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 BB

8 Claims



1. Compression hip screw apparatus adapted for internal fixation and compression of a fractured portion of the proximal femur comprising:

plate and barrel means for attaching said apparatus to said femur wherein said barrel means includes a smooth bore therethrough;

screw means for internally fixing the fractured portion of said femur, said screw means including a smooth cylindrical outer surface which is slidably received within said smooth bore in said plate and barrel means;

compressing means for compressing said fractured portion to said femur, said compressing means being adjustably attached to an end of said screw means; and,

locking means for simultaneously locking together said plate and barrel means, said compressing means, and said screw means.

4,432,359

EQUIPMENT FOR HANDLING INVALIDS AND THE DISABLED

David R. James, Glenyard, England, assignor to James Industries Limited, Gloucester, England

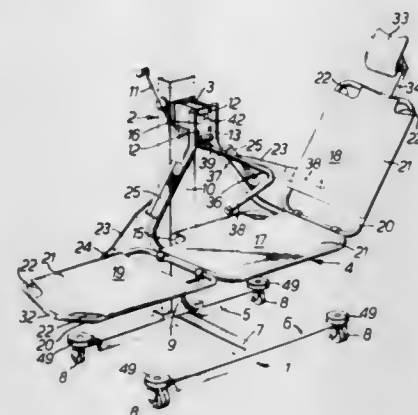
Filed May 12, 1982, Ser. No. 377,358

Claims priority, application United Kingdom, May 16, 1981, 8115068

Int. Cl.³ A61F 13/00

U.S. Cl. 128—134

12 Claims



1. Equipment for handling invalids and disabled persons, comprising an articulated patient support structure with a central section and end sections separately adjustable relative to the central section for supporting the patient either lying down or seated so as to face, alternatively, in either direction longitudinally of the support structure, and restraining means with a first portion to extend laterally above said central section of the support structure with a patient seated thereon and a sideways extending retaining portion to extend alongside the body of the seated patient with said first portion of the restraining means extending in front of the body and above the legs of the patient, said restraining means being such that when in an operative position the restraining portion thereof is rotatably through an angle such that it can alternatively extend to one side or the other according to the direction in which the seated patient faces and said restraining means being so mounted as to be rotatable upwardly as a whole from said operative position to a raised inoperative position at one side of the support structure.

4,432,360

INTERACTIVE PROGRAMMER FOR BIOMEDICAL IMPLANTABLE DEVICES

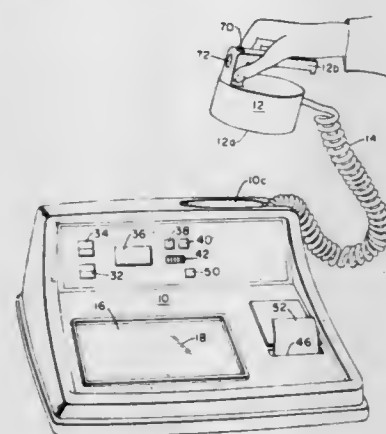
Van E. Mumford; Louis Sasmor, both of Miami, and Edward A. Schroepel, Miramar, all of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jul. 6, 1981, Ser. No. 281,011

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PG

16 Claims



1. An interactive programmer console for programming implantable biomedical devices by enabling the operator to

select among a number of parameter options including parameters and parameter values and then executing the reprogramming of the implant in accordance with the selected parameter options, comprising

a display screen,
a transparent switch matrix sheet covering said screen and having a plurality of transparent touch sensitive switch locations of undefined functionality distributed over the surface of the screen,

means for displaying on said screen a selectable set of parameter options by simultaneously generating a plurality of parameter option messages on the screen with juxtaposed targets over corresponding arbitrary switch locations so as to define the functionality of the corresponding set of switch locations,

means responsive to operator actuation of any switch location for ignoring such actuation unless a target is present at such location,

means responsive to operator actuation of a switch location at a target on said screen for registering the selected parameter option indicated by the juxtaposed message on the screen,

memory means for addressably storing and retrieving parameter data, and

means responsive to an operator command for encoding and transmitting parameter data from said memory means corresponding to at least one parameter option selected by actuation of the temporarily corresponding switch, in a form capable of being received and decoded by said implant for executing the reprogramming of said implant in accordance with the selected parameter option, whereby individual switch locations in said switch matrix can be redefined under control of the screen to designate different functions to accommodate different sets of programmable options.

4,432,361

PORTABLE CONTINUOUSLY SELF-MONITORING BONE HEALING DEVICE AND METHOD

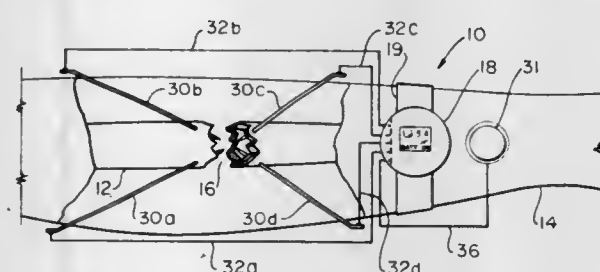
James M. Christensen, San Diego, and Allan H. Mizoguchi, Del Mar, both of Calif., assignors to Sutter Biomedical Inc., San Diego, Calif.

Filed Jan. 18, 1982, Ser. No. 340,520

Int. Cl.³ A61N 1/20

U.S. Cl. 128—419 F

5 Claims



1. A completely portable, continuously self-monitoring device for expediting the healing of bone or soft tissue fractures or defects in a patient, said device comprising: an electrical power supply, a plurality of first electrodes, a second electrode and circuit means cooperating with said power supply for applying a regulated flow of current between each of said first electrodes and said second electrode through the fracture or defect site in the patient by the appropriate placement of said electrodes relative to said site; and monitoring means cooperating with said power supply, all of said electrodes and said circuit means during operation of the device for continuously detecting and visually indicating whether or not said power supply is in operating order and whether or not a minimum predetermined amount of current is flowing between each of said first electrodes and said second electrode, said monitoring

means including means for visually indicating whether or not said power supply is in operating order and whether or not current is flowing between each of said first electrodes and said second electrode, said visual indicating means including fixed indicia representing that the power supply is on and representing the circuit paths between corresponding first electrodes and the second electrode so long as the power supply is in operating order and, if said power supply is in operating order, changeable indicia adjacent the fixed indicia for indicating whether or not at least said predetermined amount of current is flowing between each of said first electrodes and said second electrode.

4,432,362

ATRIAL-BASED, ATRIAL-VENTRICULAR SEQUENTIAL CARDIAC PACER

Michael E. Leckrone, Indianapolis, Ind., and James P. Martucci, Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

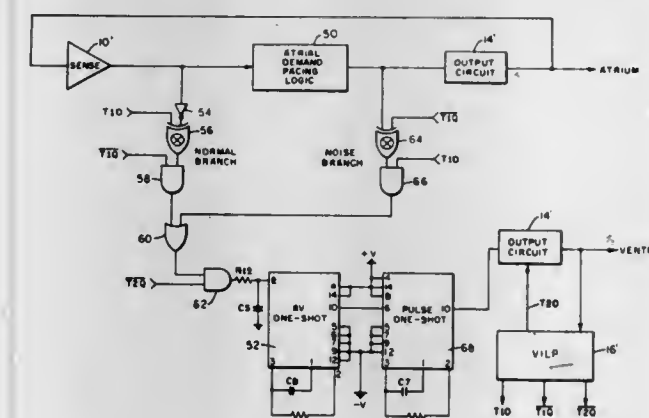
Division of Ser. No. 153,422, May 27, 1980, Pat. No. 4,386,610.

This application Mar. 8, 1982, Ser. No. 355,367

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PG

13 Claims



1. A fully implantable AV sequential pacer including an implantable enclosure with electronic circuitry, wherein the improvement further comprises

electrical means defining an atrial channel and a ventricular channel,

means for repeatedly timing a fixed rate interval and for issuing an output pulse at a predetermined point therein, means for resetting said timing means to restart the timing of said interval in response to a sensed natural electrical signal on the atrial channel,

means for stimulating the atria in accordance with said timing means output,

means responsive to a sensed natural electrical signal on the atrial channel for stimulating the ventricles following a predetermined AV delay in the absence of ventricular activity for a predetermined inhibit period.

4,432,363

APPARATUS FOR TRANSMITTING ENERGY TO A DEVICE IMPLANTED IN A LIVING BODY

Makoto Kakegawa, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Ootawara, Japan

Filed Jan. 5, 1981, Ser. No. 222,536

Claims priority, application Japan, Jan. 31, 1980, 55-9307

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PS

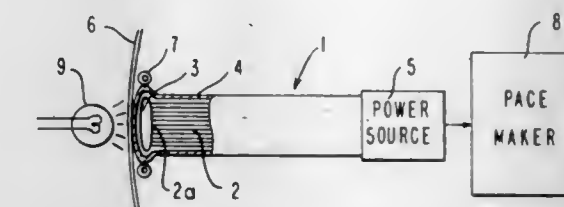
1 Claim

1. Apparatus for supplying energy from a source outside a living body to a device having an energy supply terminal implanted in the body comprising:

means having an input adjacent the inside surface of the skin of the living body and including a bundle of optical fibers for transmitting light energy from said input to an output,

said input also including a condensing lens for transmitting said light energy to said bundle of optical fibers, a protective membrane covering said bundle of optical fibers and said condensing lens;

an annular projection formed in said protective membrane and surrounding said condensing lens for facilitating the attachment of the apparatus to the inside surface of the skin by sewing;



means for receiving said light energy from said output, for converting said light energy to electrical energy, and for applying said electrical energy directly to the energy supply terminal of said implanted device; and energy source means for applying light energy to the outside surface of the skin of the living body opposite said input of the energy-transmitting means, said applied light energy penetrating the skin without rupturing the skin and entering said input.

4,432,364

BRASSIERE

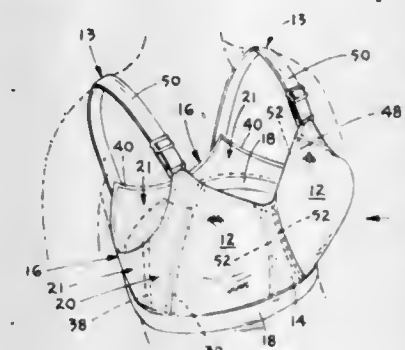
Jeanne M. Martini, Brooklyn, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed May 13, 1983, Ser. No. 494,341

Int. Cl.³ A41C 3/00

U.S. Cl. 128—484

10 Claims



1. A brassiere construction comprising a pair of individual breast-receiving cups, each terminating in an apex at the top, means joining together said breast cups, a pair of panel means connected respectively to outer marginal edges of the breast cups for securing the brassiere in encircling relation to a wearer, each of said panel means including a first section secured to an adjacent breast cup and a second section extending around the side and to the back of a wearer, a pair of shoulder strap assemblies directly connected respectively to said pair of panel means, each shoulder strap assembly having a first portion coupled to said panel means first section adjacent a breast cup and a second portion attached to said panel means second section.

4,432,365

PHYSIOLOGICAL SENSING UNIT

Helmut Leist, Freiburg im Breisgau, Fed. Rep. of Germany, assignor to 501 Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

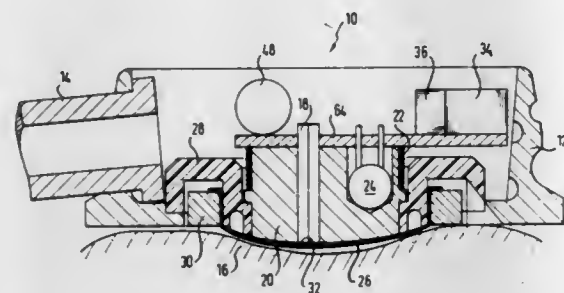
Filed Apr. 27, 1981, Ser. No. 257,804

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018863

Int. Cl.³ A61B 5/00

U.S. Cl. 128—635

12 Claims



1. A physiological, electrically heated thermostatically controlled sensing unit, comprising:

- a housing;
- a sensing element supported within the housing for application to the skin of a living being;
- an electric heater element located within the housing;
- first temperature-responsive switch means located in the housing and adapted for coupling to a control circuit remote from the sensing unit for maintaining the sensing unit at a preselected temperature level in conjunction with said heater element;
- a second switch for interrupting energization of the electric heater element;
- temperature-responsive control circuit means contained in the housing for operating the second switch to interrupt energization of the electric heater element if the temperature of the sensing unit exceeds the pre-selected temperature level to reach a predetermined threshold value;
- power supply means for the control circuit means;
- power supply means for the electric heater element; and
- means for coupling the sensing element to monitoring equipment.

4,432,366

REFERENCE ELECTRODE CATHETER

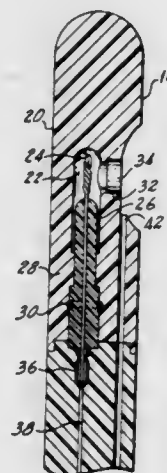
Gary S. Margules, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Nov. 27, 1981, Ser. No. 325,402

Int. Cl.³ A61B 5/00

U.S. Cl. 128—635

18 Claims



1. A reference electrode catheter for use in potentiometric electroanalysis in body fluids comprising:

- an elongated cylindrical tubing having proximal and distal

ends and having a passageway extending throughout the entire length thereof;

- a hollow cylindrical housing member being mounted at the distal end of said tubing and having enclosed ends to thereby form a sealed chamber within said housing member, an aperture extending through a wall of said housing member and communicating with said chamber;
- an electrode positioned within said chamber;
- a conductive lead connected to said electrode and extending out of the housing member and through said passageway of said tubing to the proximal end of said tubing;
- retainer means positioned within said housing member for supporting said electrode;
- electrolytic material disposed within the chamber of the cylindrical housing member and in contact with said electrode; and,
- a biocompatible porous liquid junction comprised of a hydrogel being positioned across said aperture in said housing member so as to form an ion diffusion control barrier between body fluids and the electrolytic material within the chamber in said housing member for providing a stable liquid junction potential in body fluids to provide a substantially voltage stable reference electrode.

4,432,367

ELECTROCARDIOGRAPH RECEIVER

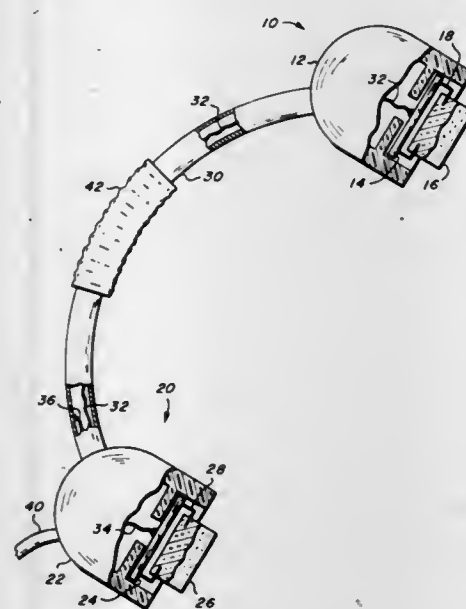
Gregory H. Piesinger, 6702 E. Cactus Rd., Scottsdale, Ariz. 85254

Filed Mar. 3, 1982, Ser. No. 354,373

Int. Cl.³ A61B 5/04

U.S. Cl. 128—639

3 Claims



1. An electrocardiograph receiver for receiving electric impulses produced by the heart muscle of an animal, said receiver comprising:

- a first and second electrode means each including an electrode and resilient porous sponge means adapted to absorb an electrically conducting liquid and positioned for completing electrical contact between the associated electrode and an animal's body when the electrode means is pressed thereagainst, said electrode means each further including a housing having the associated electrode fixedly engaged therein with the porous means maintained in proximity to the electrode and extending externally of said housing for providing contact with the animal's body;
- means mechanically connecting said first and second electrode means and fixedly positioning said electrode means in spaced apart relationship a distance at least as great as the span of the animal's heart muscle, said mechanical means including an elongated, semi-flexible tubular member having a housing of each electrode means affixed to each end thereof and forming a handle for pressing said

first and second electrode means against the body of the animal; and

means for electrically coupling the electrodes of said electrode means to an electrocardiograph.

4,432,368

AUTOMATIC ELECTRODE PLACEMENT DEVICE

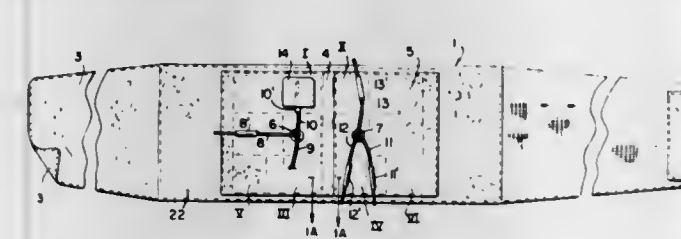
Allen S. Russek, Medford, N.Y., assignor to Wallant International Trade, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 190,242, Sep. 24, 1980, Pat. No. 4,381,012. This application Jun. 26, 1981, Ser. No. 277,940

Int. Cl.³ A61B 5/04

U.S. Cl. 128—644

11 Claims



1. A device for continuously fixed automatic anatomically correct placement of at least one electrode means against one or more predetermined portions of a body, said at least one electrode means being adapted to transmit electrical signals, said device comprising:

- a substantially non-stretchable first portion adapted to be placed against a body portion of a wearer, said first portion having at least one electrode means at at least one electrode receiving position thereon;
- means for electrically connecting said at least one electrode means to an electrical signal generating and/or signal receiving device;
- touch-type locating means on said first portion and being cooperable with a given body portion of a wearer, said given body portion of the wearer having touch locatable characteristics, for positively automatically locating said device relative to said given body portion of the wearer, said at least one electrode means being a corresponding substantially fixed distance from said locating means so as to be adjacent said one or more predetermined body portions of the wearer each and every time the device is mounted to the body of the wearer, said one or more predetermined body portions being substantially fixed distances from said given body portion which last mentioned fixed distances are substantially the same as respective first mentioned fixed distances; and
- means for removably securing said first portion to the body of the wearer with said touch-type locating means adjacent said given body portion of the wearer and with said at least one electrode means adjacent said one or more predetermined body portions of the wearer;
- said locating means comprising means for locating and abutting the sacro-coccygeal joint of a wearer.

4,432,369

ELECTROMAGNETIC SENSOR HAVING THREE ELECTRODES FOR MEASURING SIGNALS INDICATIVE OF A BIOLOGIC CONDITION

Kenneth G. Halvorsen, San Clemente, Calif., assignor to Medi-Tech, Incorporated, Watertown, Mass.

Filed Sep. 4, 1981, Ser. No. 299,628

Int. Cl.³ A61B 5/02

U.S. Cl. 128—653

8 Claims

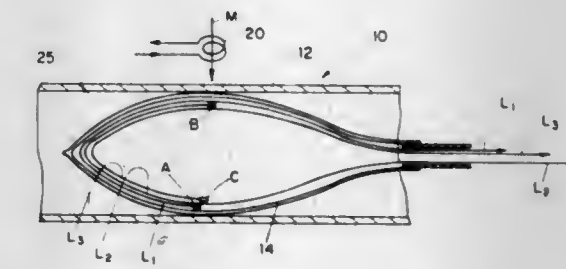
- 1. An electromagnetic sensor for measuring signals indicative of a biologic condition in a body channel, comprising:
- a loop-shaped flat frame having an open end and opposite closed end, and having sides laterally compressible and expansible in the plane of said frame for insertion into said

channel in compressed form and expansion therein to contact opposite sides of said channel;

first and second electrodes mounted at opposite sides of said frame and disposable at opposite sides of said channel when said frame is expanded therein for picking up signals generated across said channel;

a third electrode mounted at one side of said frame adjacent said first electrode for picking up signals generated at said one side of said channel;

magnetic means for generating a magnetic field orthogonal to said frame within said channel in the region of said electrodes;



wires connected to said electrodes respectively and carried by said frame, and extending out of said open end of said frame, whereby multiple signals picked up by said electrodes appear on said wires; and

circuit means connected to said wires externally of said frame to receive said picked up signals, said circuit means being adapted to mix first signals picked up across said first and second electrodes, with second signals picked up at said first and third electrode and neutralize one of said first and second signals, leaving only third signals to be passed to a signal measuring means.

4,432,370

METHOD AND MEANS FOR MINIMALLY INVASIVE ANGIOGRAPHY USING MONO-CHROMATIZED SYNCHROTRON RADIATION

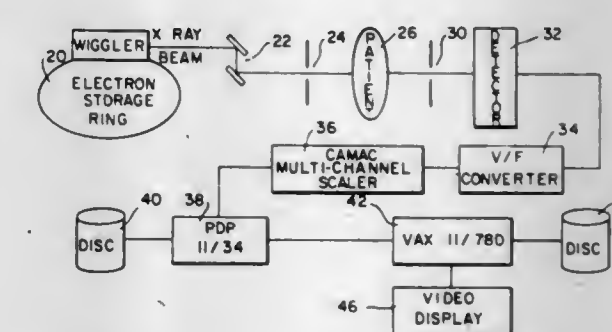
E. Barrie Hughes, Redwood City; Edward Rubenstein, Hillsborough, and Robert Hofstadter, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Oct. 14, 1981, Ser. No. 311,305

Int. Cl.³ A61B 6/00

U.S. Cl. 128—654

9 Claims



- 1. A method of visualizing arteries such as the coronary artery and other moving arteries comprising the steps of introducing a small quantity of an iodinated material into the blood stream of a patient,
- obtaining a first: chromatinized X-ray beam from an electron storage ring and auxiliary wiggler at an energy level slightly above 33.16 KeV,
- directing said first chromatinized X-ray beam through the patient and the blood vessel under examination,
- obtaining a first signal indicative of said first chromatinized X-ray beam as attenuated by said patient,
- obtaining a second chromatinized X-ray beam from an electron storage ring and auxiliary wiggler at an energy level slightly below 33.16 KeV,

directing said second chromatized X-ray beam through the patient and the blood vessel under examination, obtaining a second signal indicative of said second chromatized X-ray beam as attenuated by said patient, logarithmically subtracting said first signal from said second signal to obtain a third signal, and controlling a display with said third signal.

4,432,371

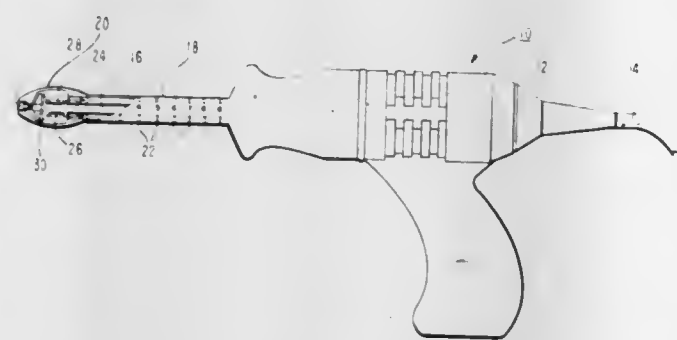
ULTRASOUND SCANHEAD

Robert R. McAusland, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.
Filed Jun. 10, 1982, Ser. No. 386,869

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660

1 Claim



1. An improved ultrasound scanhead of the type comprising a housing containing a motor; an armature extending from the motor; at least one ultrasound transducer mounted in a liquid containing transducer housing adjacent one end of the armature, wherein the improvement comprises an impeller comprising a substantially circular disk mounted on the end of said armature, said impeller including a plurality of vanes which extend outward from said disk for causing said liquid to rotate, there being a central opening between said vanes into which any bubbles contained within said liquid will be forced when said impeller rotates, said central opening not being within the zone of transmitted or received ultrasound energy.

4,432,372

TWO-LEAD POWER/SIGNAL MULTIPLEXED TRANSDUCER

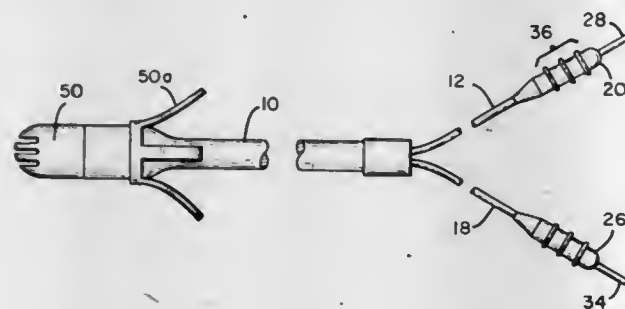
Paul P. Monroe, Janesville, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 28, 1981, Ser. No. 297,472

Int. Cl.³ A61B 5/02

U.S. Cl. 128—675

13 Claims



1. A body implantable transducer assembly comprising: a transducer head requiring an electrical power input and supplying an electrical output signal and comprising a piezoresistive resistance bridge having a temporary storage means whereby said electrical output signal is generated by said electrical power input as stored in said temporary storage means passing through said piezoresistive resistance bridge; means for processing said electrical output signal; means responsively coupled to said transducer head and said processing means for conducting said electrical output

signal between said transducer head and said processing means; and means responsively coupled to said conducting means for supplying said electrical power input to said transducer head via said conducting means.

4,432,373

ELECTRONIC BLOOD PRESSURE MEASURING APPARATUS

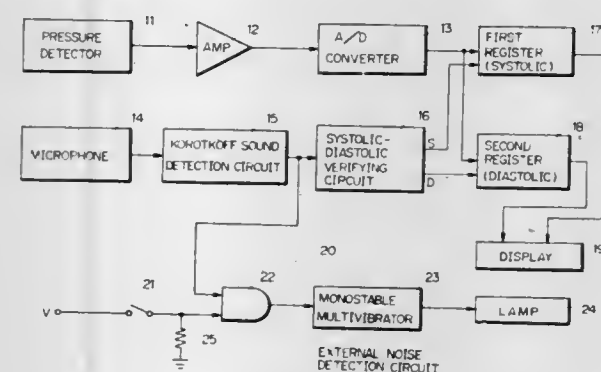
Hiroshi Ogawa, Nagaokakyo; Syozi Kimura, Kameoka, and Yoshinori Miyawaki, Yawata, all of Japan, assignors to Omron Tateisi Electronics Company, Hanazono, Japan
Continuation of Ser. No. 122,740, Feb. 19, 1980, abandoned.

This application Jan. 11, 1982, Ser. No. 338,255

Int. Cl.³ A61B 5/02

U.S. Cl. 128—680

3 Claims



1. In an electronic pressure measuring apparatus comprising pressure detecting means operatively connected with a cuff for detecting a pressure at the cuff, Korotkoff sound detecting means associated with the cuff for detecting any Korotkoff sound output signal and verifying means operative in response to the Korotkoff sound detecting means output signal generated by the Korotkoff sound detecting means for determining systolic and diastolic blood pressures,

the improvement comprising signal detecting means for detecting the generation of a Korotkoff sound detecting means output signal by said Korotkoff sound detecting means and generating a signal detecting means output signal and indicator means operative in response to said signal detecting means output signal for displaying the generation of said Korotkoff sound detecting means output signal,

wherein said signal detecting means includes a check switch and an AND circuit adapted to receive both an output signal from said check switch and said Korotkoff sound detecting means output signal,

the check switch further being adapted so that prior to a blood pressure measurement the check switch is closed and remains in an "on" position for a predetermined time period,

and wherein said signal detecting means further includes a display means operative in response to the AND circuit that signals the generation of said Korotkoff sound detecting means output signal by said indicator means as a warning signal of an improper measurement condition.

4,432,374

PLETHYSMOGRAPHIC ACCELERATION PULSE WAVE METER

Hiroshi Osanai, Miyamaedaira Green Heights 17-403, Mukogaoka 430, Takatsu-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 25, 1981, Ser. No. 325,012

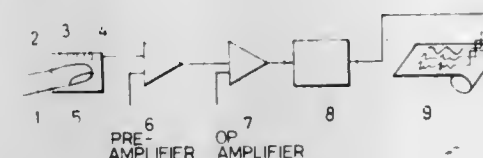
Int. Cl.³ A61B 5/02

U.S. Cl. 128—694

6 Claims

1. A plethysmograph comprising a sensor for detecting an

increase or decrease in the blood volume of a vascular bed, means producing a pulse waveform signal representative of blood volume, means twice differentiating said pulse wave-



form signal, means producing an output signal representative of an acceleration pulse wave from said differentiated waveform signal, and means displaying said output signal for analysis of the circulatory system.

4,432,375

CARDIAC ARRHYTHMIA ANALYSIS SYSTEM

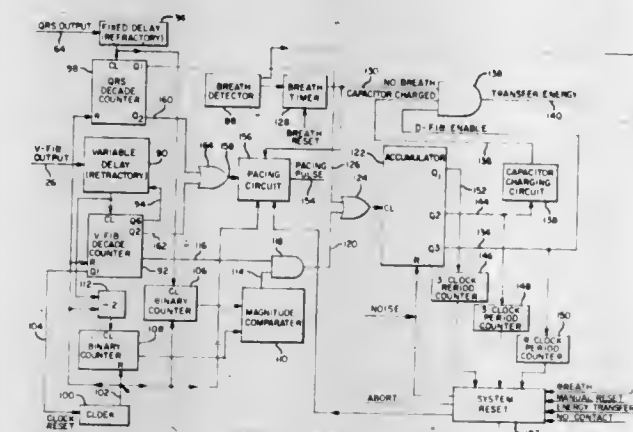
James H. Angel, Aurora, Ore., and Alfred L. Aronson, New York, N.Y., assignors to Cardiac Resuscitator Corporation, Wilsonville, Ore.

Filed May 24, 1982, Ser. No. 381,541

Int. Cl.³ A61B 5/04

U.S. Cl. 128—705

10 Claims



1. A system for monitoring the cardiac electrical activity and at least one other selected life sign of a patient and triggering the application of appropriate therapeutic current to the patient, comprising:

(a) input means for receiving from said patient an electrocardiac signal representative of the electrical activity of said patient's heart and a second signal derived from said other selected life sign and indicative of the occurrence of a second criterion for the identification of selected cardiac arrhythmia;

(b) V-fib circuit means, responsive to said electrocardiac signal, for repetitively producing V-fib pulses at a rate greater than or equal to a first predetermined rate in response to the occurrence of ventricular fibrillation and producing at least one V-fib pulse in response to the occurrence in said electrocardiac signal of a QRS complex;

(c) QRS circuit means, responsive to said electrocardiac signal, for producing a QRS pulse in response to the occurrence in said electrocardiac signal of a QRS complex while producing in response to ventricular fibrillation QRS pulses at less than half the rate of V-fib pulses produced by said V-fib circuit means; and

(d) logic means, responsive to said V-fib pulses, said QRS pulses, and said second signal, for producing periodic pacing trigger signals upon the occurrence of V-fib pulses and QRS pulses both at less than a second predetermined rate and of said second criterion.

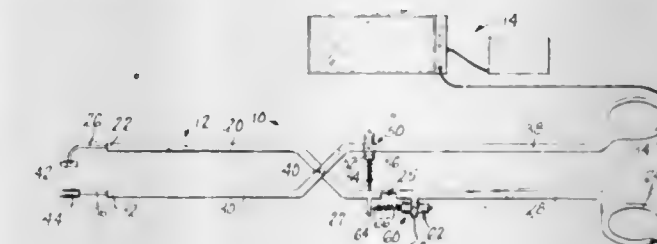
4,432,376
METHOD FOR DETERMINING THE EXTENSIBILITY OF SELECTED NON-EXCISED TISSUE OF THE UTERINE CERVIX, EAR OR SKIN

Gabor B. Huszar, 16 Chestnut La., Woodbridge, Conn.
Filed Jan. 30, 1980, Ser. No. 230,369

Int. Cl.³ A61B 5/10

U.S. Cl. 128—774

8 Claims



1. A method for measuring the modulus curve of extensibility for selected nonexcised tissue of the uterine cervix comprising:

- positioning the tissue at the lip of the uterine cervix between two members;
- applying an increasing compressive force to the tissue which increases from a minimum force to a maximum force;
- measuring the instantaneous force applied and the displacement of tissue resulting from said force over the range of forces applied;
- calculating the ratio of the instantaneous force applied to the displacement resulting therefrom;
- deriving the modulus curve of extensibility for the uterine tissue from the calculated ratios; and
- displaying the modulus curve of extensibility over the range of forces applied.

4,432,377

BIOMEDICAL LEAD WITH RING ELECTRODE AND METHOD OF MAKING SAME

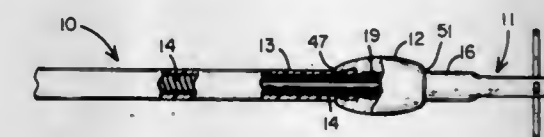
Eugene A. Dickhudt, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 29, 1982, Ser. No. 344,125

Int. Cl.³ A61N 1/04

U.S. Cl. 128—786

8 Claims



1. A method of making a body implantable lead of the type having an exposed ring electrode, a lead body comprising a conductor electrically connected to said electrode and an insulating casing enclosing said conductor and forming the external portion of said lead body, said casing being of a pliable material generally inert to body fluids, comprising the steps of: slipping said casing and said conductor into said ring electrode so that the conductor is electrically connected to the ring electrode; and forcing ends of said ring inward until they embed themselves into said casing.

6. A body implantable lead of the type having an exposed ring electrode, a lead body comprising a conductor electrically connected to said electrode and a casing enclosing said conductor and forming the external portion of said lead body, said casing being of a pliable material generally inert to body fluids, wherein said electrode comprises a conductive cylinder having ends embedded in the material of the casing to form a barrel, the barrel having a maximum diameter between the ends of said barrel greater than the diameter of said casing, and the

embedded ends of said conductive barrel having a diameter less than the diameter of said casing.

4,432,378

SUBSTITUTED CYCLOHEXANE DERIVATIVES

Brian J. Willis, Bergenfield, N.J., and Robert G. Eilerman, Merrick, N.Y., assignors to Fritzsche, Dodge & Olcott, Inc., New York, N.Y.

Division of Ser. No. 116,839, Jan. 30, 1980, Pat. No. 4,326,996.

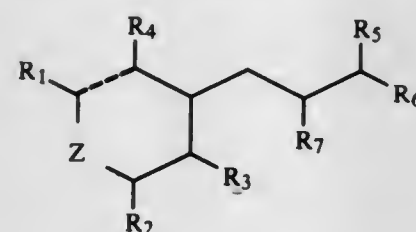
This application Nov. 30, 1981, Ser. No. 325,989

Int. Cl.³ A24B 3/12, 15/36, 15/40

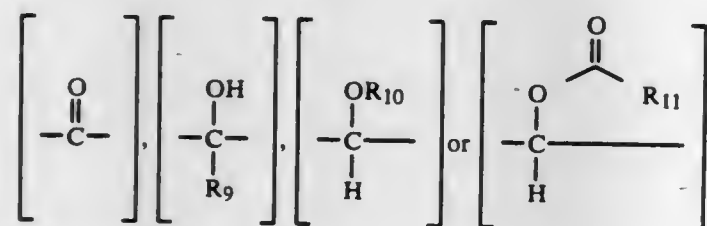
U.S. Cl. 131-277

1 Claim

1. A smoking composition comprising a smoking material and at least 0.0001% by weight of one or more of the substituted cyclic compounds having the structure:



wherein the dotted line may be a carbon-carbon double bond or a carbon-carbon single bond; wherein each of R₁, R₂, R₃, R₄, R₅, R₆ and R₇ may be hydrogen or lower alkyl; wherein Z may be any of the following:



wherein R₉ is hydrogen or lower alkyl; and wherein R₁₀ and R₁₁ are lower alkyl.

4,432,379

METHOD AND APPARATUS FOR HANDLING A COIN HOLDER

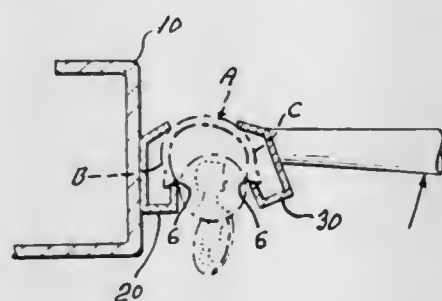
Ross H. Cantley, 577 Essex Rd., Beaconsfield, Quebec H9W 3V8, Canada

Filed Apr. 6, 1983, Ser. No. 482,439

Int. Cl.³ G07D 9/00

U.S. Cl. 133-1 R

20 Claims



1. An apparatus for handling a resilient coin holder of the type having terminal ends and a coin-receiving mouth extending longitudinally thereof and defined by opposed side walls of the holder through which coins are received laterally thereof, comprising in combination:

- frame means;
- a first jaw member on said frame means, said first jaw member adapted to receive and engage with a first side wall of the coin holder when placed on said apparatus; and
- a second jaw member adapted to receive and engage with

a second side wall of said coin holder, said second jaw member being so arranged as to permit movement thereof relative to said first jaw member whereby to displace said first and second side walls relative to one another to permit coins within said holder to be released therefrom.

4,432,380

APPARATUS FOR REMOVING OPTICAL COMPONENT BLANKS FROM A BLOCKING TOOL

Hans R. Ruf, Illnau; Rolf Quattländer, Effretikon; Max Reichlin, Illnau, and Patrik Hilpert, Volketswil, all of Switzerland, assignors to Roag, Illnau, Switzerland

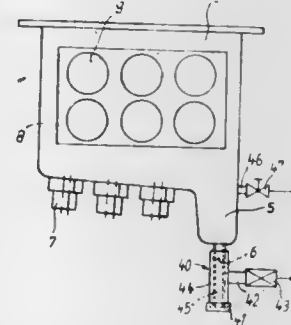
Filed May 7, 1982, Ser. No. 376,003

Claims priority, application Switzerland, Jun. 24, 1981, 4186/81

Int. Cl.³ B08B 3/12

U.S. Cl. 134-104

8 Claims



1. An improved apparatus for removing optical components from a blocking tool, which optical components are mounted thereto by means of a low melting alloy, which said apparatus comprises a heated liquid bath and a source of ultrasonic vibrations intended for deblocking said optical components from their respective blocking tools and for removing any mounting material from said optical components and blocking tools and comprises further means for separately collecting said optical components, said blocking tools and said removed mounting material, which said apparatus is provided with a tank provided with a heating means; a plurality of ultrasonic transducers mounted to the floor of said tank; a means for holding said optical components, which are placed into said tank and a collecting grid intended for collecting deblocked blocking tools;

the improvement comprising a sump located at the bottom of said tank, which said sump is provided with a discharging means for collecting and discharging any removed mounting material; comprising further a second heating means arranged at said sump and said discharging means and intended to keep removed mounting material in a liquid state of aggregate; comprising further a supporting rack, whereby said collecting grid is a section of said supporting rack, which said supporting rack is arranged to receive said holding means for said optical components and said blocking tools; and comprising a further means for moving said optical components including said blocking tools relative to said ultrasonic transducers and arranged to be suspended at said supporting rack.

4,432,381

WINDBREAKER

George Greenbaum, 790 Boylston St., Boston, Mass. 02199

Filed Jun. 9, 1982, Ser. No. 386,734

Int. Cl.³ A45F 1/00; A01G 9/00

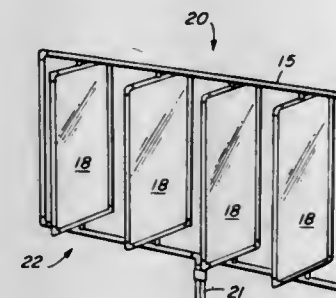
U.S. Cl. 135-87

10 Claims

1. A structure which comprises:

a post comprised of a plurality of rods, the rods assembled in parallel relationship to define channels between them on their composite outer surface and their composite inner

surface, and the upper ends of the rods spaced from one another when in a clamped position; means to clamp the rods one to the other, said means having an inner surface with projections extending therefrom some of said projections mating with some of said channels, the projections inhibiting the movement of the rods one to the other when the post is subject to stress; a plurality of grooved rods secured one to the other to define a frame;



means to secure the frame to the post, said means adapted to be slidably received on the upper ends of the rods in their clamped position, said means adapted to slidably receive the ends of at least some of the grooved rods of the frame; and sheet material secured to the frame by a resilient tube-like strip, which strip carries the sheet material with it into the grooves of the rods.

4,432,382

TENT STAKE

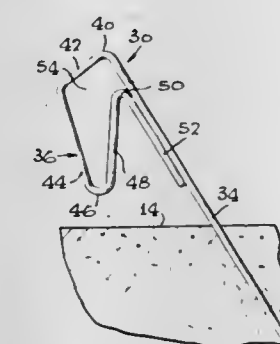
Jerrold M. Wolf, 4880 Dogwood Ave., Seal Beach, Calif. 90740

Filed Mar. 24, 1982, Ser. No. 361,439

Int. Cl.³ A45F 1/16, 1/18

U.S. Cl. 135-118

12 Claims



1. A tent stake, said tent stake having a body of elongated wire-like metal having a uniform cross section, said tent stake body having a straight, elongated shank for earth engagement, said shank having a tip on one end of said body, said body having a head thereon at the end of said straight shank opposite said tip, said straight shank terminating at a striking corner where said shank joins said head, said head being formed of a top leg directed away from said straight shank at the bend at said striking corner, said top leg being directed at an acute angle with respect to said straight shank, a downwardly extending leg attached to said top leg at a bend therebetween, said downwardly extending leg being oriented at an acute angle with respect to said straight shank, a hook bend formed on said body between said downwardly extending leg and a hook leg on the side of said hook bend away from said downwardly extending leg, said hook leg extending at an acute angle with respect to said straight shank, said head including a final leg on said body beyond said hook leg, a final bend in said body between said hook leg and said final leg so that a hook is formed between said hook leg and said final leg, said final leg lying against at least a portion of said straight shank.

4,432,383

ATTACHMENT FOR SAFETY VALVES

Lewis D. Boyette, P.O. Box 5492, Pensacola, Fla. 32505

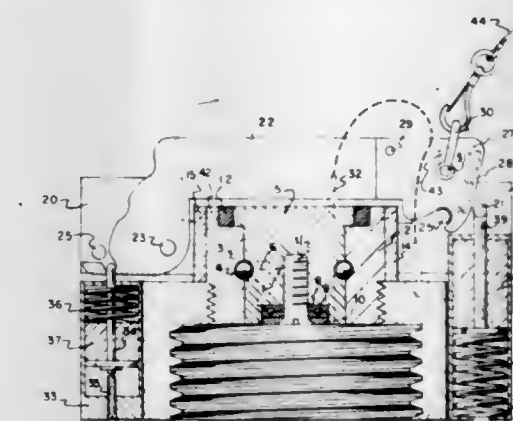
Continuation of Ser. No. 30,422, Apr. 16, 1979. This application

Oct. 15, 1981, Ser. No. 311,593

Int. Cl.³ F16K 17/40

U.S. Cl. 137-77

2 Claims



1. Control apparatus for controlling a valve assembly, said assembly comprising a main housing having walls defining a passageway extending along an axis and a valve actuating stem movable within said passageway along said axis, said control apparatus comprising:

- an auxiliary housing mountable on said main housing;
- restraining block means for engaging the end of said valve stem;
- engagement means on said block means and on said auxiliary housing for normally supporting said block means in a locked position along said axis wherein said block means prevents axial movement of said valve stem, said engagement means comprising bearing means for providing rolling contact between said restraining block means and said auxiliary housing when said block means is rotated from said locked position to said released position; and
- selectively actuatable release means for rotating said restraining block means from said locked position to a released position wherein said block means and said stem are free to move along said axis;
- said block means being in the general form of a cylinder received within a generally cylindrical bore extending along said axis in said auxiliary housing, said bearing means comprising at least one spherical ball partially received in a generally circumferentially extending groove in said bore and partially received in a generally circumferentially extending groove portion in the periphery of said cylinder, at least one of said cylinder and cylindrical bore further comprising a third groove communicating with said circumferentially extending groove in said one of said cylinder and said cylindrical bore, said third groove permitting axial movement of said cylinder when said ball is positioned within said third groove.

4,432,384

SEWER FLUID TRAP

Marcel Guiboro, 124 Renaud St., Ile Perrot, Province of Quebec, Canada (J7V 5X5)

Filed Mar. 18, 1982, Ser. No. 359,207

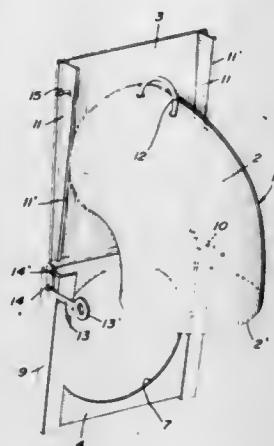
Int. Cl.³ F16K 9/00

U.S. Cl. 137-247.11

4 Claims

1. A sewer fluid trap comprising, in combination, a manhole having a catch-basin and a sewer pipe opening into said manhole; a first plate having a fixed central hole adapted to be permanently installed on the manhole wall around said sewer pipe, such that said central hole is in registry with the latter; said flat plate being formed with a pair of lateral vertical slots; a back-plate adapted to overlie said first plate between said lateral slots; downwardly-depending elbow rigidly secured at

its top end to said back-plate; the latter being provided with a second central hole in registry with said elbow; said elbow being open at its lower end, the latter being adapted to be submerged in said catch-basin; remotely-controlled latch



means to positively lock said first plate and said back-plate together; and lift means to remove said elbow and said back-plate, whereby unlatching and lifting of said elbow and back-plate can be carried out without it being necessary to descend into said manhole.

4,432,385

DEVICES FOR REGULATING THE FLOW AND THE PRESSURE OF GASEOUS FLUIDS

Andre Legris, Saint Maur, France, assignor to Legris S/A, Rennes, France

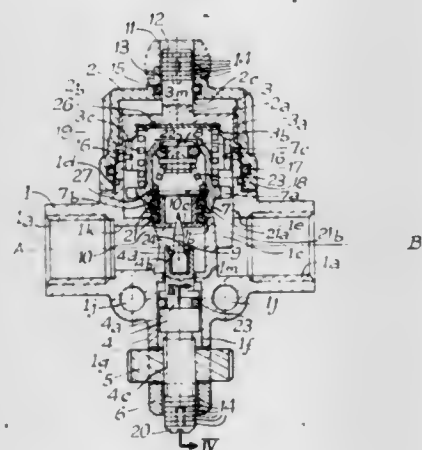
Filed Apr. 16, 1981, Ser. No. 254,619

Claims priority, application France, Apr. 23, 1980, 80 09143

Int. Cl.³ F16K 17/18

U.S. Cl. 137-271

25 Claims



1. Energy saving improvement to a device for regulating the flow and pressure of compressed gases, said device being installed in a conduit connecting the outlet of a control valve to a pressure-using apparatus to regulate the pressure toward the pressure-using apparatus and the flow in the reverse direction, wherein said device comprises a main body having aligned inlet and outlet nozzles, said body having a main valve seat connected to said inlet nozzle, a valve chamber member, a main valve carried by said valve chamber member at one end thereof for movement therewith, first resilient means for urging said main valve into engagement with said main valve seat, first manually operable means for adjusting the force exerted by said first resilient means, said first manually operable means comprising visible indicator means extending in a variable manner externally of said first manually operable means, said main valve ensuring a reduction of the gas pressure in the direction of the pressure-user apparatus, said valve chamber comprising at the other end thereof a secondary valve and second one-way acting resilient means for urging said secondary valve closed, said second resilient means being

relatively weak so that when the main valve is closed the secondary valve is adapted to occupy an open position for the passage of gas flowing in from the pressure-user apparatus, a nozzle formed in the main valve, a needle valve cooperating with said main valve nozzle for controlling the flow of said gas flowing in from the pressure-user apparatus, and second manually operable means for adjusting the position of said needle valve, said second manually operable means comprising second visible indicator means extending in a variable manner externally of said second manually operable means, each of said visible indicator means comprising markings corresponding to the position of the member moved by the associated manually operable means and to the value of the flow and pressure regulated thereby.

4,432,386

VALVE ASSEMBLY FOR RECIPROCATING PLUNGER PUMP

Amos Pacht, Houston, Tex., assignor to Butterworth, Inc., Houston, Tex.

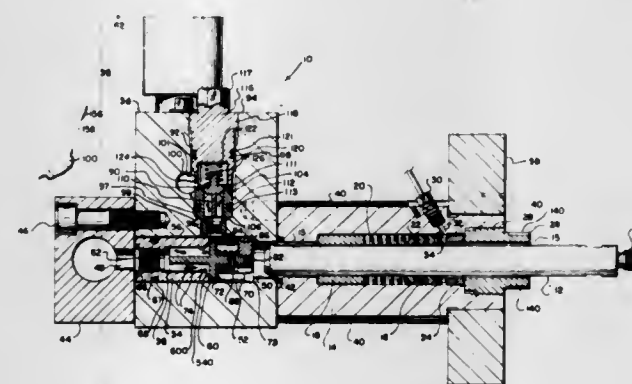
Division of Ser. No. 853,113, Nov. 21, 1977, Pat. No. 4,277,229.

This application Dec. 19, 1980, Ser. No. 218,129

Int. Cl.³ F16K 15/06

U.S. Cl. 137-327

6 Claims



1. A valve assembly adapted to be inserted in a cylindrical valve chamber in a cylinder block of a reciprocating high pressure pump and retained in said chamber by a manifold member removably secured to said cylinder block, said valve chamber having a shoulder formed by said block at the inner end of said chamber, said valve assembly comprising:

an elongated cylindrical tubular valve seat member adapted to be slidably insertable in said chamber and retained in said chamber by said manifold member, said seat member having a bore extending longitudinally therethrough and including a threaded portion for engagement with a disassembly tool to remove said seat member from said valve chamber, and a valve seat surface formed at the inner end of said bore;

a valve member including a cylindrical disc portion engageable with said surface on said seat member for closing off fluid flow through said bore, said valve member including a plurality of longitudinal guide ribs projecting from said disc portion and insertable in said bore for guiding said disc portion for reciprocation with respect to said seat member to open and close said valve;

a valve guide member including a base portion and a plurality of circumferentially spaced apart arms which extend longitudinally from said base portion and are adapted to engage a transverse end face of said seat member around said disc portion, said base portion including a plurality of concave exterior wall surface portions between said arms and forming recesses to permit the flow of fluid through said chamber from said bore, said base portion extending to engagement with said shoulder in said chamber whereby said guide member is retained in said chamber by being clamped between said shoulder and said seat member, said guide member including a central threaded bore

in said base portion for engagement with a disassembly tool to remove said guide member from said bore; and spring means disposed between said base portion and said valve member and adapted to bias said valve member in the valve closed position against said seat member.

4,432,387

ROTATING DISC GATE VALVE

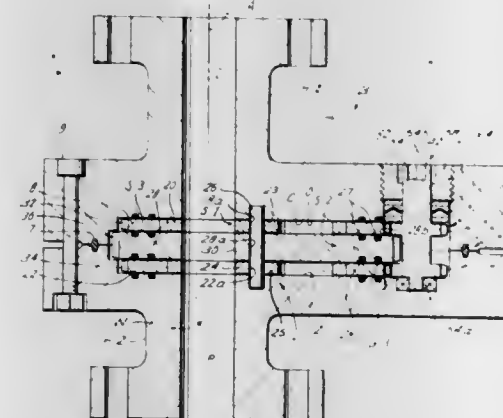
Don G. Sims, 4530 Briarhollow, Houston, Tex. 77027

Filed Sep. 20, 1982, Ser. No. 420,032

Int. Cl.³ F16K 43/00

U.S. Cl. 137-329.02

17 Claims



1. A rotating disc gate valve for controlling fluid flow in a flow line, comprising:

a valve body having formed therein a fluid passageway and a cavity extending transversely to said passageway; and, a flow control assembly mounted with said valve body cavity, including:

first and second valve seat carriers mounted within said valve body cavity, said valve seat carriers each having a plurality of valve seats which are alignable with valve seats in the other valve seat carrier to form valve seat sets, said valve seat sets are alignable with said passageway;

carrier rotation means mounted with said valve body for rotating said valve seat carriers to a plurality of positions in which one of said valve seat sets are aligned with said passageway;

a rotatable flow control disc having formed therein a flow control port alignable with said valve seat sets; flow control disc rotation means mounted with said valve body for rotating said flow control disc between an opened and closed position, said flow control port of said flow control disc being simultaneously aligned with said valve seat sets and said fluid passageway in the opened position; and

said sets of seats of said valve seat carriers providing the rotating disc valve with multiple sets of seats whereby said valve seat set alignable with said valve body passageway is replaceable without dismantling of said valve body.

4,432,388

DEVICE FOR PREVENTING SEWAGE BACKUP IN DRAIN LINES

Jerome Rest, 8827 N. Ewing Ave., Skokie, Ill. 60203

Filed Jan. 7, 1982, Ser. No. 337,611

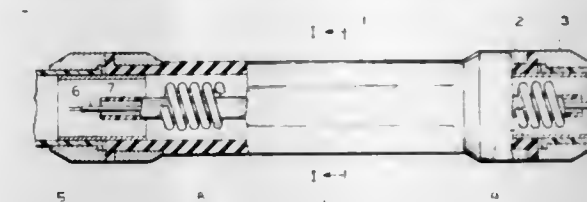
Int. Cl.³ F16K 31/128

U.S. Cl. 137-403

9 Claims

1. A device for automatically preventing the backup of sewage in a gravity discharge drain line consisting of an expandable bladder in conjunction with a reverse flow detector, means for inserting said device to a remote section in said drain line, a pressure source for expanding said bladder to a predetermined pressure to block reverse flow upon signal from said reverse flow detector, electrical and mechanical means for

remote automatic operation of said device, said electrical and mechanical means containing elements for return of said de-



vice to normal standby position when the backup condition is rectified.

4,432,389

RESEAL RELIEF VALVE

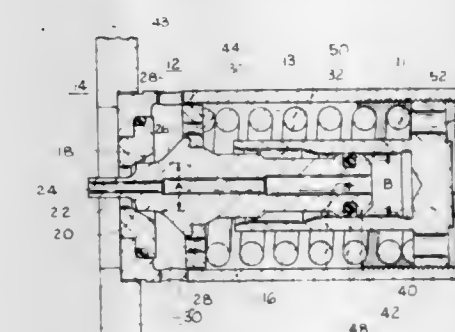
Alan D. Jackson, and Kenneth E. Day, both of Hutchinson, Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Feb. 16, 1982, Ser. No. 349,101

Int. Cl.³ F16K 17/20

U.S. Cl. 137-469

7 Claims



1. A fluid relief valve adapted to be utilized in a hydraulic system comprising:

a body member defining a chamber therein; inlet and outlet openings in the body; a beveled circular seat located in the outlet opening; biasing means in the chamber; an axially movable pressure responsive poppet in said chamber having an annular sealing surface engageable with said seat approximate one end thereof acting in conjunction with the biasing means to close the valve; an enlarged end spaced at the opposite end of the poppet with a sealing means therearound; a guide sleeve means in the body having an axial bore therein for receipt of the enlarged end to guide the longitudinal movement of the poppet while allowing the poppet to rotate about the enlarged end through a limited angle to align the sealing surface with said seat.

4,432,390

REMOTELY ADJUSTABLE CONTROL PRESSURE BY-PASS AND SHUT-OFF VALVE

Eugene L. Brazil, P.O. Box 505, Corcoran, Calif. 93212

Filed Oct. 5, 1981, Ser. No. 308,612

Int. Cl.³ F16K 31/52, 3/32; F16C 1/10

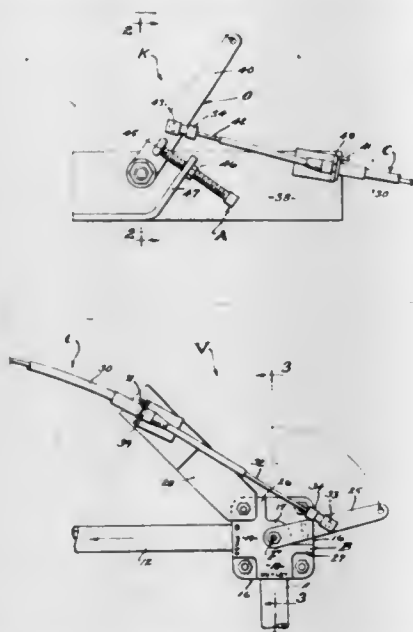
U.S. Cl. 137-625.46

8 Claims

1. The combination of a by-pass and shut-off valve and remote adjustable control means therefor for use where the supply of fluid varies with respect to pressure-volume; the by-pass valve including a chamber with an operating stem entering therein and rotatable freely between opened and closed positions, and with an inlet port from a variable pressure-volume supply line, and with separate outlet and by-pass ports angularly separated about the stem, the outlet port being convergent toward its closure side and with a vertex for gradually diminishing flow and opening to a useful fluid line, and the by-pass port being open to a

return line, and a valve element positioned by the stem rotated by a lever to open the outlet port while closing the by-pass port and alternately to close outlet port while opening the by-pass port,

the control means including a bearing plate rotatably carrying a manually shiftable lever with an adjustable stop for the valve element in an outlet port open position



there being a control cable extending between the by-pass valve and remote control means and including a casing anchored to the by-pass valve and control means respectively and a reciprocable element free to shift therein and coupled to each of the aforesaid levers, whereby variations in pressure-volume are compensated for in the by-pass valve through preset manual adjustment of said control means therefor.

4,432,391

IMPULSE VALVE

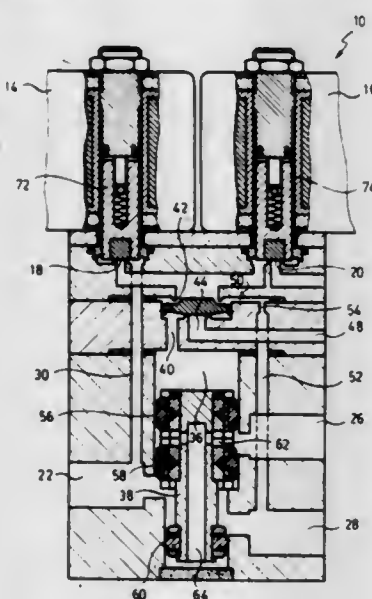
Helmut Ott, Stuttgart, Fed. Rep. of Germany, assignor to Herion-Werke KG, Fellbach, Fed. Rep. of Germany
Filed Aug. 25, 1981, Ser. No. 296,185

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1980, 3038802

Int. Cl.³ F15B 13/043

U.S. Cl. 137-625.64

10 Claims



10. An impulse valve having a housing formed with an inlet port for a pressure medium, a pressure-release port, a pressure relieving channel, at least two working ports and a working chamber; a main piston movable in the chamber between predetermined switching positions; a solenoid-operated preliminary control valve having a valve seat connected to a connec-

tion channel; said preliminary control valve controlling communication between the connecting channel and said inlet port; a valve member arranged between the connection channel and said working chamber and being movable into a first position in which the working chamber is connected to the pressure-relieving channel and a second position in which the working chamber is connected to the inlet port; and a control channel permanently connecting one of said working ports with said valve member to bias the same by pressure in the one working port towards said second position of the valve member, whereby said main piston remains in a switching position adjusted by said preliminary control valve even when the latter is inactivated.

4,432,392

PLASTIC MANIFOLD ASSEMBLY

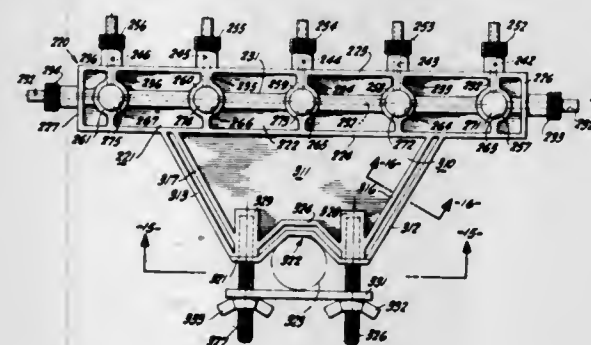
Hyman W. Paley, 25 Broadmoor Dr., San Francisco, Calif. 94132

Continuation of Ser. No. 727,791, Sep. 29, 1976, Pat. No. 4,177,835. This application May 29, 1979, Ser. No. 43,452
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.³ E03B 7/07

U.S. Cl. 137-883

8 Claims



1. In a manifold assembly: a generally planar body fabricated as a unitary structure of a substantially rigid plastic material including a longitudinally extending rib and a plurality of laterally extending ribs intersecting the longitudinally extending rib, each of said ribs being formed to include an axially extending flow passageway, valve bores formed in the body at the intersections of the ribs and extending in a direction normal to the passageways, and valve members rotatively mounted in the bores for controlling communication between the passageways.

4,432,393

ACCUMULATOR

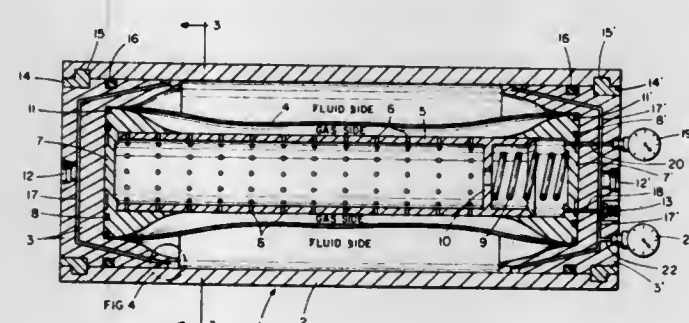
Carl R. Mills, East Dundee, Ill., assignor to Chicago Fluid Power Corp., Streamwood, Ill.

Filed Dec. 20, 1982, Ser. No. 451,077

Int. Cl.³ F16L 55/04

U.S. Cl. 138-30

12 Claims



1. In a sleeve-type bladder accumulator having an outer generally cylindrical body, an apertured generally cylindrical

stop tube concentrically disposed within the cylindrical body, and an elastic tubular bladder sleeve partially enveloping the stop tube with each end of the sleeve being anchored by a bladder retainer carried on the adjacent end of the stop tube and an end cap fixed to the adjacent end of the cylindrical body, the improvement comprising clamping means disposed between one end of the stop tube and the adjacent end cap exerting a force upon the stop tube tending to move the stop tube away from that end cap and toward the opposite end cap, and sealing means made more secure by the force generated by the clamping means.

4,432,394

GROOVED COUPLING PROTECTOR

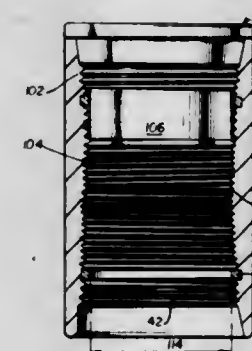
Dennis E. Martin, 170 Moonraker Dr., Sildell, La. 70458

Filed Jun. 21, 1982, Ser. No. 390,660

Int. Cl.³ B65D 59/00; F16L 57/00

U.S. Cl. 138-96 T

11 Claims



1. A system for protecting threaded couplings during transportation and/or handling comprising in combination:

a coupling having opposing end portions each defining a coupling face, said coupling including interiorly tapering walls between said end portions and the midpoint of said coupling and defining a threaded cavity therebetween, said coupling including first and second axially disposed grooves carrying first and second seal rings each defining an interior space, respectively, said first groove and seal ring positioned between one end and said midpoint and said second groove and seal ring positioned between said other end and said midpoint;

at least one protecting member for threaded engagement in one of said end portions and including a threaded portion for threadably engaging with said threaded cavity above said seal ring and a substantially smooth portion dimensioned so as to closely fit in the interior space defined by the respective said seal ring, said at least one protector further including flange means for preventing damage to the coupling face of said one of said end portions and for permitting said at least one protector to be grasped.

4,432,395

PIPE PART WITH SOCKET PROVIDED WITH LONGITUDINALLY EXTENDING CHANNELS

Joannes H. Beune, Hardenberg, and Roelof H. Marissen, Berghem, both of Netherlands, assignors to Wavin B.V., Netherlands

Division of Ser. No. 108,049, Dec. 28, 1979, Pat. No. 4,344,461.

This application Apr. 21, 1982, Ser. No. 370,536

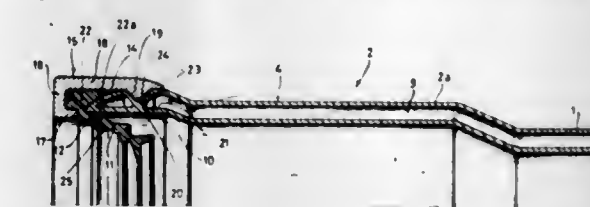
Int. Cl.³ F16J 15/10

U.S. Cl. 138-109

11 Claims

1. A plastic pipe part with a socket, a wall of said pipe part being provided with longitudinally extending channels, said channels extending into the wall of the socket at least over a part of the length of the socket, a retaining ring, said retaining ring together with said socket forming an annular end groove

chamber, said retaining ring being fixed to the outer side of the socket by an adhesive; and a sealing sleeve, said sealing sleeve



being connected with a sealing member part received in said annular end groove chamber.

4,432,396

CASTING TUBE

Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville les Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

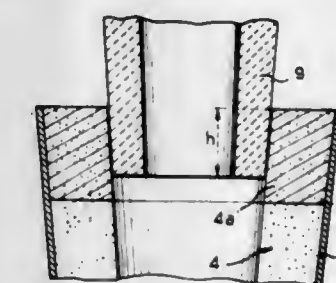
Filed May 17, 1982, Ser. No. 378,603

Claims priority, application France, May 27, 1981, 81 10519

Int. Cl.³ F16L 9/10; B22D 41/02

U.S. Cl. 138-109

7 Claims



1. A casting tube to be engaged tightly around the casting nozzle of a first metallurgical vessel and to be immersed in the molten metal which is being poured into a second vessel placed beneath the first vessel, said casting tube being constituted by a mixture of refractory particles and fibers embedded in a binder which is not capable of withstanding the temperature to which the casting tube is heated when liquid metal flows within the interior of said tube whereas the refractory particles are sinterable in a tube zone which is directly exposed to the heat of the liquid metal, wherein said casting tube also contains a refractory binder which is resistant to the heat of the liquid metal and is provided at least in the end zone of said tube which is to be engaged around said casting nozzle, which is not directly exposed to said heat.

4,432,397

NOISELESS HIGH-SPEED CIRCULAR LOOM FOR PRODUCING TUBULAR FABRICS CONSISTING OF STRIPS, THREADS AND THE LIKE MADE OF SYNTHETIC OR NATURAL MATERIALS

Beniamino Cacciapuoti, Aulla, Italy, assignor to Moplefan S.p.A., Milan, Italy

Filed Nov. 27, 1981, Ser. No. 325,596

Claims priority, application Italy, Dec. 12, 1980, 26612 A/80

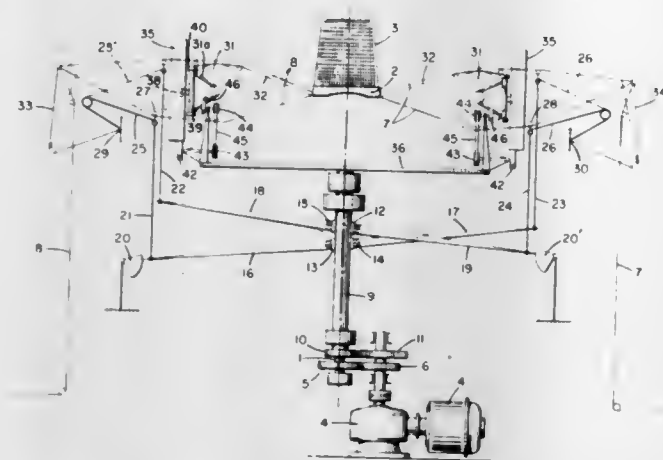
Int. Cl.³ D03D 37/00

U.S. Cl. 139-13 R

6 Claims

1. A circular loom for tubular fabrics made of threads and/or strips of polymeric, natural and similar materials, of the type with heddles arranged on two concentric circles and with a central driving shaft, characterized in that it comprises, for the alternate spreading apart of the internal and external warp threads, a supporting member, mounted coaxially and rotating around the central and vertical shaft of the loom, on which supporting member one or more pairs of wings or circular sectors diametrically opposed to one another are coupled at a predetermined angle of inclination to the axis of said central shaft, each pair of wings being coupled in an inclined manner

on said supporting element with interposition of a roller bearing so as to prevent said wings, through means oscillatorily connecting such wings with fixed parts of the loom, from rotating around said supporting element when the loom is working and thus allowing the wings to assume a continuous undulatory motion, the end portions of said opposite wings being connected, through a plurality of tie rods, with eye-bearing elastic elements acting as elastic heddles so as to transmit



the undulatory motion of said wings to the elastic heddles and therefore to achieve, along the development of the loom reed and by utilizing more pairs of wings, the necessary spreading apart of the warp threads adapted to form the wave pitch; rolling means associated with the usual shuttle-pushing devices as well as multi-wheel devices, associated with the shuttles, capable of providing a support, and a guide for the shuttles on the blade reed being furthermore provided for the shuttle control or drive.

4,432,398

WRAPAROUND ADJUSTABLE CENTER BRACE ATTACHMENT

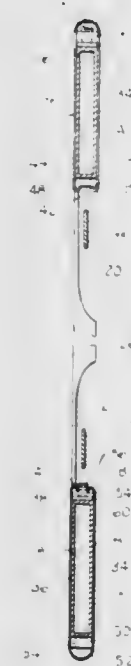
Stephen J. Root, Mauldin, S.C., assignor to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed Jun. 16, 1982, Ser. No. 388,893

Int. Cl.³ D03C 9/06

U.S. Cl. 139—91

5 Claims



4. In a heddle frame construction for a loom of the type which includes a top and bottom frame slat, a heddle rod carried by each frame slat which support heddles in the frame, at least one center brace carried vertically between said top and bottom frame slats, said bottom frame slat being adapted for driving connection with a heddle frame drive assembly, an

adjustable attachment element carried by said top and bottom slats attaching said center brace thereto comprising:

sleeve means slidably carried on said top frame slat and said bottom frame slat;

said sleeve means wrapping around said respective frame slats and including opposing edge portions having hook means engaging said slats;

a longitudinal slot defined between opposing edge portions across a first end of said sleeve means;

a first block means carried on opposing ends of said center brace including an open groove formed in an upper surface thereof defined by upstanding edge means on each side of said open groove;

said hook means fitting over said edge means of said first block means fastening said center brace between said top and bottom frame slats;

second block means carried adjacent a second end of each said sleeve means remote from said first end of said sleeve means;

said first and second block means having vertical threaded openings extending therethrough;

threaded locking means received in said threaded openings of said first and second block means;

said threaded locking means clamping said sleeve means against said frame slats when in a tightened clamping position;

access means formed in said first means;

said threaded locking means being operationally accessible through said access means from a vertical direction from above said top and bottom frame slats on said heddle frame carried vertically on said loom facilitating adjustment of the longitudinal position of each said sleeve means on said frame slats without obstruction from below the heddle frame.

4,432,399

FILLING-THREAD MONITORING DEVICE FOR JET LOOMS

Hans Bachmann, Charlotte, N.C., and Robert Frey, Ruti, Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

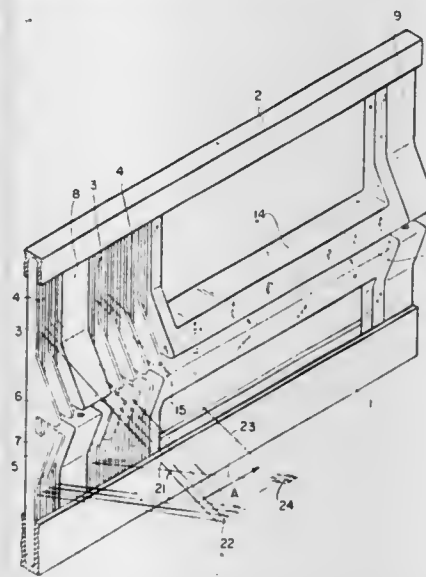
Filed Nov. 18, 1981, Ser. No. 322,424

Claims priority, application Switzerland, Nov. 25, 1980, 8686/80

Int. Cl.³ D03D 51/34

U.S. Cl. 139—370.2

13 Claims



1. A filling-thread monitoring device for jet looms in which the filling thread is guided during its insertion into the shed, in a first guide channel which is partially open on the side and formed by spaced members having a first filling thread stop motion means for the giving off of a signal when the filling thread introduced is less than its normal length and having a second filling thread stop motion means spaced from the latter

to give off a signal when the filling thread introduced exceeds its normal length by a predetermined amount, characterized by the fact that between the two filling thread stop motion means there is arranged a guide member having a second guide channel which is open at its entrance and exit ends, is closed in the filling direction on substantially all sides, and lies in the extension of the first guide channel.

4,432,400

COIL INSERTION METHOD AND APPARATUS USING NON-PARALLEL BLADE GAPS

Robert G. Walker, Ossian, Ind., assignor to Industra Products, Inc., Fort Wayne, Ind.

Filed Jul. 20, 1981, Ser. No. 285,429

Int. Cl.³ B21F 3/00

U.S. Cl. 140—92.1

26 Claims



1. In a method of winding dynamoelectric machine field coils and inserting the same in an internally slotted core member using coil insertion apparatus having a cylindrical array of elongated, parallel, circumferentially spaced blade elements defining equal-width gaps therebetween respectively radially aligned with the centerline of the array, the blade elements respectively having distal ends, the method including the steps of single-layer, precision winding a coil having two converging angled sections respectively joined to opposite end sections, moving the array relative to the coil to a first position in which the distal ends of a group of adjacent blade elements extend into the coil generally at right angles thereto with the angled sections of the coil respectively extending through the two gaps respectively adjacent the outer blade elements of the group and one end section disposed within the array, said two gaps defining a first angle therebetween, moving the array with the coil on said group of blade elements relative to the core member to a second insertion position with the blade elements extending into the bore of the core member and inserting the coil in the core member slots, the improvement comprising: providing the array of blade elements with at least said two gaps tapered in planes perpendicular to the array centerline and having sides which diverge toward the center of the array; winding the coil from wire having a diameter closely approaching the width of the gaps with said two angled sections defining a second angle therebetween slightly smaller than said first angle and with the projected centerlines of said angled sections meeting at a first point spaced outwardly from the centerline of the array on the side thereof remote from said one end section when the array is in said first position thereof, pivoting the coil on the group of blade elements to a position defining an acute angle therewith whereby said two angled sections of said coil project a third angle therebetween slightly larger than said first angle with the projected centerlines of

said angled sections meeting at a second point spaced inwardly from the centerline of the array on the side thereof toward said one end section when the array is in said insertion position thereof.

17. In apparatus for winding dynamoelectric machine field coils and inserting the same in an internally slotted core member including a cylindrical array of elongated, parallel, circumferentially spaced blade elements defining equal width gaps therebetween respectively radially aligned with the centerline of the array, the improvement wherein said blade elements respectively have opposite sides which define said gaps, the facing sides of each pair of adjacent blade elements being substantially flat and diverging toward the centerline of the array to define an inwardly facing angle therebetween, the radii of said cylindrical array with which said gaps are aligned respectively substantially bisecting said angles.

4,432,401

STABILIZER FOR THE CONTENTS OF FURNITURE DRAWERS DURING FURNITURE MOVING AND METHOD

Edward R. Katz, 4847 Cambridge Dr., Dunwoody, Ga. 30338

Filed Jul. 19, 1982, Ser. No. 399,444

Int. Cl.³ B65B 1/04

U.S. Cl. 141—4

3 Claims



1. A method of preparing a furniture unit having drawers with contents for moving, comprising partly opening the drawers with their contents in place while the furniture unit is in a normal upright position, placing inflatable contents stabilizers on top of the contents in the drawers while the stabilizers are in a deflated state, inflating the stabilizers while the drawers are partly open to expand the stabilizers into firm pressure contact with the drawer contents and against the bottoms of adjacent uppermost drawers, and fully closing the drawers with the inflated contents stabilizers therein to enable safe movement of the furniture unit without displacement of the drawer contents.

4,432,402

SELF-ELEVATING WOOD SPLITTER

James L. Wirsbinski, Marshfield, Wis., assignor to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 380,687, May 21, 1982, abandoned. This application Apr. 18, 1983, Ser. No. 485,964

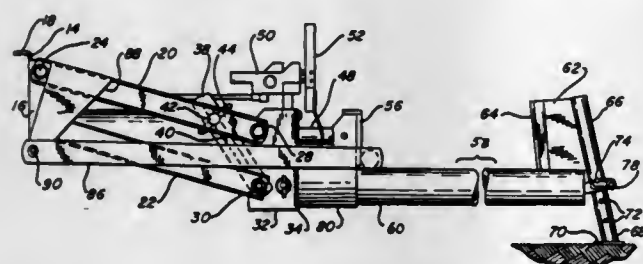
Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 A

32 Claims

1. A hydraulic wood splitter adapted to be connected to a tractor, or the like, comprising:

front mounting means for effecting a fixed connection to said tractor;
 an elongated wood supporting frame connected to said front mounting means;
 means for mounting said wood supporting frame for movement between an extended position and a retracted position with respect to said front mounting means;
 means on said frame for splitting wood including hydraulic ram means mounted on said wood supporting frame and movable therealong in the extended position of said frame;



height adjustment means operatively associated with said front mounting means for permitting vertical movement of said wood supporting frame and said ram;
 locking means for releasably locking said wood supporting frame at any desired elevation; and
 elevator means associated with said height adjustment means and selectively movable into operative association with said ram means whereby movement of said ram means effects raising or lowering of said wood supporting frame.

4,432,403

PROCEDURE AND APPARATUS FOR BARKING TIMBER

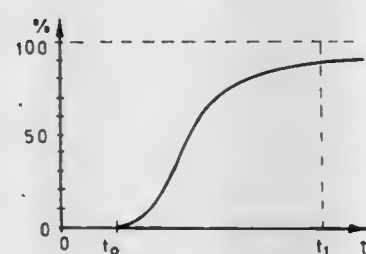
Urho Heikkinen, Helsinki, Finland, assignor to Kone Oy, Helsinki, Finland

Continuation of Ser. No. 44,777, Jun. 1, 1979, abandoned, which is a continuation of Ser. No. 864,226, Sep. 26, 1975, abandoned, which is a continuation of Ser. No. 617,056, Sep. 26, 1975, abandoned. This application May 21, 1981, Ser. No. 266,104

Claims priority, application Finland, Sep. 27, 1974, 2833/74

Int. Cl.³ B27L 1/00

U.S. Cl. 144—342



2. A method for barking timber wherein the timber is pretreated prior to frictional drum barking to render the drum barking more efficient, comprising:

(a) pretreating the timber by first partly removing the bark therefrom in spots and patches so as to produce bare spots and patches on the timber and provide an extended demarcation line for the bare patches between the barked and unbarked timber; and

(b) feeding the pretreated partially barked timber having bare patches into a rotating barking drum and removing the remaining bark therefrom by frictional barking for final efficient barking of the timber.

4,432,404
ICE AXE

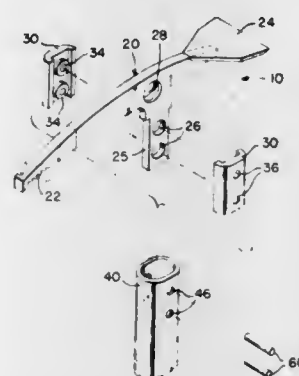
James R. Clark, Kirkland, and Michael K. Reeves, Redmond, both of Wash., assignors to Seattle Manufacturing Corporation, Bellevue, Wash.

Filed Apr. 2, 1982, Ser. No. 364,983

Int. Cl.³ B26B 23/00

U.S. Cl. 145—2 R

6 Claims



1. An ice axe which comprises:

a head having an upper portion including a tool, and a shank depending from the upper portion, the shank including an aperture extending therethrough;

a nonmetallic spacer which surrounds the shank and abuts the exterior surfaces of the shank and shank aperture, the interior surfaces of the spacer being shaped to conform to the exterior surfaces of the shank and shank aperture, the spacer forming an elongated passageway which extends through the spacer and shank aperture;

a handle having a hollow upper portion which surrounds the shank and spacer, the interior surfaces of the hollow upper portion being shaped to conform to the exterior surfaces of the spacer assembly such that the interior surfaces of the handle abut the exterior surfaces of the spacer, the handle having handle apertures aligned with each end of the spacer passageway; and

a pin extending through the spacer passageway and handle apertures and being secured to the handle at each handle aperture, such that, in the event of failure of the spacer, the pin will engage the shank at the shank aperture to form a direct connection between the head and handle.

4,432,405

PRESSURE CUFF TIRE PUMP DEVICE

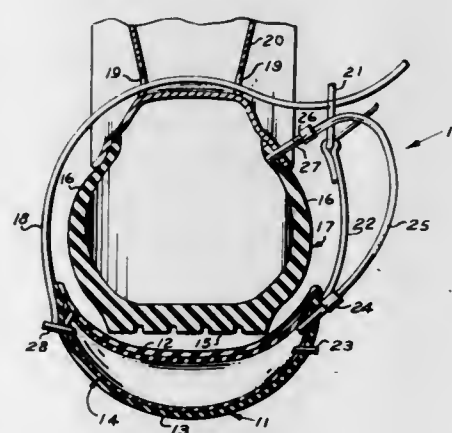
Harold Grushkin, 25 Atlantic Ave., Nanuet, N.Y. 10954

Filed Sep. 27, 1982, Ser. No. 424,395

Int. Cl.³ B60C 23/10, 29/00

U.S. Cl. 152—424

5 Claims



1. A pressure cuff tire pump device, comprising, a resilient flexible casing, an inflatable bladder received in said casing, for receiving air at atmospheric pressure and discharging it under pressure into a vehicle tire, a pair of straps secured to said

casing, for fastening said casing to a vehicle wheel and its tire, a flexible hose secured to said bladder, for air transfer into said tire, and three valves secured in said bladder, for controlling the air entering and being discharged from said bladder.

4,432,406

POWER OPERATED BI-FOLD STRIP CURTAIN DOOR ASSEMBLY

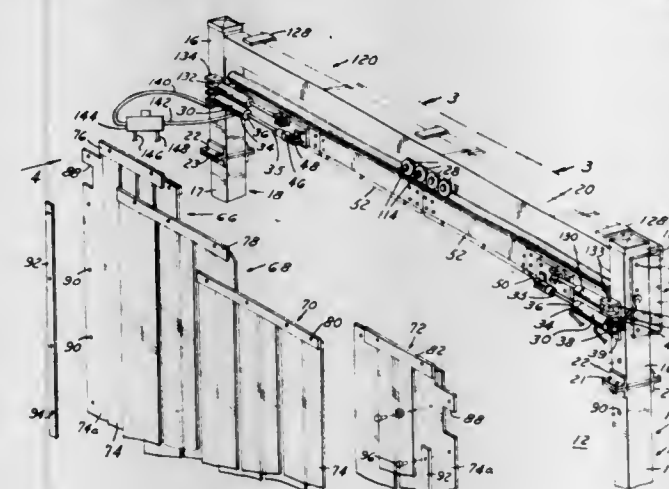
James A. Belanger, Northville; Robert J. Wentworth, Ann Arbor; Douglas J. Calvin, Farmington Hills, and James M. Lapham, Northville, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Continuation-in-part of Ser. No. 212,372, Dec. 3, 1980. This application May 6, 1981, Ser. No. 260,952

Int. Cl.³ E05D 15/26

U.S. Cl. 160—199

7 Claims



1. A strip curtain bi-fold door assembly adapted for use in a door space defined by an overhead track, a floor and a pair of spaced apart uprights, said door assembly comprising:

at least a pair of laterally positioned inboard and outboard door means having opposed adjacent ends and free ends for closing at least a part of the door space, each said door means including support means for suspending a group of elongated flexible strip curtains in overlapping relation; first hinge means for connecting the opposed adjacent ends of said door means;

second hinge means adapted to connect the free end of the outboard door means to one of the uprights;

carriage means adapted to guidingly engage the track for travel therealong;

said carriage means including a pivot pin means adapted for suspending the inboard door means adjacent its free end for pivotal movement during travel of said carriage means;

fluid actuator means adapted to be interconnected between one of said door means and said one upright and effective when actuated to move said door means and their associated group of strip curtains between a folded position adjacent said one upright and an extended side-by-side position across the door space;

said fluid actuator means being in the form of a piston and cylinder having one end pivotally connected to said one upright and an extensible and retractable piston rod extending from said cylinder other end with the rod pivotally connected to said outboard door means;

said carriage means further including a first roller having an annular groove which conforms to and receives said track, said roller having a stub shaft rotatably supporting said pivot pin means;

one of said door means having a terminal exterior strip curtain vertical border portion extending laterally a predetermined distance beyond the associated opposed adjacent end of said one door means;

means reinforcing the upper horizontal edge of said terminal exterior strip curtain such that its border portion is main-

tained in the plane of the associated group of strip curtains carried by said one door means; wherein upon said door means being extended said terminal exterior strip curtain border portion overlapping the next adjacent strip curtain of the other door means such that a lap seal is provided at the juncture of said outboard and inboard groups of curtain strips;

said door means in their folded position having a V-shaped configuration with first interior surfaces of said door means facing inwardly in opposed relation, and second exterior surfaces of said door means facing outwardly; the axis of said actuator being disposed substantially parallel to said outboard door means when said door means are in either said folded position of said extended position; and a shock absorber being connected between said outboard door means and said one upright to dampen the vibrations upon the folding or opening of said inboard and outboard door means and their associated groups of strip curtains.

4,432,407

ARRANGEMENT AT A SUPPORTING AND GUIDING STRUCTURE TO BE USED IN A CONTINUOUS CASTING PLANT

Werner Scheurecker, and Herbert Spanner, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Continuation of Ser. No. 205,468, Nov. 10, 1980, abandoned.

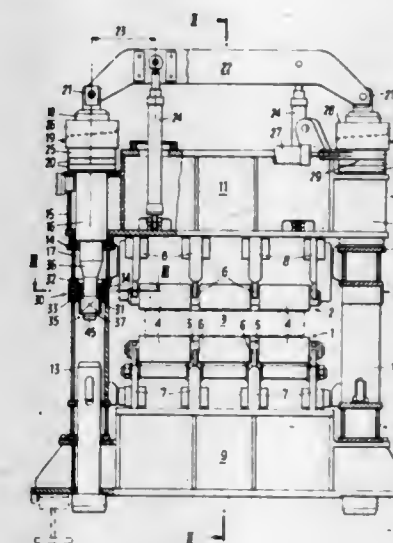
This application Jul. 6, 1983, Ser. No. 511,442

Claims priority, application Austria, Nov. 28, 1979, 7523/79

Int. Cl.³ B22D 11/12

U.S. Cl. 164—448

6 Claims



1. In an arrangement at a supporting and guiding structure to be used in a continuous casting plant for casting a strand, in particular a continuous casting plant for casting steel slabs, and of the type including oppositely arranged roller ways for supporting the strand on two opposite sides thereof, a first supporting framework and a second supporting framework for accommodating said roller ways, and drawing anchors for bracing said second supporting framework relative to said first supporting framework, said second supporting framework being connectable with, and detachable from, said first supporting framework, the improvement which is characterized in that a bayonet connection is provided as connecting means for connecting each of said drawing anchors with one of said first and said second supporting frameworks, said bayonet connection including a disc, arranged in a cavity provided in one of said first and said second supporting frameworks, and having at least one recess defined therein, each one of said drawing anchors comprises a drawing-anchor head with a lateral neck corresponding to said at least one recess, said drawing-anchor head being insertable into said at least one recess, and said drawing-anchor head is rotatable between a fastening position axially fixing the pertaining one of said drawing anchors, and a

releasing position whereby said drawing anchor can be withdrawn from one of said first and said second supporting frameworks, thereby enabling the other of said first and said second supporting frameworks to be detached from said one framework.

4,432,408
METHOD AND COMPRESSED VERMICULAR
EXPANDED GRAPHITE APPARATUS FOR HEAT
EXCHANGING

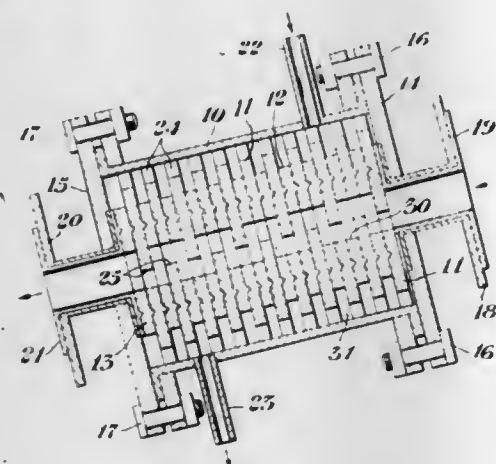
Ronald S. Caines, Stone Mountain, Ga., assignor to The Dow Chemical Co., Midland, Mich.

Filed Jul. 19, 1982, Ser. No. 399,386

Int. Cl.³ F28D 9/00; F28F 3/08

U.S. Cl. 165—1

12 Claims



1. A method for exchanging heat between two or more fluids, which comprises passing a first fluid through a core member made up of a plurality of plates made by compressing a composition containing essentially vermicular expanded graphite substantially more along one axis than along the other two axes, and passing a second fluid through said core member in separate but heat exchange relationship with said first fluid in such a manner that the primary exchange of heat between the two fluids is through the core member along an axis of the core member that is normal to the axis of substantial compression under which said core member is formed.

4,432,409
ROTARY HEAT REGENERATOR WHEEL AND
METHOD OF MANUFACTURE THEREOF

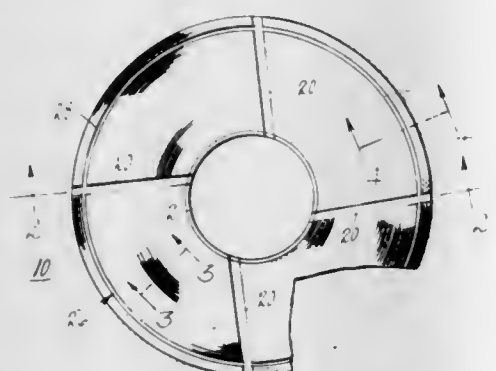
Donald F. Steele, Cohasset, Mass., assignor to Northern Solar Systems, Inc., Hingham, Mass.

Filed Nov. 3, 1981, Ser. No. 317,756

Int. Cl.³ F28D 19/00

U.S. Cl. 165—8

9 Claims



1. A rotary heat recovery device, comprising a heat recovery wheel formed of spiral wound layers of at least one strip of synthetic plastic material and spacing means between the layers forming gas passages therebetween, in which the wheel has reinforcing means provided by narrow portions extending

radially in which the layers of the strip have been adhered together.

4,432,410
HEAT EXCHANGER, IN PARTICULAR FOR A COOLING
CIRCUIT OF A MOTOR VEHICLE ENGINE

Patrick Cadars, Montigny le Bretonneux, France, assignor to Valeo, Paris, France

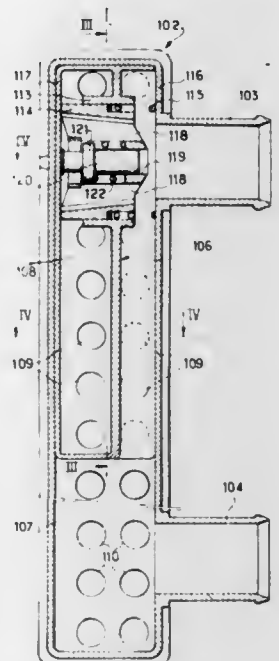
Filed May 5, 1981, Ser. No. 260,672

Claims priority, application France, May 5, 1980, 80 09989

Int. Cl.³ B05D 23/00

U.S. Cl. 165—32

8 Claims



1. A heat exchanger, particularly for a cooling circuit of a motor vehicle engine, comprising a water box provided with at least a liquid inlet pipe; a nest of tubes opening into the water box; first and second chambers formed inside the water box; first and second liquid circuits formed in parallel in the exchanger, the first circuit comprising said first chamber and at least a portion of said tubes, the second circuit comprising at least said second chamber; passages formed between said liquid inlet pipe, said first chamber and said second chamber and comprising a tubular cylindrical wall forming a bearing open at both ends thereof and extending between said chambers; a valve sensitive to the liquid temperature for controlling the flow of the liquid through said passages and said circuits, a cylindrical valve member guided in said bearing and biased in one direction by said temperature sensitive valve; a return spring for biasing said cylindrical valve member in a direction opposite to said one direction; said temperature sensitive valve, said valve member and said bearing being in axial alignment with said liquid inlet pipe inside said water box, said valve member having an axial inner sleeve and a cylindrical skirt open at both ends thereof and guided in said bearing, said temperature sensitive valve having a body received in said sleeve and a piston applied on a wall of said water box opposite to said liquid inlet pipe, said return spring being provided between said valve member and a wall of said water box.

4,432,411
RADIANT HEAT SHIELD FOR A SUPERCONDUCTING
GENERATOR

George D. Hooper, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 3, 1982, Ser. No. 354,488

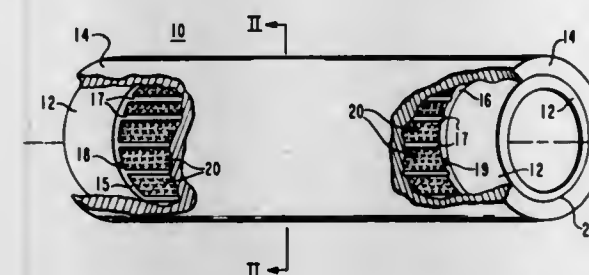
Int. Cl.³ F24H 3/00

U.S. Cl. 165—47

9 Claims

1. A superconducting rotor, comprising:
a first tube having two circumferential grooves formed in its outer cylindrical surface, said two circumferential

grooves being a preselected axial distance apart, said first tube having a plurality of axial grooves formed in its outer cylindrical surface, each of said axial grooves intersecting said two circumferential grooves and providing fluid communication therebetween, each of said circumferential grooves having a hole intersecting it and extending radially inward to intersect the inside cylindrical surface of said first tube;



a second tube disposed radially outward from said first tube in coaxial and concentric relation, said second tube providing a radially outer fluid seal for said circumferential and axial grooves; and
a thin cylindrical layer of brazing material disposed between said first and second tubes, said layer of brazing material having an axial length which is less than the axial length of said first tube and less than the axial length of said second tube.

4,432,412
COOLING DEVICE
Lothar Teske, Hegelstr. 15, 5000 Köln 90, Fed. Rep. of Germany

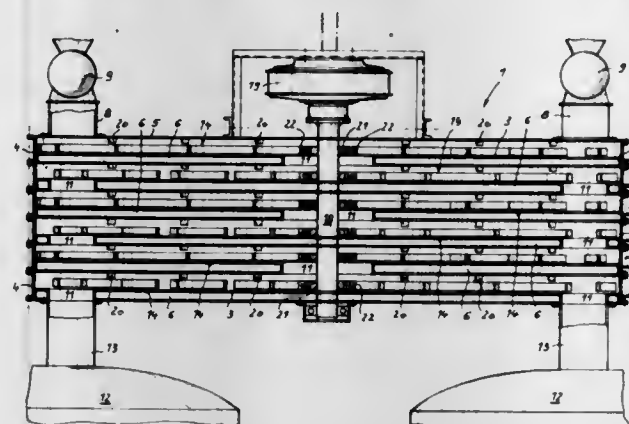
Filed Aug. 17, 1981, Ser. No. 293,500

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031851

Int. Cl.³ F28F 13/12

U.S. Cl. 165—93

3 Claims



1. A cooling device for cooling coal dust or other fine particulate material both from its bottom and its top comprising a housing having a plurality of vertically arranged and secured housing sections of which the uppermost housing section is covered, a motor-driven conveyor device mounted in said housing to transport the coal dust or particulate material from one or more inlets to one or more outlets over the coolable bottom of the housing, the housing having a circular cross-section and a plurality of coolable tray members spaced one above another disposed in the housing, said tray members each being provided with cooling means arranged on their bottom sides and each tray member having associated therewith a conveyor wheel arranged to move over it, the wheels being connected to a common motor-rotatable shaft arranged vertically and coaxially with respect to the housing, each tray member having at least one outlet arranged alternately at the center of the tray member and adjacent an outer housing shell and the conveyor wheels being shaped to convey material from an inlet in the cover of the housing and/or from an outlet in the uppermost tray to an outlet of the lowermost tray, each tray member in

each housing section being provided on its bottom side with a chamber traversable by cooling agents and which communicate with each other by pipelines.

4,432,413
HEAT ABSORBER
Holger Brass, Waldbrunn; Herbert Braunsch, Hofheim am Taunus; Dieter Disselbeck, Bad Soden am Taunus, and Helmut Golly, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst AG., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,070

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040510

Int. Cl.³ F28F 13/18; F24J 3/02

U.S. Cl. 165—133

11 Claims



1. An ambient-air heat absorber comprising a plurality of flat plate-type heat exchanger elements each having an upper surface and a lower surface, between which upper and lower surfaces flows a heat transfer medium; a frame supporting said heat exchanger elements generally horizontally and one above the other with a predetermined spacing therebetween, while permitting natural flow of ambient air across said heat exchanger elements; and a plurality of lattice grids each formed of plastics and arranged on at least one of the upper and lower surfaces of a respective one of said heat exchanger elements to disrupt laminar flow of said ambient air across the respective surface of the associated heat exchanger element.

4,432,414
DUAL CIRCUIT EMBOSSED SHEET HEAT TRANSFER
PANEL

Grover D. Morgan, St. Louis County, Mo., assignor to The United States of America are represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1982, Ser. No. 410,680

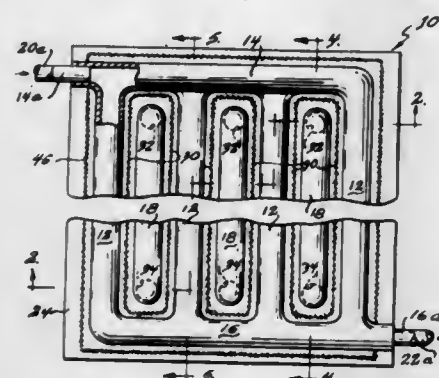
Int. Cl.³ F28F 3/12

U.S. Cl. 165—140

9 Claims

1. A heat transfer panel having first and second independent cooling circuits for cooling a common surface, each cooling circuit consisting of a plurality of channels communicating with an inlet and an outlet header, said panel comprising:
a first sheet embossed to form first portions of the channels of said first and said second cooling circuits, and first portions of the inlet and outlet headers of the first cooling circuit;
a second sheet having first and second sides, said first side dimensioned to completely overlie said first sheet and joined to said first sheet to form channels and inlet and outlet headers of said first cooling circuit and channels of said second cooling circuit, said second sheet further having inlet and outlet apertures communicating with the channels of the second circuit; and

third and fourth sheets dimensioned to overlie said inlet and outlet apertures of said second sheet, respectively, said third and said fourth sheets embossed to form first portions



of said inlet and said outlet headers are joined to said second side of said second sheet at spaced-apart locations to form inlet and outlet headers of said second cooling circuit, respectively.

4,432,415

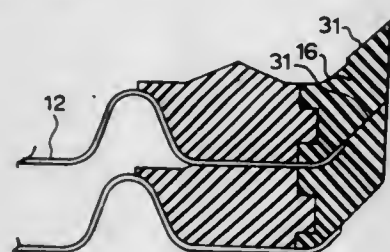
PLATE HEAT EXCHANGER

Felix W. Wright, Copthorne Bank, Nr. Crawley, England, assignor to The A.P.V. Company Limited, Crawley, England
Filed Jan. 22, 1982, Ser. No. 341,749

Claims priority, application United Kingdom, Jan. 30, 1981, 8102899

Int. Cl.³ F28F 3/10

U.S. Cl. 165—166



1. A plate for a plate heat exchanger, the said plate comprising a flow space zone and a two part gasket to seal a flow space zone, a first part of the gasket being of comparatively hard elastomeric material and substantially permanently attached to the plate, and a second part of the gasket being of comparatively soft elastomeric material so as to be compressible to form a seal, the said second part being located on a side of the said first part nearer the flow space zone to be sealed, said first and second parts having co-operating structures in operative contact such that said second part is mechanically retained by said first part, whereby the first part provides external lateral reinforcement of the second part against the pressure in the flow space zone, the second part is secured to the plate by means of the first part and is not directly attached to the plate, and said second part is mechanically retained by said first part in a manner allowing convenient removal of said second part for replacement.

4,432,416

WELL FLOW CONTROL APPARATUS

William R. Welch; Ernest P. Fisher, and John H. Yonker, all of Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 23, 1982, Ser. No. 351,547

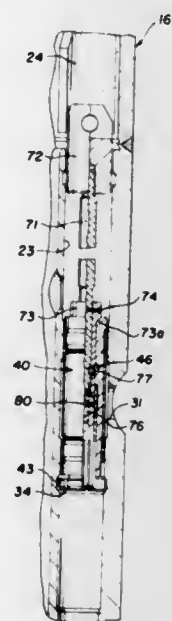
Int. Cl.³ E21B 23/02, 43/12

U.S. Cl. 166—117.5

20 Claims

1. In a well device for controlling flow between the exterior and interior of a well flow conductor which includes: a side pocket mandrel having a longitudinal main bore and having a longitudinal receptacle bore in said side pocket opening to said

main bore, said mandrel being connectible in said well flow conductor with its main bore in axial alignment therewith; said receptacle bore having lateral port means through the wall thereof to the exterior of said mandrel, and annular seal surface means at opposite sides of said lateral port means engageable with a flow control device; a first flow control device comprising a sleeve valve disposed for reciprocation in said receptacle bore between port-closing and port-opening positions for controlling flow through said lateral port means, said sleeve valve having seal means coacting with said annular seal surface



13 Claims

means of said receptacle bore; said receptacle bore and said sleeve valve having coacting latching means for retaining said sleeve valve in the port-closing position; said sleeve valve being movable to port-opening position and returned to port-closing position in response to the insertion and removal of a second flow control device in said receptacle bore; the improvement comprising said sleeve valve having latching recess means for coaction with latching means of a pulling tool, to enable withdrawal of said sleeve valve from said receptacle bore.

4,432,417

CONTROL PRESSURE ACTUATED DOWNHOLE HANGER APPARATUS

Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 307,903

Int. Cl.³ E21B 33/129, 34/10

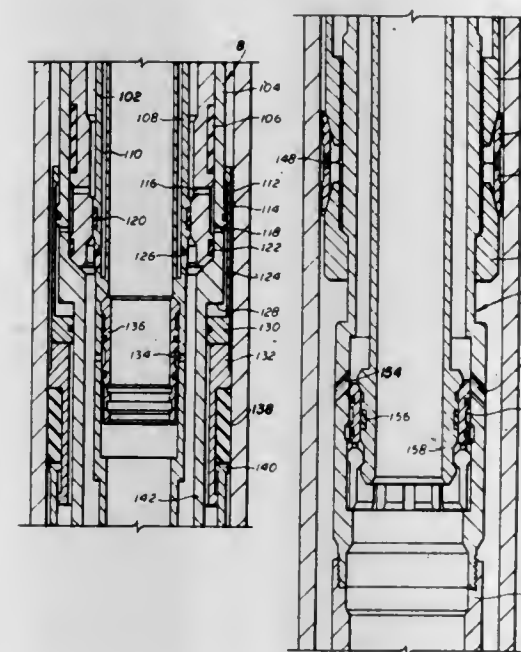
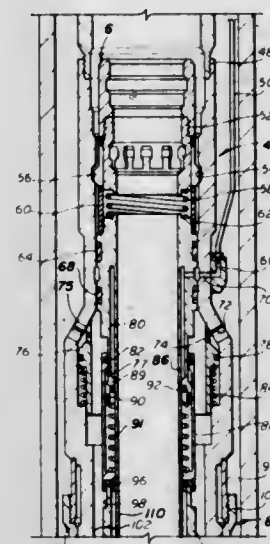
U.S. Cl. 166—120

14 Claims

1. In an apparatus for use in a subterranean well comprising a hanger for supporting an interior conduit such as a tubing string extending therebelow, said hanger being anchorable against an exterior conduit, upon radial expansion of anchoring slip elements in response to fluid pressure in a pressure chamber communicating through a hanger port extending to the interior bore of said hanger, with fluid pressure acting upon a hydraulically activated hanger slip setting piston and an annulus safety valve for controlling fluid flow in the annulus between said interior and exterior conduits in response to fluid pressure in a separate control line, the improvement comprising control line communication means for activating said hydraulically activated hanger slip setting piston and said safety valve by means of fluid pressure in the same control line, said control line communication means comprising:

landing nipple means for engaging said hanger and the interior conduit extending above said hanger,
a first radially extending port in said landing nipple means communicable with said control line and said annulus safety valve;

a second radially extending port in said landing nipple means communicable with said hanger port;
disengageable means for suspending said annulus safety valve from said landing nipple means; and
separation sleeve means suspendable from said landing nip-



ple means instead of said annulus safety valve for establishing fluid communication between said first and second radially extending ports to expose said hydraulically activated hanger slip setting piston to fluid pressure in said separate control line to set said hanger prior to installation of said annulus safety valve.

4,432,418

APPARATUS FOR RELEASABLY BRIDGING A WELL

Harold E. Mayland, 2467 S. Granby Way, Aurora, Colo. 80014

Filed Nov. 9, 1981, Ser. No. 319,440

Int. Cl.³ E21B 33/128, 33/129

U.S. Cl. 166—133

20 Claims

10. In a retrievable bridge plug having an expandable packer assembly adapted to be expanded into anchored relation to a well conduit, the improvement comprising:
an inner mandrel extending substantially the length of said plug, said mandrel having a section with no passageway therethrough;
a support tube disposed in outer concentric relation to said inner mandrel including means releasably interconnecting said inner mandrel and said tube; and
pressure equalizing means including a passageway establishing communication above and below said packer assembly with said well conduit and including a normally closed port in said support tube, said port being movable to a position

opening said passageway when an upwardly directed force is applied to said outer tube and said packer assembly is in the expanded position in said well conduit whereby to equalize the pressure above and below said packer assembly, said



normally closed port disposed in said support tube above said packer and defined by an axially separable portion in said support tube which is operative to undergo separation to open said port when an upwardly directed force is applied to said support tube.

4,432,419

RETRIEVABLE PLUG

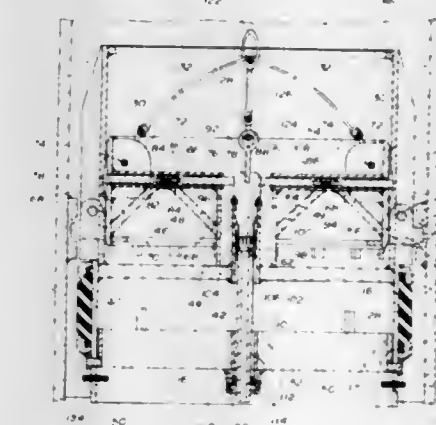
Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 6, 1980, Ser. No. 194,194

Int. Cl.³ E21B 33/02; E02B 5/00

U.S. Cl. 166—188

6 Claims



1. A removable plug for temporarily sealing the interior of an annular member to prevent the flow of fluid therethrough, said removable plug comprising:

plug body means adapted to be disposed within said annular member, the plug body means comprising:
packer mandrel means having a plurality of apertures therein, having an annular recess in the interior thereof and having a circular packer mandrel plug therein for preventing the flow of said fluid therethrough, the circular packer mandrel plug having a centrally located sleeve therein;
packer member means located on the packer mandrel means for sealingly engaging the interior of said annular member;
packer setting sleeve means located on the packer mandrel means for compressing the packer member means into

sealing engagement with the interior of said annular member;

locking dog means pivotally mounted on the packer mandrel means for retaining said removable plug from axial movement when installed in said annular member, the locking dog means comprising:

a plurality of members pivotally mounted on the packer mandrel means, each member having a portion thereof adapted to engage a portion of the interior of said annular member when said plug is installed therein and being rotatable through an aperture of the plurality of apertures in the packer mandrel means;

pressure equalization plug means releasably secured within the centrally located sleeve of the packer mandrel means for allowing the flow of said fluid through said removable plug when said removable plug is installed in said annular member thereby allowing the pressure of said fluid to substantially equalize in said annular member across said removable plug before the removal of said removable plug from said annular member; and

annular dog locking sleeve assembly means comprising: annular cylindrical member means having an elongated, centrally located annular dog locking sleeve mandrel means located therein, having reinforcing ring means located on the interior surface of the end portion of the annular cylindrical member means which has a portion of the exterior surface thereof abutting the dog locking means, and having a plurality of pin sleeve means secured to the annular cylindrical member means and the elongated annular dog locking sleeve mandrel means,

the annular dog locking sleeve assembly means being slidable within the packer mandrel means between a first position wherein the locking dog means abut a portion of the exterior surface of the annular cylindrical member means of the dog locking sleeve assembly means thereby preventing rotation of the locking dog means through the apertures in the packer mandrel means and a second position wherein the locking dog means are free to rotate through the apertures in the packer mandrel means thereby disengaging the interior of said annular member to allow removal of said plug from said annular member.

4,432,420

RISER TENSIONER SAFETY SYSTEM

Edward W. Gregory, Calgary, Canada, and Gregory G. Baer, Newton, N.C., assignors to Exxon Production Research Co., Houston, Tex.

Filed Aug. 6, 1981, Ser. No. 290,553

Int. Cl.³ E21B 34/04

U.S. Cl. 166—355

17 Claims

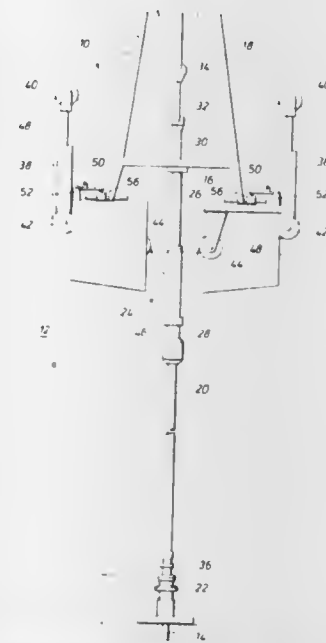
1. A tensioner system for tensioning a marine riser extending between a floating vessel and a wellhead at the bottom of a body of water, said tensioner system comprising:

at least one flexible tensioning line having a first end attached to the top of said riser and a second end attached to a stationary anchor point on said vessel;

tensioning means attached to said vessel, said tensioning means being in contact with and capable of applying force to said flexible tensioning line; and

safety means attached to said flexible tensioning line and

adapted to deactivate said tensioning means if the tension in said flexible tensioning line drops below a predetermined



mined level, thereby preventing said tensioning means from applying force to said flexible tensioning line.

4,432,421

GARDEN TOOL WITH SELF-CLEANING EARTH-WORKING ELEMENTS

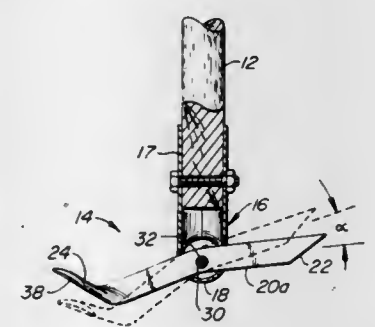
Elof Granberg, San Rafael, Calif., assignor to Granberg Pump & Meter Ltd., Richmond, Calif.

Filed Sep. 16, 1981, Ser. No. 302,935

Int. Cl.³ A01B 1/20

U.S. Cl. 172—375

3 Claims



1. A garden tool for raking and thatching surface materials and cutting weeds and cultivating below the surface of the soil, said tool comprising:

an elongate handle;

a tubular cross member secured perpendicular to one end of the handle, said cross member having a plurality of aligned paired slots disposed along the length of the member, the slots of each pair being coplanar and spaced 180° apart;

a rod centered within the tubular cross member; and

a plurality of earth-working elements rotatably attached to the rod and independently rotatable with respect to said rod, each of the elements passing through a pair of the slots in the cross member which are so dimensioned as to permit but limit the rotation of the respective one of the elements with respect to the other of the elements, rotation of the elements being otherwise unconstrained, each of the elements including a pointed tine at one end and a laterally inclined blade at the other, the blades of adjacent elements being substantially contiguous, the tined ends of the elements being used for raking and thatching with the limited rotation permitted for the elements being of a sufficiently significant angle as to provide self-cleaning of the elements on the backstroke by permitting the elements to briefly move apart from each other, the blades being

used for subsurface weeding and cultivation with the limited rotation allowing large weed stalks to slip between the blades and cleaning the blades when the direction of motion is reversed.

4,432,422

BOREHOLE GUIDE AND METHOD OF BORING INTERPENETRATING HOLES

Robert J. Hopley, Germiston, and Wynand J. van der Westhuizen, Boksburg, both of South Africa, assignors to Boart International, Limited, Transvaal, South Africa

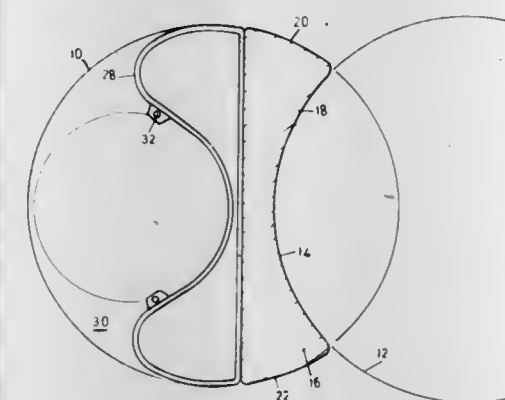
Filed Jul. 14, 1981, Ser. No. 283,276

Claims priority, application South Africa, Jul. 17, 1980, 80/4310; Sep. 9, 1980, 80/5549; Nov. 10, 1980, 80/6920

Int. Cl.³ E21B 7/08

U.S. Cl. 175—61

18 Claims



1. A method of boring interpenetrating non-parallel holes which includes the steps of boring a first hole, locating at least two guides in the first hole with one of the guides being angularly displaced relative to the other guide to form an inclined path that can be varied in degree of inclination, securing each guide in position by displacing each guide into contact with a wall of the first hole such that substantially an entire surface of the guide travels approximately the same distance to contact the wall, and directing a drill into guiding engagement with the guides to bore a second hole overlapping the first hole.

4,432,423

APPARATUS FOR EXTENDED STRAIGHT LINE DRILLING FROM A CURVED BOREHOLE

William C. Lyons, 1209 Calle Luna, Santa Fe, N. Mex. 87501, and Albert O. White, 1327 Fox Hollow Rd., Schenectady, N.Y. 12309

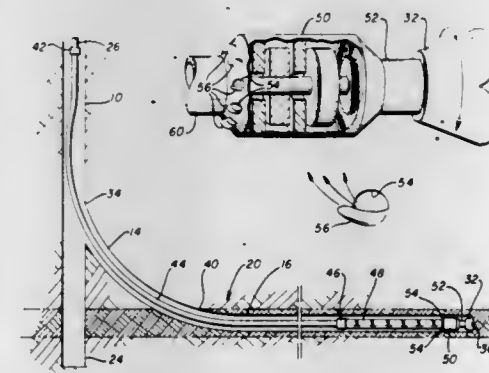
Division of Ser. No. 108,686, Dec. 31, 1979, Pat. No. 4,333,539.

This application Mar. 22, 1982, Ser. No. 360,585

Int. Cl.³ E21B 4/02, 7/08

U.S. Cl. 175—75

6 Claims



1. Drilling apparatus comprising a flexible pipe, a straight drill guide, a fluid turbine, a drill bit; a drill pipe string connected to one end of said flexible pipe; said straight drill guide having opposed ends with one end thereof being connected to the other end of said flexible pipe and the other said opposed end of said straight drill

guide being connected to said fluid turbine; means connecting said drill bit for rotation by said fluid turbine; passageway means formed along the longitudinal central axis of said drill pipe string, said flexible pipe, and said straight drill guide by which a source of power fluid is conducted to said fluid turbine; said turbine includes exhaust ports which are directed away from the turbine in a direction to provide a reaction which induces a turning moment in opposition to the drilling reaction of the bit; so that after a vertical borehole has been formed, and thereafter turned laterally from the vertical part of the borehole; said turbine continues to advance said bit along a substantially horizontal path.

4,432,424

LIFT LOADER

Theodor Abels, Aschaffenburg, and Güter Honecker, Seligenstadt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Holtrielskreuth, Fed. Rep. of Germany

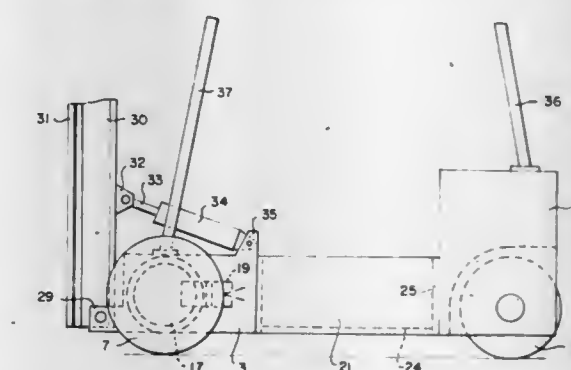
Filed Apr. 26, 1982, Ser. No. 371,964

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3117078

Int. Cl.³ B62D 11/04

U.S. Cl. 180—6.48

13 Claims



1. A lift loader such as a fork lift comprising two side and one rear frame elements, a pair of drive wheels on said frame elements, a pair of drive motors, a transmission housing with a gearing arrangement drivingly connecting each said motor to a drive wheel whereby each of said motors drives one of said drive wheels, each of said transmission housings being joined to the frame and being flanged onto one end of its corresponding motor at one side and supporting a wheel hub on the other side, said frame being provided with a rear cross bar and at least two lateral struts, each of said transmission housings being connected to one of said struts to form an extension thereof, said drive motors having drive shaft axes parallel to each other and being connected together at their ends opposite the transmission housings in a rigid bending resistant manner to form a front frame element.

4,432,425

WHEEL CHAIR

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

Filed Nov. 5, 1981, Ser. No. 318,631

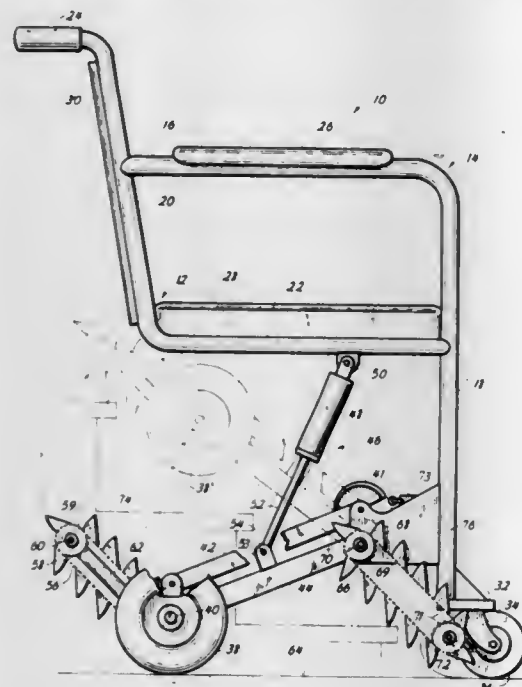
Int. Cl.³ B62D 57/02

U.S. Cl. 180—8 A

15 Claims

1. Apparatus for moving an object over substantially varying terrain, including stairs having stair treads, which comprises: a frame for supporting said object, said frame having opposite sides and a front portion and a rear portion; first wheel means mounted from said front portion of said frame having a front wheel proximate each side of said frame for engagement with said terrain; second wheel means mounted from said rear portion of said frame having a rear wheel proximate each side of said frame for engagement with said terrain; drive means connected to at least one of said first and said

second wheel means for rotating corresponding of said wheels against said terrain;
 first level sensing means carried by said frame for continuously sensing any change in pitch of said frame from a pre-set pitch value;
 means responsive to said first level sensing means connected between said frame and at least one of said first and second wheel means for correcting said pitch to said pre-set pitch value; and
 a stair engaging means associated with each of said front wheels and said rear wheels for causing said apparatus to ascend or descend said stairs, said stair engaging means



including an oval-shaped carrier unit having a peripheral flexible endless member mounted in a substantially vertical plane with the long dimension of the oval oriented at an angle from horizontal substantially equal to an average stair pitch and with one end of said oval carrier being proximate corresponding of said wheels, means connected to said endless member for rotating said endless member about said carrier, and deployable lugs extending from said endless member in said vertical plane for engagement with treads of said stairs, said lugs being moved from a retracted position to a deployed position upon contact of a portion of said lugs with said treads.

4,432,426

STAIR CLIMBING WHEELCHAIR CARRIER

Rintaro Misawa, Tokyo, Japan, assignor to Sunwa Sharyo Manufacturing Company Limited, Tokyo, Japan

Filed Apr. 20, 1981, Ser. No. 255,927

Claims priority, application Japan, Nov. 29, 1980, 55-168542

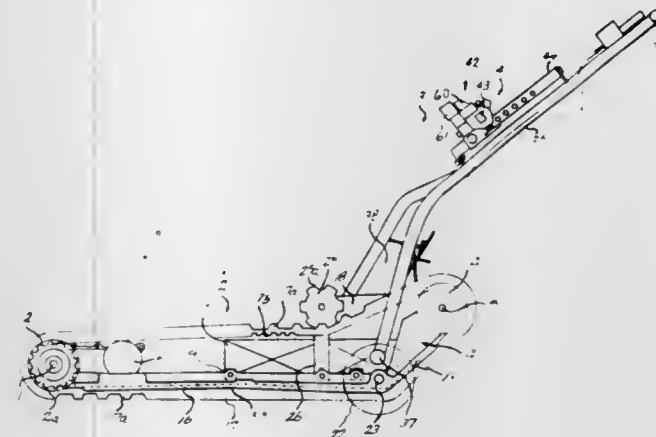
Int. Cl.³ B62B 5/02

U.S. Cl. 180-8 A

7 Claims

1. A stair climbing wheelchair carrier comprising:
 a carrier portion including a frame,
 a pair of endless belt crawlers on said frame,
 a plurality of pairs of wheels rotatably supported on said frame for guiding said endless belt crawlers and a driving motor for driving one of said pairs of wheels,
 each of said endless belt crawlers having a predetermined span in a longitudinal direction extending over a predetermined extent of two steps in a staircase and an oblique overhang portion at one end of said frame which has a first predetermined height higher than the usual height of a step in a staircase,
 a handle portion rotatably and detachably attached to said carrier portion at a portion adjacent to said oblique overhang portion so as to be rotated in the longitudinal direction of said carrier,
 said handle portion being adapted to be rotated between an

operating inclined position with respect to said carrier portion and a wheelchair engaging upright position with respect to said carrier portion,
 means for securing said handle portion to said frame at said operating inclined position,
 a pair of idlers mounted adjacent to said oblique overhang portion and depressingly engaging said endless belt crawlers at upper moving portions thereof adjacent to said oblique overhang portion so as to decrease the height of the upper moving portions so that substantially most of



said carrier portion including substantially up to said overhang portion has a second predetermined height lower than the top of a central free space beneath a wheelchair permitting the wheelchair to approach said handle portion,
 a wheelchair holding means provided on said handle portion for holding the wheelchair when said handle portion is at said wheelchair engaging upright position, whereby said wheelchair is set in the inclined operating position by rotating said handle portion from said wheelchair engaging position to said inclined operating position.

4,432,427

AGRICULTURAL TRACTORS AND OTHER VEHICLES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 4,877, Jan. 19, 1979, Pat. No. 4,311,203,

which is a continuation of Ser. No. 816,254, Jul. 15, 1977,

abandoned, which is a division of Ser. No. 588,156, Jun. 19,

1975, abandoned. This application Jan. 11, 1982, Ser. No.

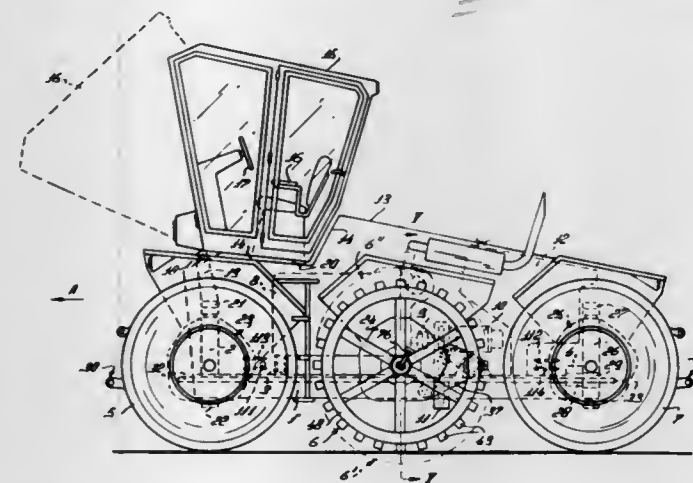
338,629

Claims priority, application Netherlands, Jun. 25, 1974, 7408500

Int. Cl.³ B62D 61/10

U.S. Cl. 180-24

16 Claims



1. A tractor which comprises: a frame, power producing means supported by said frame; at least three pairs of ground

wheels of substantially the same diameter mounted on said frame whereby one pair of said wheels are located rearwardly thereon, a further pair of said wheels are located rearwardly thereon and a central pair of said wheels are located between said forward and said rear pairs of wheels, said frame including a first portion which is rigid and mounts for rotation said forward pair of wheels and said central pair of wheels so that their individual axes of rotation are substantially retained in a generally horizontal plane, said frame including a second portion which is substantially turnable freely within limits about a horizontal fore and aft axis relative to said first frame portion, said rear wheels being mounted on said second frame portion, each said pair of wheels including separate means for rotating same; power transmission means connecting each said rotating means with said power producing means so constructed and arranged that each said pair of wheels is energized independently of the other said pairs of wheels; steering means connected to the forward of said pairs of wheels whereby said forward wheels are steerable with respect to said rear pair of wheels; connecting means connected to at least the rear of said frame for connecting implements to the tractor; said central wheels located between said forward and said rear pairs of wheels having a tread width greater than the tread width of said forward and rear wheels and having a dentated form as seen from the side.

4,432,428

MOUNTING MECHANISM FOR A DIFFERENTIAL GEAR ASSEMBLY OF AN AUTOMOBILE

Toshiro Kondo, and Kiyohiko Hamaoka, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

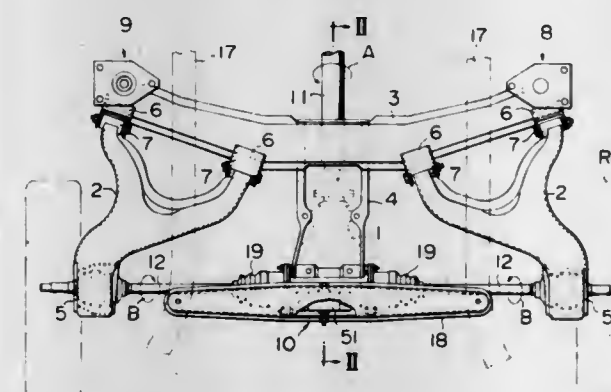
Filed Feb. 26, 1982, Ser. No. 352,572

Claims priority, application Japan, Feb. 28, 1981, 56-29010

Int. Cl.³ B60K 17/16

U.S. Cl. 180-73 D

5 Claims



1. A differential gear mounting structure for an automobile comprising a body, a sub-frame extending substantially transversely with respect to said body and having an intermediate portion and opposite end portions, said mounting structure including means for mounting differential gear means on said sub-frame at the intermediate portion thereof, said differential gear means being connected with a propeller shaft and a pair of sidewardly extending driving axles so that a driving torque of the propeller shaft is transmitted through the differential gear means to said driving axles to produce driving torque for driving wheels which are respectively connected with said driving axles, suspension arms pivotably connected at one end portion with said sub-frame respectively at the opposite end portions of said sub-frame and at the other end portion with said wheels, a pair of mounts for connecting the respective end portions of the sub-frame to said body so that reaction forces against the driving torques in said propeller shaft and in said driving axles are produced at the mounts, one of said mounts which is on the end portion of the sub-frame wherein said reaction force is greater than in the other end portion comprising fluid type damping means which has ability of absorbing relative vertical movement between said body and said sub-frame, the other mount including resilient support means.

4,432,429
AIR-CUSHION APPARATUS

Harold J. Clements, Canterbury, England, assignor to Modern Precision Engineers and Associates Limited, Ashford, England

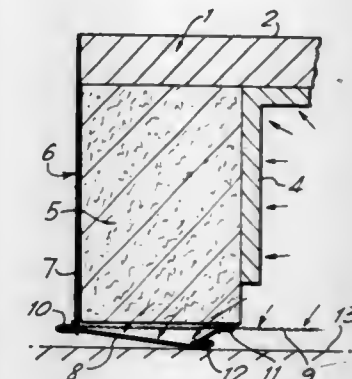
Filed Jul. 28, 1981, Ser. No. 287,558

Claims priority, application United Kingdom, Jul. 30, 1980, 8024948; Nov. 28, 1980, 8038187

Int. Cl.³ B60V 1/02

U.S. Cl. 180-127

16 Claims



1. An air-cushion supported, manually maneuverable, load-carrying apparatus comprising:
 a load-carrying base;
 a dependent perimetric skirt for laterally confining pressurized air; and
 means for restraining a foot portion of said skirt to a permanently inwardly extending configuration for urging said skirt into sealing engagement with the ground by the internal air pressure during operation, said foot portion having at least one ground-engaging sealing fin extending all around the skirt;
 wherein said skirt restraining means is secured to the skirt at spaced inner and outer regions, spanning said foot portion, said skirt restraining means having rectilinear spacing being substantially less than the corresponding width of the foot portion for providing the foot portion with freedom to seal with the ground, said skirt including means for urging the foot portion into substantially continuous sealing engagement with an irregular ground surface when the skirt is not pressurized.

4,432,430

WHEEL SPINNING CONTROL SYSTEM FOR MOTOR VEHICLES

Lars Lind, Floda; Kent Melin, and Lars Sandberg, both of Gothenburg, all of Sweden, assignors to AB Volvo, Gothenburg, Sweden

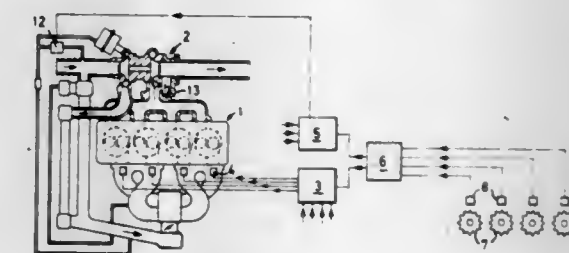
Filed Jun. 29, 1982, Ser. No. 393,625

Claims priority, application Sweden, Jun. 29, 1981, 8104064

Int. Cl.³ B60K 31/00; F02D 5/02

U.S. Cl. 180-197

5 Claims



1. Control system for optimizing driven wheel traction and the capacity to take up lateral forces in a wheeled vehicle with a combustion engine which has a fuel injection system with injection valves, which comprises first speed sensor means for continuous sensing of the speed of the driven wheels of the vehicle, second speed sensor means for continuous sensing of

the speed of the non-driven wheels of the vehicle, and a processing unit disposed to receive and compare speed-dependent signals sent by the first and second speed sensor means and upon detecting a speed difference to send a signal to a control unit to limit the injected quantity of fuel injected through the injection valves, characterized in that the processing unit is disposed to limit the injected quantity incrementally up to a level determined by the size of the speed differential between the driven and the non-driven wheels first having a speed differential, by sensing a signal to the control unit to discontinue the injection through the respective valves one by one, first intermittently and then completely, so that a predetermined small speed differential results in intermittent discontinuation of the injection through only one injection valve, and a predetermined large speed differential results in complete discontinuation of the injection through a plurality of valves.

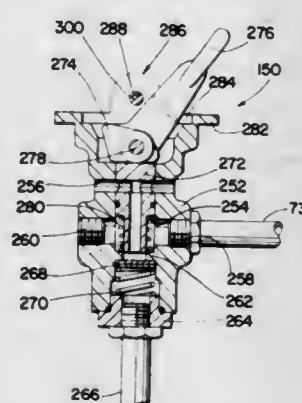
4,432,431

CHANGE SPEED MULTIPLE AXLE SHIFT LOCK OUT
John D. Russell, Mentor, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 7, 1981, Ser. No. 290,985
Int. Cl.³ F16H 1/44, 1/40

U.S. Cl. 180-248

4 Claims



1. An improved control system for a change speed multiple drive axle assembly comprising at least two driving axles, each of said driving axles including a change speed mechanism actuatable to vary the output speed of the axle to a high speed and a low speed range, axle assembly speed shift selector means associated with each of said change speed mechanisms and operable by movement between a first and a second position to selectively actuate said change speed mechanisms to vary the output speed of the driving axles substantially simultaneously, interaxle differential means drivingly connected between said driving axles and operable to provide a differential action therebetween, an interaxle differential lockup mechanism actuatable to render said interaxle differential inoperative, and interaxle differential lockup selector means operable to selectively actuate said interaxle differential lockup mechanism, the improvement comprising:

said interaxle differential lockup selector means effective to engage said interaxle differential lockup mechanism in both the high speed and low speed ranges of said driving axles and sensing means associated with said interaxle differential lockup mechanism effective to sense actual and impending engagement of said lockup mechanism, said sensing means effective to provide a signal to said axle shift selector means and shift lockout means associated with said axle shift selector means to positively prevent movement of said axle shift selector means between said first and second positions thereof whenever said sensing means signal indicates actual and impending engagement of said interaxle differential lockup mechanism, said shift selector means comprising a switch housing having a handle pivotably mounted therein, said handle pivotably movable to a first and a second position relative to said housing for operation of said axle change speed mechanisms and said shift lockout means comprising a member having a first position relative to said housing allowing

pivotal movement of said handle and a second position relative to said housing for blocking pivotal movement of said handle.

4,432,432

AUTOMOTIVE ANTI-THEFT DEVICE

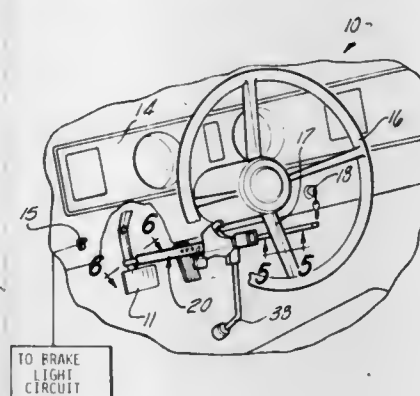
Neil J. Martin, 28150 Rose, Trenton, Mich. 48183

Filed Feb. 9, 1981, Ser. No. 232,541

Int. Cl.³ B60R 25/02, 25/08

U.S. Cl. 180-287

25 Claims



1. An automotive anti-theft device conversion kit for a standard automotive bumper jack of the type having a shaft, a jacking mechanism, a jack hook, apertures and removable lug wrench for locking the wheels of an automotive vehicle by installing the bumper jack with conversion kit between the brake pedal and steering wheel so as to depress the brake pedal of the automotive vehicle, said conversion kit comprising, a lower jack adaptor having a forked stem portion being adapted to engage the brake pedal arm of an automotive vehicle, a top portion adapted for attachment to the bottom end of a standard bumper jack shaft, and lock means for engaging the bumper jack to prevent the retraction or unjacking of the bumper jack once the brake pedal is depressed.

4,432,433

NOISE REDUCING COVER FOR INTERNAL COMBUSTION ENGINE

Naoki Ogawa, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

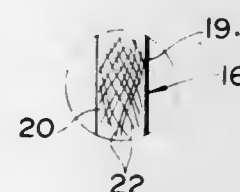
Filed Aug. 26, 1981, Ser. No. 296,510

Claims priority, application Japan, Sep. 3, 1980, 55-125239[U]

Int. Cl.³ F01N 1/24

U.S. Cl. 181-204

13 Claims



1. A noise reducing cover for an internal combustion engine, comprising:

a first layer formed into a self supporting three dimensional shape and of a first material which is high in vibration damping capacity, said first layer having an inner surface adapted to receive heat from the engine, and an outer surface directly contacting with ambient air; and means for effectively transmitting heat from said inner surface of said first layer to said outer surface of said first layer, said heat transmitting means including metal fibers contained in said first layer of high vibration damping capacity material.

4,432,434

SOUND ABSORBING ARRANGEMENT FOR AIR HANDLING UNITS

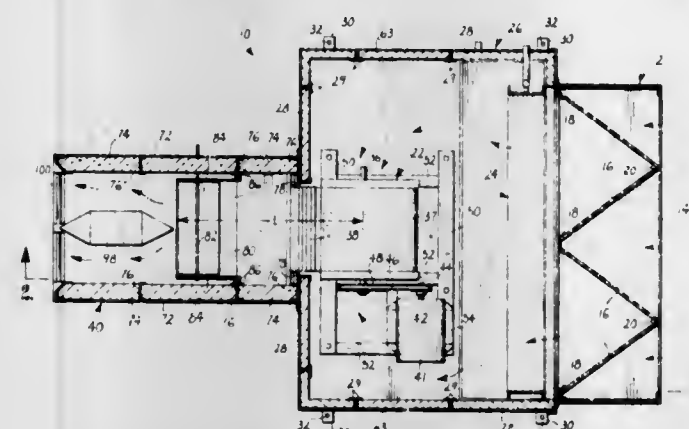
Frank J. Dean, Jr., Jackson County, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Jan. 7, 1982, Ser. No. 337,584

Int. Cl.³ F01N 1/24

U.S. Cl. 181-225

7 Claims



1. In a variable volume air handling unit having a housing, a fan in the housing presenting a plurality of forwardly curved blades turning about a fan axis to draw air into an inlet side of the fan and discharge the air from a discharge side of the fan, and a duct connected with the discharge side of the fan, the improvement comprising:

a damper mounted for opening and closing movement in said duct at a location downstream from the fan axis a distance having the dimension L; and
acoustical material in said duct between the fan and damper, said acoustical material having effective sound absorbing ability at a sound wave frequency $f = C/4L$ where C represents the speed of sound.

4,432,435

CLAMPING DEVICE

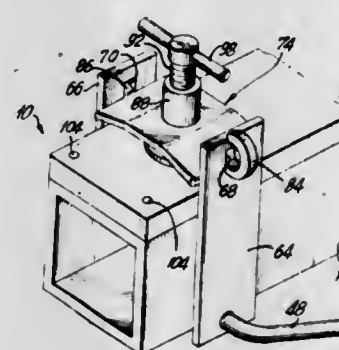
Carl Anderson, 12 St. Stephens Pl., Staten Island, N.Y.

Continuation-in-part of Ser. No. 143,506, Apr. 24, 1980. This application Apr. 20, 1981, Ser. No. 255,631

Int. Cl.³ E04G 7/10

U.S. Cl. 182-82

8 Claims



1. In combination, a U-shaped bracket comprising a pair of opposing side plates extending from a connecting bar, said side plates being relatively movable with respect to each other along said bar, the ends of said side plates remote from said bar being slotted, and

a clamping device for securing a rectangularly shaped pole within said bracket, said clamping device comprising, a plate member having a flat central section and forwardly angled side sections on either side thereof, said central section having a hole extending therethrough, a bolt having a forward end threadingly passing through said hole to extend from a forward surface thereof, a bearing plate rotatably mounted on the forward end of said bolt for abutting the pole and pressing it toward said bar, hook means laterally extending from opposing ends of said side sections of said plate mem-

ber for respectively engaging the slots in said side plates, said hook means being rearwardly angled with respect to said side sections to form a V interconnection therewith, whereby continued threading of said bolt against the pole presses said pole against said connecting bar and simultaneously said V interconnections draw together said side plates to abut the sides of the pole so that the pole is securely retained on all four sides thereof.

4,432,436

ADJUSTABLE TRANSOM BRACKETS AND COMPACT SELF-STORING BOAT LADDER

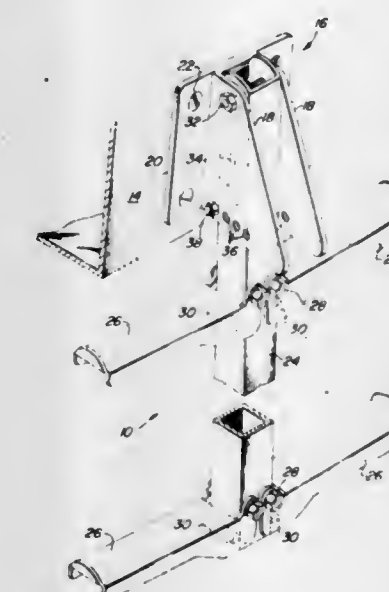
Glen H. Suiter, R.R. 1, Le Claire, Iowa 52758

Filed Sep. 23, 1982, Ser. No. 422,114

Int. Cl.³ E06C 5/04; B63B 27/14

U.S. Cl. 182-97

2 Claims



1. A ladder for attachment to the transom of a small boat, comprising a bracket of general U-shape as seen from above and including a transverse substantially upright wall including means for affixation of the bracket to the transom and a pair of upright, fore-and-aft flanges spaced closely laterally apart and rigid with and extending rearwardly from the wall, a transverse pivot carried by and spanning the flanges, a ladder post having a free end portion received between the flanges and having means connecting said end portion to the pivot for swinging inversion of the post from a down position extending into the water and an up position clear of the water, said means including a track extending lengthwise of the end portion and receiving the pivot as a track follower, said track having a first stop closely adjacent to the terminal end of the post and a second stop relatively remote from said terminal end, whereby the post in its down position depends from the pivot via its first stop and in its up position slides downwardly in the track and engages the second stop so that the portion of the post between the stops engages the bracket wall below the pivot to retain the post generally upright and against rearward swinging until the post is manually lifted upwardly to engage the first stop with the pivot.

4,432,437

FIRE ESCAPE SYSTEM

Thomas E. McClung, Old Forge Village, Clifton Forge, Va. 24422

Filed Jun. 10, 1981, Ser. No. 270,852

Int. Cl.³ A62B 1/10

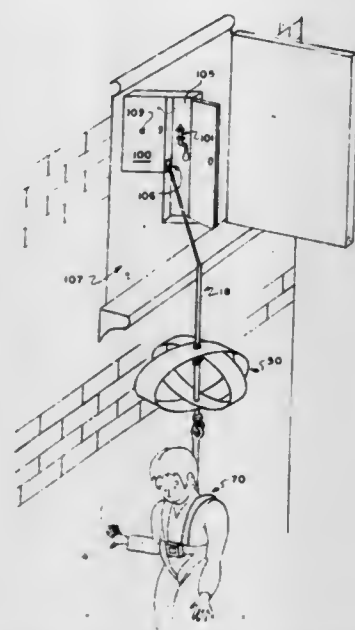
U.S. Cl. 182-234

19 Claims

1. An emergency evacuation system for occupants of high structures comprising:

A. Rotational speed controlled reel means for releasing a weight sustaining line at a substantially constant velocity;

B. Weight confining harness means connected to the leading end of said line; and



C. Weight deployed shield means for deflecting falling debris from striking said weight.

4,432,438

UPRIGHT FOR LIFT TRUCK

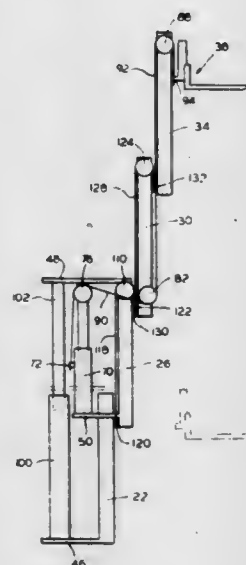
Richard H. Robinson, Jr., Kalamazoo, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 232,762, Feb. 9, 1981. This application Feb. 9, 1981, Ser. No. 232,493

Int. Cl.³ B66B 9/20

U.S. Cl. 187-9 E

32 Claims



26. An upright structure having vertical rails for lift trucks and the like having a fixed upright section, a plurality of telescopic upright sections mounted from said fixed section for simultaneous elevation relative to each other and to said fixed section and load carrier means mounted from one of said telescopic sections for elevation relative thereto, the improvement comprising a first lift cylinder means connected to a movable cylinder support means on one of the telescopic sections other than the telescopic section which is adapted to be actuated to maximum elevation, and a second lift cylinder means connected to a fixed cylinder support means, said first cylinder means being operatively connected to said load carrier means, and said second cylinder means being operatively connected to said plurality of telescopic upright sections.

4,432,439

ELEVATOR SYSTEM

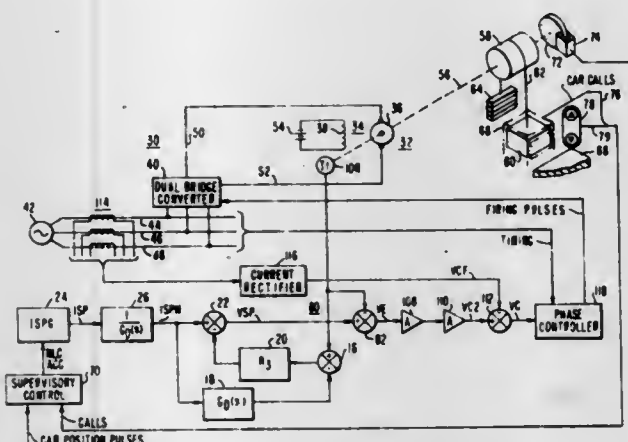
William R. Caputo, Wyckoff, N.J., and Masami Nomura, Nagoya, Japan, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1982, Ser. No. 356,688

Int. Cl.³ B66B 1/30

U.S. Cl. 187-29 R

6 Claims



1. An elevator system, comprising:
an elevator car,
speed pattern means providing a speed pattern signal,
a drive system for said elevator car which provides a first output signal in response to said speed pattern signal in accordance with a predetermined actual transfer function,
first means providing a second output signal in response to said speed pattern signal in accordance with a predetermined desired transfer function,
and second means responsive to said first and second output signals for forcing the drive system to adaptively appear to have said predetermined desired transfer function.

4,432,440

ELECTRICALLY ACTUATED AIRCRAFT BRAKES

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

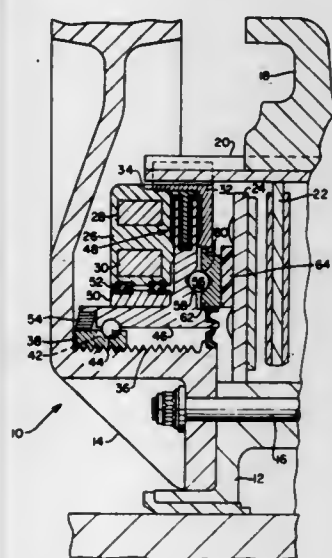
Division of Ser. No. 62,199, Jul. 30, 1979, Pat. No. 4,381,049.

This application Feb. 11, 1982, Ser. No. 347,851

Int. Cl.³ F16D 55/02

U.S. Cl. 188-71.2

11 Claims



1. A brake control assembly for incorporation with a pressure plate and a brake disk stack, comprising:
a first member operatively connected to a wheel rim and rotatable therewith;
a second member operatively connected to the pressure plate,

said second member being maintained upon a ball screw operative within a spiral groove of fixed length;
a metalized fluid maintained between said members; and
electrically actuated coil means for selectively magnetizing said fluid and thereby imparting rotation of said rotating member to said nonrotating member.

4,432,442

HYDRODYNAMIC TORQUE-TRANSFER UNIT, ESPECIALLY A HYDRODYNAMIC BRAKE

Klaus Vogelsang, Crailsheim, Fed. Rep. of Germany, assignor to Volth Turbo GmbH & Co KG, Fed. Rep. of Germany

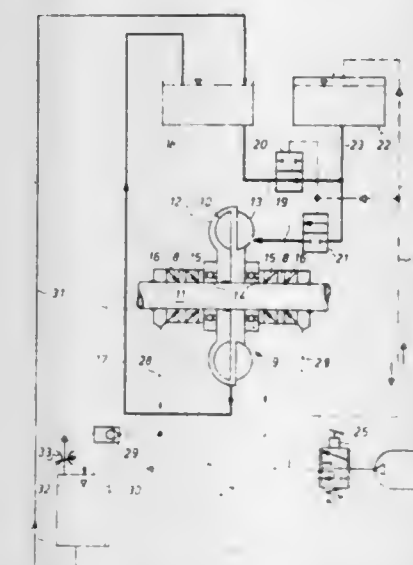
Filed Jul. 27, 1981, Ser. No. 286,986

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028429

Int. Cl.³ F16D 57/06; B60T 11/00; B60K 41/26; F01D 25/32

U.S. Cl. 188-290

8 Claims



1. Hydrodynamic torque transfer apparatus, comprising:
a housing defining a working chamber for containing working fluid; a stator and a cooperating rotor in the housing for defining transfer means in the chamber, wherein the torque transferred is dependent upon the level of working fluid in the working chamber and the speed of rotation of the rotor with respect to the stator;
an inlet line for delivering working fluid to the working chamber; an outlet line for removing working fluid from the working chamber; fluid recirculating means for connecting the inlet and outlet lines to recirculate working fluid from the outlet line to the inlet line;
the rotor being supported on a shaft extending through the housing; sealing means sealing the shaft in the housing for reducing leakage of working fluid along the shaft;
a leaked fluid recovery line communicating with the rotor shaft outside the sealing means along the shaft for recovering working fluid that leaks past the sealing means; a leaked fluid reservoir connected to receive working fluid recovered by the recovery line; the leaked fluid reservoir communicating with the recirculating means for delivering working fluid thereto;
a working fluid feed reservoir connected to the inlet line for feeding working fluid to the working chamber;
pressurizing means selectively connectable to the feed reservoir for pressurizing the feed reservoir to urge working fluid into the inlet line to the working chamber;
first valve means for selectively connecting the pressurized fluid feed reservoir to the working chamber and for disconnecting them;
second valve means for selectively connecting the feed reservoir to the leaked fluid reservoir for pressurizing the leaked fluid reservoir with the pressure of the feed reservoir to urge working fluid from the leaked fluid reservoir to the recirculating means, and the second valve means being operable for disconnecting the feed reservoir and the leaked fluid reservoir;
means for coordinating the first and second valve means such that when the pressurizing means is connected to the feed reservoir, the feed reservoir is disconnected from the leaked fluid reservoir, and vice-versa.

4,432,441

VIBRATION ISOLATION APPARATUS

Masahito Kurokawa, Yokohama, Japan, assignor to Kokka Kogyo Kabushiki Kaisha, Tokyo, Japan

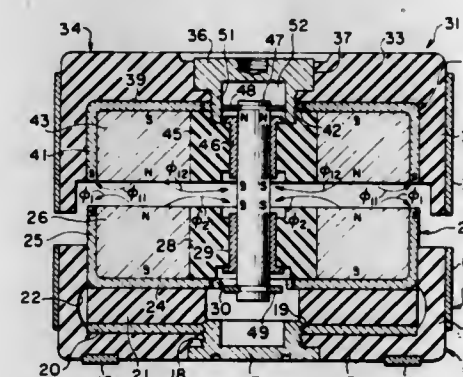
Filed Mar. 10, 1982, Ser. No. 356,691

Claims priority, application Japan, Apr. 13, 1981, 56-54407

Int. Cl.³ F16F 6/00, 7/00, 13/00

U.S. Cl. 188-267

6 Claims



1. A vibration isolation apparatus comprising
a pair of upper and lower casings each having a cylindrical opening which has its open end located opposite to each other;
a pair of substantially cup-shaped upper and lower yoke members of a magnetizable material which are disposed within the respective cylindrical openings of the both casings and having their open ends located opposite to each other;
a pair of upper and lower permanent magnets disposed within the upper and the lower yoke member, respectively, each of the magnets being vertically magnetized and centrally formed with an opening vertically passing therethrough, the openings being aligned with each other on a common axis, and the opposing surfaces of the both magnets presenting magnetic poles of a like polarity;
a pair of upper and lower bearing members of a non-magnetic material disposed in the openings of the both magnets, the both bearing members having openings which are aligned with the common axis;
a connection shaft of a magnetizable material loosely fitted in the openings formed in the bearing members for coupling the pair of permanent magnets together in a manner such that one of the permanent magnets is axially slidable independently from the other permanent magnet;
and air damping means including a collar member secured to at least one end of the connecting shaft and a hollow cylinder formed in one of the upper and lower casings which is located adjacent to the collar member and having an opening in which the collar member is tightly fitted.

4,432,443

CLUTCH AND BRAKE AND IMPROVED UNIVERSAL COUPLING

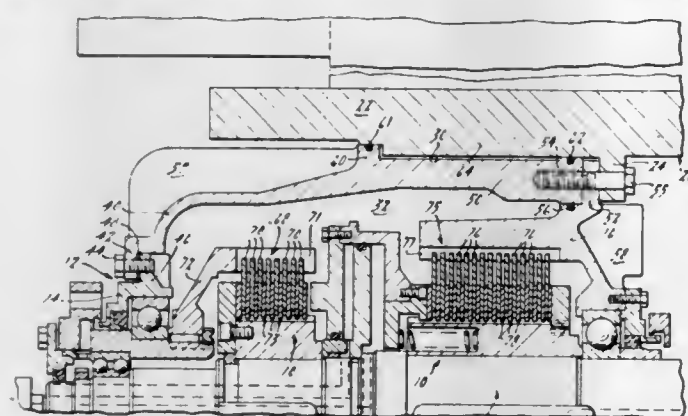
Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Co., Warren, Mich.

Filed Jan. 21, 1981, Ser. No. 226,635

Int. Cl.³ B60K 41/24

U.S. Cl. 192—12 R

12 Claims



1. In combination with a rotatable flywheel having a central bore, a rotatable shaft adapted to be rotated by said flywheel, and a clutch-brake unit operably associated with said rotatable shaft,

a housing assembly comprising a pair of end walls and an annular enclosure member extending between and attached to both of said end walls, said housing assembly forming a reservoir chamber around a portion of said shaft and surrounding said clutch-brake unit,

means for removably securing said housing assembly, clutch-brake unit and said shaft as a unit to said flywheel, and

means for orienting said housing assembly within said central bore of said flywheel disposed at an intermediate location on said housing assembly between said means for removably securing and one end wall of said housing assembly.

4,432,444

FLUID FRICTION CLUTCH

Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

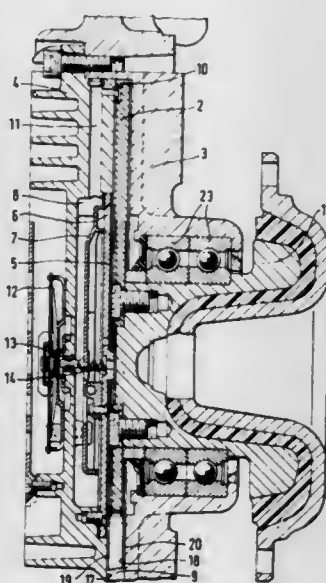
Filed Mar. 12, 1981, Ser. No. 242,821

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009665

Int. Cl.³ F16D 35/00

U.S. Cl. 192—58 B

19 Claims



1. A fluid friction clutch, comprising:

a drive disk having at least one first working surface;

a housing enclosing said drive disk and being mounted rotatably with respect thereto, said housing including at least one second working surface in spaced relationship with said first working surface to form a gap therebetween;

means for selectively introducing a fluid working medium into said gap; and

means for removing the fluid working medium from said gap wherein at least one of said first and second working surfaces comprises a roughened surface, said roughening providing a more uniform filling of the working gap thus reducing uncontrollable throwing of said working medium and fluctuations in r.p.m. as said working medium is introduced.

4,432,445

CLUTCH CONTROL SYSTEMS

Harry M. Windsor, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

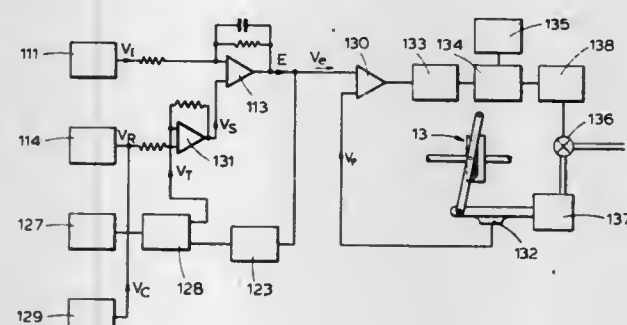
Filed Jun. 1, 1981, Ser. No. 268,807

Claims priority, application United Kingdom, Nov. 4, 1980, 8035377

Int. Cl.³ B60K 41/02

U.S. Cl. 192—0.076

7 Claims



1. A vehicle transmission clutch control system for a vehicle having an engine, a transmission and a friction clutch interposed therebetween, the clutch being selectively engagable for establishing a driving connection between engine and transmission, thereby to load the engine and control engine speed, the control system comprising:

an engine speed sensor;

means for producing an electrical engine speed signal derived from the engine speed sensor;

generator means for producing an electrical reference signal;

a throttle position sensor which produces a throttle signal indicative of throttle position;

means for the summation of the throttle signal and reference signal to produce a modified reference signal;

comparator means arranged to receive and compare the modified reference signal and engine speed signal and produce a consequent error signal;

a clutch actuator that operates the clutch to vary the degree of engagement of the clutch; and

a control means responsive to said modified error signal and controlling the actuator to control the state of engagement of the clutch to control the load on the engine so as to equalize said engine speed signal and modified reference signal until the clutch is fully engaged.

4,432,446

ELECTROMAGNETIC COUPLING APPARATUS

Reijiro Okano, and Kiyoshi Usami, both of Oobu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 26, 1981, Ser. No. 267,424

Claims priority, application Japan, Jun. 28, 1980, 55-91085; Dec. 11, 1980, 55-178267

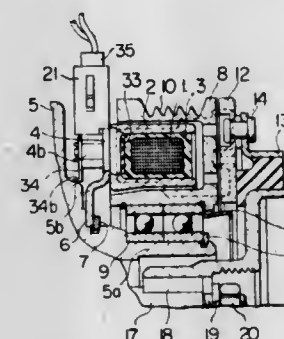
Int. Cl.³ F16D 27/10

U.S. Cl. 192—84 C

8 Claims

1. An electromagnetic coupling apparatus comprising a

rotary body rotated by the driving power from a drive source, an armature disposed in opposed and spaced relation with said rotary body, a magnet coil having terminals projecting therefrom and having a magnetic circuit containing said rotary body and said armature for attracting and holding said armature to said rotary body, a yoke containing said magnet coil, a hub coupled to said armature through an elastic member for trans-



mitting the rotation of said armature, an electric connector in direct contact with said yoke and connected with said magnet coil, and a fixing member for securing said yoke and said electric connector together, said yoke and said fixing member having a through hole through which the terminals of said magnet coil project to the outside of said fixing member, said electric connector having an end connected to an end of said magnet coil in said electric connector.

4,432,447

COIN DETECTING DEVICE FOR A COIN SORTING MACHINE

Akio Tanaka, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

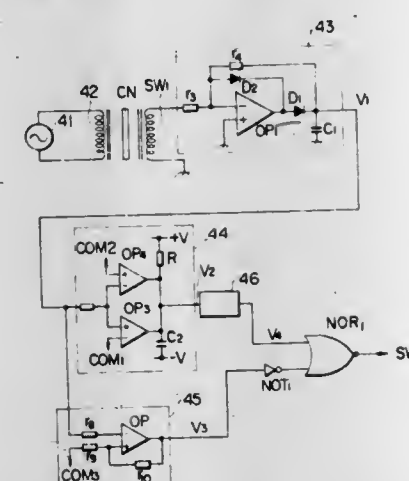
Filed Jul. 25, 1978, Ser. No. 928,023

Claims priority, application Japan, Jul. 25, 1977, 52-89095

Int. Cl.³ G07D 5/08

U.S. Cl. 194—100 A

1 Claim



1. A coin detecting device for a coin sorting machine in which a sorting coil for detecting the characteristics of a coin and coin detectors for detecting the passage of a coin are arranged in a coin rolling passageway, successive coin insertion or a coin sorting period is determined by a detection signal provided by said coin detectors, and the variation in impedance of said sorting coil which is caused when a coin passes through said sorting coil is detected to determine whether said coin is a true coin or a false coin, the improvement characterized in that said device further comprises:

discriminating means for discriminating between a true coin and a particular coin by detecting the diameter of the particular coin, said particular coin causing the impedance of said sorting coil to vary in a manner similar to that caused by the true coin, such that the sorting coil errone-

ously determines that the particular coin is a true coin by generating a sorting signal;

signal transmitting and receiving coils disposed on opposite sides of said coin passageway; and

receiving coil detection circuit means for subjecting the signal induced in said receiving coil by a passing coin to first and second level detections, said detection circuit means providing a first output signal indicative of the passage of said particular coin when the level of the signal in said receiving coil is between said first and second levels for a predetermined minimum period of time;

and wherein said detection circuit means subjects said receiving coil signal to a third level detection and outputs a second output signal indicative of the passage of a coin other than said particular coin when said receiving coil signal traverses said third level but is not between said first and second levels for at least said predetermined minimum period of time;

and wherein said first output signal consists of two pulses within said predetermined period, and said second output signal consists of only one pulse within said predetermined period;

and wherein said machine further includes gate means operable for directing true coins along a true coin path and false coins along a reject path; said device further comprising:

up/down counter means responsive to said first and second output signals for producing a count signal only in response to said second output signal; and logic circuit means responsive to a sorting signal and to the absence of said count signal for producing, at the end of said sorting period, a control signal for operating said gate means to direct said particular coin along said reject path.

4,432,448

CONVEYOR TROUGH FOR A SCRAPER CHAIN CONVEYOR

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

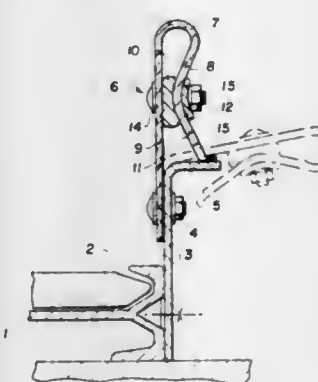
Filed Dec. 23, 1981, Ser. No. 334,073

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049253

Int. Cl.³ B65G 19/28

U.S. Cl. 198—735

7 Claims



1. A conveyor trough for a scraper chain conveyor comprising a sheet metal bracket which is adapted to be secured along the side wall of the trough and which has a wall with an inside facing the trough and an upper portion with an outwardly bent cover leg, and an attached bracket secured to the inside of the metal bracket and made of a resiliently bending material and projecting upwardly from said cover leg of said metal bracket, said attached bracket having a loop forming bend forming the upper edge thereof, and an outwardly extending stabilizing leg propped against said cover leg of said metal bracket.

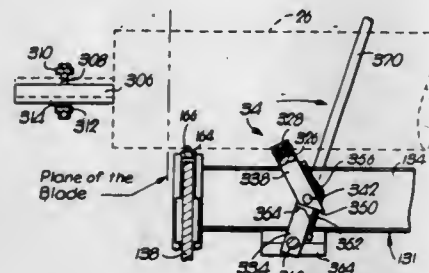
4,432,449

LOG CUTTING DEVICE HAVING LOG SHIFTING MEANS

Leslie A. Neff, 2020 W. 15th, Emporia, Kans. 66801
 Division of Ser. No. 119,403, Feb. 7, 1980, Pat. No. 4,331,052.
 This application Dec. 28, 1981, Ser. No. 334,464
 Int. Cl.³ B65G 25/00

U.S. Cl. 198—777

3 Claims



1. Handling apparatus for an elongated object such as a log or the like, comprising:
 means for supporting said object along the length thereof;
 and
 means for incrementally axially and forwardly shifting said object as desired, said shifting means including
 an object-shifting member disposed below said object and having a lower portion, an upper portion, means carried by said upper portion for engaging said object, and means pivotally coupling the upper and lower portions;
 and
 means operatively connected to said member for selective fore and aft pivotal movement thereof about an axis transverse to the longitudinal axis of said object,
 said coupling means including structure for preventing pivoting of said upper and lower portions relative to each other during pivoting of the member in a forward direction for said forward axial shifting of said object, and for permitting pivoting together of the upper and lower portions upon rearward pivoting of the member in a direction opposite to said forward direction,
 said coupling structure including complementary, adjacent, obliquely oriented engagement surfaces on said upper and lower portions respectively, said surfaces being cooperatively arranged for collapsing together of said upper and lower portions upon rearward shifting of said member to an extent to clear said object.

4,432,450

MESH-BELT CONVEYOR FOR INDUSTRIAL FURNACES

Oddino Dorigo, Bagnolo Cremasco, Italy, assignor to Societa' Industriale Bagnolo S.I.B. S.r.l., Bagnolo Cremasco, Italy
 Filed Oct. 1, 1981, Ser. No. 307,636
 Claims priority, application Italy, Oct. 2, 1980, 25093 A/80
 Int. Cl.³ B65G 23/00

U.S. Cl. 198—832

8 Claims



1. An endless belt conveyor disposed in an elongated path having at one end an idle reversing roller about which the conveyor is trained and at the other end a labyrinth device through which the endless conveyor is trained, means mounting the labyrinth device for movement toward and away from the reversing roller, the labyrinth device when moving away from the reversing roller exerting greater friction on the end-

less belt conveyor than when moving toward the reversing roller, the endless belt conveyor having substantial slack when said labyrinth device is nearest said reversing roller, and means for gripping and advancing said slack toward said reversing roller, said labyrinth device and said means for gripping and advancing cooperatively serving to intermittently advance said endless belt conveyor.

4,432,451

BATHROOM ACCESSORY

Oneida O. Hooser, 313 N. Church (Brooklyn), Mooresville, Ind. 46158

Filed Mar. 9, 1983, Ser. No. 473,530
 Int. Cl.³ B65D 85/67

U.S. Cl. 206—216

10 Claims



1. A canister device for storage of toilet tissue in rolled form, comprising:
 a generally cylindrical enclosure housing, of an internal diameter large enough to accommodate the diameter of a roll of toilet tissue;
 the housing being open at its upper end, and provided with a slot extending downwardly from its upper end continuously a length at least as long as the length of a roll of said tissue;
 tray-support means located inwardly of the housing; and
 a movable tray member supported by said tray-support means, and inwardly of the housing;
 the tray member having a lug which extends outwardly of the slot of the housing when the tray member is positioned in the housing, and providing a manually graspable handle for the tray by which it and a roll of tissue supported thereon may be raised to an upward position such that the roll of tissue may be grasped from above the upper end of the housing without reaching downwardly into the housing.

4,432,452

PROTECTIVE RAZOR PACKAGE

John F. Kelly, Randolph, Mass., assignor to The Gillette Company, Boston, Mass.

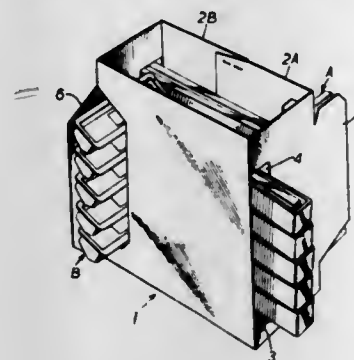
Filed May 19, 1982, Ser. No. 379,592
 Claims priority, application United Kingdom, Jun. 19, 1981, 8118888

Int. Cl.³ B65D 75/58; A45D 27/29; B65D 75/64
 U.S. Cl. 206—354

3 Claims

1. A package for a plurality of razors each having an elongated handle and a transversely extending shaving head at the upper end thereof, the package being formed from card which is cut, shaped and secured to form an envelope having an opposed pair of side walls forming a first side wall and a second side wall and an opposed pair of end walls forming a first end wall and a second end wall, a first group of razors being accommodated in the envelope with the lower end portions of

their handles projecting through only said first end wall and with portions of their heads projecting through only said first side wall, and a second group of razors in a side-by-side orientation with said first group of razors and being reversed end for



end with those of the first group, and having the lower end portions of their handles projecting through only said second end wall, and portions of their heads projecting through only said second side wall.

4,432,453

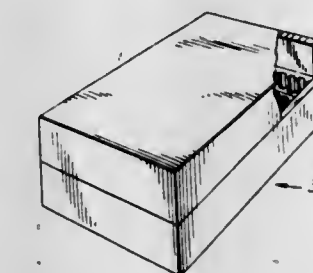
STORAGE SYSTEM FOR EITHER BOXED OR UNBOXED CASSETTES

Joseph L. Berkman, Mamaronck, N.Y., assignor to Berkman Industries, Inc., Boynton Beach, Fla.

Filed Sep. 30, 1982, Ser. No. 429,200
 Int. Cl.³ B65D 85/30, 85/62

U.S. Cl. 206—387

12 Claims



1. A storage case for magnetic tape cassettes and tape cassette boxes comprising at least one row having a plurality of tandem compartments for interchangeably receiving and storing either a boxed cassette or a pair of unboxed cassettes in the same compartment, each said compartment having opposite side walls connected by means of a bottom wall, and having twin parallel storage zones disposed transverse to said opposite side walls; each said compartment further comprising projection means separating and dividing said compartment into said twin parallel storage zones on either side of said projection means; said opposite side walls having pairs of vertical ribs for guiding and securely retaining a single boxed cassette in place in said compartment atop said projection means, and vertical end stops adjacent said vertical ribs for limiting transverse movement of unboxed cassettes stored and securely retained between said projection means and oppositely disposed compartment separating guides projecting inwardly from said opposite side walls.

4,432,454

COMPARTMENTALIZED DOCUMENT CARRIER CARTON

Otis J. Bloom, 478 Richmond Dr., Millbrae, Calif. 94030
 Filed Sep. 20, 1982, Ser. No. 420,029

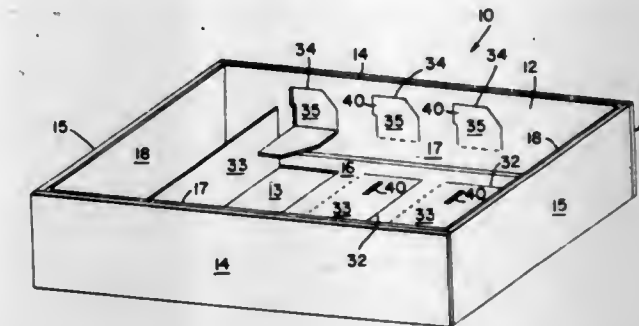
Int. Cl.³ B65D 5/48, 85/00

U.S. Cl. 206—425

10 Claims

3. A document carrier carton having a bottom wall, a pair of side walls and a pair of end walls, said bottom wall having a plurality of spaced U-shaped slits therethrough with the portions of said bottom wall within said slits being bendable up-

wardly in spaced parallel relation to define partitions extending parallel to said end walls of said carton, said side walls having a plurality of spaced substantially U-shaped slits therethrough with the portions of said side walls within said slits bendable inwardly in spaced relation to each other into parallel relation



to said body part to provide abutment members between said partitions at each end thereof, and means for removably fixing each of said abutment members of one side wall together with a corresponding one of said abutment members of the other of said side walls to a different one of said partitions.

4,432,455

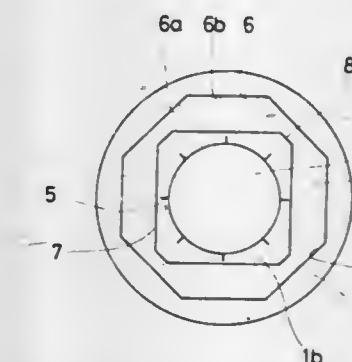
SUPPORT FOR TABLETS, CAPSULES, PILLS OR THE LIKE

Jean-Claude Savoir, 43, rue de Lausanne, 1201 Geneva, Switzerland

Filed Nov. 9, 1981, Ser. No. 321,174
 Claims priority, application France, Mar. 11, 1980, 80 05425
 Int. Cl.³ B65D 83/04

U.S. Cl. 206—531

3 Claims



1. Packaging for supporting tablets, capsules, pills or the like articles on the neck of a container, said packaging comprising an inner annular disc having a central opening of a size and shape to fit frictionally on the neck of a container, an outer annular disc surrounding said inner disc with article-receiving spaces between the outer periphery of said inner disc and the inner periphery of said outer disc, said articles being received in said spaces; and two coatings adhering respectively to opposite faces of said discs to unite said disc in a unitary packaging and retain said articles in said spaces.

4,432,456

JEWELRY DISPLAY AND STORAGE APPARATUS

Joseph Ovadia, and Abraham Ovadia, both of 150 W. 47th St., New York, N.Y. 10036

Filed Jan. 4, 1982, Ser. No. 336,819

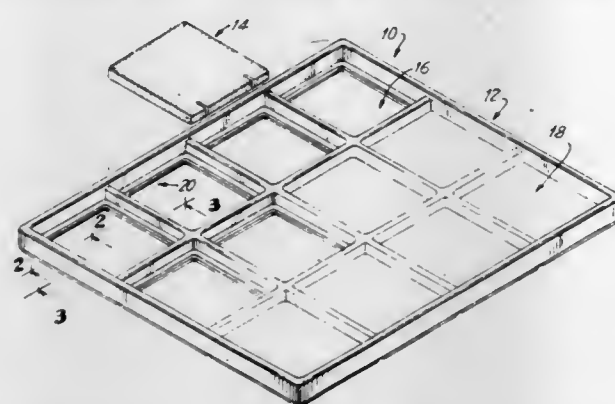
Int. Cl.³ B65D 1/36, 6/04

U.S. Cl. 206—566

10 Claims

1. A jewelry display and storage apparatus comprising a frame defining an open gridwork, said gridwork being formed of a series of vertically extending walls, each of said walls terminating at its lower edge in a horizontally projecting step; one or more jewelry mounting pads mounted within said gridwork, said jewelry mounting pads having a top surface upon

which jewelry may be mounted and displayed, a bottom surface, and peripheral depending sides adapted to be embraced by said walls and supported by said projecting steps such that said gridwork and said bottom surface of said pads form an open-bottom chamber below said pads, said walls being so



dimensioned and arranged to permit identical frame members to be stacked one atop the other, such that jewelry mounted on a mounting pad of a first display apparatus sits within an open-bottom chamber of the next stacked apparatus and is completely surrounded by and separated from adjacent jewelry items by walls of the next stacked apparatus.

4,432,457

ARTICLE SELECTION APPARATUS

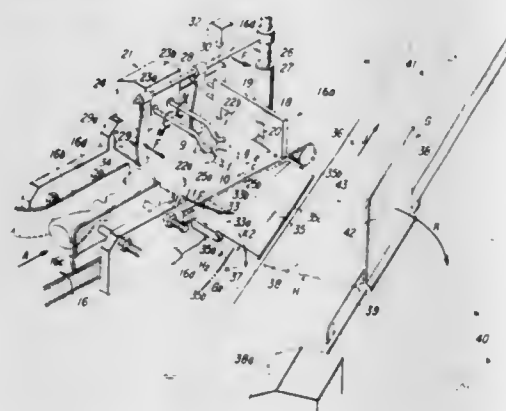
Yuji Sawa, and Yozo Kudo, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 19, 1981, Ser. No. 235,877

Claims priority, application Japan, Feb. 25, 1980, 55-22533; Mar. 14, 1980, 55-32998

Int. Cl.³ B07C 5/04

U.S. Cl. 209—557

14 Claims



1. An article-selection apparatus comprising a first conveying means for conveying an article, a second conveying means for receiving said article at an entrance end spaced apart by a predetermined distance from a conveying end of said first conveying means and for conveying the received article, a stopper for abutting against a downstream end of said article to be selected and conveyed by said second conveying means and for stopping said article, a discrimination means for discriminating a shape of said article abutted against said stopper at said downstream end thereof and for generating discriminating signals, a third conveying means having an entrance portion adjacent to said second conveying means, a pushing means for pushing said article to be selected out to said entrance portion of said third conveying means, a selection member for guiding the pushed-out article to said entrance portion of said third conveying means when said selection member is set to a first position and for guiding said pushed-out article outside of said third conveying means when said selection member is set to a second position, and a setting means for setting the position of said selection member according to said discriminating signals from said discriminating means, said first conveying means having a gap which extends along the conveying path to a

conveying end thereof and said gap having a width smaller than said predetermined distance from said conveying end of said first conveying means to said entrance end of said second conveying means and said first conveying means comprising two conveying sections each of which has a conveying surface downwardly inclined to said gap.

4,432,458

ELECTRONIC CONTROL SYSTEM FOR MONITORING AND CONTROLLING THE MOVEMENT OF AN ENVELOPE THROUGH A MAIL SORTING MACHINE

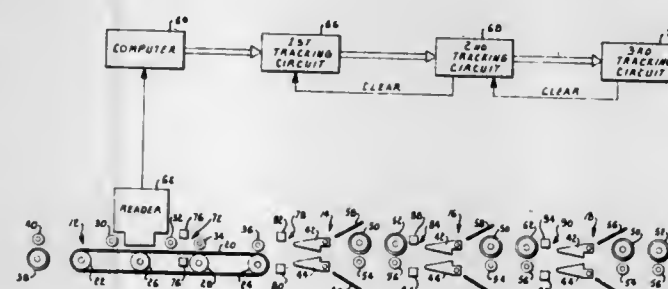
Henry A. Daboub, Dallas, Tex., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 204,588, Nov. 6, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 333,768

Int. Cl.³ B07C 3/06, 5/36

U.S. Cl. 209—564

6 Claims



1. In a mail sorting machine having a plurality of deflecting gates which are arranged in pairs to provide a single guideway through which envelopes may be asynchronously conveyed, each deflecting gate having a normal position in which an envelope is allowed to pass through said guideway unimpeded and a deflect position in which an envelope is deflected out of said guideway, the improvement therein of a tracking circuit associated with each pair of deflecting gates and interconnected in series with the remaining tracking circuits, each tracking circuit serving to control the position of the gates, each successive tracking circuit comprising:

sensing means for generating an alert signal in response to an approaching envelope;

means for accepting from a preceding tracking circuit an encoded designation signal in response to an alert signal, said designation signal being arranged to have a location portion which is encoded to represent a particular numerical value and an encoded gate designating portion;

each tracking circuit for a succeeding pair of gates including means for generating and transmitting a clear signal to the tracking circuit of the immediately preceding pair of gates to clear the designation signal therefrom upon the acceptance of said encoded designation signal by said tracking circuit for a succeeding pair of gates and irrespective of the elapsed time of movement of an envelope between adjacent pairs of gates as sensed by successive tracking circuits;

means for changing the numerical value of said location portion of said designation signal by a set numerical quantity to thereby produce an updated designation signal;

means for comparing the numerical value represented by the location portion of the new designation signal with a preselected numerical value; and

means for examining the gate designating portion of said new designation signal if the numerical value represented by the location portion of the updated designation signal coincides with said preselected numerical value, said examining means also being operable to cause the deflecting gate designated by the gate designating portion of said updated designation signal to be placed in a deflect position.

4,432,459

TACK BOX AND SADDLE RACK UNIT

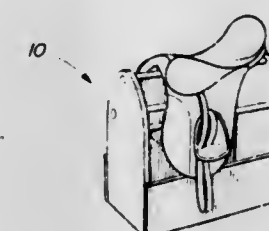
Margaret E. Coldren, R.D. #1, Abbottstown, Pa. 17301

Filed Mar. 6, 1981, Ser. No. 241,423

Int. Cl.³ A47F 7/00

U.S. Cl. 211—13

1 Claim



1. A tack box and saddle rack unit comprising in combination, a generally rectangular box including a lower portion having parallel side panels of equal height and a unitary bottom panel, the opposite ends of which are secured respectively to the opposite side and bottom edges of the lower portion of parallel vertical end members having upper portions which extend a substantial distance above the upper edges of said side panels comprising the lower portion of the box, an uppermost rail extending between the uppermost portions of said end members centrally thereof in the upper portion of the box to support a saddle, and a pair of side rails respectively extending between the upper portions of said end members within a common horizontal plane above the upper edges of said side panels a distance substantially equal to the height of said side panels in a somewhat triangular arrangement with said uppermost rail and respectively being spaced a short distance inward from the outer edges of said end members and within vertical planes parallel to but spaced inward from the inner surfaces of said side panels of the lower portion of said box and operable to have stirrup straps and other depending side members of a saddle draped along the outer surfaces of said side rails for disposition of stirrups and other accouterments within the box of the unit, said upper portions of said end members extending above the lower portion of the box defined by the upper edges of said side members a distance greater than the height thereof and said central uppermost rail being above said pair of side rails, whereby all of said rails are in the upper portion of said box above the lower portion thereof.

4,432,460

DEVICE FOR THE RECEPTION OF LEAF-SHAPED BODIES ESPECIALLY OF SHEETS OF PAPER

Barbara E. Bell, Achalmstr. 4, D-7447 Aichtal, Fed. Rep. of Germany

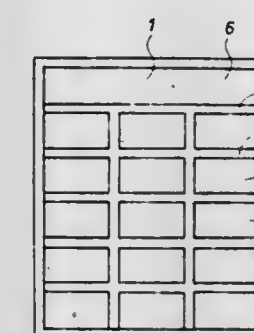
Filed Nov. 24, 1980, Ser. No. 209,737

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947397

Int. Cl.³ A47F 5/08

U.S. Cl. 211—50

8 Claims



1. An apparatus for receiving and holding flat bodies such as

cards or sheets for display thereof, the apparatus comprising the combination of

first and second generally planar, plate-like wall members; a plurality of separating strips extending longitudinally and transversely between said wall members for maintaining said wall members in substantially parallel, spaced relationship and for dividing the volume between said wall members into a plurality of compartments; said first wall member being transparent at least in the regions of said compartments, and

means defining a plurality of slots through said second wall member, each of said slots opening into one of said compartments adjacent a separating strip defining a top side of the compartment when the apparatus is in a normal, upright position, said slots being formed such that bodies placed in said compartments tend to remain therein when said apparatus is inverted.

4,432,461

TAMPER INDICATING PACKAGE

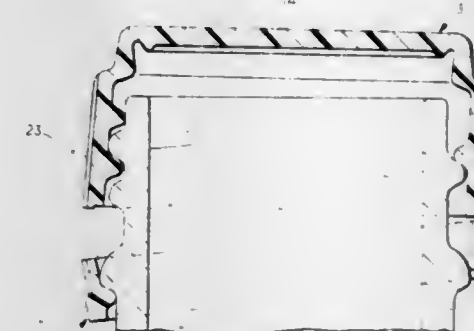
George V. Mumford, and Ernest L. Li, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 9, 1982, Ser. No. 366,796

Int. Cl.³ B65D 41/34

U.S. Cl. 215—252

12 Claims



1. A tamperproof package comprising a container having a neck with external threads formed thereon, a plastic closure comprising a top panel and an integral depending annular skirt, said skirt having integral internal threads formed thereon complementary to the threads on the neck of the container, said container having an annular bead positioned axially below the threads, said skirt having a ring at the lower end thereof connected to the upper portion of the skirt by a plurality of circumferentially spaced integral bridge portions located below the threads when the closure is on the container, said ring having a radially inwardly extending annular rib engaging beneath the locking bead of the container when the closure is on the container, the thickness of the ring being such that the ring will flex to an oval configuration, one of said bridge portions having a greater cross section than the remainder of said bridge portions such that when the closure is applied to the container, the rib on the pilfer ring snaps over and engages below the annular bead on the container, and when the closure is rotated to remove the closure from the container, the bridge portions are broken except for the bridge portion having the greater cross section, the ring will flex to an oval configuration as the closure is being removed so that the ring will pass over the annular bead of the container into the space between the threads of the container and the bead such that the pilfer ring remains connected to the closure.

4,432,462

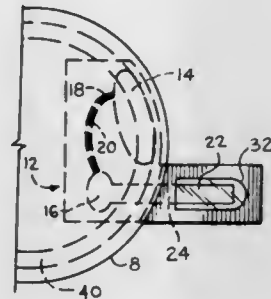
RECEPTACLE TAMPERING INDICATOR AND METHOD THEREFOR

Randall A. Newkirk, 22700 Lake Forest, #411, El Toro, Calif. 92630

Filed Oct. 18, 1982, Ser. No. 435,017
Int. Cl.³ B65D 55/02

U.S. Cl. 215—365

20 Claims



1. An indicator to provide a warning of tampering with a receptacle, said indicator to be positioned between a cap for closing said receptacle and a rim of said receptacle through which the contents of the receptacle are loaded, said cap being removably connected to said receptacle at the rim thereof, and said tampering indicator comprising:

fluid supply means,

fluid indication means responsive to and providing an indication of the presence of a fluid thereat, and

fluid path means interconnecting said fluid supply means with said fluid indication means,

said fluid supply means and said fluid path means being moved into engagement with the rim of said receptacle when the cap is connected thereto, so as to force fluid from said supply means into said path means, said fluid path means being blocked from communication with said indication means at the engagement of said path means by said receptacle rim, said fluid path means becoming unblocked to permit fluid to be conveyed to said fluid indication means in the event that the cap is removed from said receptacle and said fluid path means is disengaged from said receptacle rim.

4,432,463

WINE STORAGE CONTAINER

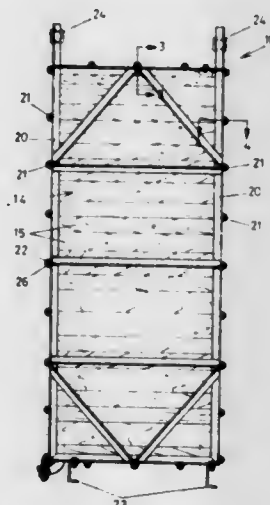
Leslie R. MacDonald, 15 Balfour Rd., Springfield, South Australia, and Wouter Verschoor, 5 Enford St., Elizabeth, South Australia, both of Australia

Filed Mar. 18, 1981, Ser. No. 245,084

Claims priority, application Australia, Mar. 25, 1980, PE2910
Int. Cl.³ B65D 6/24

U.S. Cl. 217—12 R

5 Claims



1. A container for the storage of wine, comprising:

a plurality of channel section members interconnected to define the container shape, each member having a central web and a flange on each longitudinal side of the web, the

webs of said channel section members together defining upper, lower and end walls of the container and bounding two open vertical sides of the container,

a pair of timber panel assemblies, one on each of said open vertical sides bounded by the channel section members, each timber panel assembly engaging the corresponding flanges of the channel section members,

resilient jointing material between each of said flanges of the channel section members and the associated one of the timber panel assemblies,

a pair of clamping frames, each contiguous with the outer surface of the respective one of the timber panel assemblies,

and a plurality of clamping bolts extending between the clamping frames and clamping the clamping frames, the timber panel assemblies, the resilient jointing material and the channel section members together.

4,432,464

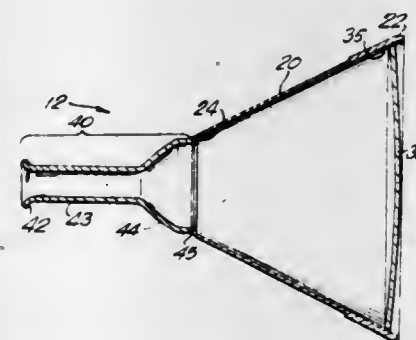
LARGE METAL CONE CATHODE RAY TUBES, AND ENVELOPES THEREFOR

Peter Seats, Boonton; Emil Sanford, Montclair, and Bernard M. Waxenbaum, Paramus, all of N.J., assignors to Thomas Electronics, Inc., Wayne, N.J.

Filed Sep. 9, 1981, Ser. No. 300,682
Int. Cl.³ H01J 31/00, 61/30

U.S. Cl. 220—2.1 A

18 Claims



1. A large cathode ray tube envelope comprising a metal truncated cone and a curved glass faceplate sealed to the large end of the cone, said faceplate comprising an inner surface and an outer surface, characterized by a beveled edge on the faceplate, said beveled edge comprising a substantially straight, radially, outwardly facing surface defining the outermost perimeter of said faceplate and joining the inner and outer surfaces of said faceplate, and a layer of solder glass between the beveled edge and the metal cone forming a hermetic seal between them, wherein the faceplate is supported solely by the beveled edge, and the angle of the bevel with respect to an axis through the center of the faceplate is substantially the same as the angle of the sealing zone of the metal cone and less than approximately 45°.

4,432,465

FIRE RATED CLOSURE PLUG

Emil S. Wuertz, Madison, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 309,166, Oct. 6, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,529

Int. Cl.³ B65D 53/00

U.S. Cl. 220—235

11 Claims

1. A closure fitting for installation in a generally circular opening in a fire rated barrier to maintain the integrity of the barrier comprising the combination of

a cover plate dimensioned to cover and extend beyond the periphery of the opening and lie adjacent one surface of the barrier;

generally annular gripping ring means having a continuous circular peripheral surface of compressible elastomeric

4,432,467

REINFORCED LID CONSTRUCTION FOR SECURITY CONTAINERS OR THE LIKE

Harold E. Swingle, Jr., Monona, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Mar. 8, 1982, Ser. No. 355,364
Int. Cl.³ B65D 43/14

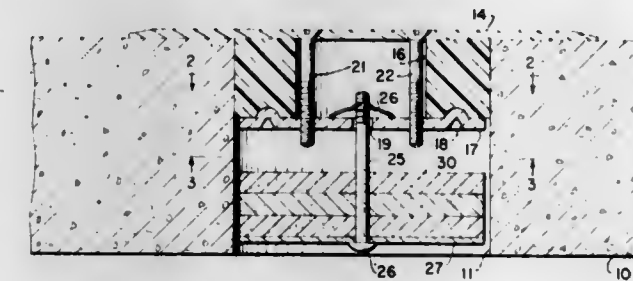
U.S. Cl. 220—334

6 Claims

material for fixing the position of the fitting in the opening, said ring means having an outer diameter equal to or less than that of the opening and having an axial thickness significantly less than that of the barrier, one face of said ring means being adjacent a surface of said cover plate;

a generally circular pressure plate adjacent the opposite face of said ring means and having a diameter smaller than said opening;

means extending between said cover plate and said pressure plate for urging said plates toward each other to axially



compress and radially expand said ring means against the opening;

a body of intumescent material having a diameter normally smaller than said opening; and

means for supporting said body of intumescent material in generally parallel relationship with said pressure plate, said means for supporting said body of intumescent material being adjustable relative to said pressure plate, whereby said body of intumescent material is positionable adjacent an opposite surface of the barrier.

4,432,466

CONTAINER HAVING CLOSURE PANEL INCLUDING INTEGRALLY FORMED SCOOP RUPTURABLE THEREFROM

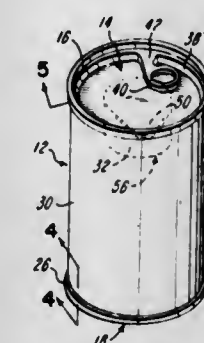
David O. Allen, Wilmington, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

Continuation of Ser. No. 345,344, Feb. 3, 1982, abandoned, which is a continuation of Ser. No. 205,458, Nov. 10, 1980, abandoned. This application Nov. 26, 1982, Ser. No. 444,545

Int. Cl.³ B65D 17/40

U.S. Cl. 220—276

10 Claims



1. A container construction comprising a generally tubular wall, a panel disposed to close one end of said tubular wall, a scoop wall integral with said panel and projecting into the space surrounded by said tubular wall, rupturable web means one piece with said panel, said web means joined to said tubular wall in surrounding relation to said panel, said panel having an endless first rupturable scoreline surrounding said scoop wall, said first scoreline including a bight portion which is spaced outwardly from said scoop wall, said panel having an arcuate second rupturable scoreline merging with said bight portion, said panel having a third rupturable scoreline extending from said second scoreline to said web means, and pull-out means integrally affixed to said panel adjacent said third scoreline.

4,432,468

INTRAVENOUS DELIVERY SYSTEM

Elliott J. Siff, 15 Broadview Rd., Westport, Conn. 06880, and Claude L. Emmerich, 15 Hutchinson Ave., Scarsdale, N.Y. 10583

Filed Feb. 6, 1981, Ser. No. 232,248
Int. Cl.³ G01F 11/08

U.S. Cl. 222—55

19 Claims

13. A quantizer for delivering fluid in discrete units, comprising in combination,

a container,

a source of pressurized fluid,

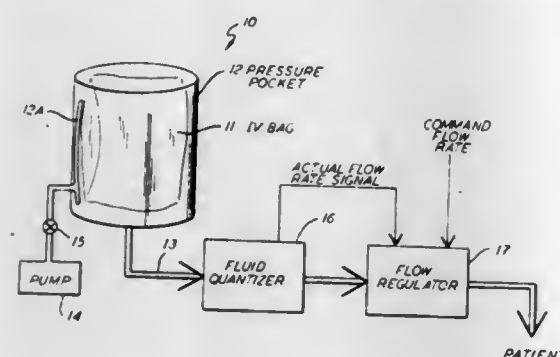
diaphragm means fixed to one end of said container capable of expanding in one direction,

inlet valve means connected to said source of pressurized fluid,

outlet valve means,

first means disposed within said container means having a

first position closing said outlet valve means and opening said inlet valve means and a second position opening said outlet valve means and closing said inlet valve means, spring means disposed within said container means for moving said first means from said first position to said second position each time sufficient fluid has been introduced into



4,432,469

DEVICE FOR DISCHARGING A PLURAL-COMPONENT MATERIAL

Monika Eble, and Gusztav Lang, both of Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

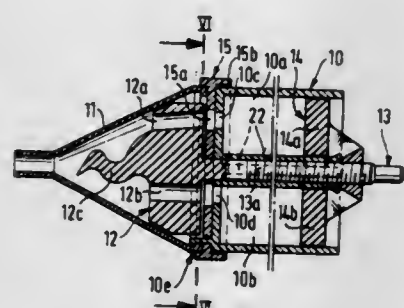
Filed Dec. 4, 1980, Ser. No. 213,180

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949369

Int. Cl.³ B65D 83/00

U.S. Cl. 222-134

12 Claims



1. Device for the measured discharge of a plural-component material such as an adhesive, sealing, filling or putty-like substance comprising a casing having a first end, said casing divided into separate compartments each extending from said first end, each said compartment arranged to hold a component of the plural-component material so that the components are maintained separate until ready to be mixed, each of said compartments having a discharge opening at said first end of said casing, a mixing chamber mounted on said first end of said casing for receiving the components from said compartments, a member interposed between said first end of said casing and said mixing chamber, said member being rotatable about an axis extending transversely of said first end, said member having passageways extending therethrough alignable with said discharge openings from said first end of said casing for conveying the components of the plural-component material from said compartments into said mixing chamber, said rotatable member is a rotational slide, a shut-off slide rotatable about the same axis as said rotational slide and located between said first end of said casing and said rotational slide, said shut off slide having bores therethrough for permitting flow between said discharge openings from said compartments into said passage-

ways through said rotational slide so that by selectively rotating said shut-off slide flow from said compartments can be blocked.

4,432,470

MULTICOMPONENT LIQUID MIXING AND DISPENSING ASSEMBLY

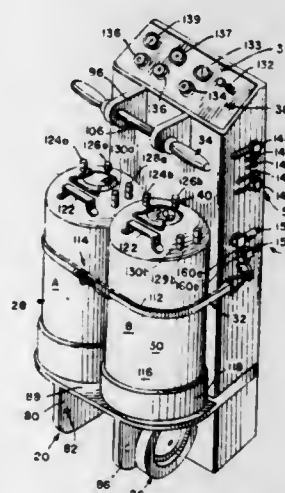
Timothy J. Sopha, Elgin, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Jan. 21, 1981, Ser. No. 226,860

Int. Cl.³ B67D 5/52

U.S. Cl. 222-135

35 Claims



1. An apparatus for supplying A and B liquids from A and B sources, respectively, to a mixing head or the like, said apparatus having A and B pumps each having a pump member movable from a first toward a second position, means rigidly mechanically connecting the A and B pump members for simultaneous movement toward said first and second positions, drive means operable in one direction to move said pump members from their first toward their second positions, and A and B conduit means connecting said A and B sources to said A and B pumps, respectively, the improvement which comprises A and B valve means in said A and B conduit means, respectively, said valve means each having outlet means for connection to a mixing head or the like and each having a first position permitting flow of liquid from the respective pump through its outlet means on movement of said pump members toward their second positions, said A and B valve means each having a second position providing communication between said A and B sources and said A and B pumps, respectively, and means to cause said A and B liquids to hydraulically bias said pump members operating through said means rigidly mechanically connecting the A and B pump members toward their first positions when said A and B valve means are in their second positions.

4,432,471

TWO PHASE PRODUCT DISPENSER

Harry Hayes, Warrington, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,460

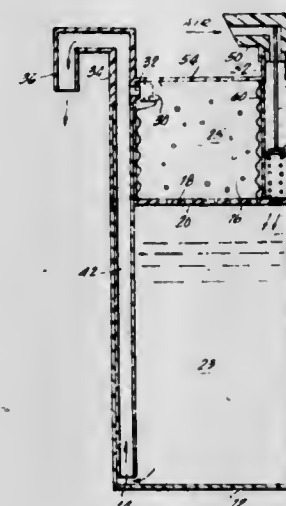
Int. Cl.³ B67D 5/54

U.S. Cl. 222-136

13 Claims

1. A dispenser comprising a container having an upper section and a lower section, a perforated plate separating said upper section from said lower section, first product within said lower section with an air space existing between said first product and said plate, deformable membrane means overlying said plate, second product in said upper section with said membrane means separating said second product from said plate, a lower delivery tube section connected to said lower section of said container, an upper delivery tube section connected to said upper section of said container, nozzle means

communicating with said delivery tube sections, and pump means on said container for introducing air under pressure into



said bracket means being slidable with respect to said band to allow positioning thereof at a selected location on the buffing machine housing; means for selectively pivotally mounting said supporting means to one of said surfaces of said bracket means; and a chain having one end thereof secured to said trigger of said sprayer head and the other end extending to the handle of the buffing machine for actuating said trigger of said sprayer head.

4,432,473

CARTRIDGE-TYPE DISPENSER

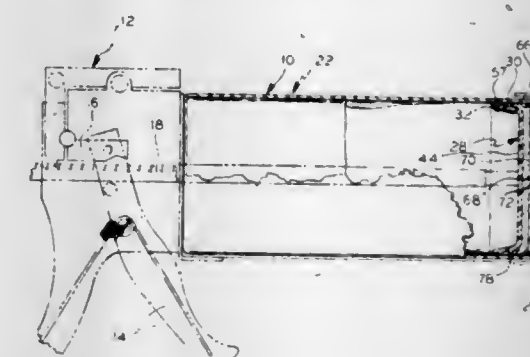
George E. MacEwen, Kansas City, Mo., assignor to Sealright Co., Inc., Kansas City, Mo.

Filed Feb. 21, 1984, Ser. No. 237,808

Int. Cl.³ B65D 85/72

U.S. Cl. 222-327

33 Claims



1. A container comprising: a generally cylindrically shaped tubular side wall formed of a delaminable laminated sheet material and having an inner surface and first and second open end portions, the first open end portion terminating in a radially inwardly rolled lip; a generally flat circular disc disposed within said tubular side wall in abutting relation with the radially inwardly rolled lip, said circular disc having a plurality of slits therethrough and mutually intersecting at a point positioned generally in the center of said circulating disc;

SPRAYER ATTACHMENT FOR A FLOOR BUFFING MACHINE

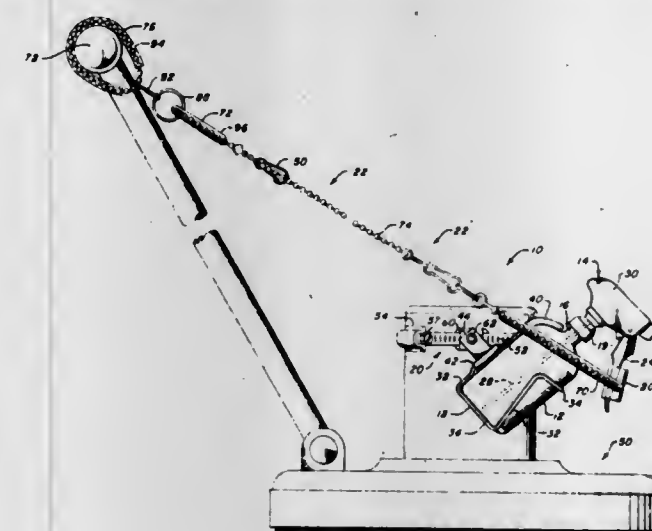
George L. Lamm, Melrose, Mass., assignor to G & L Manufacturing & Develop. Corp., Melrose, Mass.

Filed Jun. 11, 1982, Ser. No. 387,706

Int. Cl.³ B05B 15/06; A47L 11/40

U.S. Cl. 222-174

3 Claims



1. A sprayer unit for attachment to a floor buffing machine comprising: a container for holding a quantity of a liquid to be sprayed and having normally generally vertical side walls; a manually actuated sprayer head removably attached to said container, said sprayer head having a trigger for actuation thereof and a nozzle for propelling liquid from said container onto a surface to be sprayed; means surrounding said container for supporting said container, said supporting means having a flexible finger biased against one portion of said side walls of said container to urge an opposite portion of said side walls of said container against a confronting portion of said supporting means to normally retain said container within said supporting means, said finger permitting said container to be inserted and removed from said supporting means by deflection of said finger; a band having an adjustable circumferential length; means for adjusting the length of the circumference of said band for tightly securing said band to a housing of a floor buffing machine; bracket means secured to said metal band and having at least two generally normally disposed surfaces formed thereon,

means disposed about the periphery of said circular disc and communicating between said circular disc and said tubular side wall for securing said circular disc within said tubular side wall in abutting relation with said inwardly rolled lip and providing a substantially liquid tight seal between said circular disc and said tubular side wall; and plug top closure means disposed within said tubular side wall adjacent the second open end portion thereof, said plug top closure means having a closure side wall sized and shaped to be closely received within the second open end portion of said tubular side wall, said closure side wall having radially outwardly extending closure lip means on a first end portion thereof adapted for yieldably engaging the inner surface of said tubular sidewall and formed of a normally solid thermoplastic material fusion sealed to the inner surface of said tubular side wall, and said plug top closure means further including generally radial end wall means extending across and closing a second end portion of said closure side wall.

4,432,474

HANDLE AND ACTUATING DEVICE FOR PRESSURIZED DISPENSERS

Paul Hutchinson, and Alan Serginson, both of Acklam, England, assignors to Can-Gun Limited, Acklam, England

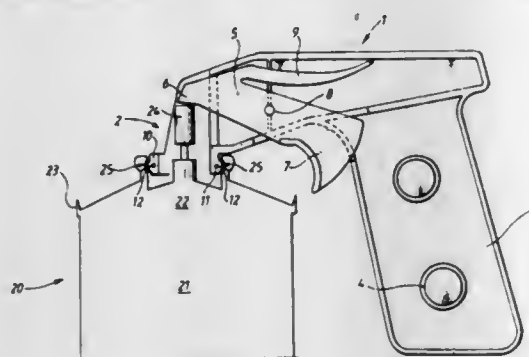
Filed Jul. 1, 1981, Ser. No. 279,265

Claims priority, application United Kingdom, Jul. 8, 1980, 8022233; Sep. 3, 1980, 8028427; Feb. 3, 1981, 8103261

Int. Cl.³ B65D 83/14

U.S. Cl. 222-402.15

12 Claims



1. A combined handle and actuating device for a pressurized dispenser of the kind comprising a container containing a pressurized active ingredient and having a discharge valve assembly manually operable by a depressable actuating member, the valve assembly including an annular channel which opens towards the actuating member, which device comprises a body having a handle to be gripped by the user and coupling means adapted for ready supportive attachment to and detachment from the dispenser, and an actuating means operable by the hand of the user holding the handle to depress or release the actuating member, wherein:

the coupling means is made of resiliently deformable plastics material and comprises a part annular nose portion and a part annular tail portion diametrically opposed relative thereto so as to be engageable with respective diametrically opposed regions of said channel, and a cantilever connecting means connecting said nose portion to said body downwardly and forwardly to permit resilient deformation of the nose portion relative to the body, diametrically opposed peripheral recesses arranged in the coupling means between the nose portion and the tail portion in order to define said cantilever connection of the nose portion to said body downwardly and forwardly which renders the nose portion more readily deformable than the tail portion, the device being attachable to the dispenser via said coupling means by first inserting the nose portion fully into a region of said channel followed by relative pivoting of the device about the nose portion so as to bring the tail portion into snap-fitting engagement with a substantially diametrically opposed region of the channel.

4,432,475

AUTOMATIC WASH TANK DRAIN/FILL APPARATUS FOR PROCESSOR OF PHOTSENSITIVE MATERIAL

Conrad E. Lee, Golden Valley, and Jerry A. Cafisch, Minneapolis, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Nov. 16, 1981, Ser. No. 321,913

Int. Cl.³ B22D 37/00; B08B 3/00

U.S. Cl. 222-509

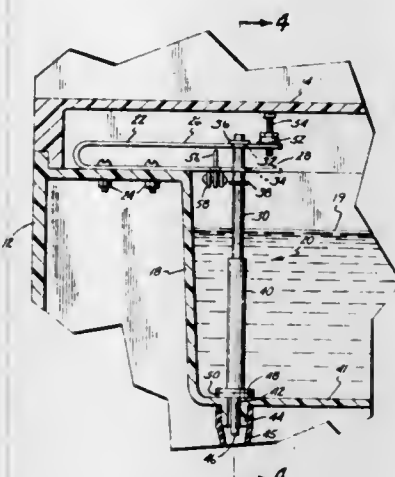
25 Claims

1. A drain apparatus for a processor of photosensitive material comprising:

- a tank for containing fluid;
- a movable cover having an operating position covering the tank when the processor is in operation and being displaceable from the operating position to permit venting of an interior portion of the processor when the processor is not in operation;
- a valve for draining fluid from the tank, the valve having an

open state which permits draining and a closed state which prevents draining;

bias means for biasing the valve to its open state;



means responsive to the position of the cover for maintaining the valve in its closed state when the cover is in its operating position covering the tank and permitting the bias means to bias the valve to its open state when the cover is displaced from its operating position.

4,432,476

BAND ATTACHMENT ASSEMBLY FOR ATTACHING A WATCHBAND TO A WATCHCASE

Koichi Yokosuka, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

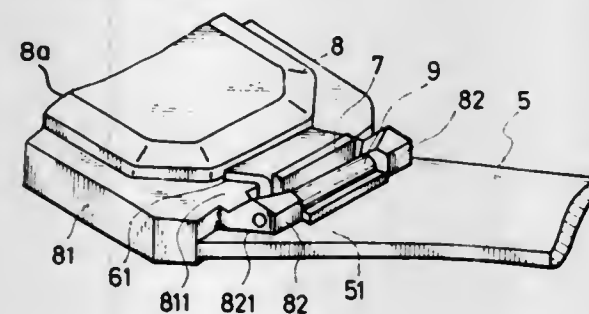
Filed Mar. 11, 1983, Ser. No. 474,269

Claims priority, application Japan, Mar. 12, 1982, 57-34759[U]

Int. Cl.³ A44C 5/00

U.S. Cl. 224-164

22 Claims



1. A band attachment assembly for attaching a wristband to an article to be worn on the wrist of a wearer comprising: means including a pin connectable to the article for defining a clearance between the pin and an end portion of the article; holding means connected to one end of the wristband and configured to be inserted through the clearance for releasably engaging with a rear portion of the article to thereby hold the wristband in a predetermined position relative to the article and locking means for locking the wristband in said predetermined position relative to the article.

4,432,477

CARRIER FOR MUSIC PLAYER

Jonathan D. Haidt, and Elaine Haidt, both of 35 Church La., Scarsdale, N.Y. 10583

Filed Sep. 22, 1982, Ser. No. 421,339

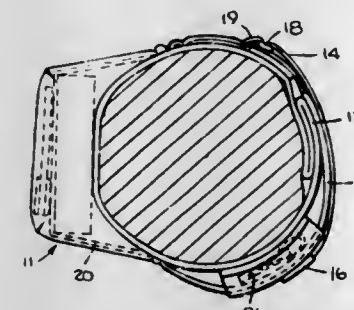
Int. Cl.³ A45C 11/00

U.S. Cl. 224-222

12 Claims

1. An armband carrier for a music player or the like comprising a continuous annular flexible carrier body for encircling a

wearer's upper arm, a pocket sized to hold a player, belt means permanently attached at one end of said carrier body and means associated with said belt means for applying tension to the belt means for adjusting the armband to secure the arm-



4,432,478

VEHICLE ARTICLE CARRIER

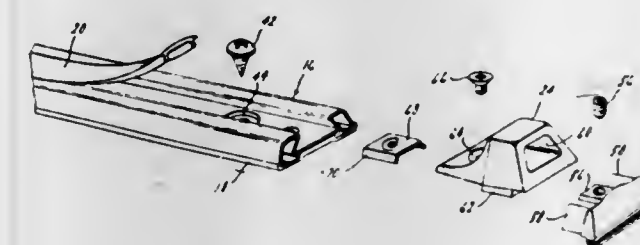
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 259,898, May 4, 1981. This application Jun. 24, 1983, Ser. No. 507,507

Int. Cl.³ B60R 9/00

U.S. Cl. 224-321

8 Claims



1. In combination with an automotive vehicle having a generally horizontal exterior body surface with a leading edge and a trailing edge of said surface, an article carrier comprising:

a pair of generally horizontally arranged article supporting slats each having a uniform cross-sectional shape, a generally horizontal transverse width greater than the vertical height and both adapted to be directly and fixedly mounted upon the same said horizontal surface of said vehicle presenting a low profile thereon and having a decorative appearance, each said slat having an upwardly opening slot extending longitudinally thereof, said slot being defined in part by a bottom wall and upwardly directed side walls and each said slat having a pair of horizontal supporting surfaces adjacent opposite sides of said slot and capable of having articles supported thereon, said supporting surfaces being cooperable between said slats to be capable of supporting articles on said slats, said surfaces being disposed in the same plane which plane is spaced from the horizontal surface of said vehicle;

article securing means associated with each of said slats, a substantial portion of said article securing means extending upwardly from said horizontal supporting surfaces, a portion of said article securing means disposed within said slot, said article securing means having an operative securing position and having a fastening element extending along an axis arranged generally perpendicular to said supporting surfaces and said vehicle exterior surface; fastening means disposed at least in part within said slot and including portions adapted to engage the interior of said slot for releasably attaching said article securing means in

its operative securing position at a preselected longitudinal position along said slat, said fastening means being operatively connected to said slat such that said fastening means may be threadably advanced in one direction along said axis toward a first position in which said portions of said fastening means engage the interior of said slot in such manner as to clamp said article securing means in said preselected position, and such that said fastening means may be threadably advanced in the opposite direction along said axis toward a second position in which said article securing means disengages the interior of said slot in such a manner as to unclamp said article securing means and permit the same to be moved longitudinally along said slat; and

end cap means disposed at at least one end of each of said slats closing off said slot to stop the travel of said article securing means in at least one direction at said at least one end of said slat when said fastening means is disposed in said second position in which said article securing means disengages the interior of said slot, said end cap means extending forwardly from each said slat toward the leading edge of said body surface in an aerodynamic and aesthetically appealing manner, each end cap means including a profile extending from a substantially flush profile with the configuration of said slat at the interface between each of said end cap means and each of said slats downwardly to interface with said horizontal body surface.

4,432,479

VEHICLE ATTACHED CARRIER

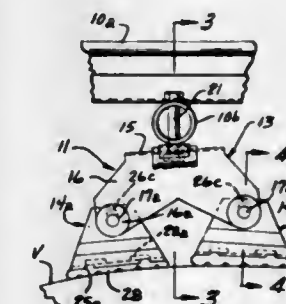
Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Jun. 22, 1983, Ser. No. 506,815

Int. Cl.³ B60N 11/00

U.S. Cl. 224-322

8 Claims



1. In a vehicle attached carrier for mounting on the roof or trunk lid of a vehicle, the carrier including a load support, a plurality of vehicle engaging devices for supporting the load support on the surface of the vehicle, and carrier attaching means for connecting the load support to the vehicle, the improvement wherein said vehicle engaging devices each include an elongated load distributing member having a pair of relatively parallel pivot pins extending crosswise thereof adjacent opposite ends, means engaging the load distributing member intermediate its ends for attaching the same to the load support in a manner to transmit downwardly applied forces substantially equally to both pivot pins, first and second foot members each having a generally flat vehicle engaging face and a mounting portion extending above the vehicle engaging face, the mounting portions of the first and second foot members each having openings therethrough along a line generally paralleling the associated vehicle engaging face for receiving the respective one of the pivot pins, the openings being enlarged in a direction perpendicular to the vehicle engaging face of the foot member to support the foot members for pivotal movement about the axis of the respective pivot pin and for limited tilting movement in a direction crosswise of the respective pivot pin, whereby to allow the vehicle engaging faces of the first and second foot members to individually conform to

the longitudinal and transverse curvature of the surface of the vehicle contacted thereby.

4,432,480

ROOF ATTACHED ARTICLE CARRIER FOR VEHICLES
Walter Kimmel, Am Schlossfeld 30, 8950 Kaufbeuren, Fed. Rep. of Germany

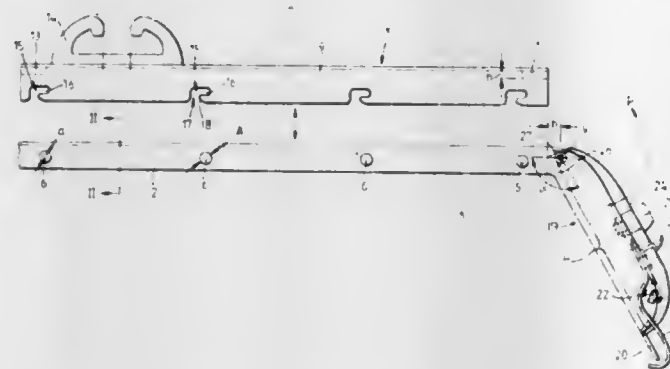
Filed Sep. 8, 1981, Ser. No. 299,947

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033903

Int. Cl.³ B60R 9/00

U.S. Cl. 224—329

9 Claims



1. A car roof carrier comprising at least one elongated support member, attaching means on the ends of said support member adapted to removably attach said support member at its ends to the car roof so that said support member extends across the roof, at least one elongated retainer carrier having a substantially open-sided channel shaped cross-section formed by a web portion and depending legs therefrom adapted to be removably positioned coextensively over said support member so that said legs extend over at least part of said support member, at least one coupling pin projecting from support member transversely with respect to the longitudinal direction thereof, at least one bayonet slot in a leg of said retainer carrier positioned to engage with said pin having an entrance slot extending from the free edge of said leg to a retaining slot extending substantially parallel to the longitudinal direction of said retainer carrier so that said carrier is attachable to said support member by first moving said carrier with respect to said support member to slide said entrance slot over said pin and then moving said carrier toward one end of said support member into the retaining position where said entrance slot is displaced with respect to said pin to prevent withdrawal of said pin through said slot, and releasable locking means operably mounted on the other end of said support member to engage said carrier in the retaining position to prevent movement thereof toward said other end and to release said carrier to allow movement thereof toward said other end for removing said carrier from said support member.

4,432,481

SPLICE-IN-REGISTER CONTROL

Peter S. Miller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 14, 1982, Ser. No. 388,320

Int. Cl.³ B65H 25/00

U.S. Cl. 226—9

13 Claims

4. A control circuit for a web-feeding machine used to provide a continuous supply of material having successive labels and registration marks printed serially thereon, the machine having an assembly for splicing the material from a ready web and the material severed from a running web wherein the response of the assembly after being actuated is delayed by a response time T , a driving circuit having an input and an output electromechanically coupled to the splicing assembly actuated thereby in response to a signal applied to the input thereof, a scanner positioned adjacent the material to provide a signal in response to the presence of a registration mark, and an encoder for providing a fixed number of pulses proportional

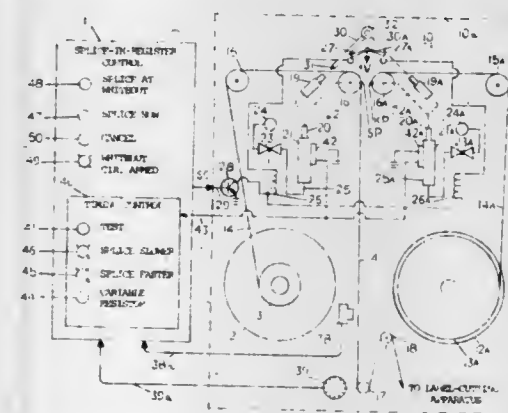
to a corresponding length of the moving material, the control circuit comprising:

means responsive to the encoder pulses and to the scanner signals for counting the number of encoder pulses B_0 between successive scanner signals to determine the length B of each label, said means being zeroed after each scanner signal;

calculating means connected to said B-counting means and responsive to the encoder pulses and to successive scanner signals for reading the number of encoder pulses B_0 in response to each scanner signal and then decrementing from the number B_0 to zero in response to successive encoder pulses, said calculating means having a data output providing the decrementing number;

timing means responsive to successive scanner signals for providing a time delay T_0 preset to approximate the response time T ;

means connected to said timing means and responsive to the encoder pulses and to periodic scanner signals for decrementing to zero from a preset number D corresponding to the distance between the splicing assembly and the scan-



ner in response to successive encoder pulses after the time delay T_0 ;

means connected to the data output of said calculating means and responsive to said D-counting means for storing a decremented value X provided at the data output of said calculating means when said D-counting means reaches zero;

delay means connected to said X-storing means and responsive to the encoder pulses and successive scanner pulses for reading the value X in response to a scanner signal, decrementing to zero therefrom in response to successive encoder pulses, and providing a splice signal SS upon reaching zero; and

a splicing circuit connected to said delay means, said splicing circuit having an output for providing a splice-command signal SC to the input of the driving circuit and splice-now means for triggering a splice-command signal SC in response to a splice signal SS provided by said delay means after said splice-now means has been armed by an operator, whereby the machine accomplishes a splice-in-register after the splice-command signal SC has been applied.

4,432,482

DISPENSER FOR ROLLED SHEET MATERIAL

Armand S. Beausoleil, 12501 S. Prairie Ave., Hawthorne, Calif. 90250

Filed Apr. 17, 1981, Ser. No. 255,051

Int. Cl.³ B65H 17/22; B65D 71/00

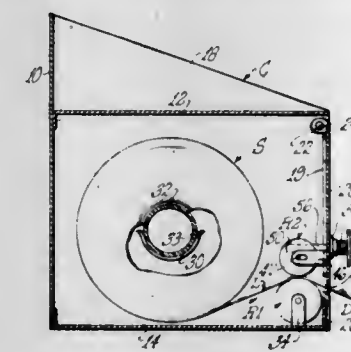
U.S. Cl. 226—181

2 Claims

1. A sheet dispenser comprising means for rotatably disposing a roll of flexible sheet material therein in position for unrolling, said dispenser having an outlet mouth for emergence therethrough of selected lengths of sheet material as may be drawn from said roll, said mouth including a severance edge extending across the width of sheet material and disposed for

severance of a selected length thereof which has been withdrawn from the mouth,

a first roller carried by the dispenser in position to rollingly support one side of said sheet material adjacent the outlet mouth, a slide track disposed transverse to said outlet mouth, a second roller having an axle slidably supported upon said track for selective displacement therealong between a retracted position wherein the two rollers are spaced apart and an extended position wherein said axle is rotatably disposed adjacent the end of said track with the circumference of the second roller located in frictional contact with the opposite side of said first-roller-supported sheet material and is thus positioned upon its rotation to frictionally impart rolling movement to the first roller by pressure through the intervening sheet material,



thereby moving the intervening sheet through the outlet mouth,

said axle having gear means located intermediate its ends, an ejection starter unit carried by the dispenser adjacent the outlet mouth and comprising a reciprocable plunger adapted selectively to move said second roller along the slide track from retracted to extended position and thereat to drivingly engage said gear means, thereby rotating the two rollers and moving the intervening sheet material through the outlet mouth, said plunger having resilient means for its return to retracted position with disengagement of said gear means and the second roller spaced from the first roller so as to permit the ejected sheet material to be further withdrawn manually and then severed at the severance edge.

4,432,483

SAFETY RELEASE MECHANISM FOR FASTENING DEVICES

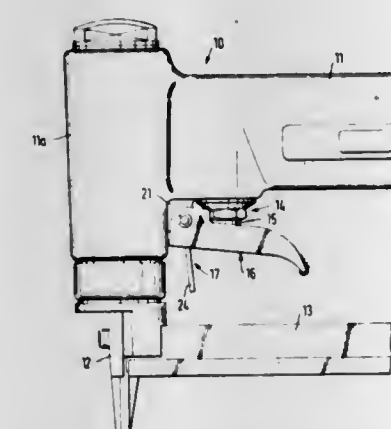
Manfred Kuck, Ahrensburg, Fed. Rep. of Germany, assignor to Joh. Friedrich Behrens AG, Ahrensburg, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,583

Int. Cl.³ B21J 7/20

U.S. Cl. 227—8

9 Claims



1. A safety release mechanism for a power operated fastener driving apparatus having a shooting channel for the fastener

and a pivotally supported trigger lever housing for actuating a release pin of the driving apparatus, including in combination: the trigger lever housing comprised of a trigger lever portion having bottom and side portions thereon and defining a channel therein with said bottom portion having a recess therein and wherein said side portions are pivotally attached to the driving apparatus for pivotal movement of said trigger lever into engagement for actuating the release pin,

said safety release mechanism having an actuation portion slidably positioned within said channel and an extension portion extending outwardly from said bottom portion of said trigger lever housing, with said actuation portion having an opening therein,

spring means engageable with said actuation portion to bias the same to an at rest-off position wherein said opening therein and said recess in said bottom of said trigger lever housing are in aligned position to receive the release pin and prevent actuation of the driving apparatus, and

wherein said extension portion of said safety release mechanism is engageable and movable upon the pivotal movement of said trigger lever housing from said at rest-off position to a second position wherein said opening in said actuation portion and said recess in said bottom portion of said trigger lever housing are misaligned to permit engagement of the release pin by the trigger lever housing to energize the driving apparatus.

4,432,484

TOOL FOR DRIVING METAL FASTENERS IN A FRAME AND SETTING ITS REAR CLOSING PANEL

Elio Maestri, Milan, Italy, assignor to Romeo Maestri & Figli S.p.A., Milan, Italy

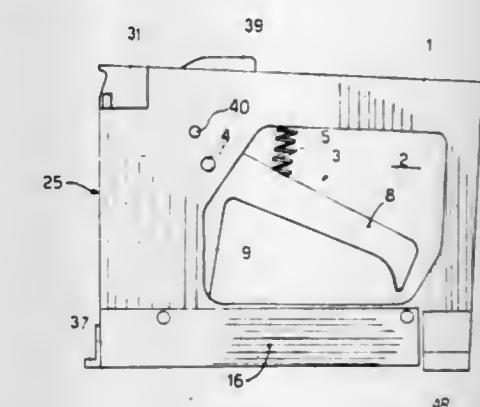
Filed Dec. 19, 1980, Ser. No. 218,423

Claims priority, application Italy, Dec. 24, 1979, 23473 79[U]; Dec. 24, 1979, 23474 79[U]

Int. Cl.³ B25C 1/02, 5/00

U.S. Cl. 227—126

1 Claim



1. A tool for driving metal fasteners into a frame, comprising:

a casing, an L-shaped handle having a handle portion and a driving lever portion, said handle being pivotally mounted on and within said casing, said handle being movable between an actuating position and a non-actuating position, resilient means connected to said casing and said handle, said resilient means being movable to a biased position upon manual movement of said handle from said non-actuating position to said actuating position and further movable to an unbiased position upon release of said handle from said actuating position wherein said handle is biased from said actuating position to said non-actuating position, said lever portion of said handle forming a recess at the end of said handle,

a catch member mounted in said recess, said catch member being rotatably movable about a pivot in said recess, said catch mechanism having a normal position in said recess, biasing means positioned in said recess and engaged with

said driving lever and said catch biasing member, said biasing means being for biasing said catch member in said normal position and for allowing movement of said catch member in one direction away from said normal position to a rotated position wherein said biasing means is additionally biased, said recess including a space for receipt of a portion of said catch member in said rotated position, slidable hammer means positioned in the bottom of said casing, said hammer means being movable between an unbiased position and a biased ejecting position, said hammer means being for receiving said catch member for movement from said unbiased position to said biased ejecting position upon manual movement of said handle toward said actuating position, said catch member being for moving said hammer means from said unbiased position to said biased ejecting position and for releasing said hammer means from said biased ejecting position upon further movement of said handle to said actuating position thereupon releasing said hammer means for biased movement to said unbiased position,

spring means positioned between said casing and said hammer means, said spring means being for moving said hammer from said biased ejecting position to said unbiased position,

a removable loading magazine in said casing containing fasteners in stacked relationship substantially perpendicular to the slidable movement of said hammer means, said loading magazine forming a fastener ejection passage, means cooperating with said hammer means for ejecting said fasteners from said ejection passage upon movement of said hammer means from said biased ejecting position to said unbiased position;

means for pushing said fasteners downwardly within said magazine toward and to said ejection passage,

a locking lever means pivotally mounted on the upper portion of said casing between the top of said means for pushing and said casing, said locking lever means having a locked mode and an unlocked mode, wherein in said locked mode said locking lever means biasedly urges the top of said means for pushing downwards in said magazine, and wherein in said unlocked mode said top of said means for pushing is released from said locking lever means, and

coil spring means connected to said upper portion of said casing for biasedly urging said locking lever means downwardly over said magazine and for biasedly allowing rotatable movement of said locking lever means upwards away from said magazine and downwards away from said casing.

4,432,485

CORRUTHERM EXPANSION FIXTURE

William E. Smith, Palm Beach County, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

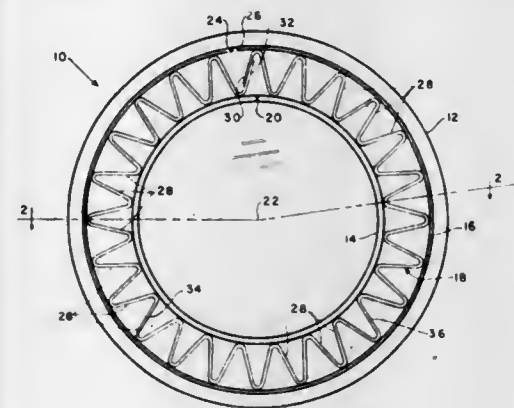
Filed Sep. 21, 1981, Ser. No. 304,122
Int. Cl.³ B23K 19/00

U.S. Cl. 228—44.1 R

1. A corrutherm expansion fixture, comprising:
(a) an inner ring;

(b) an outer ring; and

(c) a corrugated ring loosely disposed between said inner and outer rings;



(d) said outer ring being discontinuous and having opposite ends which are positioned adjacent to one another.

4,432,486

DEVICE FOR BRINGING INTO REGISTER THE CIRCULAR END SECTION OF A CYLINDRICAL ELEMENT WITH THE CIRCULAR SECTION OF A CYLINDER BOTTOM, WITH A VIEW TO ASSEMBLY THEREOF BY WELDING

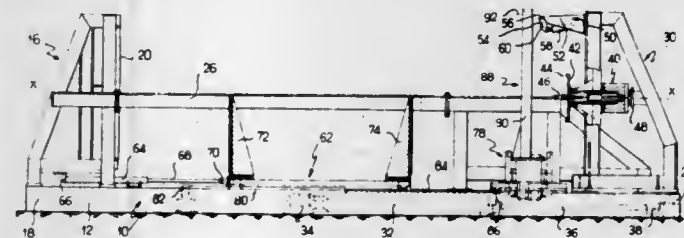
Raymond Wascot, Cuffies by Soissons, France, assignor to Big-nier Schmid-Laurent, France

Filed Jan. 21, 1981, Ser. No. 226,606

Claims priority, application France, Jan. 28, 1980, 80 01729
Int. Cl.³ B23K 37/04

U.S. Cl. 228—49 A

5 Claims



1. Device for bringing into register the circular end section of a cylindrical element with the circular section of a cylinder bottom, said cylindrical element presenting an axis of revolution and comprising a receiving end adapted to receive the cylinder bottom, the device comprising, a frame defining a track, a stop means fixed on the frame, a bottom-carrying carriage movable on the track, a cylinder-carrying carriage movable on the track between the fixed stop means and the bottom-carrying carriage, and a carriage supporting a radial tightening member adapted to be simultaneously tightened around the receiving end of the cylindrical element and the end of the bottom, the radial tightening member being constituted by an assembly of two half-rings the top ends of which are articulated on a common pin and the lower ends of which are in abutment and supported for movement by means of a roller on an outwardly raised guide, and a jack being connected to the lower end of each half-ring to tighten and loosen same, the carriage supporting the tightening member being movable on the track between the cylinder-carrying carriage and the bottom-carrying carriage.

4,432,487

METHOD OF OVERLAYING STAINLESS STEEL MATERIAL FOR DECORATIVE ARTICLES AND ORNAMENTS WITH A PRECIOUS METAL ALLOY

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki, Kaisha, Japan

Filed Jan. 18, 1982, Ser. No. 340,484

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ B23K 20/00

U.S. Cl. 228—194

3 Claims

1. A method of overlaying a stainless steel material for decorative articles and ornaments with an alloy of Au, Pt, and/or Pd bases, which comprises plating selected surfaces of the steel material with the constituents of said alloy in any desired order, and one at a time in a plurality of successive layers, and with each layer being of a thickness and volume corresponding to the constituent ratios of the alloy of a desired purity and dimension, heating the plated layers to a temperature higher than 800° C. for effecting the diffusion bonding thereof, overlaying the plated layers with a layer of said alloy thicker than the combined thicknesses of said plated layers, and heating the resultant product at a temperature lower than 800° C.

4,432,488

ROUND ICE CREAM CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

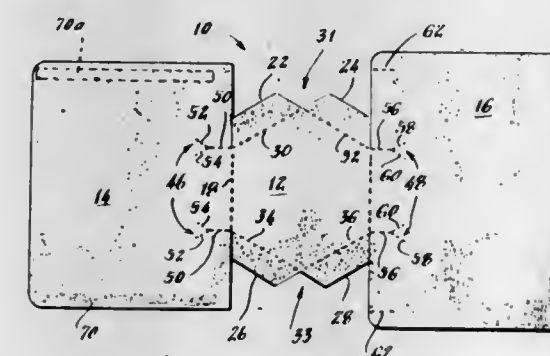
Continuation of Ser. No. 253,010, Apr. 10, 1981, abandoned.

This application Aug. 26, 1982, Ser. No. 411,676

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ B65D 3/04, 3/08

U.S. Cl. 229—21

1 Claim



1. A cylindrically shaped, open-topped carton formed from a unitary sheet of paper stock having a coating of moisture resistant material thereon and having a smooth beaded rim formed by a spinning means comprising:

an essentially flat base having at least three sets of opposed, essentially parallel edges,
a pair of side wall sections each respectively having sides and an end joined by a fold line to one of said base edges and extending upwardly from said base,
first and second pairs of polygonal flap members having four or more straight sides respectively joined by corresponding fold lines to adjacent base edges in said second and third sets thereof, each of said flap members extending upwardly from said base and being joined in face-to-face relationship with interior surface areas of certain of said side wall sections,
at least some of said side wall sections being provided at the ends of said parallel edges of said base with a plurality of Y-shaped pleats, which include a straight vertical leg for engagement with a surface which prevents rotation of the carton with the spinning means at it spins to form said rim bead, said Y-shaped pleats having straight angularly extending arms tending to produce a smooth, substantially unscored and leakfree transition in the shape of said side wall sections from a polygonal shape adjacent said base to

an essentially circular shape at the end thereof distal from said base,
a smooth circular bead at said end,
each of said side wall sections being glued on the inside of one of its edges and on the outside of its opposite edge to the other of its side edges whereby the formation of said smooth circular bead is enhanced by the spinning means not having to move against a side edge of said side wall sections but moving downwardly over both of said side edges.

4,432,489

PIE CARTON

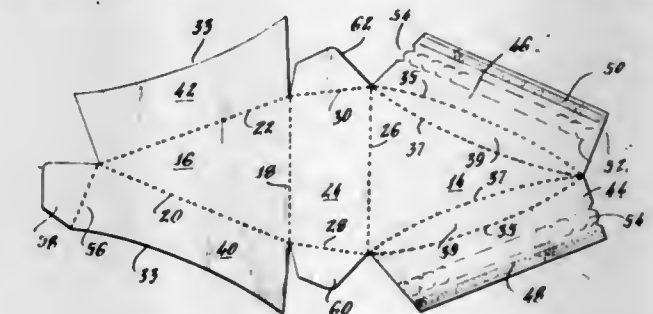
Raymond A. Cote, Taylorsville, N.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 14, 1982, Ser. No. 388,499

Int. Cl.³ B65D 5/54, 85/36

U.S. Cl. 229—22

4 Claims



1. A one-piece foldable blank for forming a wedge-shaped carton having a slanted end wall, said carton comprising:

a triangular bottom panel having a base edge and two side edges;
a trapezoidal end wall having top, bottom and side edges, with said bottom edge of said end wall and said base edge of said bottom panel being hingedly connected and of equal length, and with corner flaps being respectively connected to the side edges of said trapezoidal end wall;
a triangular top panel having a base edge and two side edges with the length of the base edge of said top panel being greater than the length of the base edge of said bottom panel, and with the length of said top panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof being greater than the length of said bottom panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof, said base edge of said top panel being hingedly connected and of equal length to the top edge of said trapezoidal end wall;
a pair of side wall panels extending from and hingedly connected to the associated side edges of said triangular top and bottom panels, with each side panel of one pair of said side wall panels including a pair of spaced, intermittent cut lines extending along the length thereof and defining a tear strip to permit easy opening of the erected carton which is of wedge-shaped configuration having a slanted trapezoidal end wall and which is useful for containing a wedge-shaped piece of pie having a slanted crust portion, with the carton conforming to the shape of said pie piece and with said sloping trapezoidal end wall functioning to provide increased protection and support to the slanted crust portion thereof,
said base edge of said top panel being defined by at least a pair of spaced scorelines converging towards each other at their ends to enhance the protection of a pie piece within said carton by precluding contact of the pie piece with an adjacent straight edge, a fold around flap is hingedly connected to the edge of one side wall panel extending from said bottom panel, said fold around flap being disposed adjacent the apex of said triangular bottom

panel, said converging scorelines defining said edge including a convex and facing concave scoreline.

4,432,490

REAR LOADING SINGLE SERVING PIE CONTAINER AND BLANK FOR FORMING SAME

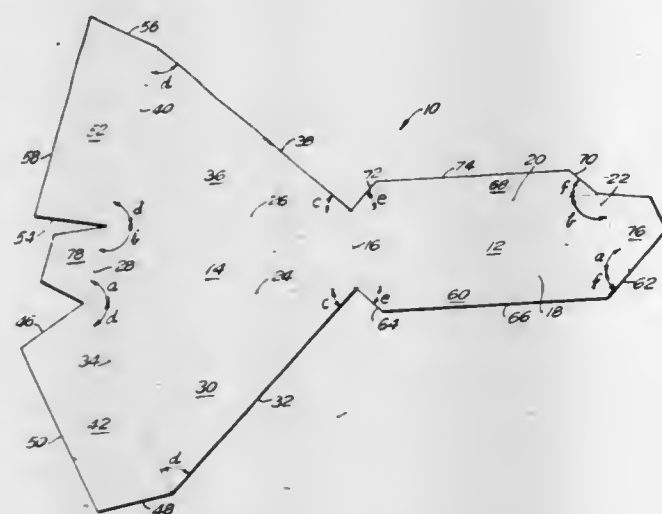
Harry H. Roberts, Roswell, Ga., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 25, 1982, Ser. No. 411,438

Int. Cl.³ B65D 5/00

U.S. Cl. 229—22

7 Claims



1. A paperboard blank for forming a wedge-shaped pie carton having an openable slanted rear wall, said blank comprising:

first and second substantially identical trapezoidal side wall panels, each said side wall panel including parallel top and bottom edges and non-parallel first and second side edges, the top edges of said side wall panels being longer than the bottom edges thereof, the first side edges of said side wall panels being a common edge perpendicular to the top and bottom edges thereof, said side wall panels being foldably connected along said common edge such that the top and bottom edges of the first side wall panel are colinear respectively with the top and bottom edges of the second side wall panel;

an isosceles triangular top panel having first and second equal side edges and a base edge, said first side edge of said top panel and the top edge of one said side wall panel being a common edge hingedly connected and of equal length, said first and second side edges of said top panel intersecting one another adjacent the foldable connection of said first and second side wall panels;

an isosceles triangular bottom panel having first and second equal side edges and a base edge, said first side edge of said top panel and the bottom edge of one said side wall panel being a common edge hingedly connected and of equal length, said first and second side edges of said top panel intersecting one another adjacent the foldable connection of said first and second side wall panels, the angular separation of said first and second side edges of said bottom panel being equal to the angular separation between the first and second side edges of the top panel;

an isosceles trapezoidal top panel flap having parallel top and bottom edges and non-parallel side edges, said top edge of said top panel flap and said base edge of said top panel being a common edge hingedly connected and of equal length, said bottom edge of said top panel flap and said base edge of said bottom panel being of equal length, said side edges of said top panel flap and the second side edges of said side wall panels being of equal length; and an isosceles trapezoidal bottom panel flap substantially identical to said top panel flap, said bottom panel flap having parallel top and bottom edges and non-parallel side edges, said bottom edge of said bottom panel flap and said base

edge of said bottom panel being a common edge hingedly connected and of equal length.

4,432,491

CONTAINER PACKAGING FOR CUPS

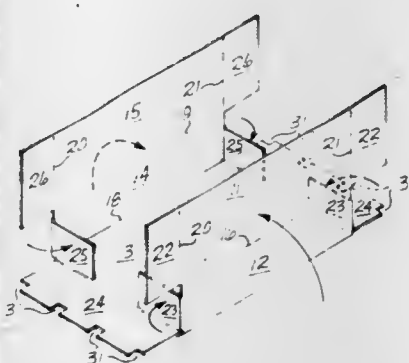
Herbert D. Muise, Orange, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 21, 1982, Ser. No. 390,713

Int. Cl.³ B65D 5/22, 5/42

U.S. Cl. 229—33

6 Claims



1. A container for packaging cups comprising side panels, a bottom closure, end panels extending between said side panels, notches in the upper edges of said end panels to accommodate rails holding said cups, said notches in one end panel being aligned with said notches in the other end panel, two of said notches in each end panel being at the upper corners of said end panel, the remainder of said notches in each end panel being located equidistantly across the top edge of said end panel, the distance between said notches being substantially greater than the width of said notches, said notches having a width which allows said rails to fit into said notches, cover panels hingedly attached to said side panels, closure panels hingedly attached to the sides of said cover panels, said closure panels being fastenable to the outer face of said end panels covering said notches.

4,432,492

THERMOSTATIC EXPANSION VALVE WITH REMOTE ADJUSTMENT

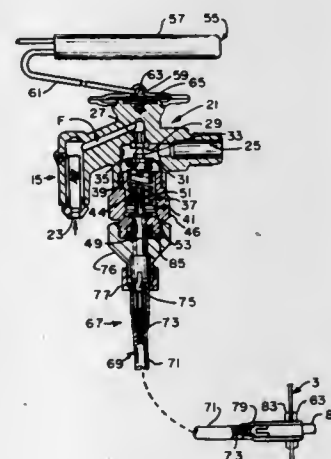
Bernard L. Kunz, Madison County, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 136,442, Apr. 2, 1980, Pat. No. 4,325,508. This application Feb. 19, 1982, Ser. No. 350,226

Int. Cl.³ F25B 41/04

U.S. Cl. 236—92 B

6 Claims



1. In a thermostatic expansion valve for a refrigeration sys-

tem, said valve comprising a valve housing having a flow path therethrough, said flow path having an inlet, an outlet, and an expansion valve seat constituting an expansion port between said inlet and said outlet, said inlet and said outlet being adapted to be connected to a liquid line of the refrigeration system for the passage therethrough of pressurized refrigerant, a valve member movable toward and away from said valve seat thereby to regulate the flow of refrigerant through said flow path, a compression coil spring for biasing said valve member toward a closed position in which said valve member cooperates with said valve seat thereby to regulate the flow of refrigerant through said flow path, expansion bulb and diaphragm means operatively connected to said valve member responsive to the load on said refrigeration system, said expansion bulb and diaphragm means and said spring operating on said valve member so as to maintain the flow of refrigerant through said flow path within a desired superheat range, and means for adjusting the superheat range of the thermal expansion valve, this last-said adjustment means comprising a spring compression member engageable with one end of said spring and being selectively axially movable relative to said spring thereby to compress or relax said spring throughout a predetermined range and thereby to vary the superheat range of said thermostatic expansion valve, wherein the improvement comprises: an adjustment stem rotatable with respect to said valve housing and having a flange engageable with said valve housing so as to prevent axial movement of said stem, said adjustment stem being threadably engageable with said spring compression member and being rotatable through a plurality of revolutions thereby to effect axial movement of said spring compression member throughout said predetermined range upon rotation of said adjustment stem, an elongate flexible shaft, one end of said flexible shaft being coupled to said adjustment stem, means for sealing said adjustment stem with respect to said housing and for permitting rotation of said adjustment means relative to said housing, said flexible shaft having a drive member on its outer end and being unaffected by the compression force of said spring, rotation of said drive member effecting corresponding rotation of said adjustment stem relative to said valve housing thereby permitting convenient adjustment of the superheat range of said thermal expansion valve from a location remote from said thermal expansion valve.

4,432,493

SYSTEM FOR HEATING THE SERVICE CABIN OF A MACHINE

Gottfried Moser, Bergisch Gladbach, and Hansjurgen Gross, Niederkassel, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

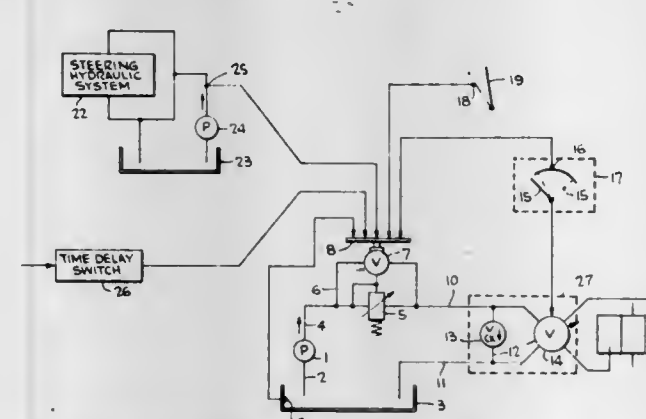
Filed Aug. 28, 1981, Ser. No. 297,254

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033661

Int. Cl.³ B60H 1/02

U.S. Cl. 237—12.3 R

8 Claims



1. A system for heating the service cabin of a machine powered by an internal combustion engine having an oil sump containing lubricating oil, and a lubricating oil distribution circuit, the system comprising a hydraulic pump, a heat ex-

changer located in the service cabin or in a hot-air supply line thereof, heat generating means connected between said pump and said heat exchanger in said oil circuit of the internal combustion engine, said circuit having suction and return oil lines respectively extending from said pump and said heat exchanger to said oil sump of the engine, a first line in said circuit by-passing said means and being controlled by a directional control valve, and a second line in said circuit by-passing said heat exchanger and being controlled by a control mechanism, the improvement wherein said heat generating means comprises a pressure relief valve which is mechanically fixed to effect a constant opening pressure, said control mechanism comprises an adjustable flow control valve for regulating oil flow, means for manually adjusting said control valve for regulating said heat exchanger, said directional control valve having a control element, said manually adjusting means including a first actuating switch for activating said control element for opening said directional control valve, and means responsive to the temperature of the oil for activating said control element, independent of said manually adjusting means, for opening said directional control valve above a predetermined lubricating oil temperature required for operation of said engine to make available to said heat exchanger the waste heat of said oil upon regulation of said heat exchanger, said temperature responsive means being set for opening said directional control valve above said predetermined temperature, and said temperature responsive means being set for activating said control element for closing said directional control valve below said predetermined temperature required for engine operation so that the lubricating oil in said distribution circuit may be heated by said fixed pressure relief valve as required for the operation of said engine irrespective of whether heat is required for said heat exchanger.

4,432,494

SELF-STEERABLE WHEEL ASSEMBLY FOR IRRIGATION SYSTEMS

Richard E. Hunter, 5755 Arrowhead Dr., Greeley, Colo. 80631

Filed Mar. 13, 1981, Ser. No. 243,437

Int. Cl.³ B05B 3/18

U.S. Cl. 239—177 CC

15 Claims



13. In a self-propelled irrigating apparatus of the center pivot type in which an elongated water supply conduit is supported by a plurality of spaced, wheeled support towers and means are provided for advancing said wheeled support towers in a circular path across an area to be irrigated, the boundary of the area being unevenly spaced away from the center, the improvement comprising:

an extension boom member hinged at the outermost end support tower of said wheeled support towers and at a point inwardly of the outer distal end of said extension boom member;

a castored wheel support assembly disposed intermediately between said outermost end support tower and said outer distal end of said extension boom member having a suspension frame connected to said extension boom member, a pair of laterally offset, steerable ground-engaging wheels arranged in tandem, suspension means for journaled connection of said wheels to said suspension frame whereby to suspend said wheels in trailing, laterally offset relation

to the vertical axis of journaled connection to said suspension frame; and
drive means associated with at least one of said steerable wheels for advancing said wheels independently of and at a rate faster than the rate of advancement of said propelling means for said wheeled support towers, sensing means in outer surrounding relation to said extension boom member operative to sense the boundary of the area to be irrigated, and said drive means responsive to said sensing means to control the rate of advancement of said steerable wheels relative to the rate of advancement of said wheeled support towers.

4,432,495

POP-UP SPRINKLER WITH INDEPENDENTLY BIASED DRAIN VALVE

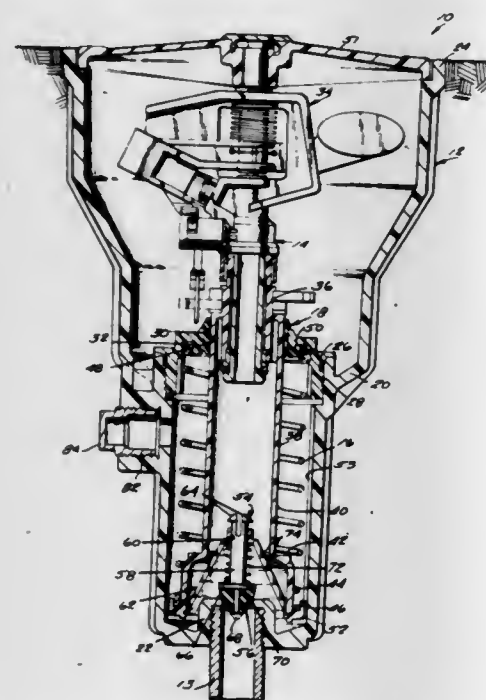
Kenneth J. Bruninga, Mapleton, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed May 10, 1982, Ser. No. 376,496

Int. Cl.³ B05B 15/10

U.S. Cl. 239—205

8 Claims



1. In a pop-up sprinkler comprising a housing assembly adapted to be stationarily mounted in the ground having an inlet in the lower portion thereof adapted to be communicated with a source of water under pressure, a sprinkler head assembly carried by said housing assembly for movement from a retracted storage position into an extended operative position in response to the communication of said water source with said housing assembly, and coil spring means between said housing assembly and said sprinkler head assembly for resiliently urging said sprinkler head assembly into said retracted storage position in response to the closing of communication of said water source with said housing assembly, the improvement which comprises

an upwardly facing annular valve seat formed in the lower portion of said housing assembly above said inlet therein, a valve member carried by said sprinkler head assembly in a position to engage said annular valve seat when said sprinkler head assembly is in said retracted storage position, and

means mounting said valve member on said sprinkler head assembly for biased movement independent of the movement of said sprinkler head assembly and independent of the resilient urging of said coil spring means so that said valve member will be separately moved out of engagement with said annular valve seat prior to the movement of the sprinkler head assembly out of said retracted storage position so as to permit passage of water under pressure into said housing assembly in response to the commu-

nication of the source of water under pressure with said inlet.

4,432,496

FOAM LIQUID DISPENSING DEVICE

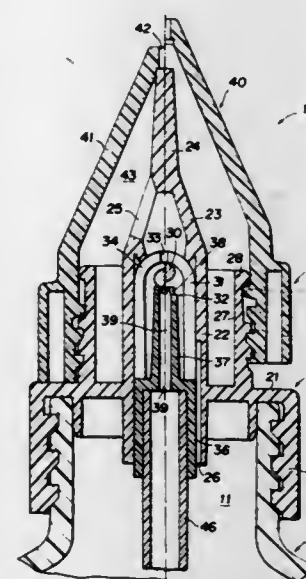
Kazuo Ito, Kamakura, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,688

Int. Cl.³ B65D 1/32

U.S. Cl. 239—327

13 Claims



1. In a foam liquid dispensing device adapted to mix liquid capable of foaming and air together and dispense said mixture as foam liquid, characterized by a cylindrical container having a neck provided on the outer periphery of the neck with threads; a cap adapted to be detachably fitted on said container and including an outer cover having an upwardly tapered upper portion provided at the upper end with a foam liquid jet nozzle and an integral lower cylindrical skirt provided on the inner periphery with threads and a coaxial inner cover having a lower cylindrical skirt, an outer cylindrical portion extending upwardly from said skirt of the inner cover and an integral inner cylindrical portion extending upwardly and downwardly through said skirt of the inner cover and surrounded by said outer cylindrical portion in peripherally spaced relationship to the latter, said inner cylindrical portion integrally having a frusto-conical portion extending upwardly from said inner cylindrical portion and provided with a discharge port and a plug extending upwardly from said frusto-conical portion and adapted to clog said jet nozzle whereby the upwardly tapered portion of said outer cover and said inner cover define a flow path therebetween in communication with said discharge port, a cylindrical porous member disposed within said inner cylindrical portion of the inner cover above said skirt of the inner cover to define a mixing chamber therein and having an outlet at the top, a check valve normally positioned below said outlet to close the outlet in the porous member, a tubular support member having a lower cylindrical portion disposed within said inner cylindrical portion of the inner cover below said lower skirt of the inner cover and an upper tapered portion extending upwardly from said lower cylindrical portion of the support member into said mixing chamber, there being a side flow path from the exterior of said porous member into the container between said lower cylindrical portion of said support member and said inner cylindrical portion of said inner cover, and a pipe extending between said container and said tubular support member whereby one fluid from said container flows through said support member into said mixing chamber and the other fluid from said container flows through said side flow path and pores in said porous member into the mixing chamber to mix with said one fluid.

4,432,497

NOZZLE FOR FORMING A FREE JET STREAM OF A LIQUID, AND ITS METHOD OF MANUFACTURE

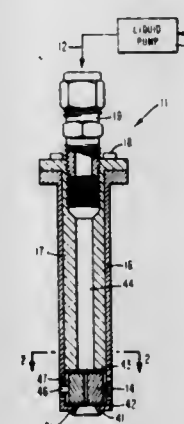
Ludger Wöste, Chexbres-Vand, Switzerland, assignor to Lexel Corporation, Palo Alto, Calif.

Filed May 21, 1981, Ser. No. 265,700

Int. Cl.³ B05B 1/00

U.S. Cl. 239—589

12 Claims



1. A nozzle for receiving a liquid under pressure and forming a free jet stream therefrom and having an exit aperture at least partially formed by an edge of a first block of material defined by the intersection of first and second faces of said block, conditioned to having a minimum of imperfections by:

- positioning said first block against a support block with said first face thereof generally coplanar with a corresponding first face of said supporting block and said edge in contact with said supporting block; and
- simultaneously removing material from said first face of said block and said corresponding first face of said supporting block while overlapping said edge whereby said edge is fully supporting during said removal.

4,432,498

METHOD AND APPARATUS FOR DISPOSING OF ANIMAL WASTE

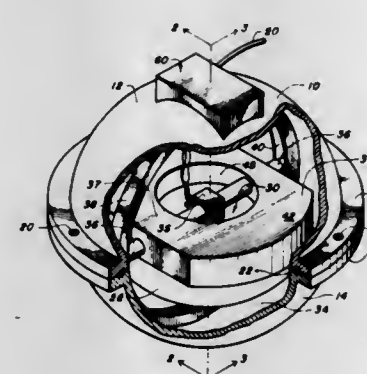
Aynon L. Clements, 7165 N. Oakbank Dr., Glendora, Calif. 91740

Filed Jul. 16, 1979, Ser. No. 57,884

Int. Cl.³ B02C 23/18

U.S. Cl. 241—21

9 Claims



1. That method of hydraulically processing animal waste including straw and the like bedding material and conducting the same to a place of disposal in finely comminuted form which consists of:

- submerging the animal waste and bedding material in a body of water confined in a container;
- injecting a jet of pressurized water into said body of water from a stationary nozzle near the bottom of said container in a manner to rotate a major portion of said water, and said animal waste and bedding material in the path of said jet and comminuting the same into smaller increments; and
- simultaneously circulating another stream of said pressur-

ized water through aspirating duct means having a submerged inlet port to aspirate the comminuted animal waste, bedding material and water from said body of water into said duct means and conducting the same to a place of disposal.

7. Apparatus for hydraulically conducting animal waste and bedding material associated therewith to a place of disposal comprising:

elongated duct means having an inlet at one end connectable to a source of pressurized water and an outlet at the other end thereof;

said duct means including a second duct having an inlet for animal waste and bedding material adapted to be submerged near the bottom of a container of water, animal waste and bedding material and having an outlet opening into said duct means between the said inlet and outlet of said duct means;

means interiorly of said duct means for jetting water from said water inlet past said outlet of said second duct thereby to aspirate said animal waste and bedding material into said duct means; and

said duct means including a third duct having stationary nozzle means for jetting a stream of pressurized water past the exterior of said inlet for animal waste and bedding material and effective to circulate major portions thereof past said animal waste and bedding material inlet as other portions of said animal waste and bedding material are aspirated thereto.

4,432,499

PORTABLE FEED GRINDER-MIXER

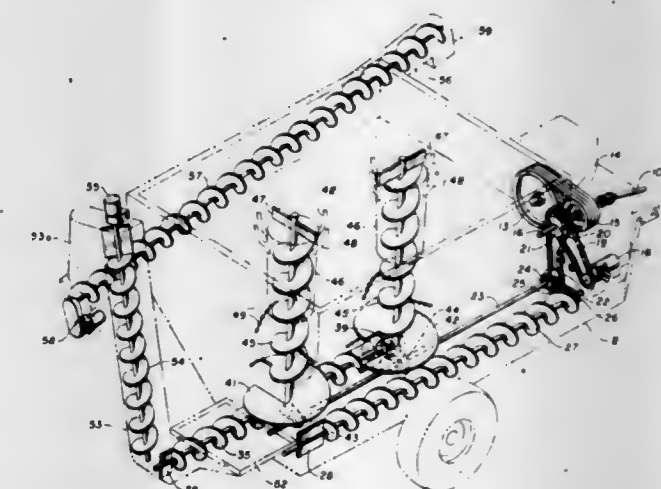
Larry L. Henkensiefken, Waseca; Douglas L. Pettit, and Gerald E. Barry, both of Owatonna, all of Minn., assignors to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Dec. 15, 1980, Ser. No. 216,134

Int. Cl.³ B02C 19/00

U.S. Cl. 241—30

28 Claims



1. A feed grinder-mixer comprising:

- a vehicle;
- feed grinding mechanism mounted on said vehicle;
- a mixing bin carried by said vehicle and connected to said feed grinding mechanism in ground feed-receiving relation;
- first power-driven mixing mechanism in communication with the interior of said bin and constructed and arranged to move and mix such ground feed in a circulatory path in a generally horizontal plane;
- second power-driven mixing mechanism mounted within said bin directly above and in close ground-feed-receiving relation with said first mixing mechanism and being constructed and arranged immediately above said first mechanism in close proximity thereto so as to move, mix and cross-mix such ground feed in a circulatory path in a generally vertical plane, which path intersects said horizontal circulatory path;

(f) power-driven unloading mechanism connected to said bin in ground-feed-receiving relation for conveying the ground-feed away therefrom after it has been so mixed by said mixing mechanisms.

4,432,500

ROLL MILL FOR MILLING COAL

Horst Brundiek, Kaarst, and Ludwig Werner, Düsseldorf, both of Fed. Rep. of Germany, assignors to Loesche GmbH, Düsseldorf, Fed. Rep. of Germany

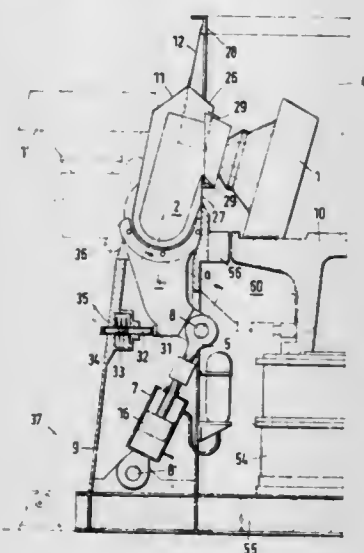
Filed Dec. 22, 1981, Ser. No. 333,299

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100341

Int. Cl.³ B02C 15/00

U.S. Cl. 241—57

7 Claims



1. In a roll mill having a gas-tight housing, a mill pan, a system for driving the pan about an upright axis, rolls designed for rolling and milling material on said pan supplied to said mill, and turnpins with rocker arms, equal in number to the number of rolls, each rocker arm turningly supporting one of said rolls, said arms being able to be rocked about axes of said turnpins, the improvement comprising said roll mill has a separate fork for each rocker arm, said fork being able to be undone from said rocker arm so that the arm may be moved separately from the fork, power means for acting on said rolls by way of said forks, and gas-tight covers placed around said rocker arms, said covers furthermore forming part of said mill housing.

4,432,501

APPARATUS FOR THE CONTINUOUS PRODUCTION AND LAYING DOWN OF YARN LOOPS

Gerhard Arendt, Hohentengen; Roland Benz, Denkendorf; Reinhold Engenhardt, Blochingen, and Viktor Schmidt, Saulgau, all of Fed. Rep. of Germany, assignors to Lucke Apparate-Bau GmbH, Mengen, Fed. Rep. of Germany

Filed Apr. 6, 1982, Ser. No. 365,998

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114535

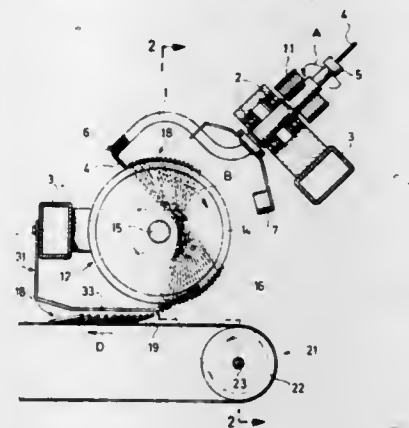
Int. Cl.³ B65H 54/76

U.S. Cl. 242—47

6 Claims

1. Apparatus for the continuous production and laying down of yarn loops including in combination a rotationally symmetrical lap body comprising a shaft, a pair of loop carriers and means adjustably mounting said carriers in spaced relationship on said shaft, means mounting said shaft for rotary movement around a first axis corresponding to the axis of symmetry of said body, a belt conveyor for receiving loops from said body, means mounting said conveyor for movement of the loop receiving length thereof in a certain direction, a lap flyer for introducing yarn loops onto said lap body, means mounting said lap flyer for rotary movement around a second axis, the arrangement being such that said first axis extends transversely

both to said second axis and said certain direction, means for driving said lap body so that the portion thereof adjacent to said conveyor moves generally in said certain direction, and a



stationary loop stripper extending into the space between the loop carriers for transferring loops from said lap body to said belt conveyor.

4,432,502

BOBBIN APPARATUS FOR USE IN RADIOSONDES

Esa Varkia, and Osmo Reittu, both of Espoo, Finland, assignors to Vaisala Oy, Finland

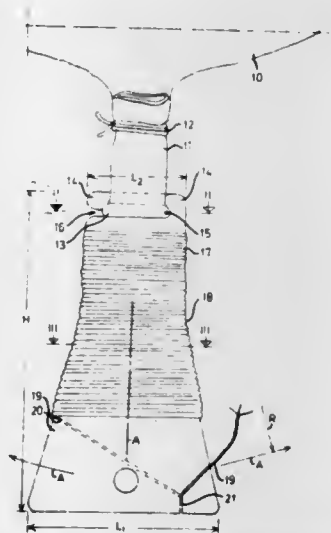
Filed Jul. 1, 1981, Ser. No. 279,512

Claims priority, application Finland, Jul. 2, 1980, 802130

Int. Cl.³ B65H 54/68

U.S. Cl. 242—50

9 Claims



1. Bobbin apparatus for releasing a filament which interconnects a radiosonde and a sonde balloon in a controlled manner during the ascent thereof, comprising a bobbin member adapted to be affixed to the balloon having a longitudinal axis around which the filament is adapted to be wound and a transverse dimension which increases in the longitudinal direction from a narrow upper end to a wide lower end thereof, said bobbin member having a configuration which causes it to oscillate below said balloon periodically to and fro as said balloon ascends and said filament unwinds from said bobbin member whereby said filament unwinds from said bobbin member in a controlled manner without fouling and at an appropriate rate.

4,432,503

MACHINE FOR PRODUCING YARN LOOPS

Klaus Wedler, Mittelbiberach, Fed. Rep. of Germany, assignor to Croon & Lucke Maschinenfabrik GmbH & Co. KG., Mengen, Fed. Rep. of Germany

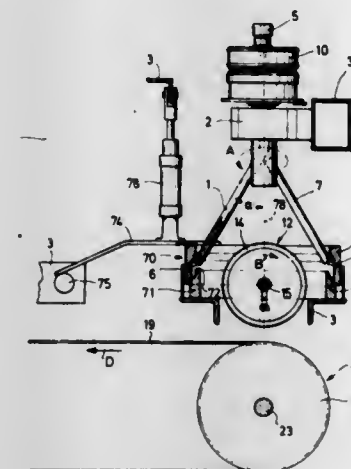
Filed Jan. 24, 1983, Ser. No. 460,484

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202474

Int. Cl.³ B65H 51/20

U.S. Cl. 242—47

14 Claims



1. Apparatus for producing yarn loops comprising a rotary winding member having a discharge end through which, in use, yarn passes; a winding means for collecting yarn discharged from said winding member in the form of loops; a conveyor means for receiving loops of yarn from said winding means and conveying the loops received from the winding means to a remote position; and clamping means for the end of the yarn as it emerges from the discharge end of the winding member during the initial use of the apparatus, said clamping means including a pair of rings surrounding said winding means, said rings defining complementary surfaces the contours of which substantially correspond to the path of movement of the discharge end of the winding member, and means for moving the rings relative to each other so that the end of the yarn emerging from said discharge end can be trapped between said surfaces.

4,432,504

HOLDER AND DISPENSER FOR BATHROOM TISSUE ROLLS

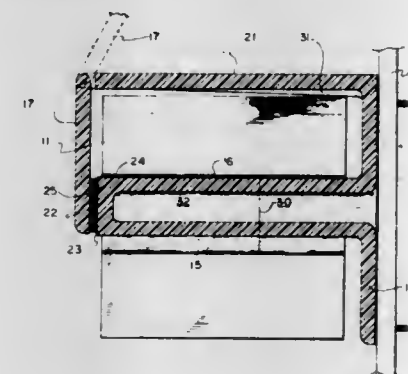
Ron L. Pace, 217 S. 2nd West, Wellsville, Utah 84339

Filed Mar. 2, 1981, Ser. No. 239,396

Int. Cl.³ B65H 19/00

U.S. Cl. 242—55.2

5 Claims



1. An apparatus adapted for holding and dispensing bathroom tissue from a roll of a strip thereof, said roll enclosing a central tubular core therethrough normal to the strip, and said apparatus comprising:

a wall mounting plate adapted to be secured with a flat wall side thereof against the surface of a bathroom wall;

a cylindrical spindle being integral with the wall mounting

plate and outstanding normally therefrom away from the wall, said spindle being of substantially smaller outside diameter than the inside diameter of the central tubular core of the roll, and being outstanding from the plate at least a distance slightly greater than the width of the roll; a hinge member being integral with the wall mounting plate and outstanding normally therefrom away from the wall, and outstanding from the plate a distance at least slightly greater than the width of the roll, and spaced away from the spindle a distance sufficient to clear a roll placed thereabout;

a roll retaining member spanning between the ends of the spindle and the hinge member remote from the wall plate; hinge means connecting said end of the hinge member with the end of the roll retaining member proximate thereto, said hinge means permitting the retaining member to be rotated away from the spindle to permit placement and removal of the roll to about and from about the spindle respectively; and means for releasably securing the spindle end of the roll retaining member to said end of the spindle.

4,432,505

LEAD TAPE PULLER AND METHOD

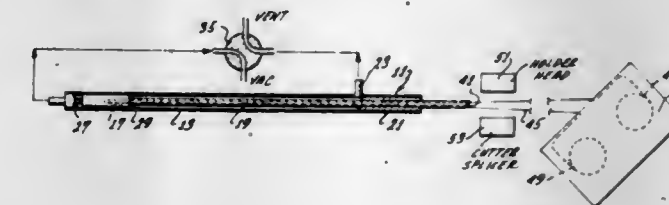
Edward W. Honeywell, 1237 S. Ninth Ave., Arcadia, Calif. 91006, and Joseph C. Honeywell, R.R. 2, Box 1006, Sand Spring, Okla. 74063

Filed Jan. 18, 1982, Ser. No. 340,315

Int. Cl.³ B65H 69/06; G03D 15/04

U.S. Cl. 242—56 R

17 Claims



1. A method of moving a movable element comprising: providing a moving apparatus which includes a housing, a passage in the housing, a piston slidable in the passage of the housing, a member coupled to said piston and movable with said piston between extended and retracted positions and passage means in said piston and said member opening on one side of said piston and having a port in the member which provides communication between the interior of the passage means and the exterior of the member on the other side of the piston;

moving said piston and said member to one of said positions with the port being adjacent the movable element;

applying subatmospheric pressure to said one side of the piston and through said passage means to tend to draw air through the port and the passage means to said one side of the piston and to tend to pull the movable element toward said port;

at least partially closing said passage means with said movable element to restrict air flow through said passage means to said one side of said piston to thereby reduce the pressure on said one side of the piston; and

applying a pressure greater than said subatmospheric pressure to said other side of the piston whereby said subatmospheric pressure and said pressure greater than said subatmospheric pressure create a differential pressure across the piston to at least assist in moving the piston and the member to the other of said positions.

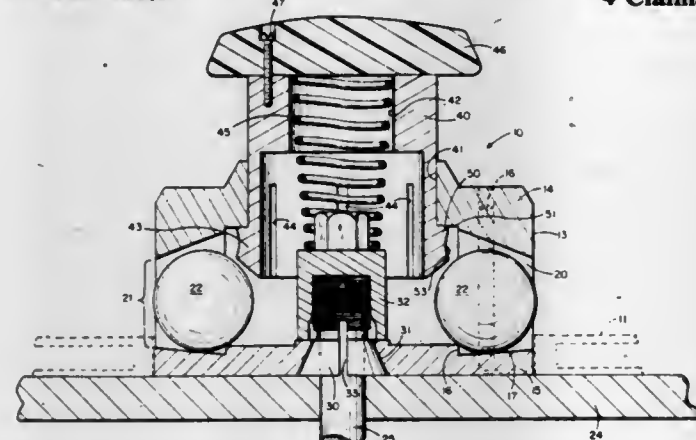
4,432,506

REEL AND HUB LOCK FOR TAPE DRIVES
Barrett P. Bingham, Burbank, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Jul. 28, 1982, Ser. No. 402,773
Int. Cl.³ B23B 31/14; B65H 17/02

U.S. Cl. 242—68.3

4 Claims



1. In a reel and hub locking mechanism for a tape drive, the combination of:
a subplate;
a ball housing positioned over said subplate and having a plurality of radial passages, with each of said passages having a converging taper in the outward direction;
a ball positioned in each of said passages for radial movement, with the peripheral opening of the passage of a size smaller than the ball to retain the ball in the passage;
means for mounting said subplate and ball housing on a drive shaft; and
a plunger mounted in said housing for axial sliding between locking and non-locking positions,
said plunger having a plurality of flexible fingers having an overall dimension (a) to engage and force said balls outward in said passages when said plunger is moved to said locking position, with said fingers individually flexing inwardly to apply outward forces on said balls thereby centering and locking a reel or hub between said balls and subplate, and
(b) to be spaced from said balls when said plunger is moved to said non-locking position a distance permitting said balls to move inward in said passages to clear a reel or hub, with said balls moving radially freely in said passages so that rotation of said mechanisms produces forces moving said balls radially outward thereby centering and locking a reel or hub between said balls and subplate.

4,432,507

RETRACTOR FOR A SAFETY STRAP

Maurice Rietsch, Valentigney, and Jean Joly, Pont de Roide, both of France, assignors to Aciars et Outillage Peugeot, Audincourt, France

Filed Apr. 15, 1983, Ser. No. 485,359

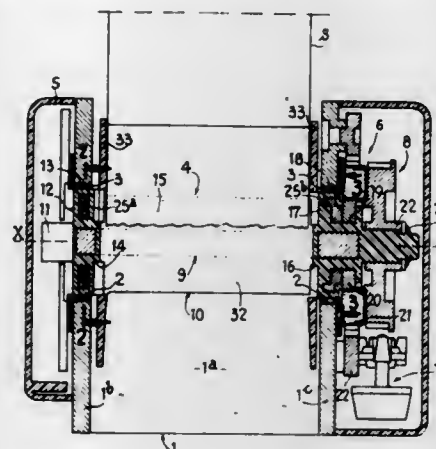
Claims priority, application France, Apr. 26, 1982, 82 07133
Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 A

8 Claims

1. In a retractor for a safety strap of the type comprising a support, a rigid central assembly which is for connection to one end of the strap, is mounted in the support to rotate about an axis and around which assembly the strap is adapted to be wound under the action of a resiliently yieldable return force, a locking mechanism associated with said assembly for preventing the rotation of said assembly in the direction for unwinding the strap when a limit acceleration or deceleration value applied to the strap and/or to the support is exceeded, said assembly comprising as a central core a metal strip and a covering of moulded plastics material in which covering the strip is fastened, said covering having portions defining two coaxial bearing surfaces by means of which bearing surfaces

the assembly is rotatively mounted in the support; the improvement comprising adjacent to each end of said rigid assembly a rigid reinforcing circular plate which is perpendicular to the



4,432,508

AUTOMATIC TAPE THREADING DEVICE

Yoichi Inoue; Takao Terayama, both of Ibaraki; Susumu Kasai, Sagami, and Tamotsu Tominaga, Akishima, all of Japan, assignors to Hitachi, Ltd.; Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

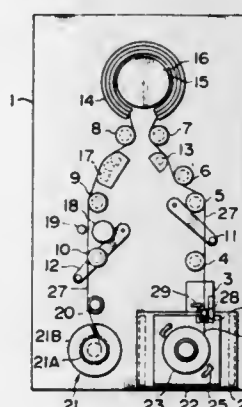
Filed Jan. 11, 1982, Ser. No. 338,657

Claims priority, application Japan, Jan. 14, 1981, 56-3216

Int. Cl.³ G11B 15/06

U.S. Cl. 242—195

6 Claims



1. An automatic tape threading device suitable for use with a magnetic recording and reproducing system, comprising:
a cartridge having mounted therein a supply reel for winding a magnetic tape thereon;
a takeup reel for winding thereon the magnetic tape and a leading tape member having a greater width than the magnetic tape, said takeup reel being connected to a drive source and located on a base;
a cartridge stage for attaching said cartridge thereto, said cartridge stage being mounted on a base laterally of said takeup reel;
a drum having mounted thereon a magnetic head for writing information to and reading out information from the magnetic tape; and
an eraser head and a sound head mounted in a path of travel of the magnetic tape;
said leading tape member being connectable to said magnetic tape so that the magnetic tape moves past an outer circumferential surface of said drum as the leading tape member is taken up on the takeup reel;
wherein the improvement comprises:
a support means for shifting the cartridge stage in a direction toward and away from a reel bed on said base in such a

manner that a surface of rotation of the supply reel of a cartridge attached to the cartridge stage moves in a direction perpendicular to the surface of the base;
a pair of complementary shaped male and female joint members, one of said joint members being located at an end portion of the leading tape member withdrawn from the takeup reel and moved along the path of travel of the magnetic tape to the vicinity of the cartridge stage and the other of the joint members being located at an end portion of the magnetic tape wound on the supply reel in the cartridge attached to the cartridge stage, said joint member located on the end portion of the leading tape member being constructed and arranged to come into engagement with said joint member on the end portion of the magnetic tape by widthwise movement therebetween, whereby the joint member of the magnetic tape and the joint member of the leading tape member are brought into interfitting engagement with each other as the supply reel of the cartridge is engaged with said reel bed due to shifting of said cartridge stage by said support means.

4,432,509

APPARATUS FOR FEEDING FILM

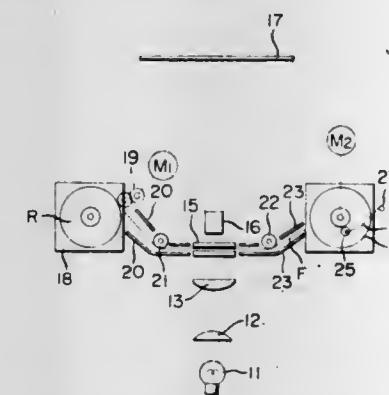
Masanari Shirai, Chigasaki, and Hitoshi Yanagawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,903

Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242—195

6 Claims



6. An apparatus for automatically loading a sheet at a predetermined position from a reel on which the sheet is wound, wherein the sheet has a leader part affixed to the leading end of a part of the sheet on which an information is recorded with the leader part having a width larger than that of the information recorded part, said apparatus comprising:

a reel having a core and having a pair of flanges provided on the core spacing apart from each other by a distanced which is smaller than the width of the leader part but larger than the width of the information recorded part, the information recorded part being wound around the core and the leader part being wound around the peripheral surface of the pair of flanges;
a roller having a width smaller than the distance between the pair of flanges and movable between a first position spaced from the peripheral surface of the pair of flanges and a second position located between the inner walls of the pair of flanges;
driving means for rotating said roller to provide an automatic loading operation;
means for guiding the sheet fed out from said reel to the predetermined position;
means for moving said roller, during the automatic loading operation, from the first position to a position where said roller press-contacts the leader part wound around the peripheral surface of the pair of flanges, and then for moving said roller, when the leader part is completely fed out and spaced from the peripheral surface of the pair of flanges, from the press-contacts position to the second position;

detecting means for outputting a signal when said roller moves to the second position;
means for moving said roller to the first position in response to the output of said detecting means; and
means disposed at the predetermined position for taking up the sheet fed from said reel.

4,432,510

TAPE CASSETTE

Haruki Ogata, Sagami, and Kimio Ogawa, and Hiroyuki Umeda, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

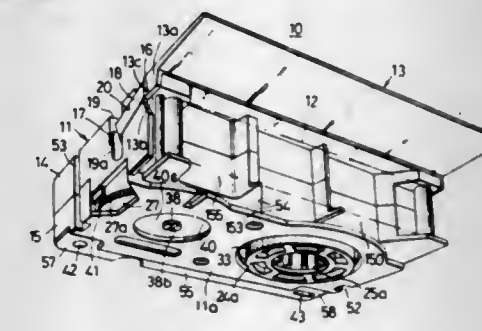
Filed Jan. 15, 1982, Ser. No. 339,671

Claims priority, application Japan, Jan. 20, 1981, 56-7566

Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242—200

11 Claims



1. A tape cassette for use with a recording and/or reproducing apparatus having a reel driving mechanism including at least one reel driving shaft, said tape cassette comprising:
a cassette case;
a supply reel and a take-up reel provided within said cassette case, for winding a tape, and positioning means for positioning said cassette case with respect to the recording and/or reproducing apparatus;
one of said reels being constructed to receive the reel driving shaft of said recording and/or reproducing apparatus, said shaft being inserted into a center part of the bottom of said one reel to engage and drive said one reel when said tape cassette is loaded into said recording and/or reproducing apparatus;
the other of said reels being constructed so as to be driven at other than a center part thereof;
said positioning means having an engaging part on the bottom surface of said cassette case at a position corresponding to the center of rotation of said other reel.

4,432,511

BEAM-RIDER GUIDANCE USING TWO OVERLAPPING RETICLE DISCS

Kay C. Tong, Mission Viejo, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed May 11, 1981, Ser. No. 262,684

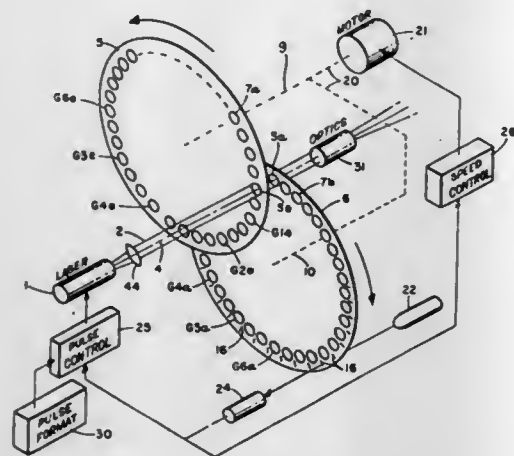
Int. Cl.³ F41G 7/26

U.S. Cl. 244—3.13

18 Claims

1. Beam rider guidance apparatus for a guided object, comprising a light beam generator for projecting a light beam toward a target and onto said object when the latter is launched at said target, a pair of rotating reticle discs in the path of said beam, each of said discs having a series of reticles thereon in a circle centered at the axis of rotation of said disc, one of said discs being an elevation guidance disc having its reticles passing in a vertical direction through said path of said beam, the second disc being an azimuth guidance disc having its reticles passing in a horizontal direction through said beam path, each of said series of reticles comprising a plurality of clear reticles and a plurality of guidance reticles having a light-blocking portion and a light-passing portion wherein said portions are at different positions in each of said guidance reticles to form an advancing pattern circumferentially of its respective disc as said disc is rotated, and means for connecting

and driving said discs in a synchronous manner to project said beam through a guidance reticle on said elevation disc and simultaneously through a clear reticle on said azimuth disc, and



at different times in said rotation through a clear reticle on said elevation disc and simultaneously through a guidance reticle on said azimuth disc.

4,432,512

JET PROPULSION EFFLUX OUTLETS

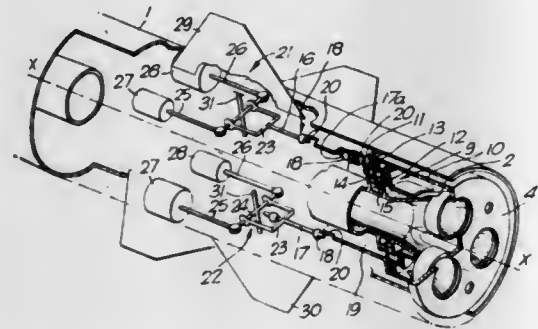
Robert W. Young, Luton, England, assignor to British Aerospace Public Limited Company, London, England
Filed Aug. 27, 1979, Ser. No. 69,713

Claims priority, application United Kingdom, Aug. 31, 1978, 35153/78

Int. Cl.³ F42B 15/18

U.S. Cl. 244—3.22

10 Claims



1. A jet propulsion efflux outlet assembly for controlling a guided flight vehicle in opposed senses about at least its roll axis while in flight comprising in combination;

nozzle means defining a plurality of aperture means through which efflux issues to exert a propulsive thrust, the plurality of aperture means being symmetrically disposed about the roll axis and shaped so that at least one edge region of each aperture means is radially spaced further from the roll axis than other edge regions of the same aperture means;

a spoiler plate member defining a plurality of aperture means matching in both number and configuration said plurality of aperture means of said nozzle means, each aperture means of said spoiler plate member having an impingement region on which the issuing efflux can impinge;

support means for supporting said spoiler plate member in a position generally transverse to the roll axis adjacent but downstream of said nozzle means and allowing movement of said spoiler plate member in the form of rotation in the roll sense; and

actuating means operable in flight to turn said spoiler plate member in opposed roll senses, such that efflux issuing from a part of each aperture means remote from the roll axis impinges on an associated impingement region and causes a roll torque of magnitude and sense dependent on

the respective magnitude and sense of movement of said spoiler plate member.

4,432,513

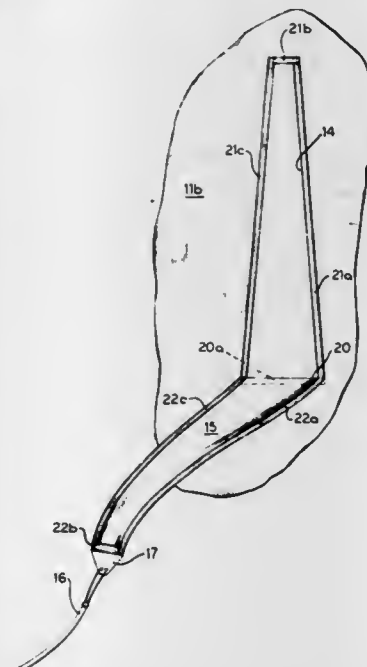
GAS-PROOF FASTENING SYSTEM FOR A NON-RIGID AIRSHIP

Paul E. Yost, P.O. Box 165, Tea, S. Dak. 57064
Filed Sep. 9, 1980, Ser. No. 185,545

Int. Cl.³ B64B 1/46, 1/64

U.S. Cl. 244—99

6 Claims



1. A gas leak proof releasable sealing panel system for a non-rigid gas leak-proof airship formed of a flexible gas leak-proof envelope, comprising:
an aperture in the envelope;
a sealing panel of flexible material dimensioned to cover the aperture;

a first hook-pile fastening strip adjacent a substantial portion of a periphery of the aperture;

a second hook-pile fastening strip adjacent a substantial portion of a periphery of the sealing panel and positioned to releasably mate with the first strip when the sealing panel is aligned in position to cover the aperture; and

a gas sealing heavy viscosity silicon grease applied to at least one of the first and second strips such that when the strips are mated a gas leak proof seal is formed for at least one of the gases selected from the group consisting of helium, coal gas and hydrogen.

4,432,514

DECOMPRESSION EQUALIZATION RELIEF VALVE

Dorris R. Brandon, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 23, 1976, Ser. No. 725,809

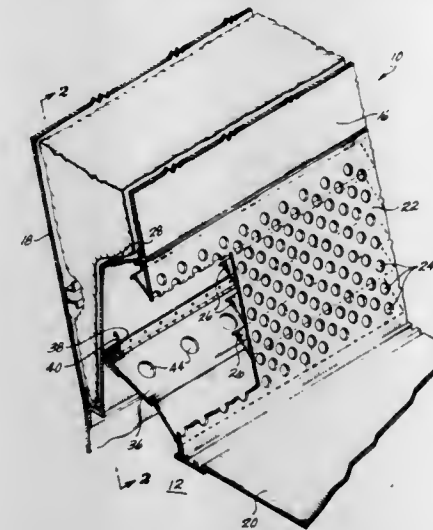
Int. Cl.³ B64D 25/00, 45/00

U.S. Cl. 244—118.5

9 Claims

1. A pressure relief device in an airplane to provide decompression relief between a passenger compartment having a double side wall and a cargo compartment, the device comprising: a grill to replace a section of an inside wall; ductwork to extend from an upper edge of the grill to an outer wall to form a channel for movement of air between the two compartments; and a pivotally mounted valve to extend across to block the channel, said valve having resilient means sized for holding the valve closed under normal operating conditions and having

perforations sized to allow pressure equalization across the closed valve in response to a low pressure differential and to



require the valve to open in response to a high pressure differential.

4,432,515

LIQUID FUEL TANK FOR AN AIRPLANE AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

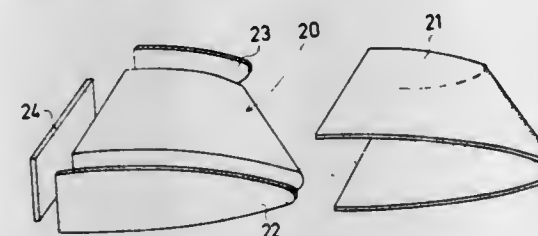
Elias A. Järvinen, Halli, Finland, assignor to Valmet Oy, Finland

Filed Mar. 13, 1981, Ser. No. 243,504

Int. Cl.³ B64C 3/34

U.S. Cl. 244—123

9 Claims



1. In a liquid fuel tank for an airplane of the type which constitutes a structural part of the airplane wing and having an outer surface which defines the aerodynamic outer surface of at least a portion of the airplane wing, the improvement comprising:

the liquid fuel tank being defined by walls having a bonded multi-layer sandwich structure having sufficient rigidity and strength while devoid of internal and external reinforcing structure, the sandwich structure including an inner liquid-tight tank formed of thin metallic sheet material, an intermediate core layer formed of a cellular rigid foam plastic material bonded to the outer surface of the inner tank, and an outer shell layer formed of metallic sheet material bonded to the outer surface of the intermediate layer, the outer surface of the outer layer constituting the aerodynamic outer surface of at least a portion of the airplane wing, and wherein said sandwich structure as a unitary structural entity constitutes a load bearing member.

4,432,516

38VARIABLE AIRFOIL ASSEMBLY

Ralph P. Muscatell, 2007 NE, 20th Ave., Fort Lauderdale, Fla. 33305

Continuation-in-part of Ser. No. 136,682, Apr. 2, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,561

Int. Cl.³ B64C 3/48, 9/32

U.S. Cl. 244—219

19 Claims

1. In a variable airfoil assembly having:
a fixed airfoil member with a bottom wall, a convex nose

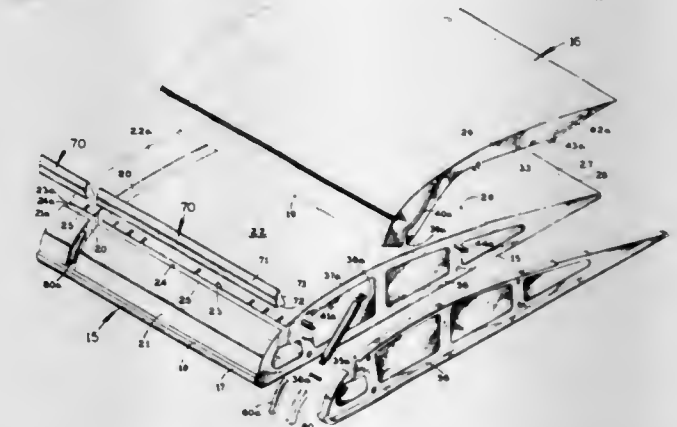
extending upward and curving rearward from the front end of said bottom wall, and a rear top wall segment spaced behind said nose and inclined downward and rearward toward the rear end of said bottom wall;

an adjustable airfoil member mounted for adjustment between a lowered position on top of said fixed airfoil member and raised positions projecting up beyond the top of said fixed airfoil member;

and means acting between said fixed and adjustable airfoil members for adjusting the position of said adjustable airfoil member on said fixed airfoil member;

the improvement wherein:

said fixed airfoil member presents a convex top plate extending behind the upper end of said nose and terminating at its rear end slightly below the front of said rear top wall segment;



and said adjustable airfoil member comprises a curved sheet metal plate which closely overlies said nose and said top plate of the fixed airfoil member when the adjustable airfoil member is in said lowered position;

said curved sheet metal plate presenting a convex top surface which in said lowered position of the adjustable airfoil member merges smoothly at its front end with the leading edge of said nose and merges smoothly at its rear end with said rear top wall segment of the fixed airfoil member;

said fixed airfoil member being formed with narrow gaps in said top plate; and

said adjustable airfoil member having narrow reinforcing ribs extending down from said curved sheet metal plate and received in said gaps in said lowered position of the adjustable airfoil member.

4,432,517

CIRCUIT FOR DETECTING UNBALANCE OF THE TRACTION CURRENT IN A TRACK CIRCUIT

Paolo Ripamonti, Genoa, Italy, assignor to ANSALDO S.p.A., Genoa, Italy

Filed Apr. 3, 1981, Ser. No. 250,862

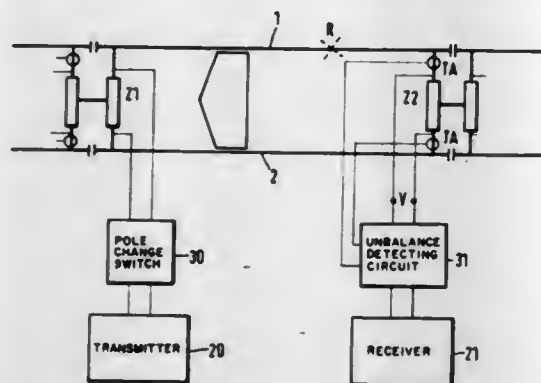
Claims priority, application Italy, Apr. 18, 1980, 12513 A/80
Int. Cl.³ G08B 21/00

U.S. Cl. 246—28 F

4 Claims

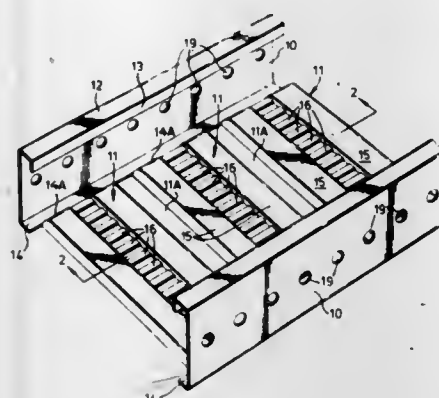
1. A device for detecting unbalance of the traction current in a track circuit of the type comprising a track section which is short-circuited by rolling stock, there being a transmitter for transmitting a track circuit signal current and an associated receiver characterized in that the unbalance detecting device comprises two current sensors for coupling to respective rails of the track section, an unbalance detecting circuit for receiving from the current sensors respective signal currents in the respective rails for transmitting track circuit signal currents to the receiver when the signal currents detected by the current sensors are equal and responsive to any detected unbalanced currents of a given frequency and magnitude of unbalance effective to render the unbalance detecting circuit effective to preclude transmission to the receiver, and a pole change switch

for connection between the track circuit current transmitter and the rails associated therewith for alternately changing the direction of the track circuit signal current through the track circuit to render the track circuit signal current balanced.



direction of the track circuit signal current through the track circuit to render the track circuit signal current balanced.

between adjacent side flanges of a respective side or each side of said cable mounting ladder.



4,432,518

EAVES TROUGH BRACKET ASSEMBLY

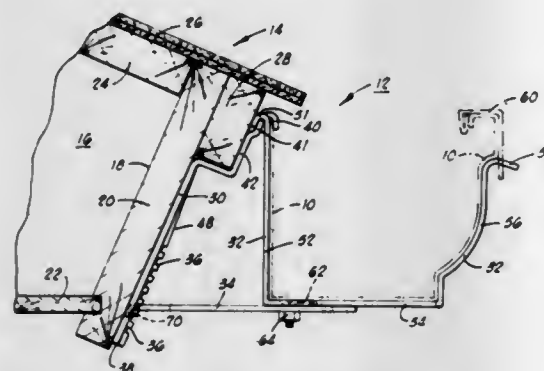
Robert J. Navarre, Rte. 2, Box 89, Harrah, Okla. 73045

Filed Nov. 8, 1982, Ser. No. 439,936

Int. Cl.³ E04D 13/06

U.S. Cl. 248—48.2

6 Claims



1. An eaves trough bracket, comprising:
 - a securing plate adapted to be secured in generally vertical orientation to roof eave structure, and having a plurality of brace slots adjacent the lower end and a retaining hook on the opposite, upper end;
 - a trough support member having interlocking hooks formed on one end for retentive engagement with said retaining hook, said member including elongated structure for supporting the eaves trough; and
 - brace plate means secured between one of said securing plate brace slots and said trough support member elongated structure.

4,432,519

MEANS FOR MOUNTING CABLES AND THE LIKE

Howard Wright, Brisbane, Australia, assignor to Burundy, Inc., Ontario, Canada

Filed Jan. 15, 1981, Ser. No. 225,264

Claims priority, application Australia, Jan. 17, 1980, PE2041

Int. Cl.³ F16L 3/00

U.S. Cl. 248—49

2 Claims

1. A cable mounting ladder including a plurality of transverse rungs interconnecting a pair of opposed side flanges or side runners which is of arcuate or curved shape wherein each side flange is severed or partially severed to form a multiplicity

4,432,520

STRAIN RELIEF ASSEMBLY

Hans Simon, Bruchhausener Strasse, D-5463 Unkel, Fed. Rep. of Germany

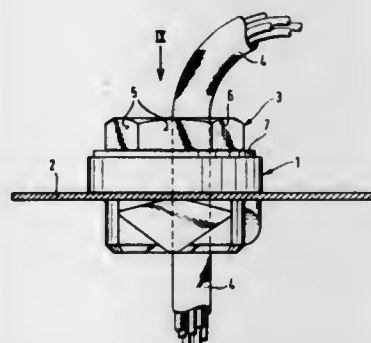
Filed Feb. 1, 1982, Ser. No. 344,326

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105316; Apr. 29, 1981, 3117029

Int. Cl.³ F16L 5/00

U.S. Cl. 248—56

9 Claims



1. A cable strain relief assembly comprising a grommet for reception in an aperture of a supporting wall or the like; clamping means receivable in said grommet; said clamping means and said grommet having corresponding cable-receiving passageways; said clamping means having a stationary anchor portion interlockingly engaging with said grommet in which received in interfitting engagement and a flexible band portion movable relative to said anchor portion for gripping engagement with a peripheral portion of a cable passing therethrough; said band portion extending from said clamping means anchor portion and being located in a plane at substantially right angles to the longitudinal axes of said cable-receiving passageways; said band portion having a movable end opposed to said anchor portion; and a clamping means rotatable drive portion connected to said band movable end for rotating said band movable end and moving said flexible band portion about the longitudinal axes of said passageways.

4,432,521

CRADLE CASE

Jack Douglas, 11645 Montana Ave., Los Angeles, Calif. 90049

Filed Jun. 22, 1981, Ser. No. 275,998

Int. Cl.³ F16M 11/00

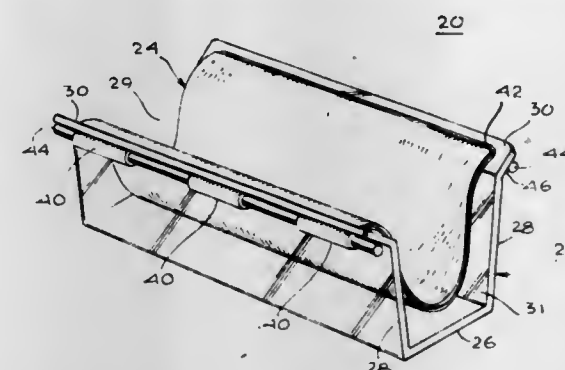
U.S. Cl. 248—176

5 Claims

1. An improved eyeglass holder, said holder comprising, in combination:

(a) a base having a bottom support and upstanding opposed sides, defining a central space therebetween, the upper

- ends of said sides terminating in lips which diverge outwardly from each other,
- (b) a flexible eyeglass cushion cradle overlapping at least a portion of said lips and depending from said lips in said space,
- (c) wherein said lips are angled mainly upwardly and outwardly from said base and wherein at least a portion of the side margins of said cradle are secured to said lips,



- (d) wherein said cradle comprises a plurality of layers of soft flexible material secured together, and
- (e) wherein at least one of said layers includes tabs which extend outwardly of the side margins of said cradle and are disposed through said lips and formed into tubes and wherein elongated rods are disposed through said tubes to lock said cradle to said lips.

4,432,522

PORTABLE TELEPHONE SUPPORT

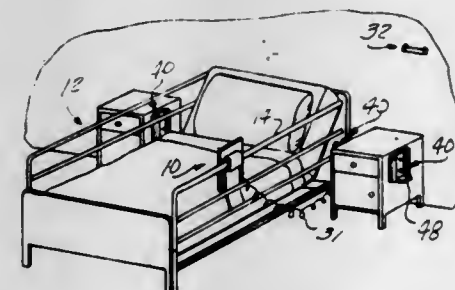
Thomas F. Prunte, and Anna Tamargo, both of Pontiac, Mich., assignors to St. Joseph Mercy Hospital Pontiac, Pontiac, Mich.

Filed Feb. 17, 1982, Ser. No. 349,187

Int. Cl.³ A47B 96/06

U.S. Cl. 248—215

6 Claims



1. A portable telephone support for use by hospital patients in a bed having a side rail and a mattress comprising:
 - a telephone base support;
 - a bedrail engaging hook member secured to the telephone base support, the bed rail engaging member including a continuous planar piece bent at an upper end to form a hook for engaging the side rail of the bed and a lower end inclined out of the plane of the bedrail engaging member to pass the edge of the mattress without interference when the bedrail engaging member is mounted on the side rail of the bed facing the mattress; and
 - means for selectively mounting the telephone base support to a wall and a support surface spaced from the bed side of the rail of the bed, the mounting means comprising:
 - a mounting bracket having a support surface engaging portion and an outer portion joined to and spaced from the support surface engaging portion to define an aperture therebetween for receiving the bedrail engaging member therein.

4,432,523

CABINET SHELF SUPPORT BRACKET

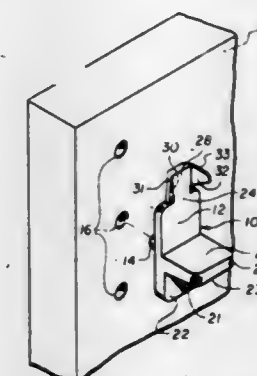
James S. Follows, Surrey, Canada, assignor to Vanguard Plastics Ltd., Surrey, Canada

Filed Apr. 1, 1982, Ser. No. 364,494

Int. Cl.³ A47G 29/02

U.S. Cl. 248—250

7 Claims



1. In a cabinet of the type having at least one shelf, the vertical positioning of said shelf being variable and effected through the movement of shelf supports, a shelf support bracket comprising:

a backplate adapted for placement against one surface of a sidewall of said cabinet, said backplate having an upper portion of uniform thickness in a direction orthogonal to said sidewall;

a bracket-mounting means associated with said backplate for removably mounting said backplate to said sidewall;

a shelf support plate projecting from a first surface of said backplate such that said upper portion of said backplate lies above said shelf support plate, said shelf support plate constructed and arranged to receive an edge portion of said shelf;

a shelf-retaining means extending from said upper portion of said backplate, spaced from said shelf support plate and constructed and arranged to cooperate therewith to retain said shelf edge portion on said support plate, said shelf-retaining means including a first portion substantially coplanar with said upper portion of said backplate and of a thickness no greater than the thickness of said upper portion of said backplate and, at least one planar ear portion contiguous with said first portion and extending from a first edge thereof in a substantially upright plane oblique to the plane of said first portion, said ear portion resiliently yieldable to a position in which the surfaces of said upper portion, first portion and ear portion that are distally located from said sidewall and are adapted to contact said edge portion of said shelf are coplanar to permit passage of said shelf edge whereupon said ear portion returns to its original position and overlies said shelf edge portion, said shelf edge portion when in place upon said shelf support bracket lying intermediate said ear portion and said support plate.

4,432,524

THREE POINT SEAT ADJUSTER

Gary A. Wize, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1981, Ser. No. 288,165

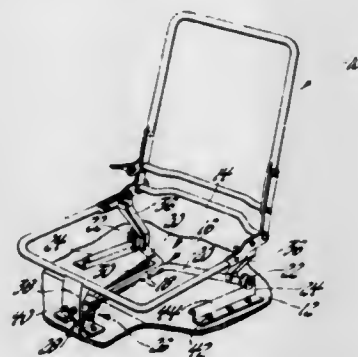
Int. Cl.³ A45D 19/04

U.S. Cl. 248—395

2 Claims

1. A seat adjuster providing three point support of a seat to the floor of a vehicle or the like, comprising,
 - a pair of generally parallel, rearwardly disposed guide tracks mounted to the vehicle floor,
 - a forwardly disposed guide member including a guide bracket pivotally joined to a floor mounted bracket, the guide bracket including a pair of journals and a roller between the journals,

a generally Y shaped seat frame support attached to the seat and including a pair of tubular stem members, each slidably extending through a respective guide bracket journal and engaging the roller to provide a first point of support, the seat frame support further including a pair of leg members, each extending angularly from a stem member and respective to a guide track, roller means slidably supporting each leg member on a re-



spective guide track, the roller means sliding up and down the guide tracks as the seat frame support is moved forward and backward, the guide bracket pivoting relative to the floor as the seat frame support moves relative to the journals and roller, and releasable locking means selectively engageable between one of the stem members and the guide bracket to releasably lock the stem members within the guide bracket in a plurality of positions.

4,432,525

ADJUSTABLE CHAIR SUPPORT

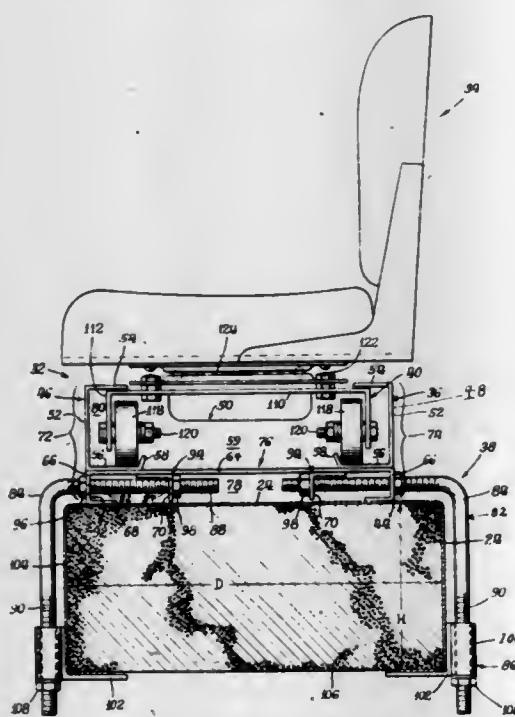
Clarence E. Duvall, 2614 N. Wilson Dr., Peoria, Ill. 61604

Filed Dec. 23, 1981, Ser. No. 333,642

Int. Cl.³ F16M 13/00

U.S. Cl. 248—430

7 Claims



1. An adjustable support device enabling sidewise movement of a chair along a seat bench to a plurality of fixed positions, said device comprising an elongated body, clamp means, a carriage, and latch means;

said elongated body comprising horizontally spaced front and back vertical walls adapted to be mounted on a seat bench, horizontal floor plate means interconnected between the walls at a location intermediate the tops and bottoms thereof to provide a lower space beneath the floor plate means and an upper space above the floor plate

means, a pair of inwardly extending horizontal top flanges along the top edges of said walls; said clamp means comprising a plurality of clamps each including a right-angled rod having a screwthreaded horizontal leg and a depending screwthreaded vertical leg, each said horizontal leg extending through one of said vertical walls into said lower space, each said vertical leg being positionable downwardly along a front or back edge surface of the seat bench and having at the bottom end a saddle member engageable with a lower corner of the seat bench, screw thread means acting between each horizontal leg and said body to enable individual fore-and-aft horizontal adjustment of the rods to accommodate different fore-and-aft depths of seat bench and different fore-and-aft positions of the body on the seat bench, and other screw thread means acting between the vertical legs and saddle members to accommodate vertical adjustment of the saddle members for different seat bench thicknesses; said carriage having chair attachment means and being retained in said upper space by said flanges and being supported on said floor plate for movement between opposite sides of said body; and said latch means acting between said carriage and said body to lock said carriage in a plurality of fixed, sidewise-displaced positions.

4,432,526

SUPPORT BLOCK ASSEMBLY

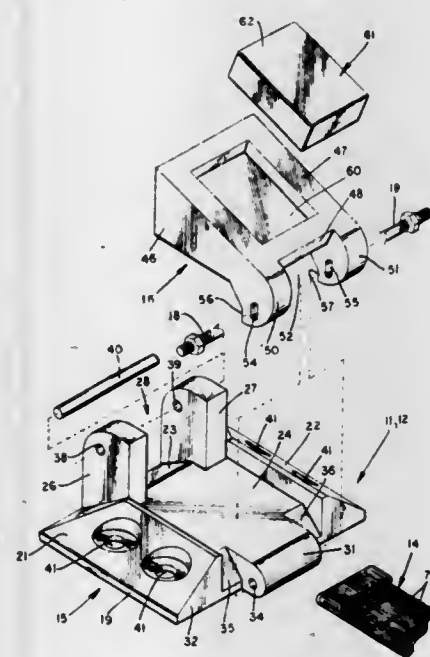
Withers, Jr. L. Andrew, 5801 Whispering Pines Cir., Mableton, Ga. 30059; William D. Withers, and Carlo Fineo, both of Austell, Ga., assignors to L. Andrew Withers, Jr., Mableton, Ga.

Filed Jan. 4, 1982, Ser. No. 336,671

Int. Cl.³ F16M 13/00

U.S. Cl. 248—542

8 Claims



1. A support block assembly for cylindrical rolls and the like comprising a pair of support blocks of similar construction, each said support block including a platform for engaging a floor surface, a support plate positioned on said platform, and a strap extending between each said support block, with one end portion of said strap extending between the support plate and the platform of one support block and the other end portion of said strap extending between the support plate and the platform of the other support block, hinge means hingedly connecting together the platform and support plate of each support block in such a manner the weight of the support plate is supported by the platform and the strap is compressed between the support plate and the platform and said support plates each including an upwardly facing support surface sloped downwardly toward the opposite support block,

whereby when a cylindrical roll or the like is placed on the support blocks the support surfaces of the support blocks are engaged by the cylindrical rolls and form wedges that support the roll.

4,432,527

TROLLING MOTOR BRACKET

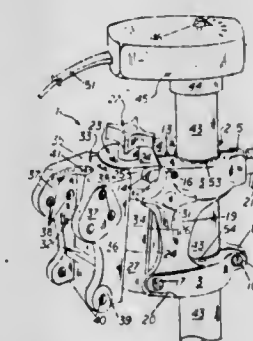
Frank C. Sample, Rte. 2, Box 286B, West Monroe, La. 71291

Filed Mar. 5, 1982, Ser. No. 354,967

Int. Cl.³ F16M 13/00

U.S. Cl. 248—548

5 Claims



1. A trolling motor bracket for supporting the shaft of a trolling motor comprising:

- a shaft bracket having a first shaped housing member; a second shaped housing member cooperating with said first shaped housing member; a shaft aperture defined by said first shaped housing member and said second shaped housing member for receiving the shaft of the trolling motor; and rearwardly facing slots in said first shaped housing member and said second shaped housing member;
- a bracket hinge pivotally attached to said shaft bracket;
- a support bracket hingedly attached to said bracket hinge and top mount flanges provided in said support bracket for attachment to the guide struts of a folding boat bracket and bottom mount flanges provided in said support bracket for attachment to the boat bracket member in the folding boat bracket; and
- bracket hinge pin means cooperating with said bracket hinge and said support bracket to permit said shaft bracket to hingedly rotate horizontally on said bracket hinge with respect to said support bracket, said bracket hinge pin means further characterized by a threaded, elongated bracket hinge pin in threadable cooperation with said support bracket for adjusting the hinge tension between said bracket hinge and said support bracket;
- two threaded, elongated breakaway pins in threadable cooperation with both sides of said bracket hinge and arranged in essentially oppositely disposed relationship, said breakaway pins normally registering with said rearwardly facing slots in said first shaped housing member and said second shaped housing member, respectively, when the trolling motor is in normal operating configuration; and
- a threaded, elongated shaft tension screw in threadable cooperation with said shaft bracket for selectively exerting pressure against the shaft of the trolling motor and biasing the shaft of the trolling motor at a selected height in said shaft bracket.

4,432,528

EASY SERVICE MOTOR MOUNT FOR AN AUTOMATIC WASHER

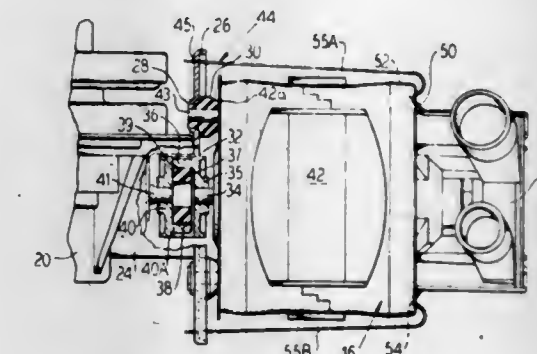
Gerald L. Kretchman, St. Joseph, and Anthony Mason, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 20, 1980, Ser. No. 179,897

Int. Cl.³ F16M 13/00

U.S. Cl. 248—603

11 Claims



1. An automatic washer motor mount for connecting a motor to a gear case, said motor having a housing with an end bell at one end and a plurality of pilot studs at an opposite end and a drive shaft therethrough, said motor mount comprising: a mounting plate secured to said gear case said mounting plate having a plurality of openings there-through, for receiving a plurality of resilient bushings and said drive shaft, said bushings being selectively connected to said motor housing by means of said pilot studs, at least two tension arms external of said motor housing, said tension arms being connected to one end to said mounting plate and at an opposite end to said motor housing end bell and having points of contact only at said ends, whereby said motor is secured against said bushings such that vibration from said motor is dampened and is only minimally transmitted to said gear case.

4,432,529

ICE TRAY WITH LID

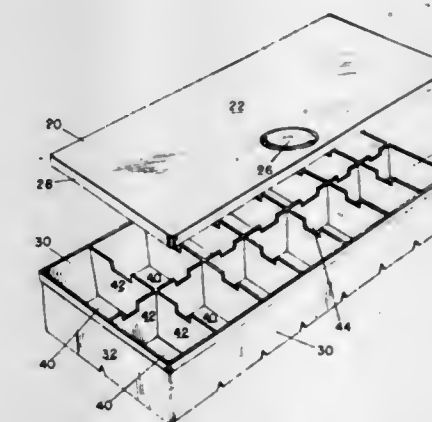
Charles McMillan, 218 E. Franklin St., Quincy, Fla. 32351

Filed Sep. 30, 1982, Ser. No. 431,758

Int. Cl.³ B29C 1/02

U.S. Cl. 249—52

1 Claim



1. A stackable, covered ice cube tray structure comprising a tray having an outwardly flared bead around its upper peripheral edge and a removable tray cover having a downwardly extending skirt around its lower peripheral edge which secures to said tray by engaging said outwardly flared bead on said tray, ice cube forming compartments in said tray, said tray and said tray cover combination having a recessed filling means in said cover, surrounded on all sides by said tray cover, for filling said covered ice cube tray and a cap on said filling means

coplanar with said cover, with fluid when said tray cover is secured to said tray, whereby when said covered trays are stacked, smooth, planar surfaces on said tray covers will allow close engagement of said trays and result in compact, efficient storage of same.

4,432,530

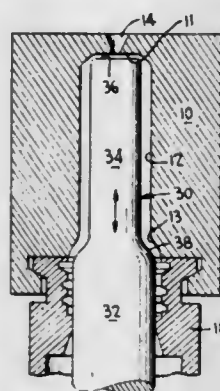
MOLD-CORE ROD COMBINATION FOR FORMING AN INJECTION MOLDED PLASTIC PARISON

John A. Marcinek, Westfield, Mass., assignor to Emhart Industries, Inc., Farmington, Conn.

Continuation-in-part of Ser. No. 863,746, Dec. 23, 1977, abandoned. This application Jul. 10, 1979, Ser. No. 56,426
Int. Cl.³ B29C 1/14, 17/07; B29D 23/02

U.S. Cl. 249-142

6 Claims



1. A plastic mold-core rod combination for forming an injection molded plastic parison having a bottom, a sidewall, a shoulder, and a neck finish comprising a female parison mold having a flat area at the bottom surface thereof and a sharply tapered annular corner surface extending from said flat at said bottom surface into a sidewall surface and terminating at a neck finish, and a core rod having a flat area at the end portion thereof and a sharply tapered annular corner surface extending from said flat into a sidewall surface; said flat at said end portion, said sharply tapered annular corner surface and said sidewall surface of said core rod, and said flat at said bottom surface, sharply tapered annular corner surface and sidewall surface of said mold constructed and arranged to mate and form a cavity having a bottom area thickness, a sidewall area thickness and an annular corner area thickness connecting said bottom and sidewall areas, said bottom area thickness and annular corner area thickness being less than said sidewall area thickness and having a rapid transition from the thickness at the middle of said bottom cavity area to said sidewall cavity area of greater thickness, said sidewall thickness being substantially constant from said annular corner surface to the shoulder.

4,432,531

VEHICLE JACK

Terry D. Bevans, and James L. Hammer, both of 6902 Manhattan Ln., Cheyenne, Wyo. 82001

Filed Apr. 12, 1982, Ser. No. 367,551

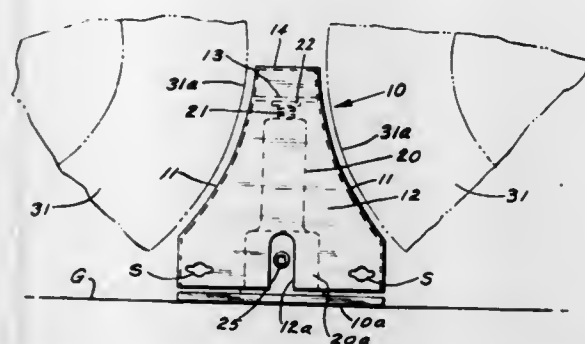
Int. Cl.³ B66F 3/36

U.S. Cl. 254-100

2 Claims

1. An operably raisable jack for lifting a vehicle having a pair of aligned tandem wheels by the pair of aligned tandem wheels comprising, in combination, a manually vertically operable jack having a transverse base plate and a raisable shaft portion, a bell-shaped housing extending around the jack and removably secured to the top of the raisable jack shaft, said housing having four sides, with two of said sides being diametrically opposed and formed as inward arcuate vertical surfaces, and the other two of the housing sides being diametrically formed as opposing flat vertical surfaces, said arcuate opposed surface sides being adapted to frictionally wedge about the outer periphery of a pair of aligned tandem wheels upon jack operation between such pair of aligned wheels for effecting jack

vehicle raising by said wheels, and said housing flat opposed surface sides each having aligned bayonet-slot openings adjacent their lower edges and with each opening being adapted to removably receive and hold a transverse wheel lifting bar therein.



4,432,532

DIRECT DRIVE DUAL DRUM WINCH

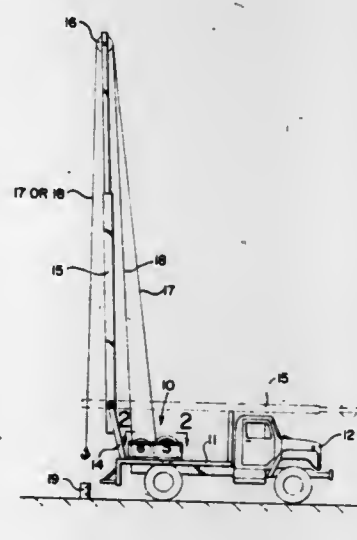
Mark Overholt, 6867 Wooster Pike, Medina, Ohio 44256

Filed Jan. 27, 1983, Ser. No. 461,644

Int. Cl.³ B66D 1/08; F16D 1/00, 3/50

U.S. Cl. 254-291

4 Claims



1. A direct drive dual drum line and cable winch for the deck of a mobile well tending rig, comprising: a generally rectangular frame with front and rear channels for cross connection of a drive side plate to a parallel second side plate, the base of said frame being adapted for attachment to said rig deck, each said side plate having front and rear holes therethrough for integral attachment of a bearing mounting block, each said front and rear mounting block having a circular bore; front and rear opposed and axially aligned bearings positioned within said bore of a mounting block, each said bearing having a radial flange for attachment to a mounting block; front and rear winch drums positioned within said frame transversely of said side plates, each said drum having a shaft rotatably mounted within a bearing on said second side plate and a drive shaft rotatably mounted within and axially projecting beyond a bearing on said drive side plate; front and rear bell housings positioned coaxially around each said drum drive shaft, the inner ends of each said housing being connected to a drive side plate outwardly of said radial flange of a bearing, the outer end of each said housing being adapted for mounting a hydraulic motor; front and rear hydraulic motors each having radial pistons and an axially oriented inwardly projecting drive shaft aligned with said drive shaft of a winch drum; and, flexible couplings connecting said aligned drive shafts within said bell housings.

4,432,533

FLAME GUNNING OF REFRACTORY LININGS

Masato Shimizu; Tadashi Morimoto; Motoyasu Yaji; Masaaki Tsukamoto, all of Chiba; Takao Suzuki, Ichihara, and Shigeru Ogura, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

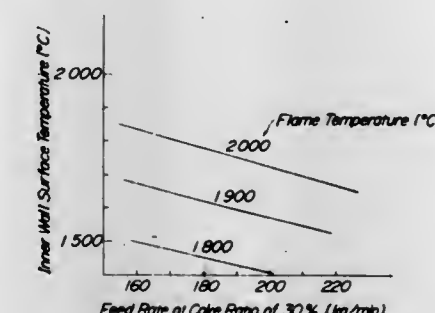
Filed Apr. 1, 1982, Ser. No. 364,414

Claims priority, application Japan, Apr. 6, 1981, 56-51387; Apr. 6, 1981, 56-51389; Apr. 6, 1981, 56-51396

Int. Cl.³ F27D 1/16

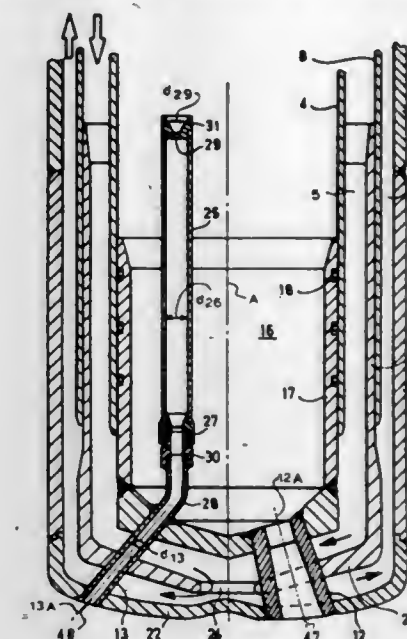
U.S. Cl. 266-44

5 Claims



1. In a method of repairing a refractory lining of a vessel lined with refractory by a flame-gunning process, comprising flame-gunning a patching material consisting of refractory particles and carbonaceous fuel powder, together with an oxygen containing gas to fuse or semi-fuse the refractory particles in a region surrounded by high temperature flame, and striking the flame-gunned material against the surface of the refractory lining to produce a deposit layer of the refractory particles, the improvement comprising flame-gunning at an initial stage of repairing a patching material having a higher mixing ratio of the fuel powder, and subsequently flame-gunning, in order with the progress of repairing, patching materials in which the mixing ratio of the fuel powder is lowered stepwise, and during which blowing the oxygen containing gas in such an amount that the oxygen content in the oxygen containing gas is substantially less than the theoretical amount required for complete combustion of the fuel powder, and controlling a blow rate of the oxygen containing gas in accordance with the change of the mixing ratio of the fuel powder in the patching material.

connected to the inner end of a respective nozzle for passing gas from the interior of the tube into the nozzles



4,432,535

PRESSURE POURING FURNACE

Tsuguharu Ohmori, and Sadaumi Ueno, both of Suzuka, Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

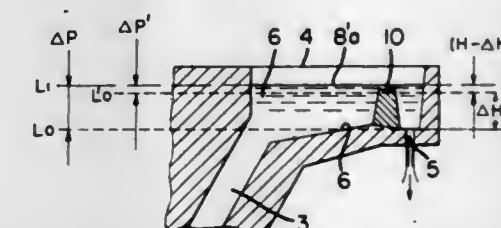
Filed Aug. 6, 1982, Ser. No. 405,737

Claims priority, application Japan, Aug. 8, 1981, 56-124570

Int. Cl.³ B22D 39/00

U.S. Cl. 266-239

5 Claims



1. A molten metal pressure-type pouring furnace comprising a molten metal storing chamber, means for selectively impressing an air pressure onto the surface of molten metal stored in said storing chamber, a pouring chamber having a bottom surface with a pouring nozzle port therein, the area of the bottom surface of the pouring chamber being larger than the cross-sectional area of the pouring nozzle port, a passageway communicating with said storing chamber and having an outlet in said pouring chamber, and a weir having a predetermined height extending above the bottom surface of said pouring chamber to separate the passageway outlet from said pouring nozzle port, wherein said weir is arranged between said outlet and said pouring nozzle port to define a well having a larger cross-sectional area than the cross-sectional area of the pouring nozzle port for receiving a quantity of molten metal desired to be poured so that the level of molten metal is set at a predetermined height above the bottom surface of said pouring chamber and is thereby poured through said pouring nozzle port at a predetermined rate, thereby enabling a prelevel of molten metal in said pouring chamber to be set, at a first air pressure, at a level corresponding almost to the height of said weir, whereby a second air pressure for effecting the pouring of said metal from said well through said pouring nozzle port is reduced.

4,432,534

OXYGEN LANCE FOR STEEL CONVERTER

Hugues Zanetta, St. Julien-les-Metz, and Daniel Richard, Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint Germain-en-Laye, France

Filed Feb. 10, 1983, Ser. No. 465,559

Claims priority, application France, Feb. 10, 1982, 82 02173

Int. Cl.³ C21C 5/32

U.S. Cl. 266-225

12 Claims

1. A gas-injection lance comprising:
a main tube centered on an axis and having a lower end formed adjacent the axis with a plurality of throughgoing inner orifices and an upper end;
means for feeding a treatment gas under pressure to the upper end and thereby pressurizing the interior of the tube therewith sufficiently that the gas exits from the lower end through the inner orifices at supersonic speed;
an annular array of nozzles traversing the lower tube end around the inner orifices and each having an outer end opening outside of the tube and an inner end inside the tube; and
respective pressure-reducing means each having one side open at the lower tube end inside the tube and another side

4,432,536

MOLTEN IRON CONTAINING VESSEL WITH IMPROVED REFRACTORY LINING

Heinz Cordes, Duisburg, and Manfred Oberbach, Krefeld-Verger, both of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

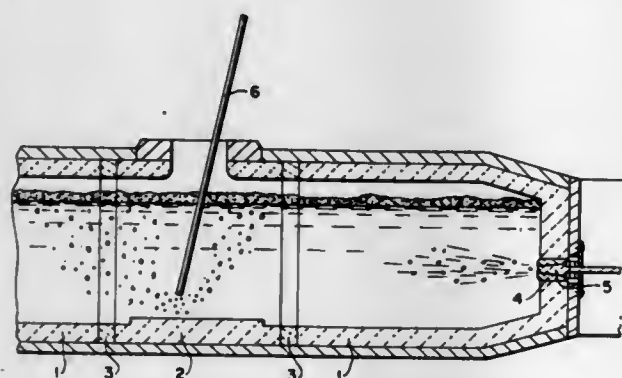
Filed Mar. 30, 1982, Ser. No. 363,499

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114069

Int. Cl.³ C21B 5/00

U.S. Cl. 266—280

11 Claims



1. In a horizontal vessel for transporting and desulfurizing pig iron, said vessel being of the type including a horizontally elongated tubular portion, an end portion facing and closing the tubular portion, and a gate portion between said tubular and end portions and having an upper opening through which pig iron may be charged into said vessel, and a refractory fireproof inner lining, the improvement wherein:

said lining in said tubular and end portions comprises dolomite;

said lining in said gate portion comprises bauxite;

said lining includes magnesite bricks between said dolomite and bauxite; and

means for injecting a flushing gas into said end portion of said vessel and thereby for reducing slag therein, said injecting means comprising a gas permeable brick member extending through said end portion into the interior of said vessel.

4,432,537

HYDRAULIC SUPPORT

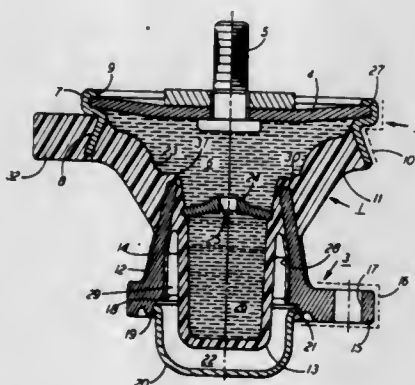
Hubert Pletsch, Birkenau, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany
Continuation of Ser. No. 174,528, Aug. 1, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,258

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932478

Int. Cl.³ F16F 1/36

U.S. Cl. 267—8 R

5 Claims



1. A hydraulic support for supporting and damping a motor vehicle engine comprising:

(a) a metallic ring with an end face;

(b) a cover closing said ring at its end face, said cover having a first abutment extending therefrom;

(c) a rubber-elastic hollow body having an upper end adhesively connected along its circumference to said metallic ring and having a lower end formed as an integral cup shaped portion;

(d) an internal nozzle system dividing said hollow body into first and second chambers, said cup shaped portion being said second chamber, said chambers connected to each other by said nozzle system, and the wall of said body dished inwardly from the upper end of said body toward said nozzle system in the area of said first chamber to form an generally conical inner surface;

(e) a second abutment in the form of a generally cylindrical member having a conically tapered upper end embedded in part of the wall of said rubber-elastic hollow body defining said first chamber, extending above and surrounding said nozzle system and surrounding said cup shaped portion with a spacing so as to define an empty annular space between said cylindrical member and said cup shaped portion, a mounting flange formed at the lower end of said cylindrical member;

(f) a closure cup closing off the lower end of said cylindrical member; and

(g) a circular reinforcement of the material of the hollow body over the end of said embedded cylindrical member, in said first chamber, forming a stop for the cover for maximum spring excursion.

4,432,538

MACHINE TOOL CLAMP

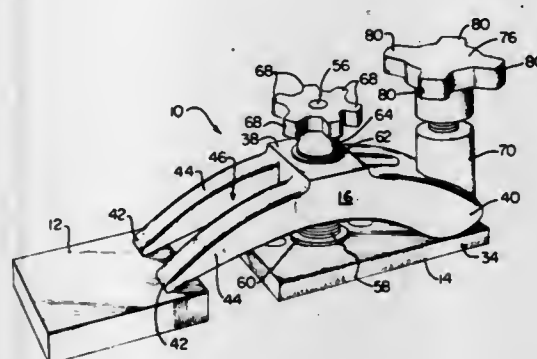
Hector Sequin, 11902 W. Dakota Dr., Lakewood, Colo. 80228

Filed Nov. 30, 1981, Ser. No. 325,638

Int. Cl.³ B23Q 3/02

U.S. Cl. 269—92

22 Claims



1. A machine clamp adapted for gripping a work piece, comprising:

a base plate having first and second ends;

an upright guide post secured to said base plate;

a clamp member having a central portion receiving said guide post, a heel end positioned over said first end of said base plate, and a pair of parallel elongated curved fingers extending from said heel end in an arch shape and having a slot therebetween, said fingers each terminating in a free end and said central portion being defined by a brace block extending across said slot and formed integrally with and as a solid extension of said fingers;

first adjustment means associated with said guide post for moving said central portion toward and away from said base plate; and

second adjustment means associated with said heel end for selectively moving said heel end away from said base plate and permitting return of said heel end in a direction toward said base plate.

4,432,539

SHEET FEEDING SYSTEM FOR PRINTING MACHINES

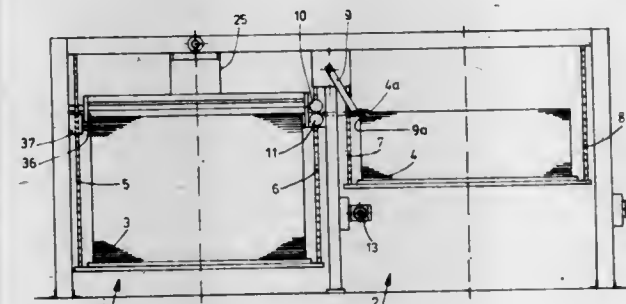
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 6, 1981, Ser. No. 280,988

Int. Cl.³ B65H 5/10

U.S. Cl. 271—3.1

15 Claims



1. Printing machine sheet feeding system having primary means (1.) for stacking sheet and for removal therefrom of sheets, one-by-one, for printing thereon, and comprising

a secondary sheet stacking means (2) located laterally adjacent the primary sheet stacking means (1) and parallel to an edge of the sheets in the primary sheet stacking means, said secondary sheet stacking means being adapted to hold secondary or scrap or waste sheets for selective introduction into the printing machine prior to printing on the sheets in the primary sheet stacking means;

separating means (9a, 26a) comprising

a gripper means (9, 9a; 26, 26a) separating a plurality of secondary sheets from the secondary stack (4) to form a package of secondary sheets and positioned for gripping said package of sheets from the secondary stack (4),

said gripper means being movable for moving said package of sheets towards the primary stack (3);

and secondary sheet transport means (9, 20, 21, 22, 23; 26, 27, 28, 29, 30) movable between said secondary and primary sheet stacking means and transporting separated secondary sheets (4a, 4a') from the secondary stack (4) to and over the topmost sheet of the primary stack (3).

4,432,540

MAIL SORTING MACHINE WITH IMPROVED CONVEYOR AND ENVELOPE SEPARATING DEVICE

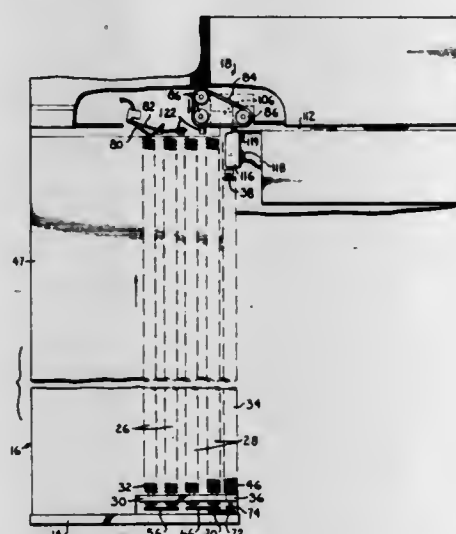
Roy Akers, Johnson County; Charles R. Hartman, Douglas County, and Keith B. Deutch, Johnson County, all of Kans., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 5, 1981, Ser. No. 231,593

Int. Cl.³ B65H 3/04

U.S. Cl. 271—8 A

6 Claims



1. In a mail sorting machine having a magazine section for

receiving a supply of envelopes and delivering the envelopes to a feed station at which the envelopes are separated individually from the envelope supply, an improved conveyor comprising:

a plurality of generally horizontal rollers mounted on the magazine section of the machine for rotation about substantially parallel axes located in a common horizontal plane, said rollers being located to receive the envelope supply with the lower edge of each envelope on the rollers and the envelopes oriented substantially vertical, said horizontal rollers being arranged to present first and second sets thereof;

a spiral groove in each roller for receiving the lower edges of the envelopes, said grooves being arranged to convey the envelopes lengthwise along the rollers toward the feed station of the machine in response to rotation of the rollers;

at least one raised roller mounted on the magazine section of the machine for rotation about an axis oriented generally parallel to the rotational axes of said horizontal rollers, said raised roller being elevated relative to said horizontal rollers at a location to engage a vertical edge of each envelope loaded on the horizontal rollers, said raised roller being adjacent said first set of horizontal rollers and being remote from said second set of horizontal rollers;

a spiral groove in said raised roller arranged to receive said vertical edges of the envelopes to assist in conveying the envelopes and maintaining the vertical orientation thereof; and

drive means for effecting rotation of each roller to convey the envelopes along the magazine section to the feed station of the machine, said drive means including first power means operable to effect rotation of said first set of horizontal rollers and said raised roller when activated and second power means operable to effect rotation of said second set of horizontal rollers when activated.

4,432,541

RECIRCULATING DOCUMENT FEED APPARATUS AND METHOD FOR ALIGNING DOCUMENTS THEREIN

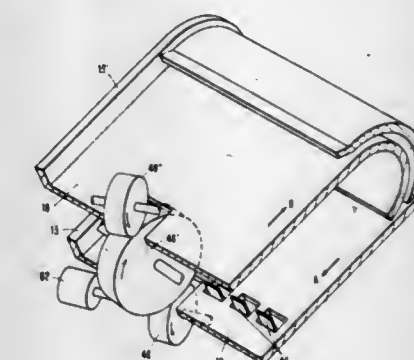
William D. Clark, Longmont; Mark D. Garner, Boulder; John H. Rhodes, Jr., Longmont, and Bernard L. Wilzbach, Berthoud, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,684

Int. Cl.³ B65H 9/16

U.S. Cl. 271—251

3 Claims



1. The method of aligning the side of a document against a reference edge which is located parallel to the direction of document travel, and in which said document is moved through the nip of rollers in which said document may slip while it is being moved toward the reference edge, comprising the step of:

skewing a first roller on the drive side of the nip to the direction of document travel in a manner to provide a force component away from said reference edge;

skewing a second roller on the nondriven side of the nip to the direction of document travel in a manner to provide a force component away from said reference edge;

force component toward said reference edge so that when said document slips on said first roller it tends to follow said second roller toward said reference edge; and providing said second roller with a lower coefficient of friction than said first roller to avoid crumpling said document when it is against said reference edge.

4,432,542

JOKE CIGARETTE LIGHTER

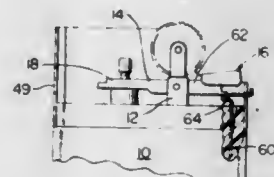
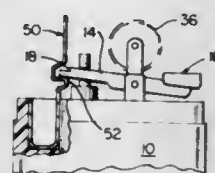
Donald B. Poynter, Cincinnati, Ohio, assignor to Poynter Products, Inc., Cincinnati, Ohio

Continuation of Ser. No. 56,050, Jul. 10, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 277,036

Int. Cl.³ A63H 33/30

U.S. Cl. 272-27 W

3 Claims



1. A novelty apparatus, comprising:
 - (a) an enclosed fluid container having an opening;
 - (b) valve means associated with said container and movable between open and closed positions, said valve means being operable to selectively establish fluid communication between the interior of the container and the atmosphere, the interior of the container being in fluid communication with the atmosphere when said valve is in the open position;
 - (c) means for expelling fluid in said container whenever fluid communication is established between the interior of the container and the atmosphere;
 - (d) friction means rotatably supported on the exterior of said container, said friction means being adapted to interface with a human finger;
 - (e) a bi-stable actuator mounted on said container, said actuator cooperatively interacting with said valve means to move said valve means between open and closed positions, said actuator having one stable position corresponding to the open position of said valve means and one stable position corresponding to the closed position of said valve means, said bi-stable actuator including a lever arm pivotally mounted on the exterior of said container and a holding member resiliently urged against an end of said lever arm, said holding member cooperating with said lever arm to interface at two stable positions, one of said stable positions corresponding with a closed position of said valve means and the other stable position corresponding to an open position of said valve means, said holding member comprising an integral one-piece resilient clip member having opposed ends, one of said opposed ends of said resilient clip member being secured to said apparatus by being press-fitted into said opening of said container in a manner to cantilever mount the other of said opposed ends, said resilient clip member having an outwardly protruding section intermediate said ends thereof for

acting on said end of said lever arm, said protruding section having opposed surfaces respectively engaging said end of said lever arm in said two stable positions.

4,432,543

PHYSIOTHERAPEUTIC SELF-EXERCISER

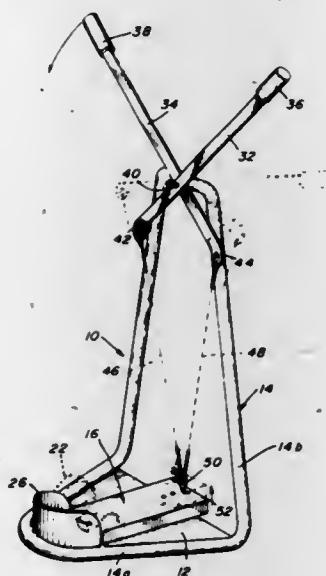
Michel Normandin, 1328 Nelles, Ste-Foy Quebec, Canada

Filed Feb. 24, 1982, Ser. No. 351,617

Int. Cl.³ A63B 21/00

U.S. Cl. 272-126

14 Claims



1. A physiotherapeutic self-exerciser to enable a patient to apply himself traction to the muscles or tendons of his foot comprising:
 - a base;
 - a sabot pivotably mounted relative to said base, said sabot adapted to fixedly receive the foot of the patient, said sabot having a toe end and an ankle end;
 - support means for supporting said self-exerciser, and associated with said base;
 - lever means mounted to said support means and being articulatable relative to said support, said lever means having one end actuatable by the patient so that the latter may use his weight to articulate said lever means; and
 - tie means connecting the other end of said lever means to said toe end of said lever means whereby the patient, by gradually applying his weight to the lever means, exerts a tension of the sabot, said tension exerting traction to the foot muscle or tendon to be treated;
 - said lever means consisting essentially of a pair of levers in scissor-like arrangement, each lever having one end manually engageable by the patient and the other end connected to said tie means.

4,432,544

FISHING TOY

Kazuo Wakimura, Tokyo, Japan, assignor to Mitsuwa Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,733

Claims priority, application Japan, Oct. 16, 1980, 55-147246[U]; Oct. 16, 1980, 55-147247[U]

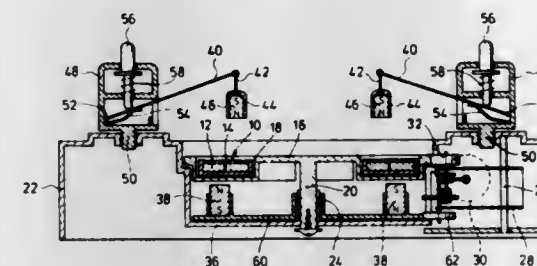
Int. Cl.³ A63F 9/00

U.S. Cl. 273-1 M

8 Claims

1. A fishing toy comprising a plurality of small toy bodies each containing a magnet therein, a rotatable disc consisting of a non-magnetic body and having a plurality of receiving parts each accommodating a said small toy body individually, a base on which said rotatable disc is rotatably mounted, a driving means mounted to said base for rotating said disc, magnets

arranged under said disc each corresponding to a said receiving part for overturning a said small toy body by magnetic



repulsion, and a fishing rod provided with a magnet for fishing up and holding a said small toy body by magnetic attraction.

4,432,545

NON-LETHAL COCK FIGHTING SYSTEM

Charles C. Vanderpool, R.D. #1, Waverly, N.Y. 14892

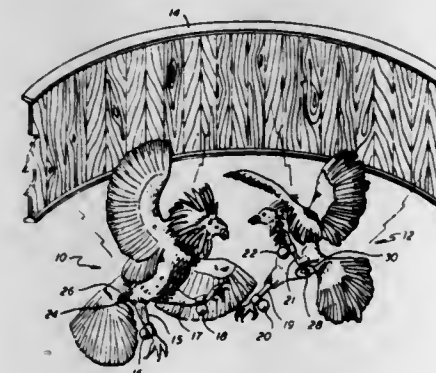
Continuation-in-part of Ser. No. 173,058, Jul. 28, 1980,

abandoned. This application Apr. 30, 1982, Ser. No. 373,577

Int. Cl.³ A01K 29/00

U.S. Cl. 273-1 GC

7 Claims



1. Apparatus for conducting and scoring cock fights between two combating birds, said apparatus comprising, in combination:

- (a) individual switch means mounted upon each leg of each bird in place of or in covering relation to the natural spur, each of said switch means including a member movable along the axis of the natural spur in response to a blow struck substantially along said axis and by a distance commensurate with the force of said blow;
- (b) means for generating an individual electrical signal upon each movement of said member by at least a minimum increment of said distance, said signal having a parameter distinctive to each of said switch means and to a plurality of distinct increments of said distance;
- (c) means attached to the skin of each bird in a posterior area below the tail features where the feathers have been removed for transmitting said individual signals to a location remote from said birds;
- (d) signal processing means at said remote location for receiving said transmitted signals and for indexing a counter associated with each of said signals parameters in response to reception of each individual signal of said parameter; and
- (e) display means providing a visual indication of the accumulated count of each of said counters, thereby scoring the fight according to the number of blows of each increment of force struck by each leg of each bird.

4,432,546

FINGER INSERT FOR BOWLING BALLS

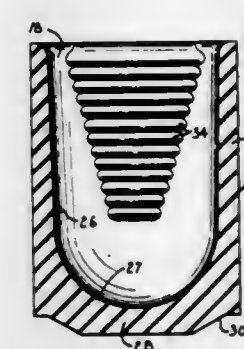
Bernard D. Allen, Jr., 4108 N. Belmont, Kansas City, Mo. 64117

Filed Sep. 20, 1982, Ser. No. 419,716

Int. Cl.³ A63B 37/00, 43/02

U.S. Cl. 273-63 A

3 Claims



1. An insert for a finger hole in a bowling ball, said insert comprising:
 - a resilient body adapted to be inserted into the finger hole, said body having a generally cylindrical wall surrounding a finger opening which is sized to receive a finger tip and which extends into said body from an open end thereof;
 - a solid bottom of said body providing a closed end opposite said open end;
 - a finger pad forming one portion of said wall for cushioning the finger tip, said finger pad gradually tapering in thickness from said open end toward said closed end and presenting a substantially planar friction surface facing into the finger opening of said body; and
 - a plurality of transverse corrugations on said friction surface to texture same and increase the frictional force and gripping action of the finger tip applied thereto, said corrugations gradually decreasing in length from said open end toward said closed end.

4,432,547

INFLATABLE BALL REPAIR

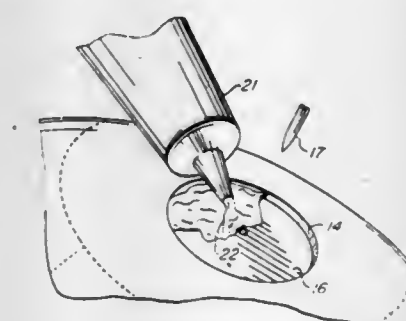
Malcolm E. Richards, Litchfield Park, Ariz., assignor to Mafix, Incorporated, Litchfield Park, Ariz.

Filed Aug. 2, 1982, Ser. No. 404,361

Int. Cl.³ A63B 41/12, 41/08; B32B 35/00

U.S. Cl. 273-65 R

25 Claims



1. A method of repairing an inflatable ball comprising the steps of:
 - cutting an access opening about the existing inflation port and through the cover of a ball to be repaired, leaving any cover stitching intact;
 - removing any existing bladder from said ball cover via said access opening;
 - inserting an inflatable bladder into said ball cover via said access opening;
 - adhesively affixing said inflatable bladder within said ball cover in position for ease of inflation thereof; and
 - selectively applying an adhesive filler material to said access opening for purposes of restoring the surface integrity of

said ball cover by eliminating said access opening while providing air valve access through said restored surface to said inflatable bladder for inflation thereof.

17. A manufacture comprising a repaired inflatable ball produced by the method of claim 1.

4,432,548

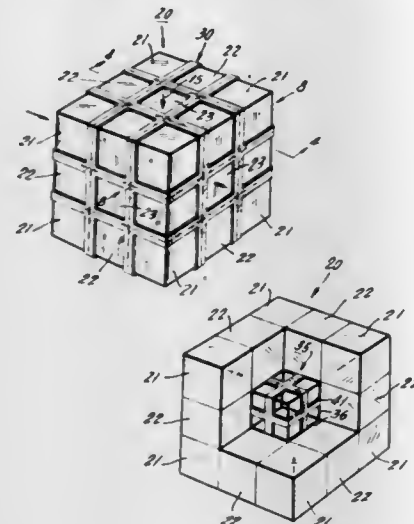
PUZZLE CUBE

Peter Kassin, 160 W. 16th St., New York, N.Y. 10011

Filed Jun. 14, 1982, Ser. No. 388,081

Int. Cl.³ A63F 9/08

U.S. Cl. 273—153 S



1. A puzzle cube comprising a plurality of smaller cubes; the smaller cubes together forming a square having an odd number on each of the sides of the puzzle cube;
- a framework containing the smaller cubes in large cubical arrangement, said framework extending along margins between the cubes and permitting the cubes to be manipulated through the framework;
- a central cage within said larger cube;
- a center cube from at least one of the sides of said puzzle cube, being movable into said central cage and out of said central cage;
- said central cage comprising a framework open on each side and into which the center cube forming part of any one side of the larger cube may be moved;
- said puzzle cube including biasing means on said central cage, biasing any cube moved thereinto outwardly of said cage.

4,432,549

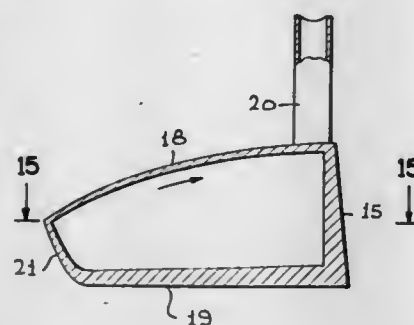
METAL GOLF DRIVER

John Zebelean, Oxnard, Calif., assignor to Pro-Pattern, Inc., Ventura, Calif.

Continuation-in-part of Ser. No. 872,092, Jan. 25, 1978, Pat. No. 4,214,754. This application Jan. 26, 1979, Ser. No. 6,577

Int. Cl.³ A63B 53/04

U.S. Cl. 273—167 H



1. A golf driver comprising: an enclosed body of preselected metal, shaped in the form of a golf driver head having a front face side 15, a bottom sole-define side 19, a back side 21, a heel 17 and an opposite toe 16, a top side 18 and a hollow neck 20 extend-

ing from said body at said heel 17 at a preselected angle, the mass of said body being distributed to increase from the top side 18 toward the bottom sole-define side 19 and from the heel 17 toward the toe 16 by progressively and continuously varying the thicknesses of selected ones of said sides from one end to the other, with said side 18 progressively and continuously increasing in thickness from said back side 21 toward said front face side 15.

4,432,550

GOLF CLUB

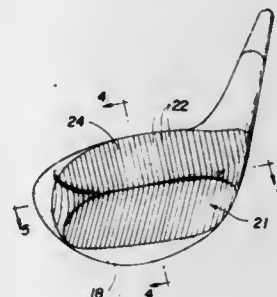
7 Claims Larry W. Byars, Greenville; Eric Jackson, Seneca, both of S.C., assignor to Tranoco, Inc., Travelers Rest, S.C. and Dunlop Sports Company, div. Dunlop Tire and Rubber Corp., Buffalo, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,967

Int. Cl.³ A63B 53/04

U.S. Cl. 273—169

7 Claims



3. In a golf club, a substantially all wooden club head having a body portion formed of uncompressed wood, said body portion having a forward inclined face which slopes upwardly and forwardly from the bottom of the body portion to substantially the top thereof and also extends for substantially the entire length of the body portion in the heel to toe direction on the club head, and a wedge element formed of compressed and densified wood and having a rear inclined face abutting and registering substantially with the forward inclined face of the body portion, the wedge element and body portion being permanently adhesively united at the abutting inclined faces, the wedge element having a bottom face disposed in a generally level plane flush with the bottom of the body portion and forming the greatest part of the sole of the completed club head and extending substantially from the heel to the toe of the club head and from its front to a point near the rear thereof, and the wedge element further including a generally upright front striking face extending substantially from top to bottom of the club head and from heel to toe thereof in the completed club head.

4,432,551

GOLFER'S TRAINING AID

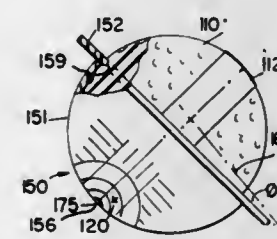
Richard M. Chen, 51-25 Goldsmith St., Elmhurst, N.Y. 11373

Continuation-in-part of Ser. No. 282,054, Jul. 10, 1981. This application Nov. 16, 1981, Ser. No. 321,572

Int. Cl.³ A63B 69/36

U.S. Cl. 273—183 C

8 Claims



1. A golf ball mark reading device comprising: a transparent member, said member being formed with a hemispherical portion, said hemispherical portion being

sized so as to rotatably receive a golf ball on the inside of the hemispherical portion, and the said hemispherical portion being formed with a central marking, and means formed on the hemispherical portion including a surface for determining the club face angle, so that a golf ball having an alignment marking thereon, for aligning the ball on the tee prior to club face impact and also having an impact mark caused by a golf club face impact on the ball adjacent said marking is placed within the inside of the hemisphere and rotated until the impact mark on the golf ball is aligned with the central marking of the hemisphere so that the center of the impact mark is determined and the surface of the means forms an angle with the alignment marking which angle indicates the club face angle at impact.

4,432,552

GOLF PRACTICE APPARATUS

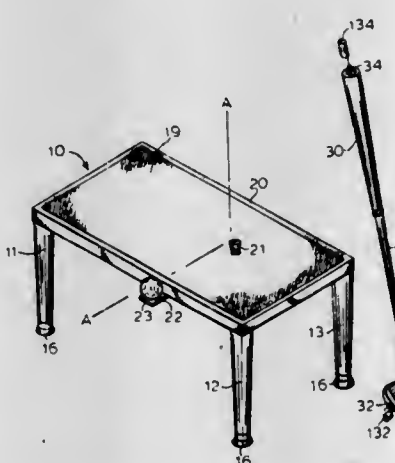
Bennett J. Saverino, 73-36 196th St., Flushing, N.Y. 11365

Filed Apr. 15, 1982, Ser. No. 368,525

Int. Cl.³ A63B 69/36

U.S. Cl. 273—183 A

4 Claims



1. A golf practice device for use over a floor area, comprising: a golf platform having a plurality of legs of predetermined height for supporting said platform approximately 10 inches over the floor area, said platform including artificial grass disposed on the top surface thereof;
- means for individually lengthening and shortening each of said plurality of legs supporting said platform, so that the top surface thereof can be tilted to any desired orientation, and
- a shortened golf club reduced in size approximately equal to the predetermined height of said golf platform, said golf club having a length which permits a golf ball to be played indoors in a room having restricted ceiling height by a golfer, the shaft of said golf club including a weight at each end thereof to compensate for the weight loss resulting when the opposite ends were removed from a standard golf club shaft to produce the shaft of said shortened golf club, whereby when a golf ball is disposed on the top surface of said platform, a golf player can accomplish a full and balanced swing of the golf club indoors without obstruction.

4,432,553

COWBOY RODEO CONTEST GAME

Hazel M. Moore, 148 Kellie La., Auburn, Calif. 95603

Filed Dec. 21, 1981, Ser. No. 332,729

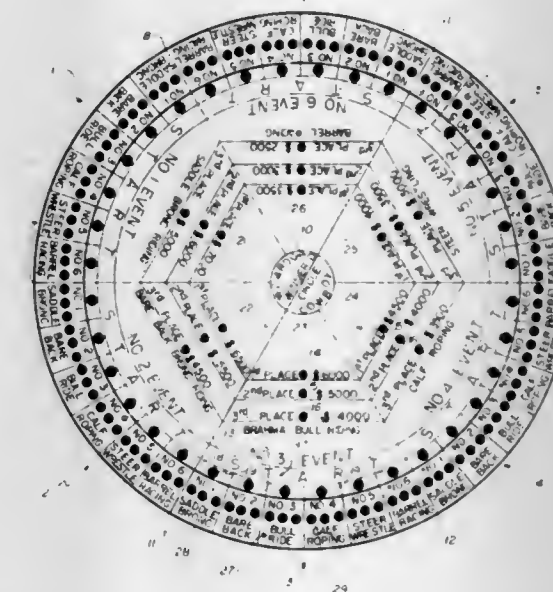
Int. Cl.³ A63F 3/00

U.S. Cl. 273—244

6 Claims

1. A game simulative of plural rodeo events comprising in combination: a board radially divided into equal N sections,

first and second playing paths peripherally disposed about said board, said first playing path disposed concentrically inward relative to said second playing path and leaving an awards area in each said section corresponding to a specific said rodeo event, a plurality of playing pieces deployable in said paths and said awards area, chance means for directing the deployment of said playing pieces, and a central winner's zone on said board adapted to receive



at least one of said playing pieces denoting an overall winner wherein each said awards area includes a means for differentiating performance of a player in said specific rodeo event wherein N holes are provided in each said first playing path section and N playing pieces are disposed therein at the outset of said game wherein three N holes are provided in each said second playing path section, said first and second playing paths subdivided into N segments having equal number of holes, whereby playing pieces advance from said first playing path to and along said second playing path responsive to said chance means.

4,432,554

WORD GAME APPARATUS

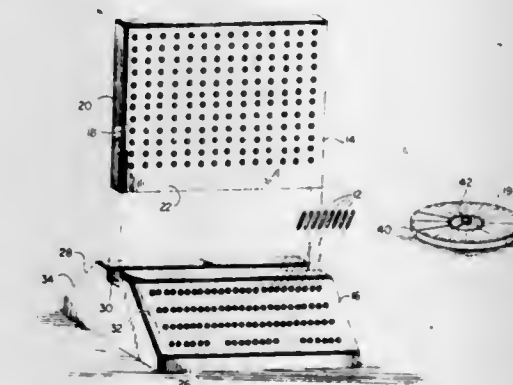
Earl T. Beamon, 289 Conestoga St., Windsor, Conn. 06095, and Joanne M. Bouchard, 15 Grafton St., Hartford, Conn. 06106

Filed Feb. 16, 1982, Ser. No. 348,780

Int. Cl.³ A63F 3/00

U.S. Cl. 273—272

8 Claims



1. A word game apparatus for playing a two player game, said apparatus comprising:

a plurality of playing pieces, each in the form of an elongated cylindrical peg with opposite end surfaces, a number of said pegs being letter pegs bearing a letter of the alphabet on each of their opposite end surfaces, the letter on one end surface of each letter peg being different than the letter on its opposite end surface and each of said opposite end surfaces having a characteristic which visibly distinguishes it from its opposite end surface, the letters on the end surfaces of one characteristic therefore forming one set of letters which may be assigned to one player and the letters on the end surface of the other characteristic forming a second set of letters which may be assigned to the other player, said letter pegs being of sufficient variety as to permit the formation of a numerous variety of words from the letters of each set, the remaining number of said pegs being blank pegs having blank opposite end surfaces, a self-supportive game board in the form of a broad, rectangular platen having substantially planar and parallel opposite board faces and also having a base portion along one edge of said platen, said platen including circular openings extending completely through said game board and arranged in a matrix pattern on each of said faces, each of said openings being of such size as to loosely receive one of said pegs inserted endwise therethrough so that after such insertion one of its end surfaces will appear adjacent one of said board faces and the other of its end surfaces will appear adjacent the other of said board faces, a stand including means for supporting said game board upright from its base portion with its opposite faces positioned vertically and means for holding a supply of said pegs, and means for indicating by chance a course of action a player must take regarding the addition of pegs to and the removal of pegs from said game board during a game.

4,432,555

CENTRIFUGAL SEAL WITH DEFORMABLE FRUSTOCONICAL SEALING RING

Kenneth R. Langley, Gloucestershire, England, assignor to Rolls Royce Limited, England

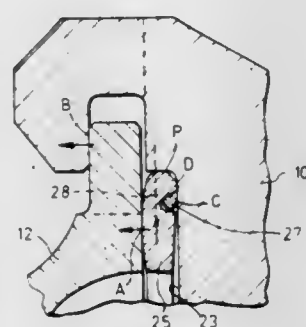
Continuation of Ser. No. 119,935, Feb. 8, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,609

Claims priority, application United Kingdom, Feb. 21, 1979, 790617

Int. Cl.³ F16J 15/34, 15/54

U.S. Cl. 277—25

8 Claims



1. An arrangement for forming a seal, relying on both mechanical and centrifugal forces, between two components which rotate together and between which relative movement in a radial direction is tolerated, said arrangement comprising a deformable substantially frusto-conical sealing ring, which when mechanically urged radially outward, forms a circumferential line of contact along one of the two components, the frusto-conical sealing ring being so shaped and dimensioned that during rotation of the two components, centrifugal forces, acting on the deformable frusto-conical sealing ring, impart a turning moment to the sealing ring thereby forming a seal between the sealing ring and both of the components.

4,432,556
PISTON SEALING ARRANGEMENT FOR A CRYOGENIC REFRIGERATOR

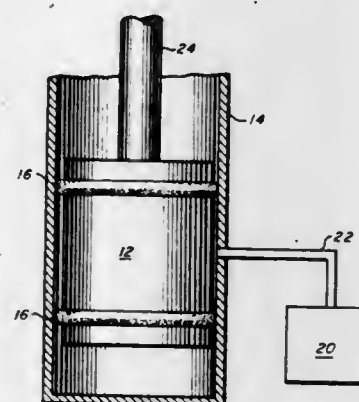
Geoffrey F. Green, Annapolis, and James C. Humphrey, Clinton, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 1, 1983, Ser. No. 500,117

Int. Cl.³ F01B 31/00; F16J 15/40, 1/00

U.S. Cl. 277—73

2 Claims



1. A piston sealing arrangement for a cryogenic refrigerator of the type having a piston slidably and concentrically disposed within a cylinder to moveably define a variable volume expansion chamber for cooling a refrigeration gas comprising: dual O-rings disposed around the circumference of the piston to define a buffer therebetween; and means for supplying to the buffer a pressurized gas of the same type as the refrigeration gas.

4,432,557

CASSETTE SEAL

Rolf Drucktenhengst, Lampertheim-Hofheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

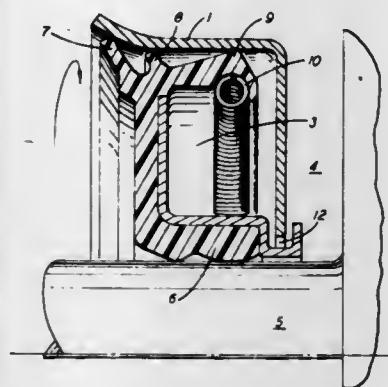
Filed Oct. 27, 1982, Ser. No. 436,954

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204989

Int. Cl.³ F16J 15/32

U.S. Cl. 277—153

9 Claims



1. A cassette seal for a shaft comprising an inner ring having a substantially L-shaped profile and an outer ring having a substantially L-shaped profile wherein said inner ring is arranged within said outer ring with said L-shaped profiles having an opposed orientation thereby forming an essentially rectangularly bound hollow space; said inner ring L-shape profile having a first leg extending substantially parallel to the axial direction of said ring with said first leg having an inner surface for facing said shaft; an elastomer coating adhered to the inner surface of said inner ring first leg for contacting said shaft to provide sealing and support; said inner ring L-shaped profile having a second leg extend-

ing in the radial direction outward from said inner ring first leg; said outer ring L-shaped profile having a first leg extending substantially parallel to said axial direction; said outer ring L-shaped profile having a second leg extending in the radial direction inward from said outer ring first leg; wherein, the second leg of one of said rings, which will be remote from a sealed-off medium has mounted thereon a member fabricated from an elastomer material with said elastomer member extending into said hollow space and having formed thereon a sealing lip and at least one dust lip; said sealing lip is positioned within said hollow space and rests against the first leg of said other ring; said dust lip is spaced from said sealing lip at an axial distance in the direction toward said second leg of said one ring; the second leg of said other ring which will be adjacent said sealed-off medium is arranged with respect to the first leg of said one ring to form a labyrinth gap for providing restricted fluid communication between said sealed off medium and said hollow space; means for providing at least one choke point located within said labyrinth gap thereby providing a pumping effect between said sealed-off medium and said hollow space; and said elastomer member is formed such that the contact surface of said dust lip changes into the contact surface of said sealing lip without enlargement of the diameter.

4,432,558

CONCRETE PUMPING SWIVEL COUPLING APPARATUS WITH SEAL

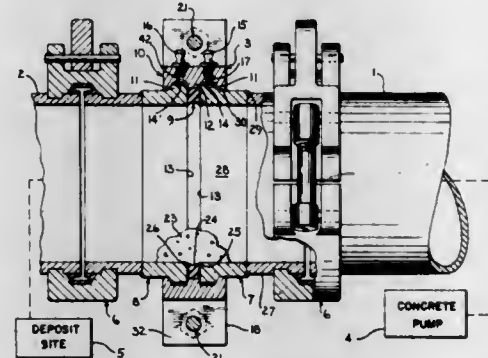
Robert E. Westerlund, 10904 N. Westview, 41W, Mequon, Wis. 53092, and Wayne L. Read, 4913 Hillside Rd., West Bend, Wis. 53095

Division of Ser. No. 866,615, Jan. 3, 1978, Pat. No. 4,305,607, which is a continuation-in-part of Ser. No. 762,381, Jan. 26, 1977, abandoned. This application Dec. 4, 1981, Ser. No. 327,565

Int. Cl.³ F16J 15/00; F16L 27/00

U.S. Cl. 277—180

4 Claims



1. A sealing gasket adapted to be clamped between the ends of a pair of relatively rotatable rigid pipe members, comprising a continuous gasket member having an outer body portion and integral outwardly flared inner side lips, said sealing gasket having an annular recess located between said lips and having a depth substantially less than said sealing lips, said lips being adapted to be deflected inwardly less than the width of said body portion to define a gap adjacent the sidewalls, a rigid spacer member located to the back side of body, said spacer member having a width in excess of said body and less than the distance between the side lips whereby said pipe member may be disposed abutting the ends of the spacer members to define the limits of the deflection of said sealing lips.

4,432,559

HYDRAULIC CHUCK HAVING RING COLLET

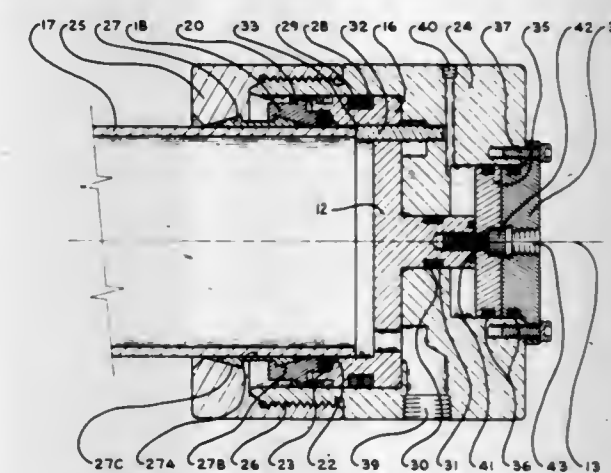
Robert Rasmussen, 3800 - 56th Ave. N., Minneapolis, Minn. 55429

Filed Dec. 16, 1981, Ser. No. 331,324

Int. Cl.³ B23B 31/30; B65D 45/32; F16L 21/06

U.S. Cl. 279—4

7 Claims



1. A hydraulic chuck device, comprising: a piston having a central axis and an annular extension along said axis with an inner diameter sized to receive a tube; seal cone means positioned adjacent said extension to cooperatively define a seal cavity adjacent said tube; seal means located in said cavity to prevent passage of fluid between said piston and said tube; ring collet means attached to said seal cone means and positioned to engage said tube upon compression of said ring collet means; body means slideably mounting said piston to permit movement of said piston with respect to said body means along said axis, said body means having tube seat means for restraining axial movement of said tube in one axial direction; nose cone means fixedly mounted on said body means and attached to said ring collet means such that movement of said body means with respect to said piston operates said ring collet means; power means for moving said piston with respect to said body means to activate said seal means and said ring collet means; and said tube seat means fixedly mounted on said body means and slideably mounted through said piston, said tube seat means being positioned to contact the end of said tube to prevent axial movement of said tube in one axial direction.

4,432,560

SINGLE WHEEL GOLF CADDY

James F. Patrick, 106 Imperial Southgate, Lakeland, Fla. 33803

Filed Sep. 28, 1981, Ser. No. 305,958

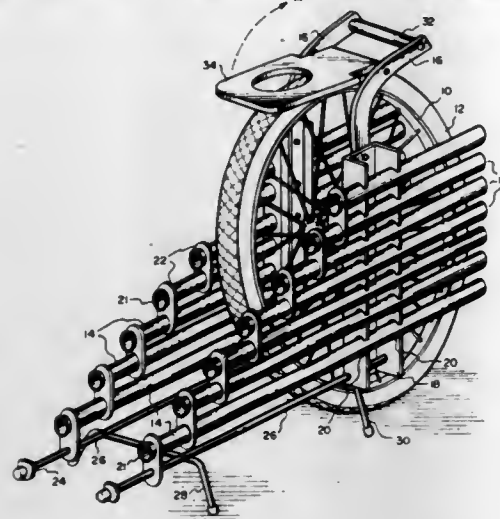
Int. Cl.³ B62B 1/26

U.S. Cl. 280—47.19

9 Claims

1. A golf club caddy comprising: a bicycle wheel having a pneumatic tire mounted thereon, and an axle; a generally U-shaped framework disposed over said wheel and tire and bolted to said axle on each side thereof; a plurality of golf club holding tubes disposed essentially horizontally in a first bracket attached to a side of a first leg of said frame on one side of said wheel and tire, and in a second bracket attached to a side of a second leg of said frame on the other side of said wheel; golf club head holding means disposed at the forward ends of said tubes, said tubes having said forward edges staggered to provide separation of the golf club heads; caddy stand means for supporting said caddy at rest; and handle-seat means pivoted within an upper portion of said

frame, said handle-seat means pivoted forward to rest upon said tire when said caddy is at rest forming a seat and



pivoted rearward to serve as a handle when transporting said caddy.

4,432,561

TRICYCLE RECUMBENT

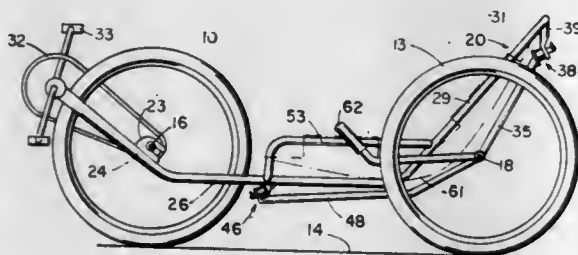
Roger H. Feikema, and Harry J. Bakker, both of 6050 Palmer Blvd., Sarasota, Fla. 33582

Filed May 4, 1982, Ser. No. 374,694

Int. Cl.³ B62K 5/04, 17/00

U.S. Cl. 280—281 LP

7 Claims



1. A pedal-powered wheeled vehicle, comprising: a single front wheel and two rear wheels in triangular relationship, the rear wheels mounted on a common axle; a passenger cradle having a torso-holding frame; means for support of the frame on the front wheel in an angled attitude extending upwardly and to the rear of the front wheel; a first pivot and frame means for pivotally supporting the cradle on the rear wheels at a position rearward and upward from said front wheel; the first pivot, the front wheel, and the torso-holding frame aligned to enable the cradle to swing about an axis intersecting the ground area projection of the front wheel diameter; rear wheel stabilizing means including a second pivot carried by the torso-holding frame and tie rod means for rigidly securing the rear wheel axle to the second pivot, the second pivot being aligned to turn about the axis of the first pivot; whereby the vehicle is caused to steer by rolling of the cradle to tilt the front wheel, but the rear wheels experience essentially no guiding turning.

4,432,562

MOTORCYCLE JACK STAND

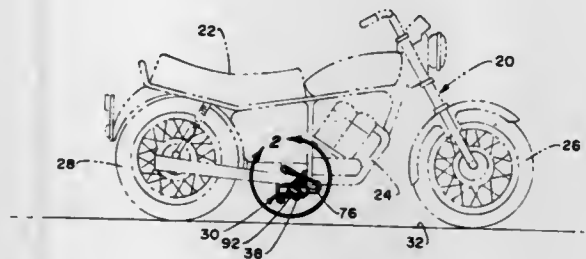
Jack B. Cline, 12827 Bromwich St., Arleta, Calif. 91331

Filed Jul. 9, 1982, Ser. No. 396,826

Int. Cl.³ B62H 1/02, 1/06

U.S. Cl. 280—300

20 Claims



1. A motorcycle jack stand comprising: a frame adapted to be mounted on a motorcycle; a first stanchion mounted on said frame, a second stanchion mounted on said frame, said second stanchion being spaced from said first stanchion, both said first stanchion and said second stanchion being movable between a retracted stowage position and an extended usable position; said first stanchion constructed of a first main member and a first movable member, said first movable member being movable between a first withdrawn position and a first protracted position, said first protracted position being when the free outer end of said first movable member is in contact with a supportive surface; said second stanchion constructed of a second main member and a second movable member, said second movable member being movable between a second withdrawn position and a second protracted position, said second protracted position being when the free outer end of said second movable member is in contact with a supportive surface; a first ratchet assembly connected to said first stanchion, movement of said first movable member is permitted only in the direction toward said first protracted position when said first ratchet assembly is in operation; a second ratchet assembly connected to said second stanchion, movement of said second movable member is permitted only in the direction towards the second protracted position when said second ratchet assembly is in operation; whereby with said first and second movable members in contact with the supportive surface in their respective first and second protracted positions, reversing lateral movements of the motorcycle causes said first and second movable members to move relative to the respective first and second main members resulting in the motorcycle being partially supported on said first and second stanchions; said first ratchet assembly comprising a first pawl assembly, said second ratchet assembly comprising a second pawl assembly, both said first and second pawl assemblies being movable between a disengaged position and an engaged position, with said first and second pawl assemblies in said engaged position each said movable member being capable of movement toward said first and second protracted position, both said first and second pawl assemblies being continuously biased toward said engaged positions; and retraction means for moving said first and second movable members from their respective said first and second protracted positions to said first and second withdrawn positions, said retraction means including structure to physically engage with said first and second pawl assemblies to move such to said disengaged position.

4,432,563

HITCHING GUIDANCE DEVICE

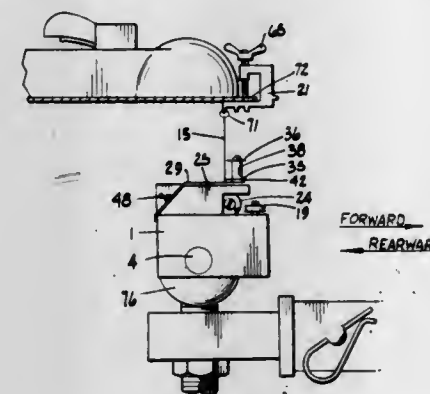
Laurence S. Pitcher, 1120 N. Logan Ave., Colorado Springs, Colo. 80909

Filed Sep. 10, 1981, Ser. No. 300,932

Int. Cl.³ B60D 1/14

U.S. Cl. 280—477

18 Claims



1. A guidance apparatus to assist the operator of a towing vehicle when maneuvering the towing vehicle to align a hitch element of the towing vehicle with a hitch element of a towed vehicle, the apparatus comprising: electrical conductor line connectible between the two vehicles; means, operatively associated with the line, for sensing the relative positions of the towing vehicle hitch element and the towed vehicle hitch element when maneuvering the towing vehicle to align the hitch elements; and means for detachably mounting the sensing means directly on one of the hitch elements in such a manner that the sensing means will be properly positioned so that additional procedures will not be required to reference the relative positions of the sensing means and hitch elements before using the guidance apparatus, said mounting means comprising: a platform base, which supports said sensing means, and which fits over and matingly engages one of the hitch elements; and means for detachably securing said platform base to said one of the hitch elements.

4,432,564

REAR SUSPENSION ASSEMBLY FOR MOTOR VEHICLES

Pier G. Tronville, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

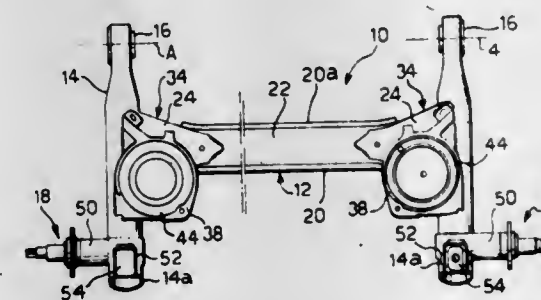
Filed Jan. 5, 1982, Ser. No. 337,203

Claims priority, application Italy, Jul. 22, 1980, 68167 A/80; France, Jul. 21, 1981, 8114143

Int. Cl.³ B60G 19/00

U.S. Cl. 280—689

5 Claims



1. A rear suspension assembly for motor vehicles, of the type comprising a pair of trailing arms with high flexural and torsional strength; a transverse wheel support carried at the rear end of each trailing arm, and a cross member which is flexurally rigid but torsionally yielding and is rigidly connected at its

opposite ends to the two trailing arms, the improvement comprising:

said cross member having an inverted U-shaped cross section with an upwardly-disposed base wall having two opposing inclined end portions which slope downwardly towards the trailing arms; an inverted U-shaped reinforcing member overlying and fixed rigidly to each end of the cross member, each reinforcing member forming a box structure with the corresponding inclined end portion of the cross member, a substantially bracket-shaped connecting part being defined at the outer end of the box structure, in which the respective trailing arm is engaged and fixed by welding, and a support for a helical suspension spring of the assembly being provided on each reinforcing member.

4,432,565

STEERING ASSEMBLY SUPPORTING DEVICE OF A MOTOR VEHICLE

Ichiro Suzuki, Nagoya; Yasushi Nakagawa, Aichi, and Naoto Kitagawa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

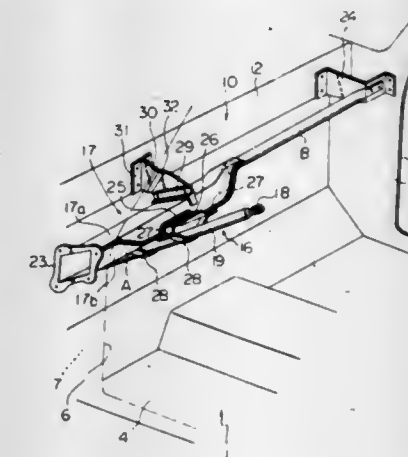
Filed Dec. 4, 1981, Ser. No. 327,639

Claims priority, application Japan, May 7, 1981, 56-65029[U]

Int. Cl.³ B62D 1/16

U.S. Cl. 280—779

10 Claims



1. A steering assembly supporting device of a motor vehicle comprising a steering assembly, a floor, front door opening flanges, first and second cowl side panels each extending forward from the front end of a corresponding front door opening flange, front pillars each forming a portion of the corresponding front door opening flange and having a root portion connected to a corresponding cowl side portion, and a cowl inner panel spaced from the floor and transversely extending substantially parallel to the floor at a position above the floor, wherein the steering assembly supporting device comprises:

a steering assembly supporting body spaced from the cowl inner panel and transversely extending substantially parallel to the cowl inner panel, said steering assembly supporting body comprising a hollow tubular portion having an inner end and an outer end, a hollow expanded portion supporting the steering assembly having an inner end and an outer end, an L-shaped bracket having a first and second leg, the inner end of said hollow tubular portion being secured to the inner end of said hollow expanded portion, the outer end of said hollow expanded portion being secured to said second cowl side panel, the outer end of said hollow tubular portion being flattened and fixedly secured to the first leg of said L-shaped bracket, said first leg of said L-shaped bracket being fixedly secured to said first cowl side panel and the second leg of said L-shaped bracket being fixedly secured to said cowl inner panel, said hollow expanded portion having a cross-sectional area which is larger than that of said hollow tubular portion.

tion over the entire length of said hollow expanded portion.

4,432,566

SEAT BELT SYSTEM

Rudolf Andres, Sindelfingen, and Eduard Ament, Aichwald, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

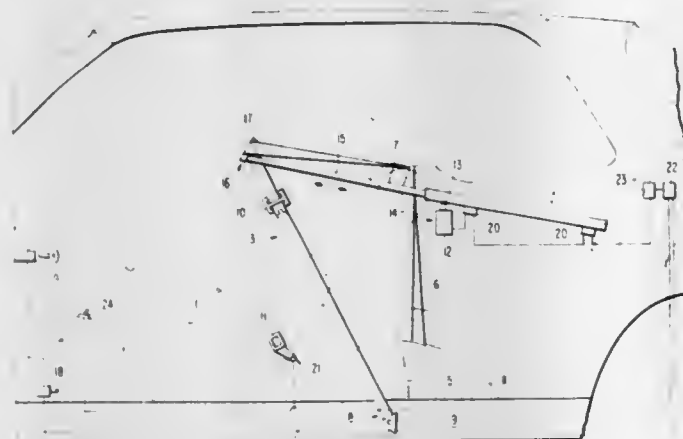
Filed May 26, 1982, Ser. No. 381,979

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120843

Int. Cl.³ B60R 21/02

U.S. Cl. 280—807

6 Claims



1. A mechanism for feeding at least one of a locking means and a belt strap of a safety belt system of a motor vehicle, the safety belt system including a blockable belt roller means, the mechanism includes a displaceably mounted feeder means for feeding at least one of the locking means and belt strap between a retracted position and a forward position for enabling at least one of the locking means and belt strap to be equipped by an occupant of the motor vehicle, means for displacing the feeder arm means between the retracted and forward positions, and means for controlling an operation of the means for displacing, characterized in that an overload safety means is provided for reversing a displacement direction of the means for displacing so as to return the feeder arm means to a retracted position in response to the feeder arm means encountering an unusual rise in force applied thereto during a feeding displacement of the feeder arm means and for automatically initiating a new feeding displacement of the feeder arm means upon the feeder arm means returning to the retracted position, means are provided for enabling a displacement of the feeder arm means from the forward position in a direction of the retracted position by an amount sufficient to release a blocking effect of the belt roller means, and in that means are provided for preventing a restarting of the means for displacing after at least a one-time response of the overload safety means during the feeding displacement of the feeder arm means and a one-time response during a return displacement of the feeder arm means until a source of the force applied to the feeder arm means is removed.

4,432,567

AUTHORIZATION CARD

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Strasse 36, D-7730 Villingen, both of Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,332

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005432; Oct. 13, 1980, 8027321[U]

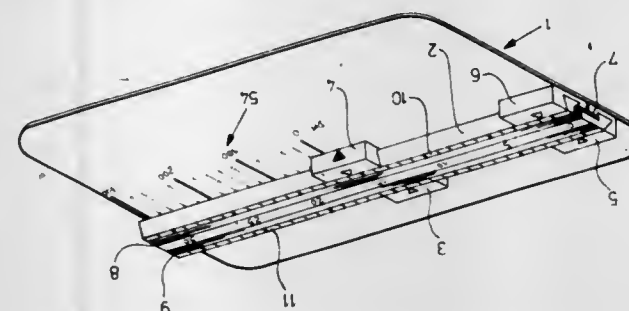
Int. Cl.³ B42D 15/00; G06K 7/06

U.S. Cl. 283—83

7 Claims

1. An authorization card having at least one storing zone for storing fixed information defining the type and/or extent of authorization and at least one storing zone for storing variable information associated with the owner of said card, said storing

zones being adapted for automatic reading of said fixed and variable information in an automatic reading device, and further comprising means for generating a coded information by manual adjustment, said coded information being adapted for automatic reading by said automatic reading device and to be



compared with said variable information, said coded information generating means includes scale means for facilitating said manual adjustment, wherein said coded information generating means comprises at least one zone of electrical resistivity on said card, wherein manually adjustable stop means are in sliding engagement with said zone of electrical resistivity.

4,432,568

HOUSING FOR GARBAGE DISPOSER

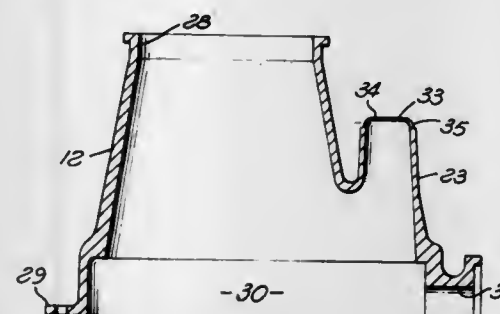
Doru A. Ohannesian, Whittier, and Cyril M. Walsh, Los Angeles, both of Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Aug. 31, 1981, Ser. No. 297,576

Int. Cl.³ F16L 35/00

U.S. Cl. 285—3

2 Claims



1. An open upper housing for a garbage disposer and adapted for mounting with a lower housing to provide a grind chamber,

said upper housing having an open bottom and means defining a relatively large sink inlet passage and a relatively small dish washer inlet spout,

with said sink inlet passage and said dish washer inlet spout upwardly directed and disposed parallel to each other, and

with said spout including an integral cap closing the inlet end of said spout, said cap having an integral end and an annular rim joining said end to said spout, with said cap end and rim having a reduced wall thickness with respect to said spout.

4,432,569

FLEXIBLE HOSE CHUCK

Robert L. Wietecha, Columbia Heights, Minn., assignor to Air-Mo Hydraulics, Inc., Minneapolis, Minn.

Filed Jun. 25, 1981, Ser. No. 277,289

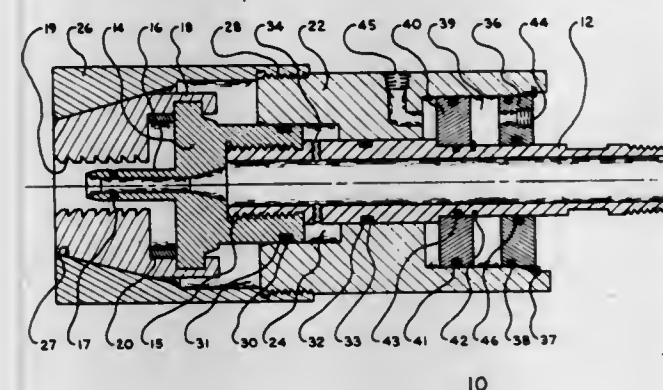
Int. Cl.³ F16L 21/06

U.S. Cl. 285—18

1 Claim

1. A chuck device for use with a flexible hose, comprising: a porting tube means for attachment at one end to a source of hydraulic fluid and having a central passage for said fluid;

a seal cartridge means removeably mounted on the other end of said porting tube and having a hose engaging cylinder extending away from said porting tube to engage the interior of said hose including seal means for preventing passage of fluid between said hose and said cylinder; collet means mounted on said cartridge means and positioned to engage the exterior of said hose when said hose is on said cylinder and including biasing means for urging said collets away from said cylinder; chuck body means slideably mounted between predetermined limits on said porting tube and said cartridge means



to define sealed power chamber, said porting tube having a sealed fluid passage means connecting said power chamber to said central passage;

nose cone means mounted on said body means and having a collet means engaging surface, whereby passage of fluid into said chamber forces said collets against said surface to urge said collet against said hose; and

pneumatic clamp means cooperatively associated with said porting tube means to selectively urge said collet means against said surface independent of the presence of fluid in said power chamber.

4,432,570

COUPLING

Gunnar Kemppainen, Adolf Hedinsvagen 11, 981 34 Kiruna, Sweden

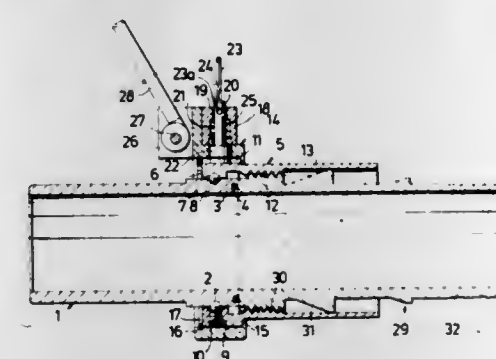
Filed Jun. 26, 1981, Ser. No. 277,500

Claims priority, application Sweden, Jun. 27, 1980, 8004786

Int. Cl.³ F16L 35/00

U.S. Cl. 285—24

3 Claims



1. A coupling, comprising a first coupling member having a circular toothed portion on the exterior thereof and a second coupling member positioned over said first coupling member and having catch means thereon, said toothed portion cooperating with said catch means of said second coupling member, said first and second coupling members having means therebetween rotatably mounting said second coupling member on and in relation to said first coupling member to permit rotation of the first coupling member by rotating said second coupling member in a circular reciprocating movement, said catch means being reversible such that in a first position thereof it will be engaging the teeth of the toothed portion to cause said first coupling member to rotate with the second coupling member

when rotated in a clockwise direction and to slide over the teeth thereof when rotated in a counter-clockwise direction and in a second position thereof it will cause said first coupling member to rotate with the second coupling member when rotated in a counter-clockwise direction and to slide over the teeth thereof when rotated in a clockwise direction, characterized in that the second coupling member surrounds the toothed portion of the first coupling member, said first coupling member including an elongated sleeve portion extending from said toothed portion and including an internal threading and a smooth cylindrical interior portion extending therefrom to the end thereof, a third coupling member having a substantially smooth tubular exterior guiding portion, and said third coupling member having a threading near to one end thereof threadingly engaging the threading of said first coupling member and at a somewhat larger distance from said end having said guiding portion which includes a substantially saw tooth shaped peripheral part, the outer peripheral portion of which closely fits in the cylindrical interior portion of said tubular sleeve to guide said threadings into engagement whereupon said third member is advanced or retracted in said first member by rotation thereof by said second member.

4,432,571

RETAINER GLAND FOR MECHANICAL JOINT PIPE

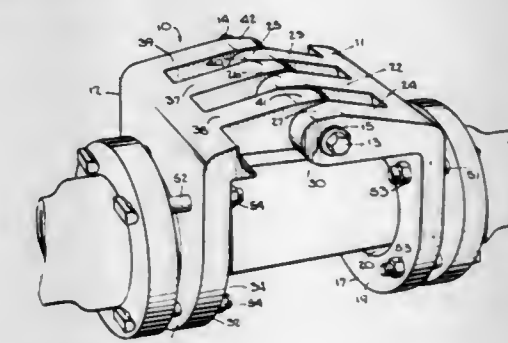
Samuel H. Davis, 111 Forest Dr., Jericho, N.Y. 11753

Filed Jul. 1, 1981, Ser. No. 279,307

Int. Cl.³ F16L 27/00, 25/00, 21/00, 27/04

U.S. Cl. 285—283

11 Claims



1. A retainer gland for mechanical joint pipe and mechanical joint fittings, the gland including a flat ring portion having a longitudinal axis with two substantially parallel faces perpendicular to the axis and an opening with a circular inner circumference, and a circular rib portion extending generally axially from one face of the flat ring portion adjacent said inner circumference, the flat ring portion and the circular rib portion having a generally L-shaped radial cross section, wherein the retainer gland further comprises:

at least a first hinge arm extending generally axially from the other face of the flat ring portion and terminating in an outer end portion, the first hinge arm having a transverse hole through said outer end portion, said hole being coaxial with a hinge axis which is perpendicular to a plane containing said longitudinal axis of the flat ring portion and there being no axial protrusion from said other face of the flat ring portion that does not intersect said hinge axis.

4,432,572

FLANGE CONNECTION

Alfred Thalman, Uhriesen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Switzerland

Filed Mar. 24, 1981, Ser. No. 247,159

Claims priority, application Switzerland, Apr. 9, 1980, 2712/80

Int. Cl.³ F16L 23/00

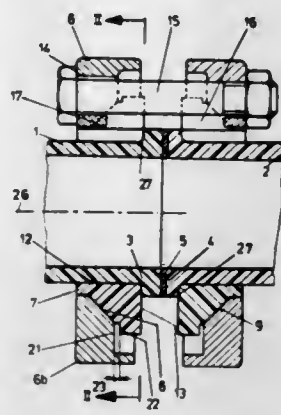
U.S. Cl. 285—412

15 Claims

1. An apparatus for connecting a tubular member having a radially protruding collar with a surface generally perpendicular

lar to the central axis of the member to a fitting or similar member, the apparatus comprising

- a first outer flange ring slidable over the collar;
- a second inner flange ring having a surface for abutting the perpendicular surface of the collar, said inner ring being unitarily formed from a plastic material with a radial separating slit, at least one thin hinge portion angularly spaced from said slit and an inner cylindrical peripheral surface for surrounding the tubular member;
- mating conically shaped surfaces facing each other on said inner and outer rings, said mating conically shaped surfaces being formed such that a line passing perpendicularly through the center of said mating conically shaped



- surfaces intersects said inner cylindrical surface of said inner ring;
- a plurality of circularly spaced recesses in one of said rings;
- a plurality of projections in the other of said rings arranged to mate with said recesses establishing a relative angular relationship therebetween;
- a plurality of threaded fasteners mounted in said outer ring for urging the tubular member toward the fitting or similar member; and
- a stop surface on each of said inner and outer rings, said stop surfaces normally being in parallel spaced facing relationship for providing a stop when said apparatus is subjected to excessive force.

4,432,573

LOCKING SYSTEM FOR SAFES

Ilan Goldman, 10 Bar-Eli St., Tel Aviv, Israel

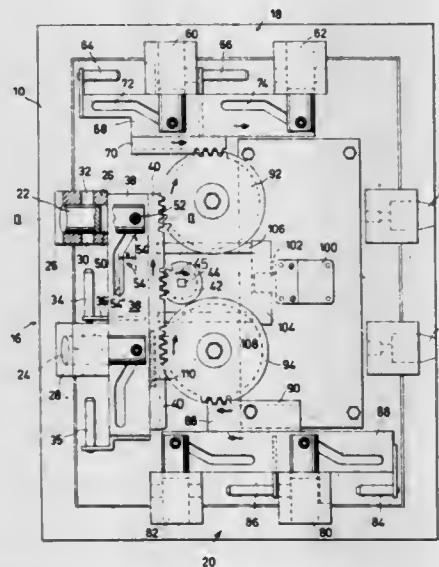
Filed Jul. 22, 1981, Ser. No. 286,002

Claims priority, application Israel, Aug. 8, 1980, 60796

Int. Cl.³ E05B 63/14; E05C 1/06, 9/10, 9/14

U.S. Cl. 292—37

6 Claims



1. A turnable handle or handwheel operated locking system for safe doors, comprising at least one set of bolts, each bolt being slidable within a fixed bolt housing block between locking and unlocking positions wherein the bolts project into, and are withdrawn from the door rim, respectively, a locking pin

for each of said bolts extending normal to the bolt and being in axial alignment with an opening formed at a wall of the said block, a bore formed in the block parallel to the axial direction of said opening, and said pin, the pin being slidably movable in said axial direction and being mounted onto a support member coupled, on the one hand, to the handle and, on the other hand, to the bolts of each bolt set for displacing the bolts into their projected and withdrawn positions, so that in the projected position of each bolt, its associated bore and opening become aligned with respect to each other and the pin becomes inserted through said opening and into said bore for securing the bolt in the locking position.

4,432,574

LATCH ASSEMBLY

Marc F. Varlet, 8 rue des Ecoles, 56410 Etel, France

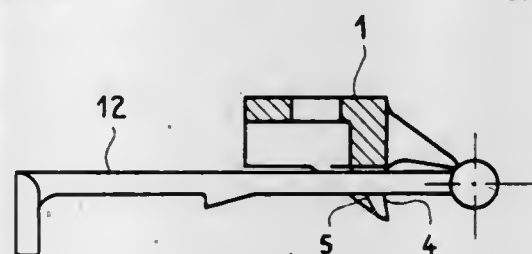
Filed Mar. 30, 1982, Ser. No. 363,418

Claims priority, application France, Jul. 4, 1981, 81 07312

Int. Cl.³ E05C 19/06

U.S. Cl. 292—91

17 Claims



1. A latch assembly for limiting the distance that a door may be opened comprising:
 - a first part, being formed with means to mount said part to one of the door frame and door and being formed with a rigid engagement surface;
 - a second part, being formed with means to mount said part to one of the door frame and door, and being formed with a base and an outwardly extending flexible arm portion therefrom, and a catch portion extending from said flexible portion, and formed so as to automatically engage the engagement surface of the first part with one part being fixedly mounted on the frame and the other part being fixedly mounted on the door; and with flexure of the arm from the engagement surface, the catch disengages and the door opens; and said flexible arm portion being perpendicularly disposed with respect to its base, and said arm being formed by a cylinder at the outward end, said cylinder having an axis perpendicular to said arm, whereby in different mountings the arm is perpendicular or parallel to said first part.

4,432,575

LOCK STRIKER ANCHOR PLATE ASSEMBLY

Louis P. Garvey, West Bloomfield, and Robert A. Maye, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,482

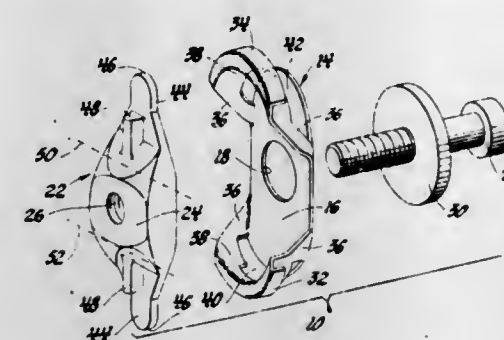
Int. Cl.³ E05B 15/02; F16B 37/04, 39/28

U.S. Cl. 292—341.18

1 Claim

1. An adjustable lock striker anchor assembly comprising, a retention bracket having a mounting portion, a pair of opposed laterally spaced retention flanges extending substantially normally to the mounting portion of the retention bracket and symmetrical with respect thereto, each retention flange having a slot therethrough defined by the planar mounting portion, a pair of side struts and an upper bridging portion, the slot of one retention flange being sized larger than the slot of the other retention flange, the struts of at least one flange being flexible to

permit the bridging portion of the flange to flex laterally of the mounting portion, an anchor plate having a central body portion and a pair of legs extending laterally thereof, each leg terminating in an edge portion spaced laterally of the edge portion of the other leg by a distance greater than the lateral separation of the bridging portions of the retention flanges, each leg being slidably receivable through the slot of a retention flange to retain the anchor plate within the retention bracket, the central body portion further including a pair of sections, each being sized larger than the slot of the said one retention flange, and each spaced from a remote leg edge portion by an amount slightly greater than the lateral spacing between said one flange and the said other flange,



the central body portion further including a pair of ribs intermediate each said leg edge portion and said section and sized smaller than the slot of said one retention flange but larger than the slot of said other retention flange, the anchor plate being assembled within the retention bracket by sliding either leg and rib through the slot of the said one retention flange in one direction until a central body portion section engages the said one retention flange and the edge portion of the other leg engages the bridging portion of the other retention flange, the edge portion being resiliently forced past the bridging portion of the other retention flange and into the slot thereof as the struts thereof flex laterally of the mounting portion of the retention bracket, the anchor plate being more closely slidably confined within the retention bracket in the other direction by the engagement of a rib with the said other retention flange.

4,432,576

DOOR LATCH

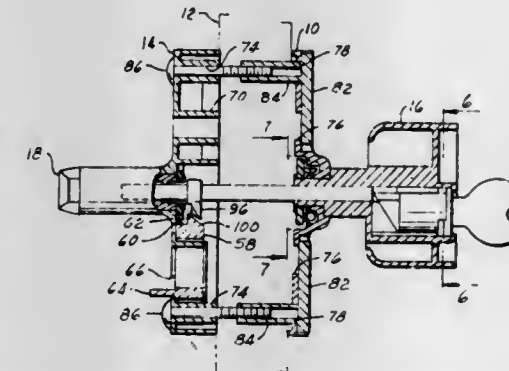
George Wartian, East Detroit, Mich., assignor to Wartian Lock Co., St. Claire Shores, Mich.

Filed Sep. 28, 1981, Ser. No. 306,288

Int. Cl.³ E05C 21/00

U.S. Cl. 292—357

4 Claims



1. A door latch for storm and screen doors having a pair of pre-drilled bolt receiving openings therein by means of which the latch is secured to the door; comprising a pair of latch housings adapted to be mounted on opposite sides of the door,

an operating handle carried by each housing and latch mechanism cooperatively associated with and operable by said handles, one of said housings having a plurality of openings therein, the other of said housings, having a pair of inserts each having an outer portion seated in a correspondingly shaped recess in said other housing and an inwardly extending internally threaded mounting post, said mounting posts being insertable through said openings in said door for receiving bolts insertable through aligned openings in said one housing, each insert being reversible end-for-end within its recess and having its mounting post located nearer to one end thereof than the other so that end-for-end reversal of said inserts will vary the spacing between said mounting posts thereby to adapt said latch for use on doors having differently spaced bolt openings therein.

4,432,577

PHONOGRAPH RECORD HOLDING DEVICE

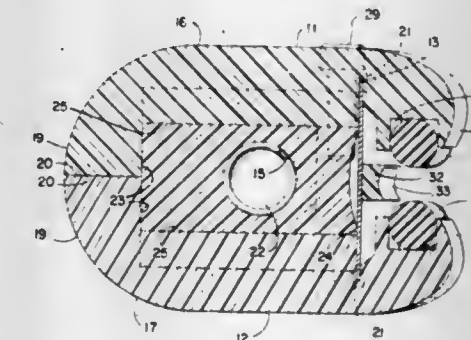
Russell E. Equitz, Jr., 252 Mariposa, #B, Sierra Madre, Calif. 91024, and Bruce K. Strong, 7535 Sunstone Ave., Cucamonga, Calif. 91730

Filed Apr. 5, 1983, Ser. No. 482,178

Int. Cl.³ B65G 7/12

U.S. Cl. 294—16

19 Claims



1. A device for grasping, holding, manipulating and transporting phonograph record discs comprising:

- (a) An elongated horizontal upper jaw member having a forward extending front jaw section and a rearward extending jaw extension,
- (b) An elongated horizontal lower jaw member having a forward extending front jaw section and a rearward extending jaw extension, said lower jaw member being substantially the mirror image of said upper jaw member and being disposed parallel to and underneath said upper jaw member,
- (c) A vertically oriented, horizontally disposed spring strip spanning the width of said upper and lower jaws and joining the inner surfaces of said upper and lower jaws at the vertical plane defining the boundary between the front jaw sections and the rear jaw extensions,
- (d) A longitudinal channel behind the spring strip spanning the width of the said upper and lower jaws and having symmetrical entrance openings in opposite sides of said upper and lower jaws, said entrance openings tapering uniformly to a smaller-dimension opening towards a plane vertically bisecting said channel,
- (e) Opposed actuator buttons slidably mounted in opposite side ends of said channel and having a tapered cross-section substantially conforming to the tapered cross-section of said channel openings,
- (f) Spring means for maintaining said actuator buttons in outward positions,
- (g) Stop means for limiting the outward movement of said actuator buttons, whereby squeezing said actuator buttons towards one another causes said rear jaw extensions to move vertically apart, and said front jaw sections to pivot vertically together.

4,432,578

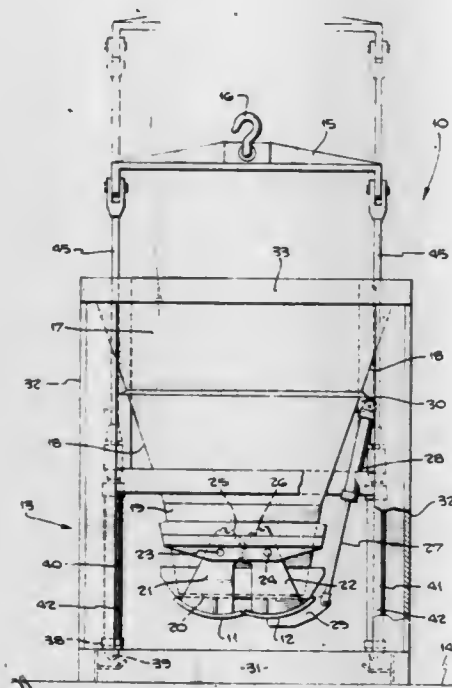
CLOSED PRESSURE ACTUATED SYSTEM FOR PLACEMENT BUCKET

Roland E. Garlinghouse, P.O. Box 109, Heber Springs, Ark. 72543

Continuation-in-part of Ser. No. 111,227, Jan. 11, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,130
Int. Cl.³ B66C 3/16; F15B 15/17

U.S. Cl. 294—69 R

12 Claims



1. A closed fluid pressure actuated system for a material placement bucket equipped with a dispensing gate, operating cylinder means for said gate having opening and closing sides, and piston means in said cylinder means in operating engagement with said gate having full opening and closing strokes, said system comprising a charge of non-compressible hydraulic fluid normally under pressure, lifting means for the bucket, a pressure generating master cylinder assembly having one complementary part attached to the bucket and another complementary part attached to the lifting means and adapted to generate additional fluid pressure, a plurality of traverse lines between said operating cylinder means and said master cylinder assembly, fluid accumulator means in communication with said traverse lines for accumulation of a quantity of fluid under pressure generated by the lifting of said bucket and storage of said fluid, said accumulator means comprising a closed chamber, a first portion of said closed chamber containing compressible fluid under pressure, a second portion of said closed chamber containing a quantity of said non-compressible fluid and diaphragm means comprising a separator between said compressible fluid and said non-compressible fluid, one of said traverse lines being in communication with the opening side of said operating cylinder means and another of said traverse lines being in communication with the closing side of the operating cylinder means, and a primary directional control valve in communication with said traverse lines, said primary directional control valve having a normal position interconnecting said master cylinder assembly and said accumulator means with the closing side of said operating cylinder means and having an actuating position interconnecting said master cylinder assembly and said accumulator means with the opening side of the operating cylinder means.

4,432,579

CARRIERS FOR CONTAINERS

James Denmark, 5 York Pl., Leeds, England (LS1 2SD), and John Shilcock, 11 Wendron Close, Roberttown, Liversedge, West Yorkshire, England

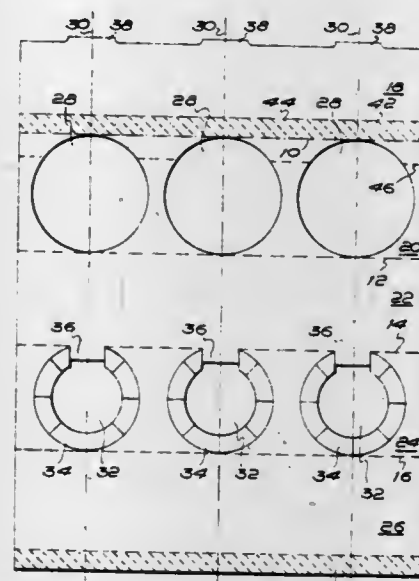
Filed Aug. 18, 1981, Ser. No. 293,933

Claims priority, application United Kingdom, Sep. 19, 1980, 8030433; Feb. 19, 1981, 8015383

Int. Cl.³ B65D 71/00; B66F 19/00

U.S. Cl. 294—87.2

9 Claims



1. A device for holding together groups of containers such as bottles that have a mouth portion with an underside rim or bead, or having caps defining underside rims or beads, which device is produced from cut and creased sheet material which has

- an upper wall,
 - a first side wall,
 - a lower wall spaced below said upper wall,
 - a second side wall spaced apart from said first side wall, and
 - a locking member, the improvement comprising
- (1) said lower wall and said upper wall each having apertures through which the top ends of the container can pass so that the mouth portions or caps of the containers extend above said upper wall,
 - (2) said locking member
- (a) having a base portion that is hingedly connected to some portion of the device at a point below said upper wall,
 - (b) having an upper edge portion that is adapted to extend from a point beneath upper wall upwardly and under the rim or bead of a container, and
 - (c) being positioned so that it diverges inwardly and upwardly with respect to the sidewall closest to its base portion so that the relationship between said upper wall, said locking member and the side wall nearest the locking member closely approximates that of a triangle, thus ensuring locking of the upper edge portion of the locking member under said rims or beads.

4,432,580

INTERIOR LINING FOR MOTOR VEHICLES

Ernst Lohmar, Weinheim, and Hans-Achim Kunkel, Reichelsheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 275,015

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 8023225[U]; Aug. 30, 1980, 8023224[U]; Aug. 30, 1980, 8023226[U]

Int. Cl.³ E04B 1/74

U.S. Cl. 296—39 A

8 Claims

1. An interior side wall lining for a motor vehicle, which

4,432,582

CHAIR WITH MEANS FOR ADJUSTING THE INCLINATION OF THE BACKREST

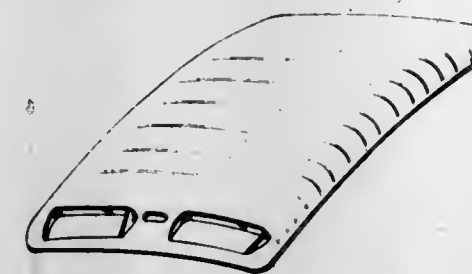
Herbert L. Wiesmann, Hameln, and Erich W. Becker, Springe, both of Fed. Rep. of Germany, assignors to Wilkhahn-Wilkening & Hahne GmbH & Company, Bad Munder, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,790

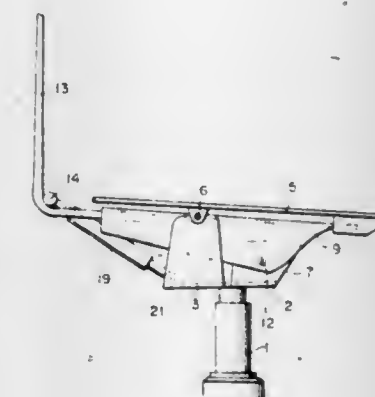
Int. Cl.³ A47C 1/02

U.S. Cl. 297—316

34 Claims



cross-linking is by carbon-carbon single bonds between substantially all of the linear polypropylene and polyethylene molecules used in the composition such that substantially all molecules are cross-linked at least once; and the balance between amorphousness and crystallinity of the composition is sufficient to make the composition flexible and sound absorbing yet allow it to retain its shape at a temperature up to about 120° C.



1. A chair comprising a seat portion, a backrest portion, support means for supporting the seat portion, and a cylinder-piston means for enabling an adjustment of an inclination of the backrest portion with respect to the seat portion, characterized in that means are provided for mounting the seat portion at the support means so as to fix a normal setting of inclination between the seat portion and the backrest portion, first means are provided for mounting a first end of the cylinder-piston means to the backrest portion including a bearing shaft means, means are provided for mounting the bearing shaft means to the chair so as to enable the bearing shaft means to be easily removed including a threaded coupling comprising a threaded portion provided along at least a portion of an axial length of the bearing shaft means, and bearing sleeve means mounted in the chair and provided with an internal threaded portion cooperable with the threaded portion of the bearing shaft means, second means are provided for mounting a second end of the cylinder piston means to the chair including a coupling member extending transversely of the seat portion, the coupling member including a pair of axially spaced end portions, coaxially disposed bearing means are respectively provided in each of the end portions, bearing support means are accommodated in the bearing means, the coupling member further includes means for enabling a removal of the coupling member from the bearing support means after a removal of the bearing shaft means including a centrally disposed recess means provided between the end portions for removably accommodating the bearing support means, the coupling member has a substantially cylindrical cross-section and includes one substantially flat outer surface, the recess means is provided in the coupling member on a side thereof opposite the substantially flat surface, the bearing support means includes a pair of bearing pins respectively disposed in the bearing means in the end portion of the coupling member and in the recess means, each of the bearing pins has a substantially cylindrical cross section and includes one substantially flat outer surface, and in that the recess means are dimensioned such that the coupling member is removed from the bearing pins by rotation of the coupling member through a predetermined angle.

4,432,581

PORTABLE AUTOMATIC CARPORT

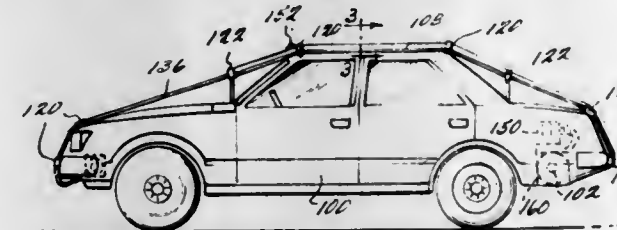
Tesfa Guma, 7709 Newcastle Dr., Annandale, Va. 22003

Filed Jan. 4, 1982, Ser. No. 336,582

Int. Cl.³ B60J 7/20

U.S. Cl. 296—136

27 Claims



1. A cover for a vehicle, said vehicle having a passenger compartment, said cover comprising:
cover means attached to said vehicle;
a plurality of brackets attached to the upper surface of said vehicle;
means, attached along substantially the entire length of said cover means, for guiding said cover means over said brackets, said guiding means including a first portion attached to said cover means and extending through at least a part of each of said brackets and a second portion, attached to said first portion opposite said cover means attachment, which cannot pass through said at least a part of each of said brackets to slidably lock said guide means to said brackets; and
means for extending and retracting said cover means, said cover means for covering the length of said passenger compartment when said cover means is fully extended.

4,432,583

VEHICLE SEAT TRACK APPARATUS

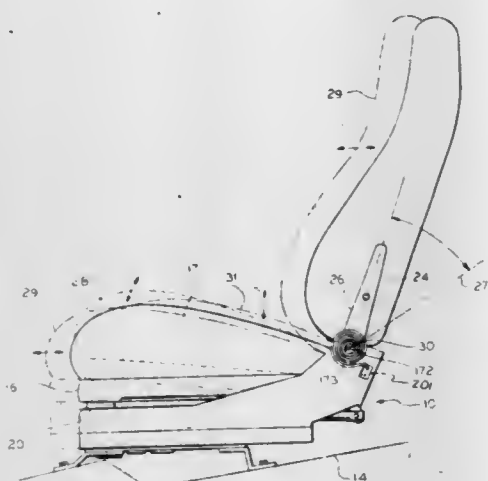
Vincenzo Russo, Jackson, and Max O. Heesch, Brooklyn, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 1, 1981, Ser. No. 250,065

Int. Cl.³ B60N 1/02

U.S. Cl. 297—330

7 Claims



1. A power seat track mechanism for horizontally moving the seat of a motor vehicle in a forward and rearward sense and for elevating the front end of the seat and elevating the rear end of the seat, the mechanism including laterally spaced apart first and second rail members stationarily secured to the vehicle, a movable carriage comprised of a track member engaged with each rail member for constraining the carriage to forward and rearward horizontal movement, motor drive means for elevating said seat, front elevating structure operated by said motor drive means for elevating the front end of the seat substantially independently of elevation of the rear end of the seat, rear elevating structure operated by said motor drive means for elevating the rear end of the seat substantially independently of any operation of the front elevating structure, a seat back mounted on said carriage for horizontal movement therewith, the mounting of said seat back being independent of both seat elevating structures, a pivotal link at the front end of the seat interfacing between the front elevating structure and the seat, said link having a pivotal mounting to said carriage and to a section affixed to said seat, said link movable about its carriage mounting on operation of the front drive structure to move the front end of the seat upwardly and a limited amount rearwardly during elevation of the front end of the seat, and a second link at the rear end of the seat with one section of the second link affixed to the carriage and a second section spaced from said one section coupled to the rear end of the seat through a lost motion connection to enable said limited rearward movement of the seat on elevation of the front end of the seat, and further comprising a torsion bar at each seat end, each said torsion bar affixed to a link at the respective seat end thereof, and in which there is a bracket supporting the seat adjacent the rear thereof, said bracket including an elongated horizontal slot supporting the torsion bar at the seat rear for effecting said lost motion connection.

4,432,584

TRENCHING MACHINE FOR CUTTING PREFERABLY FROZEN GROUND

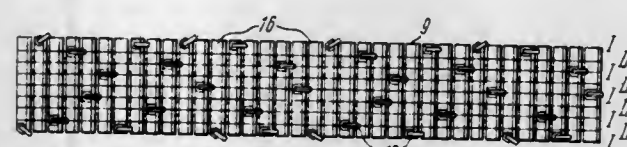
Stepan K. Vartanov; Rudolf G. Isupov, both of Leningrad; Vladimir R. Malko, Kharkov; Eino A. Mark, Tallin; Boris I. Kogan, Leningrad; Aref I. Belozorov; Ivan I. Morgachev, both of Moscow; Jury S. Chernik, Leningrad; Konstantin A. Kvitkovsky, Leningrad; Alexei I. Gusev, Leningrad, and Nina A. Terentieva, Leningrad, all of U.S.S.R., assignors to Leningradskoe Nauchno-Proizvodstvennoe Obiedinenie Zemleroinogo Mashinostroenia, Leningrad, U.S.S.R.

Filed Aug. 31, 1981, Ser. No. 297,912

Int. Cl.³ E21C 25/30; E02F 5/06

U.S. Cl. 299—25

4 Claims



1. A trenching machine for cutting preferably frozen ground, comprising:
a vehicle of a tractor type;
a digging apparatus;
a spoil discharge conveyor assembly;
a drive mechanism;
said digging apparatus including:
a boom connected with its one end to said vehicle;
a power means for raising and lowering said boom;
a support and guide means mounted on said boom;
a carrying means moving along said support and guide means;
teeth mounted on said carrying means along each of at least two alternate first cutting lines and second cutting lines in the direction of movement of said carrying means, the number of said teeth mounted along said first cutting lines being greater than that of said teeth mounted along said second cutting lines, and the distance between said teeth mounted along said first cutting lines across the width of said carrying means being greater than the width of said teeth mounted along said second cutting lines.

4,432,585

EMERGENCY BRAKE SYSTEM

Kenjiro Nezuka, Kashiwa, Japan, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 29, 1982, Ser. No. 363,191

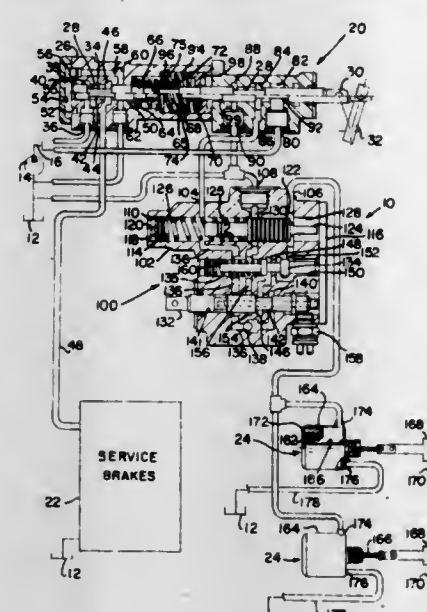
Int. Cl.³ B60T 7/02

U.S. Cl. 303—10

8 Claims

8. A hydraulic control system for emergency brakes comprising:
a hydraulic reservoir,
a hydraulic pump drawing fluid from said reservoir,
a pilot control valve connected to said hydraulic pump and to said hydraulic reservoir and having a system pressure outlet, said control valve having a first normal position connecting said hydraulic pump to said system pressure outlet and a second selective position connecting said outlet to said reservoir;
a dump valve connected to said pilot valve system pressure outlet having a conduit means communicating inlet pressure to a pressure cavity, said conduit means having a reverse flow check valve, and a valve means inactive in the presence of inlet pressure but, in the absence of inlet pressure, disposed to permit communication between said pressure cavity and a dumping outlet open to said reservoir, said valve means being spring biased to permit communication only above a predetermined pressure differential between said pressure cavity and said dumping outlet;
a pressure-release, mechanical-apply brake actuator having

an inlet communicating with said dump valve pressure cavity and
flow restrictive outlet means communicating with the fluid pressure applied to said brake actuator to permit gradual



decay of said pressure in the absence of inlet pressure to said dump valve and in the absence of communication between said dump valve pressure cavity and said dump outlet.

4,432,586

ANTI-SKID BRAKE CONTROL SYSTEM FOR MOTOR VEHICLES

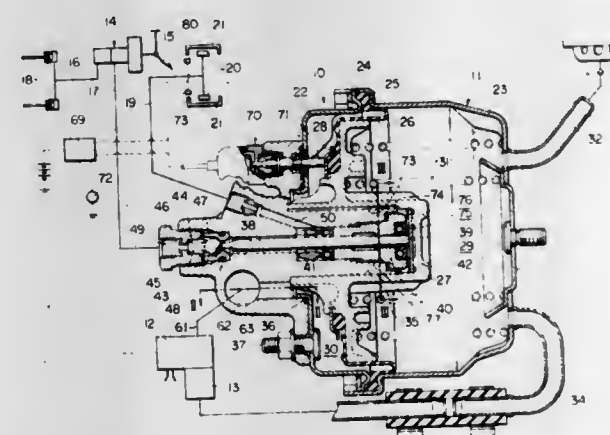
Masamoto Andoh; Harumi Ohhori, and Takashi Kiriya, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha
Continuation of Ser. No. 188,117, Sep. 17, 1980, abandoned. This application Aug. 17, 1982, Ser. No. 408,872

Claims priority, application Japan, Sep. 26, 1979, 54-123658

Int. Cl.³ B60T 8/02

U.S. Cl. 303—115

8 Claims



1. A brake control system for a motor vehicle having a master cylinder and brake actuators comprising:
a brake modulator for modulating, in response to a sensed vehicle skid condition, braking effort being applied from said master cylinder to said brake actuators, wherein said brake modulator further comprises;
a housing operatively associated with said brake modulator;
a power piston movable within said housing and forming a first chamber and a second chamber such that said power piston separates said first chamber from said second chamber;
a pressure modulating plunger operatively associated with said power piston;
fluid pressure cut-out valve means for blocking fluid pressure from said master cylinder in response to said sensed

vehicle skid condition operatively associated with said pressure modulating plunger;
means for controlling a pressure differential across said power piston which further comprises air passage means disposed between said first chamber and said second chamber; and
a changeover valve for closing said air passage means and for admitting ambient air into said second chamber in response to said sensed vehicle skid condition and wherein said housing further comprises;
guiding means operatively associated with said housing and projecting into said second chamber substantially coaxially with said power piston;
said power piston having a blind force formed therein in sliding fitted engagement with said guiding means;
at least one axial groove formed in the internal surface of said blind bore and extending throughout the full length of said blind bore for continuous communication of the interior of said blind bore with said second chamber through said at least one axial groove; and
lubricant stored within said at least one axial groove.

4,432,587

RECIRCULATING BALL BEARING ASSEMBLY

Frank T. Bryan, Greece, N.Y., assignor to Blasius Industries, Inc., Clifton, N.J.

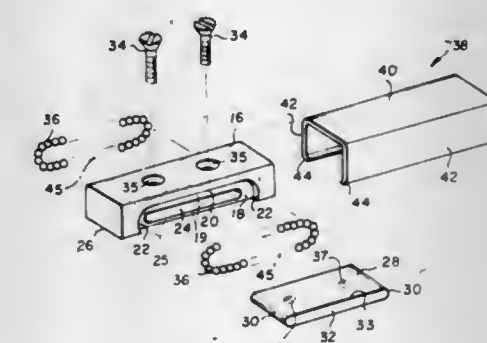
Continuation of Ser. No. 918,070, Jun. 22, 1978, abandoned.

This application Oct. 18, 1979, Ser. No. 85,993

Int. Cl.³ F16C 29/06

U.S. Cl. 308—6 C

2 Claims



1. A recirculating ball bearing assembly for facilitating sliding movement between a pair of objects comprising:
a unitary body having a bottom surface, and an outer side surface substantially perpendicular to said bottom surface; said body further having a base surface parallel to and spaced from said side surface and extending from said bottom surface, said body further having a smooth continuous outer surface having a substantially straight portion and arcuate end portions, each arcuate end portion having one end integral with one end of said straight portion and its other end lying in said bottom surface, said outer surface arranged perpendicular to and connecting said base surface to said side surface to define a major portion of an outer race, said base surface and said outer surface further cooperating to define a substantially oblong-shaped recess;
a first opening parallel to and spaced from said bottom surface and extending from said base surface through said body to define a body plate;
an inner race plate having a substantially oblong longitudinal cross section insertable through said first opening with an oblong-shaped side portion of said plate extending into said recess wherein the periphery of said side portion forms an endless inner race in register with and spaced from said outer race, said inner race plate further having an enlarged second opening extending therethrough;
means extending through said second opening and engageable with said body plate for adjustably securing said inner race plate to said body;

an endless row of ball bearings mounted in said recess around said endless inner race with a plurality of said ball bearings interposed between said inner race and said major portion of said outer race and the remainder of said ball bearings extending from said inner race beyond said bottom surface; and
a cover plate on said side surface of said body for retaining said endless row of ball bearings in said recess.

4,432,588

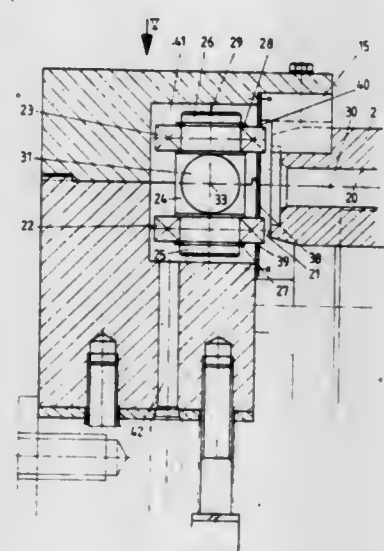
BEARING TO BE USED FOR A ROTATING BODY
Arnold Kapellner, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Nov. 12, 1981, Ser. No. 320,655

Claims priority, application Austria, Dec. 15, 1980, 6083/80
Int. Cl.³ F16C 19/02, 19/50, 35/00, 13/06

U.S. Cl. 308—234

3 Claims



1. A bearing to be used for a rotating body having a rotation surface and a rotation axis, said bearing comprising:
a bearing body having two pairs of opposed pinlike projections extending outwardly therefrom, the axes of all of said projections lying in a common plane, the projections of each of said pairs having a common axis approximately normal to the axis of the other pair, the plane of said axes of said pairs of projections being approximately normal to the axis of said rotating body,
said bearing body being adapted to pivot about the axis of one of said pairs of projections, and
two rolling bodies journaled respectively on the projections of the other of said pairs for rotation about the axis thereof,
said rolling bodies being arranged symmetrically relative to the rotation axis of said rotating body for supporting said rotation surface in the direction of the rotation axis of said rotating body.

4,432,589

MOBILE STORAGE APPARATUS WITH CANTILEVERED LIGHT FIXTURES

John A. Sattel, Janesville, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Oct. 1, 1981, Ser. No. 307,400

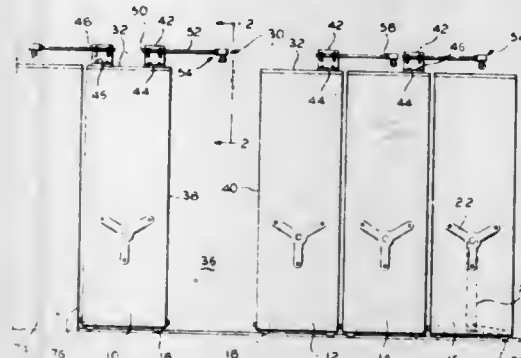
Int. Cl.³ A47B 53/00; B60M 1/34

U.S. Cl. 312—198

3 Claims

1. In storage apparatus comprising a plurality of mobile storage units, each unit having at least one storage face, and guide means cooperating with said mobile units to guide movement of said storage units in a direction normal to said faces and said storage units being movable to open an aisle between adjacent units for access to said faces, the improvement comprising light fixtures, supporting means adjustably supporting said fixtures on top of said units to position said light fixtures in cantilevered relationship from one unit above an adjacent unit

when the units are closed so that there is no interference between the light fixture and the adjacent unit during relative movement of the light fixture and adjacent unit upon opening of an aisle over which said lighting structure extends and so that the light thereon will illuminate the adjoining faces of adjacent units when the units are separated to form an aisle and wherein said light fixtures project a distance from the units upon which they are supported a distance equal to approximately one-half of the distance between units when the units



are opened to form an aisle to illuminate both exposed shelf faces, and in which adjacent storage units have lighting fixtures and said lighting fixture from one unit extends over the adjacent unit, with said supporting means being offset from the longitudinal centerline of the mobile units toward the face of the unit to be illuminated by the unit light fixture to provide clearance between the supporting means of one unit and the overhanging lighting fixture of another unit when said units are in closed position.

4,432,590

STRUCTURAL SYSTEM FOR SUPPORTING FURNITURE, SHELF AND WALL PANELS

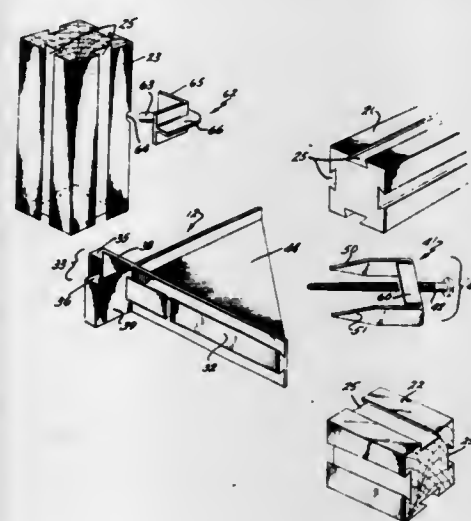
Phillip G. Lawrence, Spring Lake, and Robert L. Russell, Kentwood, both of Mich., assignors to Jer Manufacturing, Inc., Coopersville, Mich.

Filed Dec. 22, 1980, Ser. No. 218,780

Int. Cl.³ A47B 43/00, 47/00; E04B 1/00; F16B 12/00

U.S. Cl. 312—257 SK

39 Claims



1. Apparatus for constructing a skeletal framework for supporting wall, furniture and structural panels comprising:
a plurality of elongate frame members each having a generally rectangular cross section;
at least one side of each of said frame members having an axially extending slot;
each of said axially extending slots having a cross-sectional shape substantially wider in some areas than the entrance width of said axially extending slots;
a plurality of corner connectors for interconnecting first, second and third frame members extending in different angular orientations;

said plurality of corner connectors each having first, second and third extensions for extending into and engaging axially extending slots disposed on said first, second and third frame members, respectively;
said first and second extensions being provided with a portion roughly corresponding to the cross-sectional shape of said axially extending slots on said first and second frame members;
said third frame member being provided with at least two axially extending slots;
said third extension comprising a bifurcated member having first and second projections extending into said two axially extending slots disposed on said third frame member, said first and second projections at least partially corresponding to the cross-sectional shape of said two axially extending slots;
a plurality of corner locks;
said plurality of corner connectors each having means for receiving one of said corner locks; and
each of said corner locks comprising a stake for extending through said corner connectors and engaging said first and second frame members, and a fastener extending through said stake and said corner connectors, said fastener engaging said third frame member for drawing said first, second and third frame members and said corner connectors theretogether.

4,432,592

ELECTRICAL CONNECTOR ASSEMBLY

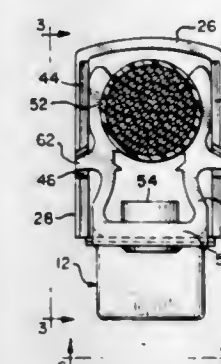
Kamal S. Boutros, Downsview, and John W. Fenn, Agincourt, both of Canada, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 21, 1979, Ser. No. 12,986

Int. Cl.³ H01B 7/06

U.S. Cl. 339—103 M

15 Claims



1. An electrical connector assembly comprising:
a connector body having a mating section and a terminal section;
a hood including opposing sidewalls for enclosing the terminal section of said connector body; and
strain relief means on said connector body including opposing clamping members adapted to receive a cable therebetween, said clamping members being resilient and movable in a direction transverse to the axis of the cable placed therebetween from an initial cable-receiving position to a final cable-clamping position, said transverse movement of said clamping members being effected by mounting said hood to its finally assembled position whereby said hood sidewalls urge said clamping members into said final cable-clamping position.

4,432,591

STORAGE AND TRANSPORT CART WITH IMPROVED SECURITY

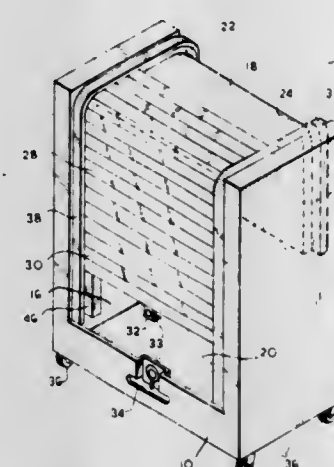
Isaac Rinkewich, Tel-Aviv, Israel, assignor to M.I.T. Poly-Cart Corp., New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 257,703

Int. Cl.³ E06B 9/14

U.S. Cl. 312—297

8 Claims



1. A storage and transport cart comprising a body having a wall with an opening, interior and exterior spaced parts defining a track along said opening, said exterior part being recessed relative to the exterior surface of said wall, a relatively flexible door having an end portion situated in and movable along said track between open and closed positions, and interengaging means on said track and said end portion cooperating to prevent removal of said end portion from said track when said door is flexed inwardly, said means comprising first and second lips, said first lip being situated along the edge of said exterior part and extending towards said interior part, said second lip situated along the edge of said end portion and extending towards said exterior part.

4,432,593

ELECTRICAL LAMP SOCKET HOLDER

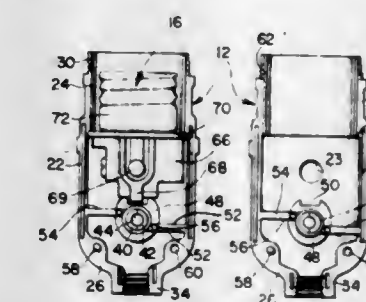
Stanley P. Waluk, Attleboro, Mass., assignor to Carol Cable Company, Inc., Pawtucket, R.I.

Filed Feb. 8, 1982, Ser. No. 346,943

Int. Cl.³ H01R 13/58

U.S. Cl. 339—105

9 Claims



1. A holder for an electrical lamp socket and the like comprising:

a. a pair of substantially identical opposed longitudinal casing halves which are formed of an electrical insulating material and which include shell portions that cooperate in assembled relation to define an interior chamber for retaining an electrical lamp socket therein, said chamber communicating with the exterior of said holder through an enlarged upper opening for receiving an electrical bulb or the like in said socket and through a reduced lower opening for receiving a pair of electrical wires connected to said socket, each of said halves further including a hub portion which extends inwardly in substantially aligned relation with respect to the corresponding hub portion of the opposed half, said aligned hub portions abutting interiorly of said chamber, and a pair of longitudinally offset baffles extending outwardly from opposite

sides of said hub portions terminating at the adjacent edges of the respective shell portions, the adjacent baffles of the opposite halves cooperating to define a pair of tortuous paths in said holder on opposite sides of said hub portions for receiving and retaining said wires on opposite sides of said hub portion; and

b. means retaining said halves in assembled relation.

4,432,594

CLIP-TOGETHER INTERCONNECTION BUSING CLIP FOR MULTIPLE FUSE HOLDER ARRAYS

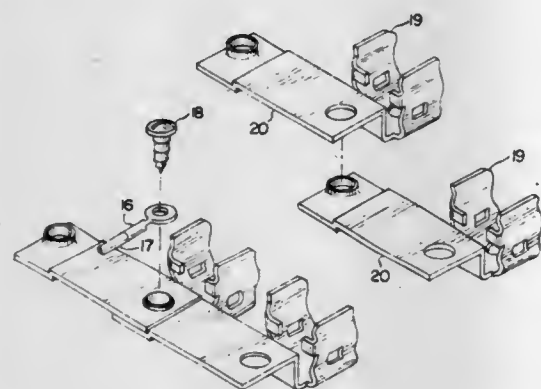
Charles W. Daggett, Mt. Prospect, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Oct. 1, 1981, Ser. No. 307,367

Int. Cl.³ H01R 13/12

U.S. Cl. 339—258 F

21 Claims



1. A fuse holder array for cartridge type electrical fuses comprising:

a mounting base;

a plurality of spring clips, each said clip including a pair of clip jaws for springingly lockingly engaging a terminal of an inserted fuse, each said clip having unitary terminal lug means; and

means for securing said clips to clip mounting areas on said base, said secured clips disposed in two parallel rows to form a parallel array of engaged inserted fuses, a chosen plurality of said clips along a given row having their associated terminal lug means configured as busing terminals integral with said clips and configured in the form of right-angle conductors comprising a first portion extending away from said clip and a second portion extending at right angles to said first portion such that said second portions of said associated terminal lug means lie substantially along a common axis, each said first portion including an identical first engaging means formed integrally therewith, each said second portion including an identical second engaging means formed integrally therewith, said first engaging means being configured to lockingly engage with said second engaging means by mutual engagement therebetween solely by mechanical deformation of at least one of said engaging means, said first engaging means being disposed at the outer end of said first portion, said second engaging means being disposed at the distal end of said second portion, the length of each said second portion being configured to engagingly join said chosen plurality of clips as a common busing element with said chosen plurality of clips secured to their respective mounting areas.

4,432,595 OPTICAL ELEMENT FOR PHOTOGRAPHIC RADIOMETER

Monis J. Manning, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

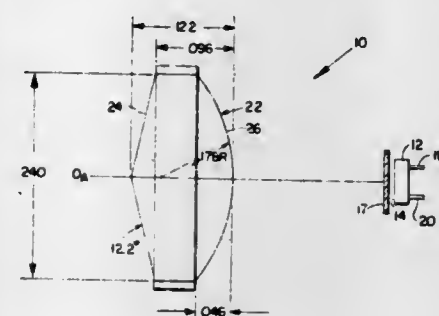
Division of Ser. No. 99,599, Dec. 3, 1979, Pat. No. 4,335,959.

This application Aug. 31, 1981, Ser. No. 297,774

Int. Cl.³ G02B 5/22

U.S. Cl. 350—1.1

12 Claims



1. An optical element for filtering infrared light comprising at least one metal-organic infrared absorbing dye at least partially dissolved homogeneously throughout a molded optical plastic.

4,432,596

INFRA-RED OPTICAL SYSTEMS

Duncan R. J. Campbell, Dyserth, and Philip J. Rogers, Bodelwyddan, both of Wales, assignors to Pilkington P.E. Limited, St. Helens, England

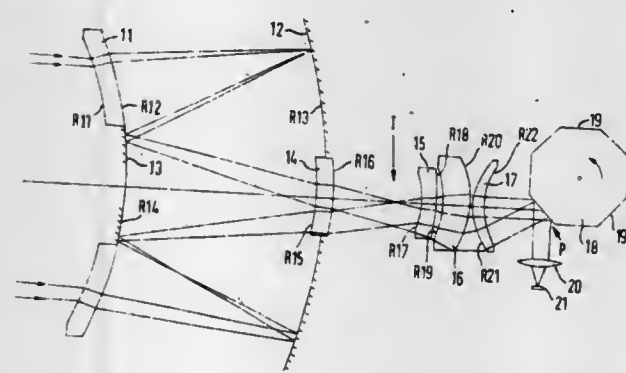
Filed Jul. 10, 1981, Ser. No. 282,236

Claims priority, application United Kingdom, Jul. 24, 1980, 8024210

Int. Cl.³ G02B 3/00

U.S. Cl. 350—1.3

24 Claims



1. An "eye-piece" system for use in a non-Galilean afocal infra-red optical system or an afocal infra-red telescope in which an intermediate image is formed, the "eye-piece" system comprising at least three lens elements of infra-red transmitting material operative with radiation in at least one of the 3 to 5.5 and 8 to 13 micron wavebands, the three lens elements including a back element of positive power having a front surface which is convex and a curved back surface, and a pair of elements which are closely spaced to define a gas lens therebetween, the back element of the pair having a convex back surface and the front element of the pair having a concave front surface with an absolute value of radius of curvature equal to or greater than that of the convex back surface of the back element of the pair, the pair of elements in combination with the gas lens therebetween being of positive power.

4,432,597

TRANSMISSIVE HOLOGRAPHIC OPTICAL ELEMENT ON ABERRATING SUBSTRATE

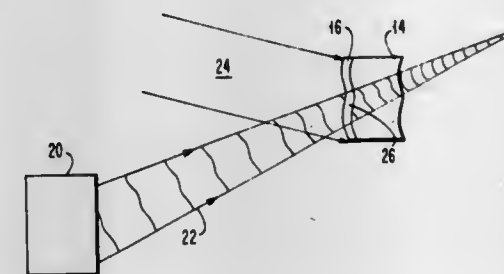
Gary C. Bjorklund, Los Alto, and Glenn T. Sincerbox, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,093

Int. Cl.³ G02B 5/32; G03H 1/22

U.S. Cl. 350—3.70

8 Claims



1. A method for using a transmissive holographic optical element comprising the steps of passing a first coherent wavefront through an aberrating substrate and a holographic recording material supported thereon to a wavefront conjugator to launch a conjugate wavefront back toward the holographic recording material, passing a second coherent wavefront to said holographic recording material whereby said second wavefront interferes with said conjugate wavefront to form a fringe pattern which is recorded in the holographic material, developing the holographic material to form a holographic optical element, and passing a third coherent wavefront having substantially the same wavelength and wavefront shape as said second wavefront through said optical element, thereby resulting in an emerging coherent wavefront conjugate to said first wavefront.

4,432,598

IMAGE READING AND RECORDING APPARATUS AND PHOTODEFLECTOR THEREFOR

Yuichi Akanabe; Hiroaki Ikeda; Masatoshi Maeda, and Shinsuke Funaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

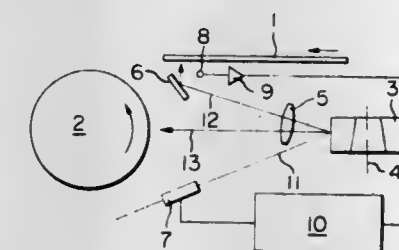
Filed May 19, 1981, Ser. No. 265,350

Claims priority, application Japan, May 22, 1980, 55-67098

Int. Cl.³ G02B 27/17

U.S. Cl. 350—6.7

8 Claims



1. A photodeflector for a scanning device, comprising a plurality of groups of multiple mirrors circumferentially alternating around a rotation axis, each of said groups consisting of the same number of mirrors and each of said mirrors of a particular one of said groups being disposed so that its surface is inclined, with respect to said rotation axis, at the same angle as the other mirrors of that group and at a different angle from the mirrors of all other mirror groups disposed about said axis.

4,432,599

FIBER OPTIC DIFFERENTIAL SENSOR

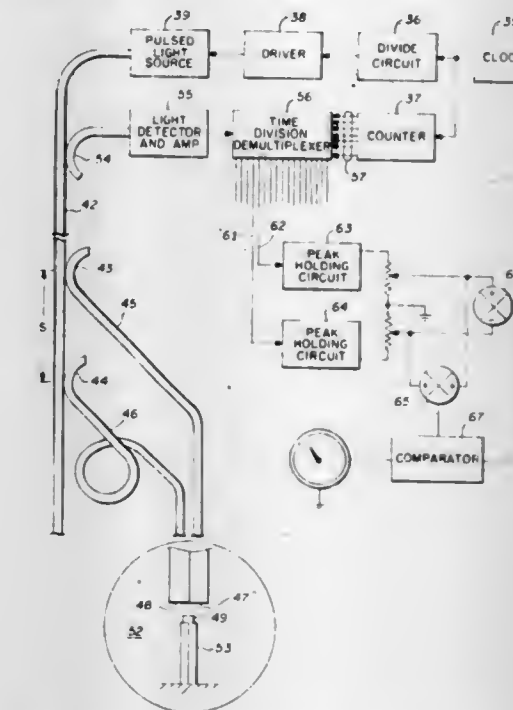
Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,615

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.15

7 Claims



1. A fiber optic differential sensor comprising: main optical propagation means for propagating optical signals in first and second directions; a plurality of optical directional couplers coupled to said main optical propagation means with predetermined separations therebetween; a plurality of branch optical waveguides respectively coupled to said plurality of optical directional couplers to receive portions of optical signals propagating in said first direction, each having an end face with said end faces arranged in groups, each group having a center and at least two end faces positioned about said center; mirror means movable with variations in ambient conditions and positioned with respect to said groups of at least two end faces for reflecting at least portions of optical signals emitted from said at least two end faces back thereto for coupling therethrough to said directional couplers for propagation in said optical propagating means in said second direction, said portion of said reflected signal being a function of said positioning with respect to said at least two end faces and said optical signals propagating in said second direction being temporally separated at a reference plane in said main optical propagation means by a time that is a function of said predetermined separation; and means coupled to said optical propagation means for receiving said reflected signals and for providing indications of relative differences between said portions of said light reflected from said mirror means.

4,432,600

METHOD AND APPARATUS FOR COUPLING AT LEAST TWO OPTICAL FIBERS BY MEANS OF A HOLOGRAPHIC LENS

Lucien Falco, Cornaux, Switzerland, assignor to Cabloptic S.A., Switzerland

Filed Mar. 30, 1981, Ser. No. 249,211

Claims priority, application Switzerland, Apr. 3, 1980, 2677/80

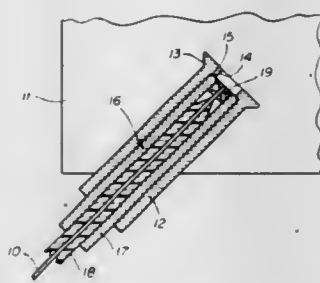
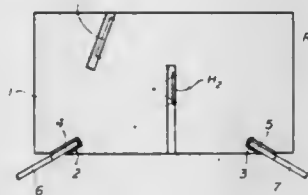
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.18

5 Claims

1. A method of coupling at least two optical fibers by a

holographic coupling lens, comprising the steps of recording a hologram of phase and volume by means of monomodal optical fibers to produce a holographic coupling lens, replacing said monomodal fibers by multimodal fibers, and providing a positioning mechanism for precisely positioning the ends of the multimodal fibers at the position previously occupied by the replaced monomodal fibers.



2. An apparatus for coupling two optical fibers comprising a rigid support arranged to hold in given relative positions monomodal fibers and a holographic coupling lens formed by said monomodal fibers, said rigid support comprising means for precisely positioning the ends of multimodal fibers to be coupled at a position initially occupied by said monomodal fibers used to form said holographic coupling lens.

4,432,601

APPARATUS AND METHOD FOR COUPLING AND DECOUPLING OF OPTICAL FIBER WAVEGUIDES

Lothar Mannschke, Eckental, Fed. Rep. of Germany, assignor to Te Ka De Felten & Guillaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

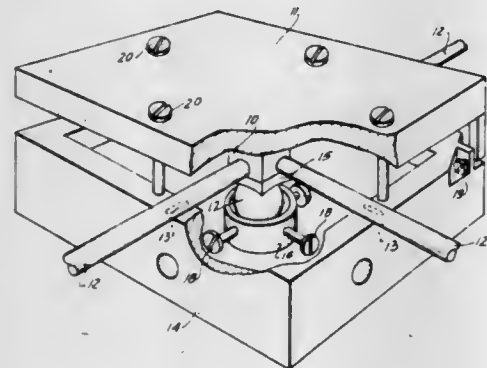
Filed Feb. 17, 1981, Ser. No. 235,135

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006895

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.19

17 Claims



1. An apparatus for coupling and decoupling of optical fiber waveguides to an optical beam splitter comprising a frame for supporting and guiding said fiber waveguides in a plane; a cover plate arranged above said frame, said beam splitter being attached to said cover plate and suspended into said plane, a universal joint arranged below said plane for supporting said beam splitter so that the latter together with said cover plate are swingable relative to said frame; and means for fixing said waveguides and said beam splitter in an adjusted position.

4,432,602 OPTICAL FIBER CLAMP AND CONNECTOR ASSEMBLY

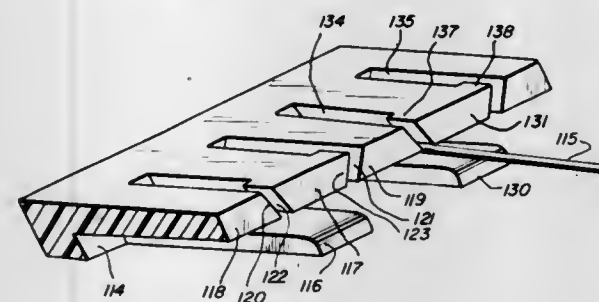
Mark Margolin, Chicago, Ill., assignor to TRW, Inc., Redondo Beach, Calif.

Filed Apr. 13, 1981, Ser. No. 253,777

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20

18 Claims



1. A retainer assembly for clamping multiple optical fibers comprising opposed arrays of generally parallel flexible cantilever fingers each supported at its proximal end, one of said arrays comprising deflectable first clamping fingers alternately interdigitated with latching fingers, the other of said arrays comprising second clamping fingers arranged in opposition to said first clamping fingers, adjacent portions of said first clamping fingers and said latching fingers including cam portions for laterally deflecting distal portions of the respective adjacent latching fingers as the distal portion of each first clamping finger is deflected toward the respective second clamping finger to clampingly engage an optical fiber therebetween and for latch engagement with said first clamping finger to retain said first clamping finger in its deflected clamping position.

4,432,603

MULTICHANNEL FIBER OPTICS CONNECTOR

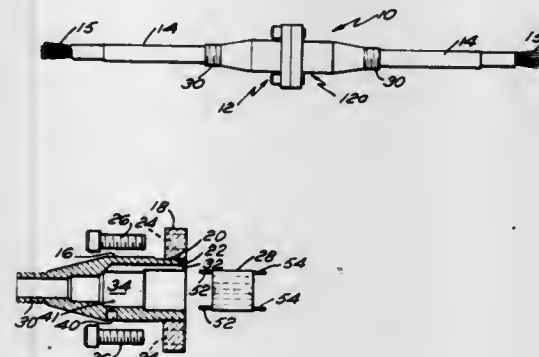
Roger L. Morency, Voluntown, and Lester D. Olin, Mystic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1981, Ser. No. 296,285

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

8 Claims



5. A fiber optic connector assembly comprising: a first and second connector with each of said first and second connectors having a housing shell, a clamping nut, an insert alignment bushing and anchor pins; each housing shell having an axially aligned aperture running from the aft end to the forward end of said shell, said shell having fill and exit apertures for potting; each clamping nut forming a collar around the forward end of its associated shell, each nut having aligned apertures for connecting purposes, the apertures of one nut are clearance apertures and of the other nut are threaded apertures;

each insert alignment bushing being inserted in the forward end of its associated shell, each bushing comprising a solid slug of material having keying pin apertures, anchor pin apertures and fiber optic lead apertures, respective members of said keying pin apertures and said anchor pin apertures having the same axis; anchor pins inserted in said anchor pin apertures of each insert alignment bushing; fiber optic leads inserted in each housing shell at the aft end of said axially aligned aperture and connected within said respective fiber optic lead apertures of its associated insert alignment bushing; potting material surrounding said fiber optic leads within each of said housing shells; keying pins inserted in respective aligned keying pin apertures; and cap screws connecting each clamping nut to each other.

resilient means on one of said first and second plugs for movement of said first and second plugs in the third one of said orthogonal directions when said first and second plugs are inserted in said fiberoptic connector for alignment.

4,432,605

OPTICAL FIBER SUBMARINE CABLE

Yasubiko Niino, Yokohama, and Yoshihiro Ejiri, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

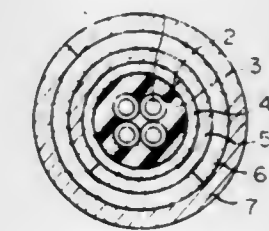
Continuation of Ser. No. 24,674, Mar. 28, 1979, abandoned. This application May 1, 1981, Ser. No. 259,529

Claims priority, application Japan, Apr. 11, 1978, 53-41703

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.23

3 Claims



4,432,604 SELF-ADJUSTING FIBEROPTIC CONNECTOR ASSEMBLY

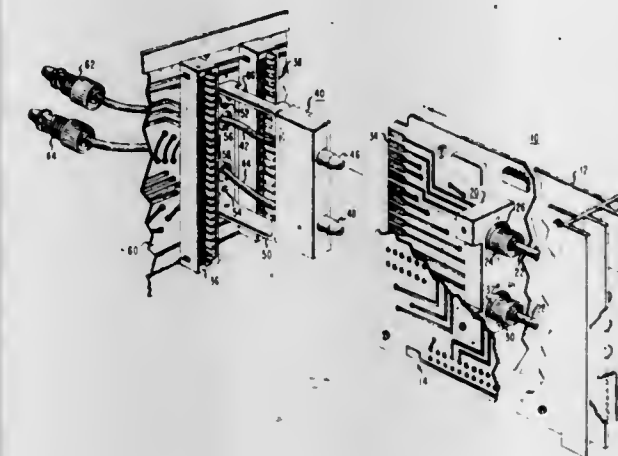
Richard E. Schwab, Randolph, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 28, 1982, Ser. No. 372,743

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

5 Claims



1. A self-adjusting fiberoptic connector assembly capable of movement in three substantially orthogonal directions, said connector comprising:

first and second fiberoptic cable ends terminated in first and second plugs, respectively,

a fiberoptic connector for aligning said first and second plugs,

first means for securing said first plug to a backplane, said first securing means providing for movement of said first plug relative to said backplane in a first one of said orthogonal directions,

second means for securing said fiberoptic connector to a printed circuit board, said second securing means providing for movement of said fiberoptic connector relative to said printed circuit board in a second one of said orthogonal directions, and

1. An optical fiber submarine cable having a multilayer, cylindrical pressure-resisting layer comprising: at least one optical fiber extending longitudinally; a two-layer cushion layer closely directly covering said at least one optical fiber; said two-layer cushion consisting of a primary thin cushion of elastic material directly covering said fiber and a thicker secondary cushion of soft material, the primary cushion being of a different composition than the secondary cushion material, a cylindrical, tubular multi-layer pressure-resisting layer comprising a first elongated, folded tape of a good electric conductor metallic material folded longitudinally for closely directly, circumferentially covering said cushion layer, a longitudinal joint of side edges of the folded metal first tape being welded; a second tape of a good electric conductor metallic material folded longitudinally closely directly circumferentially covering the layer constituting said first tape and adhered thereto by the use of an adhesive binder layer therebetween; a longitudinal joint of said edges of the longitudinally folded second metallic second tape being welded, the longitudinal welded side edges of the longitudinal joints of the first and second tapes being out of registry, the second metallic tape being thicker than the first metallic tape, a third tape of a good electric conductor metallic material covering and adhered to the second tape and folded longitudinally, a longitudinal joint of side edges of the folded metal third tape being welded and being out of registry with the welds of the first and second tapes, the adhered first, second and third tapes defining a unitary tubular structure and the radius of said cushion layer being substantially equal to the combined thickness of the three of said tapes.

4,432,606

OPTICAL FIBER INSENSITIVE TO TEMPERATURE VARIATIONS

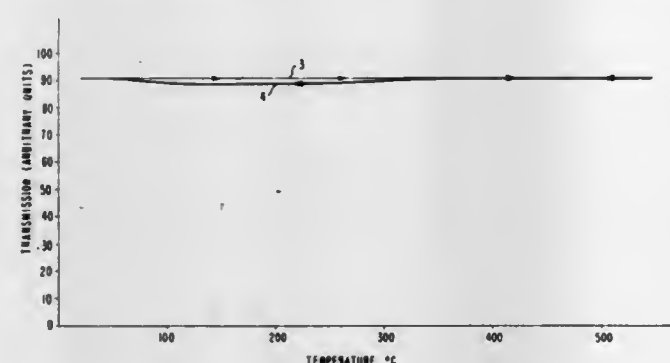
G. Richard Blair, Culver City, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 24, 1981, Ser. No. 305,309

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.33

11 Claims



6. An annealed, metal-coated optical fiber comprising at least a light-conducting core and a glass optical cladding thereon, evidencing substantially temperature-insensitive optical transmission.

4,432,607

HOT MELT COATED OPTICAL FIBER

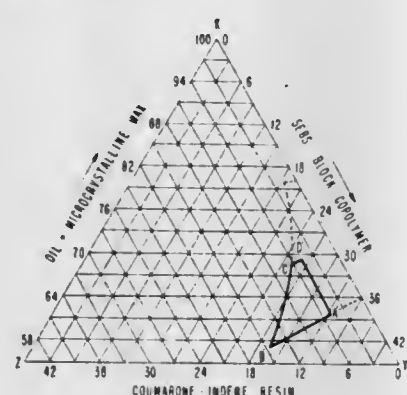
Alvin C. Levy, DeKalb County, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1981, Ser. No. 315,429

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.34

10 Claims



1. A coated optical fiber comprising an optical fiber and one or more coated layers thereon, characterized in that at least one coated layer comprises a mixture of: (X) An ASTM type 103, 104A, 104B, or mixture thereof, naphthenic or paraffinic oil, with a wax optionally substituted for a portion of said oil; (Y) a styrene-rubber-styrene block copolymer having a styrene-rubber ratio of 0.2 to 0.5; and optionally further comprises (Z) a coumarone-indene or vinyl toluene- α methyl styrene copolymer that associates with the styrene end-blocks of said block copolymer; and further comprises a thermal oxidative stabilizer.

4,432,608

VIEWING SCREEN WITH ENHANCED CONTRAST

Howard W. Grup, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,670

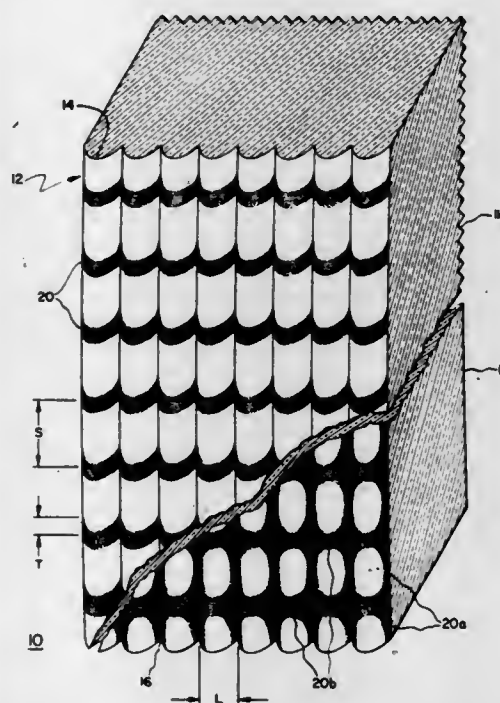
Int. Cl.³ G03B 21/60

U.S. Cl. 350—128

10 Claims

1. A method for enhancing contrast of a projection screen having a viewable surface, comprising the steps of:

providing a one-piece solid projection screen formed of a substantially uniformly transparent material;
providing the viewable screen surface with a plurality of substantially parallel grooves defining a plurality of substantially parallel lenticule columns therebetween;



depositing a plurality of substantially parallel lines of light-absorbing darkening material only upon the screen viewable surface and in a direction substantially perpendicular to the direction of the lenticules; and
selecting the spacing and thickness of the lines to provide a desired degree of surface coverage.

4,432,609

RADIATION PROTECTION LOUVER

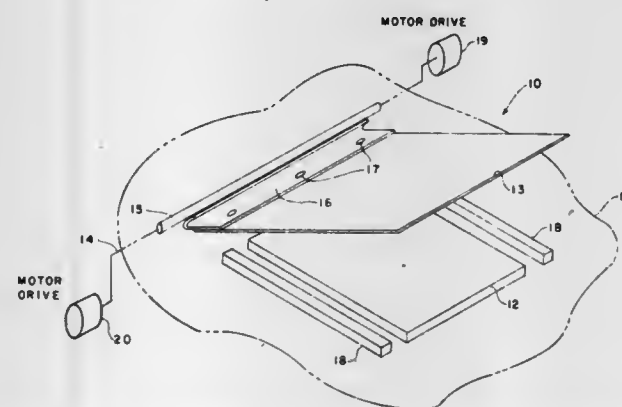
James E. Dueker, Florissant, Mo.; Ronald C. Foster, Fort Worth, Tex., and Bennett V. Whiteson, Wentzville, Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1982, Ser. No. 337,347

Int. Cl.³ E05F 15/20

U.S. Cl. 350—266

2 Claims



1. A radiation sensitive protective louver system for shielding a surface from high intensity radiation, comprising:
a. a shaft mounted for rotation about an axis substantially parallel to said surface;
b. a movable louver panel mounted for rotation substantially about said axis;
c. actuator means connecting an edge of said panel to said shaft, for rotating said panel to a position covering said surface in response to heating of said means by high intensity radiation, said means including a metallic alloy member having a predetermined configuration and being formed to an intermediate configuration for installation

into said louver system, said alloy member exhibiting the characteristic of changing from said intermediate configuration to said predetermined configuration in response to said heating; and
d. motor drive means for acting on said shaft to reform said alloy member to said intermediate configuration.

4,432,610

LIQUID CRYSTAL DISPLAY DEVICE

Hiroshi Kobayashi, Tokyo; Hisashi Yamada, and Yukimasa Uchida, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

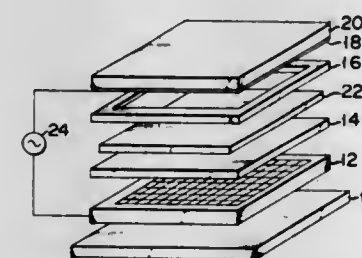
Filed Feb. 19, 1981, Ser. No. 235,995

Claims priority, application Japan, Feb. 22, 1980, 55-20542; Jul. 11, 1980, 55-93962; Jul. 11, 1980, 55-93964

Int. Cl.³ G02F 1/133

U.S. Cl. 350—331 R

19 Claims



1. A liquid crystal display device comprising:
a memory array including a plurality of cells having means for storing data without any external memory for refreshing and for becoming electrically conductive, such that this conductive condition is determined and sustained based on the contents of the stored data;
a data terminal connected to said cells of said memory array and supplied with data to be stored;
an address terminal connected to said cells of said memory array for selecting a cell;
a power source terminal connected to each cell of said memory array;
liquid crystal arranged on the surface of said memory array; and
a transparent electrode arranged on the liquid crystal, holding said liquid crystal with said memory array and applying an electric field to said liquid crystal with said power source terminal through said cells.

4,432,611

PHOTOCONDUCTOR CONTROL OF ELECTRO-OPTICALLY VARIABLE DISPLAY CELL

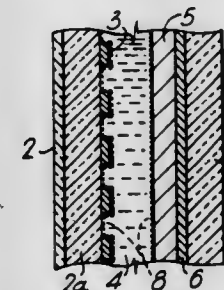
John S. S. Wei, Roanoke, Va., assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 948,624, Oct. 3, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,138

Int. Cl.³ G02F 1/13

U.S. Cl. 350—342

7 Claims



1. A display panel comprising:
a layer of electro-optic material having optical transmissivity

increasing with increasing electric field intensity thereacross;
immediately adjacent to the layer of electro-optic material, a layer of photoconductive material having conductivity increasing with increasing light intensity incident thereon;
a first set of conductors contacting the photoconductive material layer on a side thereof remote from the electro-optic material layer;
a second set of conductors located on a side of the electro-optic material layer remote from the photoconductive material layer;
a plurality of crossovers at which conductors of one set cross over conductors of the other set, the crossovers defining a plurality of display cells, each display cell comprising an area of the electro-optic material layer and an immediately adjacent area of the photoconductive material layer located to receive light transmitted by said area of the electro-optic material layer; and
means for applying a voltage between pairs of conductors at selected crossovers;
wherein the electric field intensity-optical transmissivity characteristic of the electro-optic material, the conductivity-light intensity characteristic of the photoconductive material, and impedances of the electro-optic material and the photoconductive material at a selected cell are so related that below a threshold voltage no light is transmitted across the cell, and above the threshold voltage light is transmitted across the cell.

4,432,612

PHTHALOCYANINE ELECTROCHROMIC DISPLAY WITH IMPROVED CYCLE LIFE

Margie M. Nicholson, San Marino, and Frank A. Pizzarello, Yorba Linda, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 16, 1981, Ser. No. 302,876

Int. Cl.³ G02F 1/17

U.S. Cl. 350—357

10 Claims

1. An electrochromic display cell capable of assuming a plurality of visually distinct optical states and having a cycle life in excess of 50,000 cycles comprising:
a pair of enclosure plates, at least one of which is transparent;
a counter electrode and a display electrode disposed between said enclosure plates;
a layer of electrochromic material disposed on said display electrode, said layer of electrochromic material consisting of an electrochromic diphtalocyanine compound; and
a liquid electrolyte material disposed between said counter electrode and said display electrode, said liquid electrolyte material being specifically selected to be mildly acidic and having a pH between approximately 5 and 2 so as to enable the display cell to function in excess of a 50,000 cycle lifetime, to provide enhanced color contrast, and longer color retention of the red color mode.

4,432,613

EXPOSURE LIGHT BEAMS CONTROL METHOD FOR USE IN A PICTURE REPRODUCING MACHINE

Sadao Ueda, Yasu; Isao Tokura, Uji, and Mitsuhiro Yamada, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 10, 1981, Ser. No. 253,049

Claims priority, application Japan, Apr. 10, 1980, 55-47122

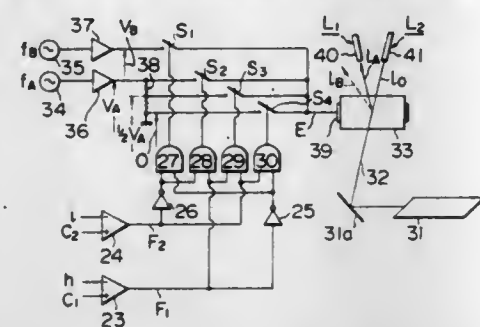
Int. Cl.³ G02F 1/11

U.S. Cl. 350—358

6 Claims

1. A method for controlling exposure light beams for use in a picture reproducing machine, said method comprising the steps of:
(a) applying a light beam to an acousto optical deflector deflecting said light beam to form diffracted light beams incident upon a pair of fixed light paths,

- (b) digitally controlling said diffraction light beams by applying a variable frequency supersonic wave to said



acoustooptical deflector, so that each of said diffraction light beams, respectively, may be made selectively incident upon respective ones of said fixed light paths.

4,432,614

HIGH FREQUENCY LIGHT MODULATOR

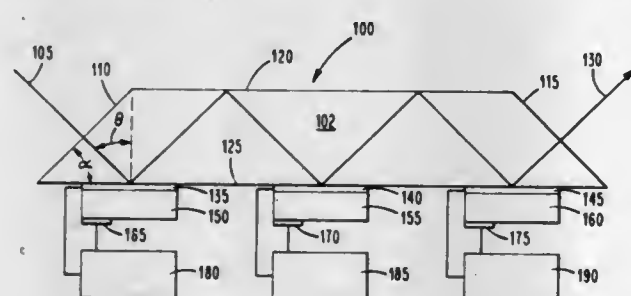
William H. McNeill, Carlisle, and Yung J. Chen, Weston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 20, 1982, Ser. No. 451,646

Int. Cl.³ G05D 25/02

U.S. Cl. 350—386

13 Claims



1. An electrooptic device for controlling the intensity of a collimated monochromatic light beam, said device comprising: a first element transparent to said monochromatic light beam and having first and second planar surfaces operable to alternately reflect said collimated light beam from said first and second planar surface;
- a plurality of structures each in contact with said second planar surface at regions where said collimated light beam reflects from said second planar surface, each of said structures forming an interface with said second planar surface;
- each of said structures comprising a portion of a material of negative dielectric constant in contact with said second planar surface and a portion of a semiconductor material coupled to said material of negative dielectric constant; and
- means for separately varying the charge density of semiconductor material in the semiconductor portion of each of said structures to affect the degree of coupling between said monochromatic light beam incident at each of said interfaces and surface plasmon waves generated in each of said plurality of elements whereby the intensity of said collimated monochromatic light beam reflected from the interface at each of said elements varies with the charge density in each of said elements.

4,432,615

ZOOM LENS

Keiji Ikemori, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

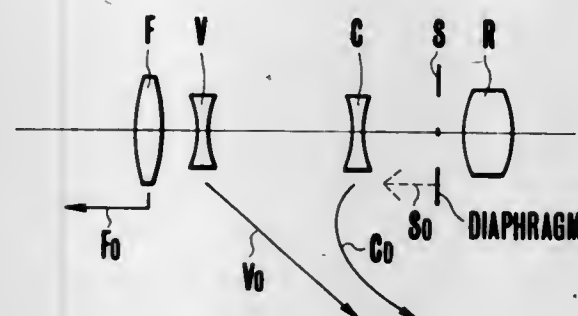
Filed Jun. 17, 1981, Ser. No. 274,665

Claims priority, application Japan, Jun. 19, 1980, 55-83065

Int. Cl.³ G02B 7/11

U.S. Cl. 350—427

5 Claims



1. A zoom lens of high grade optical performance comprising:
 - a first focusing lens group having a lens barrel, a variable magnification optical system and a diaphragm movable along the optical axis from the object side, said variable magnification optical system having a lens group III at the image side, said lens group III having a lens barrel and being movable for variable magnification in such a manner that the distance between the lens group III and the diaphragm is wider at the wide angle position than at the end of the telephoto position,
 - connecting means, for connecting the diaphragm with the first focusing lens group, said diaphragm being advanced toward the object side in operative engagement with the first focusing lens group when the focusing is changed from an object that is at infinity to an object that is nearby,
 - movement prohibiting means for controlling the amount of the movement of the diaphragm operatively engaged with the first focusing lens group at another zooming position than the wide angle position in accordance with the position of the lens group III on the optical axis.

4,432,616

FRAME FOR A PAIR OF SPECTACLES

Yoshinori Kurosaka, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

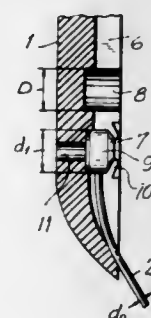
Filed Apr. 26, 1982, Ser. No. 371,902

Claims priority, application Japan, Apr. 27, 1981, 56-63743

Int. Cl.³ G02C 1/04

U.S. Cl. 351—106

19 Claims



1. A frame for a pair of spectacles including a rim and lens, comprising:
 - a peripheral groove formed in the edge of said lens, a first portion of said groove being engaged with a protruding portion of said rim;
 - a flexible wire engaged in a second portion of said groove, said wire in said groove retaining said lens against said rim;

first and a plurality of second engagement means on said rim for holding the respective ends of said wire to said rim; third engagement means respectively connected to opposite ends of said wire for connection with said first and a selected one of said plurality of second engagement means, lenses of different perimeters being retained between said wire and said rim by selection of said second engagement means for connection of said wire thereto.

4,432,617

EYE REFRACTIVE ERROR MEASURING DEVICE

Kiyoshi Itoh, Kamifukuoka; Yukiyasu Nishikawa, Kawagoe; Shuji Hoshika, Fujimi, and Ikuzo Okamoto, Tamagawa, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

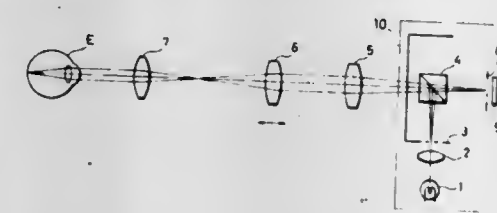
Filed Jan. 15, 1981, Ser. No. 225,221

Claims priority, application Japan, Jan. 30, 1980, 55-9580

Int. Cl.³ A61B 3/10

U.S. Cl. 351—211

5 Claims



1. An eye refractive error measuring device comprising: a chart movable in a predetermined direction in a plane perpendicular to an optical axis of said measuring device, said movable chart having plural striped patterns oriented at different angles from one another; optical system means for projecting the image of said chart onto the retina of an eye to be examined; and means for measuring the refractive error of said eye from a state of said optical system at a position where said image thus projected appears most sharp, said measuring means comprising a stationary chart having patterns similar to said patterns of said movable chart and detecting means, said detecting means receiving light reflected from said retina through said stationary chart.

4,432,618

TRAY DRIVE AND SLIDE CHANGE CONTROL APPARATUS FOR SLIDE PROJECTOR

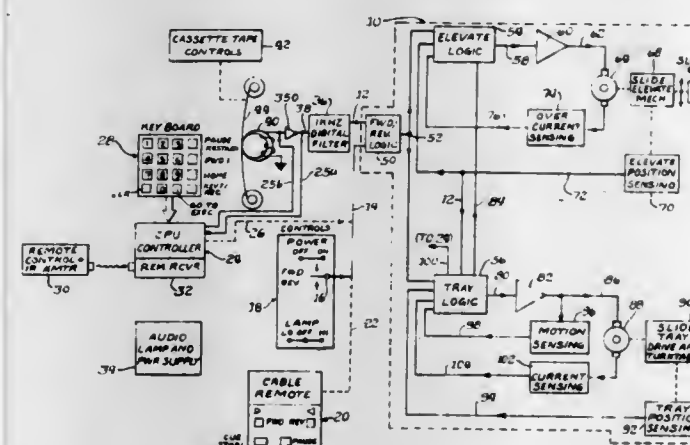
Robert R. Parker, Wheeling, and Rudolph Starai, Arlington Heights, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,523

Int. Cl.³ G03B 23/04

U.S. Cl. 353—25

23 Claims



1. Control apparatus for slide projector apparatus comprising:
 - drive transport means for carrying a slide tray including a plurality of slide positions and for selectively moving said

slide tray to align said slide positions at a slide change station; means for detecting the position of said drive transport means, said detecting means comprising means responsive to the position of said drive transport means for generating feedback signals representing the degree of alignment between each of said slide positions and said slide change station when each of said slide positions is within a predetermined positional range of said slide change station; means for generating a slide movement signal; and drive transport control means responsive to said slide movement signal and said feedback signals for controlling operation of said drive transport means.

4,432,619

COMPACT COLLAPSIBLE MICROFORM VIEWER

Detlef E. Schmidt, Malibu, Calif., assignor to Topper Manufacturing Corporation, Torrance, Calif.

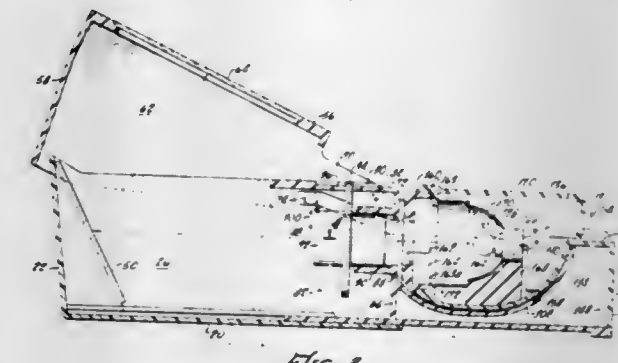
Division of Ser. No. 237,688, Feb. 24, 1981, Pat. No. 4,358,184.

This application May 3, 1982, Ser. No. 373,968

Int. Cl.³ G03B 21/28

U.S. Cl. 353—119

2 Claims



1. A microform projector comprising
 - a first housing having a lens for projecting an image of illuminated film,
 - a second housing adjacent said first housing and having means for illuminating film bearing an image to be projected,
 said first and second housings defining a film receiving path therebetween, whereby film may be moved and positioned in said path for illumination by light from said first housing, and whereby an image of such illuminated film may be projected by the lens of the second housing, and mutually interengageable means for detachably connecting and readily disconnecting said housings to each other without use of fasteners, whereby said housings may be readily separated and reconnected without tools for maintenance, repair, and cleaning of said film receiving path, said means for detachably connecting comprising first guide means fixed to and extending along said first housing, and second guide means slidably engaged with said first guide means and extending along said second housing, whereby said housings may be relatively detached and reconnected by sliding one of said housings relative to the other, said first housing including an upstanding rear wall positioned behind said film path, said first guide means comprising a first pair of laterally spaced guide members fixed to said rear wall, said second housing having a depending rear wall, said second guide means comprising a second pair of laterally spaced guide members fixed to said rear wall of said second housing.

4,432,620

LENS MOTOR DRIVE DEVICE IN AUTOMATIC FOCUSING CAMERA

Hiroshi Kurokawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

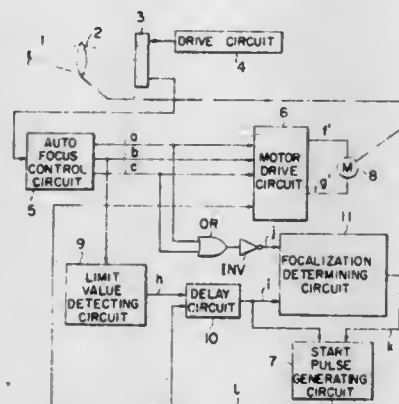
Filed Mar. 9, 1982, Ser. No. 356,318

Claims priority, application Japan, Mar. 13, 1981, 56-36176; Mar. 13, 1981, 56-36177

Int. Cl.³ G03B 3/10

U.S. Cl. 354-402

3 Claims



1. A lens motor drive device in an automatic focusing camera, in which current corresponding to a degree of focalization of an optical system is supplied to a lens motor to drive a lens in said optical system; when device comprises:

- a signal forming circuit for forming a focalization signal representing the focalization of said optical system, and a focalization deviation signal having a level corresponding to a degree of focalization of said optical system;
- a limit value detecting circuit for providing an output when the level of said focalization deviation signal decreases to an extent that said lens motor cannot continue rotation;
- a timing circuit for providing an output when said limit value detecting circuit provides the output for a predetermined period of time; and
- a start pulse generating circuit for generating a start pulse having a duration long enough to start said lens motor when the output of said timing circuit is provided under the condition that the focalization signal is not provided, so that current is supplied to said lens motor according to said start pulse.

4,432,621

AUTO-FOCUS BUILT-IN CAMERA

Toyotosi Suzuki; Hideo Tamamura, both of Tokyo, and Mutsuhide Matsuda, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

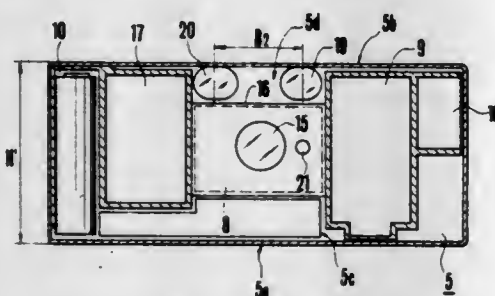
Filed Jan. 8, 1982, Ser. No. 338,100

Claims priority, application Japan, Jan. 16, 1981, 56-5639

Int. Cl.³ G03B 3/00

U.S. Cl. 354-403

8 Claims



1. A camera having a built-in auto-focus mechanism, comprising:

- (A) a film supply chamber;
- (B) a film take-up chamber provided at an interval spaced from said film supply chamber;
- (C) a photographic aperture plate arranged in the space

between said film supply chamber and said film take-up chamber and having a total height less than that of said film supply chamber; and

- (D) a range finder optical system for said auto-focus mechanism arranged between said film supply chamber and said film take-up chamber at a stepped portion formed by the difference between the total height of said aperture plate and that of said film supply chamber.

4,432,622

FOCUSING-POSITION-DETECTION CIRCUIT

Ikue Kawashima, Iwanuma; Yoshio Fukushima, Machida; Tamio Murano, Itami, and Toshitatsu Suzuki, Takarazuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

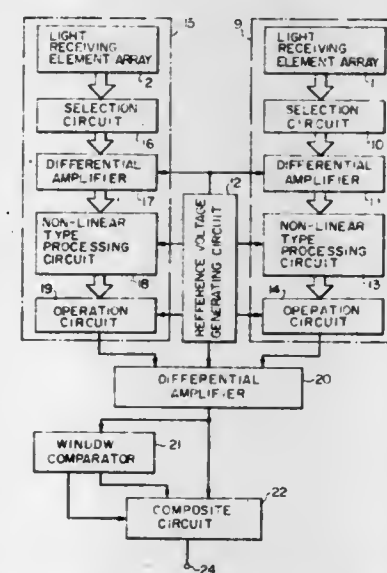
Filed Jun. 7, 1982, Ser. No. 385,826

Claims priority, application Japan, Jun. 16, 1981, 56-92808; Jun. 26, 1981, 56-99198

Int. Cl.³ G03B 3/10

U.S. Cl. 354-408

3 Claims



1. A focusing position detection circuit comprising: two sets of light receiving arrays respectively disposed in front of and behind a predetermined focusing plane of an optical system;

first means and second means for selecting predetermined combinations of two light receiving elements from each of said light receiving arrays, said combinations including combinations of adjacent and non-adjacent light receiving elements, for obtaining the differences in output between said light receiving elements in said combinations, and for subjecting said differences in output to non-linear type processing;

third means for obtaining the difference in output between said first means and said second means; and fourth means for outputting an analog signal corresponding to the position of said optical system in the defocused range and outputting a focused signal at a predetermined level in the focused range with a predetermined tolerance range, by judging the position of said optical system based on the signal output from said third means.

4,432,623

AUTOMATIC EXPOSURE CONTROL CAMERA

Masafumi Yamasaki, and Muneaki Yoshida, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 301,231

Claims priority, application Japan, Sep. 22, 1980, 55-132197

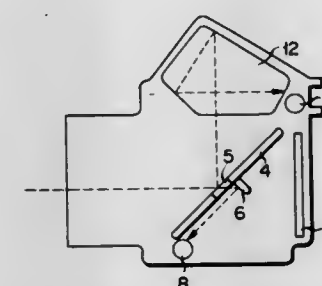
Int. Cl.³ G03B 7/08

U.S. Cl. 354-412

5 Claims

1. An automatic exposure control camera comprising: light receiving means having first and second photoelectric converting elements which are both in a light receiving

state before the shutter release but only of which is in the light receiving state during the shutter release; first operating means coupled with said first and second photoelectric converting elements for producing a difference signal output which corresponds to the difference between output signals of said first and second photoelectric converting elements before the shutter release; second operating means for producing a sum signal of an output signal from said photoelectric converting element



rendered in the light receiving state during the shutter release and said output signal from said first operating means; and

means coupled to said second operating means for controlling an exposure of a camera in accordance with one of an output signal from said second operating means and an output signal from said photoelectric converting element rendered in the light receiving state during the shutter release.

4,432,624

DELAY TIMER FOR A CAMERA

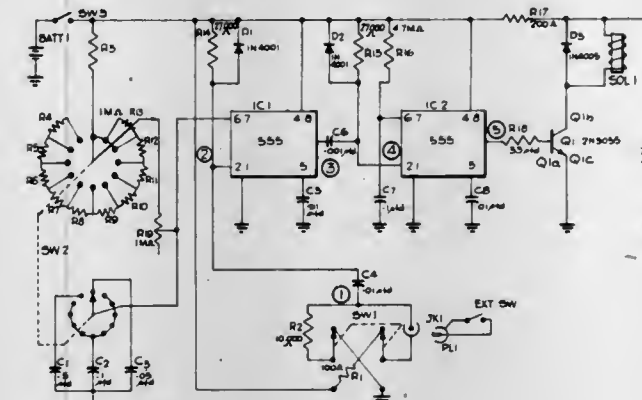
Joan M. Stevenson, Kingston, Canada, and Mark G. Pipkorn, Minneapolis, Minn., assignors to Queen's University at Kingston, Kingston, Canada

Filed Feb. 16, 1982, Ser. No. 349,019

Int. Cl.³ G03B 9/64, 17/40

U.S. Cl. 354-238.1

9 Claims



1. A delay timer circuit comprising: an externally controlled switch means; first integrated circuit timer means arranged to provide a first output signal at the end of a selected first delay period initiated by said externally controlled switch means; variable resistor-capacitor means for selecting duration of said first delay period; circuit means for connecting said first integrated circuit timer means, through said externally controlled switch means, to a DC power source; second integrated circuit timer means arranged to provide a second output signal for a predetermined time period initiated by said first output signal; transistor means activated by said second output signal; solenoid means arranged to mechanically activate an external load when a current is passed therethrough; and capacitor means arranged to discharge a current through

said solenoid means and said transistor means when said transistor means is activated, and to charge when said transistor means is deactivated.

4,432,625

FILM AND PAPER ASSEMBLY FOR FILM CARTRIDGES

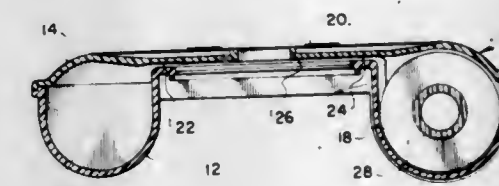
Douglass C. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,135

Int. Cl.³ G03B 17/26

U.S. Cl. 354-275

3 Claims



1. In a roll film cartridge comprising:

- (a) a housing including means defining a supply chamber and a take-up chamber spaced from one another by an intermediate cartridge section,
- (b) a take-up core rotatably supported in the take-up chamber of said housing, and
- (c) a film strip assembly attached at its leading end to the take-up core and comprising a film strip element and an opaque backing strip attached to one another adjacent the leading end of the film strip element, said film strip assembly extending through the intermediate cartridge section and into the supply chamber where it is initially coiled into a supply roll, the improvement comprising: means connecting the trailing end of the film strip element to the backing strip to prevent relative longitudinal movement therebetween.

4,432,626

SINGLE-LENS REFLEX TYPE VIEWFINDER AND METHOD OF ADJUSTING THE SAME

Yoshichi Ohtake, Kamakura, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

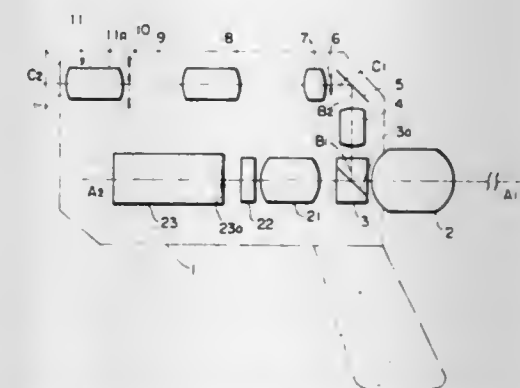
Filed Dec. 15, 1981, Ser. No. 330,863

Claims priority, application Japan, Dec. 16, 1980, 55-177468; Dec. 20, 1980, 55-180840; Dec. 20, 1980, 55-180841; Dec. 29, 1980, 55-185658; Dec. 29, 1980, 55-185659; Dec. 30, 1980, 55-188363

Int. Cl.³ G03B 19/12

U.S. Cl. 354-155

14 Claims



1. A single-lens reflex type viewfinder for a camera, comprising:

- a main lens for passage therethrough of light along a first optical axis;
- an image pickup device disposed on said first optical axis;
- a prism for guiding a portion of the light to pass along a

second optical axis extending substantially at a right angle to said first optical axis;
 a viewfinder master lens disposed on said second optical axis for passage therethrough of the light portion;
 a mirror for guiding the light portion to pass along a third optical axis extending substantially at a right angle to said second optical axis and parallel to said first optical axis; and
 an eyepiece disposed on said third optical axis for delivering a viewfinder image therethrough, said mirror being disposed on an image formation point of said viewfinder master lens so as to eliminate disagreement between the centers of a viewfinder image and an image focused on said image pickup device and also eliminate adjustment of the viewfinder.

4,432,627

APPARATUS FOR COMMUNICATING INFORMATION RELATING TO TAKING LENS

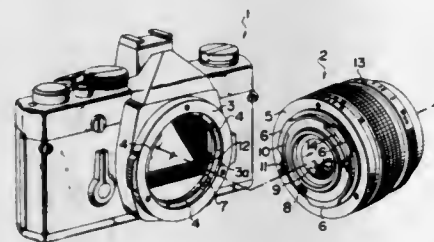
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Oct. 19, 1981, Ser. No. 312,825

Claims priority, application Japan, Nov. 18, 1980, 55-163001
 Int. Cl.³ G03B 17/00

U.S. Cl. 354—289.1

7 Claims



1. Apparatus for determining at least one characteristic of a taking lens which forms part of a lens barrel which is removably mounted on a camera body, said apparatus comprising:
 a magnetic element stationarily mounted on said lens barrel, at least one of the position of said magnetic element with respect to said lens barrel or the strength of said magnetic element being indicative of said at least one characteristic of said taking lens;
 a magneto-electric transducer element stationarily mounted on said camera body for generating an electric signal whose magnitude varies as a function of the magnetic force applied thereto; and
 means for positioning said lens barrel at a predetermined location with respect to said camera body when said lens barrel is mounted on said camera body such that the magnitude of said electric signal is indicative of said at least one characteristic of said taking lens.

4,432,628

FILM TRANSPORTATION DISPLAY DEVICE

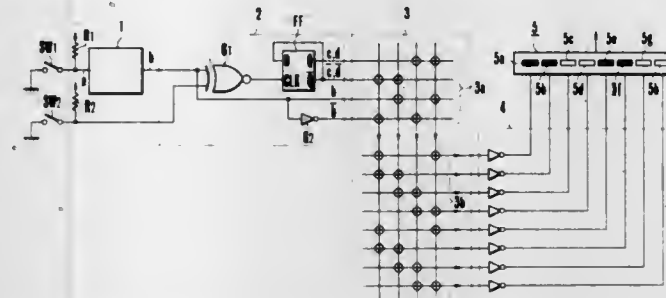
Nobuaki Sakurada, Masayoshi Kiuchi, and Masahiro Thunoda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,691

Claims priority, application Japan, Aug. 27, 1981, 56-134581
 Int. Cl.³ G03B 1/66, 17/18

U.S. Cl. 354—289.12

7 Claims



1. A film transportation display device including:
 (a) pulse forming means for producing a pulse signal when a film is being transported;
 (b) a 1st circuit means for producing a plurality of pulse signals in a prescribed relationship based on the pulse signal from said pulse forming means;
 (c) display means for displaying film transporting conditions, said means having a plurality of display elements; and
 (d) a 2nd circuit means for actuating the plurality of display elements in said display means to present a display pattern as if it were flowing in one direction based on the plurality of pulse signals from said 1st circuit means.

4,432,629

DRYER APPARATUS FOR FILM DISC PROCESSOR

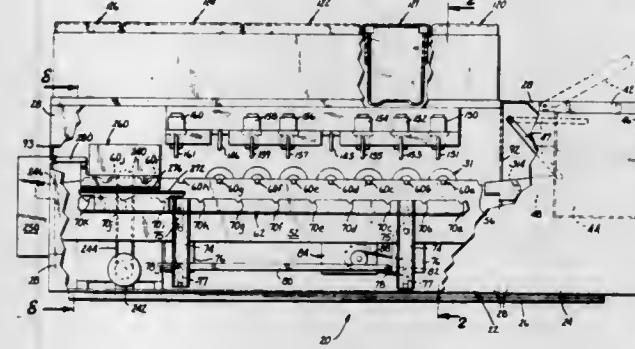
Jerry A. Caflisch, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Oct. 5, 1982, Ser. No. 432,819

Int. Cl.³ G03D 5/04, 15/02

U.S. Cl. 354—299

29 Claims



1. A processor for processing undeveloped photographic film discs mounted on a spindle assembly, the processor comprising:
 conveyor means for conveying the spindle assembly intermittently along a generally horizontal conveyor path to each of a plurality of processing stations and first and second drying stations, the conveyor means conveying the spindle assembly so that the spindle assembly has an axial direction which is generally horizontal and perpendicular to the conveyor path;
 fluid processing means at selected processing stations for contacting the film discs mounted on the spindle assembly with processing fluids;
 spindle drive means for rotating the spindle assembly when the spindle assembly is positioned at the processing stations and the second drying station to cause the film discs mounted on the spindle assembly to be rotated at a first rate of rotation;

spindle spin means at the first drying station for rotating the spindle assembly and film discs mounted thereon at a second higher rate of rotation to dry the film discs by centrifugal force;
 blower means for blowing tempered air through the drying stations to facilitate film disc drying;
 dryer hood means for enclosing the drying stations when the dryer hood means is in a first lowered operational position to prevent fluid from being cast from the spinning film discs into the rest of the processor and to direct the tempered air from the blower means through the drying stations; and
 hood movement means for moving the dryer hood means intermittently between its first lowered operational position and a second raised position out of the conveyor path, the hood movement means being synchronized with the conveyor means so that the dryer hood means is moved to its second raised position when the spindle assembly is moved from one station to a next station along the conveyor path by the conveyor means and the dryer hood means is moved to its first lowered operational position when the spindle assembly is positioned at the next station by the conveyor means.

4,432,630

LIGHT SENSITIVE VALIDATING IDENTIFICATION BADGE SYSTEM

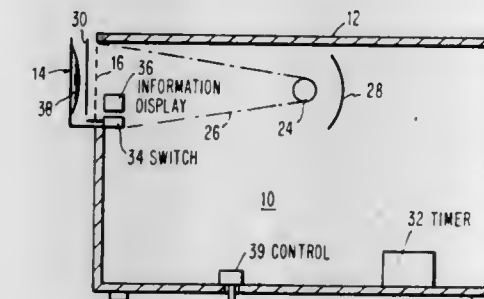
David J. Haas, 9 Marget La., Suffern, N.Y. 10901

Filed Oct. 21, 1980, Ser. No. 199,672

Int. Cl.³ G03B 27/52

U.S. Cl. 355—1

28 Claims



1. A temporary security badge fabrication system comprising:
 a badge having at least one surface coated with an ambient light sensitive coating which when exposed to ambient light conditions for a specified predetermined period of time changes to a specified color;
 an apparatus for printing information on the badge comprising:
 a source of radiation;
 a printing mask facing the radiation source comprising an opaque portion and a radiation transmissive portion, the radiation transmissive portion containing an information portion; and
 a badge holding means disposed to locate the mask between the radiation source and the badge holding means; and
 a means for activating the radiation source for a period of time sufficient to print the information on the badge in the specified color; and
 attachment means mounted to the badge for attaching the badge to a wearer and permitting exposure of the badge to ambient light;
 whereby when the badge is attached to the wearer and exposed to ambient light for the specified predetermined period of time the badge changes to the specified color and the information is not discernible.

4,432,631

PHOTOCONDUCTOR CHARGING TECHNIQUE

James L. Bacon, Boulder, and Gerald L. Smith, Broomfield, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

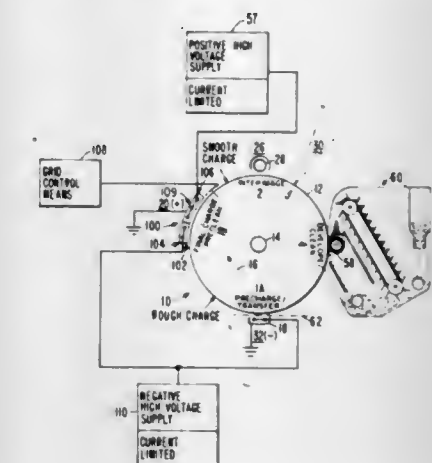
Continuation of Ser. No. 750,800, Dec. 15, 1976, abandoned.

This application Dec. 18, 1978, Ser. No. 970,587

Int. Cl.³ G03G 15/052

U.S. Cl. 355—3 CH

26 Claims



1. In a two cycle process, electrophotographic apparatus having a photoconductor with the customary electrophotographic facilities for charging, imaging, developing, transferring and cleaning, the improvement comprising:
 a first generator means with a first polarity being positioned in proximity with the photoconductor defining a combined precharge/transfer station;
 second generator means with an opposite polarity being positioned in proximity with the photoconductor and downstream from the first generator means for defining a combined final charge/preclean station;
 switching means operably associated with said second generator means for controlling the second generator means so as to generate different voltage levels to precharge or final charge the photoconductor.

4,432,632

APPARATUS FOR HOLDING A RECORDING MEMBER IN THE FORM OF AN ENDLESS BELT IN A RECORDING SYSTEM USING THE SAME

Takashi Yokota, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jan. 11, 1982, Ser. No. 338,606

Claims priority, application Japan, Jan. 13, 1981, 56-3238[U]; Jan. 13, 1981, 56-3239[U]; Jan. 13, 1981, 56-3240[U]

Int. Cl.³ G03G 15/06

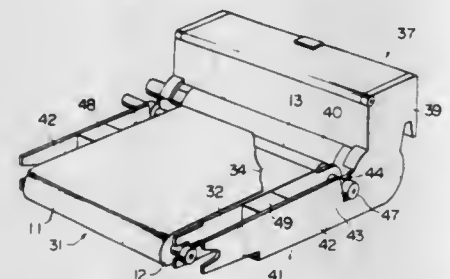
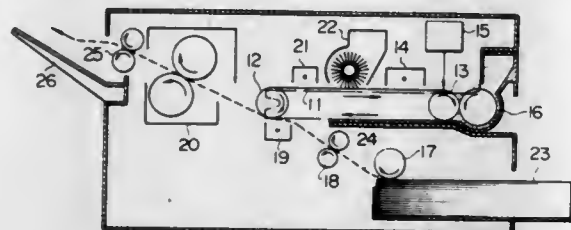
U.S. Cl. 355—3 DD

14 Claims

9. An integrated assembly of a recording unit including a recording member in the form of an endless belt trained around a plurality of rollers for forming a latent image and a developing unit including a rotatable sleeve for bringing developer to a latent image formed on said recording member to render the

latent image visible, said developing unit having integral means including a receiving portion extending outwardly from said

supply shaft and the said moving means on both of the units.



sleeve for receiving said recording unit and holding the recording member with a predetermined spacing from said sleeve.

4,432,633 ELECTROPHOTOGRAPHIC REPRODUCING APPARATUS

Isao Nosaka; Hirofumi Sakaguchi; Takao Shiozawa, and Yozo Fujii, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

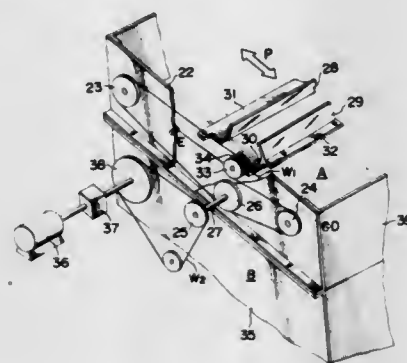
Filed Jan. 28, 1982, Ser. No. 343,706

Claims priority, application Japan, Feb. 13, 1981, 56-19023

Int. Cl.³ G03G 15/28

U.S. Cl. 355—8

11 Claims



1. In electrophotographic reproducing apparatus:
 - a pre-assembled optical scanning unit having first components including a movable optical device for reflecting a light beam from a document and means to move said device, said first components having predetermined positions relative to a first plane in said scanning unit;
 - a pre-assembled reproducing apparatus body unit having second components including a movable electrostatic latent image receptor for receiving said light beam and means to move said receptor, said second components having predetermined positions relative to a second plane in said body unit;
 - means to mechanically connect both pre-assembled units together so that the first and second planes assume a predetermined positional relationship whereby said light beam forms an undistorted and clear image on said receptor;
 - and mechanical power transmission means comprising a drivable power supply shaft rotatably mounted on said body unit and drive means connected between said power

4,432,634 ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kenji Tabuchi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

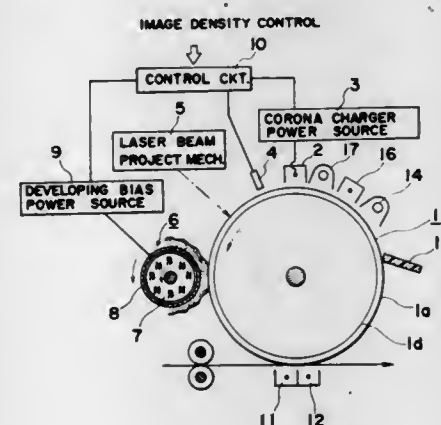
Filed Oct. 2, 1981, Ser. No. 308,173

Claims priority, application Japan, Oct. 20, 1980, 55-147122; Aug. 22, 1981, 56-131922

Int. Cl.³ G03G 15/06, 15/02

U.S. Cl. 355—14 D

4 Claims



1. An electrophotographic copying apparatus which comprises:
 - a photosensitive member having a photosensitive surface;
 - means for uniformly charging the photosensitive surface of said photosensitive member to a charged potential;
 - an adjustable electric power supplying means connected to said charging means for supplying electric power to said charging means;
 - means for projecting light onto the photosensitive surface to form an electrostatic latent image on said photosensitive surface;
 - means having a developing electrode for reversal development of said electrostatic latent image;
 - an adjustable developing bias potential applying means connected to said developing electrode for applying a developing bias potential to said developing electrode which is different from said charge potential;
 - image intensity varying means connected to said electric power supplying means and to said developing bias potential applying means for adjusting at least one of the electric power supplying means and said developing bias potential applying means for maintaining an approximately constant absolute value of voltage difference between said charge potential and said developing bias potential in response to an adjustment of at least one of the electric power supplying means and said developing bias potential applying means, whereby the shape of the density variation characteristic curve of the line portions of the image and the shape of the density variation characteristic curve of the solid portions of the image are kept substantially the same.

4,432,635 TEMPERATURE-CONTROLLED SUPPORT FOR SEMICONDUCTOR WAFER

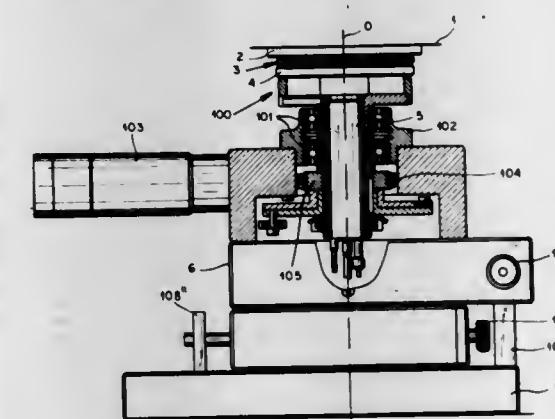
Herbert E. Mayer, Eschen, Liechtenstein, assignor to Censor Patent-und Versuchs-Anstalt, Vaduz, Liechtenstein
Continuation-in-part of Ser. No. 188,539, Sep. 18, 1980, and a continuation-in-part of Ser. No. 220,451, Dec. 29, 1980. This application Mar. 31, 1982, Ser. No. 363,860

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951454

Int. Cl.³ G03B 27/52

U.S. Cl. 355—30

7 Claims



1. In an apparatus for exposing semiconductor wafers to exposure through a photomask, comprising a support having a stage with an upper surface onto which a wafer to be exposed is held by suction, said support being displaceable for imparting to said wafer a predetermined alignment position, the improvement wherein said support comprises temperature-sensing means adjacent said surface and Peltier-effect temperature-control means below said stage responsive to said temperature-sensing means for maintaining said wafer at a selected temperature level.

4,432,636 ILLUMINATION APPARATUS

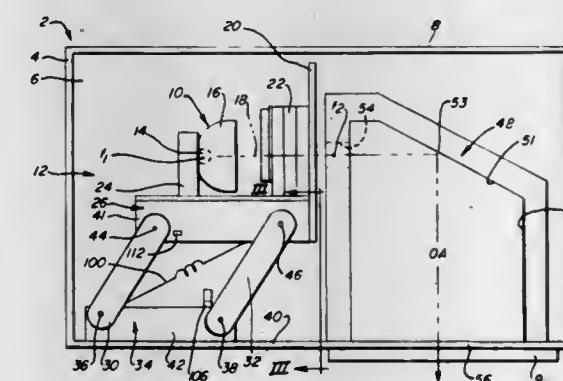
Giuseppe Tarsia, Valley Stream, N.Y., assignor to Berkey Photo, Inc., White Plains, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,773

Int. Cl.³ G03B 27/72, 27/76

U.S. Cl. 355—35

14 Claims



1. An illumination apparatus for use in an image projection system comprising:
 - a light source means;
 - a light sealed housing having a first portion for containing said light source means, a second portion for containing a light mixing means, and a third portion for containing a transparency;
 - a light mixing chamber selected for insertion into said housing second portion from a plurality of differently sized and interchangeable mixing chambers, said light mixing cham-

ber having a light inlet at one side thereof and a light exit at another side thereof; and
light source positioning means comprising a parallelogram movement for maintaining said light source means at a selected location in optical alignment with said light inlet of a selected light mixing chamber, whereby increased light flux through said transparency is obtained.

4,432,637 APPARATUS FOR THE PREPARATION OF SECTIONS OF PHOTOGRAPHIC FILM FOR PASSAGE THROUGH A CONTINUOUS PRINTER, PARTICULARLY FOR PROCESSING OF PHOTOGRAPHIC PRINT REORDERS

Michael Baschung, Zurich, Switzerland, assignor to Greta Aktiengesellschaft, Regensdorf, Switzerland

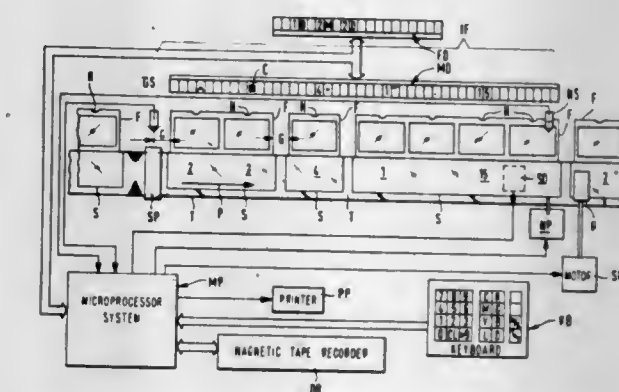
Filed Feb. 22, 1982, Ser. No. 350,569

Claims priority, application Switzerland, Feb. 20, 1981, 1146/81

Int. Cl.³ G06K 7/10, 7/14

U.S. Cl. 355—35

8 Claims



1. Apparatus for the preparation of sections of film for passage through a continuous printer, in particular for the processing of photographic print reorders, including a transport installation for the conveying of film sections mounted on a carrier strip through an inspection section and a device for generating and entering printing data for the individual image frames of the sections of film on a data carrier in coordination with the individual image frames, said device being equipped with a keyboard for entering the printing data and a display for displaying the data entered, wherein at least one part of the display extends essentially along the inspection section, and including electrical means for effecting the display of at least a part of the entered printing data in direct positional coordination with the image frames of the film sections on said part of the display and for causing the printing data appearing on said part of the display to move essentially in synchronization with the transport motion of the film sections, thereby maintaining direct positional coordination of said data with associated image frames of said film sections.

4,432,638 ALIGNMENT STRUCTURE

Giuseppe Tarsia, Valley Stream, N.Y., assignor to Berkey Photo, Inc., White Plains, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,771

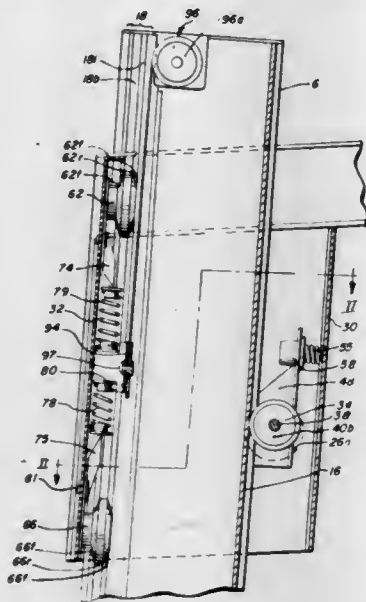
Int. Cl.³ G03B 27/52

U.S. Cl. 355—63

32 Claims

1. An alignment structure comprising:
 - a column having first track means along one side extending generally the full length thereof and second track means along an opposite side of said column generally coextensive with said first track means;
 - carriage means associated with said column for movement therealong;
 - first roller means rotatably mounted on an axle transverse to the longitudinal axis of said column, said first roller means

captively journaled in said carriage for movement toward or away from said column;
 first bias means urging said first roller means into contact with said first track means;
 second roller means including rollers attached to said carriage and in rotational engagement with said second track means, each of said rollers rotatably mounted on an axis transverse to the longitudinal axes of said column and said first roller



means, said second roller means including two spaced-apart rollers fixedly aligned with said longitudinal column axis and a biased roller means laterally spaced and movable with respect to said fixed rollers; and
 second bias means urging said biased roller means into lateral engagement with said second track means to maintain said fixed rollers in alignment therewith, whereby the first and second roller means cooperate to maintain said carriage in three-dimensional alignment with said column.

4,432,639

RECIPROCATIVE ORIGINAL CARRIER LOCKING MECHANISM

Masao Saitou, Kamakura; Yasuhiro Iwata, Yokohama, and Kohachi Uchida, Sagami, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

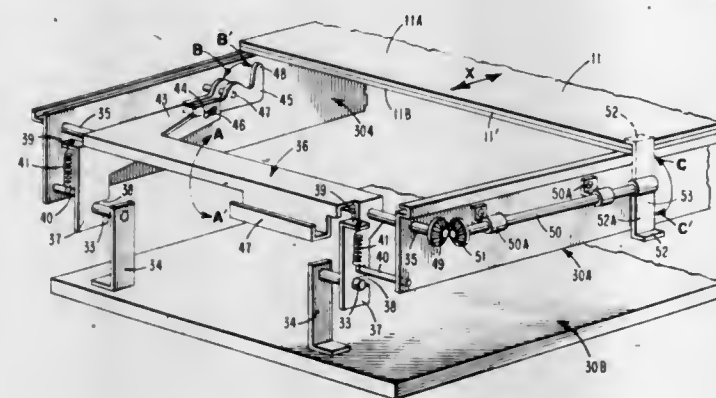
Filed Sep. 28, 1981, Ser. No. 306,496

Claims priority, application Japan, Oct. 31, 1980, 55-154399

Int. Cl.³ G03B 27/62

U.S. Cl. 355—75

4 Claims



1. An image forming device having an upper and lower unit wherein the upper unit is hingedly attached to the lower unit to permit access to the interior of the machine, the upper unit comprises a reciprocative type carrier which moves along a path of travel which includes a predetermined position, said image forming device comprising:
 means for pivotally attaching said upper unit to said lower unit;

a latching means for latching said upper unit to said lower unit;
 a locking means which projects in the path of said carrier to prevent the movement of said carrier from said predetermined position when said latching means is unlatched; and
 actuator means having a first portion and a second portion, said first portion being connected to said latching means to operate said latching means, said locking means being connected to said second portion to prevent said actuator means from operating said latching means except when said carrier is in said predetermined position.

4,432,640

ADJUSTMENT AND TESTING DEVICE FOR A LASER RANGING SYSTEM

Ludger Grage, Eichenau; Werner Rysek, Oberschleissheim, and Franz Michl, Geretsried, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

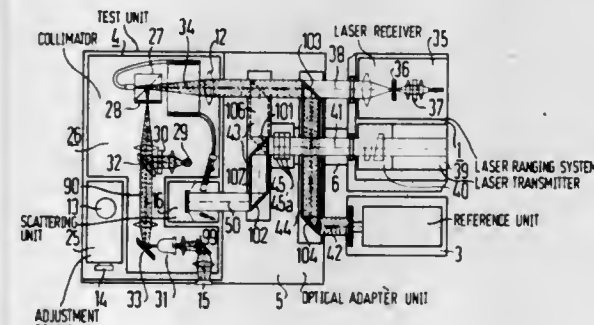
Filed Sep. 11, 1981, Ser. No. 301,401

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034922

Int. Cl.³ G01C 3/08; G01B 11/26

U.S. Cl. 356—5

30 Claims



1. An adjustment and test device for a laser ranging system particularly adapted for obtaining the parallel alignment of the optical axes of the transmitter and receiver of the system with respect to one another and with respect to an optical reference axis, said device comprising a test unit having a housing, a collimator and means for mounting the collimator in said housing for adjustment of the optical axis of the collimator in said housing, said collimator comprising a collimator lens, a beam splitter cube with a reticule, means for illuminating the reticule and means for observing the illuminating reticule; an optical adapter unit having an independent housing and having means for optically coupling the test unit to the laser ranging system, said optical adapter unit comprising at least one movable optical coupling element for interconnecting an optical axis of the laser ranging system to the collimator axis, each movable optical coupling element having a shape of a parallelepiped with a pair of opposing surfaces being provided with parallel extending mirrors; and a mechanical adapter unit having means for mechanically coupling the test unit onto the laser ranging system to enable carrying out the adjustments and tests thereon.

4,432,641

VISUAL DEFECT INSPECTION OF MASKS

Fausto Caprari, East Brunswick, and Robert A. Geshner, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 16, 1981, Ser. No. 312,277

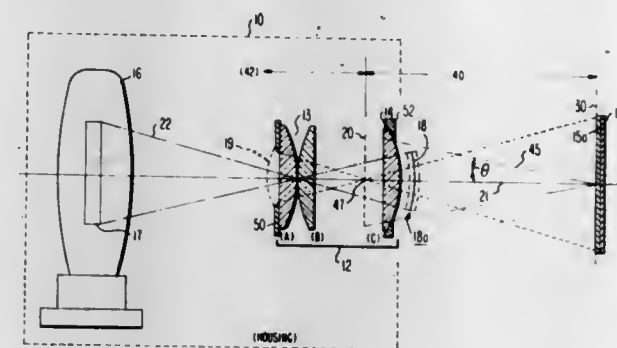
Int. Cl.³ G01N 21/88; G02B 21/08

U.S. Cl. 356—237

5 Claims

1. A method for visually inspecting specimens of photoresist coated masks having a sensitivity to radiation in the blue and ultra-violet wave length spectrum, comprising:
 (a) generating an elongated light source of sodium light said

source of light being substantially free of radiation in the blue and ultra-violet wave length spectrum;
 (b) focusing said source in a Kohler-type illumination system within the exit pupil thereof;
 (b1) said Kohler-type illumination system having at least three lens elements, comprising two contiguous input lens elements and spaced therefrom one output lens element, wherein an aerial surface of uniform illuminance is located between said three lens elements and the source, an entrance pupil plane is located at the input side of the output lens



element, and an image surface plane is located at the output side of said output lens element;
 (c) imaging said light source as an aerial image within the exit pupil of said lens system at an aerial surface that is a conjugate of said light source; and
 (d) projecting a substantially uniform illuminance field on a specimen positioned at a plane that is conjugate to said aerial surface of uniform illuminance with sufficiently high contrast levels and illuminance levels to detect with the human eye defects as small as 2 μ m by scattering light from said defects.

4,432,642

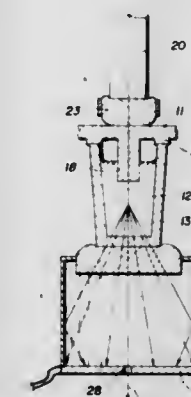
NEPHELOMETER

Walter E. Tolles, Lee Hwy., Fairfield, Va. 24435

Filed Oct. 6, 1981, Ser. No. 309,034

Int. Cl.³ G01N 21/03

U.S. Cl. 356—246



1. In a nephelometer, a fluid specimen holder having at least one micro-volume specimen well including a bottom wall and being open at its top, a cover for the specimen holder overlying the well and having an attached depending light pipe element projecting into the well and being immersed in a fluid specimen contained by the well, precision spacer means on the bottom of the cover abutting a top surface of the specimen holder and establishing and maintaining a precision length light path through the nephelometer between the bottom of the light pipe element and said bottom wall, an additional light pipe means spaced from said cover and said bottom wall in coaxial relationship with said well and light pipe element, and conformable optical coupler means disposed between said additional light pipe means and said cover and bottom wall.

4,432,643

APPARATUS FOR ATOMIZING A SAMPLE INCLUDING A SLIDABLE PRESSURE MAINTAINING ARRANGEMENT

Hideaki Koizumi; Yosio Taiti; Kazuo Moriya; Katsuhito Harada, and Kazuo Sato, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

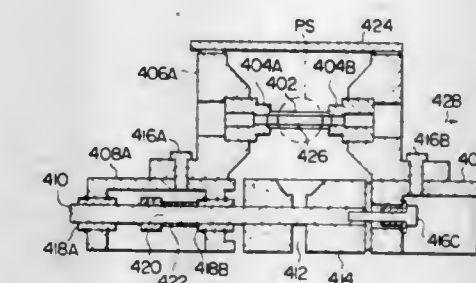
Filed Mar. 18, 1981, Ser. No. 245,162

Claims priority, application Japan, Mar. 19, 1980, 55-35557

Int. Cl.³ G01N 21/31

U.S. Cl. 356—312

8 Claims



1. An apparatus for atomizing a sample, which comprises a cuvette of heating material into which a sample is introduced, a pair of electrodes for supplying an electric current to the cuvette, thereby heating the cuvette and the sample, and atomizing the sample, supports for supporting the pair of electrodes, a means for supplying light to the atomized sample, and a means for slidably maintaining at least one of the pairs of electrodes against the cuvette with a predetermined range of contact pressure during operation of the apparatus, the means for slidably maintaining at least one of the pair of electrodes against the cuvette in a predetermined range of contact pressure comprising two slide shafts arranged in parallel to each other, each slide shaft having at least one slide bearing, at least one spring stopper being fixed on the slide shaft for pressing at least one of the electrodes against the cuvette, and a spring provided between the slide bearing and the spring stopper.

4,432,644

SPECTROMETER

Donald R. Demers, Nashua, N.H., and Charly D. Allemand, Newton, Mass., assignors to Baird Corporation, Bedford, Mass.

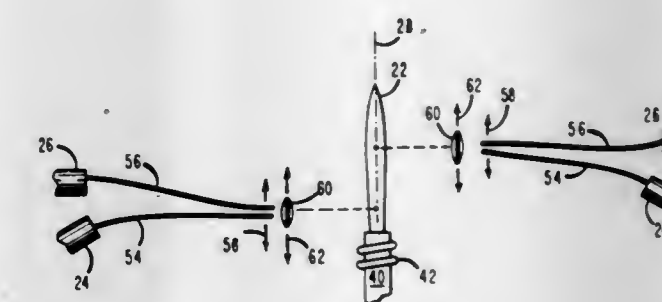
Filed Apr. 16, 1981, Ser. No. 254,929

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ G01N 21/73

U.S. Cl. 356—316

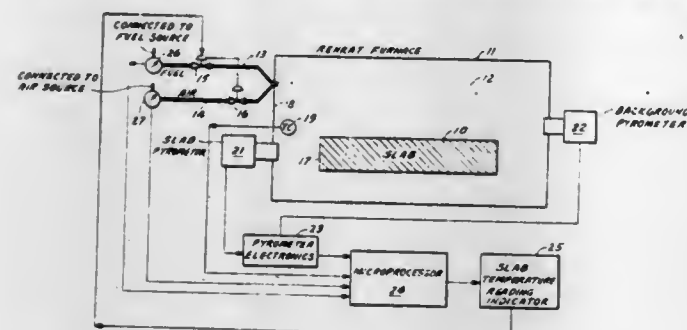
11 Claims



1. A fluorescence spectrometer for multielement analysis of samples comprising:

- (a) a source for atomizing a dispersed sample along an axis, said source being an inductively coupled plasma;
- (b) a plurality of pairs of energizers and detectors mounted

measuring the distance between the slab and the pyrometer used for measurement of radiation from the slab, choosing a temperature correction function from a list of such predetermined functions in accordance with a combination of the aforementioned measurements of wall temperature, air to fuel ratio, and distance between slab and the pyrometer used for measurement of slab radiation,



obtaining a corrected measurement of the temperature of the slab by correcting said measurement of temperature of the slab in accordance with the chosen temperature correction function which function is a function of temperature differential of the temperature of the furnace wall minus the temperature of the slab surface, distance between measuring pyrometer and slab surface, combustion air to fuel ratio, and emissivity setting of the pyrometer.

4,432,658

TEMPERATURE SENSOR

Geoffrey E. Harman, Bristol, England, and Malcolm J. F. James, Ontario, Canada, assignors to Rolls-Royce Limited, England

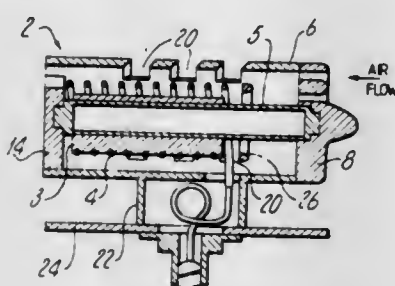
Filed Dec. 7, 1981, Ser. No. 328,254

Claims priority, application United Kingdom, Dec. 6, 1980, 8039190

Int. Cl.³ G01K 1/08

U.S. Cl. 374-138

5 Claims



1. A temperature sensor for use in an air flow, comprising: a temperature sensitive element; a hollow cylindrical casing enclosing said temperature sensitive element, said cylindrical casing having a longitudinal axis disposed generally in line with a direction of said air flow and having forward and rearward open ends; a front plate facing for partially closing said forward end of said cylindrical casing; first and second aperture means; said first aperture means being formed in said hollow cylindrical casing and comprising a plurality of rows of slot-like apertures arranged transversely to said longitudinal axis of said cylindrical casing, each of said slot-like apertures in said cylindrical casing having a relatively small width and a relatively large transverse length and being outwardly forwardly inclined such that said air flow passing over said cylindrical casing is directed into an interior of said cylindrical casing to flow over said temperature sensitive element; said second aperture means being formed in said front plate facing and comprising a plurality of arcuate slot-like apertures, each of said arcuate slot-like apertures in said front plate facing having a large ratio of perimeter length to

cross-sectional area such that air flow can pass easily therethrough while enabling rapid blockage thereof by ice when icing conditions are prevalent in the air flow; wherein said hollow cylindrical casing further comprises a forwardly extending unapertured portion adjacent to said front plate facing such that any ice buildup occurs between said first aperture means and said front plate facing in the interior of said cylindrical casing.

4,432,659

FUEL PUMP ARMATURE SHAFT BEARING

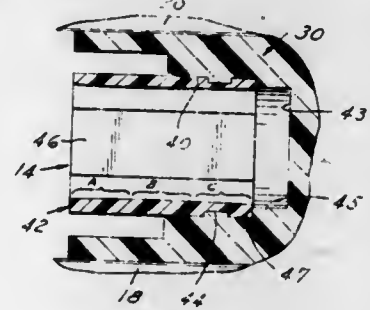
Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Mar. 12, 1982, Ser. No. 357,690

Int. Cl.³ F16C 33/02, 45/02, 33/20

U.S. Cl. 384-300

1 Claim



1. In a device having a rotating shaft journaled at one end in a molded plastic portion of a housing, that improvement which comprises a hollow cylindrical bearing insert molded into a recess in said housing and formed of a plastic such as polytetrafluorethylene, said insert having a close running fit with said rotating shaft and shaped internally and externally with a polygonal configuration, the sides of the internal polygon being in running contact with said shaft and the sides of the external polygon being in mechanical engagement with said housing, said insert having a substantial portion of its outer end extending axially out of said recess to the extent of about one-half the axial length, and said insert having a larger diameter at its outer end beyond said recess and at the inner end within said recess in comparison to a smaller diameter at a central section in the area of the mouth of said recess.

4,432,660

GLASS- OR CERAMIC-TO-METAL SEALS

Gordon S. Norvell, Thousand Oaks, and Donald W. King, Pomona, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 105,759, Dec. 20, 1979, Pat. No. 4,273,282.

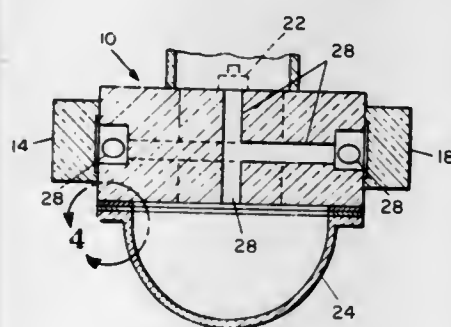
This application Apr. 20, 1981, Ser. No. 255,591

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.³ F16C 9/00; F16D 1/00; F16G 11/00

U.S. Cl. 403-29

32 Claims



1. A seal between a metal surface and a glass surface comprising in juxtaposition, said metal, gold, an indium-gold alloy, indium, and said glass.

4,432,661

GEODESIC DOME CONNECTOR

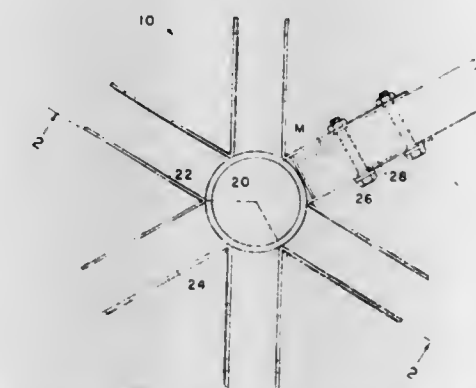
Martha E. Phillips, 3906 Ridgemoor Rd., Baltimore, Md. 21206, and Leo G. Woerner, 1301 Woodshore Rd., Baltimore, Md. 21204

Filed Jul. 17, 1981, Ser. No. 284,197

Int. Cl.³ F16B 7/00

U.S. Cl. 403-172

1 Claim U.S. Cl. 403-275



1. In a connector for geodesic domes, having a plurality of pairs of arms radiating from a central tubular portion, each pair of arms in symmetrically parallel-spaced relation about a respective radius of the central portion, and at an axial angle thereto, and having holes in the arms for bolted connection of a respective elongate member between each pair of arms; the connector having a first or outer face and a second or inner face, the improvement comprising: the central tubular portion being a cylindrical tubular member, respective adjacent arms of different pairs being affixed at a respective junction with each other at the perimeter of the central portion, the central tubular portion having a conical convex taper on the axial end thereof at said outer face; and the central tubular portion having a conical concave taper on the axial end thereof at said inner face.

4,432,662

COMPOSITE SUCKER ROD AND METHOD OF MANUFACTURING SAME

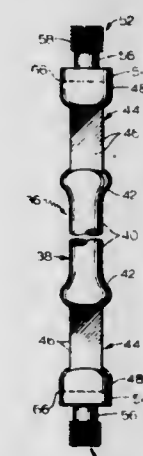
Ake E. Ronkvist, 4484 W. Arm Rd., Spring Park, Minn. 55384

Filed Aug. 13, 1981, Ser. No. 292,636

Int. Cl.³ F16B 11/00

U.S. Cl. 403-271

10 Claims



1. A composite sucker rod comprising a first member initially of one piece construction, said first member including a rod portion of one diameter, a bead portion, a wrench portion and a cylindrical portion of larger diameter than said rod portion, and a second member including a cylindrical portion and a threaded portion, said cylindrical portions having substantially the same diameter and being inertia welded to each other.

4,432,663

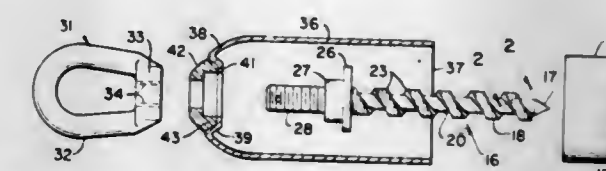
CABLE PULLING EYE

John L. Lasak, LaGrange Park, and Costenzio A. Tuzzolino, Elmhurst, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,747

Int. Cl.³ F16G 11/05

2 Claims



1. A cable pulling eye assembly, which comprises: a rod having a square auger thread formed along a forward section thereof and a screw thread formed along a rearward section thereof; a cylindrical shell means having a closed nose end with an opening therethrough for receiving and supporting said rod in coaxial relation with said shell; an eye member having a threaded bore for threadably receiving the threaded section of the rod; and a jam member on said rod positioned within said shell means and jammed into engagement with the inner wall of the closed end of the shell by the eye member being screwed on the threaded rearward section of the rod into engagement with the outer portion of the closed end of the shell means.

4,432,664

BOAT HOIST

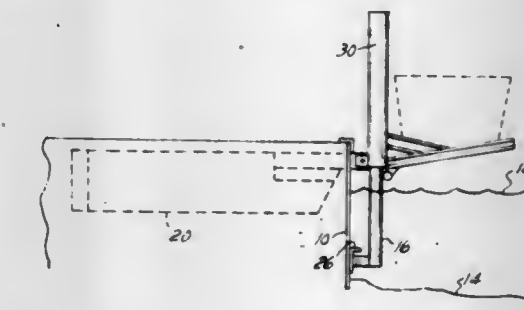
Joseph W. Baldyga, Mt. Clemens, Mich., assignor to Duraline Products Corporation, Mich.

Filed Mar. 3, 1981, Ser. No. 239,174

Int. Cl.³ B63C 3/06

U.S. Cl. 405-3

16 Claims



1. A boat hoisting construction installed at the water's edge comprising: post means positioned solely at the landward side of a boat both when water-borne in position to be hoisted and when hoisted vertically upwardly to a storage position, said post means consisting of at least one vertically elongated stationary post capable of sustaining the weight and torque of a boat to be hoisted; hoist means comprising a tubular hoist for each of said posts open at its bottom and mounted over its corresponding post to receive said post and movable vertically thereon, cradle means comprising boat cradle structure fixed to said hoist means to extend laterally therefrom in cantilever fashion to be movable therewith from a position below the bottom of a water-borne boat to be hoisted to receive a boat to an elevated position in which a boat supported thereon is raised above water level, and power lift means acting between said post means and hoist means to raise and lower said cradle means.

4,432,665

TUNNEL DRIVING APPARATUS

Dieter Stuckmann, Selm, and Herbert Heitkamp, Werne, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Lunen, Fed. Rep. of Germany

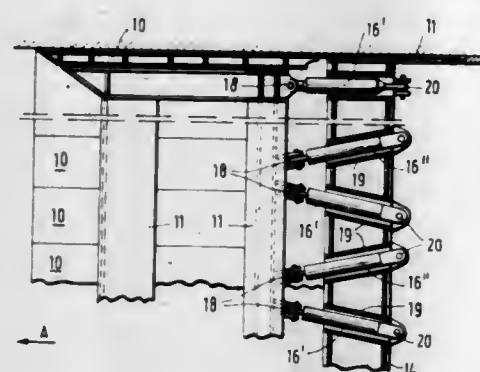
Filed Aug. 28, 1981, Ser. No. 297,474

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033480

Int. Cl.³ E21D 9/00

U.S. Cl. 405—143

8 Claims



1. In tunnel driving apparatus which includes an advanceable front drive shield composed of a series of elongate drive members mounted for movement on a common support frame and rams for effecting relative movement between the drive members and the support frame whereby to advance the drive shield and a rear abutment in the form of a follow-up ring structure; the improvement comprising a plurality of further hydraulic rams mounted between the rear abutment and the support frame of the drive shield, the further rams being arranged in first and second groups, the rams of the first group being inclined in relation to the longitudinal central axis of the apparatus in one direction and the rams of the second group being inclined in relation to the longitudinal central axis of the apparatus in a direction opposite to said one direction, the rams of either group being operable collectively in unison effectively to exert a torque on the drive shield in either a clockwise or anticlockwise direction.

4,432,666

PROCESS FOR THE STORAGE AND DUMPING OF WASTE MATERIALS

Rudolf Frey, Burgdorf, and Peer-Ingo Litschke, Burgwedel, both of Fed. Rep. of Germany, assignors to VFI, Verwertungsgesellschaft für Industrierückstände mbH, Dollbergen, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,565

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950462

Int. Cl.³ B09B 3/00

U.S. Cl. 405—129

22 Claims

1. A method of depositing and ultimately disposing of special waste containing constituents which under environmental conditions can be eluted and emitted, comprising the steps of (a) mixing the special waste with setting water and with a binder selected from the group consisting of calcium hydroxide, gypsum hardening on addition of water, waste gypsum, cement and cement-like products, (b) permitting the mixture obtained by step (a) to solidify and thereafter granulating said solidified mixture to obtain an aggregate, (c) repeating step (a) using said aggregate as the binder to form a new mixture, and (d) depositing the mixture obtained by step (c) in a pourable state into holding means and causing it to finish-harden therein.

4,432,667

INSULATION OF TUNNEL LININGS

Michael A. Richardson, Hindhead, England, assignor to Marcon International Limited, Saint Peter Port, Channel Islands

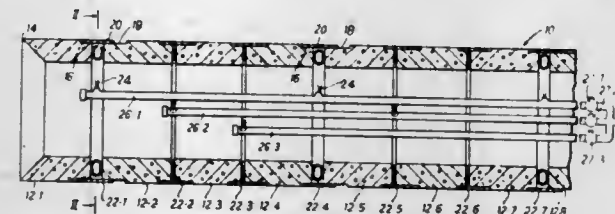
Filed Jun. 10, 1980, Ser. No. 158,302

Claims priority, application United Kingdom, Jun. 16, 1979, 7921033; Aug. 22, 1979, 7929152; Sep. 1, 1979, 7930401

Int. Cl.³ E21D 9/00, 9/06, 11/00

U.S. Cl. 405—143

15 Claims



1. A method of non-disruptively installing a tunnel or shaft lining through a medium such as soil by longitudinally advancing an assembly of tunnel lining sections arranged in end to end relationship, which method comprises inflating with driving gas at relatively low pressure an inflatable torus formed of flexible material and capable of being inflated into the shape of a toroid located between a forward and a rearward section, the torus in the deflated state being in a generally flat condition, whilst restraining the outward expansion of the torus and preventing backward movement of the rearward section to cause the forward section to advance, the backward movement being prevented by the combined friction of the rearward section and the next rearward section with the surrounding medium which provides a reaction substantially equal to the rearward thrust exerted by the torus as it is inflated, and the sections in the assembly being grouped into equally-numbered groups of at least three, with the leading section of one group being axially spaced from the rearmost section of the preceding group and each member of each group being in thrust-transmitting engagement, and corresponding sections in each group being simultaneously advanced in sequence such that the section or sections being advanced always have at least double their number of sections in thrust-transmitting engagement behind them to prevent backwards movement, whereby the assembly is advanced perichaetally, the leading section being constituted by a tunnel shield of a diameter equal to the nominal diameter of the sections, so that there is essentially no over-cut in the medium, whereby settlement of the medium above the tunnel or shaft lining is avoided or at least significantly mitigated.

4,432,668

FOOT JOINT FOR CONNECTING A MOVABLE SERVICE TOWER OF AN OFF-SHORE STATION TO A FOUNDATION

Werner Rank, Oberhausen, Fed. Rep. of Germany, assignor to M.A. N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 407,797

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132711

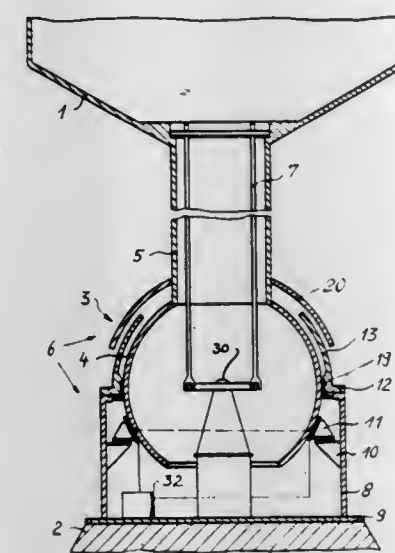
Int. Cl.³ E02B 17/00; E02D 27/04

U.S. Cl. 405—202

20 Claims

1. A foot joint for connecting a movable service tower of an offshore station to a structural part anchored to the sea bottom comprising: a tension member connected between the tower and the structural part; a spherical joint part connected to the lower end of the tower; a shell casing connected to the structural part and defining a space for receiving at least a portion of said spherical joint part; a plurality of bearings connected to said shell casing and slidably supporting said spherical joint part;

a cover ring connected to said shell casing and extending toward said spherical joint part; a collar having a spherical section shape, connected to said cover ring and extending around a portion of said spherical



joint part and defining a gap with said spherical joint part; and a stuffing seal box in said gap for sealing said gap and said shell casing space.

4,432,669

ICE ISLAND CONSTRUCTION

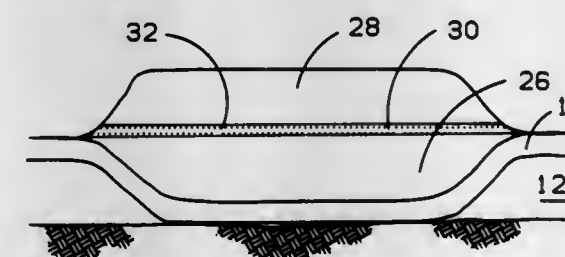
Gordon F. N. Cox, Lyme Center, N.H., and Kenneth G. Nolte, Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 11, 1981, Ser. No. 233,353

Int. Cl.³ E02B 17/00

U.S. Cl. 405—217

4 Claims



1. A method of constructing an artificial ice island in sub-freezing temperature in a marine body having a natural ice sheet of sea water thereon which comprises: constructing a lower level of fresh water ice by adding fresh water to a selected area of said ice sheet to form additional constructed ice until the bottom of the ice sheet in the selected area contacts bottom; providing an insulation material to the top of said lower level of constructed fresh water ice; providing an impervious layer on either side of the insulation material; fabricating an upper construction layer of ice by adding sea water on top of said insulation and impervious layer, said impervious layer preventing brine from said upper construction layer from deteriorating said fresh water ice.

4,432,670

COMBINATION CONNECTOR AND FLEX JOINT FOR UNDERWATER TENSION ELEMENTS

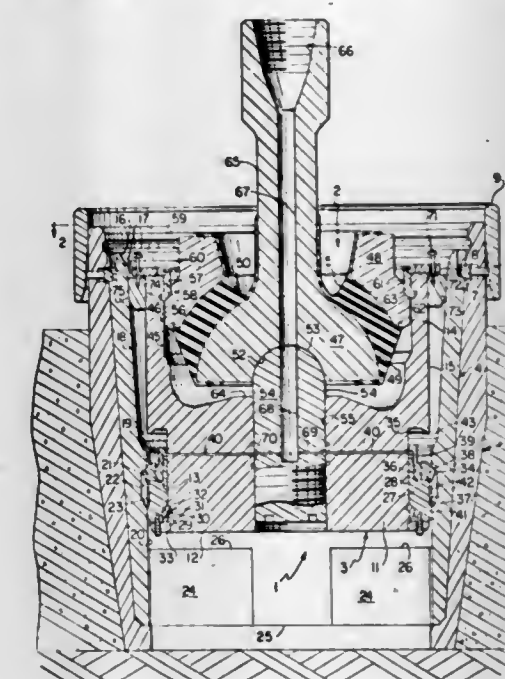
John E. Lawson, London, England, assignor to Armco Inc., Middletown, Ohio

Filed Oct. 1, 1980, Ser. No. 192,739

Int. Cl.³ E02D 5/74; E02B 17/00; F16L 27/04, 27/10

U.S. Cl. 405—224

17 Claims



1. In a device for connecting a string of pipe to an underwater anchoring base by manipulation of the string of pipe from an operational base at the surface of the body of water, the combination of

a generally tubular female connector member adapted to be secured in upright position to the anchoring base and having an internal transverse annular generally downwardly directed load-bearing shoulder, a first annular inner surface portion located above the shoulder, and a second annular inner surface portion located below the shoulder; a male connector member dimensioned for downward insertion into the female connector member, the male connector member comprising a body, and an annular portion rigidly connected to the body and projecting upwardly therefrom, the longitudinal axis of the annular portion being coincident with the longitudinal axis of the male connector member; expansible and contractible load-bearing shoulder means carried by the male connector member and constructed and arranged to coact with the load-bearing shoulder of the female connector member when the male connector member has been inserted downwardly to a predetermined position in the female connector member, the expansible and contractible load-bearing shoulder means being generally annular and coaxial with the upwardly projecting annular portion of the male connector member; flex joint means comprising a rigid ball member having a stem adapted to be connected to the string of pipe, and a ball portion, the ball member being disposed within the upwardly projecting annular portion of the male connector member with the ball portion spaced downwardly from the upper end of the annular upwardly projecting portion and the stem projecting upwardly through the annular portion, and a rigid socket member closely embraced by the upper end

portion of the upwardly projecting annular portion of the male connector member;

fastener means engaged between the socket member and the upwardly projecting annular portion of the male connector member to restrain the socket member against upward movement relative to the male connector member, the flex joint means being constructed and arranged to transfer tension loads between the string of pipe and the male connector member via the ball member, the socket member and the fastener means; and

generally annular rigid means carried by the male connector member and presenting an outwardly directed annular surface to be slidably embraced by at least one of the first and second inner surface portions of the female connector member when the male connector member has been inserted to said predetermined position in the female connector member.

4,432,671

SUCTION ANCHOR AND METHOD OF INSTALLING A SUCTION ANCHOR

Simon Westra, The Hague, and Johannes R. Hogervorst, Rijswijk, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

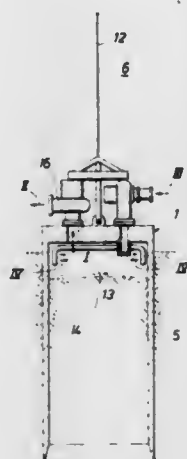
Filed Nov. 23, 1981, Ser. No. 323,792

Claims priority, application Netherlands, Apr. 2, 1981, 8101640

Int. Cl.³ E02D 7/24

U.S. Cl. 405—226

10 Claims



4. A suction anchor having a closed top, side wall means forming an open interior chamber, and a downwardly directed open end at the bottom of said anchor adapted to be installed in the bottom of a body of water with an earth core extending upwardly into said interior chamber, comprising first pumping means carried by said anchor for reducing the pressure in the interior chamber of the anchor, second pumping means having discharge means operatively connected to said anchor for introducing water into the upper part of the said interior and for eroding the top of the earth core and forming and removing a mixture of bottom particles and water from the said interior chamber, said anchor furthermore including fluid inlet means connected to the discharge means of said second pumping means adjacent the top of said anchor in communication between the interior chamber and the space outside the anchor for introducing water under pressure into the upper part of the said interior chamber, fluid discharge conduit means fixedly mounted to the interior of said anchor in fluid communication with said fluid inlet means thereof, said conduit means having a discharge end terminating near the top of said interior chamber for discharging water under pressure into the upper part of the interior chamber against the earth core formed therein, and fluid outlet means adjacent the top of said anchor in communication between the interior chamber and the space outside the anchor for removing water or bottom particles and water from the said interior.

4,432,672

CANAL BUILDING APPARATUS

Egon U. Brüderle, Zweibrücken, and Willibald Wannemacher, Blerbach, both of Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

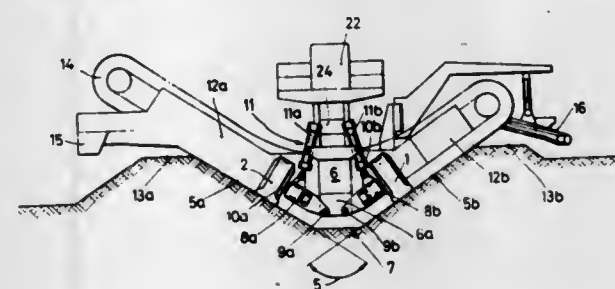
Continuation of Ser. No. 71,845, Sep. 4, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 323,713

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840800

Int. Cl.³ E02F 5/04

U.S. Cl. 405—268

4 Claims



1. An apparatus for the continuous longitudinal construction of a canal having a canal construction mode of operation and a transporting mode of operation capable of moving the apparatus from one working site to another, comprising:

- (a) an apparatus frame;
- (b) a pair of opposed wheel support arms pivotally attached to said apparatus frame;
- (c) a wheel rotatably attached to each of said wheel support arms;
- (d) said wheels, wheel support arms and apparatus frame being capable of achieving a configuration during the canal construction mode of operation, such that said wheels travel flush on the sloped walls of a canal and the center of gravity of said wheels, wheel supporting arms and apparatus frame lie below the berm of the canal;
- (e) canal construction tool means transversely supported, in a cantilevered manner, on said apparatus frame;
- (f) said canal construction tool means extending upwardly from said apparatus during the canal construction mode of operation and beyond said wheels; and
- (g) adjustable maintaining means, attached between said apparatus frame and said wheel support arms for selectively determining the angular orientation of said wheel support arms with respect to said apparatus frame such that said wheels and wheel support arms, during the canal construction mode of operation, extend upwardly from said apparatus frame and said apparatus frame lies between said wheels and within the canal being constructed.

4,432,673

MINE ROOF SUPPORT

Adrian C. Buckmaster, Upton-on-Severn, England, assignor to Dowty Mining Equipment Limited, England

Filed Apr. 20, 1982, Ser. No. 370,091

Claims priority, application United Kingdom, Apr. 25, 1981, 8112825

Int. Cl.³ E21D 23/16

U.S. Cl. 405—302

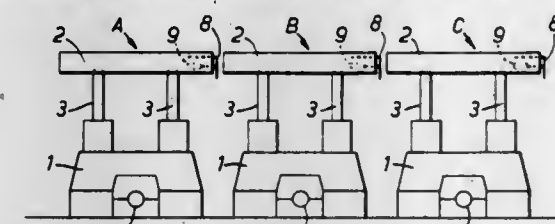
7 Claims

1. A method of mining in which a mine roof is supported by a side by side assembly of mine roof supports, each having a lower part with a floor-engaging member, an upper part with a roof-engagable member, hydraulic prop means by which the height of the roof-engagable member can be adjusted with respect to the floor-engaging member, means associated with the lower part for advancing the mine roof support, and at least one hydraulically-operable abutment member associated with the roof-engagable member and energisable to move it away from the roof-engagable member, said method including the steps of

- (a) advancing the mine roof supports, one after the other in

a predetermined sequence, from one roof-supporting position to another roof-supporting position, and

(b) simultaneously energising said hydraulically-operable abutment member located on one side of the upper part of an advancing mine roof support and said hydraulically-operable abutment member located on the other side of the upper part of that advancing mine roof support, if the advancing movement of the lower part of that mine roof support is being resisted, such that each side of the upper part of the advancing mine roof support is held in such



high frictional contact by said abutment members with the upper parts of the non-advancing mine roof supports located on opposite sides of the advancing mine roof support that advancing movement of the upper part is restricted and retarded with respect to the restricted advancing movement of the lower part; whereby, the advancing mine roof support effectively is caused to rotate about its upper part to raise the leading end of the lower part away from the part of the floor over which it is advancing and which is resisting advance of the lower part.

4,432,674

METHOD AND DEVICE FOR ANALYZING THE SOLID MATTER CONTENT IN A HYDRAULIC CONVEYING STREAM OF A CARRIER LIQUID WITH SOLID PARTICLES

Reinhard Klose, and Günter Glienke, both of Salzgitter, Fed. Rep. of Germany, assignors to Stahlwerke Peine-Salzgitter AG, Fed. Rep. of Germany

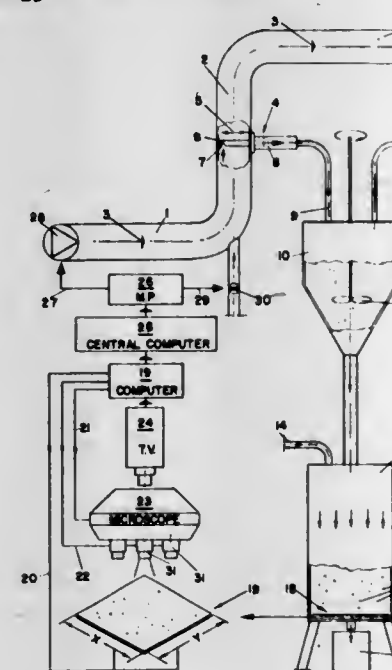
Continuation-in-part of Ser. No. 171,017, Jul. 18, 1980, abandoned. This application Aug. 5, 1982, Ser. No. 405,410

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929430

Int. Cl.³ B65G 53/66

U.S. Cl. 406—19

10 Claims



1. A method of analyzing the solid matter content of a hydraulically conveyed stream in a conveyor pipeline to be monitored and controlled, which stream contains a carrier liquid and solid particles, comprising:

- (a) taking a representative sample from the entire diameter of the conveyor pipeline;
- (b) separating the sample particles from each other, while increasing the liquid proportion in the sample;
- (c) depositing the thus separated sample on a filter surface;
- (d) analyzing the solid particles as to shape and size; and
- (e) adjusting at least one of the amount of the carrier liquid and a feed pressure in the pipeline according to the result of the analysis.

4,432,675

PNEUMATIC FEED CONTROL FOR PNEUMATIC SEEDER AND THE LIKE

Cecil B. Machnee, Yorkton, Canada, assignor to Morris Rod-Weeder Co. Ltd., Yorkton, Canada

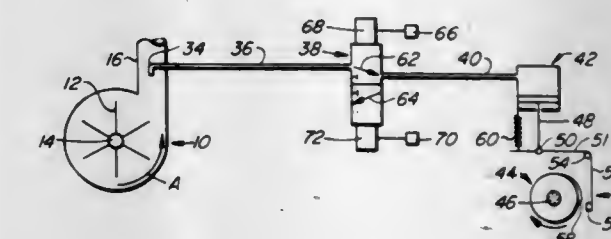
Filed May 3, 1982, Ser. No. 374,131

Claims priority, application Canada, Nov. 20, 1981, 390527

Int. Cl.³ B65G 53/66

U.S. Cl. 406—30

14 Claims



1. In an agricultural implement for dispensing particulate material and having: feed means for feeding predetermined amounts of said material to a delivery conduit, drive means for said feed means, a source of air under pressure, and air conduit means connecting said source with said delivery conduit to aid in the passage of fed material along said delivery conduit; the improvement comprising clutch means located between said drive means and said feed means, pneumatic actuator means operatively connected to said clutch means, pressure pick-up means located within said source, and pressure conduit means connecting said pick-up means with said actuator means, whereby pressure transmitted from said pick-up means to said actuator means permits said actuator means to maintain said clutch means in a position to connect said drive means with said feed means, but a negative pressure change at said source will cause said actuator means to operate said clutch means to disconnect said drive means from said feed means to thereby terminate the feeding of said material.

4,432,676

VEHICULAR MOBILE HIGH CAPACITY PNEUMATIC CONVEYOR

Wayne M. Jacobson, York, and Roger L. Quaintance, Henderson, both of Nebr., assignors to Cyclonaire Corporation, Henderson, Nebr.

Filed Jan. 15, 1982, Ser. No. 339,479

Int. Cl.³ B65G 53/40

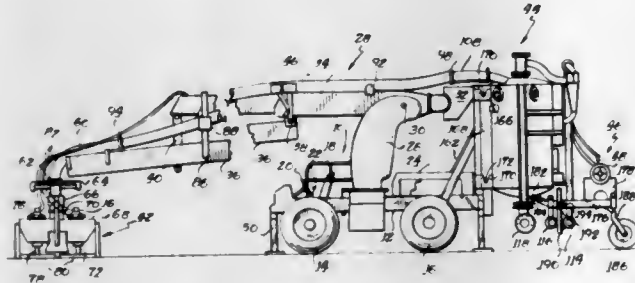
U.S. Cl. 406—39

8 Claims

1. A mobile vehicular mounted pneumatic conveying apparatus, comprising:

- a self-propelled vehicle having an elongated boom structure capable of being elevated and rotated relative to the vehicle;
- a nozzle structure mounted to the outward end portion of said boom structure, said nozzle structure having a gimbal mounting to maintain a gimbal supported lower portion relatively level, said lower portion having at least one rotatable member for loosening the material to facilitate entry thereof into said nozzle structure;

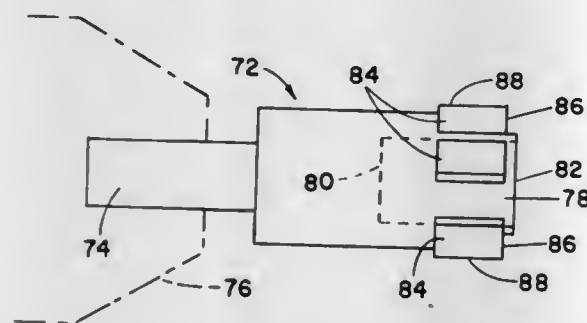
- a material transfer assembly including at least one closed vessel for receiving material under vacuum pressure and for subsequently expelling the material under positive pressure;
- a conveying line interconnecting said nozzle structure and said transfer assembly;



said vehicle and said transfer assembly having a number of releasable connections to permit said transfer assembly to be removed from said vehicle;

said transfer assembly including a carriage structure having one end pivotally attached to said vessel, the opposite end thereof having at least one wheel for partially supporting the carriage structure.

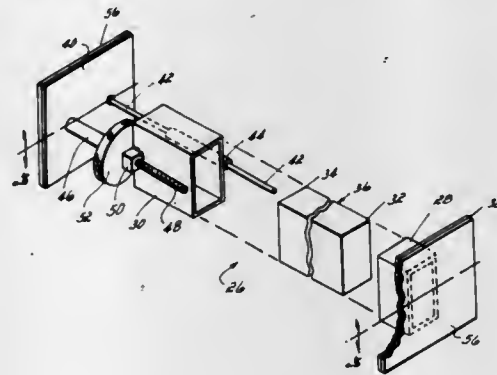
4,432,677
CUTTER FOR CYLINDRICAL LOCKS
 Delmar D. Lewis, R.R. 2, Box 89, Letts, Iowa 52754
 Filed Dec. 14, 1981, Ser. No. 330,619
 Int. Cl.³ B23B 51/04
 U.S. Cl. 408—203.5



1. A rotary cutting tool for gaining access to the horizontal tumbler mechanism of a cylindrical lock having a central core surrounded by a ring provided with an annular interior surface of greater diameter than the exterior annular surface of the core so as to provide an annular gap receivable of a tubular key, said cutter comprising a one-piece cylindrical body having a rear end adapted to be chucked in a power tool and a coaxial tubular front end portion terminating in a smooth annular face radial to the axis of the body, said front end portion having an annular wall of such radial thickness as to fit into the gap of the lock and said annular wall having a continuous, smooth, interior annular surface for piloting of the tool on the lock core, said tubular portion having rigid with and exteriorly thereof a plurality of like cutter blades equi-angularly spaced apart and terminating in a radial plane offset axially rearwardly from the annular front face, each blade having a radial front cutting edge and an outer cutting edge extending rearwardly and lengthwise of the body for cutting out an annular portion of the lock ring to expose the tumbler mechanism.

4,432,678
LOAD RETAINER
 Henry L. Liebel, Cincinnati, Ohio, assignor to Angleboard Inc., Cincinnati, Ohio
 Filed Nov. 6, 1981, Ser. No. 318,843
 Int. Cl.³ B60P 7/08, 7/16; B61D 45/00
 U.S. Cl. 410—151

4 Claims



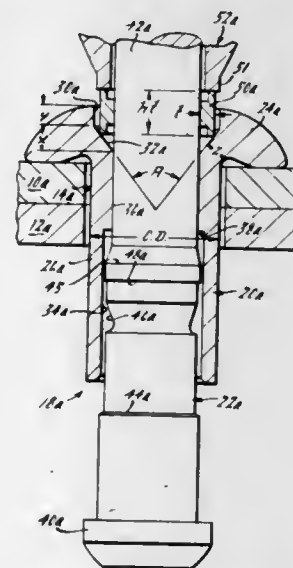
1. A load retainer assembly for bracing a load in a load containing vehicle comprising:
 a pair of shoes having side walls defining a pair of receptacles, each adapted to removably receive ends of a wooden bracing member,
 a pair of end plates, one end plate being attached to one of said shoes, and
 advancing and retracting means connected to the side walls of the other of said shoes outside of said receptacle and connecting the other of said shoes and the other of said end plates for adjusting the distance therebetween such that when the wooden bracing member is received in said shoes the overall distance between the said end plates may be adjusted to hold said end plates against the opposed walls of said vehicles with said bracing member extending therebetween and across said load to retain said load in said vehicle.

1 Claim

4,432,679
LOCK SPINDLE BLIND FASTENER FOR SINGLE ACTION APPLICATION
 Donald J. Angelosanto, and James W. Kendall, both of Huntington Beach, Calif., assignors to Huck Manufacturing Company, Irvine, Calif.
 Continuation of Ser. No. 954,111, Oct. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 835,363, Sep. 21, 1977, Pat. No. 4,127,345. This application Aug. 6, 1980, Ser. No. 175,723

Int. Cl.³ F16B 13/04
 U.S. Cl. 411—34

10 Claims

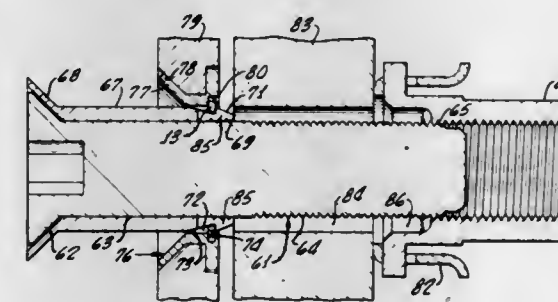


1. In a fastener system including a blind fastener and a single action tool for securing together a plurality of workpieces with

said blind fastener having a tubular sleeve, an elongated pin adapted to be located within the sleeve for the relative movement therewith, and a lock collar adapted to be moved into locking engagement between said sleeve and said pin and with the fastener adapted to be set by said single action tool, said tool having an anvil engaging said lock collar whereby the force for setting the fastener is applied substantially solely between said pin and said lock collar, the improvement comprising: said sleeve having a straight shank portion terminating in an enlarged head portion at one end and having an axially extending bore, said pin having an elongated shank section terminating in an enlarged head structure at one extremity and being adapted to be located within said axial bore with said head structure located at the opposite end of said shank portion of said sleeve and to engage said opposite end upon application of a relative axial force between said pin and said sleeve for forming a bulbous head at said opposite end, said sleeve having an enlarged straight counterbore located in said enlarged head which counterbore is connected to said axial bore via a straight, tapered entry resistance angle portion, said resistance angle portion defining an included angle of from around 65° to around 85°, said lock collar being generally annular and located around said shank section and adapted to be located within said counterbore and seated against said resistance angle portion, said lock collar having an outer shape such that it is in clearance relationship with the outer surface of said enlarged head surrounding said counterbore whereby the setting force for the entire setting cycle is applied from the anvil to said resistance angle portion through said lock collar, said pin having a lock pocket on said shank section which when located in confrontation with said resistance angle portion defines a lock cavity, said anvil having an annular, elongated nose portion engageable with said lock collar whereby all of the setting loads are applied between said pin and said lock collar; said counterbore confining said lock collar as it is deformed by the relative force applied to said lock collar between said nose portion and said resistance angle portion and guiding the movement of said lock collar as it is moved into said lock cavity by said nose portion, said nose portion being of a diameter less than that of said counterbore and being of sufficient length to move substantially axially within said counterbore without engagement of said anvil with said sleeve whereby packing of said lock cavity with said lock collar is facilitated, said pin having a breakneck groove located on said shank portion at a position proximate said enlarged head portion and adapted to fracture thereat after formation of said bulbous head and setting of said lock collar.

4,432,680
STRESSED PANEL FASTENER
 Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., El Segundo, Calif.
 Continuation-in-part of Ser. No. 236,859, Feb. 23, 1981, abandoned. This application Jun. 29, 1981, Ser. No. 278,634
 Int. Cl.³ E04B 1/48; F16B 13/04, 37/04, 39/00
 U.S. Cl. 411—103

27 Claims

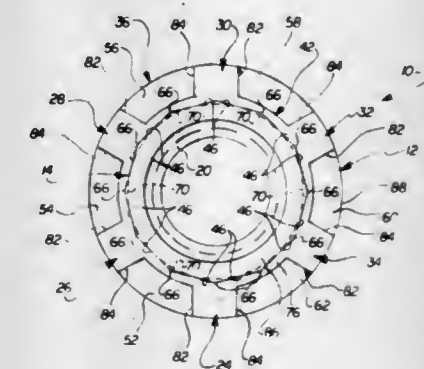


1. A fastener comprising
 a member having
 a head at one end, and
 a shank projecting from said head,

said shank including a first portion of relatively large outside diameter adjacent said head,
 and a second portion of relatively small diameter remote from said head, said second portion having a thread thereon,
 a sleeve having an inside diameter greater than that of said second portion of said shank and less than that of said first portion of said shank,
 said sleeve being received on said second portion of said shank and being axially movable relative thereto,
 a collar circumscribing said shank,
 said collar including means for attachment to a workpiece, said collar having an inside diameter greater than that of the outside diameter of said sleeve and the outside diameter of said second portion of said shank, whereby said collar can move relative to said shank and to said sleeve so that either said second portion of said shank or said sleeve is received in said collar,
 and retainer means for limiting said relative movement so that said collar cannot move off of said sleeve in the direction of the outer end of said shank, and cannot move off of said first portion of said shank in the direction of said head.

4,432,681
FASTENER
 Terry D. Capuano, Hinckley, Ohio, assignor to Russell Burdall & Ward Corporation, Mentor, Ohio
 Filed May 28, 1981, Ser. No. 268,067
 Int. Cl.³ F16B 37/04, 39/00
 U.S. Cl. 411—180

10 Claims



1. A fastener adapted to be received in a member and held against axial and rotational movement relative to the member by interaction between the member and said fastener, said fastener comprising a head section having a central axis, a shank section extending axially outwardly from said head section and having a central axis coincident with the central axis of said head section, said head section having a rim portion which extends radially outwardly from and faces axially outwardly along said shank section, a thread convolution connected with and disposed in a coaxial relationship with said head and shank sections, an annular groove formed in the rim portion of said head section and circumscribing said shank section, a plurality of flat arcuate stop surface areas disposed in a spaced apart relationship in a circular array on the rim portion of said head section and circumscribing said shank section, each of said stop surface areas extending radially outwardly from said groove and being disposed in a plane which extends perpendicular to the central axis of said head section, said stop surface areas being engageable with the member to limit the extent of axial movement of said fastener as it is inserted into the member, a plurality of wedge shaped compression ramps disposed on said rim portion of said head section in a circular array circumscribing said shank section and extending radially outwardly from said groove, each of said wedge shaped compression ramps being disposed between and projecting axially outwardly of a pair of said stop surface areas and having a face surface which slopes radially and axially inwardly toward said shank section from a radially outer end portion disposed axially outwardly of the plane containing said

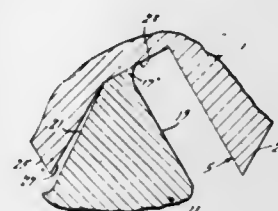
stop surface areas, a plurality of side surface areas disposed on said shank section in a circular array having a central axis coincident with the central axis of said shank section, each of said side surface areas extending axially outwardly from said groove to an axially outer end portion of said shank section, said compression ramps being effective to force the material of the member into the groove and around the side surface areas on said shank section as the fastener is inserted into the member to thereby hold said fastener against axial and rotational movement relative to the member, said side surface areas on said shank section intersect at corner portions which extend axially along said shank section, said groove extending radially inwardly of said corner portions to enable the material of the member to be forced into portions of said groove at locations radially inwardly of said corner portions to hold said fastener against axial movement, said groove having a radially inner side surface which extends tangentially to a central portion of each of said surface areas on said shank section.

10. A fastener adapted to be received in a member and held against axial and rotational movement relative to the member by interaction between the member and said fastener, said fastener comprising a head section having a central axis, a shank section extending axially outwardly from said head section and having a central axis coincident with the central axis of said head section, said head section having a rim portion which extends radially outwardly from and faces axially outwardly along said shank section, a thread convolution connected with and disposed in a coaxial relationship with said head and shank sections, an annular groove formed in the rim portion of said head section and circumscribing said shank section, a plurality of flat arcuate stop surface areas disposed in a spaced apart relationship in a circular array on the rim portion of said head section and circumscribing said shank section, each of said stop surface areas extending radially outwardly from said groove and being disposed in a plane which extends perpendicular to the central axis of said head section, said stop surface areas being engageable with the member to limit the extent of axial movement of said fastener as it is inserted into the member, said annular groove having a radially outer side surface which extends at an acute angle to the plane containing the stop surface areas and which intersects the plane containing said stop surface areas along a circular line of intersection which defines radially innermost ends of said stop surface areas, a plurality of wedge shaped compression ramps disposed on said rim portion of said head section in a circular array circumscribing said shank section and extending radially outwardly from said groove, each of said wedge shaped compression ramps being disposed between and projecting axially outwardly of a pair of said stop surface areas and having a face surface which slopes radially and axially inwardly toward said shank section from a radially outer end portion disposed axially outwardly of the plane containing said stop surface areas, said face surfaces on said compression ramps being formed as continuations of said radially outer side surface of said groove and extending at the same acute angle relative to the plane containing said stop surface areas as said side surface of said annular groove, said face surfaces on said compression ramps intersecting said radially outer surface of said groove at the circular line of intersection of said stop surface areas with said radially outer side surface of said groove, a plurality of side surface areas disposed on said shank section in a circular array having a central axis coincident with the central axis of said shank section, each of said side surface areas extending axially outwardly from said groove to an axially outer end portion of said shank section, said side surface areas on said shank section intersecting at corner portions which extend axially along said shank section, said compression ramps being effective to force the material of the member into the groove and around the side surface areas on said shank section as the fastener is inserted into the member to thereby hold said fastener against axial and rotational movement relative to the member, said groove extending radially inwardly of said corner portions to enable the material of the member to be forced into portions of said

groove at locations radially inwardly of said corner portions to hold said fastener against axial movement.

4,432,682
THREADED FASTENER ASSEMBLY
Arthur J. McKewan, Rochester, Mich., assignor to Microdot Inc., Greenwich, Conn.
Filed Dec. 4, 1978, Ser. No. 966,279
Int. Cl.³ F16B 39/30
U.S. Cl. 411—311

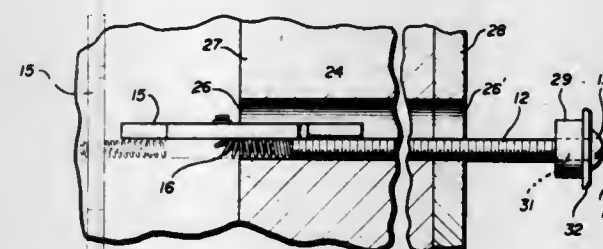
4 Claims



1. A threaded fastener assembly comprising a body having an internal aperture provided with internal modified V-shaped helical threads and a bolt having a shank provided with complementary external modified V-shaped helical threads to mate with said internal helical threads, said internal threads having an internal thread configuration comprising a leading flank and a following flank and a wedge ramp root section extending between the leading and following flanks, said leading flank and following flank being symmetrical and making an angle A with an imaginary plane normal to the axis of the threads, said external threads having an external thread configuration comprising a leading flank and a following flank and a crest between the leading and following flanks, the leading and following flanks of said external thread configuration being asymmetrical and said external thread leading flank making said angle A with said plane and said external thread following flank making an angle that is less than A with said plane whereby clearance is provided between the internal and external following flanks and contact is between said crest and said wedge ramp, said internal and external threads being sized and proportioned so that substantially all load is transferred by contact between said crest and said ramp and there is substantially no bending load on the flank of the internal thread.

4,432,683
TOGGLE BOLT ASSEMBLY
Constantine D. Polos, 524 Williamsburgh, Glen Ellyn, Ill. 60137
Continuation of Ser. No. 144,529, Apr. 28, 1980, abandoned which is a continuation-in-part of Ser. No. 928,107, Jul. 26, 1978, abandoned.
This application Jun. 23, 1982, Ser. No. 391,121
Int. Cl.³ F16B 35/04
U.S. Cl. 411—340

6 Claims

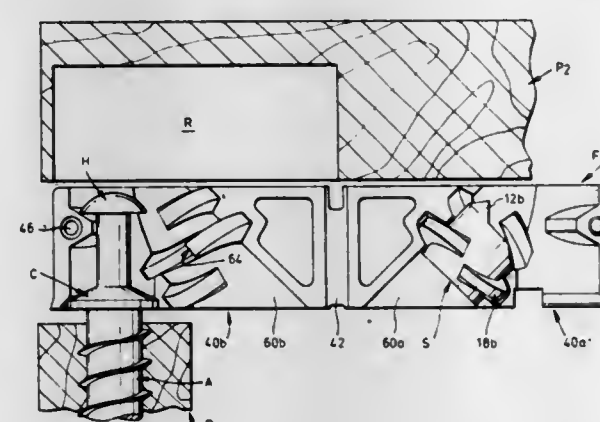


1. A toggle bolt assembly comprising:
a bolt having a threaded shank, a head attached to one end of said shank and a coaxial extension of reduced diameter attached to the other end thereof,
an elongated resilient helical coil spring frictionally engaging said extension and projecting coaxially therefrom, the outer diameter of said spring being substantially equal to the diameter of said shank;

the coils of said spring having a pitch substantially equal to that of the threads on said shank and the same direction of rotation, said spring and said shank being rotationally mismatched so that the coils of said spring do not form a continuation of the helix defined by said threads;
cooperating means on said spring and said extension for preventing relative rotation thereof in one direction;
a generally flat elongated toggle head having a threaded opening intermediate its ends adapted to threadedly engage said shank and said coil spring;
said spring being resiliently bendable sufficiently to permit said head to achieve a position adjacent and generally parallel to said shank when said head is positioned on said spring.

4,432,684
THREADED MEMBERS
John P. Palmer, Basingstoke, and Neil P. Blackburn, Winchester, both of England, assignors to ITW Limited, Windsor, England
Filed Jul. 23, 1981, Ser. No. 286,120
Claims priority, application United Kingdom, Jul. 25, 1980, 8024464
Int. Cl.³ F16B 27/00
U.S. Cl. 411—366

9 Claims



1. A threaded member comprising an elongate shank defining a longitudinal axis, the shank having a first external helical thread including a leading end, a trailing end and a crest, and the radial separation of the crest from the longitudinal axis of the shank being less at the leading end of the first thread than at the trailing end of the first thread, with the trailing end of the first thread being in the form of an abutment, and an additional thread on said shank which overlaps said first thread substantially all of their lengths, said additional thread including a leading end, a trailing end and a crest, with the radial separation of the crest of the additional thread from the longitudinal axis of the shank remaining constant from the leading end of the additional thread to the trailing end of the additional thread.

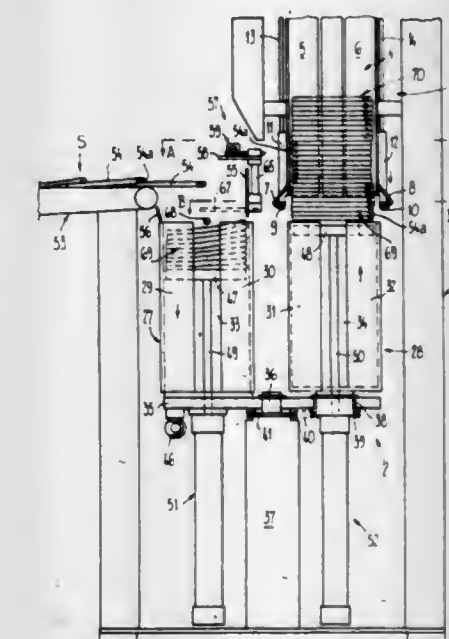
4,432,685
APPARATUS FOR FORMING STACKS FROM CONTINUOUSLY ARRIVING FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS, PARTICULARLY THOSE ARRIVING IN A LAPPED OR IMBRICATED STREAM
Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Jul. 27, 1981, Ser. No. 287,480
Claims priority, application Switzerland, Aug. 15, 1980, 6160/80
Int. Cl.³ B65G 57/30
U.S. Cl. 414—31

18 Claims

1. An apparatus for forming stacks from continuously arriving, substantially flat products, especially printed products, in

particular products arriving in an imbricated product stream, comprising:

a prestacker device for forming partial stacks;
a stacker device having a stacker chute;
support means arranged below said stacker chute of said stacker device;
said stacker device serving for stacking the partial stack reposing upon the support means within the stacker chute of said stacker device into a final stack;
a retention device movable relative to said support means; said retention device being placeable into an operative position following relative movement of the partial stack which is to be processed past said retention device where said retention device engages below said partial stack;
said prestacker device comprising two out-of-phase operat-



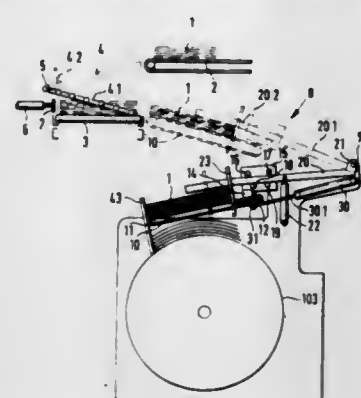
ing prestacker units movable between a receiving position and a delivery position located below the stacker device;
a stacker chute provided for each prestacker unit;
a respective support table provided for each prestacker unit for closing towards the bottom the related stacker chute thereof and defining said support means;
means for elevationally displacing said retention device relative to the support table of the prestacker unit located in the delivery position in order to receive the partial stack;
means for raising and lowering the support tables of said prestacker units; and
said retention device can be raised and lowered and in a lower terminal position of the partial stack reposing upon a related support table located in its upper end position engages below such partial stack.

4,432,686
APPARATUS FOR PLACING PACKETS OF TUBE SECTIONS IN THE STACKING MAGAZINE OF A ROTARY APPLICATOR
Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Dec. 8, 1981, Ser. No. 328,526
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046280
Int. Cl.³ B65H 57/06, 29/36
U.S. Cl. 414—77

17 Claims

1. Apparatus for placing packets of tube sections in the stacking magazine of a rotary applicator equipped with suction rollers, characterised in that, between the stacking magazine and the conveyor means supplying the tube section packets, there is a pivotably mounted arm on which a supporting frame is longitudinally displaceable, the frame being provided at the ends with direction-changing rollers over which endless belts

run and being pivotable by a pivot drive between its upper, obliquely rising position in which it receives the tube section packets and its lowered position in which it discharges them again, and that the arm is provided with an abutment securing



the tube section packets on the supporting frame and with braking means which engage the upper run of the belts between the abutment and the rear direction-changing roller and which comprise means for releasing same to receive the tube section packets.

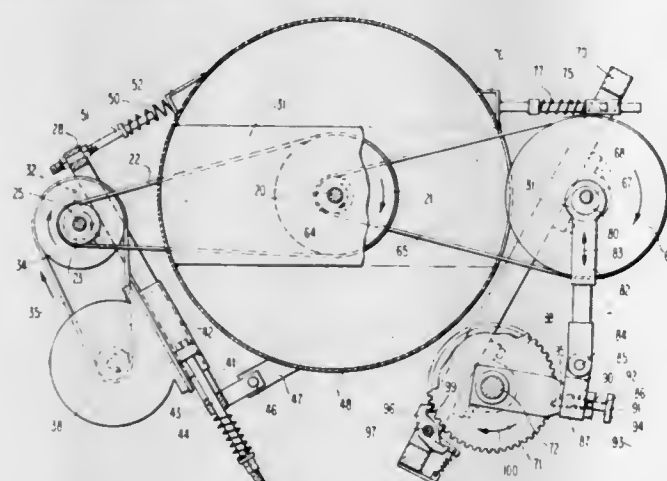
4,432,687

SILO UNLOADING APPARATUS

Richard L. Weaver, R.D. 4, Myerstown, Pa. 17067
Continuation-in-part of Ser. No. 191,071, Sep. 26, 1980, Pat. No. 4,377,364. This application Sep. 14, 1981, Ser. No. 302,191
Int. Cl.³ B65G 65/46

U.S. Cl. 414—307

17 Claims



1. In a silo unloader of the bottom unloader type having an unloading auger generally radially disposed at the bottom of the silo and mounted for rotation on its own axis for intermittent arcuate sweeping movement across the floor of the silo, including an auger mount substantially at the center of the silo at about the floor level, said mount being rotationally moveable about a generally vertical axis and having a ring-like portion disposed in the silo floor and moveable therewith, including intermittent drive means for engaging said ring-like portion and driving it in a series of repeated intermittent arcuate motions, for driving the auger in a uniform intermittent sweeping motion across the silo floor, whereby silage may be delivered through a generally centrally located discharge opening in the silo floor, wherein a drive shaft is provided inside said silo, and motor means is provided for driving said drive shaft in a continuous rotational motion with means operatively connecting said drive shaft and said auger for rotationally driving the auger on its own axis in a continuous rotational motion from said drive shaft, and wherein conversion means is provided in said silo at the general center thereof as part of said intermittent drive means, operatively connected to said drive shaft for converting continuous rotational motion from said

drive shaft to an intermittent motion provided to said intermittent drive means.

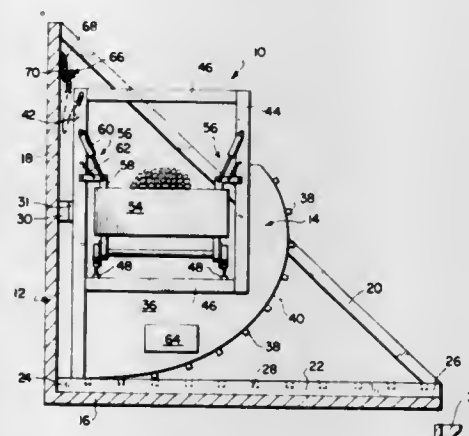
4,432,688

TIPPLE

Christian E. Schmidt, Rte. 5, Box 650, Easton, Md. 21601
Filed Aug. 27, 1981, Ser. No. 296,847
Int. Cl.³ B65G 67/48

U.S. Cl. 414—358

12 Claims



1. A tippie, comprising:
a fixed support having two horizontal and parallel rails with inboard and outboard ends; and
a cradle assembly movably mounted on said rails, including two rocker members, each with a curved surface engaging one of said rails, and
means for supporting a vehicle on said rocker members with a combined center of gravity of the vehicle and said cradle assembly located relative to said curved surfaces such that said cradle assembly with a loaded vehicle thereon freely rolls from a normal, vertical position at said inboard ends through an angle of about 135° to a dumping position at said outboard ends, and then automatically and freely rolls back to the vertical position after unloading,
each said curved surface having a curvature in which radial distances from said combined center of gravity to each of said curved surfaces and radii of curvature of each said curved surface decrease along said curvature from an inboard end to an outboard end thereof.

4,432,689

APPARATUS AND METHOD FOR HANDLING CARGO USING FLEXIBLE SUPPORT STRAPS

Melvin E. Shell, Box 1121, Stephenville, Tex. 76401
Filed Sep. 28, 1981, Ser. No. 306,315
Int. Cl.³ B66C 1/18

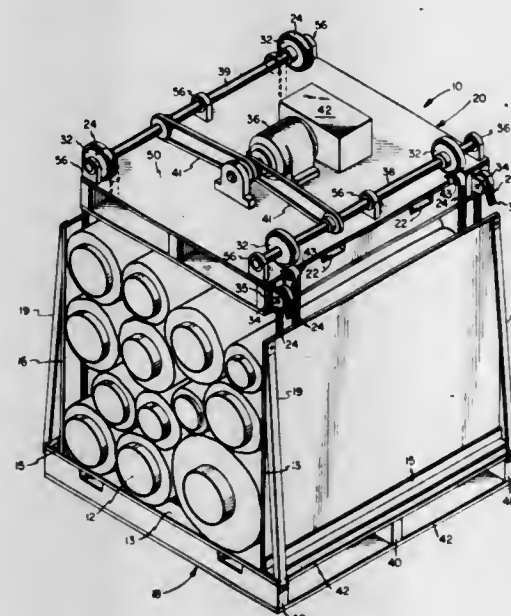
U.S. Cl. 414—416

12 Claims

10. A cargo handling system for loading and unloading a cargo load comprising one or more discrete cargo units with respect to a conveyance for said load, said system comprising:
a plurality of flexible cargo straps;
a cargo suspension frame adapted to mount on top of said load, said suspension frame including a generally rectangular frame member, a plurality of strap winding and unwinding reels mounted along at least one side of said frame member, power means on said frame member and drivably connected to said reels for rotating said reels, means on each of said reels cooperable with means on one end of each of said straps to be wound on said reels, respectively, for releasably connecting said straps to said reels, respectively, releasable strap locking means mounted along a side of said frame member opposite said reels, said locking means being operable to receive and retain said straps when said reels are rotated to tighten said straps around said load, said locking means for each of said straps comprising cam means for securing said

straps, respectively, by a wedging action between said cam means and a surface on said suspension frame, and said locking means comprises linkage connected to said cam means and operable, at will, to actuate said cam means to release said straps; and
means on said suspension frame for engaging said suspension frame by cargo transport means to move said load.

12. A method for moving cargo from one point to another, said cargo comprising unitized loads made up of one or more cargo units, said method comprising the steps of:
providing a plurality of elongated flexible straps;
providing a suspension frame comprising a frame member having a plurality of strap winding reels disposed along at least one side thereof, said straps and said reels being provided with means for releasably connecting said straps to said reels at one end of said straps, respectively, and locking means for engaging and releasably locking said straps to said suspension frame disposed along an opposite side of said frame member;



placing said suspension frame generally directly above said load;
placing said straps under said load with opposite ends of said straps being trained generally vertically upward along opposite sides of said load;
connecting each of said straps at one end to said reels, respectively, and engaging said straps with said locking means adjacent the opposite ends of said straps, respectively;
winding said straps on respective ones of said reels to tighten said straps under said load;
lifting said suspension frame and said load and moving said load to a destination;
placing said load on a support surface at said destination;
actuation said locking means to release one end of each of said straps;
disengaging the other end of each of said straps from said reels, respectively; and
removing said suspension frame from said load while leaving said straps under said load.

4,432,690

STRADDLE CARRIER

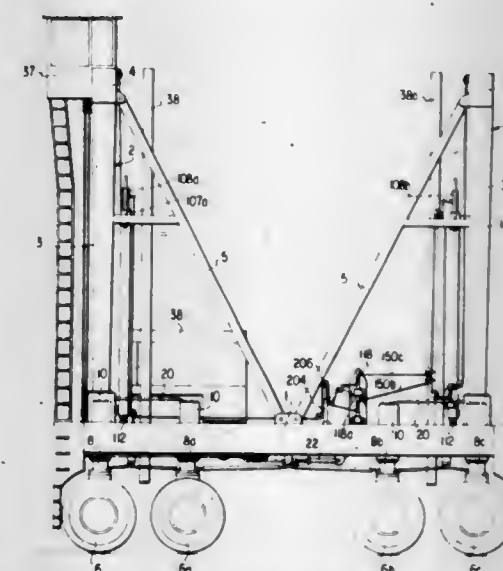
John T. Monk, 405 Meadow Moss Dr., Jackson, Miss. 39206
Continuation of Ser. No. 912,991, Jun. 6, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,328
Int. Cl.³ B60P 3/00

U.S. Cl. 414—460

29 Claims

1. A straddle carrier, either end of which may be driven over a load to be lifted, said straddle carrier comprising:
a chassis including spaced parallel elongated frame members connected together adjacent their respective ends by

vertically disposed structural arches to form a rigid rectangular frame enclosing an unobstructed load bay;
at least two pairs of wheels disposed on each side of said chassis;
air over oil suspension means for attaching each said wheel to said chassis;
rectangular load lifting means disposed between said frame members;
means for attaching said load lifting means to a load;
means for raising and lowering the load lifting means including hydraulic cylinders connected at their lower ends to said frame members and disposed adjacent the corners of said rectangular load lifting means;
upwardly movable rams respectively disposed in said cylinders;



pulleys respectively mounted on the rams;
cables respectively connected to said four corners of said load lifting means and extending over said pulleys with their other ends connected to said chassis and a hydraulic circuit for simultaneously actuating said rams to raise or lower said load lifting means; and
means for controlling the raising and lowering means for the load lifting means including means for sensing uneven extensions of the rams including further cables each having one end connected to a ram, one of said further cables being directly connected to a weight and the remaining further cables being connected through said sensing means to said weight, said sensing means being responsive to the tensions of said remaining further cables to equalize the extensions of said rams.

4,432,691

PIPE MANIPULATOR

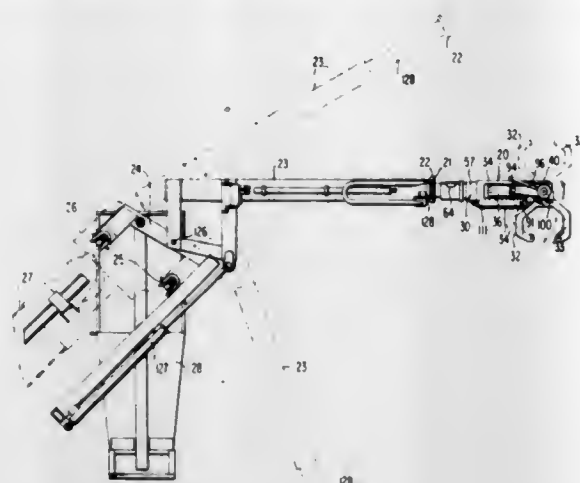
Russell L. Sterner, Greencastle, Pa., assignor to Kiddie, Inc., Saddle Brook, N.J.
Filed Oct. 16, 1981, Ser. No. 312,081
Int. Cl.³ B66C 1/42

U.S. Cl. 414—735

20 Claims

1. A manipulator for pipes and the like comprising a longitudinal body portion adapted for attachment to a support, a cross support pivotally mounted on the body portion and adapted to swing in two directions relative thereto, pairs of cooperative pipe gripping jaws on the cross support and being bodily swingable therewith on the pivot axis of the cross support and also being rotationally connected to the cross support whereby the pairs of jaws can move rotationally in unison around the axis of the cross support, one jaw of each cooperative pair being fixed relative to the other jaw of each pair and the other jaw of each pair being movable relative to the fixed jaw around the axis of the cross support, said longitudinal body portion including a rotational assembly bodily carrying the cross support and pivot means for the cross support defining said pivot axis, a first power means on said body portion operable to

rotate said rotational assembly in two directions, a second power means connected between the body portion and cross support and operable to swing the latter in two directions on its pivot axis, a third power means connected between the body portion and said cross support and pairs of jaws and operable



to rotate the pairs of jaws in unison in two directions around the axis of the cross support, and a fourth power means on the cross support and being operatively connected with the movable jaws of the cooperative pairs to move the movable jaws in two directions relative to the other jaws of the pairs around the axis of the cross support.

4,432,692

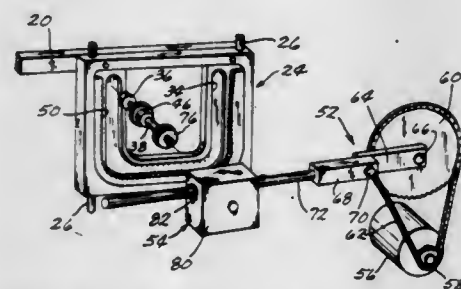
ARTICLE HANDLING APPARATUS

Warren R. Breneman, Colorado Springs, Colo., assignor to Woodford Manufacturing Company, Colorado Springs, Colo.
Filed Oct. 28, 1981, Ser. No. 315,758

Int. Cl.³ B65G 25/00

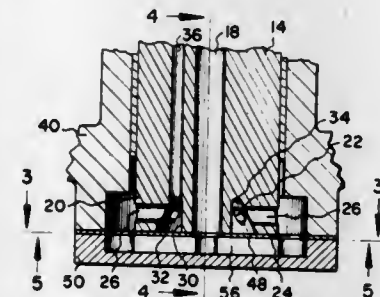
U.S. Cl. 414-749

11 Claims



1. An article handling apparatus comprising, a base frame, a guide member, means for supporting said guide member on the base frame with freedom of at least limited two-dimensional movements, an article support means mounted on said guide member for movement therewith, said guide member including an elongated cam slot, a drive shaft having a cam follower supported thereon, means for rotatably supporting said drive shaft on said base frame at a position such that said cam follower is positioned within said cam slot, coacting drive means on said guide member and drive shaft operative, in response to rotation of said drive shaft, to produce translation of said guide member and article support means along a path defined by said cam slot, and said coacting drive means comprising a pinion gear fixed on said drive shaft and a coacting elongated gear rack connected to said guide block and having a contour and position for operative engagement with said pinion gear at all positions of said guide member.

4,432,693
CENTRIFUGAL PUMP IMPELLER
Reuben J. Hackbart, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Feb. 18, 1982, Ser. No. 349,799
Int. Cl.³ F04D 1/12; F01M 1/02
U.S. Cl. 415-88 19 Claims



14. In a two-stage centrifugal oil pump impeller of the type found in reciprocating compressors for operating at the end of a substantially vertically oriented crankshaft submerged in oil in a sump, and having a plurality of radially extending tunnels for conveying oil to the perimeter of the impeller; an inlet means for providing oil to said tunnels and improving the head and flow performance of the pump, said means comprising an annular inlet groove having an annular opening in the bottom end of the shaft; a subtending groove surface narrower than said opening; and inner and outer sidewalls; said groove intersecting said tunnels to form loci each defined by the area of intersection between said groove and one of said tunnels, at least a part of each of said loci being disposed at an acute angle with respect to the axis of the tunnel defining it, thereby opening the bottom of the tunnel at the inner end and exposing at least a part of the tunnel to oil flow from directly therebelow.

4,432,694
BLOWER

Sigeaki Kuroda; Akira Arai, both of Shimizu; Takao Senshu, Shizuoka; Shinjiro Ueda, Abiko; Masamichi Hanada, and Mineo Takahashi, both of Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

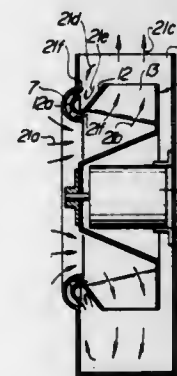
Filed Feb. 24, 1981, Ser. No. 237,711

Claims priority, application Japan, Feb. 25, 1980, 55-21671

Int. Cl.³ F04D 29/16

U.S. Cl. 415-170 A

3 Claims



2. A centrifugal blower comprising: a casing including two end plates located in spaced juxtaposed relation and enclosed at an outer periphery by a side plate formed with a discharge port, one of said end plates being formed at a central portion thereof with a suction port having a suction member; and an impeller having a shroud mounted in said casing; wherein said suction member has a semicircular shape and the shroud of the impeller includes an inclined wall portion terminating in a semicircular wall means disposed in

spaced juxtaposition with at least a portion of the semicircular shaped suction member for creating a countercurrent so as to inhibit an air leak flow into a semicircular clearance between the semicircular suction member and the curled wall means of the shroud.

4,432,695

WIND MOTOR

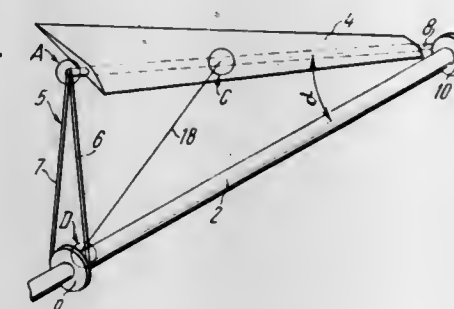
Bogdan V. Voitsekховsky, and Mikhail B. Voitsekховsky, both of Novosibirsk, U.S.S.R., assignors to Institut Gidrodinamiki Imeni M.A. Lavrentieva, Novosibirsk, U.S.S.R.

Filed Oct. 29, 1981, Ser. No. 316,494

Int. Cl.³ F03D 1/06

U.S. Cl. 416-17

6 Claims



1. A wind motor assembly comprising: a support structure; a shaft mounted on said support structure for rotating relative to its longitudinal axis; a rotor arranged on said shaft; said rotor having blades extending longitudinally of said shaft at an angle thereto, girders in the form of triangular pyramids serving for connecting said blades with said shaft, each of said girders having a first rod extending from an apex of each of said pyramids longitudinally of said shaft at an angle to the longitudinal axis thereof, said first rod passing through said corresponding blade longitudinally thereof connected therewith and with the end of said shaft at the outlet of the windstream, two more rods extending from said apex of said triangular pyramid, a hub secured on the opposite end of said shaft at the side of the rotor facing the windstream, said two rods being secured on said hub tangentially thereto.

4,432,696

ROTOR STRUCTURE FOR A ROTARY WING AIRCRAFT

Michael Stephan; Karlheinz Mautz, both of Ottobrunn, and Alois Schwarz, Putzbrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

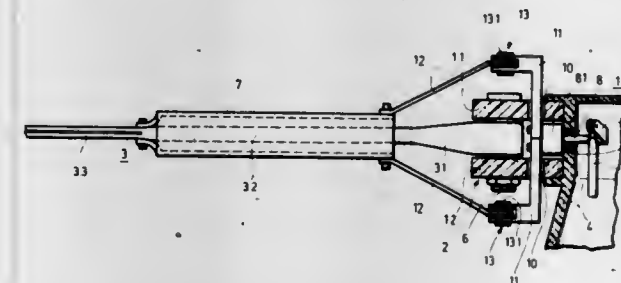
Filed Sep. 8, 1981, Ser. No. 300,378

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036093

Int. Cl.³ B64C 27/35

U.S. Cl. 416-134 A

5 Claims



1. A rotor structure for adjusting blade angle movements about a respective radial blade angle axis in a rotary wing aircraft, comprising hollow rotor hub means (4) having a rotational axis, wing means each including a blade and a torsion

yielding blade neck (3.2), hingeless and bearingless means (2) for securing said torsion yielding blade neck to said rotor hub means, and blade angle adjustment means comprising control shaft means (8) and shaft operating means (5, 9), said shaft means (8) and said shaft operating means (5, 9) being operatively housed inside said hollow rotor hub means, bearing means (14) secured to said hollow rotor hub means operatively supporting said control shaft means (8) inside said hollow rotor hub means (4) to extend radially out of said hollow rotor hub means (4) in radial, axial alignment with the respective blade angle axis, torsion-stiff sleeve means (7) rigidly connected to the respective blade so that said torsion yielding blade neck (3.2) extends radially and axially through said torsion-stiff sleeve means, yoke means (11, 12) arranged for bridging said torsion yielding blade neck substantially in the direction of said radial blade angle axis, said yoke means operatively connecting said torsion-stiff sleeve means (7) to said control shaft means (8), said shaft operating means (5, 9) inside said hollow rotor hub means being operatively connected to said control shaft means (8) for tilting the torsion-stiff sleeve means (7) around the radial blade angle axis for twisting the torsion yielding blade neck (3.2) to thereby adjust said blade angle movements of the respective wing blade.

4,432,697

ROTOR OF AXIAL-FLOW MACHINE

Haruo Miura, and Yoshiaki Abe, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

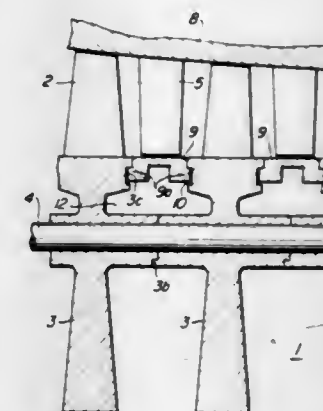
Filed Apr. 5, 1982, Ser. No. 365,597

Claims priority, application Japan, Apr. 10, 1981, 56/53182

Int. Cl.³ F01D 5/06

U.S. Cl. 416-198 A

10 Claims



10. A rotor of an axial-flow machine comprising a plurality of rotor blades arranged in a stator blade lattice and supported on disc sections in a manner to be mounted and removed as desired, said rotor comprising a stacked-rotor including a plurality of discs stacked one over another and interconnected by stacking-bolts, said rotor further comprising:

a plurality of circumferential grooves located peripherally of the rotor on opposite outer peripheral surfaces of the adjacent disc sections in spaced juxtaposed relation; spacer means including a plurality of spacer members located peripherally of said circumferential grooves and outer surfaces each forming a channel on the surface of the rotor juxtaposed against the end of each stator blade; projecting portions each divided into a plurality of elements peripherally of each said circumferential groove to be successively fitted therein to keep said spacer means from being dislodged outwardly of the rotor by engaging the outer peripheral shoulder of each said circumferential groove; cutout means formed at least in one portion of each said circumferential groove and having a length slightly greater than the peripheral length of each said spacer member to allow the spacer members to be successively

inserted therethrough into the circumferential grooves; and means for avoiding dislodging of a last spacer member inserted in the circumferential grooves through said cutout means, said last spacer member dislodging avoiding means being located both in the last spacer member and the disc section.

4,432,698

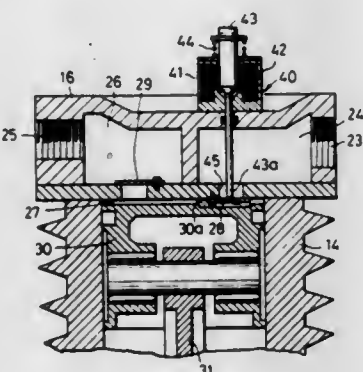
COMPRESSOR HAVING A STARTING LOAD REDUCING APPARATUS

Takashi Shirakuma; Fujito Nakamichi, and Osamu Iguchi, all of Yokohama, Japan, assignors to Tokico, Ltd., Kawasaki, Japan
Filed Nov. 3, 1981, Ser. No. 317,871

Claims priority, application Japan, Nov. 4, 1980, 55-157775[U]

Int. Cl.³ F04B 49/06

U.S. Cl. 417-27



1. A compressor having a starting load reducing apparatus comprising:

- a main compressor body for compressing gas obtained under suction from an intake chamber through an intake valve within a compression chamber, and ejecting the compressed gas through an outlet opening;
 - a motor for driving said main compressor body;
 - first and second switches for starting said motor when both said first and second switches are closed;
 - a solenoid mechanism operated when both said first and second switches are closed, for forcibly communicating said compression chamber with said intake chamber, to put said main compressor body into a non-compressing operational state;
 - a rectifier provided at a stage before a coil of said solenoid mechanism; and
 - a positive thermally sensitive resistor element provided at a stage before said rectifier,
- said solenoid mechanism operating after both said first and second switches are closed until a time when the resistance of said positive thermally sensitive resistor element reaches a predetermined resistance.

4,432,699

PERISTALTIC PIEZOELECTRIC PUMP WITH INTERNAL LOAD SENSOR

John B. Beckman, Cedartown, and Martin J. Blickstein, Austell, both of Ga., assignors to The Abet Group, Rome, Ga.

Continuation-in-part of Ser. No. 374,890, May 4, 1982. This application Jan. 3, 1983, Ser. No. 451,231

Int. Cl.³ F04R 17/04, 43/04, 43/12

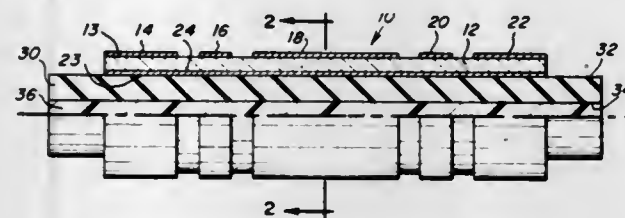
U.S. Cl. 417-63

18 Claims

1. A piezoelectric pump comprising:

- a plurality of piezoelectric tube regions, each said region having an outer surface and an inner surface defining a cavity;
- an electrode associated with each said outer surface and inner surface for applying electric signals to said surfaces;
- means for selectively phasing said electrical signals such that

said regions expand and contract in a peristaltic motion to pump fluid through said cavity; and



means for sensing the piezoelectric effect that results from the internal load on the innermost of said piezoelectric tube regions.

4,432,700

MILK PUMPING SYSTEM FOR VACUUM MILKING INSTALLATIONS

Friedrich Icking, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

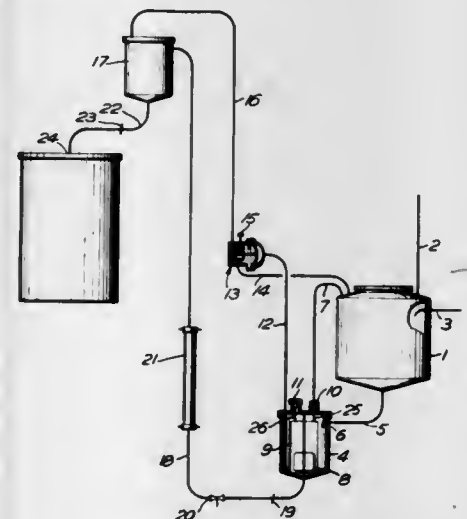
Filed Feb. 5, 1982, Ser. No. 346,478

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111233

Int. Cl.³ F04F 1/12

U.S. Cl. 417-121

5 Claims



1. In a milk pumping apparatus for a vacuum milking installation for withdrawing milk from a milk receiver under constant vacuum to atmospheric pressure, having a first milk releaser including a liquid input connected to the milk receiver by a milk outlet line with a clack valve, a milk outlet, a first valve for opening and closing a vacuum line between the milk receiver and the first milk releaser, a second valve for opening and closing a vent to the atmosphere and a float for opening the first valve and closing the second valve when there is less than a preselected amount of milk in the first milk releaser and for closing the first valve and opening the second valve when there is more than a preselected amount of milk in the first milk releaser the improvement comprising:

an air actuated two-way valve having one inlet connected to the atmosphere, another inlet connected to a vacuum, an outlet, and an actuating input connected by an air line to the first milk releaser and directly responsive to the prevailing pressure in the first milk releaser such that the valve's outlet is in communication with the one inlet when the first milk releaser and thereby the actuating input is under a vacuum and in communication with the other inlet when the first milk releaser and thereby the actuating input is at atmospheric pressure; a second milk releaser having a fluid inlet connected to the outlet of the two-way valve and a milk inlet; and means connecting the milk inlet of the second milk releaser to the milk outlet of the first milk releaser whereby milk collected in the first releaser is

aspirated by the second milk releaser while a vacuum is maintained in the second milk releaser.

4,432,701

VACUUM CONTROLLING DEVICE

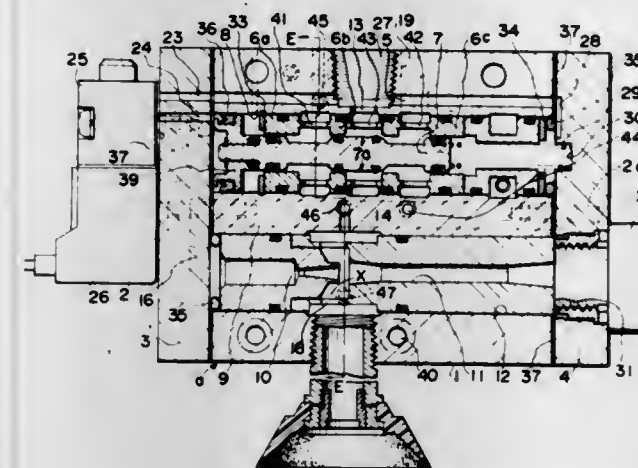
Yoji Ise, c/o Kabushiki Kaisha Myōtoku Seisakusho, 6-18, Shimomaruko 2-Chome, Ota-Ku, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,747

Int. Cl.³ F04F 5/48

U.S. Cl. 417-187

2 Claims



2. The device according to claim 1, including a vacuum confirming device, comprising a piston movable in a cylinder, said cylinder being in communication with said aspirator chamber, said piston being movable on establishment of a vacuum in said aspirator chamber to activate a microswitch.

4,432,702

SWASH PLATE TYPE COMPRESSOR

Yatsuhiko Honzawa, Kariya; Masuyoshi Moriyama, and Hidekazu Iwamori, both of Obu, all of Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Aichi, Japan

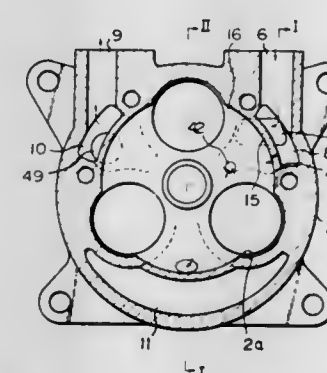
Filed Sep. 10, 1981, Ser. No. 300,922

Claims priority, application Japan, Sep. 17, 1980, 55-133004[U]

Int. Cl.³ F04B 1/16, 1/18

U.S. Cl. 417-269

2 Claims



1. A swash plate type compressor including: a pair of horizontal cylinder blocks jointed in axial alignment to form a horizontal combined cylinder block having therein a plurality of axial cylinder bores, said combined cylinder block further having a pair of suction ports formed adjacent to the joint of said pair of horizontal cylinder blocks for introducing a refrigerant gas into the combined cylinder block; front and rear housing attached to the front and rear ends of said combined cylinder block, via valve plates, respectively, each said housing having therein a suction chamber and a discharge chamber; a driving shaft extending axially through the center of said horizontal combined cylinder block, said driving shaft being rotatably supported in said combined cylinder block; a swash plate fixedly mounted on said driving shaft and received in a

swash plate chamber defined in said combined cylinder block, and; a plurality of compressor pistons engaged with said swash plate and being reciprocable within said respective cylinder bores of said horizontal combined cylinder block, wherein at least one of the cavities formed between said neighbouring cylinder bores of said horizontal combined cylinder block is provided as a horizontal suction passageway, at least one pair of inlet ports are formed in the bottom surface of said suction passageway for communicating said suction passageway with said swash plate chamber, one being located at a position radially outwardly remote from the center of said horizontal combined cylinder block and the other being located at another position radially inwardly close to the center of said horizontal combined cylinder block, and through-holes for connecting said suction passageway and said suction chambers of said front and rear housings are provided above said pair of inlet ports, respectively.

4,432,703

ADJUSTING ARRANGEMENT FOR A HYDRAULIC PUMP WITH VARIABLE DISCHARGE FLOW QUANTITY

Gerhard Beutler, Nagold; Heinz Berthold, Horb; Joachim Morsch, St. Wendel, and Karl Schiene, Sulzbach, all of Fed. Rep. of Germany, assignors to BSO Steuerungstechnik GmbH Industriestrasse, Fed. Rep. of Germany

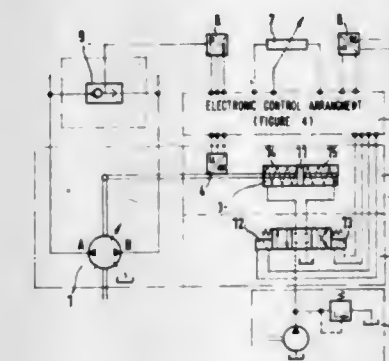
Filed Nov. 4, 1981, Ser. No. 318,064

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044515

Int. Cl.³ F04B 1/26

U.S. Cl. 417-217

16 Claims



1. An adjusting arrangement for a hydraulic pump having a variable discharge flow, said arrangement comprising:

- (a) a first means for adjusting the angle of traverse for said pump to vary the discharge flow of said pump, said first means responsive to a variable pilot pressure;
- (b) a first control means for translating electronic control signals to variable pilot pressure signals for said first means;
- (c) an electronic control means, said electronic control means having:
 - (i) a means for generating a signal proportional to the angle of traverse of said pump representing an actual discharge flow quantity;
 - (ii) a means for normalizing input parameters of said electronic control means with respect to a predetermined set of maximum permissible values said input parameters including a rated discharge flow quantity, said actual discharge flow quantity, and an actual discharge pressure;
 - (iii) a means for introducing boundary values to said electronic control means;
 - (iv) a regulator means for generating said electronic control signals provided to said first control means, said regulator means deriving said electronic signals from said angle of traverse signal, said normalized input parameters and said boundary values.

4,432,704

MECHANICAL SPEED REGULATOR FOR AN INJECTION PUMP

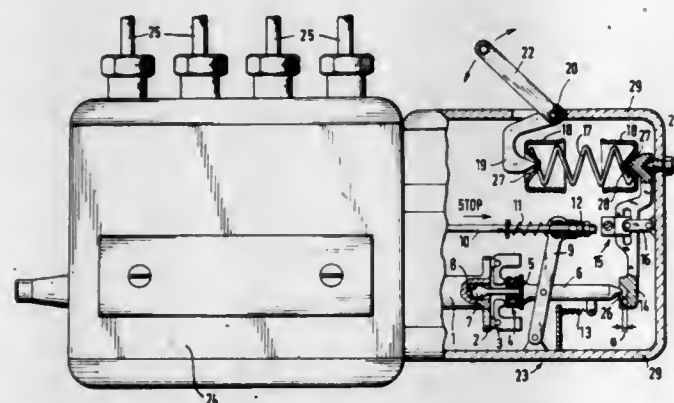
Max Matzen, Leverkusen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 92,991, Nov. 9, 1979, abandoned. This application Dec. 3, 1981, Ser. No. 327,013
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849093

Int. Cl.³ F02D 1/10

U.S. Cl. 417—294

8 Claims



1. A mechanical speed regulator for an injection pump, which comprises in combination
a housing for said regulator flanged thereto;
a drive shaft operatively connected to said pump;
centrifugal weights operatively connected to said drive shaft;
a control pin operatively connectible to said drive shaft;
a supplementary extra-starting-fuel feed spring operatively connected to said housing and to said control pin, said control pin being adapted to be axially shifted by said centrifugal weights against the force of said supplementary feed spring;
control spring means operatively connected to said housing, said control pin being substantially in equilibrium with said control spring means during operation of said regulator;
a beam operatively connected to said housing in such a way as to be able to swing freely relative thereto, said beam having a first end and a second end, said first end being adapted to engage said control pin, and said second end engaging said control spring means, said control spring means being a pressure spring arranged in such a way that its central axis is substantially parallel to said control pin and that it is adapted to have the said direction of force as said control pin, said housing including an adjustable stop located substantially coincidental with the extension of the central axis of said pressure spring, said second end of said beam being interposed between said pressure spring and said stop and being adapted to be engaged by said stop.

4,432,705

REFRIGERATION COMPRESSOR CAPACITY CONTROL MEANS AND METHOD

Bruce A. Fraser, Chittenango, and Curtis Holt, Jr., East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 944,237, Sep. 20, 1978, abandoned. This application Aug. 28, 1980, Ser. No. 182,167

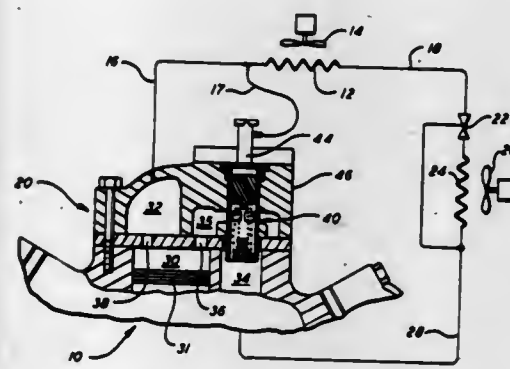
Int. Cl.³ F04B 49/02

U.S. Cl. 417—295

5 Claims

1. Capacity control apparatus for a multi-cylinder refrigerant compressor employed in a mechanical refrigeration unit comprising:
means defining a manifold for delivering refrigerant vapor to less than all of the cylinders of the compressor;
a housing disposed between the manifold and the cylinders

receiving refrigerant vapor therefrom for conducting refrigerant vapor from the manifold to these cylinders;
a piston reciprocally disposed within the housing for modulating movement between open and closed positions to modulate the flow of refrigerant vapor from the manifold to the cylinders receiving vapor therefrom, the piston dividing the housing into an upper chamber spaced from the manifold, and a lower chamber in communication therewith and located between the manifold and the upper chamber;



means for producing a relatively constant force in the upper chamber urging the piston to the closed position; and
means for producing a variable force in the lower chamber urging the piston to the open position, the variable force producing means including vapor entering the housing from the manifold wherein the position of the piston and the quantity of refrigerant passing through the housing modulate in response to changes in the pressure of refrigerant vapor in the manifold.

4,432,706

OIL WELL PUMP DRIVING UNIT

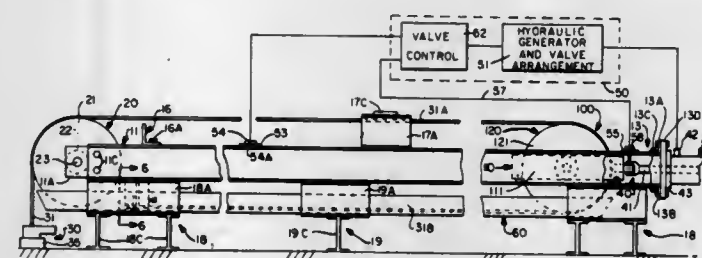
Thomas A. Gilbertson, 216 Sandringham, N., Moraga, Calif. 94566

Continuation of Ser. No. 148,380, May 9, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,646

Int. Cl.³ F04B 47/04

U.S. Cl. 417—399

6 Claims



1. In an oil well pumping apparatus which includes a submersed reciprocating pump mounted in a tubing arrangement communicating with the wellhead, a sucker rod string extending through said tubing arrangement and connected in driving relation with said pump, and a pumping tee and stuffing box arrangement mounted on the casing of the well at the wellhead and including a sealed drive rod arrangement in the stuffing box connected in driving relation to said sucker rod string and a drive rope connected in driving relation to said sealed drive rod, a pump driving unit comprising:
a rotatably mounted sheave adapted to be positioned proximate said wellhead and to engage said drive rope to change the vertical drive direction of said drive rope to a horizontal drive direction;
a hydraulic cylinder including an in/out fluid line and a cylinder rod having a preselected length to provide a preselected maximum stroke length;
structural means mounting said hydraulic cylinder in a horizontal orientation with the axis of said cylinder in the plane of said sheave;
coupling means for coupling said cylinder rod to said drive rope in a pulling relation; and
a hydraulic drive/control means for operating said hydraulic cylinder to provide a presettable operating cycle for said cylinder rod consisting of a hydraulic power upstroke and a gravity power downstroke of length presettable up to said maximum stroke length;
said structural means comprising an elongated horizontally disposed draw works having a foot end structure adapted to be placed proximate said wellhead and to support said rotatably mounted sheave, a head end structure adapted to mount said hydraulic cylinder and a body structure defining a horizontally disposed carriage channel having a length greater than said maximum operating stroke length; and said coupling means comprises a carriage assembly adapted to traverse said carriage channel, a second sheave of diameter substantially identical to said first sheave and rotatably mounted on said carriage assembly in a plane substantially coincident with the plane of the first sheave and adapted to engage said drive rope to reverse the direction of said drive rope by 180 degrees, a rope termination assembly mounted on said draw works for terminating said drive rope at a position proximate said first sheave, and a coupler assembly for coupling said carriage assembly to said cylinder rod.

4,432,708

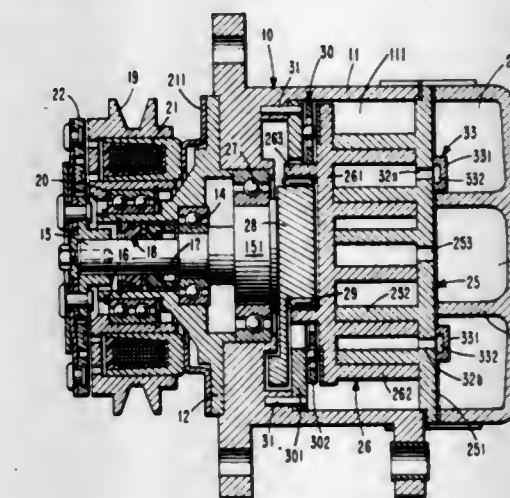
SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH PRESSURE COMMUNICATING PASSAGE BETWEEN POCKETS

Masaharu Hiraga, Honjyo, and Seichi Sakamoto, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan
Filed Jun. 25, 1981, Ser. No. 277,108

Claims priority, application Japan, Jul. 1, 1980, 55-90390
Int. Cl.³ F01C 1/02

U.S. Cl. 418—55

8 Claims



1. In a scroll type fluid displacement apparatus including a housing, a fixed scroll member fixedly disposed relative to said housing and having a first end plate from which a first wrap extends into the interior of said housing, an orbiting scroll member having a second end plate from which a second wrap extends, said first and second wraps interfitted at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, a driving mechanism including a drive shaft rotatably supported by said housing and connected to said orbiting scroll member to effect the orbital motion, and a rotation preventing mechanism connected to said orbiting scroll member to prevent the rotation of said orbiting scroll member during the orbital motion of said orbiting scroll member, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll member, the improvement comprising equalizing means for minimizing fluid pressure difference between said pair of fluid pockets and thereby reducing vibration in the apparatus, said equalizing means including two holes formed in said end plate of said fixed scroll member at symmetrical locations so that said wrap of said orbiting scroll member simultaneously crosses over said two holes, and a fluid passage means for placing said two holes in continuous fluid communication with one another.

4,432,707

ROLLER ASSEMBLY FOR PERISTALTIC PUMP

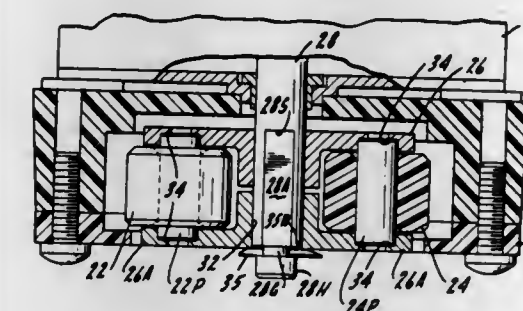
David S. Anderson, and Lawrence F. Kottke, both of Bradenton, Fla., assignors to Anko Motors, Inc., Bradenton, Fla.

Filed Jun. 21, 1982, Ser. No. 390,386

Int. Cl.³ F04B 43/12, 45/08

U.S. Cl. 417—477

4 Claims



1. A roller assembly to be mounted on the motor driven shaft of a peristaltic pump, the pump having a bent flexible tube containing a fluid to be pumped by revolving rollers which constrict the tube with a regular intermittence, comprising:
a pair of brackets each having a centrally located motor shaft opening with a keying flat aligned one to the other whereby the brackets may be keyed to a flat on the shaft in opposed relation one to the other so the brackets will rotate in unison with the shaft; and
said brackets having arms extended radially outward of the motor shaft opening and the opposed ends of the arms supporting opposed ends of pins in bracket pockets on which the rollers are rotatably mounted;
said brackets being of pressed, sintered powdered iron said brackets each having two opposed flats which may be keyed to said flat on the shaft so that a radial dimension discrepancy in the spacing of the bracket pockets may be canceled by changing the hand position of the brackets when mounting them on the shaft.

4,432,709

INTERNALLY SHAFTED PLANETARY PISTON ENGINE

Christian B. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jul. 29, 1981, Ser. No. 288,028

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030203

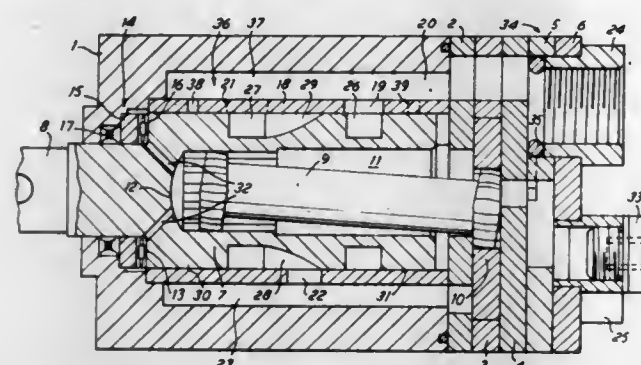
Int. Cl.³ F03C 2/00

U.S. Cl. 418—61 B

3 Claims

1. A hydraulic pump or motor, comprising a cylindrically shaped housing having optionally and selectable inlet and outlet ports and drive shaft bearing means at one end thereof, said housing defining a valve bore, a cylindrically shaped valve having a central bore and being rotatably disposed in said valve bore, drive shaft means journaled in said bearing means and being connected to said valve means in driving relation thereto, expansible chamber forming means in said housing at the end thereof opposite said bearing means, drive means in said central bore connecting said valve in driving relation to said expansible chamber forming means, valving means in said

valve disposed centrally thereof relative to the ends thereof, said valving means including first and second axially spaced annular grooves, first valving passages in said housing connecting said expansible chamber forming means to said valving means, second valving passages in said housing connecting said



inlet and outlet ports to said annular grooves of said valving means, lubrication passage means in said housing adjacent both ends of said central bore providing fluid communication between said second valving passages and said central bore near said ends thereof to provide lubrication for the outer surface of the ends of said valve adjacent said ends.

4,432,710

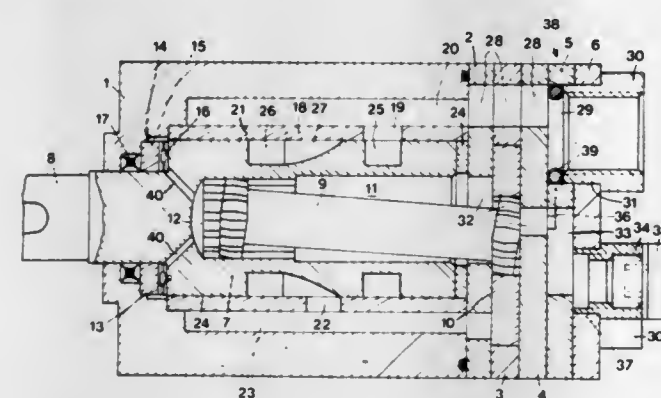
ROTARY TYPE MACHINE WITH CHECK VALVES FOR RELIEVING INTERNAL PRESSURES

Christian B. Hansen, Nordborg, and Carl O. Flagstad, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 132,306, Mar. 20, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,901

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910831

Int. Cl.³ F03C 2/22; F04C 2/22, 15/00; F16K 15/14 U.S. Cl. 418—61 B 1 Claim



1. A hydraulic pump or motor, comprising, a housing defining a central bore and an inlet and outlet passage means, said housing having axially oriented inlet and outlet ports at one end thereof having respective fluid communication with said passage means, expansible chamber means at said one end of said housing and drive shaft means rotatably supported at the other end of said housing, annularly shaped valve means rotatably mounted in said housing bore and forming an inner bore, said drive shaft means being connected to said valve means, drive means in said valve means inner bore connecting said valve means to said expansible chamber means, said housing having an end part surrounding said drive shaft means, an annular bearing plate surrounding said drive shaft means, said plate engaging said housing end part and forming therewith an annular groove surrounding said drive shaft means, an annularly shaped shaft seal in said groove, said valve means having a shoulder part adjacent said bearing plate, bearing means between said valve means shoulder part and said bearing plate, said housing being formed in part with a circular plate section adjacent said one end thereof, said circular plate section having

an aperture in fluid communication with said housing central bore and first and second bores forming portions of said housing inlet and outlet passage means, first and second passages between said aperture and said first and second bores, first and second O-rings in said first and second bores forming first and second check valve means between said valve means inner bore and said inlet and outlet ports which are respectively openable in the direction of said ports to limit the magnitude of fluid pressure in said inner bore and thereby limit the magnitude of forces applied to said bearing means, said bearing plate and said shaft seal.

4,432,711

VANE PUMP WITH CYLINDER PROFILE DEFINED BY CYCLOID CURVES

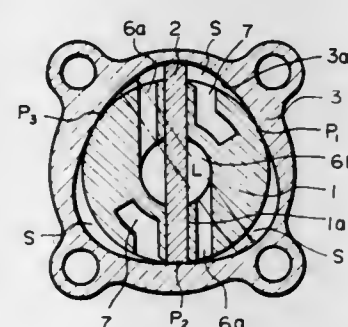
Keiji Tsuchiya; Hideaki Sasaya, and Akio Nara, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan Filed Nov. 2, 1981, Ser. No. 317,407

Claims priority, application Japan, Nov. 7, 1980, 55-157403; Jun. 10, 1981, 56-88012

Int. Cl.³ F04C 2/00

U.S. Cl. 418—150

6 Claims



1: A vane pump comprising a cylindrical rotor connected to and driven by a drive, said rotor being provided with a diametrically extending vane groove, a vane slidably arranged in said vane groove in radial directions, a cylinder in which said rotor is rotatably arranged about its center axis, said cylinder having an inner peripheral cam surface with which said vane always comes into slide contact at its opposed ends, and a pair of opposed end plates connected to the cylinder to define pumping chambers between the rotor and the cylinder, said cam surface of the cylinder having a profile defined by cycloid curves wherein said cam surface of the cylinder has a profile consisting of continuously connected cycloid curves which are represented by the following equations:

$$0 \leq \theta \leq \frac{\pi}{3}$$

$$R = A + \delta \cdot \left(\frac{\theta}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta \right)$$

$$\frac{\pi}{3} \leq \theta \leq \frac{2\pi}{3}$$

$$R = A + \delta \cdot \left(\frac{\theta'}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta' \right)$$

$$\text{wherein } \theta' = \theta - \frac{\pi}{3}$$

$$\frac{2}{3}\pi \leq \theta \leq \pi$$

$$R = A + \delta \cdot \left(\frac{\theta'}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta' \right)$$

-continued

$$\text{wherein } \theta' = \theta - \frac{2}{3}\pi$$

$$\pi \leq \theta \leq \frac{4}{3}\pi$$

$$R = A + \delta \cdot \left(\frac{\theta'}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta' \right)$$

$$\text{wherein } \theta' = \theta - \pi$$

$$\frac{4}{3}\pi \leq \theta \leq \frac{5}{3}\pi$$

$$R = A + \delta \cdot \left(\frac{\theta'}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta' \right)$$

$$\text{wherein } \theta' = \theta - \frac{4}{3}\pi$$

$$\frac{5}{3}\pi \leq \theta \leq 2\pi$$

$$R = A + \delta \cdot \left(\frac{\theta'}{\theta_h} - \frac{1}{2\pi} \sin \frac{2\pi}{\theta_h} \theta' \right)$$

$$\text{wherein } \theta' = \theta - \frac{5}{3}\pi$$

wherein:

R; a radius vector, i.e., the distance between the center axis of the rotor and the cam surface
A; the radius of the rotor
 θ ; a phase [rad.] of the vector R
 δ ; the maximum radial displacement (lift) of the vane
 θ_h ; a phase [rad.] of the vector R at the maximum radial displacement of the vane.

4,432,712

HYDROSTATIC GEAR RING MACHINE

Siegfried Eisenmann, Conchesstrasse 25, 7960 Aulendorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 279,042, Jun. 30, 1981, Pat. No. 4,398,874. This application Dec. 18, 1981, Ser. No. 332,355

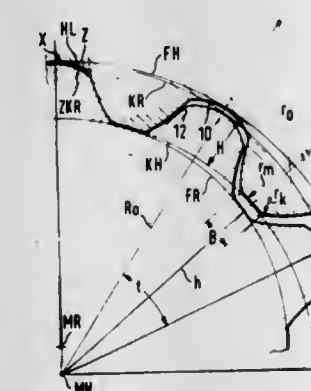
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026222

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.³ F04C 2/10

U.S. Cl. 418—171

15 Claims



1. A hydrostatic gear ring machine, comprising a housing having an inner hollow and defining an inlet side and an outlet side; a hollow gear arranged in said housing and provided with between eight and sixteen teeth; a driven pinion with further teeth having by one tooth less than said hollow gear and engaging with said hollow gear so as to form a region of deepest engagement and a region which is opposite to the latter, the

teeth heads of said pinion sliding over the teeth of said hollow gear in the opposite region whereas the teeth flanks of said pinion abut against the teeth of said hollow gear in said region of deepest engagement in a driving engagement so as to provide sealing between said inlet side and outlet side, said teeth being formed so that the teeth heads of said pinion are freely received into the teeth gaps of said hollow gear and the teeth of said pinion have a shape determined by rolling of said pinion over said hollow gear, the teeth of said hollow gear having an approximately trapezoidal shape with convexly curved flanks and heads.

4,432,713

MACHINE FOR THE CONTINUOUS MOLDING OF POLYSTYRENE

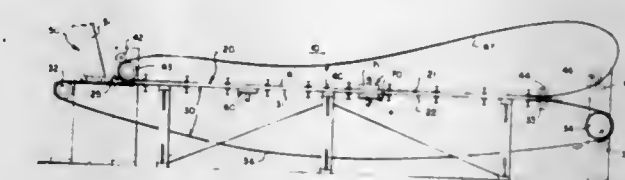
Rolf E. Berner, R.D. #6, New Castle, Pa. 16103

Filed Aug. 20, 1982, Ser. No. 409,934

Int. Cl.³ B29D 27/00

U.S. Cl. 425—4 C

10 Claims



1. In apparatus for the continuous molding of polystyrene, wherein granules of polystyrene containing a heat-activated expansion agent are converted into a coherent agglutinated body, of the type having an open-ended molding chamber with an inlet end and an outlet end, means for feeding said polystyrene granules to said inlet end of said chamber, means for continually moving said polystyrene through said molding chamber, and means for subjecting said moving polystyrene granules to heat to cause their expansion, the improvement comprising:

said molding chamber having stationary interior wall surface portions that operate to limit the expansion of said polystyrene granules in order to produce a dimensionally stable cross-section in said agglutinated body;
said continually moving means including at least one endless belt having a working segment confined within said molding chamber and a return segment subjected to substantially no longitudinal tensile force; and
means associated with said stationary wall surface portions that are in direct contact with said agglutinated body for minimizing the frictional forces presented by said stationary wall surface portions.

4,432,714

APPARATUS FOR FORMING BUILDING MATERIALS COMPRISING NON-WOVEN WEBS

John S. Forry, Manor Township, Lancaster County, and John R. Garrick, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 16, 1982, Ser. No. 408,059

Int. Cl.³ B29C 13/00

U.S. Cl. 425—83.1

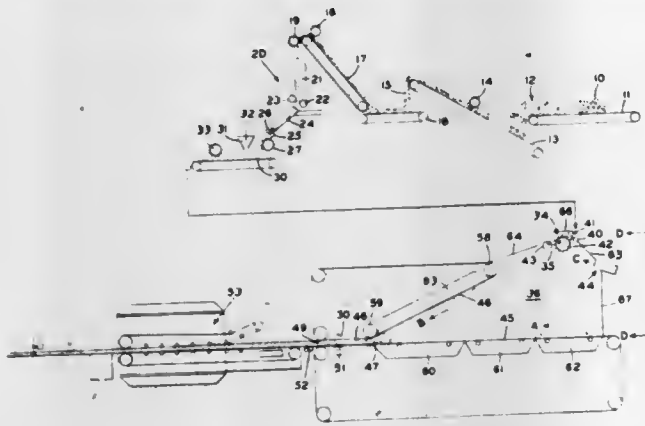
15 Claims

1. Apparatus for forming a non-woven web, said apparatus comprising:

(A) preparation means for preparing a mixture comprising a binder and principally inorganic fibrous material,
(B) a mat-forming zone feedibly associated with said preparation means so as to receive said mixture, said mat-forming zone comprising,
(1) a first aperture in the upper region thereof, said aperture comprising means for introducing said mixture therethrough,
(2) a second aperture disposed therein such that air introduced through said second aperture is horizontally or

upwardly directed so as to intersect and entrain therein said mixture, said second aperture having means associated therewith for controlling the direction of the air which passes therethrough,

(3) a first moveable foraminous wire disposed in the lower region of said mat-forming zone, said wire exiting said mat-forming zone through a nip opening, and, optionally, a second moveable foraminous wire disposed so as to converge with said first foraminous wire at said nip opening, said optional second foraminous wire and said



second aperture being disposed relative to said first foraminous wire such that said mixture is deposited essentially uniformly on said wires,

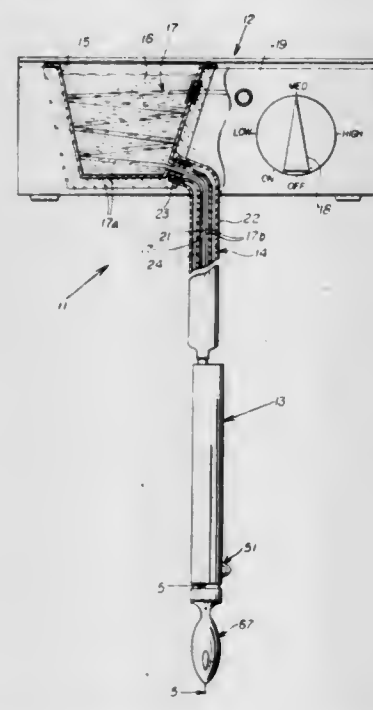
- (4) means for adjustably exhausting the entraining air through said foraminous wires to selectively deposit said mixture thereupon, and
- (5) means for moving said first foraminous wire and said optional second foraminous wire to said nip opening to form a non-woven web of material, and
- (C) means for consolidating and heating said web and setting said binder.

4,432,715

MOLTEN MATERIAL DISPENSING APPARATUS
Duk K. Ghim, 11 Merlin St., Framingham, Mass. 01701
Filed Mar. 1, 1982, Ser. No. 353,492
Int. Cl.³ B29F 5/00; B29D 9/00

U.S. Cl. 425—87

7 Claims



1. A molten substance dispenser comprising: container means for a liquified substance to be dispensed; applicator means for receiving the liquified substance from said container means and for applying the substance to a work piece, said applicator means adapted for hand manipulation and defining a

discharge port for dispensing the liquified substance flowing from said container means;

flexible tube means connected between said container means and said applicator means and adapted to accommodate the flow of the liquified substance therebetween;

heater means for heating the liquified substance in each of said container means, said applicator means, and said flexible tube means; said heater means comprising electrically conductive wire means extending through said flexible tube, and power supply means for producing heating current flow through said wire means; and

valve means for controlling the flow of the liquified substance and supported by said applicator means; said valve means comprising a valve member for controlling the flow through said discharge port, bias means biasing said valve member in a closed position, and an operator for opening said valve member and adapted for operation by a finger on a hand manipulating said applicator means; said operator being a manually actuated cam member which forcibly engages said valve member to produce movement thereof toward an open position.

4,432,716

APPARATUS FOR MOULDING THREE-Dimensionally SHAPED MOULDED ARTICLES FROM BINDER-CONTAINING WEB-LIKE NON-WOVEN FABRICS

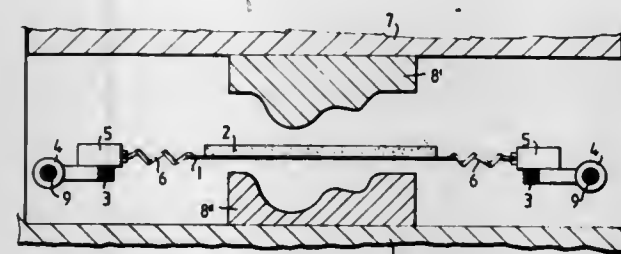
Günter H. Kiss, Berlin, Fed. Rep. of Germany, assignor to Ligotock Verfahrenstechnik GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,948

Int. Cl.³ B28B 7/36

U.S. Cl. 425—89

7 Claims



1. An apparatus for forming three-dimensional articles from non-woven fabrics comprising:

- a mould;
- the mould having first and second mould halves, at least one of which has a forming surface thereon, the first and second mould halves being movable from a spaced apart position to a closely conforming position to form the three-dimensional article;
- an elastically deformable support layer for transmitting the shaping forces from at least one of the first and second mould halves to the fabric;
- means for supporting the support layer between the first and second mould halves; and
- means, attached to the supporting means and the support layer, for resiliently stretching the support layer during the moulding process such that the support layer follows the shaping forces without using its inherent elasticity until the moulding process nears completion.

4,432,717

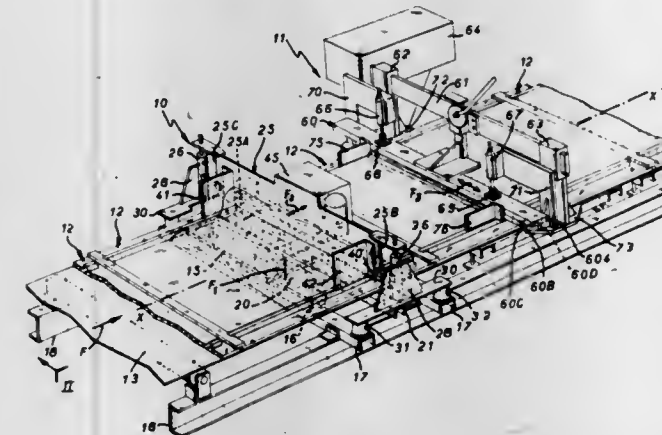
APPARATUS FOR FILLING MOLDS CARRIED ON A CONVEYOR BELT
Bernard Viemon, Trelaze, France, assignor to SAFAMA S. A., Angers, France

Filed Feb. 5, 1982, Ser. No. 346,156

Claims priority, application France, Apr. 11, 1981, 81 20657
Int. Cl.³ B28B 1/08

U.S. Cl. 425—429

14 Claims



1. An apparatus for filling molds in motion carried by a conveyor belt, said conveyor belt having a path of movement running between a filling unit for filling said molds with molding material and a finishing unit for smoothing the top surface of the molding material in said molds, said filling unit comprising a vibrating table, a section of said conveyor belt at said filling unit bearing against said vibrating table to impart essentially vertical vibrations to said section of said conveyor belt and thereby to said mold in said section of said conveyor belt, a distributor member extending transversely of said conveyor belt, said distributor member having a lower edge located slightly above a plane defined by the free upper edges of said molds, means for supplying molding material being disposed immediately ahead of the distributor member relative to the direction of movement of said conveyor belt, said distributor member spreading molding material in said mold at said filling unit by the relative displacement of said conveyor belt, means imparting essentially horizontal vibrations to said distributor member, parallel to the path of movement of said conveyor belt, said finishing unit comprising a smoothing member, and means imparting essentially horizontal vibrations to said smoothing member, said smoothing member being displaceable transversely of the path of movement of said conveyor belt, and means for reciprocating said smoothing member transversely of the path of movement of said conveyor belt in a manner wherein said smoothing member eliminates surface irregularities in the top surface of the molding material produced by vertical vibrations imparted by said distributor member.

4,432,718

EXTRUSION HEAD

Ernst Wurzer, Königswinter, Fed. Rep. of Germany, assignor to Mauser-Werke GmbH, Bruhl, Fed. Rep. of Germany
Filed Nov. 12, 1981, Ser. No. 320,507

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043228

Int. Cl.³ B29F 3/04

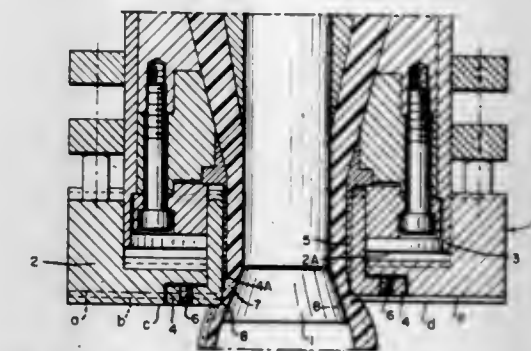
U.S. Cl. 425—466

4 Claims

1. In an extrusion head having a central axially extending die core member and an outer surrounding die casing ring member cooperating to define an annular die extrusion gap for fabricating a hollow extrudate, the die core member having a wall forming the inner boundary of the die gap and the casing ring member having a wall forming the outer boundary of the die gap, one of said walls having a tapered surface extending in said axial direction whereby relative axial movement of said

members uniformly changes the radial thickness of the die gap, the improvement wherein:

- (a) at least one of the boundary walls forming the die gap includes a plurality of independently axially adjustable sections disposed in side by side relationship about the



periphery thereof whereby axial adjustment of any section varies the local radial width of the die gap defined by that section; and

- (b) means to adjust the plurality of independently axially movable sections to change the die gap at any and all locations around the periphery of the die opening.

4,432,719

APPARATUS FOR FORMING A BLOWN THERMOPLASTIC ARTICLE

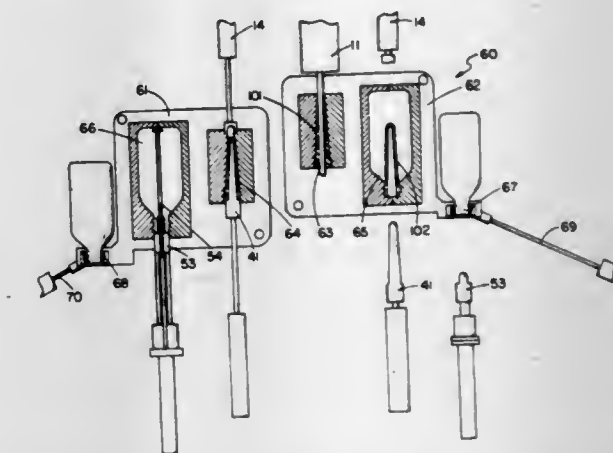
Robert X. Hafele, Baton Rouge, La., assignor to Hoover Universal Inc., Ann Arbor, Mich.

Division of Ser. No. 97,230, Nov. 26, 1979, Pat. No. 4,315,888.
This application Feb. 12, 1982, Ser. No. 348,205

Int. Cl.³ B29C 17/07

U.S. Cl. 425—526

3 Claims



1. An apparatus for forming a blown thermoplastic article, comprising:

- (a) means for extruding an essentially tubular parison of thermoplastic material;
- (b) a preform mold having sections which are closeable around the parison, thereby leaving at least one end of the parison open and enclosing the parison within a preform cavity;
- (c) means for radially expanding the parison with a differential pressure in order to enlarge the parison to essentially the shape of the preform mold, and holding the enlarged parison against the preform mold to accommodate the insertion of a core pin;
- (d) a tapering core pin insertable into the open end of the enlarged parison into essentially the entire length of the enlarged preform for compressing the parison between the core pin and the preform cavity to form a preform and for thermally conditioning the preform;
- (e) a blow mold having sections which are closeable around

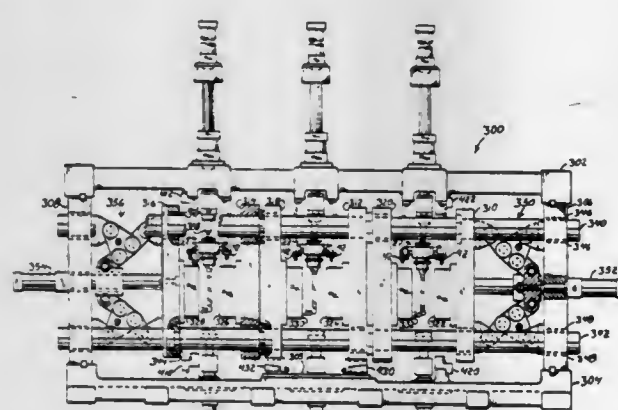
the thermally conditioned preform for enclosing the preform within a blow mold cavity; and
(f) means for expanding the preform to the shape of the blow mold cavity.

4,432,720

APPARATUS FOR HIGH RATE PRODUCTION OF BIAXIALLY ORIENTED THERMOPLASTIC ARTICLES
James G. Wiatt, James W. Calvert, Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Division of Ser. No. 257,468, Apr. 24, 1981, Pat. No. 4,382,760.
This application Jan. 25, 1983, Ser. No. 460,830
Int. Cl.³ B29C 17/07

U.S. Cl. 425-534

5 Claims



1. An apparatus for high rate production of biaxially oriented articles from thermoplastic article preforms, each article preform having a formable portion and a neck portion, the formable portion being biaxially expanded when its temperature is at a near the molecular orientation temperature of the thermoplastic, the apparatus comprising:

- (a) a machine frame;
- (b) preform carriers suspended from the machine frame, each carrier releasably retaining at least one preform, and each carrier having a passage therethrough to admit an expansion fluid into the preform;
- (c) a blow molding apparatus rigidly attached to the machine frame for biaxially expanding the article preforms comprising
 - (1) a blow station frame comprising
 - (a) a base mounted on the machine frame
 - (b) fixed side plates attached to opposite ends of the base, and
 - (c) a crown mounted on top of the side plates and lying parallel with base,
 - (2) a plurality of mold guide rods passing through the side plates and slidably supported thereby, the guide rods being operatively associated in pairs comprising first and second sets thereof,
 - (3) a first set of mold sections rigidly connected to and disposed along the first set of guide rods between the side plates and slidably supported upon the second set of guide rods,
 - (4) a second set of mold sections consisting of mating mold sections for the first set of mold sections, the first and second mold sections defining mold cavities, and the second set of mold sections being rigidly connected to and disposed along the second set of guide rods between the side plates and slidably supported on the first set of guide rods,
 - (5) first and second hydraulic actuators for respectively imparting motion to the first and second sets of guide rods, each actuator being respectively connected between a side plate and a mold section of the first and second sets of mold sections, the imparted motion closing mating mold sections together to surround preforms

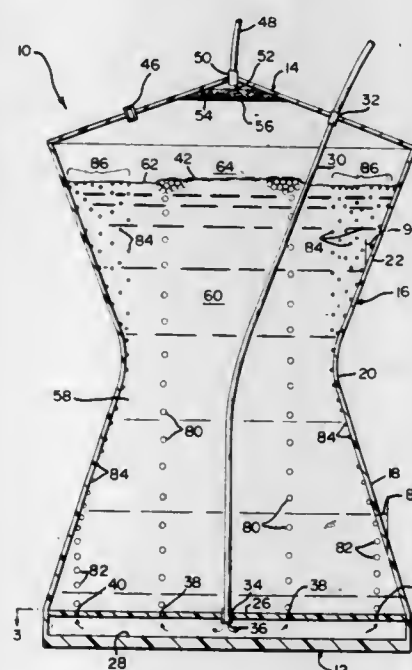
and opening mating mold sections to permit passage of expanded articles therebetween, and
(6) mold pressurizing means supported by the crown and disposed thereupon to introduce a pressurized expansion fluid into the preforms through the passage while the preforms are positioned within the mold cavities.

4,432,721

COMBUSTION AIR BUBBLE CHAMBER METHOD
Alyce D. Evans, Shiremanstown, and John R. Hilty, Thomasville, both of Pa., assignors to Testco, Inc., Camp Hill, Pa.
Filed Dec. 29, 1981, Ser. No. 335,278
Int. Cl.³ B01F 3/04

U.S. Cl. 431-4

8 Claims



1. A method of supplying humidified air to a combustion device, comprising bubbling air into water within a bubble chamber, flowing the bubbles upwardly against a downwardly facing inclined surface, attaching the bubbles to such surface, transferring the bubbles from the top of such surface around a smooth, gradual transition surface to the bottom of an upwardly facing surface sloping across the chamber, attaching the bubbles to such upwardly facing surface, moving the bubbles upwardly along such surface, releasing the bubbles along such surface at different locations to form a relatively uniform flow of bubbles floating up to the water surface, humidifying the air in the bubbles as they move upwardly in the water, collecting the vapor above the surface of the water, and conducting the collected vapor to the combustion device.

4,432,722

INTERRUPTED POWER HOT WIRE GAS IGNITION CONTROL SYSTEM

John E. Bohan, Jr., Minneapolis, and Brian J. Hinton, Crystal, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 13, 1981, Ser. No. 282,566

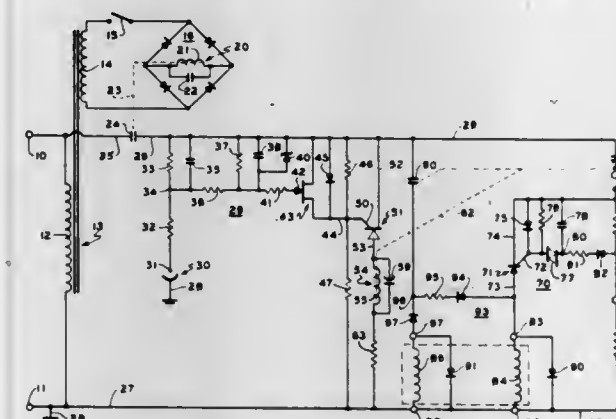
Int. Cl.³ F23Q 9/08

U.S. Cl. 431-46

10 Claims

1. An interrupted power hot wire gas ignition control system adapted to control a burner having gas valve means incorporating a pilot valve and a main valve, including: a negative temperature coefficient resistor-ignitor element which when energized from a potential changes in resistance value as the resistor-ignitor element heats to an ignition temperature with said element mounted at said burner; a series ignition circuit including a normally closed relay contact, a resistor, and said resistor-ignitor element with said ignition circuit adapted to be connected to a source of potential upon operation of said burner; switch means connected to energize said pilot valve;

switch control circuit means connected to said resistor to control said switch means, and wherein said switch means is nonconductive when said resistor-ignitor element is cold, and further wherein said switch means is conductive to energize said pilot valve when said resistor-ignitor element is at a gas ignition temperature; flame detector means mounted at said burner to detect the presence of a flame when said pilot valve has opened with said resistor-ignitor element at said gas ignition temperature; flame responsive circuit means having an input connected to said flame detector means, and said flame responsive circuit means having switched output means; said switched output means including a relay having a normally



open relay contact, and further including said normally closed relay contact; said normally open relay contact connected to said main valve to allow said normally open relay contact when closed to energize said main valve; and impedance means including a diode connecting said pilot valve to said normally open relay contact; said relay being energized upon the sensing of flame at said burner by said flame detector means with said normally closed relay contact becoming open circuited to remove power from said resistor-ignitor element while said normally open relay contact becomes closed circuited to maintain said pilot valve energized through said impedance means, and to also energize said main valve.

4,432,723

MULTILAMP PHOTOFLASH UNIT WITH IMPROVED QUICK-DISCONNECT SWITCH

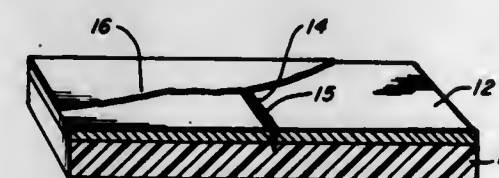
Andre C. Bouchard, Peabody, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 12, 1982, Ser. No. 397,308

Int. Cl.³ F21K 5/00

U.S. Cl. 431-359

17 Claims



1. In a multilamp photoflash unit containing a plurality of flashlamps and circuit means for sequentially igniting said flashlamps, at least one quick-disconnect switch included in said circuit means and being electrically connected in series with one of said flashlamps for interrupting the ignition circuit means for said flashlamp after said flashlamp is ignited, said disconnect switch comprising a length of polymeric material which is rendered electrically conductive by a deposit of conductive material on at least a portion of the surface of said length of polymeric material, said conductive material having a gap disposed therein extending substantially transverse to the length thereof, and a quantity of primer material disposed within said gap, whereby the disconnect switch is severed by ignition of the primer from a high voltage pulse imposed across the primed gap.

4,432,724

PHOTOFLASH LAMP INCLUDING IMPROVED IGNITION MEANS

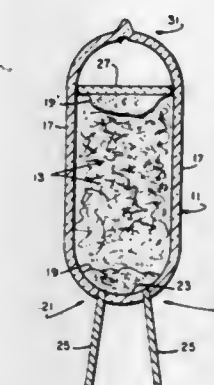
Andre C. Bouchard, Peabody, and Robert F. Craig, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 1, 1982, Ser. No. 353,316

Int. Cl.³ F21K 5/00

U.S. Cl. 431-362

12 Claims



1. In a photoflash lamp including an elongated, light transmitting envelope, a quantity of combustible, light-producing material having a shredded configuration and located within said envelope, and ignition means for igniting said shredded combustible material, the improvement wherein said ignition means includes a first quantity of primer material located within a first end of said envelope adjacent a first portion of said shredded combustible material, a pair of lead-in wires secured within said envelope and electrically connected to said first quantity of primer material for igniting said first quantity of primer material upon application of a suitable pulse across said lead-in wires, a thin member located within a second, opposing end of said envelope from said first quantity of primer material, and a second quantity of primer material positioned on said thin member adjacent a second portion of said shredded combustible material, said first quantity of primer material igniting said second quantity of primer material and said first portion of said shredded combustible material in a substantially simultaneous manner whereupon said second quantity of primer material ignites said second portion of said shredded combustible material to cause said shredded combustible material to burn from said first and second portions toward the center thereof.

4,432,725

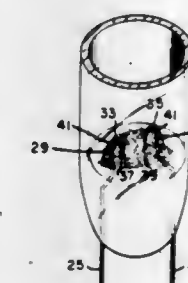
SUBMINIATURE FLASHLAMP MOUNT DESIGN
Ronald E. Sindlinger, Muncy, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 20, 1982, Ser. No. 380,592

Int. Cl.³ F21K 5/02

U.S. Cl. 431-362

12 Claims



6. A photoflash lamp comprising:
a light transmittable envelope;
a charge of filamentary combustible material located within said light transmittable envelope;

a combustion supporting gas contained within said light transmittable envelope; and
an ignition means located within said light transmittable envelope in operative relationship to said filamentary combustible material, said ignition means including a pair of electrical conductors sealed into and passing through one end of said light transmittable envelope with each of said pair of electrical conductors bent to form a loop within said envelope, and a primer material substantially bridging said loops of said pair of electrical conductors.

4,432,726

CENTRALIZED LADLE HEATING AND DRYING SYSTEM

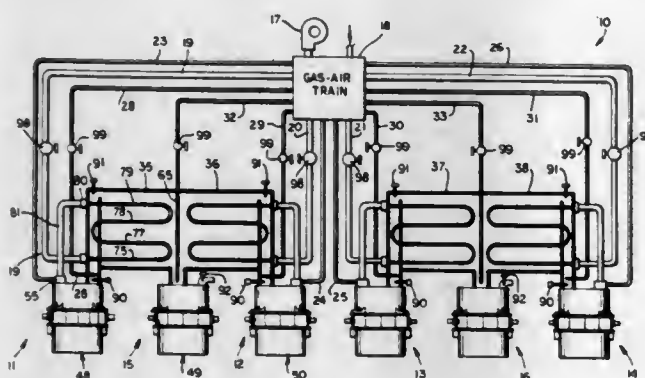
Grigory M. Gitman, Duluth, Ga., assignor to The Cadre Corporation, Atlanta, Ga.

Filed Sep. 16, 1982, Ser. No. 418,798

Int. Cl.³ F27D 3/00; C21B 9/00; F24J 3/00

U.S. Cl. 432—9

18 Claims



1. A method of simultaneously preheating a plurality of ladles and drying at least one other ladle comprising engaging the rim of each ladle with a lid including a heat resistant soft fibrous material that substantially closes the ladle,
moving combustion air first through a heat exchanger and then through the lids of and into the ladles to be preheated,
combining fuel with the combustion air and burning the combustion air and fuel in the ladles to be preheated,
moving the exhaust gases from the ladles being preheated through the lids of each ladle and through the heat exchanger,
collecting the exhaust gases moved through the heat exchanger,
moving the collected exhaust gases from the heat exchanger through the lids of and into the ladles to be dried, and
exhausting the gases from the ladles to be dried.

4,432,727

GAS-FIRED INFRARED PROJECTION HEATER

Joseph Fraioli, 8 Seymour Pl., White Plains, N.Y. 10605

Filed Sep. 21, 1982, Ser. No. 420,927

Int. Cl.³ F23D 23/00

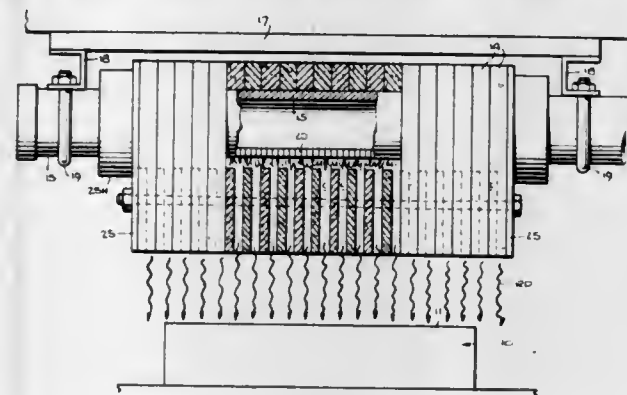
U.S. Cl. 432—227

14 Claims

1. A gas-fired infrared heater for projecting an infrared beam in a radiation pattern having a predetermined geometry for irradiating the surface of a body to effect substantially uniform heating thereof, said heater comprising:

- A. a gas-fired burner constituted by a cylinder supplied with a combustible air-gas mixture, said cylinder having a longitudinal slot occupied by corrugated ribbons whereby emitted therefrom is a sheet of flame; and
- B. an assembly formed by a stack of identical slabs of refractory material having a bore extending therethrough to receive said cylinder, each slab having a sector-shaped channel cut into one face thereof to define a fin parallel to said one face and side walls that diverge from the bore to create a flattened infrared radiation horn whose mouth is

aligned with the burner slot whereby the surface of the assembly on which the flame impinges is heated to a temperature level causing it to emit infrared radiation, the



parallel array of radiation horns created by the assembly producing a radiation pattern whose shape depends on the geometry of the channel.

4,432,728

DENTAL TRAY

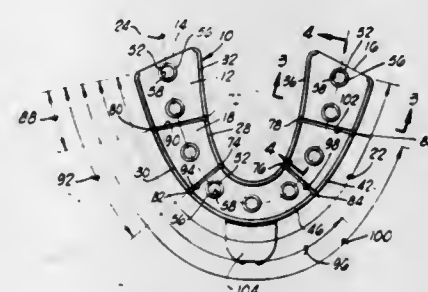
Floyd E. Skarky, 2233 NW. 46th, Oklahoma City, Okla. 73112

Filed Aug. 7, 1978, Ser. No. 931,464

Int. Cl.³ A61C 9/00

U.S. Cl. 433—37

2 Claims



1. A dental tray comprising:

- a base having opposite ends, a lingual side, a buccal side, a first surface and a second surface, the base extending in a dental arch generally between the opposite ends of the base an arcuate distance at least sufficient such that a portion of the first surface is disposable generally above some portion of the occlusal surfaces and such that a portion of the first surface of the base is disposable generally above some portion of the incisal edges in one operating position of the dental tray, the dental arch extending an arcuate distance at least sufficient such that the dental tray is contactable with the occlusal surfaces and incisal edges of an individual's teeth at three reference points to substantially prevent rotation of the dental tray and resulting model about an axis generally parallel with the dental arch axis and to substantially prevent rotation of the dental tray and resulting model about an axis generally perpendicular with the dental arch axis;
- a lingual sidewall connected to the lingual side of the base and extending a distance from the first surface generally perpendicularly from the base and terminating with an edge;
- a buccal sidewall connected to the buccal side of the base and extending a distance from the first surface generally perpendicularly from the base and terminating with an edge, the edges of the lingual and the buccal sidewalls being disposed in a generally common plane and the lingual and the buccal sidewalls cooperating with the first surface of the base to form a space for accommodating molding material during one operating aspect of the dental tray, and the lingual sidewall and the buccal sidewall each extending a surface molding distance from the base,

the surface molding distances being such that the lingual and the buccal sidewalls extend a minimum distance along the lingual and buccal edges of an individual's teeth and such that the edges of the lingual and the buccal sidewalls are each spaced a distance from the individual's gum in the one operating position of the dental tray; and
a plurality of first projections connected to the first surface and spaced generally between the opposite ends of the base, each first projection being connected to the first surface and extending a distance generally perpendicularly from the first surface terminating with an edge, the edges of the first projections being disposed in a generally common plane spaced a distance generally below the planar disposition of the edges of the lingual and the buccal sidewalls, each first projection having an opening intersecting the edge and extending a distance there-through to a position generally near the first surface.

4,432,729

PERSONAL HEALTH CARE DEVICE

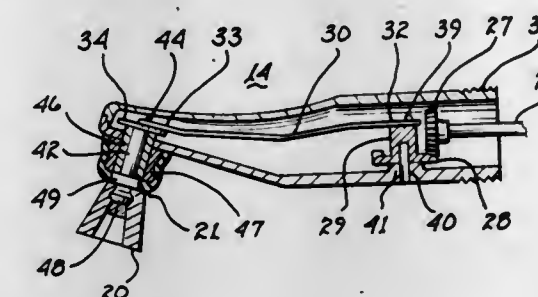
John B. Fattaleh, 4937 N. 43rd St., Phoenix, Ariz. 85018

Filed Apr. 23, 1982, Ser. No. 370,878

Int. Cl.³ A61C 1/07, 3/03

U.S. Cl. 433—118

23 Claims



1. A personal health care device comprising:

- (a) containment means for housing a drive mechanism therein and having an operative end and a body portion;
- (b) power drive means mounted in said containment means and having an output shaft extending therefrom, the actuation of said power drive means providing rotation of said output shaft;
- (c) drive means mounted for rotation about a first axis at an angle to the axis of said output shaft and operatively coupled thereto;
- (d) driven means mounted in said operative end for rotation about a second axis at an angle to the axis of said output shaft;
- (e) an elongated rigid link coupled to said drive means a first distance from said first axis and coupled to said driven means a second distance from said second axis, said first distance being less than said second distance whereby rotation of said drive means imparts an oscillatory motion to the rotation of said driven means;
- (f) engaging means affixed to said driven means and extending outwardly of said operative end for receiving an appliance thereon.

4,432,730

SOFT AND FIRM DENTURE LINER FOR A COMPOSITE DENTURE AND METHOD FOR FABRICATING

Lawrence Gettleman, Metairie, La.; Charles L. Farris, Satellite Beach, Fla.; H. Ralph Rawls, and Ralph J. LeBouef, Jr., both of New Orleans, La., assignors to Gulf South Research Institute, Baton Rouge, La.

Filed Oct. 1, 1982, Ser. No. 432,248

Int. Cl.³ A61K 6/08

U.S. Cl. 433—168

18 Claims

1. Method for forming a substantially non-toxic composite denture of improved physical characteristics comprising:

- (a) lining a curable acrylate polymer denture base material

with a denture liner material comprising a phosphonitrilic fluoroelastomer and an interpenetrating C₁-C₆ alkyl methacrylate monomer composition curable at a temperature of 100° C. or less under atmospheric pressure; and



(b) subjecting the lined denture base material to a temperature of about 100° C. or less at atmospheric pressure to concurrently cure the denture liner material and denture base material and to bond them together to form a composite denture.

4,432,731

BOMB SQUAD TRAINING DEVICE

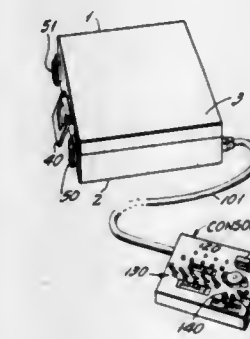
John M. Batchie, 56 Longview Ave., White Plains, N.Y. 10605

Filed Sep. 30, 1982, Ser. No. 432,062

Int. Cl.³ G09B 9/00

U.S. Cl. 434—11

10 Claims



1. A training system for personnel dealing with explosives comprising:

- a portable enclosed unit comprising simulated explosive means having triggering assembly means including detecting means responsive to at least one of movement of said unit or impingement of light on said unit to provide at least one control signal, whereby said detecting means provides a control signal simulating a triggering explosive signal; a separate, remotely coupled sensing console; said sensing console including identification means coupled to said triggering assembly means responsive to at least one of said simulated explosive signals, including indicating elements to provide an indication of a simulated explosive condition.

4,432,732

METHOD FOR PREDICTING PROPERTIES OF A CHEMICAL COMPOUND

Kunihiko Yano, c/o Yano-Miyazaki Research Laboratory, 4781-3 L-19-6, Ooba, Fujisawa-Shi, Kanagawa-Ken, Japan

Filed Jul. 26, 1982, Ser. No. 401,847

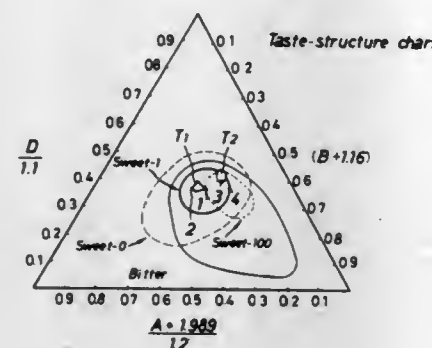
Int. Cl.³ G09B 23/24

U.S. Cl. 434—298

4 Claims

1. Method for predicting properties of a chemical compound wherein, on the basis of all available information about the chemical structure and observed activities, an optimal range of

the chemical structure of a desired property is described with a control chart or the Mahalanobis' generalized distance,



thereby the properties of the chemical compound being able to be predicted by analyzing only the chemical structure.

4,432,733

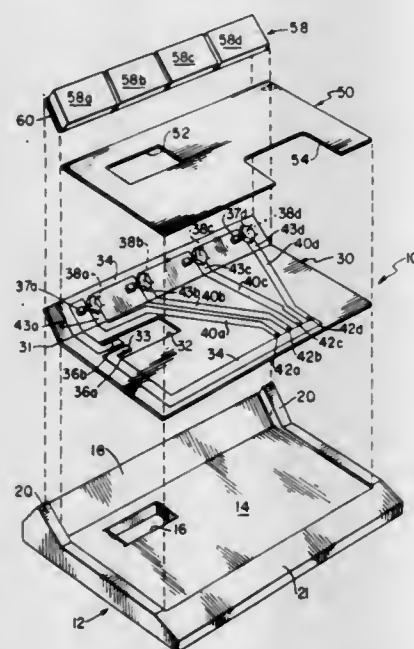
AMUSEMENT AND EDUCATIONAL GAME
Albert W. D. Carlson, Roosevelt Island, N.Y., assignor to River-cross Learning Corp., Roosevelt Island, N.Y.

Filed Jan. 8, 1982, Ser. No. 338,033

Int. Cl.³ G09B 7/02

U.S. Cl. 434—339

5 Claims



1. An electrically operated game comprising:
 - a base having a platform,
 - a template of flexible material having a pattern of electrical conductors laid down thereon, including a first and a second conductor each having a terminal for connection to a source of power,
 - a plurality of individual branch conductors connected in parallel with said first conductor, each said branch conductor including a light emitting diode and having an end adjacent said second conductor,
 - and a card having printed thereon at least one bit of conductive ink which is adapted to bridge and make electrical connection between said one of said ends of said branch conductors and said second conductor to energize the respective LED of the branch conductor, and
 - a mask for covering said template, said mask having a cutout defining a window in the area where said ends of said branch conductors are adjacent said second conductor, the edges of the mask surrounding said window providing a guide for a card.

4,432,734
MARINE PROPULSION DEVICE INCLUDING
IGNITION INTERRUPTION MEANS TO ASSIST
TRANSMISSION SHIFTING

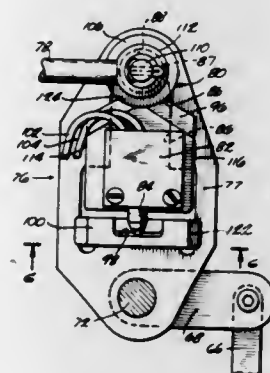
Gerald F. Bland, Kenosha, Wis., and Donald K. Sullivan, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 11, 1982, Ser. No. 338,304

Int. Cl.³ B63H 23/04, 23/06

U.S. Cl. 440—1

7 Claims



1. A marine propulsion device including an internal combustion engine, a propulsion unit, a propeller shaft rotatably mounted in said propulsion unit and carrying a propeller, a drive shaft rotatably mounted in said propulsion unit and driven by said internal combustion engine, a transmission drivingly connecting said drive shaft with said propeller shaft and movable between forward drive, reverse drive and neutral positions, shift means including a rotatable member operably connected to said transmission for moving said transmission in response to rotation of said member, said shift means further including a shift lever mounted on said rotatable member for rotation in common therewith, and shift assistance means including an element adapted for movement by an operator to effect shifting and carried by said shift lever for common movement therewith and for translatory movement relative to said shift lever when shift resistance to movement of said transmission from either the forward drive position or the reverse drive position to the neutral position is greater than a predetermined level and means for interrupting engine ignition in response to movement of said element relative to said shift lever.

4,432,735
HUMAN PROPELLED BUOYANT ANNULAR FLOAT
WITH REMOVABLE PONTOON STABILIZER

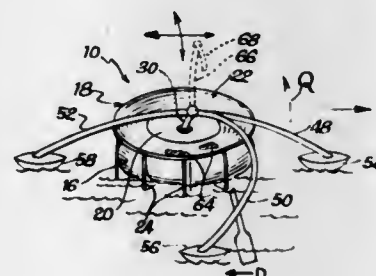
Constant V. David, 4952 Field St., San Diego, Calif. 92110

Filed Oct. 26, 1981, Ser. No. 315,001

Int. Cl.³ B63H 16/08

U.S. Cl. 440—21

8 Claims



1. A buoyant apparatus adapted to be propelled by a human operator in a standing position comprising:
 - an annular float having sufficient buoyancy to support the human operator above the water;
 - an annular platform mounted to the upper side of the float, the

annular platform having a central disk portion and a concentric outer ring portion along the entire periphery of the disk portion which defines a surface extending angularly upwardly from the outer periphery of the disk portion upon which the human operator can walk;

a plurality of downwardly extending fins secured to the annular float at circumferentially spaced locations about the underside of the float;

means for rotatably connecting a stabilizing structure to the center of the disk portion including a mast extending through the center of the platform perpendicular to the central disk portion and a coupling removably connected to the upper end of the mast; and

a member extending vertically from the coupling and having a horizontally extending bar adapted to be pushed on by the operator to counteract torque resulting from the operator rotating the float by walking on the platform.

4,432,736

WATER-JET STEERING MECHANISMS

Thomas S. Parramore, Bournemouth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

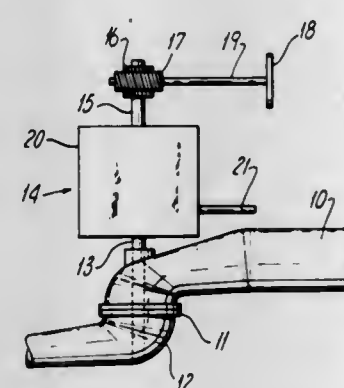
Filed Feb. 24, 1982, Ser. No. 352,606

Claims priority, application United Kingdom, Mar. 2, 1981, 8106472

Int. Cl.³ B63H 25/46

U.S. Cl. 440—42

3 Claims



1. In a steering mechanism for a water-jet propelled craft having a rotatable propulsion nozzle, the mechanism including a fine steering control and a coarse reversal control each operative to rotate the nozzle, the reversal control being arranged to rotate the nozzle through 180 degrees, the improvement comprising providing means for inhibiting torque feedback from either control to the other, the steering and reversal controls being arranged to rotate the nozzle via a common differential gear box, said gear box comprising a cage containing a differential arrangement of four bevel gears rotatable in bearings retained by the cage.

4,432,737

STEERING ARRANGEMENT AT INBOARD-OUTBOARD DRIVE UNIT

Donald Johansson, Älta, Sweden, assignor to Bröderna Lindqvists Verkstäder AB, Bandhagen, Sweden

Filed Feb. 4, 1982, Ser. No. 345,730

Claims priority, application Sweden, Oct. 2, 1981, 8100921

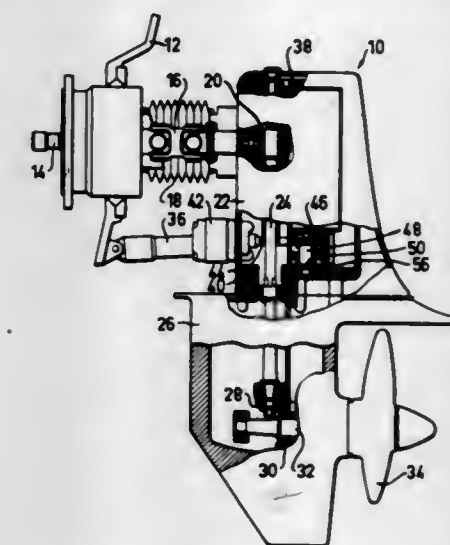
Int. Cl.³ B63H 5/13

U.S. Cl. 440—60

3 Claims

1. An assembly for steering a boat equipped with a propulsion device in the form of an inboard-outboard drive (10), to which the propulsive power from the engine is transmitted by a universal joint (16) to the gearbox (22) of the inboard-outboard drive and from there to an underwater housing (26), to which the propeller (34) is attached, and where the gearbox (22) and underwater housing (26) can be tilted vertically in relation to the stern (12) of the boat, and the gearbox (22) is

arranged as not to be horizontally pivotal relative to the stern (12) of the boat, while the underwater housing (26) is horizontally pivotal relative to the gearbox (22) by means of a steering gear (44-56) acting between the gearbox (22) and the underwater housing (26), characterized in that the steering gear comprises a first actuated gear (50) meshing with two outer gears



(52, 54), one on each side of said first gear (50), said first gear and two outer gears being located in the gearbox (22), and that at least one of said outer gears (52, 54) meshes with a toothed circular segment (56) having a length which covers an angle of about 90° so as to allow a steering deflection of about 180°, the toothed segment (56) being located in the underwater housing (26).

4,432,738

CAMERA TUBE AND METHOD OF MANUFACTURING SAME

Johannes H. T. Van Roosmalen, and Franciscus C. M. De Haas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 56,481, Jul. 11, 1979, Pat. No. 4,309,638.

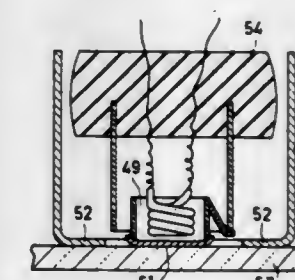
This application May 4, 1981, Ser. No. 260,665

Claims priority, application Netherlands, Jul. 20, 1978, 7807757

Int. Cl.³ H01J 9/18

U.S. Cl. 445—34

3 Claims



1. A method of manufacturing an electron gun of the type having an axis and comprising:
 - a cathode having a substantially planar electron emissive surface;
 - a cathode support having a cylindrical side and first and second open ends, the first end substantially lying in a single plane;
 - an electrically insulating material in which the cathode is mounted, said material and cathode being mounted in the cathode support such that the cathode is electrically insulated from the cathode support and the emissive surface is at the first open end of the cathode support; and
 - a substantially planar anode having an aperture therein, said

anode being attached to the first end of the cathode support; said method comprising the steps of:
placing the first end of the cathode support on a first transparent planar surface;
placing the cathode and the electrically insulating material into the cathode support such that the emissive surface of the cathode is at the first open end of the cathode support on a transparent planar surface which is at least parallel to the first transparent planar surface; and
fixing the position of the insulating material in the cathode support.

4,432,739

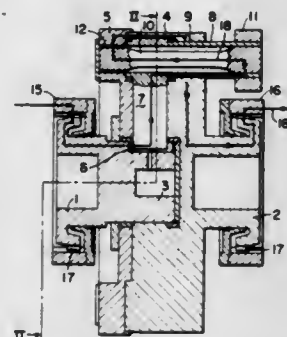
SPRING STEEL LIQUID-DAMPED SHAFT COUPLING
Jürgen Walter, Haltern-Hullern, Fed. Rep. of Germany, assignor to Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,633

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950255

Int. Cl.³ F16D 3/00, 3/14, 3/80

U.S. Cl. 464—24



1. An elastic shaft coupling for coupling one shaft to another wherein the shafts extend in substantially the same axial direction, which coupling includes a spring steel connection and liquid damping, the coupling comprising:

- an inner coupling part for connection to one shaft;
- an outer coupling part surrounding the inner coupling part for connection to the other shaft, the outer coupling part having a plurality of inwardly extending radial chambers therein which open adjacent the inner coupling;
- a plurality of leaf spring elements having first and second ends connected by a longitudinally extending web, the first end of each element being secured to the inner coupling part, and the web of each spring element extending through one of the radial chambers of the outer coupling part and dividing the chamber into two sections on opposite sides of the web;
- torsion tubes extending in the axial direction having first and second ends, each torsion tube being fixed adjacent its first end to the second end of one of the leaf springs;
- torsion bars extending within the torsion tubes and having first and second ends, each torsion bar being fixed at its first end to the second end of the leaf spring and being fixed at its second end to the outer coupling at a location in the axial direction overlying the inner coupling part to form a relatively compact elastic coupling, and
- liquid contained in the chambers for damping motion of the leaf springs as the liquid is displaced from one section of the chamber to the other due to flexing of the web of the leaf springs.

4,432,740 UNIVERSAL JOINTS AND A HOLDING CLIP FOR SUCH JOINTS

Jean P. Petiot, Massy, France, assignor to Automobiles Citroën; Automobiles Peugeot, both of Paris, France

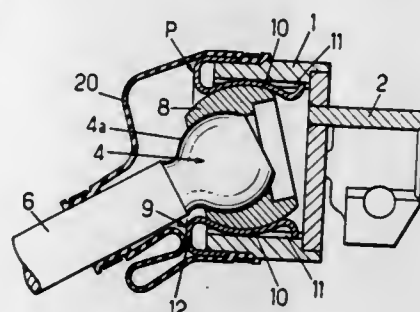
Filed Aug. 31, 1981, Ser. No. 298,101

Claims priority, application France, Sep. 24, 1980, 80 20523

Int. Cl.³ F16D 3/22

U.S. Cl. 464—146

7 Claims



1. A universal joint comprising an outer element substantially in the form of a bowl and having a cylindrical bore in which tracks are formed, an inner element housed in this bore and having a convex external surface provided with grooves, connecting means disposed respectively in the tracks of the outer element and in the grooves of the inner element, a cage to hold said connecting means in position, said cage having a concave internal surface adapted to cooperate with the convex external surface of the inner element and a convex external surface, and removable positioning means for securing the cage with respect to the outer element, wherein an expandable holding clip is used to form said removable positioning means, said expandable holding clip comprising at least two diametrically opposite lugs adapted to surround the cage and having a concave shape so as to cooperate with the external surface of the cage, said lugs being engaged in grooves formed in an inner wall of the outer element, said clip further comprising means for immobilizing the clip which is engageable with the outer element, wherein the means for immobilizing the clip on the outer element is formed by resilient curved-back hooks, each having a widened end and a portion of smaller width, said portion of smaller width being adapted to be introduced, by elastic deformation of the hook, into a notch provided in a collar on the outer element.

4,432,741

JOINT MEANS FOR TRANSMITTING A MOMENT OF ROTATION IN BOTH DIRECTIONS

Ottmar Winkler, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

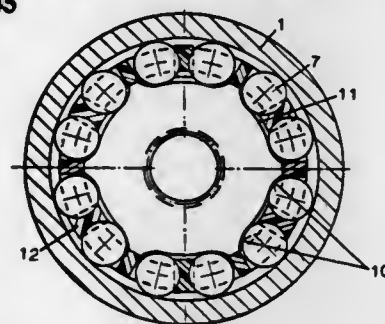
Filed Jul. 21, 1981, Ser. No. 285,543

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028467

Int. Cl.³ F16D 3/24

U.S. Cl. 464—145

9 Claims



1. A universal joint assembly for transmitting a moment of rotation in both directions between two members comprising an outer joint element, an inner joint element, said elements having confronting surfaces, a plurality of rolling elements in

the annular space between the confronting surfaces, one of said surfaces being smooth and the other surface having a series of generally axially extending circumferentially spaced grooves forming raceways for the rolling elements and having flanks at each side of the raceway which open at an angle and at least a pair of rolling elements in each raceway, elastic preload means disposed between the rolling elements of each pair in each raceway operable to contact and separate the rolling elements of each pair thereby to preload the rolling elements away from one another and to press the rolling elements reciprocally in a peripheral direction against the related flank of the raceway groove and said one smooth surface.

4,432,742

PIO MASTER SHIELD

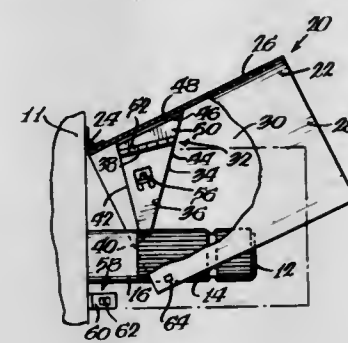
Wayne E. Hartman, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 7, 1981, Ser. No. 328,128

Int. Cl.³ F16D 3/84

U.S. Cl. 464—176

4 Claims



1. A PTO shield assembly for a tractor having a PTO shaft protruding a short distance from a wall of the tractor, said shield assembly comprising: an inverted, U-shaped shield member extending above and to the side of the PTO shaft and secured to said wall of the tractor for pivotation about a substantially horizontal axis perpendicular to the axis of the PTO shaft, said shield member having a lowered position and a raised position; and a link member pivotally secured to a top portion of said shield member and extending downwardly therefrom for selective support of said shield member in its raised position, said link member having a first position wherein said shield member is supported in its raised position and a second position wherein said shield member is in its lowered position, said link member when in said first position being in contact with said PTO shaft and when in said second position being spaced from said PTO shaft, biasing means for normally biasing said link member into its second position, said biasing means extends between said link member and said shield member, and means for automatically moving said shield member from its raised position to its lowered position upon rotation of said PTO shaft.

4,432,743

VARIABLE SPEED DRIVE PULLEY

Didier Pitoiset, Montmorency, France, assignor to Valeo, Paris, France

Filed Oct. 5, 1981, Ser. No. 308,461

Claims priority, application France, Oct. 9, 1980, 80 21571

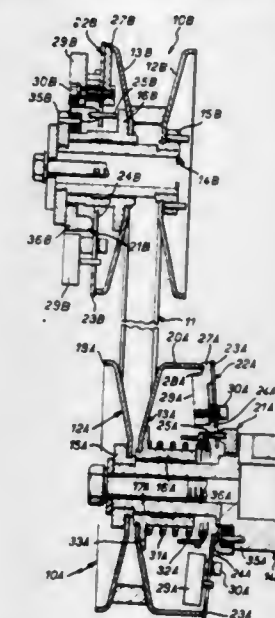
Int. Cl.³ F16H 55/56

U.S. Cl. 474—14

20 Claims

1. A variable speed drive pulley comprising a fixed pulley half and a movable pulley half facing each other and fixed for rotation with a rotatable shaft; said fixed pulley half being axially connected in operation to said rotatable shaft, said movable pulley half being mounted for axial movement relative to said rotatable shaft, at least part of a side of one of said pulley halves being frustoconical, an annular abutment member fixed for rotation with and bearing axially against said rotatable shaft, resilient return means comprising a diaphragm

spring bearing axially against said annular abutment member and urging said movable pulley half in the direction of said fixed pulley half, said annular abutment member comprising a bearing component and a contact component bearing axially against each other, said bearing component being fixed axially relative to said rotatable shaft, said diaphragm spring being



fulcrumed on said contact component, said diaphragm spring being fixed axially and circumferentially relative to said contact component, the improvement comprising means floatingly mounting said contact component with respect to said bearing component for permitting limited shifting movement with said diaphragm spring transversely relative to the axis of said rotatable shaft.

4,432,744

POWER TRANSMISSION BELT

Junji Imamura, Kobe, and Kaname Matsumura, Akashi, both of Japan, assignors to Mitsubishi Belting Ltd., Kobe, Japan

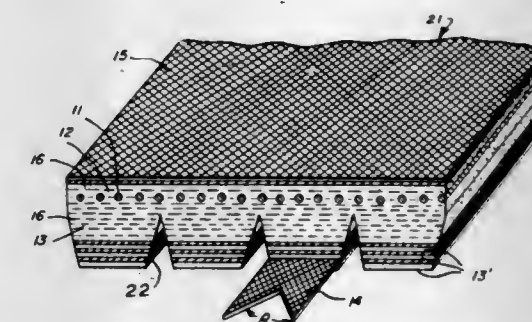
Filed Sep. 28, 1981, Ser. No. 306,403

Claims priority, application Japan, Sep. 26, 1980, 55-138014

Int. Cl.³ F16G 5/00

U.S. Cl. 474—238

32 Claims



17. In a power transmission belt having an inner compression section, an outer tension section, and longitudinal tensile cords, the improvement comprising

at least one layer of low thermal contraction fabric forming an inner portion of the compression section, said fabric being comprised of yarns formed of a mixture of natural and synthetic fibers in the ratio of approximately 30% to 70%, said yarns having a coefficient of thermal contraction of no more than approximately 1%.

4,432,745

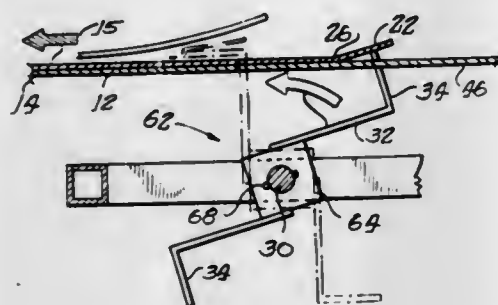
TRAILING EDGE FOLDER

Charles W. Eldridge, Beverly, Mass., assignor to Paxall, Inc., Chicago, Ill.

Filed May 6, 1982, Ser. No. 375,574
Int. Cl.³ B31B 1/54

U.S. Cl. 493—10

18 Claims



1. A trailing edge folding accessory apparatus for use in combination with a carton blank folding machine having support means for continuously advancing blanks in a predetermined direction in untimed relationship to one another along a generally horizontal path in said folding machine, the apparatus operating to fold a trailing blank panel 180° about a fold line that extends generally transverse to said advancement path, which apparatus comprises means for sensing the presence of a blank at a location along said path and providing a signal, a rotatable shaft mounted below said path and transverse thereto, drive means to rotate said shaft, clutch means to alternately associate and dissociate said shaft with the movement of said drive means to cause said shaft to be selectively and unidirectionally rotated from said drive means, brake means to stop said rotating shaft in precise positions, an arm having an inner end and an outer end, said arm being mounted on said shaft at said inner end to extend generally radially therefrom, an elongated head at said outer end of said arm which is carried by said rotating shaft from a first dwell position completely below said path to a second position just above and generally parallel to said path extending horizontally downstream from said outer end, programmable control means connected to said sensing means for operating said clutch means to associate said shaft with said drive means to carry said head from said first position to said second position at a certain instant following detection of said blank at said location, said head while moving from said first position to said second position contacting the underside of the trailing panel and folding the trailing panel 180° about the fold line, said control means operating said clutch means to dissociate said shaft from said drive means and to operate said brake means to pause said shaft with said head in said second position allowing the blank to slide out from under said head, and after a predetermined, adjustable pause period that is programmed into said control means again associating said shaft with said drive means to further rotate same and remove said head to below the said path.

10. A trailing edge folding accessory apparatus for use in combination with a carton blank folding machine having support means for continuously advancing blanks in a predetermined direction in untimed relationship to one another along a generally horizontal path in said folding machine, the apparatus operating to fold a trailing blank panel 180° about a fold line that extends generally transverse to said advancement path, which apparatus comprises means for sensing the presence of a blank at a location along said path and providing a signal, means for continuously measuring incremental advance of said support means and providing a signal, a rotatable shaft mounted below said path and transverse thereto, means for intermittently rotating and stopping said shaft, an arm having an inner end and an outer end, said arm being mounted on said shaft at said inner end to extend radially therefrom, an elongated head at said outer end of said arm which is carried by said rotating shaft from a first dwell position completely below the path to a second position just above and generally parallel to said path extending horizontally downstream from said

outer end, programmable control means connected to said sensing means and said measuring means for operating said shaft-rotating means, said control means operating said shaft-rotating means to carry said head from said first position to said second position following detection of said blank at said location and after a predetermined measured increment of advance of said support means, said head moving from said first position to said second position contacting the underside of the trailing panel and folding the trailing panel 180° about the fold line, said control means operating said shaft rotating means to stop said shaft to cause said head to pause for an adjustable period in said second position allowing the blank to slide out from under said head, and after a predetermined measured increment of advance of said support means, said control means again operating said shaft-rotating means to carry said head to below said path.

4,432,746

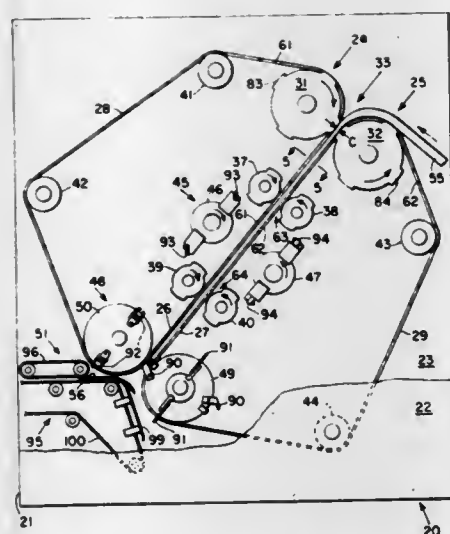
WEB SEGMENTING APPARATUS

Dennis A. DeHaan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 21, 1981, Ser. No. 265,738

Int. Cl.³ B65H 45/16, 17/34; B23Q 7/00
U.S. Cl. 493—359

9 Claims



1. Apparatus for segmenting a web into discrete articles which apparatus comprises a frame, a positive web translation means for receiving and forwarding a web in a predetermined and substantially uniform state of longitudinal stress, and cutting means operatively associated with said translation means to segment said web downstream from an infeed end of said translation means into a stream of discrete articles having substantially uniform machine direction lengths, said translation means comprising a first endless conveyor and a second endless conveyor having runs in parallel opposed relation, said first endless conveyor comprising a flight of web engaging friction plates which are longitudinally spaced to define cutter access openings between adjacent pairs of said plates, and a rotatably mounted and powered infeed roll having one or more radially outwardly projecting lugs which lugs are configured and disposed to extend into and substantially fill each of said cutter access openings of said flight to engage said web as said infeed roll rotates and said flight is driven over a circumferential portion of said infeed roll, said friction plates and said infeed roll being complementarily configured to corporately define one half of a constant clearance infeed nip disposed at said infeed end of said translation means, said cutter access openings constituting means for said cutter means to effect said segmenting.

4,432,747

CENTRIFUGAL SEPARATOR CONTROL

Günther Posse, Bergisch Gladbach, and Horst Jacob, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

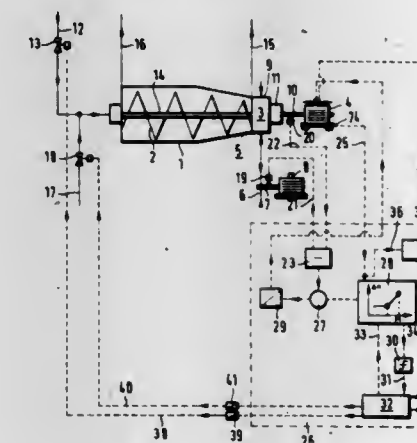
Filed Mar. 24, 1982, Ser. No. 361,413

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115692

Int. Cl.³ B04B 9/02

U.S. Cl. 494—8

14 Claims



1. A method for controlling the differential speed between the relatively rotating centrifugal drum and the screw conveyor of a centrifugal separator comprising the steps: measuring the driving torque of the screw; measuring the speed of the drum and of the screw and obtaining a value of speed differential; operating the drum and screw at a speed differential which constantly varies with variation in torque as a predetermined functional relationship to said torque; making step by step changes in said relationship to obtain a relationship other than said first relationship at predetermined upward change or downward change of the values of the torque.

4,432,748

CENTRIFUGE APPARATUS AND METHOD OF OPERATING A CENTRIFUGE

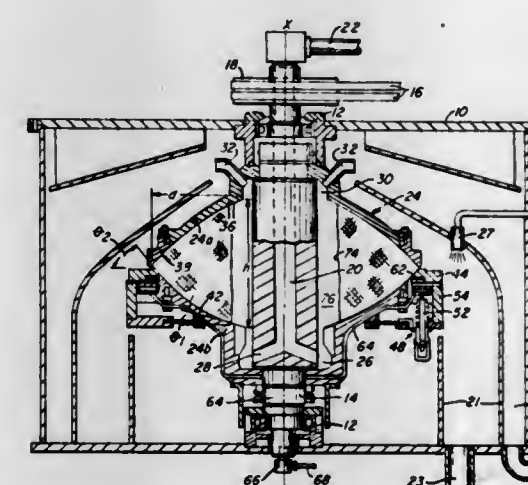
John Novoselac, and Dale L. Churcher, both of Cambridge, Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 720,200, Sep. 3, 1976. This application May 15, 1978, Ser. No. 905,695

Int. Cl.³ B04B 1/16

U.S. Cl. 494—2

26 Claims



1. The method of separating a slurry of solid particles entrained in a fluid vehicle into an effluent component primarily consisting of the fluid vehicle and a relatively heavier centri-

fuged product component primarily consisting of a mass of the particles within a centrifuge including an elongated shaft member rotatable about the central longitudinal axis thereof and a pair of formed bowl members defining a centrifuge chamber carried by such shaft member for rotation therewith and which bowl members have a peripheral portion spaced radially outermost from said central axis selectively capable of preventing or permitting the flow of the centrifuged product component therethrough; comprising: separating portions of such a slurry, continuously admitted throughout an initial period of time interiorly of such bowl members with said peripheral portion preventing the flow of the centrifuged product component therethrough during continuous rotation of such bowl members, into such a product component which increases in radial extent with respect to said axis throughout said initial period until a mass thereof extends from the interior of such peripheral portion to radially outwardly adjacent such shaft with the portion of said mass adjacent said shaft defining an elongated unobstructed passageway axially encompassing the full extent of such shaft within said bowl members and with said passageway having a lateral extent substantially less than the maximum radial extent of said mass and into such an effluent component while discharging portions of such effluent component exteriorly of such bowl members from one axial end of said passageway; discharging portions of said mass through said peripheral portion over an immediately subsequent period of time while simultaneously separating additional portions of such slurry admitted on a continuous basis to the interior of the bowl members into such product component and such effluent component at a rate that increments of said product component are added to said mass to maintain the radial extent of said mass substantially uniform throughout said subsequent period of time; and simultaneously throughout said subsequent period of time continuously discharging portions of such effluent component of said additional portions of such slurry from said one axial end of said passageway.

4,432,749

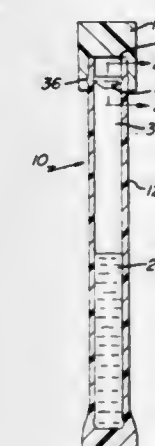
SELF-CONTAINED SWAB UNIT

Thomas A. Snyder, Willow Grove, and Walter T. Leible, Warminster, both of Pa., assignors to Hillwood Corporation, Warminster, Pa.

Continuation-in-part of Ser. No. 135,412, Mar. 31, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 360,038
Int. Cl.³ A61M 35/00

U.S. Cl. 604—2

5 Claims



1. A disposable swab unit comprising:
(a) a generally hollow container adapted to be squeezed, said container having a wall, a closed end and an open end capped by a structure providing a swabbing means;
(b) a liquid medium within the hollow container;
(c) a plug having a body, the bottom of said body juxtaposed to said liquid medium and the top of said body juxtaposed to said swabbing means, the top of said body having a

diameter larger than the inner diameter of the container, said body being tapered inwardly from the top of said body towards the bottom of said body, said body having an annular chamber disposed within the top surface thereof radially inwardly from said taper to facilitate inward deformation of said tapered surface, the plug inserted within said container to form a sealed compartment for holding the liquid medium in the portion of said container between the closed end and the plug said plug being pivotable relative to the container wall so as to allow said liquid medium to flow past said plug to contact said swabbing means upon squeezing of said container.

4,432,750

ADDITIVE STEROL SOLUTION AND METHOD FOR PRESERVING NORMAL RED CELL MORPHOLOGY IN WHOLE BLOOD DURING STORAGE

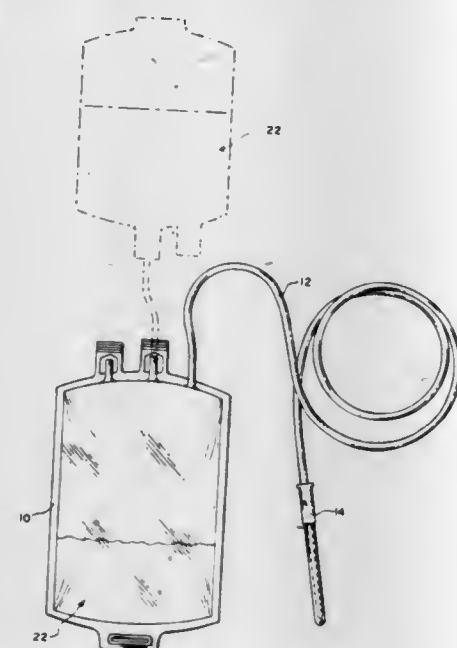
Timothy N. Estep, Lindenhurst, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,772

Int. Cl.³ A61M 1/03; A61K 35/14; A01N 1/00

U.S. Cl. 604—4

18 Claims



7. A whole blood storage system comprising a container having an interior for receiving whole blood for storage,

a solution carried within said interior and including a physiologically blood compatible sterol present in a concentration of between approximately 1.0 and 3.0 milligrams per milliliter of whole blood stored within said container.

11. A whole blood storage system according to claim 7 or 8 wherein said solution further includes, as a part thereof, an anticoagulant.

12. A whole blood storage system according to claim 11 wherein said solution further includes, as a part thereof, a nutrient for the whole blood.

13. A whole blood storage system according to claim 12 wherein said container includes

a donor tube having an end attached in flow communication with said interior and an opposite end, and a phlebotomy needle attached in flow communication with said opposite end.

4,432,751 MONOCLONAL ANTIBODIES AGAINST LENS EPITHELIAL CELLS AND PREVENTING PROLIFERATION OF REMNANT LENS EPITHELIAL CELLS AFTER EXTRACAPSULAR EXTRACTION

Jared M. Emery, and Dominic M. Lam, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Mar. 5, 1982, Ser. No. 355,081

Int. Cl.³ A61B 19/00

U.S. Cl. 604—49

3 Claims

1. A method of preventing lens epithelial cell growth after extracapsular extraction comprising, instilling into the anterior chamber of an eye after the extracapsular extraction monoclonal antibodies specific to lens epithelial cells, and

after a period of time sufficient to permit the monoclonal antibodies to interact with the lens epithelial cells instilling into the anterior chamber a complement effective to cause lysis to the lens epithelial cells.

4,432,752

PROCEDURE FOR INTRODUCING HYPERALIMENTATION CATHETERS AND THE LIKE

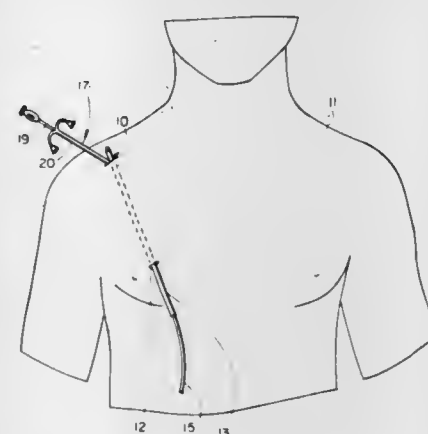
Anthony M. Marlon, 888 S. Rancho Dr., Las Vegas, Nev. 89106

Filed Mar. 12, 1982, Ser. No. 357,835

Int. Cl.³ A61M 5/00

U.S. Cl. 604—53

23 Claims



1. A method for the insertion of an indwelling catheter into the subclavian vein of a patient which comprises the steps of: a. making a first incision in the subclavian area of the patient; b. making a second incision in the patient at a location displaced from the first incision; c. making subcutaneous tunnel from the second incision to the first incision, said making of the tunnel comprising moving a hollow catheter into the second incision and subcutaneously to and through the first incision; d. moving the indwelling catheter through the hollow catheter from the second incision to and through the first incision; e. after step d., removing the hollow catheter from the subcutaneous tunnel; f. inserting the indwelling catheter in through the first incision and into the subclavian vein; and g. closing the first incision to have the indwelling catheter exit from the patient only at the second incision.

4,432,753

APPARATUS FOR ARTIFICIAL INSEMINATION

Bertrand Cassou, Saint Symphorien des Bruyeres; Maurice Cassou, and Robert Cassou, both of Rue Clemenceau, all of 61300 L'Aigle, France

Filed Jun. 8, 1982, Ser. No. 386,355

Claims priority, application France, Dec. 3, 1981, 81 22628

Int. Cl.³ A61M 1/00

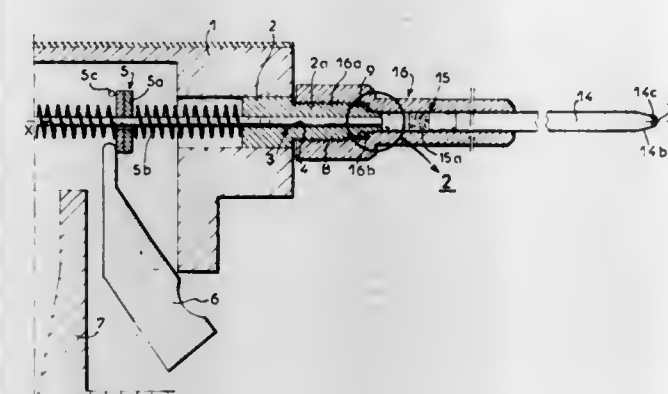
U.S. Cl. 604—55

10 Claims

1. A multi-shot artificial insemination apparatus comprising: a body presenting a snout and a passage through said snout;

a disposable reservoir means for containing plural doses of liquid semen and comprising a tube having a rear end; said snout and said tube rear end being cooperatively configured to fit said rear end to said snout in alignment with said passage;

said tube further comprising a blunt convergent front end and a length from said rear end to said front end and freely



protruding sufficiently far from said snout for insertion of said tube into an animal's cloaca to facilitate said insemination;

a plunger extensible through said passage and into said tube rear end; and means for displacing said plunger stepwise to discharge successive doses of said liquid semen from said tube through said front end to said cloaca.

4,432,754

APPARATUS FOR PARENTERAL INFUSION OF FLUID CONTAINING BENEFICIAL AGENT

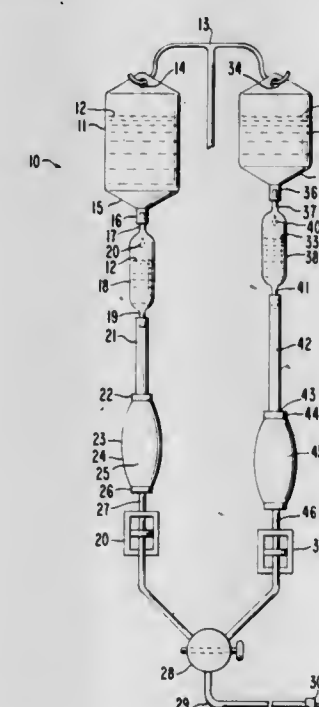
John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed May 24, 1982, Ser. No. 381,402

Int. Cl.³ A61M 5/16

U.S. Cl. 604—56

28 Claims



1. A parenteral delivery system for administering a beneficial agent formulation to an animal, the system comprising:

(a) a primary reservoir of a pharmaceutically acceptable fluid;

(b) a primary path in communication with the reservoir for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber in the primary path, the formulation chamber comprising:

(1) a wall surrounding a lumen;

(2) an inlet for letting fluid from the primary path into the formulation chamber;

(3) a beneficial agent in the formulation chamber that forms an agent formulation with fluid that enters the formulation chamber;

(4) an agent release means including a permeable film means within the formulation chamber that aids in controlling the rate of release of beneficial agent formulation from the formulation chamber; and,

(5) an outlet for letting an agent formulation leave the formulation chamber;

(d) a secondary reservoir of a pharmaceutically fluid;

(e) a secondary path in communication with the reservoir for the flow of a parenterally acceptable fluid therethrough;

(f) a formulation chamber in the secondary path, the formulation chamber comprising:

(1) a wall surrounding a lumen;

(2) an inlet for letting fluid from the secondary path into the formulation chamber;

(3) a beneficial agent in the formulation chamber that forms an agent formulation with fluid that enters the formulation chamber;

(4) an agent release means including a permeable film means within the formulation chamber that aids in controlling the rate of release of beneficial agent formulation from the formulation chamber; and,

(5) an outlet for letting an agent formulation leave the formulation chamber; and,

(g) a common path in communication with the primary path and in communication with the secondary path for receiving agent formulation, which common path, when the parenteral system is in use, is in communication with the animal for administering beneficial agent formulation thereto.

4,432,755

STERILE COUPLING

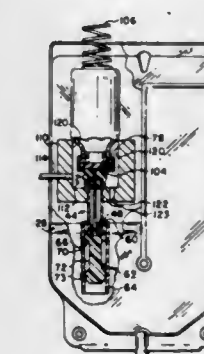
Stephen Pearson, Ingleside, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 365,943, Apr. 6, 1982. This application May 25, 1983, Ser. No. 497,963

Int. Cl.³ A61M 5/00; A61J 1/00

U.S. Cl. 604—56

4 Claims



3. A method for selectively establishing a sterile pathway between the access means of each of two separate receptacles, each access means having an end portion, wherein one of the access means includes a piercing element, the steps comprising:

(a) maintaining the end portions in predetermined, spaced relation;

(b) injection molding material about at least the end portions of both access means;

(c) simultaneously sterilizing the end portions of both access means by heat transfer from the injection molded molten material;

(d) cooling the molten material into a unitary junction means enclosing the end portions, the junction means maintaining the end portions in sterile relation; and

(e) selectively urging the piercing element through the junction.

tion means and the other of the access means thereby establishing a sterile pathway through both access means.

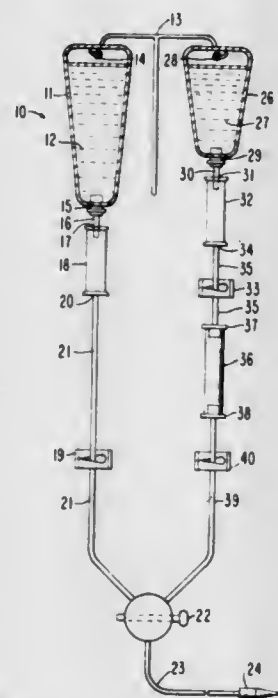
4,432,756

PARENTERAL CONTROLLED THERAPY

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Filed Nov. 27, 1981, Ser. No. 325,206
Int. Cl.³ A61M 5/00

U.S. Cl. 604—80

42 Claims



1. A parenteral delivery set for administering a beneficial fluid and a beneficial agent formulation to an animal, the set comprising:

- a primary tube for the flow of a parenterally acceptable fluid therethrough;
- a secondary tube for the flow of a parenterally acceptable fluid therethrough;
- a formulation chamber in communication with the secondary tube, the formulation chamber comprising:
 - a wall surrounding a lumen;
 - an inlet for letting fluid from the secondary tube into the formulation chamber;
 - a beneficial agent in the formulation chamber that forms an agent formulation with fluid that enters the formulation chamber;
 - a release rate controlling membrane in the formulation chamber, said membrane formed of a polymeric material that governs the rate of release of agent formulation from the formulation chamber;
 - an outlet for letting an agent formulation leave the formulation chamber; and,
- a common tube in communication with the primary tube for receiving fluid from the primary tube, and in communication with the secondary tube for receiving agent formulation from the secondary tube, which common tube, when the set is in use is in communication with the animal, administers the beneficial fluid and the beneficial agent formulation thereto.

4,432,757

INDWELLING URETHRAL CATHETER

Richard C. Davis, Jr., 5828 - C Westover Dr., Richmond, Va. 23225

Division of Ser. No. 148,340, May 9, 1980, Pat. No. 4,350,161.
This application Apr. 9, 1982, Ser. No. 366,963
Int. Cl.³ A61M 25/00

U.S. Cl. 604—99

5 Claims



1. An indwelling urethral catheter comprising:

a catheter drainage shaft means defining an enclosed drainage canal, for extending through most of a urethra to provide urinal drainage and having distal and proximal ends;

said catheter drainage shaft means including an anchoring means for extending a substantial distance along said enclosed drainage canal for anchoring and holding said shaft in position in said urethra while not inhibiting said drainage canal from providing urinal drainage therethrough and for filling potential spaces which could serve as a nidus of inflammation along said urethra, said anchoring means having a substantially compliant wall for defining an inflation lumen which is separate from, but parallel to, said enclosed drainage canal along said drainage shaft means where said drainage shaft means is positioned in said urethra, downstream of the prostatic urethra;

wherein said substantially compliant wall of said anchoring means is inflatable in a patient's urethra downstream of the patient's prostatic urethra by insertion of a fluid into said inflation lumen to fill spaces in the urethra and thereby anchor said catheter drainage shaft against retrograde movement in said urethra while allowing said enclosed drainage canal to provide urinal drainage;

and wherein said catheter being for use in male patients with the proximal end of the anchoring means not extending beyond the end of the penile meatus, said anchoring means including a valve means at the proximal end thereof for being held open by a fluid source means extending from outside the penis through the penile meatus to the valve means for allowing said inflatable member to be inflated by the fluid source means and for closing upon removal of the fluid source means through the penile meatus to leave said anchoring means inflated in said urethra.

4,432,758

URETHRAL ANESTHETIC DEVICES

Aaron N. Finegold, 136 Beechwood La., Pittsburgh, Pa. 15206

Filed Aug. 30, 1982, Ser. No. 412,985
Int. Cl.³ A61M 25/00

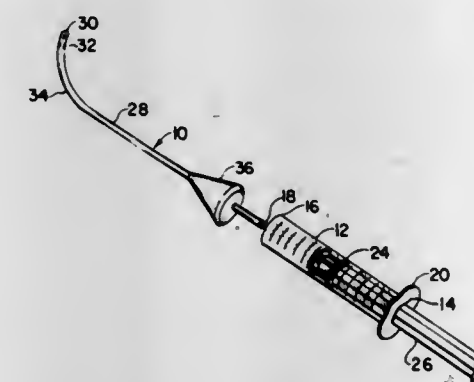
U.S. Cl. 604—104

7 Claims

1. A urethral anesthetic application instrument comprising:

- a hollow syringe body including a first end which is open to the atmosphere and a second end which terminates in a coupler in fluid communication with the interior of said syringe body;
- a slidable plunger assembly disposed within said syringe body and extending through said first end;
- an elongated hollow barrel mounted to said coupler, said

barrel including a passageway in fluid communication with said coupler and one or more openings adjacent the end of said barrel opposite said coupler and in communication with said passageway, said barrel formed in the shape of a Van Buren curve; and
(d) a meatal obstructor slidably mounted around said barrel,



whereby said barrel may be inserted into the entire length of a patient's urethra and then said barrel may be withdrawn while simultaneously applying an anesthetic to the urethra through said openings, and wherein said obstructor may be positioned against the external orifice of the urethra while said barrel is withdrawn, thereby preventing said anesthetic from escaping from the urethra.

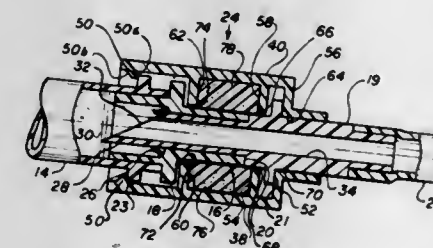
4,432,759

CONNECTING DEVICE FOR MEDICAL LIQUID CONTAINERS

James R. Gross, Bartlett, and Albert F. Bujan, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 26, 1982, Ser. No. 371,643
Int. Cl.³ A61M 5/00

U.S. Cl. 604—411

5 Claims



1. A connection assembly comprising:

- a medical liquid container;
- a tubular port member extending from the container, said tubular port member including a flange member disposed about its distal end;
- a pierceable diaphragm positioned within and sealing said tubular port member;
- a hollow tubular piercing pin connected at its proximal end to a length of flexible tubing and having a sharpened tip at its distal end adapted for penetration of said pierceable diaphragm member;
- locking means for the selective retention of said piercing pin within said tubular port member;
- said locking means comprising a clasp member including first and second substantially C-shaped body portions hingedly connected to each other and further including latching means at opposing sides thereof, said clasp member being constructed and arranged for telescopic attachment to said tubular port;
- a plurality of protruding frictional engagement means integrally formed and disposed within said clasp member proximate the distal end thereof, said protruding frictional

engagement means being constructed and arranged for securing said clasp member on said port following said telescopic attachment; and
additional engagement means defined by a flange member extending from said piercing pin and a wall surface positioned within said clasp member to limit longitudinal movement of said piercing pin in their direction.

4,432,760

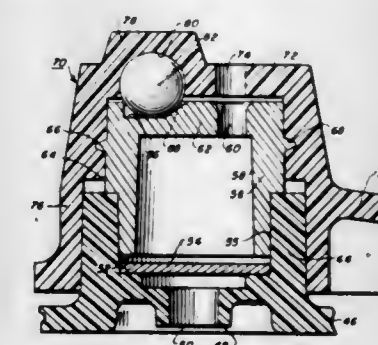
ADMINISTRATION SET INCLUDING BURETTE WITH PIVOTABLE AIR VALVE

Herbert Mittleman, Deerfield, and Gordon P. Boland, Zurich, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 170,399, Jul. 21, 1980, Pat. No. 4,332,247, which is a continuation of Ser. No. 938,063, Aug. 30, 1978, abandoned. This application Feb. 22, 1982, Ser. No. 350,680
Int. Cl.³ A61M 5/14

U.S. Cl. 604—246

7 Claims



1. In a medical device having a chamber, an air valve comprising a stationary port extending from a wall of said chamber and defining a bore therethrough, said port including a fitting shaped to define an open internal portion, a top portion of said fitting shaped to define a passageway, said fitting closing said port except for said passageway, with said passageway being substantially smaller than the open internal portion, a filter member located transverse said bore and directly underlying said passageway, a pivotable closure overlying the port and being pivotally connected therewith, said pivotable closure shaped to define an opening for communication with said passageway when the closure is pivoted to a predetermined open position, and means for segregating said closure opening from said passageway when said closure is in its closed position, said segregating means comprising a resilient member movable with the pivoting movement of said closure to close and seal said passageway when the closure is not in said predetermined open position, said fitting being proportioned to compress the resilient member while it is closing and sealing said passageway.

4,432,761

VOLUMETRIC DROP DETECTOR

Garfield A. Dawe, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 276,119, Jun. 22, 1981, abandoned.
This application Sep. 24, 1982, Ser. No. 423,369
Int. Cl.³ A61M 5/00; G01F 1/00

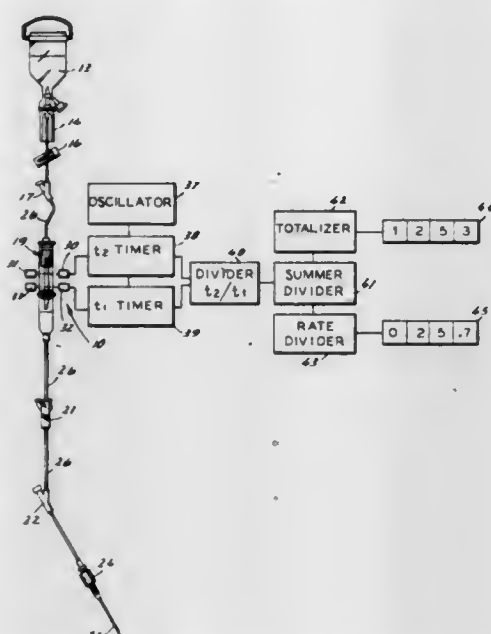
U.S. Cl. 604—253

19 Claims

1. A volumetric measuring device for use with a liquid conveying apparatus including the usual first and second flow paths comprising:

- liquid drop forming means;
- a length of measurement tubing having a known internal diameter;
- means operatively associated with said drop forming means to direct liquid drops into said measurement tubing to form a liquid column;

first and second liquid sensor means operatively positioned with respect to said measurement tubing;
electronic means operatively associated with said first and second liquid sensor means to measure the velocity and length of said liquid column;



collecting means positioned from said measurement tubing to receive said measured drops; and
connector means operatively associated with said drop forming means and said collecting means for connection with said first and second flow paths.

4,432,762

VOLUMETRIC DROP DETECTOR

Garfield A. Dawe, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

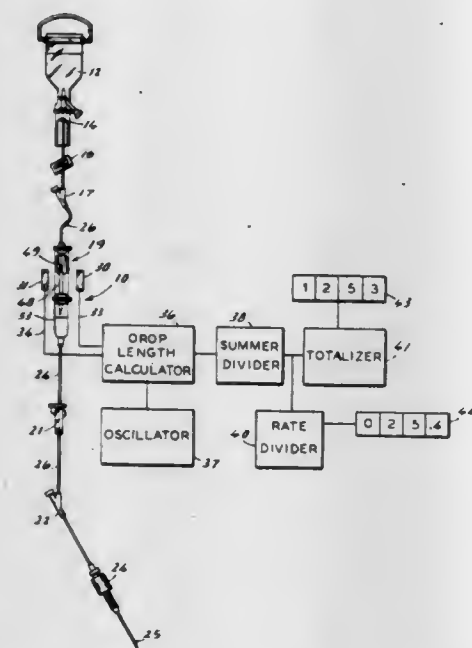
Continuation of Ser. No. 276,120, Jun. 22, 1981, abandoned.

This application Sep. 24, 1982, Ser. No. 423,370

Int. Cl.³ A61M 5/16

U.S. Cl. 604—253

17 Claims



1. A volumetric drop detector for use with a liquid conveying apparatus including the usual first and second flow paths comprising:

- liquid drop forming means;
- a length of measurement tubing having a known internal diameter;
- means operatively associated with said drop forming means to direct liquid drops into measurement tubing;
- optoelectronic means operatively positioned with respect to

said measurement tubing to determine the length of said drop;
collecting means positioned from said measurement tubing to receive said measured drops; and
connector means operatively associated with said drop forming means and said collecting means for connection with said first and second flow paths.

4,432,763

FLUID DELIVERY SYSTEM AND METHOD

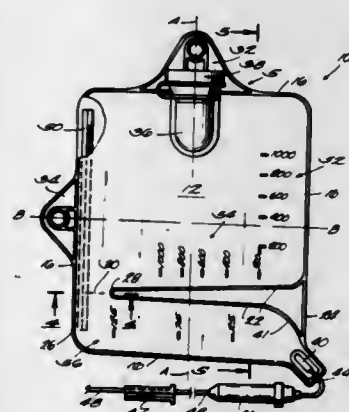
James G. Manschot, Eagle; Lawrence A. Salvadori, Milwaukee, and David D. Plekenpol, Whitefish Bay, all of Wis., assignors to The Kendall Company, Boston, Mass.

Filed May 10, 1982, Ser. No. 376,382

Int. Cl.³ A61M 5/14

U.S. Cl. 604—262

24 Claims



1. A liquid delivery system comprising:
 - a container having a filling inlet in the upper portion thereof and an outlet in the lower portion thereof, said filling inlet adapted to receive a given amount of liquid poured into the interior of said container, said liquid outlet having a control valve means in fluid communication therewith to control flow from said container outlet;
 - a first hanger member on said container for hanging said container in a first hanging position, said container outlet when in said first hanging position being in gravity flow communication with the entire given amount of liquid in said container so that when said control valve means is opened, the entire given amount of fluid in said container will flow out of the container;
 - a second hanger member on said container for hanging said container in a second hanging position, said container outlet when in said second hanging position being in gravity flow communication with a portion of the entire given amount of fluid in said container so that when said control valve means is opened, only said portion of the entire given amount of fluid in said container will flow out of the container;
- said interior of said container when in said second hanging position is divided into two separate chambers wherein a portion of said given amount of liquid will be contained in one of said chambers and a portion of said given amount of liquid will be contained in the other of said chambers, said two chambers when in said second hanging position having no gravity flow communication therebetween; and
- said two separate chambers when in said second hanging position are separated by a barrier means which extends from one edge of said container to a point spaced from the opposite edge of said container.

4,432,764

ANTISEPTIC END CAP FOR CATHETER

Georges Lopez, Lyons, France, assignor to Societe de Materials Annexes de Dialyse S.M.A.D., France

Filed Nov. 4, 1981, Ser. No. 318,271

Claims priority, application France, Nov. 5, 1980, 80 23950

Int. Cl.³ A61M 25/00

U.S. Cl. 604—283

10 Claims



1. In combination with a catheter having a tube end provided with an end fitting, an antisepticizing device comprising:
 - a cap having a formation of a shape complementary to that of said end fitting and connectable thereto, said cap being formed with a passage having one end communicating with said end fitting and therethrough with said catheter when said end fitting is fitted to said formation;
 - a reservoir in said cap having a movable wall, the other end of said passage opening into said reservoir;
 - a body of an antiseptic liquid in said reservoir; and
 - means automatically effective upon the mounting of the cap on said end fitting for displacing said movable wall of said reservoir and thereby forcing said liquid through said passage into said catheter fitted to said formation.

4,432,765

ATTACHMENT DEVICE FOR MEDICAL FLUIDS BAG

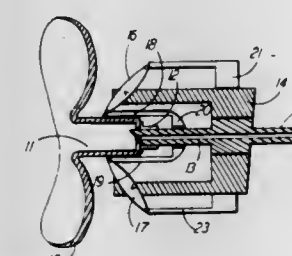
Rolf A. Oscarsson, 10 Gemini Cir., Andover, Mass. 01810

Filed Jul. 14, 1982, Ser. No. 398,287

Int. Cl.³ A61M 5/00

U.S. Cl. 604—411

8 Claims



6. A connector for a fluid container having a neck of predetermined diameter ending in a penetrable end wall, comprising:
 - a. a base member;
 - b. a hollow spike member positioned on said base member and adapted to penetrate the end of said neck as said neck is moved towards said hollow spike member;
 - c. at least one toggle member adjacent the path of travel of said neck and pivotable inwardly on said base member so that the end of said toggle member moves from an open position away from said spike member to a closed position near said spike member, the end of said toggle member pinching said neck at an intermediate point of arcuate travel and said end of said toggle member pushing said neck toward said hollow spike member as said toggle member moves to the closed position thereof;
 - d. guide means on said base member for directing said neck

along its longitudinal axis over said base member, part of said guide means being spaced apart a distance less than said diameter at said intermediate point of arcuate travel and including means to retain said neck against lateral motion;

- e. a leg member articulately attached at one end thereof to said end of said toggle member, dependent therefrom and extending towards said hollow spike member and an engagement means at the end of said leg member adapted to engage the end of said neck when said neck is seated in the connector and said toggle member is moved from said closed position to the open position thereof; and
- f. a hand operated means for effecting motion of said toggle member from said closed position to said open position.

4,432,766

CONDUIT CONNECTORS HAVING ANTISEPTIC APPLICATION MEANS

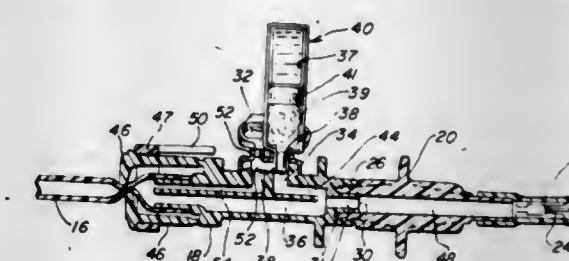
Marc Bellotti, Winnetka; Dean G. Laurin, Lake Zurich; Ronald C. Stauber, Hawthorn Woods, and Larry C. Taylor, McHenry, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 29, 1981, Ser. No. 288,224

Int. Cl.³ A61M 3/00

U.S. Cl. 604—283

17 Claims



1. In a connector member having a lumen carried on the end of a first conduit for sealingly connecting with the lumen of another connector member carried on the end of another conduit, the improvement comprising:
 - first aperture means communicating between the exterior and the interior of said connector member, bacteria-blocking, hydrophobic filter means positioned in said first aperture means, a source of antiseptic in flow communication with said first aperture means, said source of antiseptic being capable of passing an antiseptic through said filter means, and closure means for releasably sealing the interior of said first conduit without disrupting said sealing connection with the other connector member.

4,432,767

TUBING INJECTION SITE GUARD

Donn D. Lobdell, Golden, and Thomas E. Goyne, Denver, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Nov. 16, 1977, Ser. No. 852,058

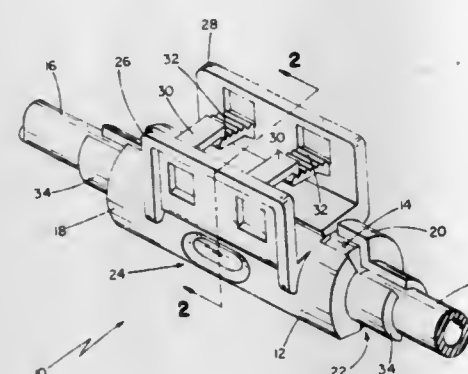
Int. Cl.³ A61M 5/00, 5/03

U.S. Cl. 604—86

8 Claims

1. A tubing injection site guard comprising:
 - a compressible, penetrable sleeve adapted to surround a continuous tube,
 - a longitudinally divided rigid casing comprising two casing sections,
 - one of said casing sections having a needle access port, said casing sections having walls, said wall of one said casing section being spaced-apart from the other said wall,
 - a longitudinal hinge joining said casing sections along one longitudinal side, and
 - means for locking said casing sections together around said sleeve in an adjustable relationship therebetween,

said needle access port allowing a needle to be inserted through said needle port and said sleeve into said tubing,
said casing radially compressing said sleeve throughout the length of said sleeve when said locking means is actuated, thereby sealing said sleeve against said tube



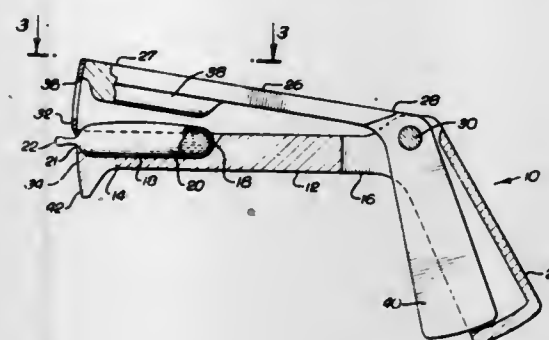
throughout said sleeve length and sealing needle holes in said sleeve, and
said means for locking being adjustable so as to draw said spaced-apart walls of said casing sections progressively together thereby increasing the radial compression of said casing sections on said sleeve.

4,432,768
MEDICINAL FLUID APPLICATOR
Jack B. Brown, Granada Hills, Calif., and Wijnand J. Bischoff, Olds, Canada, assignors to Banner Gelatin Products Corp., Chatsworth, Calif.

Filed Sep. 17, 1982, Ser. No. 419,229
Int. Cl.³ A61M 5/00

U.S. Cl. 604—200

5 Claims



1. A medicinal fluid applicator for discharging fluid from a compressible fluid-filled capsule, comprising:
a frame for holding said capsule;
a pressure arm hingedly connected to said frame for movement toward said capsule when held by said frame to apply pressure thereto; and
a blade depending from said pressure arm for severing said capsule upon movement of said arm toward said capsule held by said frame to permit said fluid to be discharged therefrom by pressure from said arm.

4,432,769
NITRO DYESTUFFS, A PROCESS FOR THEIR PREPARATION, AND USE OF THESE DYESTUFFS IN DYEING KERATIN FIBRES

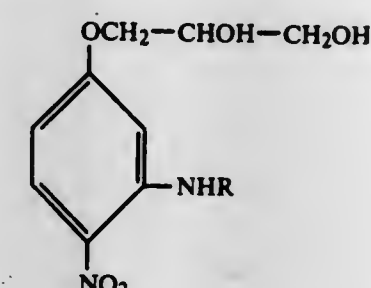
Andree Bugaut, Boulogne-Billancourt, and Patrick Andrillon, Chelles, both of France, assignors to L'Oreal, Paris, France
Filed Aug. 7, 1981, Ser. No. 291,098

Claims priority, application France, Aug. 8, 1980, 80 17617
Int. Cl.³ A61K 7/13; C07C 89/00, 91/06, 93/14

U.S. Cl. 8—414

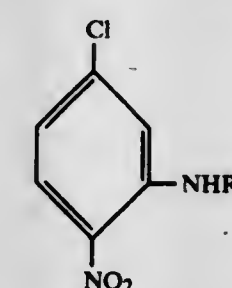
35 Claims

1. A compound having the formula:



in which R denotes hydrogen, a lower alkyl, lower hydroxyalkyl or lower polyhydroxyalkyl radical.

9. Process for the preparation of a compound as defined in claim 1, which comprises reacting 3-amino-4-nitro-chlorobenzene or a derivative thereof, of the formula:



in which R is as defined in claim 1, with glycerol, in the presence of sodium hydroxide, at a temperature of 100° to 150° C.

10. A composition suitable for dyeing human hair which comprises an aqueous, alcoholic or aqueous-alcoholic vehicle and an effective amount of at least one compound as defined in claim 1.

4,432,770
RAPID DYEING OF POLYESTER FIBERS WITH A MIXTURE OF DISPERSE DYES

Rolf Hasler, Oberwil; Beat Henzi, Basel; Ernst Schneider, Füllinsdorf, and Hermann Ulshoefer, Ettingen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 17, 1982, Ser. No. 442,366

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146178

Int. Cl.³ C09B 67/22; D06P 3/54

U.S. Cl. 8—638

20 Claims

1. A method of rapid dyeing a substrate comprising polyester fibers comprising bringing into contact with the substrate an aqueous dyebath at a temperature above 100° C. and containing a mixture of at least two disperse dyes, said mixture consisting of disperse dyes having each individually

- (i) a degree of absorption $A \geq 90\%$ after 5 minutes at 130° C. and $\geq 95\%$ after 20 minutes of 130° C. for a standard dyeing depth of $4 \times 1/1$, the starting dyeing temperature being 70° C. and the heating rate 3° C./minute,
- (ii) a diffusion coefficient D at 130° C. $\geq 1.6 \cdot 10^{-10} \text{ cm}^2 \cdot \text{sec}^{-1}$,
- (iii) a ratio $C^*/RTT \geq 14$ wherein C^* is the saturation concentration in mg dye per g substrate and RTT is the dye concentration in mg per g substrate required for the standard dyeing depth $1/1$, and

CHEMICAL

- (iv) a kinetic parameter $Z \geq 1.6 \cdot 10^{-4}$ wherein $Z = k \cdot C^*/RTT \sqrt{D}$ wherein $k = 1 \text{ cm}^{-1} \text{ sec}^{-1}$.

4,432,771
COMBUSTIBLE COAL/WATER MIXTURES FOR FUELS AND METHODS OF PREPARING THE SAME

Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 15, 1981, Ser. No. 263,810

Int. Cl.³ C10L 1/32

U.S. Cl. 44—51

16 Claims

1. A combustible fuel slurry comprising:
from 65–70% coal powder in particulate form and having a rounded particle shape;
from 0.5 to 5% by weight of a wetting/dispersing agent selected to be low to nonfoaming in water and having a structure that consists of an organic portion that absorbs on the surface of said coal particles with said agent having a charged hydrophilic portion that is lyophilic to the continuous water phase;
a clay stabilizing composition in the form of a predispersion comprising a clay stabilizer, a clay dispersant and water wherein the amount of clay stabilizer in the fuel slurry is from 0.15 to 0.8% by weight; and
the remainder of said fuel being water, whereby the clay stabilizer, when added to the fuel slurry, provides a stabilizing gel structure for the slurry.

(II)

4,432,772
SLAG BREAKER OF PRESSURE-TYPE COAL GASIFIER
Joachim Starke; Adolf Jakubik; Erich Girodi, all of Hoyerwerda; Manfred Strüding, and Reinhard Exner, both of Cottbus, all of German Democratic Rep., assignors to Veb Gaskombinat Schwarze Pumpe, Schwarze Pumpe, German Democratic Rep.

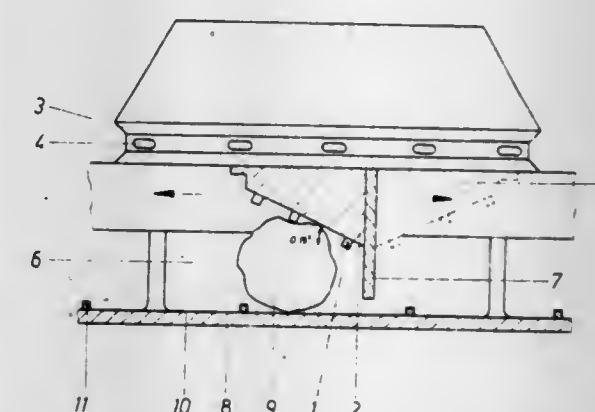
Filed Apr. 23, 1982, Ser. No. 371,183

Claims priority, application Austria, Apr. 11, 1981, 4730/81; German Democratic Rep., May 22, 1981, 230178; Japan, Nov. 26, 1981, 56-188498

Int. Cl.³ C10J 3/72

U.S. Cl. 48—66

13 Claims



1. A slag breaker of a pressure-type coal gasifier having a rotary grate with a plurality of grate segments rotatable therewith, a generator bottom, and an ash separator, the slag breaker comprising an inclined breaking plate arranged to jointly rotate with and to be located immediately below the grate segments and prior to the ash separator and provided with a plurality of breaking projections; and a wear sheet arranged to be located on the generator bottom and provided with a plurality of breaking webs so as to cooperate with said breaking projections of said breaking plate and to break slag below said rotary grate.

4,432,773

FLUIDIZED BED CATALYTIC COAL GASIFICATION PROCESS

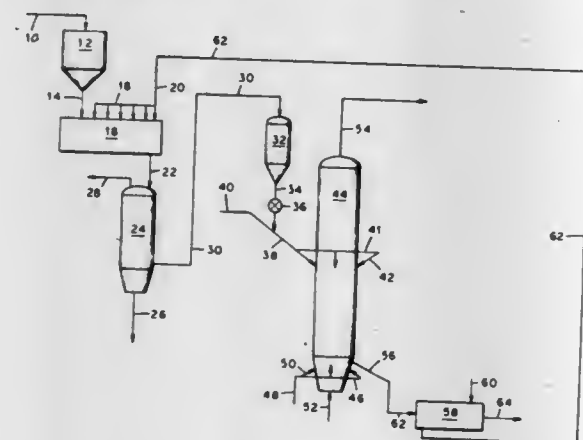
Charles A. Euker, Jr., 15163 Dianna La., Houston, Tex. 77062; Robert D. Wesselhoft, 120 Caldwell; John J. Dunkleman, 3704 Autumn La., both of Baytown, Tex. 77520; Dolores C. Aquino, 15142 McConn, Webster, Tex. 77598, and Toby R. Gouker, 5413 Rocksprings Dr., LaPorte, Tex. 77571

Continuation of Ser. No. 301,787, Sep. 14, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 475,209

Int. Cl.³ C10J 3/54

U.S. Cl. 48—197 R

11 Claims



1. A process for the fluidized bed catalytic gasification of carbonaceous solids which tend to agglomerate and swell at elevated temperatures comprising:

- contacting said carbonaceous solids with an aqueous solution containing water-soluble alkali metal gasification catalyst constituents, thereby impregnating said carbonaceous solids with said alkali metal gasification catalyst constituents;
- oxidizing said catalyst impregnated carbonaceous solids by contacting said solids with an oxygen-containing gas in an oxidation zone at a temperature below about 250° C. such that dry oxidized catalyst impregnated carbonaceous solids are produced; and
- gasifying said dry oxidized catalyst impregnated carbonaceous solids at an elevated pressure and temperature in a fluidized bed gasification zone, wherein the density of the fluidized bed in said gasification zone is maintained at a value above about 160 Kg/M³ by controlling the oxidizing conditions in said oxidation zone.

4,432,774

ADSORPTION-DESORPTION PROCESS FOR THE RECOVERY OF HYDROGEN

Harald Jüntgen; Karl Knoblauch; Jürgen Reichenberger, and Hans-Jürgen Schröter, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 922,422, Jun. 30, 1978, abandoned.

This application Nov. 9, 1979, Ser. No. 93,616

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729558

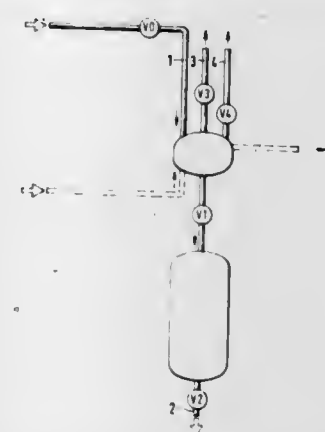
Int. Cl.³ B01D 53/04

U.S. Cl. 55—25

8 Claims

1. In a process for the recovery of a purified gas from a feed gas mixture comprising passing the feed gas through successive interconnected adsorbent containing adsorbers and operating the adsorbers for successive adsorption and desorption, the feed gas containing, in addition to the desired gas, trace pollutants strongly adsorbed in concentrations generally below 1% by volume and components lightly adsorbed in concentrations above 1% by volume, said process employing a preliminary first adsorber for the strongly adsorbable trace pollutants and a main adsorber for the lightly adsorbable components, recovering the purified gas from the main adsorber, effecting the desorption by closing the outlet for the purified gas from the

main adsorber and passing the gas through reversal of pressure by pressure reduction or evacuation from the main adsorber to the preliminary adsorber and causing the reversal of pressure jointly in said two adsorbers in the same cycle and subjecting said two adsorbers for the same periods of time to the same adsorption and desorption steps, the desorption gas being discharged exclusively from said preliminary adsorber,



and shutting off said first adsorber from said main adsorber only after a number of several adsorption/desorption cycles, namely when the first adsorber has reached substantially complete contamination by said strongly adsorbable trace pollutants, whereupon said first adsorber is then subjected to a separate regeneration or replacement of the adsorbent.

4,432,775

METHOD AND APPARATUS FOR SEPARATING A SUBSTANCE FROM A LIQUID

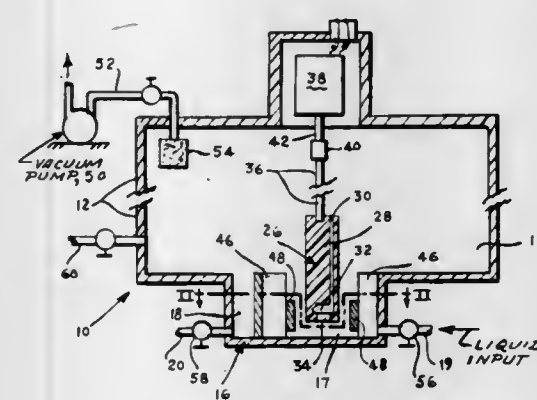
Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831

Filed Jul. 30, 1982, Ser. No. 403,280

Int. Cl.³ B01D 19/00

U.S. Cl. 55—41

16 Claims



1. An apparatus for separating a substance from a liquid within which said substance is contained comprising: a housing, said housing forming a chamber therein; means operably connected to said housing for creating a vacuum within said chamber; means situated within said chamber for receiving said liquid therein, and means connected to said liquid receiving means for feeding said liquid to said liquid receiving means at a predetermined rate; means operably positioned within said liquid receiving means for atomizing said liquid thereby spraying said liquid in mist form into said chamber and vaporizing said substance within said chamber; said vacuum creating means being capable of withdrawing said vaporized substance, and said liquid receiving means being capable of receiving said atomized liquid; and means operably connected to said housing for removing said atomized liquid at a predetermined rate.

13. A method of separating a substance from a liquid within which said substance is contained comprising the steps of:

- placing a first container and a second container in a vacuum chamber;
- interconnecting said first container to said second container;
- feeding said liquid into said first container;
- simultaneously atomizing said liquid and creating a vacuum in said chamber in order to draw off said substance being vaporized during atomization of said liquid;
- recovering a portion of the atomized liquid in said first container and recovering the remaining portion of said atomized liquid in said second container;
- removing a portion of said atomized liquid from said second container; and
- feeding the remaining portion of said atomized liquid from said second container into said first container for further atomization thereof.

4,432,776

PROCESS FOR FILTERING SEPARATORS IN DRY CHEMISORPTION

Heinz Holter, Beisenstrasse 39-41, 4390 Gladbeck, Fed. Rep. of Germany; Heinz Gresch, Dortmund-Derne, and Heinrich Igelbuscher, Gladbeck, both of Fed. Rep. of Germany, assignors to Heinz Holter, Gladbeck, Fed. Rep. of Germany

Continuation of Ser. No. 182,737, Aug. 29, 1980, abandoned.

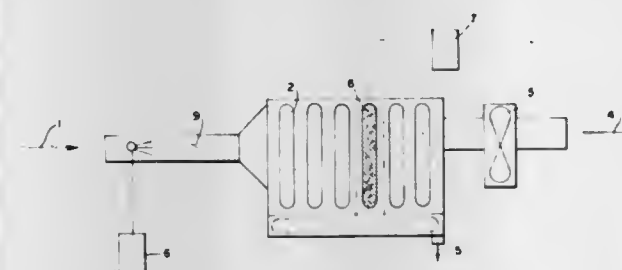
This application Apr. 9, 1982, Ser. No. 367,146

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935464

Int. Cl.³ B01D 53/10

U.S. Cl. 55—77

2 Claims



1. A process for cleaning filtering separators used in dry chemisorption systems comprising flowing contaminated gas through an inlet pipe to a reaction stage feeding chemisorption product into the reaction stage through the inlet pipe, reacting the contaminated gas and the chemisorption product in a reaction stage before flowing the contaminated gas and the chemisorption product into the filter system, feeding the contaminated gas and the chemisorption product from the inlet pipe and reaction stage into a stationary horizontally extended filter system having plural vertical filter elements arranged in separate filter pockets and collecting contaminants and chemisorption products below the system, flowing the contaminated gas and chemisorption product into fixed, vertically arranged tissue filters in each of about 100 or more filter pockets, flowing purified gas outward from the tissue filters, the filter pockets, and shielding and cleaning one filter pocket at a time from incoming reacted contaminated gas and chemisorption product and then coating the cleaned filter in the pocket by flowing fresh chemisorption product downward over the one filter in the one pocket removing chemisorption products and contaminants from beneath the filter system and drawing cleaned gas

from the filter system through an outlet separate from the inlet pipe with an exhaust fan, wherein the shielding, cleaning and coating steps comprise locating a closed shield over one pocket.

4,432,777 METHOD FOR REMOVING PARTICULATE MATTER FROM A GAS STREAM

Arlin K. Postma, Benton City, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 145,954, May 2, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,411

Int. Cl.³ B01D 47/02, 47/14

U.S. Cl. 55—86

1 Claim



1. A method of removing particulate matter from a stream of pressurized gas comprising:

- providing an open ended container having gas impervious upright side walls,
- substantially filling the open ended container with a porous bed,
- surrounding the open ended container with a liquid tight enclosure so as to create an annular space between the open ended container and the liquid tight enclosure,
- partially filling the liquid tight enclosure so as to submerge the porous bed to at least half its vertical height,
- directing a stream of pressurized gas and particulate matter to a submerged location vertically beneath the porous bed,
- passing the stream of gas through the porous bed so as to remove the particulate matter and to reduce the density of liquid within the porous bed and to cause the liquid in the porous bed to be pumped up over the side walls of the open ended container and into the annular space due to the density difference between the liquid in the porous bed and the annular space and to further cause liquid to flow from the annular space into the porous bed through the bottom of the open ended container to replace the pumped liquid, thereby creating a circulation of liquid between the porous bed and the annular space which cleans particulate matter from the porous bed by said liquid circulation.

4,432,778

FLUIDIC SWITCHED FLUID CLEANING

Michael J. Parkinson; Anthony W. Jury, both of Tewkesbury, England; Nicholas Syred, Llenishen, and Ieuan Owen, Penryn, both of Wales, assignors to Coal Industry (Patents) Limited, London, England

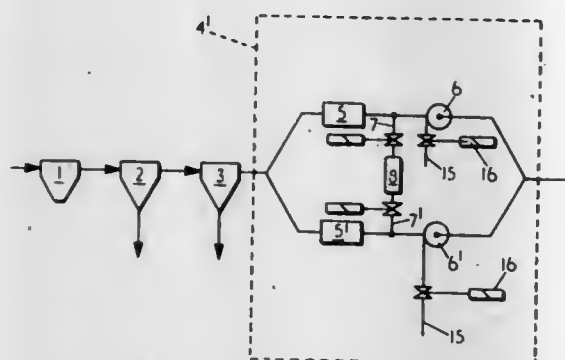
Continuation of Ser. No. 227,487, Jan. 22, 1981, abandoned. This application Mar. 23, 1983, Ser. No. 478,029

Claims priority, application United Kingdom, Feb. 8, 1980, 8004245

Int. Cl.³ B01D 46/44

U.S. Cl. 55—212

9 Claims



1. An improved hot gas cleaning system for removal of solid particles of mesh size 10 μ m and lower, and aerosols from a hot gas stream, wherein a line for carrying hot gases including solids and aerosols, having had the majority of solids removed, is split into a plurality of lines, each one comprising: a particle and aerosol collector to clean the gas including an associated cleaning means to clean the collector, and; a vortex amplifier, positioned in the stream of the particle and aerosol flow, which can, by use of control gas, be made to open or close the line to hot gas flow in which it is included, such closing of the line to hot gas flow allowing the particle and aerosol collector to be cleaned by its cleaning means whereby the whole system operates in such a manner that at any time only one line is closed to hot gas flow, while having its particle and aerosol collector cleaned, each collector being able to take the whole of the flow so that the total flow of hot gas is largely unaffected.

4,432,779

SYSTEM OF GAS DEHYDRATION USING LIQUID DESICCANTS

Joseph D. Honerkamp, and Harold O. Ebeling, both of Tulsa, Okla., assignors to Latoka Engineering, Inc., Tulsa, Okla. Continuation-in-part of Ser. No. 421,568, Sep. 22, 1982, which is a continuation-in-part of Ser. No. 227,798, Jan. 23, 1981, Pat. No. 4,375,977. This application Mar. 4, 1983, Ser. No. 472,088

Int. Cl.³ B01D 53/14

U.S. Cl. 55—233

5 Claims

1. An absorber for contacting gas having water therein with a liquid desiccant comprising:

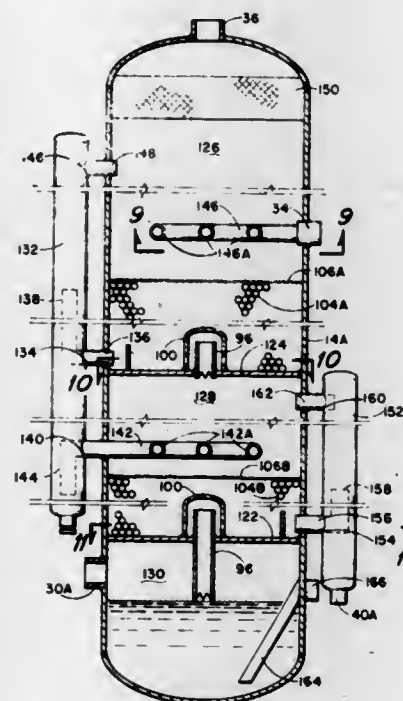
an upright vessel having a lower and an upper horizontal partition dividing the vessel interior into upper, intermediate, and lower zones, the vessel having a gas inlet in the upper zone and a gas outlet in the upper part of the upper zone, each of the partitions having a plurality of spaced apart openings therein;

a short length vertical cylindrical member supported in each of said openings in each of said partitions, the lower end of each extending below its partition and the upper end of each extending above its said partition;

a cap covering the upper portion of each of said cylindrical members, the internal diameter of the caps being greater than the external diameter of said cylindrical members, the caps having passageways therein below the upper ends of said cylindrical members;

packing within said vessel intermediate and upper zones

supported on said partitions and of depths greater than the height of said caps;
a desiccant entry in said vessel upper zone above said packing;
a desiccant outlet in the lower portion of said upper zone extending exteriorly of said vessel;



a desiccant inlet in said intermediate zone above said packing;
means communicating said desiccant outlet with said intermediate zone desiccant inlet; and
a liquid outlet in the lower portion of said intermediate zone.

4,432,780

GLASS FIBER SCRAP RECLAMATION

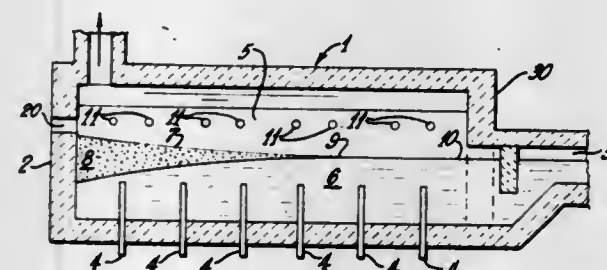
Mark A. Propster, Gahanna; Charles M. Hohman, and William L. Streicher, both of Granville, all of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Aug. 27, 1982, Ser. No. 412,337

Int. Cl.³ C03B 5/16

U.S. Cl. 65—2

10 Claims



1. A method of processing chemically-coated glass fibers which comprises introducing the fibers in discrete form in an oxidizing gaseous stream the stream being supplied in an amount sufficient to transport the coated glass fibers into hot oxidizing gases above the glass batch within a glass melting furnace to oxidize at least a portion of the chemical coating from the surface of the fibers, accumulating some portion of the glass fibers on said unmelted batch and moving said portion of the glass fibers and said unmelted batch through said furnace to melt the fibers and commingle the melted fibers and the melted batch as molten glass.

4,432,781

METHOD FOR MANUFACTURING FUSED QUARTZ GLASS

Haruo Okamoto, and Motoyuki Yamada, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

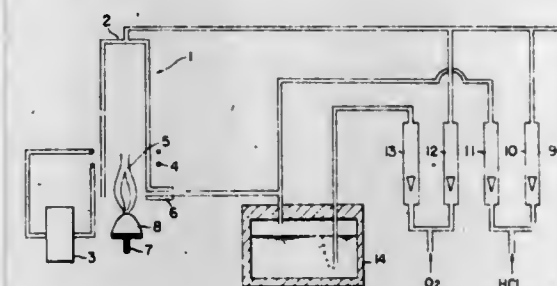
Filed Feb. 26, 1982, Ser. No. 352,856

Claims priority, application Japan, Mar. 6, 1981, 56-32352

Int. Cl.³ C03B 20/00, 19/00

U.S. Cl. 65—18.2

3 Claims



1. A method for manufacturing fused quartz glass with a controlled amount of hydroxy groups which method comprises admixing gaseous hydrogen chloride and oxygen with the vapor of a vaporizable silicon compound to form a gaseous reactant mixture, blowing the gaseous reactant mixture into a plasma flame formed with a gas flow of a plasma-supporting gas selected from the group consisting of oxygen, argon and mixtures thereof, whereby the silicon compound is decomposed and oxidized into silicon dioxide which is molten at the temperature of the plasma flame, and depositing the molten silicon dioxide on a substrate below the plasma flame to form said glass.

4,432,782

SUPPORT FOR HOT GLASS SHEETS OF NON-RECTANGULAR OUTLINE PRIOR TO BENDING

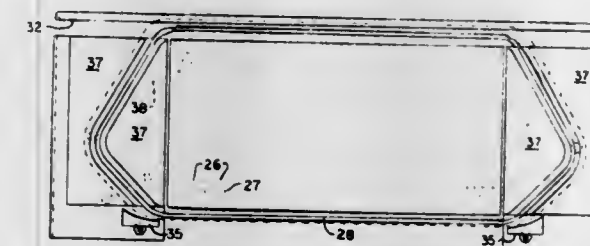
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 17, 1982, Ser. No. 389,312

Int. Cl.³ C03B 23/035

U.S. Cl. 65—25.2

13 Claims



1. Apparatus for supporting a flat glass sheet in position to be lifted by a ring-like lifting member having a plan outline and curved elevational shape conforming to that desired immediately within the perimeter of said glass sheet, said apparatus comprising a gas hearth bed portion having at least one dimension shorter than the corresponding dimension of said flat glass sheet, said ring-like lifting member surrounding said gas hearth bed portion, said bed portion having an essentially horizontal, flat, apertured upper wall, means to impart hot gas through said upper wall at a rate sufficient to float said glass sheet in closely spaced relation to said flat upper wall and to permit at least some of said hot gas to be deflected to flow beyond the edge of said upper wall, flat plate means supported adjacent an end of said upper wall and extending essentially horizontally therefrom to be in position to form an extension of said upper wall, said flat plate means comprising a pair of flat imperforate plates spaced from one another in a common essentially horizontal plane to define an elongated groove conforming to a portion of the periphery of said glass sheet, means for moving said ring-like member between a recessed position below said

upper wall and said flat imperforate plates through said elongated groove between said flat imperforate plates.

11. A method of supporting a flat glass sheet having a main portion and an end portion extending therefrom, comprising supporting the main portion thereof by gas in closely spaced relation over an upper, apertured wall of a gas hearth bed portion and supporting said end portion of said flat glass sheet extending from said main glass sheet portion in closely spaced relation to imperforate flat plate means extending from said upper apertured wall to a position in a common support plane slightly below at least a portion of the periphery of said flat glass sheet, whereby at least some of said gas that supports the main portion of said flat glass sheet is deflected to move along the lower surface of said flat glass sheet through a position between said portion of said glass sheet periphery and said flat plate means to control sag in said end portion of said glass sheet.

4,432,783

GLASSWARE FORMING APPARATUS

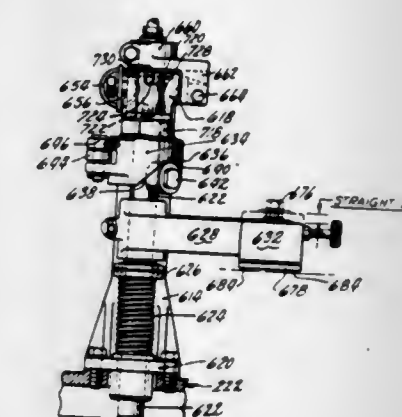
Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Continuation of Ser. No. 375,845, May 7, 1982, abandoned, which is a division of Ser. No. 179,381, Aug. 18, 1980, Pat. No. 4,339,264. This application Apr. 13, 1983, Ser. No. 484,658

Int. Cl.³ C03B 9/36

U.S. Cl. 65—239

4 Claims



1. A blowhead mechanism for a glassware forming machine, said mechanism comprising a shaft rotatably mounted on said machine, a blowhead arm attached to said shaft and including at least one blowhead, and means mounted about said shaft and positioned above said blowhead arm for imparting movement to said blowhead arm from a first position to a second position during which said shaft first rotates about its axis and then is moved axially vertically and from a second position to a first position during which the shaft is first moved axially vertically and then rotated about its axis.

4,432,784

BIOLOGICALLY ACTIVE HETEROCYCLIC COMPOUNDS

Ian T. Kay, Wokingham, and Robert A. Noon, London, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 10, 1982, Ser. No. 356,801

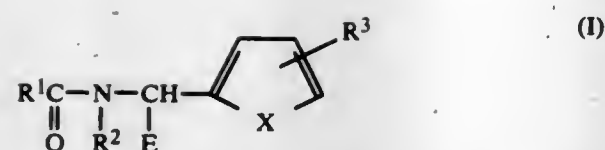
Claims priority, application United Kingdom, Mar. 19, 1981, 8108676

Int. Cl.³ A01N 43/08, 43/10; C07D 307/54, 333/24

U.S. Cl. 71—88

9 Claims

1. N-Heterocyclymethyl amides of the formula (I)



wherein R¹ is phenyl; phenyl bearing from 1 to 3 substituents selected from the group consisting of halogen, alkyl, alkoxy, halo alkyl, halo alkoxy, methylenedioxy and cyano; 2-furyl, 2-thienyl or 4-pyridyl;

R² is hydrogen, alkyl of 1 to 4 carbon atoms or alkenyl of 3 to 5 carbon atoms, said alkyl or alkenyl being either unsubstituted or substituted with C₁-C₄ alkoxy, C₁-C₄ alkylthio, or halogen;

E is —CN, alkoxycarbonyl, or a —CONR⁴R⁵ group wherein R⁴ and R⁵ may each be hydrogen, alkyl or alkenyl radical; X is oxygen or sulphur, and R³ represents hydrogen, methyl or chlorine.

8. A process for combating fungi which comprises applying to the locus of the fungi or a plant, or to the seed of the plant or locus thereof, a fungicidally effective, but non-phytotoxic, amount of an amide derivative as defined in claim 1.

9. A process of inhibiting the growth of unwanted plants which comprises applying to the plants, or to the locus thereof, a phytotoxic amount of a compound as defined in claim 1.

4,432,785

N-SUBSTITUTED-OXOBENZOTHAZOLINE DERIVATIVES USEFUL AS PLANT GROWTH REGULANTS

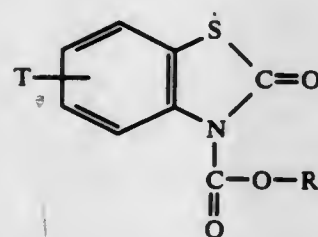
John J. D'Amico, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 27, 1981, Ser. No. 325,468
Int. Cl.³ A01N 43/78

U.S. Cl. 71—90

9 Claims

1. A method of regulating the natural growth and development of crop plants which comprises applying to the plant locus an effective plant regulating, non-lethal, amount of a compound of the formula



wherein R is equal to C₁₋₅ alkyl, C₂₋₅ alkenyl, C₂₋₅ alkynyl, haloalkyl, phenyl or phenyl substituted by one or two halogen, C₁₋₅ alkyl, C₁₋₅ alkoxy or haloalkyl moieties; T is equal to C₁₋₅ alkyl, C₁₋₅ alkoxy, halogen or haloalkyl.

4,432,786

THIENYLMETHOXYIMINOALKYL CYCLOHEXANEDIONE HERBICIDES

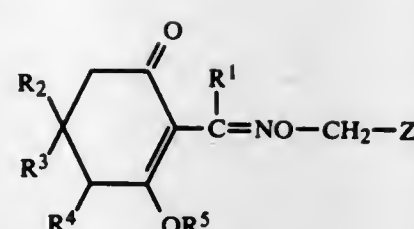
William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 10, 1982, Ser. No. 376,325
Int. Cl.³ A01N 43/02; C09B 23/16

U.S. Cl. 71—90

28 Claims

1. A compound selected from the group having the formula:



wherein

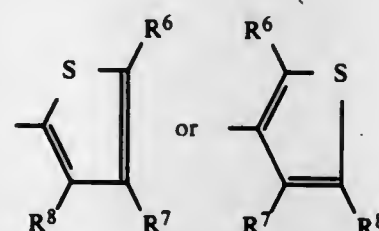
R¹ is hydrogen or lower alkyl;

R² and R³ are independently selected from the group consisting of hydrogen, lower alkyl, aryl having 6 through 10 carbon atoms, substituted aryl having 6 through 10 carbon atoms, and 1 through 4 substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, and trifluoromethyl;

R⁴ is hydrogen or alkoxycarbonyl having 2 through 4 carbon atoms;

R⁵ is hydrogen; and

Z is a group having the formula:



wherein R⁶, R⁷, and R⁸ are independently selected from the group of hydrogen, halo, nitro, alkyl having 1 through 4 carbon atoms, alkoxy having 1 through 4 carbon atoms, or trifluoromethyl; and cation salts thereof.

4,432,787

CONCENTRATED EMETIC HERBICIDAL COMPOSITION AND METHOD FOR THE PREPARATION THEREOF

Jerry P. Millionis, Somerset, and Joel E. Fischer, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,545
Int. Cl.³ A01N 25/32

U.S. Cl. 71—94

6 Claims

1. A concentrated emetic herbicidal composition comprising an aqueous solution of about 100 to 250 mg/ml of the cation of 1,1'-dimethyl-4,4'-bipyridinium dichloride; about 10 to 20 mg/ml of the peripherally-acting emetic sodium tripolyphosphate; about 5 to 10 mg/ml of the malodorous synergist pyridine for the peripheral emetic; and about 45 to 67.5 mg/ml of a nonionic surfactant.

4,432,788

METHOD FOR MANUFACTURING NON-FIRED IRON-BEARING PELLET

Michio Nakayama, Kawasaki; Osamu Tajima, Kamakura; Seiji Matsui, Kawasaki; Hideyuki Yoshikoshi, Hino, and Hiroshi Fukuyo, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,199

Claims priority, application Japan, Apr. 23, 1981, 56-60640; Apr. 23, 1981, 56-60641

Int. Cl.³ C22B 1/08

U.S. Cl. 75—3

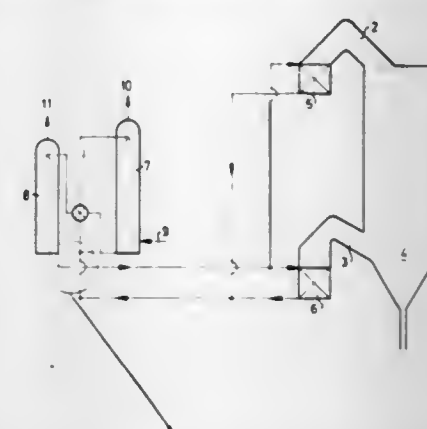
2 Claims

1. An improved process for manufacturing a non-fired iron-bearing pellet, which comprises:

mixing a hydraulic binder and water with raw materials which comprise at least one of (i) iron ore fines and (ii) dust mainly comprising iron oxides, to form a mixture; forming said mixture into green iron-bearing pellets; con-

tinuously supplying said green iron-bearing pellets into a treating furnace which comprises a preheating zone and a heating zone; blowing a heating gas containing saturated steam having a temperature of from 50° to 100° C. into said heating zone to contact and to heat the green iron-bearing pellets in said heating zone to the temperature of said heating gas and to condense at least part of said saturated steam contained in said heating gas by heat exchange with said green iron-bearing pellets by said contact and said heating; utilizing said heating gas, which in the heating zone had been used to heat said green iron-bearing pellets and contains said saturated steam at least part of which had been condensed, as a preheating gas in said preheating zone of said treating furnace to preheat the green iron-bearing pellets in said preheating zone to a temperature of from 40° to 90° C.; and maintaining said green iron-bearing pellets thus preheated and then heated,

gas, regenerating said wash liquid for reuse in said CO₂ wash by supplying heat to said wash liquid, and obtaining said heat



from the physical heat contained in the reducing gas which is removed from the upper portion of the shaft furnace.

4,432,790

BLAST FURNACE CONTROL METHOD

Marvin H. Bayewitz, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 237,331, Feb. 23, 1981, abandoned. This application Jun. 23, 1982, Ser. No. 391,329
Int. Cl.³ C21B 5/06

U.S. Cl. 75—41

25 Claims

at the temperature of from 50° to 100° C. for sufficient time to harden said green iron-bearing pellets; thereby continuously manufacturing non-fired iron-bearing pellets;

the improvement comprising

withdrawing from said heating zone said (i) heating gas which had been used to heat the green iron-bearing pellets in said heating zone before said heating gas is introduced into said preheating zone to preheat the green iron-bearing pellets therein, and withdrawing from said preheating zone said (ii) preheating gas which had been used to preheat the green iron-bearing pellets therein and mixing said withdrawn gases (i) and (ii) in a ratio to have the desired preheating temperature and form the preheating gas which is used to heat said green iron-bearing pellets in said pre-heating zone and recirculating said preheating gas to said preheating zone, thereby preheating said green iron-bearing pellets.

4,432,789

METHOD OF MINIMIZING ENERGY CONSUMPTION WHEN REDUCING IRON OXIDE WITH REDUCING GASES

Göran Mathisson, and Sven Santen, both of Hofors, Sweden, assignors to SKF Steel Engineering, Hofors, Sweden

Filed Jan. 24, 1983, Ser. No. 460,499

Claims priority, application Sweden, Mar. 2, 1982, 8201273
Int. Cl.³ C21B 13/02

U.S. Cl. 75—35

8 Claims

1. A method of reducing iron oxide so as to produce sponge iron in a shaft furnace having upper and lower portions, said method comprising the steps of supplying a hot reducing gas to the lower portion of the shaft furnace, passing the reducing gas upwardly through the iron oxide contained in the shaft furnace, withdrawing the reducing gas from the upper portion of the shaft furnace, passing the reducing gas from the upper portion of the shaft furnace through a CO₂ wash so as to remove substantially all CO₂ from said gas, and thereafter recirculating at least a portion of said gas into the lower portion of said furnace, said method further comprising using a wash liquid in said CO₂ wash to remove said CO₂ from said reducing

gas, regenerating said wash liquid for reuse in said CO₂ wash by supplying heat to said wash liquid, and obtaining said heat from the physical heat contained in the reducing gas which is removed from the upper portion of the shaft furnace.

1. A feedback control scheme for maintaining a substantially uniform operation of a blast furnace wherein solid iron-containing materials, carbon-containing fuel and fluxstone are charged into the top of the furnace and pass downwardly in the furnace and pressurized heated blast air is passed into the furnace through its tuyeres into the tuyere region of the furnace and the oxygen in the blast air combines with carbon in the fuel to provide reducing gases and high temperature heat that are required to melt and reduce the iron-containing materials to produce molten iron containing a desired silicon content, which molten iron is collected in the hearth of the furnace and to melt the fluxstone, which reacts with impurities charged into the furnace to form a fluid slag which floats atop the molten iron and protects the molten iron from impurities, the scheme comprising:

- (a) continuously accurately analyzing the composition of the top gas emitted from the furnace,
- (b) storing the analyses in a computer,
- (c) determining an average of the top gas analyses at a predetermined period of time,
- (d) determining a high temperature heat (HTH) value and a (CEEP) value for each period of time using the average of the top gas analyses determined in step (c) in mass and heat balance calculations,
- (e) storing the (HTH) values and CEEP values determined in step (d) in the computer,
- (f) determining a base period of operation of the blast furnace wherein the silicon content of the hot metal produced was within a predetermined range of the aim silicon content for the type of hot metal produced,
- (g) determining the average of the high temperature heat values as determined in step (d) from a base period of operation of step (f),
- (h) determining a difference between the high temperature heat for a current period of operation and the average value of the high temperature heat of step (g), which difference may be identified as DEL1,
- (i) determining the sum of the values from step (h) for the current hour and previous hour of operation, which sum may be identified as DEL2,
- (j) determining the average of the CEEP values of a recent period of operation,
- (k) determining the difference between the CEEP average

of step (j) and the average CEEP for a prior period of operation, and
(l) regulating the temperature and/or moisture content of the hot blast air as recommended by the values of DEL1 in step (h), DEL2 in step (i), and the CEEP difference in step (k).

4,432,791

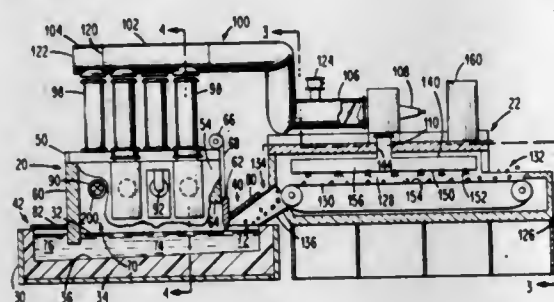
CERAMIC RADIANT TUBE HEATED ALUMINUM MELTER AND METHOD OF MELTING ALUMINUM
Viswanath Jayaraman, Livonia, and Mahendra R. Shah, Canton, both of Mich., assignors to Holcroft & Company, Livonia, Mich.

Filed Mar. 4, 1983, Ser. No. 472,425

Int. Cl.³ C21C 21/00; F27B 3/26

U.S. Cl. 75—65 R

15 Claims



1. In an aluminum melting system including a melting vessel, a housing having endwalls submergeable in a molten aluminum bath held by said vessel during operation of the system, said housing dividing the vessel into a charge zone, a heating zone, and a discharge zone interconnected below said endwalls, and means for delivering heat to said aluminum bath in said heating zone, the improvement wherein said means for delivering heat comprises a plurality of ceramic tubes extending between opposed walls of said housing, a burner at one end of each of said tubes, said burners operable to fire hot gases into said tubes, and further including:

recuperator means for collecting the combustion products from the ends of said tubes remote from said burners and preheating combustion air for said burners by passing said air in heat exchange relationship with said combustion products; and

a stock preheater operable to receive said combustion products from said recuperator means and to direct said combustion products into contact with solid aluminum stock prior to delivery of said solid stock into the charge zone of said vessel.

4,432,792

MATERIAL FOR STEEL WOOL

Heijiro Kawakami, Kobe; Sadayoshi Furusawa, Mitaka; Toyofumi Hasegawa; Hitoshi Sato, both of Kobe; Katsumasa Tanaka, Ono, and Jiro Koarai, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 30, 1982, Ser. No. 429,619

Claims priority, application Japan, Oct. 2, 1981, 56-157108

Int. Cl.³ C22C 38/00

U.S. Cl. 75—123 R

1 Claim

1. A material for steel wool essentially consisting of 0.05 to 0.20% of C, up to 0.10% of Si, 0.50 to 1.30% of Mn, 0.035 to 0.10% of P, up to 0.04% of S, 0.005 to 0.015% of N, and the balance of Fe, Al₂O₃ inclusions with sizes not smaller than 3 microns being so controlled that their content is suppressed to a level not greater than 20 ppm of the total content of the material for steel wool and when the content of the Al₂O₃ inclusions with sizes not smaller than 3 microns is within the range of 5 to 20 ppm, Al₂O₃ inclusions having a size ranging from 3 to 10 microns are not less than 30% of the total content of the Al₂O₃ inclusions with sizes not smaller than 3 microns.

4,432,793

FERROALLOY FOR THE TREATMENT OF CAST METALS AND PROCESS

Pierre Hilaire, Louveclennes, France; Franz Lietaert, Zwijsnaarde, Belgium; Claude Staroz, Puteaux, France, and Walter Schumacher, Dusseldorf, Fed. Rep. of Germany, assignors to Societe Nobel Bozel, Puteaux, France

Filed Jul. 30, 1982, Ser. No. 403,726

Claims priority, application France, Aug. 4, 1981, 81 15110

Int. Cl.³ C22C 33/08

U.S. Cl. 75—130 R

10 Claims

1. A ferroalloy for the treatment by inoculation of cast metals with spheroidal graphite comprising from 0.005 to 3% by weight of at least one metal of the rare earth group and from 0.05 to 3% by weight of at least one element taken from the group consisting of bismuth, lead and antimony, the remainder being essentially silicon and the balance iron.

4,432,794

HARD ALLOY COMPRISING ONE OR MORE HARD PHASES AND A BINARY OR MULTICOMPONENT BINDER METAL ALLOY

Helmut Holleck, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

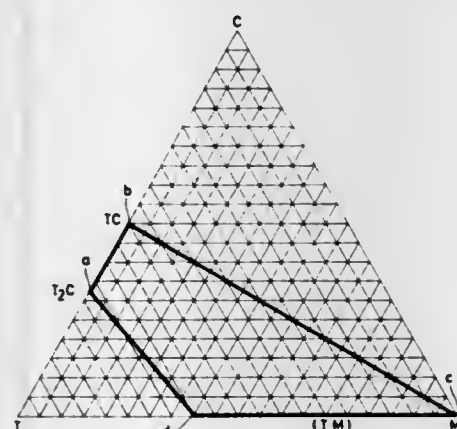
Filed Jul. 17, 1981, Ser. No. 286,376

Claims priority, application European Pat. Off., Jul. 19, 1980, 80104274

Int. Cl.³ B22F 3/16; C22C 14/00, 27/00, 28/00

U.S. Cl. 75—239

14 Claims



1. A hard alloy comprising at least one hard phase and a binary or multicomponent binder metal alloy, said hard alloy comprising a finely dispersed, homogeneous distribution of said at least one hard phase in said binder metal alloy, said at least one hard phase comprising a carbide of a transition metal of Group IVb, Vb or VIb of the Periodic Table of Elements, and said binder metal alloy comprising a solid alloy of a transition metal of Group IVb, Vb or VIb of the Periodic Table of Elements, with Ru, Rh, Pd, Os, Ir or Pt, with the proportion of transition metal in said binder metal alloy comprising 2 to 60 mole percent, and the remaining 98 to 40 mole percent of said binder metal alloy comprising (a), Ru, Rh, Pd, Os, Ir or Pt, and (b) 0 to 90 atom percent Fe, Ni or Co, the atom percent of Fe, Ni or Co being based on the total atom percent of Ru, Rh, Pd, Os, Ir, Pt, Fe, Ni and Co percent.

4,432,795

SINTERED POWDERED TITANIUM ALLOY AND METHOD OF PRODUCING SAME

Phillip J. Andersen, Cleveland Heights, Ohio, assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 97,508, Nov. 26, 1979, abandoned. This application Feb. 16, 1982, Ser. No. 349,432

Int. Cl.³ C22C 14/00, 1/04; B22F 1/00

U.S. Cl. 75—245

7 Claims

1. A process for producing a sintered powdered titanium

alloy article having a density near theoretical while minimizing the amount of fine particles required to obtain satisfactory densification which comprises:

- providing alloy-forming particles which have been milled to an average particle size ranging from about 0.5 to 20.0 microns, said particles being capable of alloying with titanium;
- mixing said alloy-forming particles in the as-milled condition with titanium-base particles having an average particle size ranging from about 40 to 177 microns so as to form a powder mixture containing about 70-95 weight percent of said titanium-base particles and the balance substantially said alloy-forming particles;
- compacting said powder mixture into an article of the desired configuration having a green density ranging from about 80 to 90 percent of theoretical density sufficient to render said article capable of being sintered to near theoretical density; and
- sintering said article at an elevated temperature below that at which any liquid phase is formed in said article, whereby said article has physical properties similar to a wrought produced article.

4,432,798

ALUMINOSILICATE HYDROGEL BONDED AGGREGATE ARTICLES

Richard L. Helferich, Clayton, and William B. Shook, Columbus, both of Ohio, assignors to The Duriron Company, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 217,203, Dec. 16, 1980, Pat. No. 4,357,165, which is a continuation of Ser. No. 908,802, Nov. 8, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,715

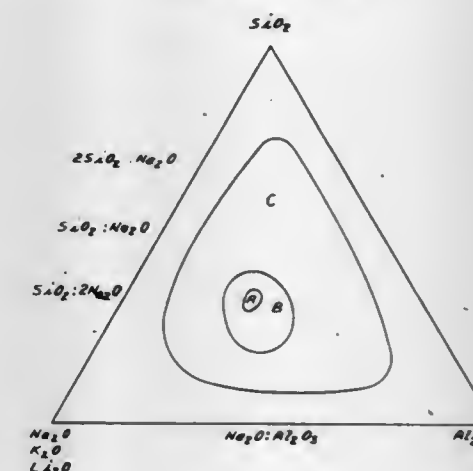
The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ B28B 7/34

U.S. Cl. 106—38.3

23 Claims

OVERALL COMPOSITION RANGE OF INVENTION HYDROGEL SYSTEM BASED ON SOLIDS CONTENT



1. Rigidified formed articles of aggregate/binder compositions which are at least sufficiently fluid or plastic when prepared to enable them to be formed into said article and which are self-setting under ambient conditions to effect rigidification thereof,

said composition comprising an inert aggregate material, more than 10% by weight of an aluminosilicate hydrogel binder bonding said aggregate material together to form said rigidified article, and at least one gel modifying filler selected from the group consisting of clays, compounds of Group II and III metals of the period and zinc, zirconium and titanium compounds which form insoluble alkali salts with said binder, said aggregate material principally comprising discrete particulate matter which when bound together in said rigidified condition constitutes the skeletal base of said articles, said aluminosilicate hydrogel binder having compositional limits, exclusive of its water content, of from 10-60 weight percent total alkali, 10-70 weight percent alumina and 10-80 weight percent silica, wherein the mole ratio of alumina-to-silica is from 0.07 to about 4.20, a total solids content of said binder of 10-50 weight percent, the balance essentially water.

4,432,796

PROCESS FOR THE CONDITIONING OF AN ORGANIC PIGMENT

John F. Santimauro, Wyckoff, N.J., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 304,127, Sep. 21, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 469,021

Int. Cl.³ C08K 5/20, 5/56; C09D 11/00

U.S. Cl. 106—19

9 Claims

1. A process for the conditioning of a crude pigment which comprises treating a crude pigment selected from the group consisting of Pigment Red 123, Pigment Red 190, Pigment Yellow 112, Pigment Blue 15 and Pigment Violet 23 with polyphosphoric acid and drowning the mixture in such an amount of water, ice, a water-miscible organic liquid or a mixture of these substances so that the H₃PO₄ equivalent of the resulting mixture is below 40%, the amount of said polyphosphoric acid being 2 to 20 parts by weight based on 1 part by weight of the 100% pigment and wherein the process is conducted at a temperature of between about 20° C. and about 200° C.

4,432,797

WATER BASED THICKENED STAIN

Ramesh C. Vasishth, Danville, and Robert S. Wang, Concord, both of Calif., assignors to Envirosof Systems International, Ltd., Orinda, Calif.

Filed Mar. 11, 1982, Ser. No. 357,033

Int. Cl.³ B05D 3/02; C09D 15/00

U.S. Cl. 106—34

10 Claims

1. A water borne wood stain resistant to pigment settling prior to use comprising: a dispersed pigment for staining wood, water and sufficient nonfilm forming water thickener to raise the solution viscosity to a level which creates a gelled structure in the stain to substantially reduce pigment settling.

4,432,799

REFRACTORY COMPOSITIONS AND METHOD

Paul V. Salazar, 1506 Clinton Pl., River Forest, Ill. 60305

Filed Mar. 8, 1982, Ser. No. 355,320

Int. Cl.³ C04B 9/04

U.S. Cl. 106—85

6 Claims

1. A basic refractory composition which, when wetted, forms a magnesium aluminum phosphate bond comprising: A magnesium oxide source: 20-94%; Aluminum phosphate: 5-70%; and an insulating material selected from the group consisting of perlite, vermiculite, diatomaceous earth, and mixtures thereof in an amount of 5-60% based on the total weight of the composition.

4,432,800

BENEFICIATING KILN DUSTS UTILIZED IN POZZOLANIC REACTIONS

William A. Kneller, and John P. Nicholson, both of Toledo, Ohio, assignors to N-Viro Energy Systems Ltd., Toledo, Ohio
 Filed Aug. 16, 1982, Ser. No. 408,173
 Int. Cl.³ C04B 7/26

U.S. Cl. 106—85

21 Claims

1. A mixture consisting essentially of pozzolan, kiln dust, a filler, and a small amount of material selected from the group comprising calcium oxide, calcium hydroxide, and sodium hydroxide, which through pozzolanic reactions produces a durable mass, the pozzolan comprising between about 6 and 24% by dry weight, the kiln dust comprising between 4 and 16% by dry weight, the filler comprising between about 60 to 90% by dry weight, the material selected from the group consisting of less than 1.5% by dry weight, of calcium oxide, of less than 2.0% by dry weight, of calcium oxide, of less than 2.0% by dry weight of calcium hydroxide, and less than 1% by weight of sodium hydroxide.

4,432,801

PROCESS FOR CONTROLLED DEGRADATION OF LIQUID GLUCOSE SYRUPS AND CEMENT ADDITIVE PRODUCTS THEREFROM

Fabio Tegiacchi; Mario Chiruzzi; Benito Casu, and Giangiacomo Torri, all of Milan, Italy, assignors to Grace Italiana S.p.A., Milan, Italy
 Filed May 4, 1981, Ser. No. 260,476
 Int. Cl.³ C04B 7/352

U.S. Cl. 106—92

18 Claims

1. A process for controlled degradation of a glucose syrup comprising glucose, maltose, and maltodextrins, said process comprising the steps of providing said glucose syrup in concentrated solution in homogeneous phase and treating said glucose syrup with an oxidizer or aqueous alkaline solution to degrade the reducing groups of said glucose, maltose, and maltodextrins without substantially modifying the polysaccharidic components of maltodextrin of said syrup having a degree of polymerization greater than 3 or with only partial depolymerization of said polysaccharidic components.

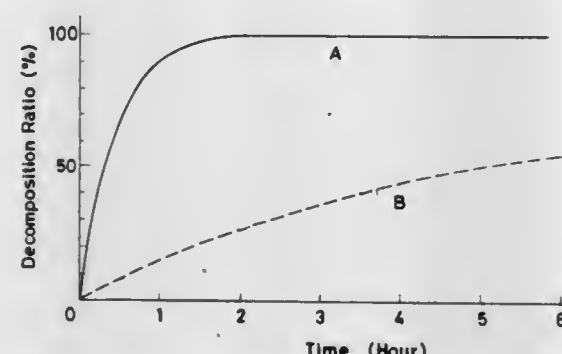
4,432,802

INCLUSION COMPOUND-CONTAINING COMPOSITE

Kazuaki Harata; Satoshi Morimoto, and Keishiro Tsuda, all of Ibaraki, Japan, assignors to Agency of Industrial Science & Technology Ministry of International Trade & Industry, Tokyo, Japan
 Filed Jan. 27, 1982, Ser. No. 343,214
 Claims priority, application Japan, Feb. 4, 1981, 56-15254
 Int. Cl.³ C08L 1/02, 1/08; A61K 9/36

U.S. Cl. 106—163 R

6 Claims



1. An inclusion compound-containing composite, comprising a closed container formed partially or wholly of permeable membrane and an inclusion compound enclosed by said container, wherein said enclosed inclusion compound consists of a water-soluble cyclodextrin polymer incapable of permeating said membrane and an active component capable of permeating said membrane, whereby the composite releases said active component steadily over a long period of time.

4,432,803

IRON OXIDE PAINT PIGMENT PRECURSOR

Henry W. Hitzrot, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 103,144, Dec. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 965,550, Dec. 1, 1978, Pat. No. 4,190,422, which is continuation-in-part of Ser. No. 906,310, May 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 800,116, May 24, 1977, abandoned. This application Jan. 21, 1981, Ser. No. 226,680
 Int. Cl.³ C09C 1/24

U.S. Cl. 106—304

3 Claims

1. In a process for producing yellow iron oxide paint pigment wherein iron-containing particles together with nitrobenzene, aluminum chloride and hydrochloric acid are charged into an autoclave and are heated under pressure, and the nitrobenzene is reduced to aniline and substantially all the iron is oxidized to iron oxides with a negligible amount of iron remaining unreacted and a negligible amount of residual salts are formed as well as water; and wherein the aniline is separated from the iron oxides, the unreacted iron and the residual salts and the water, and the iron oxides are treated to remove the unreacted iron and the residual salts to leave substantially pure yellow iron oxides, the iron-containing particles which are charged into the autoclave being a waste material comprised of metallic cores derived from scarfer spittings and characterized by a composition consisting essentially of not more than:

- 0.10 weight percent carbon,
- 0.25 weight percent manganese,
- 0.025 weight percent phosphorus,
- 0.01 weight percent sulfur,
- 0.05 weight percent silicon,
- 0.10 weight percent chromium,

the remainder iron and having a particle size within the range of about 5 mm and 0.125 mm.

4,432,804

PROCESS FOR PRODUCING A MIXTURE OF TOBERMORITE AND ETTRINGITE

Hideo Tamura, Takarazuka, and Seiro Ibuki, Kusatsu, both of Japan, assignors to Kubota Ltd., Osaka, Japan

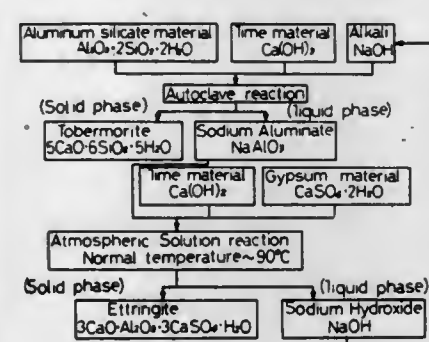
Continuation of Ser. No. 150,131, May 15, 1980, abandoned, which is a division of Ser. No. 51,057, Jun. 22, 1979, Pat. No. 4,243,429. This application Mar. 10, 1981, Ser. No. 242,230
 Claims priority, application Japan, Jun. 22, 1978, 53-76143; Jun. 22, 1978, 53-76145

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ C09C 1/02; C01B 33/24; C01F 7/76

U.S. Cl. 106—306

5 Claims



1. A process for producing a mixture of tobermorite and ettringite characterized by the steps of:

- (1) admixing an alumina-containing siliceous material and a lime material with an alkali solution;
- (2) subjecting the resulting mixture to hydrothermal reaction with water at 4 to 40 kg/cm² to form tobermorite;
- (3) admixing a lime material and a gypsum material with the resulting alkali reaction product in the reaction mixture containing the tobermorite and reacting the mixture at

room temperature to a temperature of up to 90° C. to form ettringite;

- (4) filtering the reaction mixture from step (3) to obtain a filtrate separated from the mixture of tobermorite and ettringite, recycling the filtrate to step (1) for use as alkali solution and repeating steps (1)–(3).

4,432,805

METHOD FOR CONTINUOUS SACCHARIFICATION OF CELLULOSE OF PLANT RAW MATERIAL

Antti I. Nuutila, Tampere, and Velkko J. Pohjola, Velkkola, both of Finland, assignors to Oy Tampella AB, Finland
 Continuation of Ser. No. 217,514, Dec. 17, 1980, abandoned.

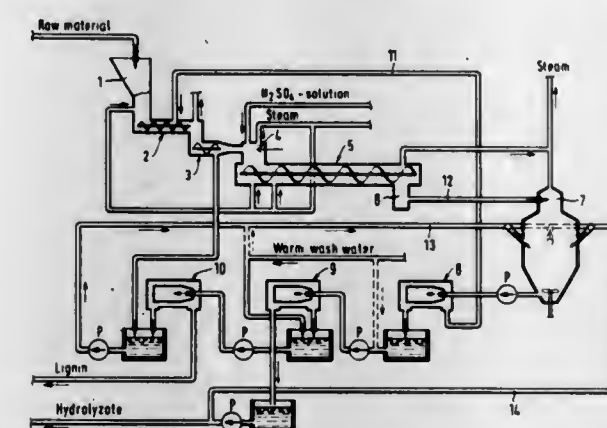
This application Jun. 23, 1982, Ser. No. 391,442

Claims priority, application Finland, Dec. 18, 1979, 793963

Int. Cl.³ C13K 1/02

U.S. Cl. 127—37

8 Claims



1. A method for continuous saccharification of a plant raw material comprising:

- feeding both the raw material and a dilute sulfuric acid solution through a flow reactor at a flow rate required to hydrolyze under pressure and at elevated temperature the more easily hydrolyzable particles of the raw material and maintaining the pressure and temperature required for hydrolysis in the reactor, the detention time of said raw material and said dilute sulfuric acid in said flow reactor being substantially equal;
- discharging dry solids and liquid containing monosaccharides together from the reactor into a common blow tank by expansion;
- separating in a separator the liquid and solids into one fraction containing liquid and fine solids and a second fraction containing coarse solids and recovering the liquid as a monosaccharide product while discharging the fine solids which contain mainly lignin; and
- recycling at least part of the separated coarse solids into the reactor.

4,432,806

METHOD OF PURIFYING SUGAR JUICE PREPARED BY EXTRACTION OF A SUGAR BEET MATERIAL

Rud F. Madsen, Strandpromenaden; Werner K. Nielsen, and Steen Kristensen, both of Bresemannsalles, all of Denmark, assignors to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Jan. 8, 1982, Ser. No. 338,071

Claims priority, application Sweden, Jan. 14, 1981, 8100186

Int. Cl.³ C13D 3/16

U.S. Cl. 127—48

14 Claims

1. A method of purifying sugar juice which has been extracted from a sugar beet material, said method comprising the steps of (a) filtering the sugar juice to remove undissolved components therefrom, (b) adding to the filtered sugar juice obtained in step (a) a chemical selected from the group consisting of oxidants, complexing agents and mixtures thereof in an amount sufficient to convert low molecular weight colored components in the filtered sugar juice into compounds of a

molecular weight sufficiently high that they can be separated from the filtered sugar juice by ultrafiltration, and (c) ultrafiltering the chemically treated sugar juice obtained in step (b) to provide a retentate containing the high molecular weight compounds and a permeate in the form of a purified sugar juice concentrate.

4,432,807

METHOD OF EXFOLIATING COATING OF COATED OPTICAL FIBER

Yusei Shirasaka; Kenichi Fuse, and Haruo Umezumi, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

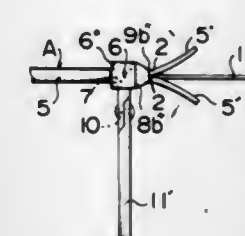
Filed Mar. 15, 1982, Ser. No. 358,003

Claims priority, application Japan, Mar. 25, 1981, 56-43495

Int. Cl.³ C03C 23/00; B08B 7/00

U.S. Cl. 134—2

14 Claims



1. A method of exfoliating a coated optical fiber in which fibrous materials are contained along the longitudinal direction of the optical fiber in the coating layer on the outer periphery of the optical fiber comprising:

- producing a crack of longitudinal direction of the optical fiber in the coating layer at the end of the coated optical fiber to be exfoliated and cleaving the cracked coating layer into a plurality of cleaved strip pieces while growing the crack, and
- outwardly bending the cleaved strip pieces at the edges provided at the positions to be exfoliated of the coating layer as basic points and bending off the cleaved strip pieces at the edges of the coating layer.

4,432,808

TREATMENT OF STAINLESS STEEL APPARATUS USED IN THE MANUFACTURE, TRANSPORT OR STORAGE OF NITROGEN OXIDES

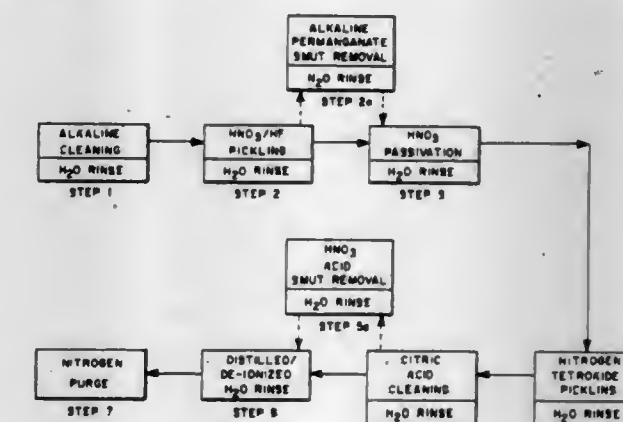
Henry P. Heubusch, Buffalo, N.Y., assignor to Textron Inc., Providence, R.I.

Filed May 26, 1982, Ser. No. 382,112

Int. Cl.³ C23G 1/02

U.S. Cl. 134—3

17 Claims



1. A method of cleaning and passivating a chromium containing stainless steel metal surface used in the manufacture,

transport or storage of highly pure nitrogen tetroxide comprising the steps of:

1. Cleaning said surface by contacting with an alkaline cleaner containing solution to remove fouling deposits and thereafter rinsing with water;
2. Pickling said surface by contacting with an aqueous nitric acid/hydrofluoric acid solution to remove oxides, carbonates and mill scale, and thereafter rinsing with water;
3. Passivating said surface by contacting with a nitric acid passivation solution and thereafter rinsing with water;
4. Pickling said surface by contacting with green nitrogen tetroxide and thereafter rinsing with water;
5. Cleaning said surface by contacting with a citric acid solution and thereafter rinsing with water;
6. Rinsing said surface with distilled or de-ionized water until said surface is chloride free; and
7. Purging said surface free of liquid with nitrogen.

4,432,809

METHOD FOR REDUCING OXYGEN PRECIPITATION IN SILICON WAFERS

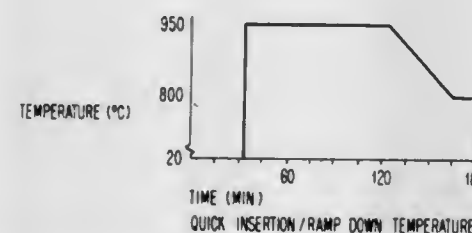
Patrick W. Chye, Mountain View, Calif.; Eric W. Hearn, Wappingers Falls, N.Y.; Murlidhar V. Kulkarni, Fishkill, N.Y., and Gary Markovits, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
PCT No. PCT/US81/01777, § 371 Date Mar. 10, 1982, § 102(e) Date Mar. 10, 1982, PCT Pub. No. WO83/02314, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 31, 1981, Ser. No. 364,542

Int. Cl.³ H01L 21/322, 21/324

U.S. Cl. 148—1.5

12 Claims



1. A method of retarding oxygen precipitation and preventing warpage in a semiconductor wafer which is subject to heat treatment at a predetermined temperature during the manufacture of semiconductor circuits thereon, comprising the steps of: preheating a furnace to the predetermined heat treatment temperature, inserting the wafer into the preheated furnace in a manner which immediately exposes said semiconductor wafer to said predetermined heat treatment temperature and causes said semiconductor wafer to rapidly heat up to said predetermined heat treatment temperature, maintaining the furnace at said predetermined heat treatment temperature for about ninety minutes, and slowly cooling the wafer at the end of said heat treatment.
2. A method of retarding oxygen precipitation and preventing warpage in a semiconductor wafer which is subject to heat treatment at a predetermined temperature during the manufacture of semiconductor circuits thereon, comprising the steps of: inserting the wafer into a furnace, the temperature of which may be increased to the predetermined heat treatment temperature at a rate exceeding several hundred degrees centigrade per second, increasing the furnace temperature to the predetermined heat treatment temperature at a rate exceeding several hundred degrees centigrade per second to thereby increase the wafer temperature to the predetermined heat treatment temperature at a rate exceeding several hundred degrees centigrade per second, performing the heat treatment, and slowly cooling the wafer at the end of said heat treatment.

4,432,810

METHOD FOR IMPROVING LUMINESCENCE AND ELECTRICAL PROPERTIES IN SEMICONDUCTOR MATERIALS BY ELECTRON IRRADIATION AT LIQUID NITROGEN TEMPERATURES

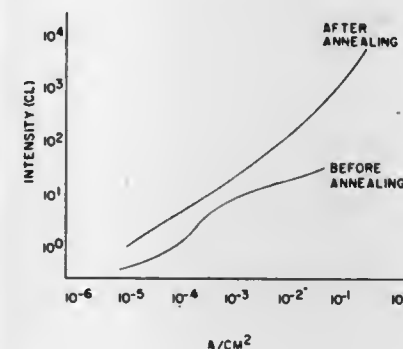
Albert Sicignano, Mt. Kisco, N.Y.; Christiaan J. Werkhoven, and Werner F. van der Weg, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,128

Int. Cl.³ H01L 21/263

U.S. Cl. 148—1.5

11 Claims



1. A process for annealing luminescence material comprising inserting a luminescence material into an enclosed region, providing a vacuum in said region, simultaneously cooling said material to the vicinity of liquid nitrogen temperatures, and thereafter exposing said material to an electron beam in the range of 20 to 27.5 KEV to cause annealing of said material.

4,432,811

METHOD OF MAKING SEAMLESS TUBING

Johann Stiebelhner, Pottschach, and Peter Machner, Leoben, both of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Oct. 4, 1982, Ser. No. 432,762

Claims priority, application Austria, Oct. 8, 1981, 4313-81

Int. Cl.³ C21D 8/00

U.S. Cl. 148—2

6 Claims

1. In a process for producing seamless tubes of austenitic chromium-nickel steels by continuous casting, wherein a metallic melt is poured continuously into a cooled mold having a round molding cavity, said melt being allowed to solidify partially in said cavity, and wherein a billet is extracted from said mold and cut into crosscut lengths after thoroughly hardening, the improvement comprising electromagnetically agitating said billet in a direction about its longitudinal axis prior to complete hardening, when said billet comprises a billet shell and a liquid billet core, annealing said crosscut continuous castings at a temperature of from 1100° C. to 1250° C. for a holding time between 30 minutes and 4 hours, cooling said casting and thereafter mechanically reducing said castings to extrusion blooms by machining, and extruding said blooms, without hot-working said blooms, to produce said seamless tubes.

4,432,812

DRIVE TRAIN GEAR OF LOWER BAINITE ALLOY STEEL

Stuart L. Rice, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 142,325, Apr. 21, 1980, abandoned.

This application Jul. 6, 1982, Ser. No. 483,961

Int. Cl.³ C21D 9/32

U.S. Cl. 148—36

9 Claims

1. In a drive train gear of the type having a plurality of gear teeth thereon for meshing engagement with another gear, the improvement comprising:

said drive train gear being formed of alloy steel having a predominantly homogeneous and substantially complete low temperature bainite microstructure including one of cementite precipitated within the ferrite laths and epsilon carbide precipitated within the ferrite lath boundaries, the drive train gear having a hardness of at least Rc56 there-through.

7. In a drive train gear of the type having a plurality of gear teeth thereon for meshing engagement with another gear, the improvement comprising:

said drive train gear being formed of alloy steel consisting essentially of carbon in the range of 0.60 to 0.80 Wt.%, manganese in the range of 0.45 to 1.00 Wt.%, silicon in the range of 0.15 to 2.20 Wt.%, and molybdenum in the range of 0.40 to 0.70 Wt.%, preferably but not essentially boron, and the balance substantially iron.

4,432,813

PROCESS FOR PRODUCING EXTREMELY LOW GAS AND RESIDUAL CONTENTS IN METAL POWDERS

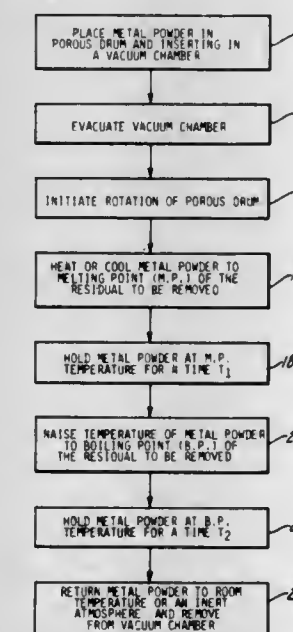
Griffith E. Williams, 3250 W. 4100 S., Salt Lake City, Utah 84119

Filed Jan. 11, 1982, Ser. No. 338,389

Int. Cl.³ B22F 1/00

U.S. Cl. 148—125

24 Claims



1. A method for removing residual elements including dissolved, absorbed, adsorbed or otherwise occluded gases from metal powders comprising the steps of: placing the metal powder in a vacuum chamber; evacuating said vacuum chamber to reduce the atmosphere surrounding the metal powder to a vacuum; subjecting the metal powder to the melting temperature of the residual element to be removed for a first predetermined period of time T₁; elevating the temperature of the metal powder to the boiling temperature of the residual element to vaporize the residual element; holding said metal powder at said boiling temperature for a second period of time T₂; and returning the metal powder from said boiling temperature to room temperature prior to removing the metal powder from said vacuum chamber.

4,432,814

AZIDO ESTERS

Edward F. Witucki, Van Nuys, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 370,235, Apr. 21, 1982. This application Apr. 13, 1983, Ser. No. 484,735

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.1

1 Claim

1. A solid composite type propellant composition consisting essentially of a cured intimate mixture of:

A. an oxidizer component;
B. a synthetic resinous binder component; and
C. an energetic plasticizer component consisting of 6-azidoethyl-6-azidohexanoate in an amount ranging from about 1.5 to 4.0 parts by weight of plasticizer to about 1.0 parts by weight of resinous binder.

4,432,815

AZIDO FLUORODINITRO AMINES

Milton B. Frankel, Tarzana, and Edward F. Witucki, Van Nuys, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 350,494, Feb. 19, 1982. This application Apr. 12, 1983, Ser. No. 484,328

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.3

4 Claims

1. A solid composite type propellant composition comprising a cured intimate mixture of:

A. an oxidizer component;
B. a synthetic resinous binder component; and
C. an azido fluorodinitro amine energetic plasticizer.

4,432,816

PYROTECHNIC COMPOSITION FOR CUTTING TORCH

Katherine L. Kennedy, Paul W. Proctor, both of White Plains, and Robert L. Dow, LaPlata, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1982, Ser. No. 440,482

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.3

6 Claims

1. An energetic composition consisting essentially of from about 15 to about 20 weight percent of aluminum, from about 5 to about 10 weight percent of the copolymer of vinylidene fluoride and hexafluoropropylene, and the remainder of iron oxide powder which is substantially ferric oxide.

4,432,817

PROPELLANT CONTAINING AN AZIDONITROCARBAMATE PLASTICIZER

Milton B. Frankel, Tarzana, and Edward F. Witucki, Van Nuys, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,643

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.5

1 Claim

1. A solid composite type propellant composition comprising a cured intimate mixture of:

A. an oxidizer component consisting essentially of cyclotetramethylene tetranitramine;
B. a synthetic resinous binder component consisting essentially of a polyester resin; and
C. 1,3-diazido-2-propyl-N-nitro-N-trinitropropyl carbamate as an energetic plasticizer present in a ratio ranging from about 1.5 to 4.0 parts of plasticizer to about 1.0 part of polyester resin binder.

4,432,818

COMPOSITIONS FOR USE IN HEAT-GENERATING REACTIONS

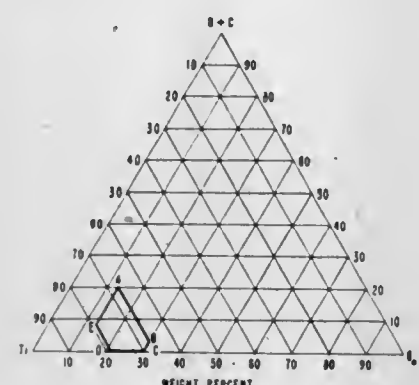
James R. Givens, Tucson, Ariz., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 22, 1980, Ser. No. 180,269

Int. Cl.³ C06B 43/00

U.S. Cl. 149—22

23 Claims



1. A composition capable of gasless exothermic reaction in the condensed state which includes boron carbide plus at least one reactive metal selected from the group consisting of titanium, zirconium, hafnium and vanadium.

4,432,819

PRIMING COMPOSITION AND TECHNIQUES

George B. Carter, Lichfield, and Alan Cross, Rubery, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Sep. 3, 1976, Ser. No. 722,072

Claims priority, application United Kingdom, Sep. 11, 1975, 37386/75

Int. Cl.³ C06B 31/00

U.S. Cl. 149—45

11 Claims

1. A priming composition for an explosive device including a primary explosive which is produced in situ in relation to at least one other element by bringing together components to form a combination including a multiple salt of a hypophosphite which has been permitted to crystallize freely in situ during its formation.

4,432,820

PROCESS FOR PRODUCTION OF POLYESTER-POLYOLEFIN FILM LAMINATES

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 362,665, Mar. 29, 1982, abandoned, which is a continuation of Ser. No. 185,778, Sep. 10, 1980, abandoned.

This application Mar. 14, 1983, Ser. No. 475,464

Int. Cl.³ B32B 31/26

U.S. Cl. 156—82

8 Claims

1. A process for producing a permanently bonded laminate comprising polyester and polyolefin layers which consists essentially of:

- providing a preformed polyester or a heat-sealable polyolefin film;
- contacting a surface of said film with the secondary portion of a flame in the vicinity of the termination of the primary portion of the flame, said flame being produced from a combustible hydrocarbon-oxygen mixture and having a temperature in the range of about 1700° F. to about 1900° F., so as to prime the surface of the film;
- storing the primed film; and
- coating the stored film with a layer of molten polymer, said molten polymer being a heat-sealable polyolefin when the film is a polyester film and a polyester when the film is a polyolefin.

4,432,821

COMPOSITION AND METHOD FOR BRAZING GRAPHITE TO GRAPHITE

Albert J. Taylor, Ten Mile, and Norman L. Dykes, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 10, 1982, Ser. No. 406,829

Int. Cl.³ C03B 29/00; C04B 33/34, 37/00

U.S. Cl. 156—89

7 Claims

1. A graphite brazing and coating composition comprising a slurry of particulate uranium oxide, particulate hafnium carbide and a thermosetting resin, said composition being characterized by the uranium oxide being converted to uranium dicarbide at an elevated temperature, and being also converted at a higher temperature of about 2600° C. to a liquid phase of the uranium dicarbide and hafnium carbide.

4,432,822

METHOD OF MANUFACTURING UPHOLSTERY PANELS

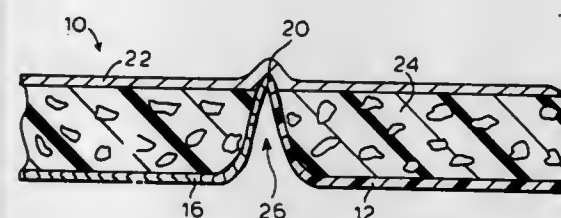
Ronald W. Adams, Auburn, and Theodore W. Johnson, Monmouth, both of Me., assignors to Albany International Corp., Albany, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,489

Int. Cl.³ B29C 31/00; B32B 31/06, 31/20

U.S. Cl. 156—148

3 Claims



1. A method of manufacturing an upholstered, decorative, panel having a plurality of diverse, upholstery materials which together form the decorative, upholstered surface, which comprises:

- providing a panel base support which comprises: a core of non-woven, synthetic textile fibers; a base first layer of heat fusible, synthetic, thermoplastic textile melt fibers; a base second layer selected from the group consisting of a film of synthetic, polymeric resins and a layer of heat fusible synthetic thermoplastic textile melt fibers; said first and second layers sandwiching the core, fibers of said first layer and the core being interengaged with each other and with the second layer, said interengagement being of the character obtained by needling;
- providing a panel intermediate layer of a synthetic, polymeric resin foam;
- providing an outer, surface layer formed from a plurality of diverse sheets of decorative, surface upholstery materials, joined together along seam lines;
- assembling the base (a) with the surface layer (c) so as to sandwich intermediate layer (b), leaving at least a portion of the space between base (a) and layer (c) beneath the seam lines, free of layer (b);
- providing a mold adapted by size and configuration to receive the assembly, said mold including a means for applying heat and pressure along the seam lines of the surface layer (c) in the zones beneath the seam lines which are free of layer (b) when the assembly is received in the mold;
- inserting the assembly in the mold; and
- applying heat and pressure on the assembly in the mold; whereby portions of the surface layer (c) are bonded to the base layer (a) in those areas of the panel which are free of the intermediate layer (b).

4,432,823

METHOD AND APPARATUS FOR MANUFACTURING ELASTIC LEG DISPOSABLE DIAPERS

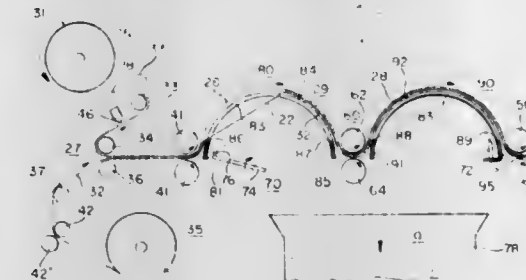
William J. Moore, Winnebago County, Wis., assignor to Kimberly Clark Corporation, Neenah, Wis.

Filed Jun. 29, 1981, Ser. No. 278,753

Int. Cl.³ B32B 31/08

U.S. Cl. 156—164

12 Claims



1. In an apparatus for manufacturing elastic leg disposable diapers including means for continuously moving a web of material in the direction of its length and means for attaching portions of a continuously moving elastic ribbon to the web at predetermined spaced apart locations along the length of the web, said predetermined locations corresponding to the leg areas of the finished diapers, the combination comprising: means for separating the path of movement of the web and the elastic ribbon between said attached locations; means comprising at least two members positioned on opposite sides of the path of movement of the elastic ribbon for clamping the elastic ribbon; and means for cutting the unattached portions of the elastic ribbon between said attached locations while the elastic ribbon is separated from the web and clamped by the clamping means.

4,432,824

METHOD FOR INTERNAL PIPE PROTECTION

Paul M. Cook, Menlo Park; Richard F. Otte, Los Altos Hills; James L. Claypool, Mountain View; Lawrence J. White, San Jose; Harry C. Broyles, Sunnyvale, and Peter L. Brooks, Los Altos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

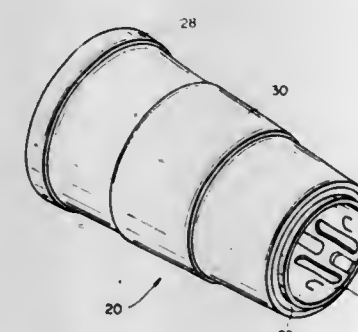
Division of Ser. No. 174,304, Jul. 31, 1980, Pat. No. 4,355,664.

This application Jul. 26, 1982, Ser. No. 402,173

Int. Cl.³ B32B 31/00; F16L 9/14

U.S. Cl. 156—165

4 Claims



1. A method of corrosion protecting the inside section of a pipe comprising the steps of: placing a heat-activated pipe protection device within the section of the pipe to be protected, said device having a radially expandable delivery means, a heat-deformable corrosion-resistant liner means outside and in contact with said delivery means, and a heat-activatable bonding means outside and in contact with said liner means; heating the outside of said pipe generally uniformly along the section to be protected, thereby expanding said delivery means, deforming said liner means, and forcing said bonding

means radially outwardly progressively into contact with the inside of the pipe, said bonding means flowing progressively between said liner means and the inside of the pipe to preclude air entrapment between said liner means and the inside of the pipe, and bonding said liner means to the inside of said pipe.

4,432,825

METHOD OF MAKING FOAM COMPOSITE MATERIAL IMPREGNATED WITH RESIN

Bengt Andersson, Söraker, and Olof Tanner, Sundsvall, both of Sweden, assignors to Kemanord AB, Stockholm, Sweden

Division of Ser. No. 260,677, May 5, 1981, Pat. No. 4,362,778.

This application Sep. 13, 1982, Ser. No. 417,599

Claims priority, application Sweden, May 21, 1980, 8003776

Int. Cl.³ B32B 31/00

U.S. Cl. 156—307.3

7 Claims

1. A method for the manufacture of a laminate comprising the steps of:

- providing a foam composite material including: (1) a material in the form of a web, (2) a curable resin in the B-stage, i.e. in a stage between an uncured A-stage in which the resin is meltable, poorly cross-linked and soluble in solvents, and a C-stage in which the resin is not meltable, completely cross-linked and insoluble, and (3) expanded thermoplastic microspheres, wherein the curable resin and the microspheres are uniformly distributed in the web material;
- assembling the foam composite material with at least one further such material or another material and
- joining the materials by a transition from B-stage to C-stage of the curable resin.

4,432,826

COEXTRUSION METHOD AND APPARATUS

Walter P. Scarberry, St. Charles, and Charles K. Vollman, Elgin, both of Ill., assignors to Health-Ex Corporation, Chicago, Ill.

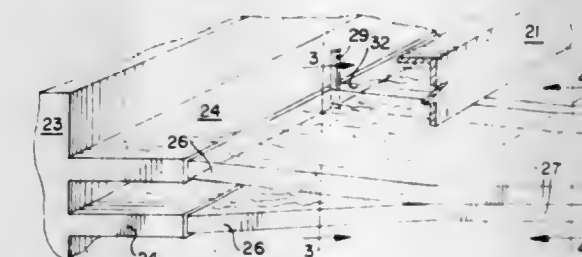
Division of Ser. No. 222,749, Jan. 5, 1981, Pat. No. 4,353,498.

This application Jul. 26, 1982, Ser. No. 402,080

Int. Cl.³ B29D 7/00; B32B 31/18

U.S. Cl. 156—244.11

26 Claims



1. A method for providing a coextruded film having a tear path with a thickness less than the coextruded film thickness, comprising:

- coextruding a plurality of molten extrudates into a zone wherein the multiple extrudates are combined into a multiple ply coextrusion of at least two non-tacky polymer films;
- interrupting the extrusion path of at least one of the molten extrudates, said interrupting step preventing extrudate flow at a narrow location in order to form an elongated void in said at least one molten extrudate and in the non-tacky polymer film formed from said molten extrudate, said interrupting being carried out before the multiple extrudates are combined into the multiple ply coextrusion; and
- combining said plurality of molten extrudates into a multiple ply coextruded film having at least one tear path at the

location of each elongated void, said tear path having an overall thickness less than the thickness of the coextruded non-tacky film.

4,432,827

METHOD OF MAKING CASSETTE HOLDERS

Herbert Graetz, Chicago, Ill., and Ronald C. Unterreiner, Cape Girardeau, Mo., assignors to Blair Industries, Inc., Scott City, Mo.

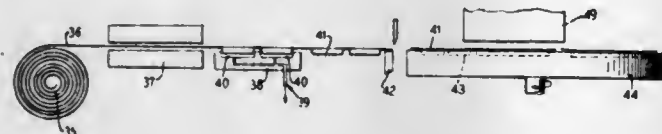
Division of Ser. No. 376,147, May 7, 1982, Pat. No. 4,407,410.

This application Apr. 29, 1983, Ser. No. 489,781

Int. Cl.³ B29C 3/04

U.S. Cl. 156—245

17 Claims



1. The method of making a book-style album which comprises thermal forming a thermoplastic sheet to define a plurality of pairs of trays and lids in side-by-side relation connected by flexible spines, covering the bottoms of the trays and lids with rigid slabs, covering the slab-receiving side of the thermoplastic sheet with a second thermoplastic sheet, crimping and bonding the sheets together around the margins thereof, providing tear margins around the crimped bond to facilitate severing of the bonded sheets, and severing the bonded sheets along the tear margins to provide a plurality of book-type holders each with rigid flaps, a tray on one flap, a lid on the other flap, and a flexible spine and spine liner connecting the tray and lid.

4,432,828

METHOD OF AN APPARATUS FOR MOUNTING A FOIL ON A PLATE

Dieter Siempelkamp, Krefeld, and Wolfgang Götz, Krefeld-Fischeln, both of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

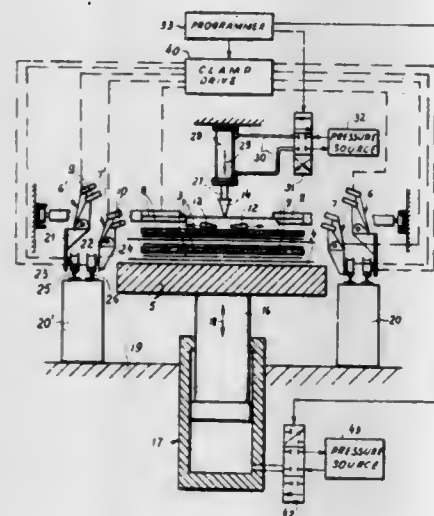
Filed Aug. 14, 1980, Ser. No. 177,839

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932845

Int. Cl.³ B32B 31/04

U.S. Cl. 156—285

8 Claims



1. In a device for assembling a stack of pressed material including a synthetic resin impregnated mat, a press plate and a metal foil, in the formation of laminated board, wherein a cyclically displaceable assembly table is provided, means cooperates with said table for depositing the press plate thereon, means cooperates with the table to deposit said mat upon said press plate, and means cooperates with said table to apply said foil to said mat so that a foil layer is applied to one side of said mat, each of said means operating cyclically in production of

pressed board, the improvement which comprises the combination therewith of:

a pair of suction boxes displaceable parallel to the table and having rows of suction openings turned toward each other; and

a bar extending transversely of the direction of displacement of said suction boxes and displaceable relative to said table to press said foil against a surface whereby mutual displacement of said suction boxes away from said bar and from each other applies suction to said foil drawing same against said surface.

4,432,829

ADHESIVE BONDING METHOD

Andrew G. Bachmann, Harwinton, Conn., assignor to American Chemical & Engineering Co., Torrington, Conn.

Division of Ser. No. 156,475, Jun. 4, 1980, Pat. No. 4,348,503.

This application Mar. 8, 1982, Ser. No. 355,475

Int. Cl.³ C09J 5/02

U.S. Cl. 156—307.3

12 Claims

1. In a method for the adhesive bonding of two surfaces, the steps comprising:

(1) forming a stable nonanaerobic adhesive composition comprised of: (a) a monomeric acrylic ester capable of free-radical polymerization to produce, upon polymerization thereof, an adhesive solid, (b) a monomer-soluble elastomeric filler material for toughening and/or strengthening the cured adhesive composition, and (c) a latent catalyst system consisting, in amounts based upon the weight of said ester, essentially of about 1 to 10 parts per hundred of an aromatic perester free-radical precursor, about 0.5 to 10 parts per hundred of an organic acid capable of cyclic tautomerism, and up to about 500 parts per million of a soluble compound of a transition metal cure accelerator, said composition being free from any organic hydroperoxide catalyst;

(2) applying said adhesive composition to at least one surface to be bonded;

(3) effecting contact of said one surface with a second surface to be bonded thereto;

(4) activating said perester catalyst to generate free radicals; and

(5) maintaining such contact for a period of time and under such conditions as to effect curing of said adhesive composition.

4,432,830

LABEL PRINTER HAVING SELECTABLE LABEL STOCK PATHS

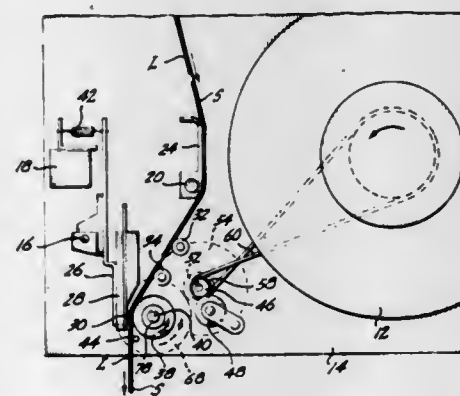
Clifford T. Jue, Edmonds, Wash., assignor to Intermec Corporation, Lynnwood, Wash.

Filed Feb. 7, 1983, Ser. No. 464,206

Int. Cl.³ B65C 9/18, 9/46

U.S. Cl. 156—384

19 Claims



1. In a label printer, a mechanism for providing selectable paths of movement of label stock that consists of a plurality of

labels removably adhering to a front surface of an elongated backing strip, said mechanism comprising: a rotatable drive capstan; a rotatable pinch roller engaging said drive capstan; a rotatable shaft; drive means for rotating said drive capstan and said shaft in opposite directions; a drive roller rotatable about said shaft; clutch means for locking said drive roller to said shaft whenever said shaft is rotated in a given direction and for permitting said drive roller to freely rotate about said shaft whenever said shaft is rotated in an opposite direction; a label stripping pin; and, pressure means yieldably engaging said drive roller;

wherein said aforementioned elements of said mechanism are disposed so that the label stock may be moved in a nonspooling path by threading a free end of the label stock between said drive roller and said pressure means and by causing said drive means to rotate said drive capstan and said drive roller in a first set of opposing directions so that said drive roller is locked to said shaft, whereupon the label stock is pulled by said pressure means and said drive roller and exits without label separation; and,

wherein said aforementioned elements of said mechanism are further disposed so that the label stock may be moved in a self-strip path by further threading the free end of the label stock past said label stripping pin and between said drive capstan and said pinch roller with a rear surface of the backing strip engaging said label stripping pin and with the backing strip being caused to sharply change its direction as it passes over said label stripping pin, and by causing said drive means to rotate said drive capstan and said drive roller in a second set of opposing directions so that said drive capstan and said pressure means pull the label stock and so that said drive roller freely rotates about said shaft, whereupon each label is partially separated from the backing strip as the backing strip passes over said label stripping pin.

4,432,831

BELT MAKING METHOD AND APPARATUS

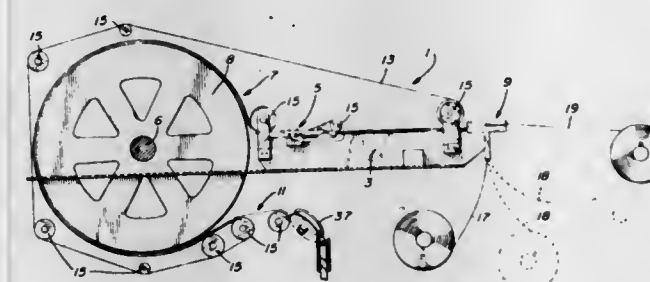
Harold Blicher, 5765 Cote St. Luc Rd., Apt. 214, Hampstead, Quebec, Canada

Filed Sep. 22, 1982, Ser. No. 421,478

Int. Cl.³ B32B 31/00

U.S. Cl. 156—467

3 Claims



1. Apparatus for forming fused seamless belts from an outer covering fabric, an interlining material, and an adhesive for fusing the interlining material to the outer covering fabric, said apparatus comprising:

an input end for bringing together said interlining and said outer covering fabric;

a folding section for folding said outer covering fabric around said interlining material to provide a folded arrangement;

a heating and fusing section for heating said adhesive in said folded arrangement and thereby fusing said outer covering fabric to said interlining material by the application of pressure on the folded arrangement to provide a fused seamless arrangement;

and an output end for drawing off the fused seamless arrangement;

said folding section having an input end and an output end;

said folding section having a center post including a T-

shaped element extending longitudinally of said folding section and having a platform for carrying said outer covering fabric and said interlining material and a separation post;

said center post further including, at said input end, vertically descending flared side walls, the flare of said side walls increasing in the direction of the output end until they are completely horizontal at said output end;

said folding section further including an inner top surface and vertically ascending side walls, said top surface meeting said vertically ascending side walls at a sharp angled junction at said input end, said junction rounding in the direction of said output end and comprising a small arc at said output end, said vertically descending side walls and said vertically ascending side walls merging at said output end and being in parallel arrangement with said inner top surface at said output end; and

said folding section still further comprising, between said input end and said output end, a pair of downwardly descending, inwardly directed, lobes, a lobe angle being defined between each lobe and said top inner surface, said lobe angles decreasing in the direction of said output end, the thickness of said lobe decreasing in the direction of said output end, whereby said lobes disappear at said output end;

whereby said folding section comprises means for providing a double fold of said outer covering fabric on each side of said folded arrangement and underlying said interlining material.

4,432,832

METHOD OF FORMING CONTOURED OPTICAL LAYERS ON GLASS ELEMENTS

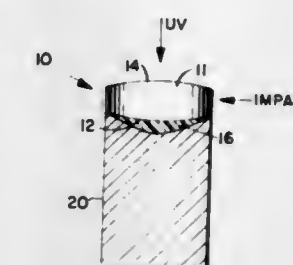
Stephen D. Fantone, Saugus, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 26, 1982, Ser. No. 411,685

Int. Cl.³ B29C 19/00; B44C 1/22; B32B 31/00; C03C 15/00

U.S. Cl. 156—630

6 Claims



1. A method for forming an optical layer having a predetermined surface contour over a given surface area of a transmissive optical element to change the optical performance characteristics of the optical element, said method comprising the steps of:

forming a tool having a shape that varies in accordance with the point to point difference in thickness between the optical element given surface area and the optical layer predetermined surface contour plus a predetermined uniform thickness value such that said shape of said tool is the complement so that of said layer predetermined surface contour;

coating at least said surface of said tool with at least one release layer having a thickness equal to said predetermined uniform thickness value;

covering said tool surface with an optically clear epoxy that is curable in the presence of ultraviolet radiation and has a predetermined index of refraction;

aligning said tool with the optical element given surface area and firmly pressing said tool and said optical element given surface area together to center one with the other;

exposing said epoxy to ultraviolet radiation until said epoxy hardens over the optical element given surface area; and separating said tool and the optical element whereby said optical layer releases from said tool with said release layer adhered to it and then chemically removing any of said release layer from the surface of said optical layer.

4,432,833

PULP CONTAINING HYDROPHILIC DEBONDER AND PROCESS FOR ITS APPLICATION

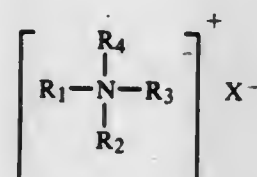
John A. Breese, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 150,885, May 19, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,399 Int. Cl.³ D21H 3/12

U.S. Cl. 162—158

10 Claims

1. A wood pulp consisting essentially of a hydrophilic debonder having the general formula:



wherein:

R₁=methyl, ethyl, propyl, hydrogen or hydroxyethyl,
R₂=methyl, ethyl, propyl or (ethylene oxide)_n where n=1 to 50,
R₃=aliphatic chain of at least 4 carbon items,
R₄=(ethylene oxide)_n or (propylene oxide)_n with n=1 to 50,
X=Cl, I, Br, SO₄, PO₄, CH₃CO₂
said debonder present at the level of 0.1% to 5.0% by weight of the dry cellulosic material in an amount sufficient to increase the water and/or urine absorbency.

4,432,834

ADDITIVE FOR FELTED CELLULOSE FIBERS

Joyce M. Whitfield, Chicago, and David R. Cosper, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 954,478, Oct. 25, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,176 Int. Cl.³ D21H 3/12

U.S. Cl. 162—158

13 Claims

1. A composition suitable for addition to cellulosic fibers prior to felting them into a tissue sheet comprising as component (a) a monomeric water soluble diallyl dimethyl ammonium halide or homopolymer thereof or mixtures thereof and as component (b) 1-stearamidoethyl-1-methyl-2-heptadecyl imidazolinium methosulfate, the proportions of (a) and (b) being sufficient to enhance softness of the dried sheet while increasing or not substantially reducing absorbency of water and tensile strength of the dried sheet when said composition is added to a slurry of cellulosic fibers prior to felting them into a sheet and thereafter drying said sheet, the weight ratio of component (a) to component (b) in said composition being within the range of 4:1 to 1:4.

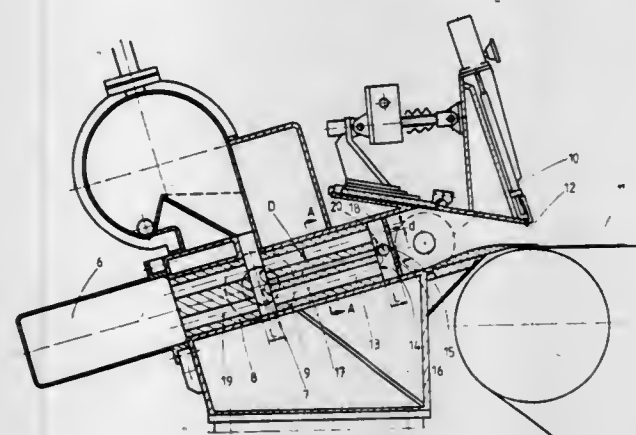
METHOD AND AN APPARATUS FOR THE FEEDING OF A FIBRE SUSPENSION ONTO THE WIRE OF A WEB FORMER

Tapio Waris, Kymnlinna, and Sven-Eric E. Lindroos, Karhula, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Noor-markku, Finland

Filed Feb. 22, 1982, Ser. No. 351,156
Claims priority, application Finland, Apr. 7, 1981, 811065 Int. Cl.³ D21F 1/06

U.S. Cl. 162—212

9 Claims



1. A method of feeding a fibre suspension onto the wire of a web former, which comprises:

- letting the fibre suspension flow through a guiding device consisting of a plurality of parallel guiding channels, said guiding channels having discharge openings of circular cross section, said guiding channels being connected to a slice chamber which is coaxial with said guiding device and downstream thereto and which leads to a slice and extends across the wire of the web former, the distance between said guiding channels and said slice chamber being not greater than the diameter of said discharge openings;
- separating the outer parts and the core parts of the jets of stock of said fiber suspension flowing out of said guiding channels from one another in said slice chamber by deflecting the outer parts from the flow direction of the core parts; and
- causing the pressure in the second space between said discharge openings of the guiding channels and the slice chamber to rise above the pressure in the first space upstream of said guiding device, whereby said outer parts of the jets of stock are discharged from said second space and returned to said first space.

3. An apparatus for feeding a fibre suspension onto a wire of a web former which comprises first means for introducing the fiber suspension to a guiding device, said guiding device comprising a plurality of parallel guiding channels having first discharge openings of circular cross section, a slice chamber connected to said guiding device and coaxial thereto, said slice chamber leading to a slice which extends across the wire, the distance between said slice chamber and said discharge openings being not greater than the diameter of said first discharge openings, second means coaxial with said guiding channels and arranged downstream thereto for deflecting the outer parts of the jets of stock of said fiber suspension from the flow direction of the core parts of the jets of stock and for returning said outer parts to a point upstream of said guiding device.

4,432,836

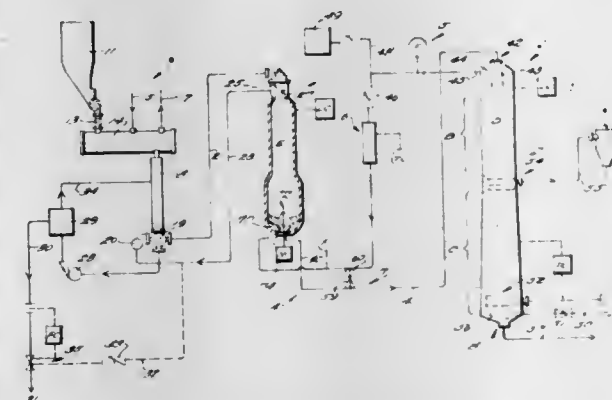
VESSEL FALSE BOTTOMING

Michael I. Sherman, Glens Falls, N.Y., and Johan C. F. C. Richter, St. Jean Cap Ferrat, France, assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,189
Int. Cl.³ D21C 7/00, 7/08

U.S. Cl. 162—237

6 Claims



1. A pressured upright generally cylindrical vessel for treating cellulosic chips material or the like on a continuous basis, said vessel comprising

- an inlet for chips material or the like in a top portion thereof;
- an outlet for chips material or the like in a bottom portion thereof;
- a false bottom disposed therewithin just above said bottom portion to define a bottom volume of the vessel between said bottom portion and false bottom;
- a scraper;
- means for mounting said scraper just above said false bottom for rotation about a vertical axis;
- means defining an opening in the middle of said false bottom for providing for the passage of chips material or the like under the influence of said scraper from above said false bottom into said vessel bottom volume;
- means for introducing liquid under pressure into said vessel bottom volume for entraining chips material or the like passing into said bottom volume and flushing said chips material or the like out said outlet;
- means defining a flow path through said opening in said false bottom into said volume that is circular in cross-section and concentric with said vessel; and
- wherein said means for mounting said scraper includes a shaft extending through said flow path concentric therewith; and wherein said means defining said flow path includes a conical member extending downwardly from said false bottom opening and flaring outwardly, and a truncated conical shroud surrounding said shaft and having the smallest diameter portion thereof disposed substantially at the top of said conical flow-path defining member and having the largest diameter portion thereof disposed just below said conical flow-path defining member.

4,432,837

SOLVENT RECOVERY PROCESS

Willy Braun, East Brighton, Australia, assignor to Dulux Australia Ltd., Victoria, Australia

Continuation-in-part of Ser. No. 176,760, Aug. 11, 1980, abandoned. This application Jul. 13, 1982, Ser. No. 397,693 Claims priority, application Australia, Aug. 10, 1979, PD9981 Int. Cl.³ B01D 3/34

U.S. Cl. 203—37

4 Claims

1. A process of recovering organic solvent from a liquid waste product comprising an organic solvent in which polymeric material is dispersed or dissolved which waste product is heat convertible by the steps of

- dispersing the liquid waste product in particulate form in water in the presence of an effective amount of an inorganic suspending agent to prevent agglomeration of said waste product, said suspending agent selected from the

group consisting of bentonite, and activated clays of the hectorite type;
(b) heating the dispersion to boiling point to strip off steam and organic solvent vapour;
(c) condensing the evolved steam and organic vapour and separating the water therefrom; and
(d) recovering the residue as an aqueous freeflowing slurry of solid granule particles,
said liquid waste product being further characterised in that a film of the liquid waste not more than 2 mm thick when heated in air at 100° C. for 60 minutes yields a residue insoluble in acetone.

4,432,838

METHOD FOR PRODUCING RETICULATE ELECTRODES FOR ELECTROLYTIC CELLS

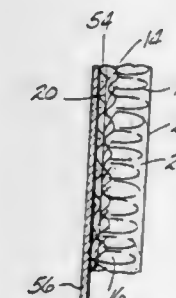
Igor V. Kadja, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 146,558, May 5, 1980, Pat. No. 4,350,580, which is a continuation-in-part of Ser. No. 143,970, Apr. 25, 1980, Pat. No. 4,370,214. This application Jul. 2, 1982, Ser. No. 394,756

Int. Cl.³ C25D 1/08, 5/02; C25B 9/00, 11/03

U.S. Cl. 204—11

12 Claims



8. A method for producing a reticulate electrode for use in the electrolysis of aqueous solutions of ionic compounds which comprises:

- affixing filaments to a support fabric to form a network of filaments;
- attaching to said network of filaments a current distributor comprised of an electrically conductive fabric having a front side comprised of a plurality of electrode-engaging means projecting from said front side for attachment to said network of filaments and a substantially planar back side suitable for attachment to an electrical conductor;
- depositing by electroplating an electroconductive metal on said network of filaments and said current distributor, said deposition forming metal coated filaments and providing interfilament bonding at contact sites between adjacent filaments; and
- removing said support fabric from said metal coated filament network to produce a reticulate electrode having a porosity of at least about 80 percent.

4,432,839

METHOD FOR MAKING METALLIZED FOILS

George A. Kline, Madison, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 18, 1981, Ser. No. 274,822
Int. Cl.³ C25D 1/04, 3/66, 5/10

U.S. Cl. 204—12

14 Claims

1. A process for applying an interdiffused metal coating to a conductive substrate selected from the group of boron, molybdenum, silicon, tungsten, niobium, graphite, technetium, rhenium, the platinum group metals, electrically conductive ceramics and mixtures thereof comprising the steps of:
applying a base metal coating to the substrate;
applying a second metal to the coated substrate using a

measurable quantity of electrical current at a rate temperature to produce interdiffusion between the base metal and the second metal but not between the substrate and the metals.

2. A method for producing metal alloy foil comprising the steps of:

- applying to an electrically conductive substrate a coating of a base metal;
- applying at least partially under impetus of a measurable electrical current, a coating of a second metal at a temperature and an electrical current flow rate whereby substantial interdiffusion occurs between the coating metals but not between the coating metals and the substrate; and
- stripping the resulting interdiffused metal coating from the substrate.

4,432,840

PREVENTION OF POLYMER BUILDUP IN POLYMERIZATION REACTORS USING THIN ORGANIC COATINGS BY ELECTROLYSIS OF PHENOL
Shung-Chung Liao; Wei-Min Cheng, and Uen-Long Young, all of Kaohsiung, Taiwan, assignors to Formosa Plastics Corporation, China

Filed Apr. 26, 1982, Ser. No. 372,076
Int. Cl.³ C25D 7/04

U.S. Cl. 204—14 N

23 Claims

1. A method for substantially preventing the buildup of polymers on the internal surfaces of polymerization reactors comprising dissolving an electrolytically formed phenolic polymer in a strongly alkali solvent to form an alkali solution and coating the internal surfaces of the polymerization reactors with said alkali solution.

4,432,841

PREPARATION OF CHALCOGENIDE ALLOYS BY ELECTROCHEMICAL COREDUCTION OF ESTERS
Santokh S. Badesha, Ontario; Thomas W. Smith, Penfield, both of N.Y., and Rafik O. Loutfy, Ontario, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1983, Ser. No. 509,550
Int. Cl.³ C25B 1/00

U.S. Cl. 204—14 N

21 Claims

1. A process for preparing chalcogenide alloys of high purity which comprises providing a mixture of the corresponding pure esters of the elements desired in an organic medium, and an organic salt, and simultaneously coreducing the esters by an electrochemical reduction in an electrolytic apparatus.

4,432,842

PROCESS FOR PRODUCING TIN-FREE STEEL
Tsuneo Inui, Tokuyama; Hitoshi Kuroda, Kudamatsu; Kenji Hizuka, Kudamatsu; Fumio Kunishige, Kudamatsu, and Yoshikazu Kondo, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

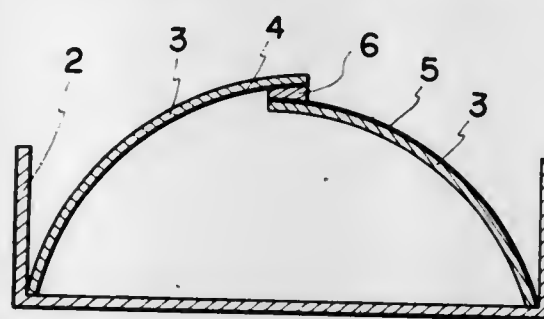
Continuation of Ser. No. 62,890, Aug. 1, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 323,986
Claims priority, application Japan, Mar. 30, 1979, 54-37084
Int. Cl.³ C25D 11/38

U.S. Cl. 204—41

4 Claims

1. In a process for preparing a tin-free steel which can be used in manufacturing nylon-adhered can bodies to be subjected to a canning process which includes hot-packing or a pasteurization step, said tin-free steel having a layer of metallic chromium on a steel base and a layer of hydrated chromium oxide on said metallic chromium layer, in two electrolytic stages, which process comprises a first electrolytic stage of forming said metallic chromium layer in a first aqueous electrolytic solution, immersing the thus treated steel in said first aqueous electrolytic solution to dissolve hydrated chromium oxide formed on said metallic chromium layer during said first stage, and a second electrolytic stage of forming said hydrated chromium oxide layer in a second aqueous electrolytic solution, each of said first and second solutions consisting of chro-

mic acid and an addition agent, the improvement wherein the addition agent for each of said first and second solutions is a fluorine compound alone, and the amount of said addition agent incorporated in said hydrated chromium oxide layer during said second electrolytic stage is restricted in a manner such that the atomic ratio of sulfur in said hydrated chromium



oxide layer to the total of chromium, oxygen, sulfur and fluorine in said hydrated chromium oxide layer does not exceed 2.5% and the atomic ratio of fluorine in said hydrated chromium oxide layer to the total of chromium, oxygen, sulfur and fluorine in said hydrated chromium oxide layer does not exceed 10%.

4,432,843

TRIVALENT CHROMIUM ELECTROPLATING BATHS AND PROCESSES USING THIAZOLE ADDITION AGENTS

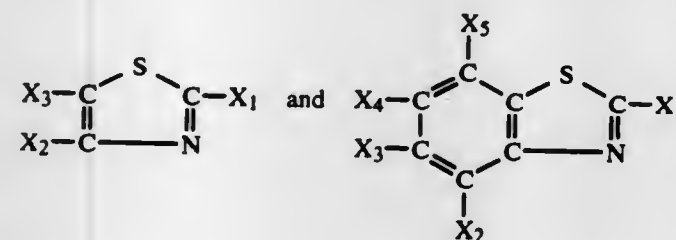
Robert A. Tremmel, Woodhaven, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Jul. 29, 1982, Ser. No. 403,196
Int. Cl.³ C25D 3/06

U.S. Cl. 204—51

26 Claims

1. An aqueous acidic trivalent chromium electrolyte containing trivalent chromium ions, a complexing agent for maintaining the trivalent chromium ions in solution, halide ions and a bath soluble additive agent present in an amount to increase the tolerance of the electrolyte to the presence of deleterious contaminating metal ions, said additive agent being of the structural formula:



wherein:

X₁-X₅ are the same or different and are H, NH₂, CH₃, NO₂, halide, C₁-C₆ alkyl sulfonate, C₁-C₆ alkyl carboxylate, C₁-C₆ alcohol, S-R; in which R is H, C₁-C₆ alkyl sulfonate, C₁-C₆ alkyl carboxylate, C₁-C₆ alkyl alcohol.

4,432,844

PROCESS FOR REGENERATION OF ELECTROLYTE CONTAINING TIN SALTS BY REDUCING THE SAME
Yuji Hinoda, and Kazuhiro Enmoto, both of Kawasaki, Japan, assignors to Fujisash Company, Kawasaki, Japan

PCT No. PCT/JP80/00141, § 371 Date Jan. 28, 1982, § 102(e) Date Jan. 28, 1982, PCT Pub. No. WO82/00036, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 23, 1980, Ser. No. 348,050

Int. Cl.³ C25D 21/18

U.S. Cl. 204—54 R

4 Claims

1. A process for regenerating a stannous tin-containing electrolyte which contains stannic ions comprising

if said electrolyte is not acidic, adding sufficient acid to said electrolyte so that the electrolyte becomes acidic; adding metallic tin having a high specific surface area selected from the group consisting of powdered tin, thin foils of tin, and sponge-like tin to said electrolyte; and heating said electrolyte containing said added metallic tin to from 80° C. to the boiling temperature of said electrolyte whereby stannic ions are reduced to stannous ions and metallic tin is oxidized to stannous ions thereby regenerating the electrolyte.

4,432,845

METHOD OF PRODUCING TIN-FREE STEEL SHEETS HAVING IMPROVED RESISTANCE TO RETORTING TREATMENT

Hajime Ogata; Toshio Ichida; Shunichi Tsugawa, and Toshio Irie, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 14, 1983, Ser. No. 513,662

Claims priority, application Japan, Jul. 20, 1982, 57-126042
Int. Cl.³ C25D 5/02, 11/38

U.S. Cl. 204—56 R

1 Claim

1. A method of producing a tin-free steel sheet having thereon a plating of metallic chromium ranging from 50 to 200 mg per square meters and a coating of hydrated chromium oxides ranging from 5 to 30 mg per square meters on the metallic chromium plating surface and exhibiting improved retorting resistance, comprising the steps of chromium plating a steel sheet through cathodic electrolysis in a chromium ion-containing aqueous solution to form a plating consisting essentially of metallic chromium, reversely electrolyzing the chromium plated steel sheet by a successive anodizing treatment in said aqueous solution, and subjecting the reversely electrolyzed steel sheet to an electrolytic chromate treatment in another aqueous solution containing sulfuric acid and at least one selected from the group consisting of chromic acid, chromates, and dichromates, the improvement wherein said aqueous solution used in the electrolytic chromate treatment has a sulfate concentration limited to the range of 0.01 to 0.10 gram per liter of the solution.

4,432,846

CLEANING AND TREATMENT OF ETCHED CATHODE ALUMINUM CAPACITOR FOIL

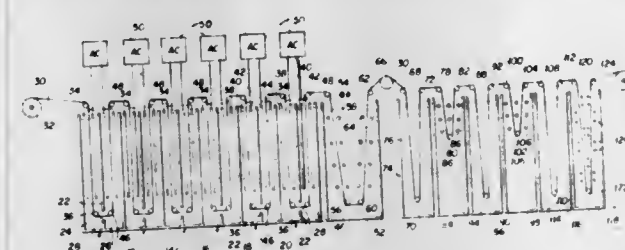
LeRoy Honeycutt, III, Salisbury, N.C., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1982, Ser. No. 448,817

Int. Cl.³ C25F 3/04, 1/00; C23G 1/02; B08B 3/00

U.S. Cl. 204—129.95

17 Claims



12. In a process for producing cathode aluminum capacitor foil in which a running length of aluminum foil of about 98.0% to about 99.99% pure aluminum is electrolytically etched in a liquid electrolyte comprising hydrochloric acid, nitric acid and phosphoric acid in water solution while applying an electric current to electrodes immersed in the electrolyte solution in spaced relation to the foil, the improvement comprising the steps of

water washing the running length of foil promptly upon withdrawal from the electrolyte solution to remove electrolyte solution and chlorides produced in the electrolytic etching process from the surface of the foil,

passing the rinsed, etched foil through a first post etch treatment bath comprising an aqueous solution of nitric acid, rinsing the nitric acid solution from the surface of the foil promptly upon withdrawing the foil from the first post etch treatment bath, passing the washed foil through a second post etch treatment bath comprising an aqueous solution of chromic acid and phosphoric acid, and rinsing the chromic acid and phosphoric acid solution from the surface of the foil promptly upon withdrawal from the second post etch treatment bath.

4,432,847

POLY SULFOXIDES FROM 1,3,4-THIAZIAZOLE-2,5-DITHIOL

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 29, 1976, Ser. No. 709,780

Int. Cl.³ C07D 285/12, 417/12, 417/14

U.S. Cl. 204—158 R

19 Claims

1. A poly sulfoxide selected from the group consisting of: 2,5-bis(1-t-octylthiomethylsulfonyl)-1,3,4-thiadiazole; 2-(1-t-octylthiomethylsulfonyl)-5-(1-t-octylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-octylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-dodecylthiomethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-dodecylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-hexadecylthiomethylsulfonyl)-1,3,4-thiadiazole; 2-(1-t-hexadecylthiomethylsulfonyl)-5-(1-t-hexadecylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-hexadecylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-hexadecylthio-1-hexylmethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-t-hexadecylsulfonyl-1-hexylmethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-octylthiomethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(1-octylsulfoxymethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(β-hydroxy-β-phenylethylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(β-hydroxyoctyl-4-sulfonyl)-1,3,4-thiadiazole; 2,5-bis(β-hydroxydodecylsulfonyl)-1,3,4-thiadiazole; 2,5-bis(β-hydroxy-β,4-pyridylethylsulfonyl)-1,3,4-thiadiazole and 2,5-bis(β-hydroxy-β,2-pyridylethylsulfonyl)-1,3,4-thiadiazole

19. A process for preparing polysulfoxides which comprises the selective oxidation of the reaction product of 1,3,4-thiadiazole-2,5-dithiol (DMTD) and an olefinically unsaturated compound wherein the said olefinically unsaturated compound is selected from the group of olefinically unsaturated compounds consisting of styrene, α-methylstyrene, α-p-dimethylstyrene, allylbenzene, cyclohexene, 1-vinylcyclohexene, ethylene, propylene, 1-butene, 1-octene, 1-dodecene, 1-octadecene, 2-vinylpyridine, 4-vinylpyridine, 2-vinylthiophene, 4-chlorostyrene, 4-nitrostyrene, eugenol methyl ether and 4-dimethylaminostyrene, wherein said DMTD is in the mole ratio to the olefinically unsaturated compound of 2:1 to 5:1 at a temperature within the range from about 0° C. to 40° C. with oxygen at 5-200 psig for 0.5 to 150 hours, and actinic radiation in the presence of a dye sensitizer selected from the group consisting of methylene blue, Eosine, and Rose Bengal.

4,432,848

RADIATION CURED, HIGH TEMPERATURE PRESSURE-SENSITIVE ADHESIVE

Ralf Korpman, Bridgewater, N.J., assignor to Permcel, New Brunswick, N.J.

Filed Nov. 19, 1981, Ser. No. 322,626

Int. Cl.³ C08L 53/02

U.S. Cl. 204—159.17

6 Claims

1. An adhesive possessing good solvent resistance and high temperature cohesive strength prepared by high energy radiation curing of an adhesive composition comprising

- (a) an elastomer component comprising an A-B block copolymer wherein A represents a poly(alkenylarene) block and B represents a polyisoprene block,
- (b) a tackifier resin component comprising a polyisoprene block compatible tackifier resin, said resin being employed

in an amount of from about 50 to 100 parts by weight for 100 parts by weight of the elastomer component, and (c) a coupling agent component, said coupling agent component being an acrylic or a methacrylic acid ester of a di- to tetra-functional polyol, in an amount of from about 5 to 25 parts by weight per 100 parts by weight of the elastomer component.

4,432,849

METHOD AND APPARATUS FOR SEPARATING MACROMOLECULES OR PARTICLES IN A LIQUID SOLUTION

Takayasu Saito, Tokyo, Japan, assignor to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,133

Claims priority, application Japan, Jul. 9, 1982, 57-120159

Int. Cl.³ G01N 27/26, 33/16

U.S. Cl. 204—180 R

6 Claims

1. A method of separating particles in a solution, comprising the steps of applying a centrifugal force to the solution in one direction and simultaneously subjecting the solution to a force imposed in a direction opposite to said one direction by an electric field applied, thereby separating the particles into a position in which said centrifugal force counterbalances said force imposed by the electric field.

4,432,850

UNGELLED

POLYEPOXIDE-POLYOXYALKYLENEPOLYAMINE RESINS, AQUEOUS DISPERSIONS THEREOF, AND THEIR USE IN CATIONIC ELECTRODEPOSITION

Thomas C. Moriarity, Allison Park, and William J. Geiger, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 284,865, Jul. 20, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 420,463

Int. Cl.³ C25D 13/06

U.S. Cl. 204—181 C

10 Claims

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode and an anode immersed in an aqueous resinous dispersion, comprising passing electric current between the anode and the cathode to cause a coating to deposit on the cathode, wherein the aqueous resinous dispersion contains from:

(A) 0.5 to 40 percent by weight of an ungelled resin formed from reacting:

(i) a polyepoxide with

(ii) a polyoxyalkylenepolyamine; the ratio of equivalents of active hydrogens in (ii), with primary amine groups being considered monofunctional, to equivalents of epoxy in (i) being within the range of 1.20 to 1.70:1; the reaction product being at least partially neutralized with acid to provide cationic groups,

(B) 60 to 99.5 percent by weight of an additional cationic resin different from (A) and which is electrodepositable on a cathode;

the percentages by weight being based on total weight of (A) plus (B).

4,432,851

ELECTRODEPOSITION OF LUBRICATIVE COATING

Sachio Matsuo, Takatsuki; Tadashi Sakane, Amagasaki; Ryoichi Noumi, Minoo; Shinji Fujiwara; Hiroshi Fukudome, both of Ibaraki; Rikizo Kobashi, Tokyo; Hiroumi Izaiku, Nishinomiya, and Toshinari Yazawa, Yokohama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Nippon Oil & Fats Co., Ltd., Tokyo, both of Japan

Filed Nov. 10, 1982, Ser. No. 440,525

Int. Cl.³ C25D 13/06

U.S. Cl. 204—181 R

6 Claims

1. A method of applying electrodeposition coating onto metallic material by continuously passing the metallic material

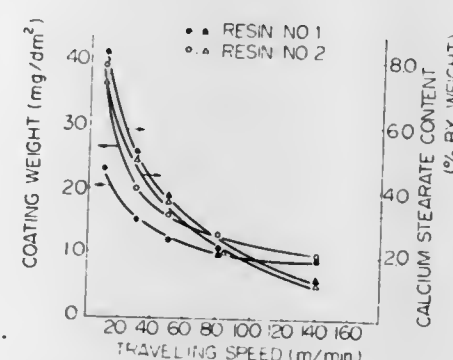
through an electrodeposition bath comprising an alkaline-solution soluble resin, a solid lubricant and water, characterized in that the bath temperature is not lower than 35° C., the bath voltage applied is not lower than 60 V and the electrodeposition is carried out under the conditions defined by the following equation:

$$aB + bT - cS \geq 3$$

(a=0.40-0.70, b=0.50-1.00 and c=0.010-0.020)

where "B" stands for the weight percent of the solid lubricant based on the solids content of said electrodeposition bath;

"T" stands for the electrodeposition treating time in seconds; and



"S" stands for the travelling speed in meters per minute (m/min) of the metallic material through the electrodeposition bath,

wherein said alkaline-solution soluble resin comprises 40-95% by weight of the solids content of the bath and is a salt of a copolymer having a glass transition temperature of -10° C. to 35° C. and a number-average molecular weight of 5,000-50,000, said copolymer comprising 5-30% by weight of acrylic acid, methacrylic acid or a mixture thereof and 70-95% by weight of an acrylate or methacrylate ester of a monovalent aliphatic C₁-C₈ alcohol or a mixture thereof, and said solid lubricant comprises 5-60% by weight of the solids content of the bath and is a water-dispersible organic metal soap having a particle size of from 0.1 to 10μ.

4,432,852

METHOD AND APPARATUS FOR PRODUCING MICA FILM

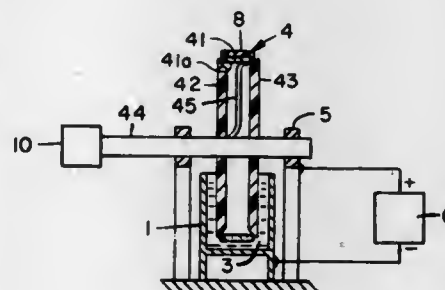
Francis P. Fehlner, and William J. Wein, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 18, 1982, Ser. No. 350,289

Int. Cl.³ C25D 13/02, 13/14

U.S. Cl. 204—181 F

4 Claims



1. In the method of producing mica film by the electrophoretic deposition of mica particles from a fluid mica sol onto an electrode surface to form a mica film and the subsequent removal of the film from the surface as cohesive mica film, the improvement wherein the electrode surface consists of a glass which is covered with an electrically conductive antimony-doped tin oxide coating.

4,432,853

METHOD OF MAKING AN ION BEAM SPUTTER-ETCHED VENTRICULAR CATHETER FOR HYDROCEPHALUS SHUNT

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

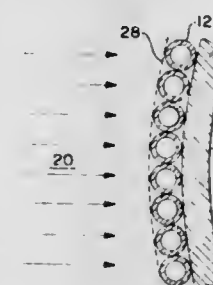
Division of Ser. No. 272,407, Jun. 10, 1981, Pat. No. 4,377,169.

This application Nov. 24, 1982, Ser. No. 444,124

Int. Cl.³ A61B 27/00

U.S. Cl. 204—192 E

17 Claims



1. In a method of making a ventricular catheter for controlling the condition of hydrocephalus by relieving the excessive cerebrospinal fluid pressure comprising the steps of covering at least one end portion of each of a plurality of microtubular members with a mask having a plurality of microscopic openings therein, placing said covered microtubular members in a vacuum environment, and exposing said mask to a beam of ions whereby perforations are produced in said end portions of said microtubular members.

4,432,854

WEB CONVEYING METHOD AND APPARATUS

Masahiro Takahashi; Toshio Hagiwara; Tsutomu Kakei, and Kazutaka Oda, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara

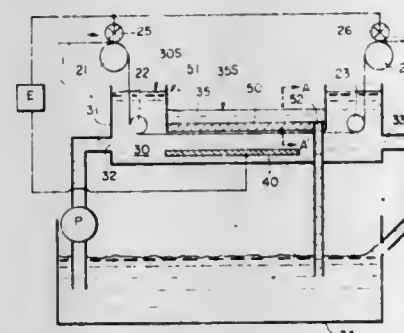
Filed Feb. 27, 1981, Ser. No. 238,909

Claims priority, application Japan, Feb. 29, 1980, 55-24773

Int. Cl.³ C25D 17/00

U.S. Cl. 204—206

26 Claims



1. A web conveying apparatus comprising: an electrolytic bath; an electrode; means for conveying a web through said electrolytic bath so that a first face of said web travels adjacent said electrode; means for supporting an opposite face of said web as said web is conveyed through said electrolytic bath, said supporting means comprising a guide plate having a plurality of through-holes formed therein; and means for applying a static pressure to said web in said electrolytic bath to press said web against a first side of said guide plate to keep said first face of said web adjacent said electrode, said static pressure applying means comprising means for maintaining a static electrolytic solution

fluid pressure of said bath adjacent said first side of said supporting means higher than a static electrolytic solution fluid pressure of said bath adjacent a second side of said supporting means which is opposite said first side so that electrolytic solution flows from said first side to said second side through said through-holes.

4,432,855

AUTOMATED SYSTEM FOR LASER MASK DEFINITION FOR LASER ENHANCED AND CONVENTIONAL PLATING AND ETCHING

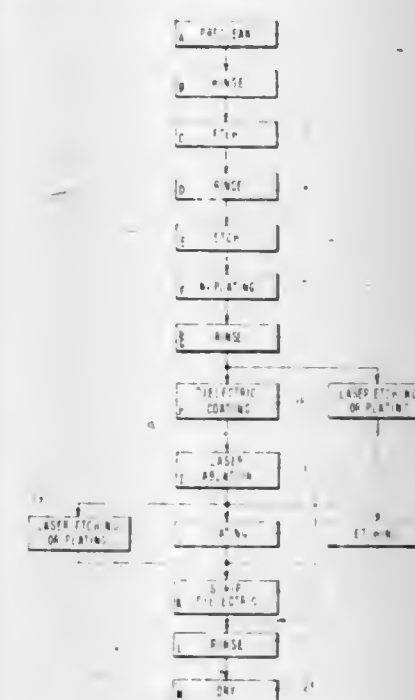
Lubomir T. Romankiw, Dr. Archie Manor, and Robert J. von Gutfeld, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,657

Int. Cl.³ C25D 17/00

U.S. Cl. 204—207

15 Claims



1. In an energy beam enhanced electrochemical system for treating a substrate electrochemically, the improvement comprising: application of a protective film to the work to be treated electrochemically, formation of a mask on said substrate with an energy beam, and performing of said treatment electrochemically.

4,432,856

APPARATUS FOR MANUFACTURING CHLORINE DIOXIDE

Katsuyuki Murakami, Maebashi; Kaoru Hirakata, Yoshioka; Fumio Ishizaka, Maebashi; Shinichi Shimoda, Fujimi, and Reichi Itai, Maebashi, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1981, Ser. No. 258,545

Claims priority, application Japan, May 13, 1980, 55-63121

Int. Cl.³ C25B 15/00

U.S. Cl. 204—237

16 Claims

1. An apparatus for producing chlorine dioxide by the electrolysis of a chlorite solution which comprises: an electrolytic cell for producing chlorine dioxide by electrolysis of a solution of chlorite, said electrolytic cell including an anode compartment and a cathode compartment, said electrolytic cell including means for discharging anolyte from said anode compartment and means for discharging catholyte from said cathode compartment; a supply tank having a first input for receiving an aqueous fresh chlorite solution, a first output for supplying a chlorite containing solution, a second input for receiving a mixture of chlorine dioxide and air and a second output

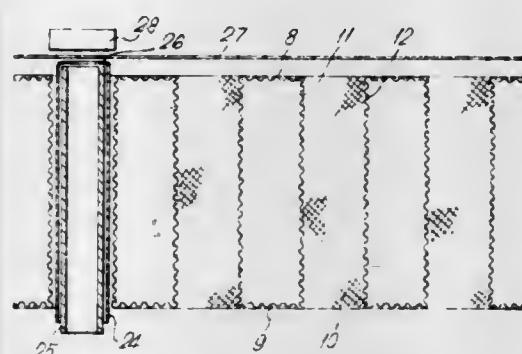
for removing a mixture of chlorine dioxide and air from the system;

a stripping tank having a first output for supplying an anolyte to the anode compartment of said electrolytic cell, a first input coupled to the anode compartment of said electrolytic cell for receiving anolyte containing chlorine dioxide dissolved therein, a second input for receiving a mixture of chlorine dioxide and air, said stripping tank stripping some of said anolyte of chlorine dioxide by said air contained in said mixture supplied thereto, a second output for supplying anolyte containing dissolved chlorine dioxide to an auxiliary stripping tank, and a third output for supplying a mixture of chlorine dioxide and air to said supply tank;

said auxiliary stripping tank including a first input for receiving anolyte from said stripping tank, a second input for receiving fresh air, a first output for supplying a mixture of chlorine dioxide and air to said stripping tank, said auxiliary stripping tank stripping anolyte of chlorine dioxide dissolved therein by means of said fresh air supplied thereto, and a second output for discharging a part of the anolyte contained in said auxiliary stripping tank from the system;



4,432,857
CLADDING CATHODES OF ELECTROLYTIC CELL WITH DIAPHRAGM OR MEMBRANE
 Colin S. Stanier, Northwich, England, assignor to Imperial Chemical Industries PLC, London, England
 Filed Mar. 1, 1982, Ser. No. 353,419
 Claims priority, application United Kingdom, Mar. 10, 1981, 8107502
 Int. Cl.³ C25B 9/00, 11/03; B29H 5/26; B29C 19/04
 U.S. Cl. 204—253 14 Claims

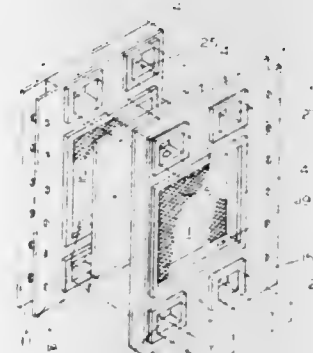


1. A method of cladding a separator to a cathode box of the pocket type for use in an electrolytic cell, the cathode box comprising side walls, a top and bottom, and a plurality of pockets substantially parallel to each other and formed by foraminant walls positioned between the top and bottom, characterized in that a separator in the form of a sleeve is positioned in each pocket of the cathode box with the ends of the sleeves projecting beyond the ends of the pockets, a first sheet material is placed in contact with those parts of the sleeves projecting beyond the ends of the pockets in one direction and the sleeves are sealed to the sheet material, a second sheet material is placed in contact with those parts of the sleeves projecting beyond the ends of the pockets in the opposite direction and the sleeves are sealed to the second sheet material, and those parts of the sheet materials adjacent to the ends of the pockets are removed.

4,432,858
MONOPOLAR FILTER-PRESS TYPE ELECTROLYZER
 Helmut Schmitt, Eintrachtstr. 28, 4600 Dortmund 1; Helmuth Schurig, Jahnstr. 26, 4755 Holzwickede, and Bernd Strasser, Freiligrath-Str. 6, 4700 Hamm Westf., all of Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,312
 Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130742

Int. Cl.³ C25B 9/00, 11/03
 U.S. Cl. 204—257 6 Claims



1. A monopolar filter-press type electrolyzer for the production of an aqueous alkali hydroxide solution, halogen, and hydrogen from an aqueous halogenide-bearing electrolyte; the electrolyzer comprising: two end plates; a plurality of alternat-

a circulation tank coupled to the cathode compartment of said electrolytic cell and including a first input for receiving a first portion of said catholyte discharged from said cathode compartment, a second input for receiving a diluent to dilute the catholyte and to thereby control the alkali concentration of the catholyte in said circulation tank, a first output for supplying diluted catholyte to the cathode compartment of said electrolytic cell, and a second output for discharging a part of the catholyte contained in said circulation tank from the system;

means for supplying a second portion of the catholyte discharged from said cathode compartment to said first output of said stripping tank;

means for combining said second portion of said catholyte and said anolyte from said first output of said stripping tank to form a first mixture; and

means for combining said first mixture with said chlorite containing solution provided at said first output of said supply tank to thereby form a second mixture, and means for supplying said second mixture to said anode compartment of said electrolytic cell.

ing anolyte and catholyte chambers each formed by two anode and two cathode plates and seals extending around the perimeters of the plates; a membrane permeable to ions separating the chambers; said seals having portions extending between the chambers for mounting said membrane and insulating said anode and cathode plates from each other; said anode plates, cathode plates, and seals having orifices which constitute inlet and outlet ducts for process fluids when said plates, membranes, and seals are assembled; each said anolyte and catholyte chamber including two anode and cathode plates having an active part permeable to gas and liquids, an inactive part impermeable and including at least four bores, said bores and said seals covering the inactive part of said anode and cathode plates and including at least four passages.

4,432,859
DIAPHRAGM FOR WATER ELECTROLYSIS
 Knut A. Andreassen, Rådgrv. 77, 3900 Porsgrunn; Olav A. Eide, Villavn. 30, 3660 Rjukan, both of Norway, and Gerhard Beyer, c/o Hoechst Aktiengesellschaft, Postfach 80 03 20, 6320 Frankfurt Am Main 80, Fed. Rep. of Germany
 Filed Apr. 23, 1982, Ser. No. 371,485
 Claims priority, application Norway, Jun. 16, 1981, 812027
 Int. Cl.³ C25B 1/46, 13/08
 U.S. Cl. 204—296 3 Claims

1. A diaphragm suitable for use in a water electrolysis cell, which consists essentially of a woven fabric of monofilaments of a fluorocarbon polymer, only the surface of said monofilaments being oxidized, the permeability of said diaphragm for gas in a dry state being from 50 to 1000 l.d.m.⁻².min⁻¹ at a pressure difference of 200 Pa.

4,432,860
POROUS DIAPHRAGM FOR ELECTROLYTIC CELL
 Jean Bachot, Fontenay aux Roses, and Jean Grosbois, L'Isle Adam, both of France, assignors to Chloé Chimie, Puteaux, France

Filed May 14, 1982, Ser. No. 378,222
 Claims priority, application France, May 15, 1981, 81 09688
 Int. Cl.³ C25B 13/08

U.S. Cl. 204—296 20 Claims
 1. A porous diaphragm adapted for use in an electrolytic cell, said diaphragm comprising an electrolytically acceptable porous sheet member having a total pore volume and average equivalent pore diameter adapted for electrolysis, and having an ion exchange resin fixedly deposited within the pores and occupying from 8 to 30% of the total pore volume thereof.

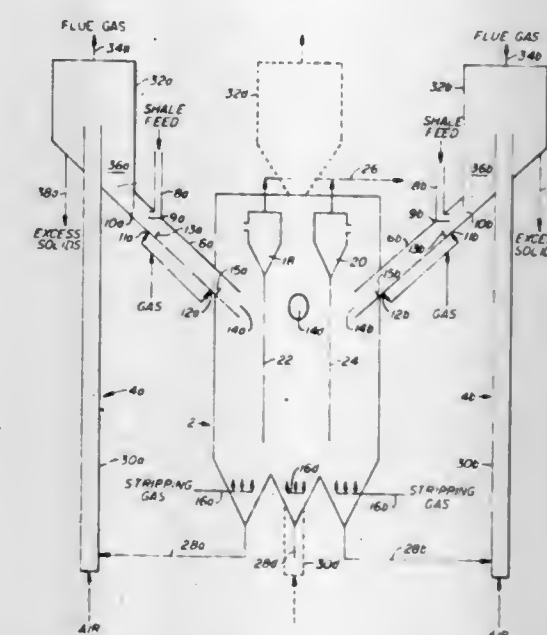
4,432,861
FEED MIXING CHUTE AND PACKED BED FOR PYROLYZING HYDROCARBONACEOUS SOLIDS
 P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 17, 1983, Ser. No. 475,999
 Int. Cl.³ C10G 1/00

U.S. Cl. 208—11 R 7 Claims
 1. A process for retorting a particulate hydrocarbonaceous solid which comprises:

- feeding the hydrocarbonaceous solid and a hot heat-transfer solid into the upper portion of a chute having an angle from the horizontal which exceeds the angle of slide of the mixture of solids and having at least one weir in the path of flow for the solids to control the depth of solids in the chute;
- passing on the upstream side of the weir an inert spouting gas across the path of flow for the mixture of solids in the chute at a rate sufficient to form locally a fluidized mixture of heat-transfer solids and hydrocarbonaceous solids;
- introducing the mixture of heat-transfer solids and particulate hydrocarbonaceous solids into a moving vertical packed bed and retorting said mixture for a time sufficient

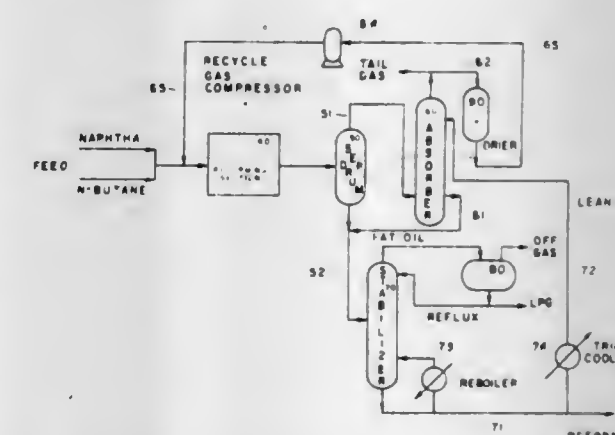
to pyrolyze a substantial amount of the hydrocarbons to release product vapors; and



(d) separately recovering product vapors and pyrolyzed solids from the packed bed.

4,432,862
REFORMING AND ISOMERIZATION PROCESS
 Gerrit S. Swart, Westfield; Louis S. Dauber, Cranford, and Richard P. O'Connor, Basking Ridge, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
 Filed Jan. 18, 1982, Ser. No. 340,071
 Int. Cl.³ C10G 35/04 4 Claims

U.S. Cl. 208—64



1. In a process for reforming, with hydrogen, a naphtha feed in a reforming unit which contains a plurality of on stream reactors connected in series, the hydrogen and naphtha flowing from one reactor of the series to another to contact the catalyst contained therein at reforming conditions, a reformat is taken from the final reactor of the series passed into a separator and separated into gaseous and liquid components, at least a portion of the gas is recycled to the reforming unit and the liquid is passed into a stabilizer for recovery of light petroleum gases and a C₅+ liquid product, the improvement comprising including within the reforming unit an absorber, passing the gaseous component, which contains n-butane and isobutane in admixture, from the separator into the absorber and countercurrently contacting said gas with a portion of the stabilized liquid from the stabilizer as lean oil, removing the stabilized liquid from the absorber as an isobutane and heavier enriched fat oil and passing same to the stabilizer,

recycling the butanes denuded gas from the absorber to the reforming unit,
 adding n-butane to the reforming unit for conversion to isobutane, and
 recovering from the stabilizer a C₅+ liquid reformat, and a stream of liquidified petroleum gases from which n-butane and isobutane can be readily recovered.

4,432,863

STEAM REFORMING OF CARBO-METALLIC OILS

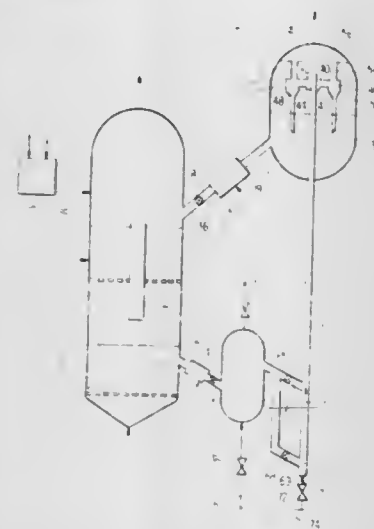
George D. Myers, deceased, late of Ashland, Ky. (by Virginia K. Myers, administratrix); William P. Hettinger, Jr., Russell, Ky.; Stephen M. Kovach, and Oliver J. Zandona, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.
 PCT No. PCT/US81/00662, § 371 Date Jul. 20, 1981, § 102(e)
 Date Jul. 20, 1981, PCT Pub. No. WO82/04063, PCT Pub. Date Nov. 25, 1982

PCT Filed May 13, 1981, Ser. No. 288,952

Int. Cl.³ C10G 9/16

U.S. Cl. 208—113

23 Claims



1. A process for economically converting carbo-metallic oils to liquid fuel products in a system comprising a progressive-flow reactor and a catalyst regenerator comprising:

- providing a converter feed containing 650°F+ material, said 650°F+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s), said heavy metal(s) including nickel;
- bringing said converter feed together with particulate cracking catalyst possessing greater than 600 nickel equivalents to form a stream comprising a suspension of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated conversion zone for a predetermined vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900 to about 1400°F and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while depositing at least a portion of said heavy metal(s) on the catalyst and producing coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;
- introducing water into said reactor conversion zone so as to form a mixture of water with said suspension of catalyst and feed, the amount of water introduced into said reactor conversion zone and the amount of reduced nickel on said recycled catalyst being sufficient to provide a steam reforming reaction in said reactor conversion zone so that hydrogen deficient components of said converter feed are converted to products having higher hydrogen to carbon ratios and the amount of said converter feed converted to coke is reduced;
- separating spent, coke-laden catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products;
- maintaining, in one or more regeneration zones, one or more fluidized catalyst regeneration beds comprising spent cata-

lyst undergoing regeneration by combustion of the coke with a combustion-supporting gas comprising oxygen on the spent catalyst, and supplying additional spent catalyst to one or more of such fluidized regeneration bed or beds;

- retaining said catalyst particles in said regeneration zone or zones in contact with a flow of said combustion-supporting gas under conditions of temperature, atmosphere and average total residence time in said zone or zones sufficient for combustion of the coke on the catalyst and for reducing the level of carbon on the catalyst to about 0.25% by weight or less, while forming gaseous combustion product gases comprising CO and/or CO₂, said regenerated catalyst being characterized by a deposited nickel content in at least a partially oxidized state;
- recycling the regenerated catalyst with said deposits of nickel to the reactor conversion zone for contact with fresh feed.

4,432,864

CARBO-METALLIC OIL CONVERSION WITH LIQUID WATER CONTAINING H₂

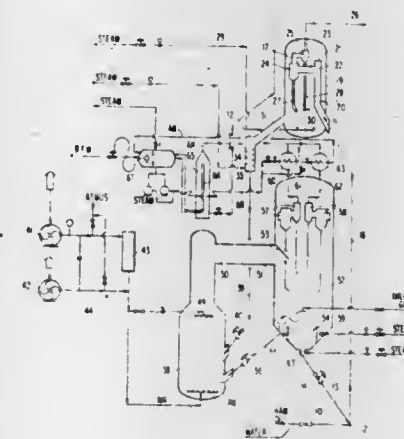
George D. Myers, and Lloyd E. Busch, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 94,217, Nov. 14, 1979, Pat. No. 4,347,122. This application Dec. 18, 1981, Ser. No. 332,279

Int. Cl.³ C10G 11/14

U.S. Cl. 208—120

87 Claims



1. A process for economically converting carbo-metallic oils to lighter products, comprising:

- providing a converter feed containing 650°F+ material, said 650°F+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 5 parts per million of nickel and vanadium combined;
- bringing said converter feed together with cracking catalyst having an equilibrium microactivity test conversion activity level of at least about 40 and bearing an accumulation of at least about 1,000 ppm combined of nickel and vanadium expressed as weight of metal(s) on regenerated equilibrium catalyst;
- bringing said converter feed together with liquid water in a weight ratio relative to feed in the range of about 0.04 to about 0.15, said liquid water containing at least 100 ppm hydrogen sulfide, less than 100 ppm sodium and less than 500 ppm each of calcium and magnesium;
- forming a stream containing a mixture of said converter feed, said catalyst and steam resulting from the vaporization of said liquid water and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch

absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts greater than about 6% by weight based on fresh feed, and laying down coke on the catalyst in amounts greater than about 0.3 percent by weight based on catalyst;

- separating said catalyst from the resultant cracking products;
- stripping said separated catalyst;
- regenerating said catalyst; and,
- recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,432,865

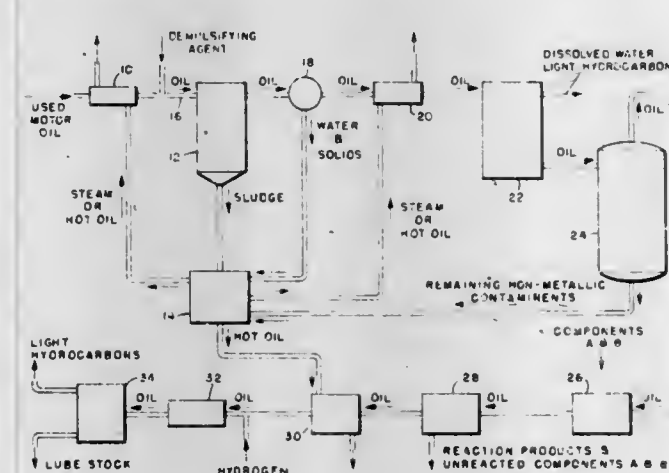
PROCESS FOR TREATING USED MOTOR OIL AND SYNTHETIC CRUDE OIL

George R. Norman, 480-2 Concord Downs Cir., Aurora, Ohio 44202

Continuation-in-part of Ser. No. 342,350, Jan. 25, 1982, abandoned. This application Dec. 8, 1982, Ser. No. 446,791
 Int. Cl.³ C10M 11/00

U.S. Cl. 208—183

45 Claims



1. A process for treating used motor oil or synthetic crude oil comprising:

- separating substantially all water from said used motor oil or said synthetic crude oil to provide a substantially anhydrous used motor oil or synthetic crude oil;
- contacting said substantially anhydrous used motor oil or synthetic crude oil with an effective amount of (A) a polyfunctional mineral acid and/or the anhydride of said acid and (B) a polyhydroxy compound to react undesired contaminants contained in said used motor oil or synthetic crude oil with components (A) and/or (B) to form one or more reaction products; and
- separating said reaction products from said used motor oil or synthetic crude oil.

4,432,866

MEMBRANE SEPARATION PROCESS

Theodore H. West, Sarnia, and John A. Thompson, Wyoming, both of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 21, 1981, Ser. No. 313,465

Int. Cl.³ C10G 21/28

U.S. Cl. 208—321

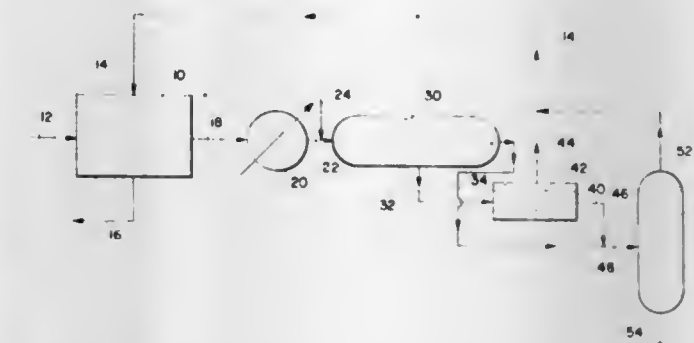
12 Claims

1. A method for separating a lube oil contaminant from a lube oil feedstock containing the contaminant, said method comprising:

- passing the lube oil feedstock and a solvent selectively miscible with the contaminant into a solvent extraction zone wherein at least a portion of the lube oil contaminant is separated from the feedstock by the solvent;
- passing the solvent containing the lube oil contaminant from the extraction zone into a liquid-liquid decantation zone wherein the solvent containing lube oil contaminant is separated into a first liquid fraction relatively rich in the

lube oil contaminant and a second liquid fraction relatively deficient in the lube oil contaminant;

- passing first liquid fraction from the decantation zone to a membrane separation zone, wherein the first liquid fraction is still further separated into a retentate relatively rich in the lube oil contaminant, and a permeate relatively deficient in the lube oil contaminant;



- recirculating permeate to the solvent extraction zone without further purification; and

- passing retentate from the membrane separation zone to a distillation zone wherein the retentate is separated into a distillate fraction and a bottoms fraction, distillate being recycled to the solvent extraction zone.

4,432,867

METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS FROM FIBROUS MATERIALS

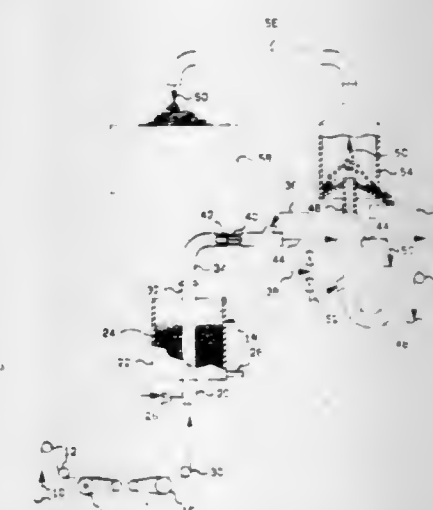
Sanford N. Smith, Spartanburg, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1980, Ser. No. 206,514

Int. Cl.³ B07B 7/01

U.S. Cl. 209—140

5 Claims



1. In an apparatus for texturing an elongated body of fibrous material by passage thereof through a body of dense, particulate material and removing entrained, dense, particulate material from said elongated body of fibrous material, including means for transporting said fibrous material by a concurrently moving fluid stream, the improvement comprising:

- a vertically-disposed chamber means having a frustum-shaped bottom converging upwardly from the lower end of said chamber to a point within the interior of said chamber, thus forming an annular space, between the interior surface of said bottom and the interior surface of said chamber, which diverges outwardly and downwardly from the apex of said bottom to the lower end of said chamber, and an opening through said apex of said bottom, thus forming a fibrous material inlet to said chamber, and having a frustum-shaped top converging up-

- wardly from the upper end of said chamber and an opening through the apex of said top, thus forming a fibrous material outlet from said chamber;
- (b) said chamber having an unobstructed path from said fibrous material inlet to said fibrous material outlet;
- (c) elongated entry tube means coaxial with said chamber, substantially smaller in cross section than the cross-section of said chamber, having an upper open end passing through said fibrous material inlet of said chamber, joined to said bottom of said chamber and adapted to pass said fibrous material into said chamber;
- (d) elongated exit tube means coaxial with said chamber, substantially smaller in cross section than said cross-section of said chamber, having a lower open end passing into said fibrous material outlet of said chamber, joined to said top of said chamber and adapted to pass said fibrous material from said chamber; and
- (e) particulate material outlet means in said chamber adjacent said lower end of said chamber.

4,432,868

SEPARATION OF HIGH GRADE MAGNETITE FROM FLY ASH

Robert G. Aldrich, Manlius, N.Y., assignor to Halomet, Incorporated, Manlius, N.Y.

Division of Ser. No. 146,697, May 5, 1980, Pat. No. 4,319,988. This application Oct. 5, 1981, Ser. No. 308,379

Int. Cl.³ B02C 23/14

U.S. Cl. 209—172.5

2 Claims

1. Magnetite derived from fly ash obtained as a product of coal combustion which comprises an admixture of spherical particles and broken spherical particles, the broken spherical particles being obtained by grinding spherical particles having a size greater than 325 mesh; said magnetite having a percent magnetics of at least about 96% as measured by Davis Tube and a specific gravity of from about 4.1 to about 4.5 and consisting essentially of particles less than 325 mesh.

4,432,869

METHOD OF TREATING AGRICULTURAL WASTES

Joost Groeneweg, Kreuzae-Drove, and Manfred Schlüter, Grevbroich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 239,118, Feb. 27, 1981, Pat. No. 4,348,285. This application Aug. 31, 1982, Ser. No. 413,485

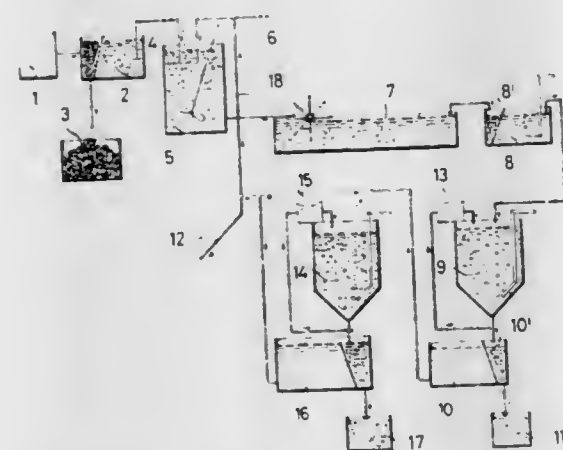
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008127

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C02F 3/32

U.S. Cl. 210—602

4 Claims



1. A method of treating liquid agricultural waste water which includes the following sequential steps of: anaerobically pretreating said waste water; subjecting said waste water to an algae/bacteria mixture

culture in a shallow open air pond for an effective period of time and temperature to obtain an algae/bacteria suspension, while controlling and maintaining the pH of said waste water to prevent any multiplication of rotifers; subsequently moving said algae/bacteria suspension to an aerated rotifer breeding container for removal of the algae/bacteria, and subjecting said algae/bacteria suspension to a rotifer culture for an effective period of time and temperature, while controlling and maintaining the pH of said algae/bacteria suspension to allow for rotifer multiplication; and separating said rotifers from the thusly treated suspension to obtain a purified water.

4,432,870

SLUDGE REMOVAL APPARATUS

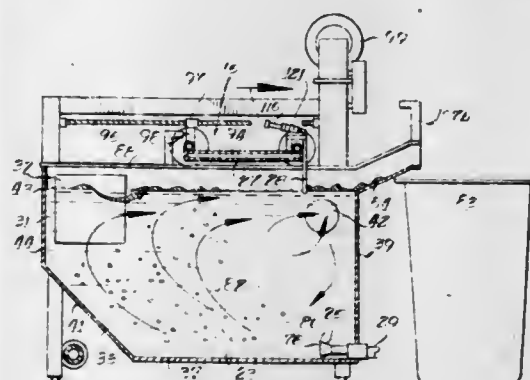
Frederick E. Russell, Elgin, Ill., assignor to Protectaire Systems Company, Elgin, Ill.

Filed May 6, 1981, Ser. No. 260,888

Int. Cl.³ B05C 15/00; B01D 21/00

U.S. Cl. 210—143

6 Claims



1. A sludge removing apparatus for removing sludge from a liquid from an adjacent tank having a water return opening, said apparatus comprising:

a tank means for receiving and holding a supply of liquid and sludge,

said tank means having a water inlet at one end thereof at water level to allow surface water and floating sludge thereon to float into the tank means at the water surface level, said adjacent tank having a water level at the water level in said tank means to float the sludge at the same water level into the tank means,

said tank means having upstanding side walls with one of said sidewalls being an end wall over which sludge is removed,

a water return opening below the surface level of the water in the tank means so that floating sludge does not float out of the tank means aligned with and connected to the opening in the adjacent tank to allow water to flow freely between tanks to maintain the same water level in said tank means and adjacent tank,

an automatic skimmer means on said tank means for skimming and extending across a pair of the side walls and for moving the sludge across the surface of the tank means and for skimming and discharging the sludge over the end wall of the tank means, and

liquid circulating means including jets for discharging and circulating liquid across the bottom of said tank means to remove settling particles from the bottom of the tank and for circulating the same upwardly to the water surface level in the tank means for removal by said skimmer means.

4,432,871

IMMUNE ADSORBENT, ADSORBING DEVICE AND BLOOD PURIFYING APPARATUS

Maokuni Yamawaki; Shozo Suzuki, and Tadaaki Furuta, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

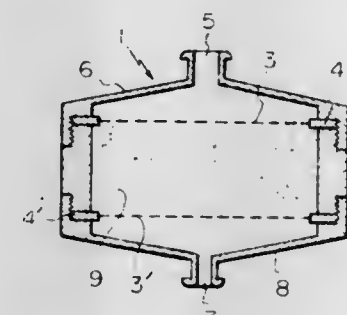
Filed Jan. 15, 1982, Ser. No. 339,368

Claims priority, application Japan, Jan. 22, 1981, 56-7152; Jul. 21, 1981, 56-112919

Int. Cl.³ B01J 20/22

U.S. Cl. 210—195.1

16 Claims



13. A blood purifying apparatus for adsorbing and removing an autoantibody and/or immune complexes from blood plasma, which comprises a blood introduction zone, a purified blood discharge zone, a blood circulation passage including a plasma separating device and a blood-plasma mixing device, and a plasma recycle passage connected to said blood circulation passage to introduce plasma, separated in the plasma separating device, into said mixing device, through a plasma purifying device, said circulation passage and recycle passage being disposed between said blood introduction zone and said purified blood discharge zone, wherein said plasma purifying device comprises a vessel having fluid inlet and outlet openings and an adsorbing material contained in said vessel, said adsorbing material comprising (a) an insoluble carrier and (b) an organic low-molecular-weight compound containing a hydrophobic compound having a solubility of not more than 100 millimoles in one dl of a physiological saline solution at 25° C., said low-molecular-weight compound being fixed to the insoluble carrier and having a molecular weight not higher than about 10,000.

4,432,872

APPARATUS FOR OXIDATION OR REDUCTION PROCESS IN WATER SOLUTION WITH ELECTROCHEMICALLY ACTIVE CATALYST ON A POROUS CARRIER

Wolfgang Faul, Jülich, and Bertel Kastening, Hamburg, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,622

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023703

Int. Cl.³ B01J 8/06

U.S. Cl. 210—205

4 Claims

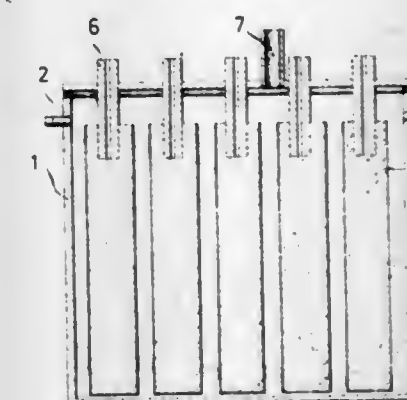
1. A catalysis apparatus for maintaining a catalytic reaction of a gaseous oxidizing or reducing agent with a substance dissolved in water by means of a catalyst and catalyst carrier immersed in said water, comprising:

a supporting core of porous material selected from the group consisting of ceramic materials and structurally firm materials composed principally of carbon particles;

a surface layer of porous activated carbon holding therein a finely divided metallic catalyst material, which layer is more finely porous than said supporting core and sufficiently coherent to remain in place while exposed to surrounding water while said gaseous reagent passes outward therethrough;

means for holding said core, with said layer thereon, substantially immersed in an aqueous solution, and

means for causing a gaseous oxidizing or reducing agent to enter said core without first passing through said layer and



to exit from said core through said layer into said aqueous solution when said core is immersed therein.

4,432,873

HIGH GRADIENT MAGNETIC SEPARATION DEVICE

Karl Schuster, Marloffstein/Adlitz, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

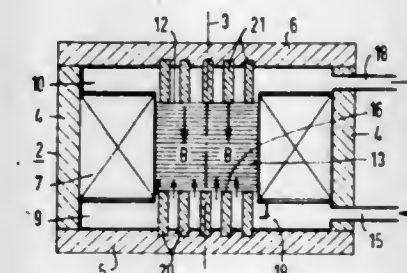
Filed Oct. 9, 1981, Ser. No. 310,323

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039171

Int. Cl.³ B01D 35/06

U.S. Cl. 210—223

11 Claims



1. In a device for the separation of magnetizable particles down to particle sizes below 1 μm, using the principle of high gradient magnetic separation technology, from a flowing medium, including a filter structure arranged in a filter space which is disposed between two parts of a ferromagnetic yoke of a magnetic device forming two magnetic poles, in a magnetic field which is oriented substantially parallel or antiparallel to the flow direction of the medium in the region of the filter structure, and which filter structure contains several wire screens arranged closely one behind the other as seen in the flow direction, the screens arranged at least approximately perpendicular to the flow direction of the medium and made of noncorroding ferromagnetic material with a predetermined mesh size and wire thickness, an inlet for introducing said flowing medium into said filter structure, and an outlet for removing said flowing medium from said filter structure the improvement comprising magnetic field carrying elements of ferromagnetic material connected to a corresponding yoke part and extending up to the filter structure, at least on the inlet side of filter structure, said elements distributed at least approximately uniformly over the entrance surface of the filter structure, the total cross sectional area of said elements occupying approximately between 1/4 and 1/2 of the cross section of the entrance area so as to avoid turbulence in said flowing medium at the entrance point to said filter structure.

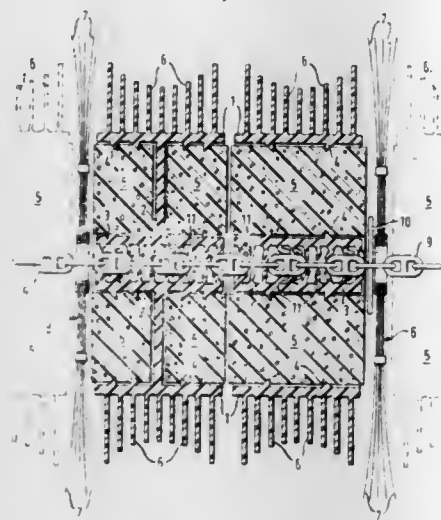
4,432,874

COLLECTING ROPE

Lars Lundin, Kauppiaankatu 4, SF-06150 Porvoo 15, Finland
Filed Jun. 22, 1982, Ser. No. 390,934Claims priority, application Finland, Jul. 6, 1981, 812122
Int. Cl.³ B01D 17/00

U.S. Cl. 210—242.4

13 Claims



13. A collecting rope for collecting oil or similar material from the surface of water, the rope comprising: a plurality of flotation units, each of which includes a cylindrical shell to which bristles are attached for collecting oil or similar material from the water's surface and a float layer secured to said cylindrical shell for floating said shell on the water's surface; a supporting drive member connecting said flotation units for rotation thereof by rotation of said supporting and drive member; and means providing a resiliently rotatable joint between said flotation units and said supporting drive member for permitting rotation of said supporting drive member relative to said flotation units.

4,432,875

SEMI-PERMEABLE MEMBRANES AND PROCESSES FOR MAKING THE SAME

Wolfgang J. Wrasidlo, and Karol J. Mysels, both of La Jolla, Calif., assignors to Brunswick Corporation, Skokie, Ill.

Filed May 29, 1981, Ser. No. 268,403

Int. Cl.³ B01D 31/00

U.S. Cl. 210—500.2

11 Claims

1. A process for the production of a semi-permeable, porous membrane which comprises a layer of a hydrophobic polymer system, said process comprising the steps of:

contacting said hydrophobic polymer system with a solution of a polymeric surfactant having both hydrophobic and hydrophilic groups located along its polymer chain and then baking the polymer system with the surfactant in contact with the surface of the polymer system at a temperature of from about 120° C. to about 180° C. for a period sufficient to adhere said surfactant to the surface of said layer to such an extent that it is substantially incapable of being removed from said polymer system during the use of said membrane as a result of said membrane being contacted with water and having a molecular weight of from about 1500 to about 3500.

11. The product produced by the process of claim 1.

4,432,876

REVERSE OSMOSIS APPARATUS AND METHOD INCORPORATING EXTERNAL FLUID EXCHANGE

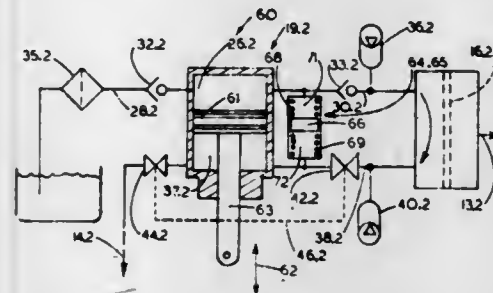
Bowie G. Keefer, Vancouver, Canada, assignor to Seagold Industries Corporation, Burnaby, Canada

Filed Jul. 30, 1980, Ser. No. 173,456

Int. Cl.³ B01D 31/00, 13/00

U.S. Cl. 210—652

15 Claims



1. Pumping apparatus for membrane separation apparatus for separating a feed fluid into permeate fluid and concentrate fluid fractions which respectively are permeated and rejected by selective membrane means, the pumping apparatus including: a reciprocating feed pump having at least one feed cylinder with a feed displacer mounted on a feed displacer rod reciprocable within the feed cylinder, the cylinder and displacer rod having relative diameters which define cylinder interior/displacer rod proportions to determine in part the recovery ratio of permeate fluid fraction to total feed fluid flow; a pumping chamber on one side of the displacer communicating with inlet conduit means to admit feed fluid, and with outlet conduit means to conduct feed fluid to the membranes; return conduit means to conduct concentrate fluid from the membranes to an expansion chamber on an opposite side of the displacer; means to reduce fluctuations in pressure and fluid flow across the membranes, first and second valve means communicating with the expansion chamber and pumping chamber respectively and cooperating with the conduit means to direct fluid flow to and from the membrane means and to exhaust de-pressurized concentrate fluid fraction from the expansion chamber, the first valve means having a closed intermediate position between two open positions; reciprocable drive means activating the feed displacer rod and first valve means whilst maintaining a phase difference or angle between the feed displacer stroke and actuation of the first valve means, the pumping apparatus including dwell means having fluid volume exchange means further characterized by:

(a) an exchange conduit means extending externally of the feed cylinder interior and interconnecting the pumping and expansion chambers,

(b) volume exchange control means within the exchange conduit to control volume exchange between the chambers,

so that fluid volume is exchanged between the chambers to approximately equalize pressure between the pumping and expansion chambers following reversal of feed displacer rod movement and to provide a dwell interval or angle sufficient to shift the first valve means across an effectively closed intermediate position thereof while initial movement of the feed displacer rod tends to equalize pressure differences across ports of the first valve means that are about to be opened prior to opening of such ports.

4,432,877

ORGANO-MERCURIAL MATERIALS

Nathan R. Tzodikov, Marshfield, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Oct. 19, 1981, Ser. No. 312,716

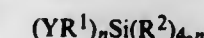
Int. Cl.³ B01D 15/08

U.S. Cl. 210—656

14 Claims

9. A method of separating a sulfhydryl compound containing at least one sulfhydryl group from other compounds, com-

prising contacting a mixture of the sulfhydryl compound and the other compounds with an affinity product in a chromatographic column, said affinity product comprising a metal having an affinity for sulfhydryl groups, said metal being coupled covalently to an inorganic carrier having available hydroxide or oxide groups, said metal being coupled to the inorganic carrier by means of a silane coupling agent having the formula:



where Y is a functional group which will react with a mercuric compound, selected from hydroxyl, amino, carboxylic acid, acyl, acyloxy, isocyanate, isothiocyanate, sulfhydryl or a diazonium salt; R¹ is alkyl, lower alkenyl, lower alkyl-aryl, or aryl; R² is selected from the group of lower alkoxy, phenoxy and halo; and n is an integer from 1 to 3, and separating such mixture from an affinity product.

4,432,878

COOLING ARRANGEMENT AND METHOD OF OPERATING THE SAME

Horst W. Emshoff, Mülheim an der Ruhr, and Walter Küsebauch, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

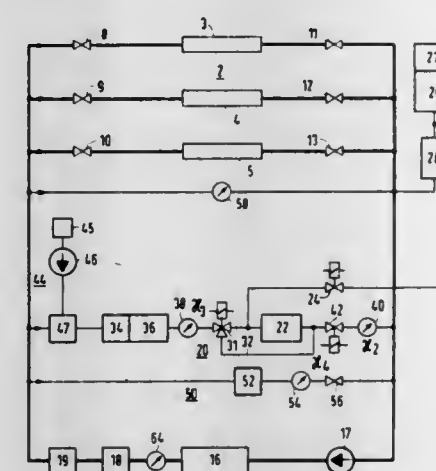
Filed Jun. 30, 1981, Ser. No. 279,052

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027362

Int. Cl.³ B01J 47/14

U.S. Cl. 210—662

6 Claims



4. A method for operating a cooling arrangement, said cooling arrangement comprising a closed cooling system containing a main loop and a parallel loop, said parallel loop having an alkalizing cation exchanger, an anion exchanger in the hydroxide form and a mixed-bed filter in series, and means for bypassing said filter, comprising conducting water in said parallel loop through the alkalizing cation exchanger, the anion exchanger and through said bypass, closing said bypass and connecting said mixed-bed filter into the parallel loop when the pH-value of the cooling water reaches a predetermined upper limit, and thereafter disconnecting said mixed-bed filter and opening said bypass when the pH-value of the cooling water drops from said upper limit.

4,432,879

TREATMENT OF AQUEOUS SYSTEMS

Brian Greaves, and Paul Ingham, both of Runcorn, England, assignors to Dearborn Chemicals, Ltd., Widnes, England
Continuation of Ser. No. 194,033, Oct. 6, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,525

Claims priority, application United Kingdom, Oct. 23, 1979, 7936773

Int. Cl.³ C02F 5/14

U.S. Cl. 210—699

6 Claims

1. Method of suspending sediment in cooling water systems

that comprises adding thereto 2-phosphonobutane-1,2,4-tricarboxylic acid and a copolymer of methacrylic acid and 2-acrylamido-2-methylpropane sulfonic acid in a molar ratio of about 1:1 or a copolymer of styrene sulfonic acid and maleic acid in a molar ratio of about 3:1, said copolymer having a molecular weight of from about 4,000 to 6,000 and said 2-phosphonobutane-1,2,4-tricarboxylic acid and copolymer being added in a respective weight ratio of about 4:1 to 1:4 and in a total dosage of about 0.1 to 50 ppm.

4,432,880

PROCESS FOR THE REMOVAL OF HEAVY METALS FROM AQUEOUS SOLUTION

Richard S. Talbot, Media, Pa., assignor to Richard S. Talbot and Associates, Media, Pa.

Filed Dec. 10, 1981, Ser. No. 329,388

Int. Cl.³ C02F 1/62

U.S. Cl. 210—725

21 Claims

1. In a process for the removal of one or more heavy metals from an aqueous system containing at least two heavy metals by the addition of a soluble sulfide to precipitate at least one of said heavy metals as the sulfide thereof, the improvement which comprises:

adding an amount of soluble sulfide statistically determined to be sufficient to precipitate as the sulfide substantially all of at least one heavy metal to the limits of its metal sulfide solubility; said statistically determined amount of soluble sulfide being less than the amount required to precipitate as the metal sulfide at least one other heavy metal in said system having a soluble sulfide equilibrium concentration sufficiently higher than that of said selected heavy metal to thus permit selective precipitation of said selected metal and of any other heavy metals present having lower sulfide equilibrium solubility concentrations than that of the selected heavy metal, with said precipitation being to the limits of the metal sulfide solubilities;

and precipitating at least a portion of at least one heavy metal remaining in said system after said sulfide precipitation by a means other than by sulfide precipitation; whereby an aqueous effluent is obtained which contains no sulfide.

4,432,881

WATER-DISPERSIBLE HYDROPHOBIC THICKENING AGENT

Syamalarao Evani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 6, 1981, Ser. No. 232,327

Int. Cl.³ C09K 7/02; E21B 43/22, 43/26

U.S. Cl. 252—8.5 A

36 Claims

1. A water soluble composition for thickening aqueous liquids comprising

(A) a water-soluble thickening agent which agent comprises (1) a water-soluble polymer having pendant hydrophobic groups, said polymer being a copolymer of a water-soluble ethylenically unsaturated monomer and water-insoluble ethylenically unsaturated monomer having a hydrophobic group having at least 8 carbon atoms, wherein

(a) the water-soluble monomer is an ethylenically unsaturated amide or an N-substituted derivative thereof, an ethylenically unsaturated carboxylic acid, an ethylenically unsaturated quaternary ammonium compound, a sulfoalkyl ester of an unsaturated carboxylic acid, an aminoalkyl ester of an unsaturated carboxylic acid, a diallylamine, a diallylammonium compound or a vinylaryl sulfonate,

(b) the water-insoluble monomer is a higher alkyl ester of an α,β -ethylenically unsaturated carboxylic acid,

- an alkylaryl ester of an ethylenically unsaturated carboxylic acid, an N-alkyl ethylenically unsaturated amide, vinyl alkyl ether or an ar-alkyl styrene; and
- (2) a water-dispersible nonionic surfactant having hydrophobic groups that are capable of associating with the hydrophobic groups of the copolymer such that at ambient conditions, water containing 0.5 weight percent of the thickening agent has a viscosity at least twice the viscosity of water, said thickening agent having a weight ratio of the copolymer to the surfactant in the range from about 20:1 to about 0.5:1, and
- (B) a water-soluble inorganic salt in an amount such that at a temperature in the range up to about 80° C., an aqueous medium containing a viscosity increasing amount of the thickening agent exhibits a further increase in viscosity when the water-soluble salt is added to the medium.

4,432,882

HYDROCARBON FOAMS

Stuart Reynolds, Wilmington, Del., and Louis B. Fournier, Media, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

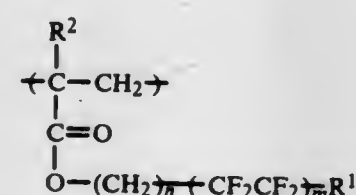
Filed Dec. 17, 1981, Ser. No. 331,892

Int. Cl.³ E21B 43/26, 43/27

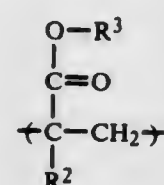
U.S. Cl. 252—8.55 R

3 Claims

3. A method of extending an initially fractured subterranean formation penetrated by a well bore with a foam, said foam comprising a hydrocarbon, a propping agent and from 0.05 to 5 weight percent as based on the hydrocarbon of a copolymer containing from 25 to 60 weight percent units of the structure



where —R¹ is —H or —F, —R² is —H or —CH₃, m is an integer from 2 to 10 and n is 1 or 2; and from 75 to 40 weight percent units of the structure;



where —R³ is an alkyl group containing from 10 to 20 carbon atoms and —R² has the above defined meaning.

4,432,883

SEAL WITH TEFLON OR RUBBER

Allen F. Denzine, Chardon, Ohio, and William E. F. Thurber, Jr., Houston, Tex., assignors to Resistic Materials Inc., Houston, Tex.

Filed Dec. 9, 1981, Ser. No. 329,009

Int. Cl.³ C10M 7/28, 7/52

U.S. Cl. 252—12

18 Claims

1. A composition of matter comprising about 50% to about 90% by weight of a polymeric material selected from the group consisting of polytetrafluoroethylene, polyurethane, nitrile, fluorocopolymer, and polyphenylene sulfide, and about 10% to about 50% by weight of another material comprising about 15% to 60% by volume of grains of titanium carbide dispersed through a metal matrix, wherein said metal matrix comprises a nickel-chromium matrix consisting essentially by weight of about 50% to 80% nickel, about 10% to 25% chro-

mium, up to about 16% molybdenum or tungsten, up to about 1% carbon, and the balance essentially iron.

4,432,884

SCALE INHIBITING AGENT

Yoshinari Kawasaki, Osaka, and Kenji Hanno, Hirakata, both of Japan, assignors to Katayama Chemical Works Co., Ltd., Osaka, Japan

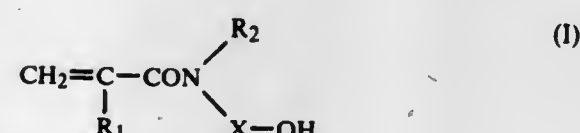
Filed Jul. 19, 1982, Ser. No. 399,816

Int. Cl.³ C02F 5/12

U.S. Cl. 252—180

8 Claims

1. A scale inhibiting agent comprising as an active ingredient a copolymer of at least one of an alkylolamide compound having the general formula (I);



wherein R₁ and R₂ independently represent a hydrogen atom or an alkyl group having one to three carbon atoms, and X is a bond or a straight or branched-chain alkylene group having one to eight carbon atoms, and at least one of an alkenyl compound having the general formula (II);



wherein R₃, R₄ and R₅ independently represent a hydrogen atom or methyl group, and A is hydroxy group or —OR₆ group in which R₆ is a lower alkyl group of one to four carbon atoms which may be substituted by a hydroxy group; an amino group or an —NHR₇ group in which R₇ is a lower alkyl group of one to four carbon atoms which may be substituted by —SO₃H at the end carbon atom.

4,432,885

DECALINS

Martin Petrzilka, Kaiseraugst, and Kuno Schleich, Zollikerberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 9, 1981, Ser. No. 328,979

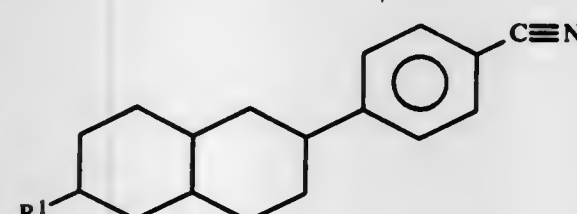
Claims priority, application Switzerland, Dec. 23, 1980, 9524/80; Aug. 26, 1981, 5513/81

Int. Cl.³ C07C 43/116, 49/30, 63/00, 69/76, 103/22, 121/64, 13/50, 25/02, 13/47; C09C 3/34; C09K 3/34

U.S. Cl. 252—299.61

18 Claims

1. A compound of the formula



wherein R¹ is hydrogen, methyl, —CH₂R, —OR or —CH₂OR, R is alkyl; and R¹ has up to 12 carbon atoms, its racemates or its optically active antipodes.

4,432,886

CATIONIC FLUORESCENT WHITENING AGENTS

Hans R. Meyer, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 200,738, Oct. 27, 1980, Pat. No. 4,384,121.

This application Sep. 22, 1982, Ser. No. 421,201

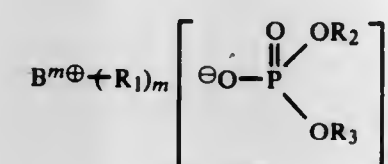
Claims priority, application Switzerland, Nov. 1, 1979, 9808/79

Int. Cl.³ C07D 405/04, 413/02

U.S. Cl. 252—301.27

7 Claims

1. A fluorescent whitening composition which is an aqueous solution of 1 to 60% by weight, based on the weight of the solution, of a cationic fluorescent whitening agent of the formula



wherein

B is a fluorescent whitening agent selected from the group consisting of 2-furanylbenzimidazoles, 2-azolybenzimidazoles, 2-stilbenylbenzimidazoles and 2,5-(benzimidazolyl)furanes,

m is the number of basic amino groups, and each of R₁, R₂ and R₃ is alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by a non-chromophoric group, or is alkenyl of 2 to 4 carbon atoms which is unsubstituted or substituted by a non-chromophoric group.

4,432,887

DE-EMULSIFICATION AGENTS OF MICROBIOLOGICAL ORIGIN

James E. Zajic, College of Science, University of Texas, El Paso, Tex. 79968, and David G. Cooper, 96 Kent St., London, Ontario, Canada (N6A 1L1)

Filed Sep. 2, 1981, Ser. No. 298,734

Claims priority, application Canada, Sep. 8, 1980, 359801

Int. Cl.³ B01D 17/04; C02C 5/02; C02F 3/34

U.S. Cl. 252—331

14 Claims

1. A process of destabilizing an oil-in-water or water-in-oil emulsion, which comprises treating the emulsion with an effective amount of at least a portion of the liquid broth resulting from the culturing and growth therein of a bacterial microorganism on a carbon-containing substrate under growth promoting conditions, said bacterial microorganism being one which produces effective de-emulsifying fermentation products for the type of emulsion chosen and being selected from the group of species consisting of *Nocardia amarae*, *Nocardia erythropolis*, *Rhodococcus aurantiacus*, *Rhodococcus rubroperitinctus*, *Arthrobacter paraffineus*, *Corynebacterium hydrocarbonclastus*, *Corynebacterium oxydans*, *Corynebacterium petrophilum*, *Corynebacterium lepus*, *Corynebacterium fascians*, *Corynebacterium hydrocarbonoxydans*, *Mycobacterium cuneatum*, *Mycobacterium petroleophilum*, *Mycobacterium parafortuitum*, *Mycobacterium rhodochrous* and *Mycobacterium brevicale*.

4,432,888

SURFACE ACTIVE AGENTS BASED ON POLYPEPTIDES

Gheorghe Cioca, Coatesville, Pa., assignor to Seton Company, Newark, N.J.

Filed Sep. 30, 1981, Ser. No. 307,016

Int. Cl.³ B01F 17/30; C07C 143/34; C11D 1/88

U.S. Cl. 252—354

18 Claims

1. A surface active agent comprised of the reaction product of an alkyl phenylsulfonic acid and a polypeptide at an acidic pH at a ratio of 1 to 1.5 parts by weight of said sulfonic acid to 0.9 to 1.65 parts by weight of said polypeptide.

4,432,889

HETEROGENEOUS CATALYST

John L. Garnett, Longueville; Mervyn A. Long, St. Ives, and Ronald G. Levot, Oyster Bay, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Feb. 6, 1981, Ser. No. 225,409

Int. Cl.³ B01J 31/24

U.S. Cl. 502—5

19 Claims

1. A process for the production of a heterogeneous catalyst comprising the steps of:

- (a) irradiating an organic macromolecular substrate or a metal substrate with ionising or ultra violet radiation in the presence of a monomer selected from the group consisting of o-, m-, or p-styryl diphenyl phosphine and o-, m- or p-phenyl acrylyl diphenyl phosphine, to graft the monomer to the substrate, and
- (b) reacting the graft copolymer with a homogeneous catalyst selected from the group consisting of catalytic metal salts and catalytic organometallic complexes such that the monomer-substrate conjugate becomes a ligand of the catalyst.

4,432,891

GLASS CAPABLE OF IONIC CONDUCTION AND METHOD OF PREPARATION

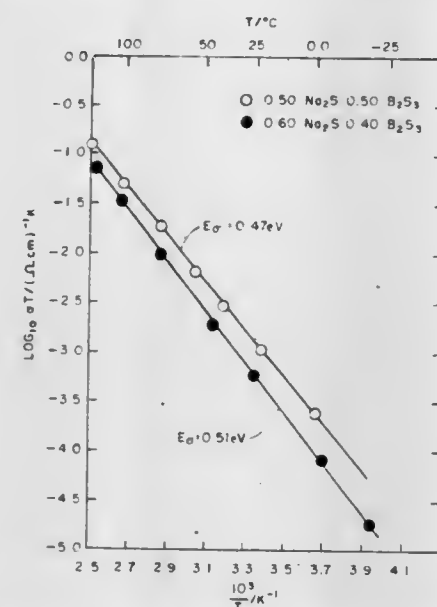
Sherman Susman, Park Forest; Charles J. Delbecq, Downers Grove, both of Ill.; Kenneth J. Volin, Fort Collins, Colo., and Leah Boehm, Jerusalem, Israel, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,525

Int. Cl.³ C03C 3/12, 3/30; H01B 1/10

U.S. Cl. 252—518

2 Claims



1. An electrically conductive glass consisting essentially of an amorphous mixture of $(1-X)Na_2S:X B_2S_3$ wherein X is about 0.5 to 0.7.

4,432,892

PROCESS FOR THE SAFE INTERMEDIATE AND FINAL STORAGE OF TRITIUM

Horst Ebinger, Bad Soden-Salmuenster; Martin Kadner, Maintal, and Guenther Luthardt, Rodenbach, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,346

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018745

Int. Cl.³ G21F 9/02, 9/16

U.S. Cl. 252—628

16 Claims

1. In a process for the safe intermediate and final storage of tritium after reaction of tritium or a tritium containing gas with a hydride forming metal in comminuted form, the improvement comprising pressing to a molded body at room temperature a mixture of the tritium containing metal particles and a metal which has a low permeability for tritium.

4,432,893

PRECIPITATION-ADSORPTION PROCESS FOR THE DECONTAMINATION OF NUCLEAR WASTE SUPERNATES

Lien-Mow Lee, North Augusta, and Lester L. Kilpatrick, Aiken, both of S.C., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,800

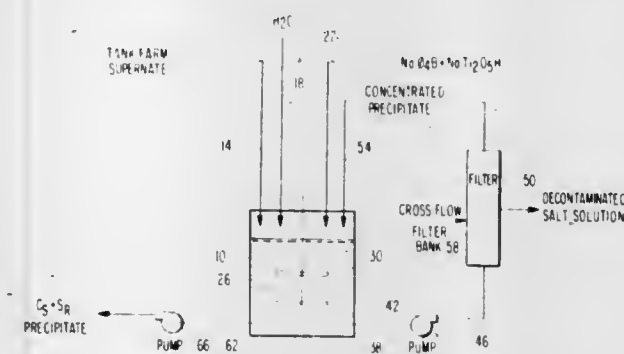
Int. Cl.³ C09K 3/00

U.S. Cl. 252—631

21 Claims

1. Process for the removal of the residual hazardous soluble values from a nuclear waste solution which comprises simultaneously contacting said solution with sufficient sodium tetra-

phenylboron and sufficient sodium titanate to form an insoluble slurry including said hazardous values and filtering said



solution to separate and substantially decontaminate said solution of said hazardous values.

4,432,894

PROCESS FOR TREATMENT OF DETERGENT-CONTAINING RADIOACTIVE LIQUID WASTES

Kunio Kamiya, Hitachi; Kenji Motojima, Mito; Kiyomi Funabashi, Katsuta; Koichi Chino, and Susumu Horiuchi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

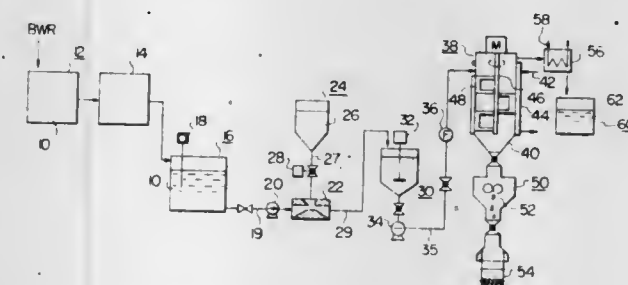
Filed Mar. 30, 1981, Ser. No. 249,012

Claims priority, application Japan, Apr. 4, 1980, 55-44930

Int. Cl.³ G21F 9/08, 9/12

U.S. Cl. 252—632

18 Claims



1. A process for the treatment of detergent-containing radioactive liquid waste, said waste comprising sodium sulfate and powdery ion exchange resin, said process comprising:

- measuring a chemical oxygen demand concentration of a radioactive liquid waste,
- adding an adsorbent to the waste in accordance with the measured concentration, and
- concentrating and drying the waste by heating, thereby converting the waste into powder.

4,432,895

MONOMERIC INTERFERONS

Stanley J. Tarnowski, Nutley, N.J., assignor to Hoffmann-La Roche, Nutley, N.J.

Filed Nov. 24, 1982, Ser. No. 444,113

Int. Cl.³ A61K 45/02; C07G 7/00

U.S. Cl. 260—112 R

11 Claims

1. A method for producing biologically active interferon in which essentially all of the interferon is in monomeric form which comprises treating a sample of purified or partially purified interferon with an effective amount of a redox reagent to convert oligomeric interferon to biologically active monomeric interferon and to prevent the formation of oligomeric interferon from monomeric interferon.

4,432,896

DERIVATIVES OF HIPPURYL-L-PHENYLALANINE

Masami Sugiyama, Hachioji; Yasushi Kasahara, Tama, and Yoshihiro Ashihara, Fuchu, all of Japan, assignors to Fuji-rebio Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,494

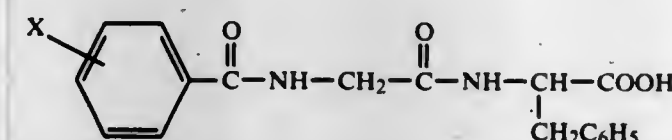
Claims priority, application Japan, Dec. 16, 1981, 56-201587

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

4 Claims

1. Derivatives of hippuryl-L-phenylalanine having the following general formula:



wherein X represents OH or CH_3O .

4,432,897

CATIONIC THIADIAZOLYL TRIAZENE DYESTUFFS

Hauke Fürstenwerth, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,823

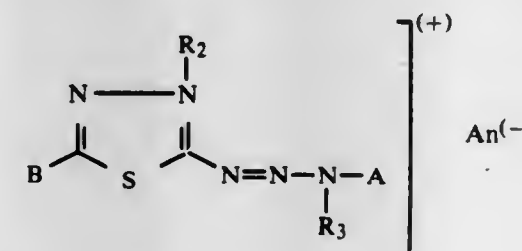
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045912

Int. Cl.³ C07C 107/00; C09B 56/20; D06P 1/42, 3/18

U.S. Cl. 260—140

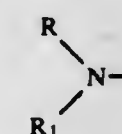
3 Claims

1. A cationic triazene dyestuff of the formula



wherein

B is alkylmercapto, arylmercapto or



R is hydrogen, alkyl, alkenyl, C_1 - C_4 -alkylcarbonyl, benzoyl, benzoyl substituted by halogen or C_1 - C_4 -alkyl, C_1 - C_4 -alkoxycarbonyl, mono- C_1 - C_4 -alkylaminocarbonyl, di- C_1 - C_4 -alkylaminocarbonyl, benzylaminocarbonyl, C_1 - C_4 -alkylsulphonyl, phenylsulphonyl, di- C_1 - C_4 -alkylaminosulphonyl, cycloalkyl, aryl, aralkyl, amino, alkylamino, dialkylamino, arylamino or aralkylamino,

R_1 is hydrogen, alkyl, alkenyl or aralkyl, or

R and R_1 together with the nitrogen atom to which they are bonded are pyrrolidine, piperidine, morpholine, piperazine, N-methyl-piperazine or N-hydroxyethylpiperazine,

R_2 and R_3 each independently is alkyl, alkenyl, alkynyl or aralkyl, or one of them is hydrogen, or

R_3 is bonded to the o-position of A, and together with the nitrogen atom and A is dihydroindole, tetrahydro-1,4-benzoxazine which is unsubstituted or substituted by 1-4 C_1 - C_4 -alkyl or C_1 - C_4 -alkoxy,

A is aryl, and

$\text{An}^{(-)}$ is an anion,

or a substitution product thereof wherein the cyclic and acyclic radicals are substituted by cyano, hydroxyl, halogen, nitro, alkyl, monoalkylamino, dialkylamino, phenyl, alkoxy, alkoxy-carbonyl, alkoxy-carbonyloxy, C_1 - C_4 -alkyl-carbonyloxy or car-

boxyl; or R- R_3 is substituted by phenoxy, benzyloxy or amido-carbonyl.

4,432,898

SULFO-SUBSTITUTED FIBRE-REACTIVE 1:2-CHROMIUM COMPLEX AZO DYES

Gerhard Back, Lörrach, Fed. Rep. of Germany; Fabio Beffa, Riehen, and Hans-Ulrich Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. Continuation of Ser. No. 971,140, Dec. 19, 1978, abandoned, which is a continuation of Ser. No. 805,754, Jun. 13, 1977, abandoned. This application Oct. 23, 1980, Ser. No. 199,789

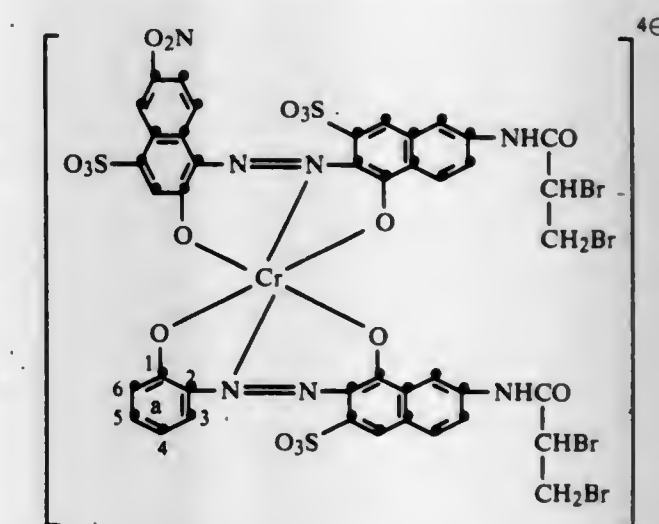
Claims priority, application Switzerland, Jun. 24, 1976, 8086/76; Mar. 14, 1977, 3153/77

Int. Cl.³ C09B 62/012, 62/675; D06P 1/38, 3/10

U.S. Cl. 260—145 A

2 Claims

1. A chromium complex dye of the formula



wherein the ring is substituted by 4- or 5-nitro, and M is a cation.

4,432,899

PREPARING CONCENTRATED AZO DYE SOLUTIONS USING NITRITE SALT AS BOTH COUPLING COMPONENT AND DIAZOTIZING AGENT

Karl Linhart, Leverkusen; Harald Gleinig, Odenthal, and Günther Boehmke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,940

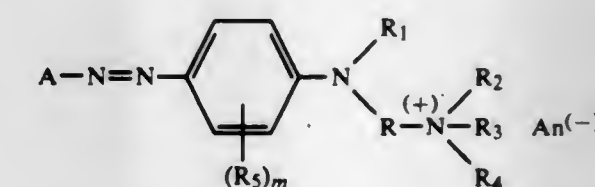
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101140

Int. Cl.³ C09B 44/02, 44/04; D06P 1/41

U.S. Cl. 260—157

7 Claims

1. Process for the preparation of a concentrated, stable solution, with a low salt content, of a cationic azo dyestuff of the formula



wherein

A denotes the radical of an aromatic carbocyclic or aromatic heterocyclic diazo component,

R denotes alkylene,

R_1 denotes hydrogen or alkyl,

R_2 denotes alkyl, alkenyl or aralkyl,

R_3 denotes alkyl,

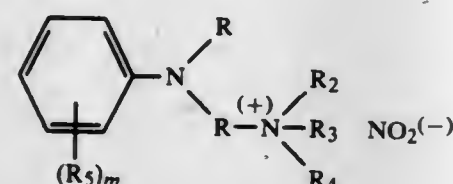
R_4 denotes hydroxyalkyl having 2 or more C atoms,

R_5 denotes halogen, alkyl, alkoxy, aryloxy, C_1 - C_4 -alkylcar-

bonyl, C₁-C₄-alkylsulphonyl, benzoyl, C₁-C₄-alkylcarbonylamino, C₁-C₄-alkylsulphonylamino or benzoylamino,
m denotes 0, 1, 2, 3 or 4, and
An⁻ denotes a carboxylic ion,
and wherein
the cyclic and acyclic substituents are unsubstituted or substituted by non ionic substituents,
comprising reacting an amine of the formula



with a nitrite of the formula



in an aqueous carboxylic acid in a concentration such that the final solution has a dyestuff concentration of from 10 to 60% by weight.

4,432,900

CATIONIC DYESTUFF PRINTING INKS

Alex Pociluyko, Glen Mills, Pa., assignor to Scott Paper Company, Scott Plaza, Pa.

Division of Ser. No. 206,730, Nov. 14, 1980, Pat. No. 4,340,386, which is a continuation-in-part of Ser. No. 88,288, Oct. 26, 1979, Pat. No. 4,359,419.

This application Jul. 14, 1981, Ser. No. 283,232

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

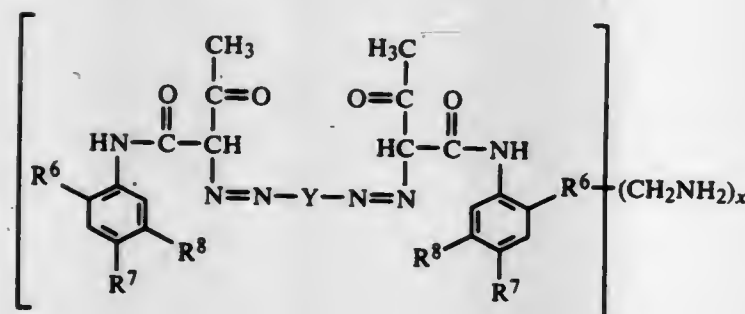
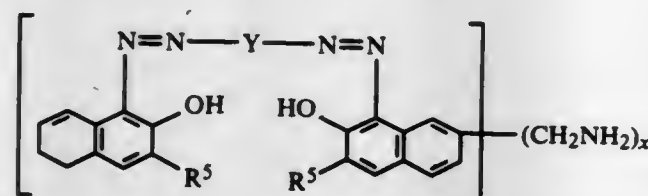
Int. Cl.³ C09B 31/10, 67/00; D06P 3/60, 5/02

U.S. Cl. 260-160

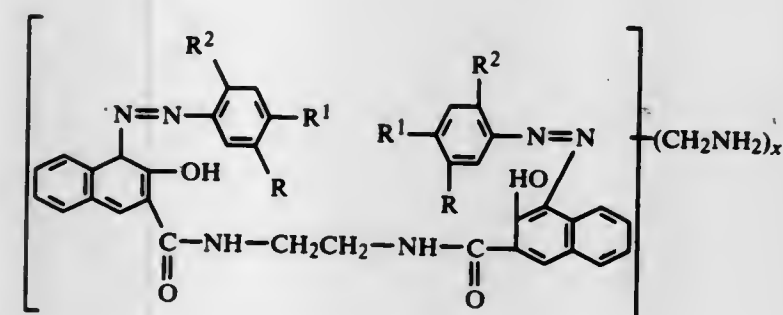
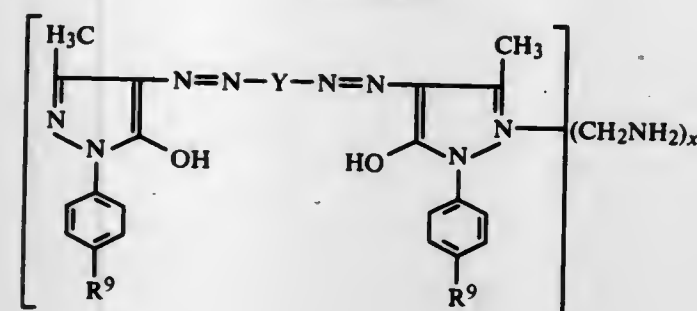
3 Claims

1. The reaction product of an aldehyde selected from the group consisting of formaldehyde, glyoxal and glutaraldehyde and a cationic, water-soluble dyestuff having a functional group capable of reacting with said aldehyde wherein the functional group of the cationic, water-soluble dyestuff is a lower alkylene amine of the formula $-(CH_2)_nNH_2$ wherein n is from 1 to 5.

2. The reaction product of claim 1 wherein the water-soluble dyestuff is a mixture consisting essentially of a disazo compound which is polyaminomethylated with an average of x aminomethyl groups per molecule wherein said disazo compound is selected from group consisting of



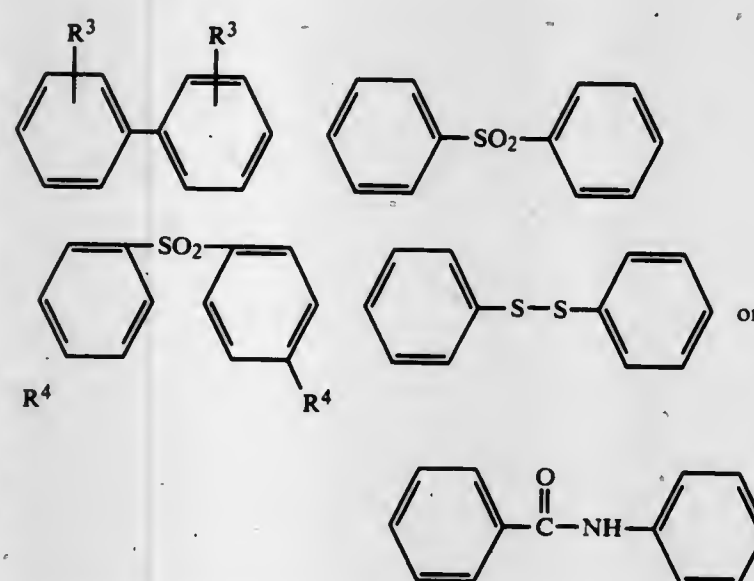
-continued



in which

x represents a number in the range of one to eight

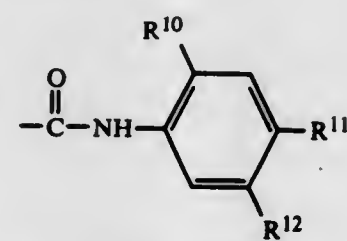
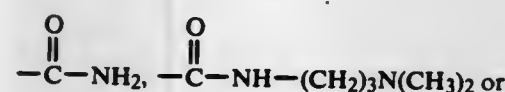
Y represents a divalent moiety selected from the class having the formulas



R represents hydrogen, C₁ to C₃ alkyl, C₁ to C₃ alkoxy or N-phenylsulfamoyl,

R¹ represents hydrogen, C₁ to C₃ alkyl, C₁ to C₃ alkoxy, halo, N-phenylsulfamoyl or 6-methylbenzothiazol-2-yl, R², R³, R⁷, R⁸, R¹⁰, R¹¹ and R¹² represent hydrogen, C₁ to C₃ alkoxy or halo,

R⁴ represents hydrogen, C₁ to C₃ alkyl or C₁ to C₃ alkoxy, R⁵ represents hydrogen or a monovalent moiety selected from the class having the formulas



R⁹ represents hydrogen or C₁ to C₃ alkyl; and the acid-addition salt forms of said mixtures.

4,432,901

BETA-LACTAM COMPOUNDS CONTAINING A C-ACETAL GROUP AND PROCESS FOR THEIR PREPARATION

Karoly Lempert; Kalman Harsanyi; Gabor Doleschall; Gyula Hornyak; Jozsef Nitrai, all of Budapest; Karoly Zauer, Szentendre; Jozsef Fetter, Budapest; Gyula Simig, Budapest; Zsuzsanna Visky nee Gombos, Budapest, and Gizella Barta nee Szalai, Vecses, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Sep. 11, 1981, Ser. No. 301,884

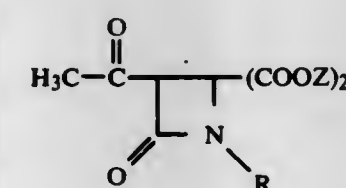
Claims priority, application Hungary, Sep. 15, 1980, 2262/80

Int. Cl.³ C07D 205/08

U.S. Cl. 260-239 A

4 Claims

1. A compound of the formula (III)



wherein

R is benzyl, 4-methoxy-benzyl, or 2,4-dimethoxy-benzyl; and

Z is C₁ to C₄ alkyl.

4,432,902

METHOD FOR SYNTHESIZING HMX

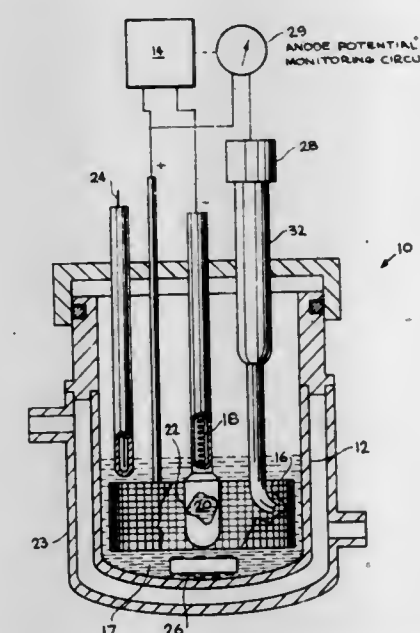
Raymond R. McGuire, Brentwood; Clifford L. Coon, Fremont; Jackson E. Harrar, Castro Valley, and Richard K. Pearson, Pleasanton, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 20, 1982, Ser. No. 399,948

Int. Cl.³ C07D 257/12

U.S. Cl. 260-239 HM

11 Claims



1. A method of synthesizing cyclotetramethylenetetranitramine (HMX), comprising:

- providing an electrochemical cell including a cathode disposed in a cathode compartment and an anode disposed in an anode compartment, said anode and cathode being operatively connected to a power source;
- placing a solution of N₂O₄/HNO₃ within said anode compartment, and a solution of HNO₃ in said cathode compartment;
- applying and maintaining a controlled potential of about 1.35 to 2.00 V vs. SCE between said N₂O₄/HNO₃ solution and said anode;

(d) forming N₂O₅ as a product step of (c) above through the application of said potential;

(e) adding said N₂O₅ formed in step (d) to a solution selected from 1,5-diacetyl-3,7-dinitro-1,3,5,7-tetraazacyclooctane (DADN) or 1,3,5,7-tetracycl-1,3,5,7-tetraazacyclooctane (TAT), wherein the molar ratio of N₂O₅ to DADN or TAT is about 3.6;

(f) heating the solution formed in step (e) to a temperature of about 35°-45° C.;

(g) adding the product formed from step (f) to water; and

(h) forming HMX as a product of step (g).

4,432,903

BIS-ESTERS OF METHANEDIOL WITH PENICILLINS AND PENICILLANIC ACID 1,1-DIOXIDE

Eric C. Bigham, Chapel Hill, N.C., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 185,090, Sep. 8, 1980, which is a division of Ser. No. 39,539, May 16, 1979, Pat. No. 4,244,951. This application Dec. 3, 1982, Ser. No. 446,612

Int. Cl.³ C07D 499/32

U.S. Cl. 260-239.1

3 Claims

1. A compound selected from the group consisting of 6'-(2-benzoyloxycarbonylamino-2-phenylacetamido)penicillanoyloxymethyl penicillanate 1,1-dioxide, 6'-(2-[4-nitrobenzyloxycarbonylamino]-2-phenylacetamido)penicillanoyloxymethyl penicillanate 1,1-dioxide and 6'-(2-[4-nitrobenzyloxycarbonylamino]-2-[4-hydroxyphenyl]acetamino)penicillanoyloxymethyl penicillanate 1,1-dioxide.

4,432,904

PHOSPHINE AZACROWN ETHER COMPOUNDS

Stephan J. McLain, and Francis J. Waller, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,357

Int. Cl.³ C07F 9/65

U.S. Cl. 260-330.6

10 Claims

1. A phosphine azacrown compound having the formula:



wherein

R is selected from the group consisting essentially of phenyl, naphthyl, substituted phenyl, and substituted naphthyl, the substituents being selected from the group consisting essentially of hydrocarbyl of up to about 6 carbons, alkoxy of 1 to 4 carbons, halogen, and CF₃;

m is 0 to 4;

n is 3 to 6; and

M is a cation selected from the group consisting essentially of Li⁺, Na⁺, K⁺, Rb⁺, Tl⁺, Cs⁺, Fr⁺, Ca²⁺, Zn²⁺, Cd²⁺, Hg²⁺, Sr²⁺, Ba²⁺, Ra²⁺, Pb²⁺, and lanthanide³⁺; when a cation is present, the corresponding anion is selected from the group consisting essentially of F⁻, Cl⁻, Br⁻, I⁻, At⁻, BF₄⁻, PF₆⁻, BPh₄⁻, CF₃SO₃⁻, SCN⁻, NO₃⁻, picrate⁻, SiF₆²⁻, SO₄²⁻, and PO₄³⁻.

4,432,905

SIMPLIFIED PROCESS FOR THE DEGRADATION OF STEROID-C-22-CARBOXYLIC ACIDS

Michael Bahn, Hilden; Wolfgang Preuss, Monheim; Rolf Schmid, Düsseldorf, and Rüdiger Wagner, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 262,966, May 12, 1981, abandoned, Ser. No. 262,970, May 12, 1981, abandoned, and Ser. No. 262,971, May 12, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,841

Claims priority, application Austria, May 12, 1980, 2534/80; May 12, 1980, 2629/80; Jun. 9, 1980, 3031/80

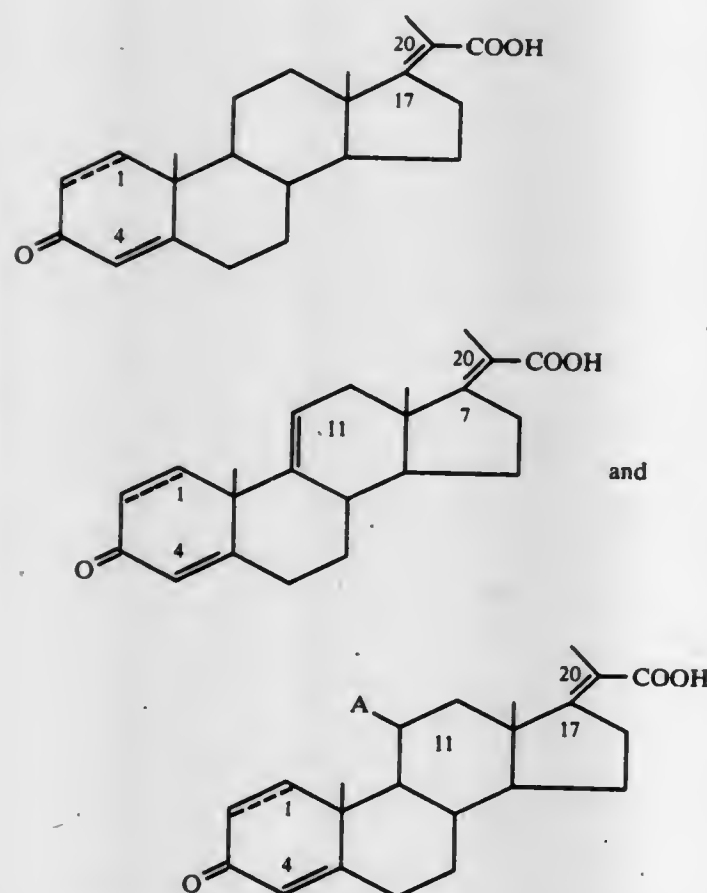
Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.1

26 Claims

1. A process of producing C20-carbonyl steroids from steroid C22-carboxylic acids by side chain degradation consisting essentially of:

(1) reacting $\Delta^4(5)$ -BNC-compounds with an additional enebond in the 17(20)-position having the formulae:



wherein A represents an α -hydroxyl, a β -hydroxyl or, together with the carbon atom substituted by A, a carbonyl, with a carboxylic acid halogenating agent under conditions whereby unwanted ring halogenation products are avoided, to form the corresponding 22-carboxylic acid halide,

(2) reacting the $\Delta^{17(20)}$ -steroid-22-carboxylic acid halide with a metal azide in an aqueous/organic two-phase reaction in the presence of quaternary ammonium salts as a phase transfer catalyst at a temperature of below about 25° C.,

(3) hydrolyzing the azide formed by heating in the presence of an aqueous acid with elimination of nitrogen, and

(4) recovering the corresponding C20-carbonyl steroid.

4,432,906

INHIBITORS OF SRS-SYNTHESIS

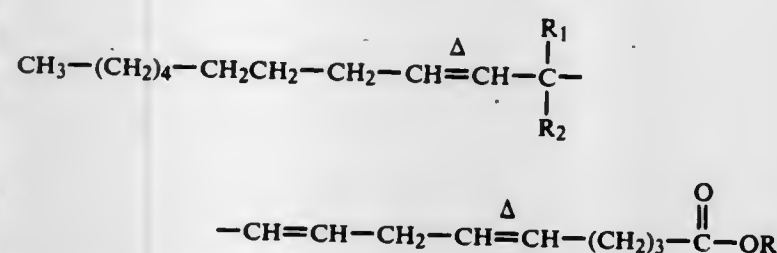
Noal Cohen, Montclair, and Giuseppe Weber, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J. Filed Sep. 14, 1981, Ser. No. 301,613

Int. Cl.³ C11C 3/02; A61K 31/23

U.S. Cl. 260—410.9 R

3 Claims

1. A compound of the formula:



wherein Δ designates a cis configuration, R is hydrogen or lower alkyl; and R₁ and R₂ are hydrogen or methyl with the proviso that where one of R₁ and R₂ is hydrogen the other is methyl, and pharmaceutically acceptable salts thereof where R is hydrogen.

4,432,907

DIAMINE ACID FLUORESCENT CHELATES

Irwin Wieder, and Robert H. Wollenberg, both of Los Altos, Calif., assignors to Analytical Radiation Corporation, Los Altos, Calif.

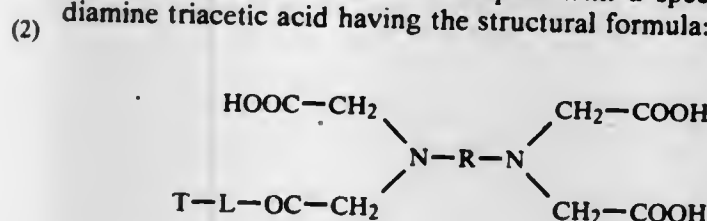
(1) Division of Ser. No. 73,728, Sep. 10, 1979, Pat. No. 4,352,751. This application May 5, 1981, Ser. No. 260,574

Int. Cl.³ C07C 101/26, 103/18; C12Q 1/06; G01N 33/52, 33/74, 33/76, 33/78, 33/92, 2/38

U.S. Cl. 260—429.2

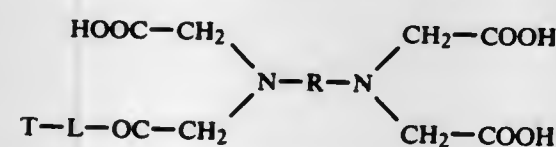
30 Claims

1. A metal chelate for use in the fluorometric quantification of a biologically active organic species comprising an essentially 1:1 molar chelate complex of a rare earth metal ion capable of forming a fluorescent complex with a species-linked diamine triacetic acid having the structural formula:



wherein R is a two to eight atom long covalent bridge selected from carbon-oxygen ether bridges, carbon-nitrogen secondary and tertiary amide bridges and carbon-carbon alkylene, cycloalkylene and arylene bridges, T is the biologically active organic species to be fluorometrically quantified, T being other than an aliphatic mono- or polyamine, or aliphatic mono- or polyol, but comprising at least one originally present or added primary amine, secondary amine, thiol or hydroxyl functional group, and L is said at least one functional group in deprotonated form covalently bonding T to the indicated carbonyl carbon of the diamine triacetic acid.

17. An activated fluorescent rare earth metal ion chelate combination for use in the fluorometric quantification of a biologically active organic species comprising an essentially 1:1 molar chelate complex of a rare earth metal ion capable of forming a fluorescent complex with a species-linked diamine triacetic acid having the structural formula:

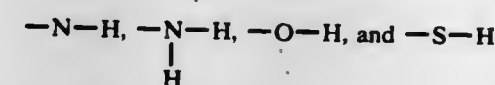


wherein R is a two to eight atom long covalent bridge selected from carbon-oxygen ether bridges, carbon-nitrogen secondary and tertiary amide bridges and carbon-carbon alkylene, cyclo-

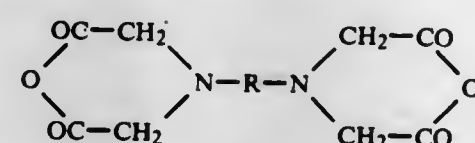
alkylene and arylene bridges, T is the biologically active organic species to be fluorometrically quantified, T being other than an aliphatic mono- or polyamine, or aliphatic mono- or polyol, but comprising at least one originally present or added primary amine, secondary amine, thiol or hydroxyl functional group, and L is said at least one functional group in deprotonated form covalently bonding T to the indicated carbonyl carbon of the diamine triacetic acid in combination with a fluorescent excitation efficiency promoter.

30. The process for preparing a fluorescent species-linked diamine triacetic acid which comprises the steps of

a. contacting in liquid phase a biologically active organic species molecule having a functional group selected from



but being other than an aliphatic mono- or polyamine, or an aliphatic mono- or polyol with a molar excess of a diaminedianhydride of the formula



wherein R is a two to eight atom long covalent bridge selected from carbon-oxygen ether bridges, carbon-nitrogen secondary and tertiary amide bridges and carbon-carbon alkylene, cycloalkylene and arylene bridges, per mole of species molecule at a temperature of from about 5° C. to about 100° C. for from about 0.5 hours to about two days,

b. hydrolyzing the remaining anhydride groups,

c. recovering the species-linked diamine triacetic acid which is formed in step b,

d. contacting the recovered species-linked diamine triacetic acid with a solution of a rare earth metal ion capable of forming a fluorescent complex with said triacetic acid and

e. contacting said fluorescent complex with a substantial molar excess of a fluorescent excitation efficiency promoter.

4,432,908

CRYSTAL OF ENANTIOMER PAIR OF PHENYLACETIC ACID ESTER DERIVATIVE AND PROCESS FOR OBTAINING A MIXTURE OF STEREOISOMERS OF THE DERIVATIVE

Yukio Suzuki; Masahiro Hayashi, both of Osaka, and Kenzi Takuma, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 1, 1981, Ser. No. 326,317

Claims priority, application Japan, Dec. 2, 1980, 55-170473

Int. Cl.³ C07C 121/75

U.S. Cl. 260—465 D

42 Claims

1. A crystal of an enantiomer pair of stereoisomers of α -cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate comprising (S)- α -cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and an enantiomer thereof, said crystal having the following crystal characteristics:

crystal system	monoclinic
lattice constant	a = 11.90 Å, b = 5.60 Å, c = 32.58 Å, β = 93.0°
space group	P2 ₁ /c
density	1.28 g/cm ³
number of molecules in unit lattice	4

2. A process for preparing a mixture of stereoisomers of a α -cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate

which consists essentially of a Y-isomer that is an enantiomer pair of (S)- α -cyano-3-phenoxybenzyl (S)-2-(4-chlorophenyl)isovalerate and an enantiomer thereof, or which is rich in said Y-isomer, the process comprising depositing a crystal of said Y-isomer from a solution of α -cyano-3-phenoxybenzyl 2-(4-chlorophenyl)isovalerate in the presence or absence of a basic catalyst, said crystal having the following crystal characteristics:

crystal system	monoclinic
lattice constant	a = 11.90 Å, b = 5.60 Å, c = 32.58 Å, β = 93.0°
space group	P2 ₁ /c
density	1.28 g/cm ³
number of molecules in a unit lattice	4

wherein the crystallization is carried out in the presence of a crystal of said Y-isomer having said crystal characteristics as a seed crystal.

4,432,909

AMINE OXANILIC ACID SALTS AS HERBICIDE EXTENDERS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 243,008, Mar. 12, 1981, Pat. No. 4,380,467.

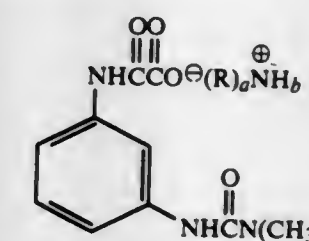
This application Dec. 27, 1982, Ser. No. 453,086

Int. Cl.³ C07C 127/19

U.S. Cl. 260—501.11

4 Claims

1. A compound having the formula



in which R is selected from the group consisting of C₁-C₆ alkyl, C₂-C₆ alkenyl, phenyl, and benzyl, and a and b are both integers from zero to four such that the sum of a and b is four.

4,432,910

PREPARATION OF PIVALOYL CYANIDE

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,042

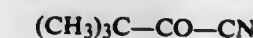
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1980, 3045181

Int. Cl.³ C07C 120/00

U.S. Cl. 260—545 R

7 Claims

1. In the preparation of pivaloyl cyanide of the formula



by reaction of pivalic acid anhydride with anhydrous hydrocyanic acid, the improvement which consists essentially of carrying out the reaction continuously in the presence of a catalyst comprising an alkali metal/copper cyanide complex or an alkaline earth metal/copper cyanide complex, and in the presence of an inert, aprotic organic diluent, which boils above about 210° C., at a temperature between about 180° and 240° C., by simultaneously and continuously dropping the pivalic acid anhydride and introducing the hydrocyanic acid in gaseous form into a stirred suspension of the catalyst in the diluent, and continuously distilling the crude product mixture consisting essentially of pivaloyl cyanide, pivalic acid and unreacted hydrocyanic acid, the unreacted hydrocyanic acid being sepa-

rated off by evaporation and being recycled to the reaction vessel, and the pivaloyl cyanide being separated from the precipitated crude product mixture by fractional distillation in vacuo.

4,432,911

VARIABLE VENTURI CARBURETOR

Satomi Wada, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Japan

Filed Apr. 28, 1982, Ser. No. 372,862

Claims priority, application Japan, Jun. 10, 1981, 56-89892
Int. Cl.³ F02M 9/06

U.S. Cl. 261-44 C

7 Claims

1. In combination with a variable venturi carburetor for an internal combustion engine having a float chamber, an air intake passage, a venturi portion provided in said air intake passage, a fuel passage communicating with said float chamber and said venturi portion, a fuel jet provided in said fuel passage, a suction piston adapted for reciprocation across said venturi portion in response to the load conditions of the engine, and a fuel metering needle fixed to a bottom end of said suction piston at its base portion for controlling an annular opening area of a fuel metering portion of said fuel jet by the reciprocation of a free end of said needle; the improvement comprising a fuel bypass duct provided above said fuel passage and adapted for bypassing said fuel jet to communicate between upstream and downstream positions of said fuel passage, said fuel bypass duct having a calibrated jet nozzle at its outlet, said fuel jet being formed in substantially hollow cylindrical configuration, a slit provided on said fuel jet and oriented for leading to an inlet of said fuel bypass duct, a fuel inlet provided at the lower portion of said fuel jet and adapted for leading to said float chamber, and a bubble well provided between the outer circumference of said fuel jet and the inner circumference of said fuel passage and adapted for leading from said slit to said inlet of said fuel bypass duct.

4,432,912

FOOD PROCESSOR WITH AIR WHIPPING CAPABILITY

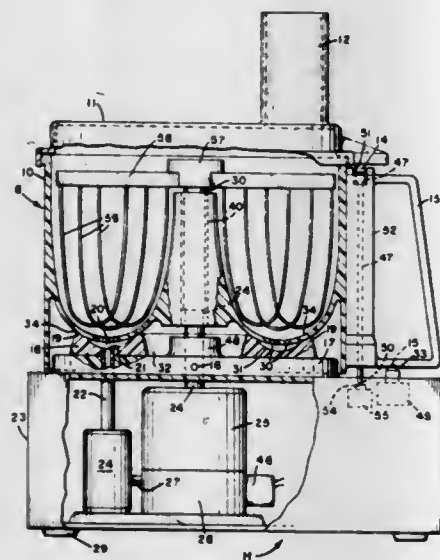
Robert M. Berler, 3 Bruce La., Westport, Conn. 06880

Filed Jan. 28, 1982, Ser. No. 343,671

Int. Cl.³ B01F 3/04

U.S. Cl. 261-93

9 Claims



1. In a food processor comprising a base which houses a drive motor, a removable bowl which is mounted on said base for containing the food, a removable cover for said bowl, and a rotatable element mounted on an implement drive shaft

which passes through the center of said bowl and is rotated by said motor, the improvement comprising:

- (a) modifying said base so that it accommodates a modified bowl, said modified bowl being provided with a plurality of small holes through the bottom of the bowl to admit air into the bowl,
- (b) a source of air on said base to supply air to said bowl,
- (c) means to supply air to said bowl from said air source when said bowl is positioned on the base,
- (d) a whisk element positioned in, and extending to the bottom of the bowl and means to rotate said whisk as air is being admitted to said bowl.

4,432,913

LIQUID DISTRIBUTING APPARATUS AND METHOD FOR A LIQUID-VAPOR CONTACT COLUMN

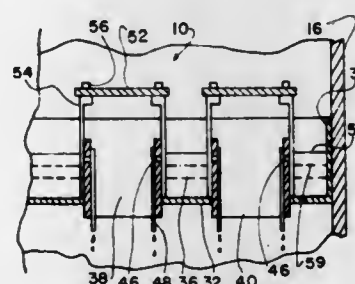
Stephen M. Harper, Lake Jackson, and Jeffrey H. Stultz, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 298,058, Aug. 31, 1981, abandoned. This application Feb. 23, 1983, Ser. No. 469,077

Int. Cl.³ B01F 3/04

U.S. Cl. 261-97

2 Claims



1. A plate-type liquid distributor for use in a liquid-vapor contact tower wherein it is desired to uniformly distribute liquid across a horizontal cross-section of the tower while allowing vapor to rise through spaced vapor ducts situated in vapor openings in the pan of the apparatus, which apparatus comprises:

- a plate which is horizontal when installed in the tower, said plate having a plurality of spaced openings passing through it to provide for upward passage of vapors rising in a tower;
- an upstanding flange sealably attached to the periphery of the horizontal plate and extending above the plate;
- a vertical duct member located in each opening of the horizontal plate, said duct members being open at top and bottom to allow upward passage of vapors through the apparatus, said vertical duct members being sealably attached to the horizontal plate member with the duct member's sides extending a distance far enough above said horizontal plate to define a liquid reservoir space above the plate between the outsides of the duct walls and the inside of the upstanding flange;

said duct walls having a plurality of openings in them located at the same distance above the plate to allow a liquid to accumulate in said reservoir and to pass out of the reservoir in streamlets through the openings in said duct walls while allowing most sediment contained in the liquid to settle to the bottom of said reservoir to greatly reduce the risk of plugging the openings with sediment and consequently upsetting the liquid distribution pattern designed for the distributor apparatus, said openings being spaced apart at a substantially uniform distance, the tops of said openings being located below the tops of the duct walls as well as below the top of the upstanding flange so that a liquid pool is capable of being maintained in said reservoir space with the pool's upper surface being capable of being situated above the tops of said openings, said openings being small enough in size so as to cause a liquid slowly flowing through them under normal operating conditions

in a tower to form a pool in said reservoir space with the pool's upper surface being situated above the tops of said openings in order that any floating debris in the liquid will remain above said openings so as to further reduce the risk of plugging the small openings and upsetting the flow distribution pattern;

said duct members' vertical sides also extending below the horizontal plate member so that liquid flowing down the side walls can have no opportunity to transfer from the side wall to the bottom of the plate member and fall from it in an indiscriminate maldistributed manner; a multiplicity of substantially parallel, substantially vertically oriented drip rods attached to the inside of the ducts, that is the vapor side of the duct walls, in such a fashion so that substantially all of the openings have a pair of drip rods associated with it, one drip rod being adjacent to an opening on one side of that opening and the other drip rod being adjacent that opening on the opposite side of that opening so as to form an "equidistant channel" between the two drip rods of the drip rod pair below the opening; and

said drip rods extending below the bottom of the duct walls so that liquid emerging from the opening between will gravity flow downwardly in the "equidistant channel", past the bottom of said horizontal plate, and on downwardly and off the bottom ends of the drip rods into the tower section below the drip rods in the same distribution pattern as is the distribution pattern of the bottom ends of the drip rods.

4,432,914

MASS TRANSFER CONTACT APPARATUS

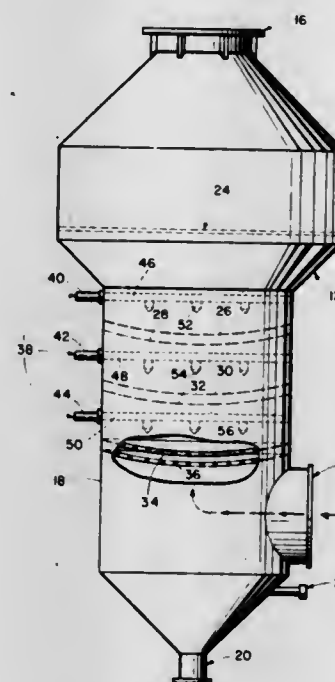
Kenneth C. Schiffner, Danbury, Conn., assignor to Kenneth C. Schiffner, Inc., Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 391,139, Jun. 23, 1982, abandoned. This application May 19, 1983, Ser. No. 496,054

Int. Cl.³ B01F 3/04

U.S. Cl. 261-111

10 Claims



1. A gas-liquid contact apparatus comprising a housing member including an inlet and outlet and interconnecting ductwork between said inlet and outlet characterized by:

- (a) at least one grid member suspended within said ductwork, the grid member disposed perpendicular to the direction of the flow of gas at said grid member; and
- (b) means for dispensing a selected flow rate (L) of liquid onto said grid member(s),

said grid member(s) constructed, having a cross sectional profile ideally equal to the sum of the predetermined theoretical velocity pressure profile of the gas flowing in said interconnecting ductwork and the static and dynamic head of the

dispensed liquid, said liquid dispensed onto the concave side of said grid member, said selected liquid flow rate (L) for a given average gas velocity at least sufficient to result in a controlled fluidization bed above the concave side of said grid member.

4,432,915

METHOD FOR PRODUCING NUCLEAR FUEL PELLETS, AND PRODUCT THEREOF

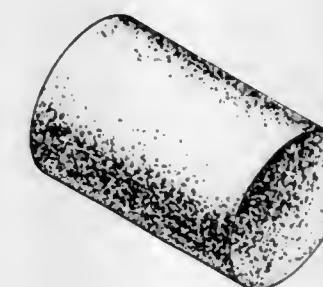
Timothy J. Gallivan, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Mar. 22, 1982, Ser. No. 360,630

Int. Cl.³ G21C 21/00

U.S. Cl. 264-0.5

21 Claims



1. A method for producing fissionable nuclear fuel pellets containing uranium oxide, comprising the steps of:

- (a) admixing a powdered nuclear fuel material containing uranium oxide with a fugitive binder comprising a polyfunctional acid having both an organic acid group and an alcohol group to provide a substantially uniform dispersion of said binder within the powdered nuclear fuel material; and
- (b) forming the resulting admixture by pressing into a coherent body.

4,432,916

METHOD AND APPARATUS FOR THE ELECTROSTATIC ORIENTATION OF PARTICULATE MATERIALS

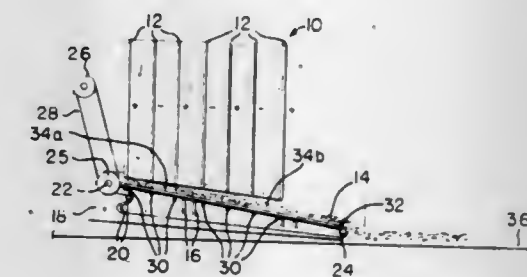
James D. Logan, Whitman County, Wash., assignor to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Filed Jan. 15, 1982, Ser. No. 339,404

Int. Cl.³ B06B 1/02

U.S. Cl. 264-24

16 Claims



1. A method of forming a mat of directionally oriented discrete pieces of material on a mat-support surface, comprising depositing a multitude of the discrete pieces of material on the mat-support surface in a mat-forming zone,

causing an electric current to flow through the deposited mat to produce a directional electric field immediately above the mat in the direction of desired orientation of the pieces, the electric field tending to cause the pieces to orient their length dimensions in the direction of the electric field, and

varying the strength of the electric field along the length of the mat-support surface in the direction of material flow thereof to achieve a desired surface potential distribution

4,432,924

PROCESS FOR PRODUCING AN ELECTRICALLY CONDUCTIVE MONOFILAMENT

Kenji Umehara, Funabashi; Hiroshi Takeda, Narashino, and Susumu Tomidokoro, Funabashi, all of Japan, assignors to Lion Corporation, Tokyo, Japan

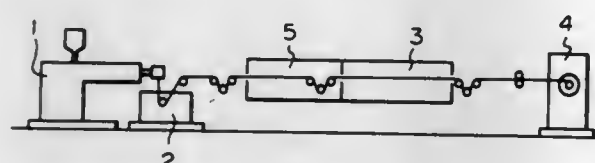
Filed Apr. 9, 1982, Ser. No. 366,995

Claims priority, application Japan, Apr. 10, 1981, 56-54082; Jun. 12, 1981, 56-90302

Int. Cl.³ D01D 5/12

U.S. Cl. 264—210.8

3 Claims



1. A process for producing an electrically conductive thermoplastic resin monofilament containing an electrically conductive carbon black through extrusion, cooling, and orientation steps, wherein the temperature of the monofilament in the orientation step is within the range of from 60° C. less than to 5° C. less than the melting point of the thermoplastic resin, and orientation is carried out at a stretching strain rate of 5000%/min or less.

4,432,925

COMPOSITE PISTON RING AND PROCESS

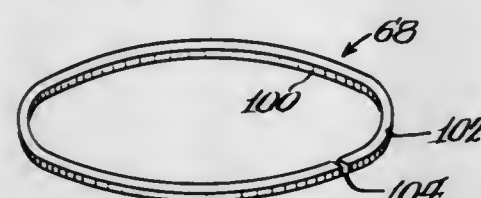
Matthew W. Holtzberg, Ringwood, N.J., and Lawrence D. Spaulding, Naperville, Ill., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,363

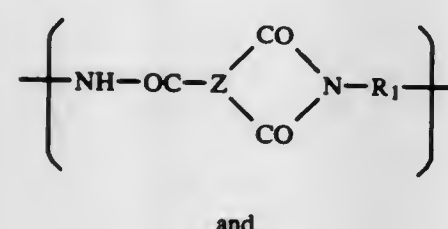
Int. Cl.³ F16J 9/28

U.S. Cl. 264—235

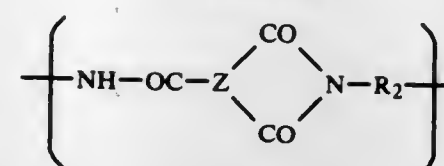
26 Claims



1. A composite engine part comprising: a thermoplastic, amide-imide resinous polymeric piston ring having an inner piston-engaging surface for snap-fitting interlocking engagement with a piston and an outer bearing surface for reciprocatingly sliding against a wall of an engine cylinder, said thermoplastic piston ring providing an oil and exhaust gas-imperious barrier and seal between said piston and said cylinder wall for substantially preventing passage of oil and gas exhaust gases therethrough, said piston ring defining a generally radial access opening, said piston-engaging surface having a diameter slightly smaller than the groove-defining piston surface on which it fits, said piston ring comprising a reaction product of a trifunctional carboxylic acid compound and at least one diprimary aromatic diamine, said piston ring further comprising at least one of the following moieties:



-continued



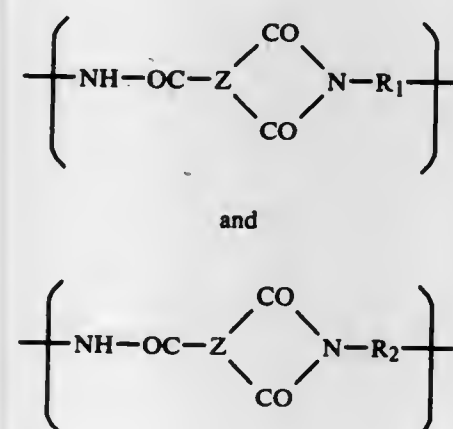
wherein one carbonyl group is meta to and one carbonyl group is para to each amide group and wherein Z is a trivalent benzene ring or lower-alkyl-substituted trivalent benzene ring, R₁ and R₂ are different and are divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms or two divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, —SO₂—, and —S— radicals and wherein said R₁ and R₂ containing units run from about 10 mole percent R₁ containing unit and about 90 mole percent R₂ containing unit to about 90 mole percent R₁ containing unit and about 10 mole percent R₂ containing unit, and said amide-imide resinous polymeric piston ring comprising at least one of said moieties substantially maintaining its shape and structural integrity at engine operating conditions.

16. A process for forming a composite piston ring for use in an engine, comprising the steps of:

molding a thermoplastic amide-imide resinous polymer to form a piston ring having an inner piston-engaging surface for snap fitting interlocking engagement with a piston and an outer bearing surface for reciprocatingly sliding against a wall of an engine cylinder;

preparing said amide-imide polymer by reacting a trifunctional carboxylic acid compound with at least one diprimary aromatic diamine;

said amide-imide polymer comprising one of the following moieties:



wherein one carbonyl group is meta to and one carbonyl group is para to each amide group and wherein Z is a trivalent benzene ring or lower-alkyl-substituted trivalent benzene ring, R₁ and R₂ are different and are divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms or two divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, —SO₂—, and —S— radicals and wherein said R₁ and R₂ containing units run from about 10 mole percent R₁ containing unit and about 90 mole percent R₂ containing unit to about 90 mole percent R₁ containing unit and about 10 mole percent R₂ containing unit; allowing said molded piston ring to cool below its plastic deformation temperature; and post curing said piston ring by solid state polymerization to enhance the strength and integrity of said piston ring.

4,432,926

METHOD AND APPARATUS FOR IMPARTING TWO-WAY PROPERTIES TO FLEXIBLE WEBS

Jan van Tilburg, deceased, late of London, England, by Yolande Eve van Tilburg, London, England, administrator

PCT No. PCT/GB80/00202, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01426, PCT Pub. Date May 28, 1981

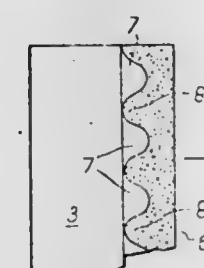
PCT Filed Nov. 24, 1980, Ser. No. 287,729

Claims priority, application United Kingdom, Nov. 23, 1979, 7940516

Int. Cl.³ B29C 17/00; D06C 21/00

U.S. Cl. 264—282

15 Claims



1. A method of treating a flexible web to uniquely compress the web and thereby impart a two way stretch to the web, said method comprising:

(a) continuously driving a web longitudinally in and through a retarding treatment zone;

(b) compressing the web in a retarding treatment zone between a pair of opposed surfaces, at least one of which is rough with respect to the other;

(c) withdrawing the web in a longitudinal direction while restraining alternately spaced portions of the web to create a stretch property in the web that is transverse to the longitudinal direction;

whereby the web, when withdrawn from the restraining area, will have a unique two dimensional stretch property.

7. An apparatus for treating a flexible web to uniquely compress the web and thereby impart a two way stretch to the web, said apparatus comprising:

(a) a retarding treatment zone defined by closely spaced opposed surfaces, at least one of which is stationary for retardingly engaging the flexible web as it passes through the treatment zone;

(b) a drive means for continuously advancing a longitudinal and flexible web into and through the retarding treatment zone;

(c) means for restraining periodically spaced portions of the web as it is withdrawn from the retarding treatment zone, said spaced portions being spaced transverse to the longitudinal dimension of the web;

whereby the web, when withdrawn from the restraining area will have a unique two dimensional stretch property.

4,432,927

CREPING MACHINE AND METHOD

Jan van Tilburg, deceased, late of London, England, and by Yolande E. van Tilburg, administrator, 6 Clarendon Gardens, London W9 1A1 England

PCT No. PCT/GB80/00109, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/00082, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 30, 1980, Ser. No. 243,945

Claims priority, application United Kingdom, Jun. 28, 1979, 7922445

Int. Cl.³ B31F 1/14; D06C 21/00

U.S. Cl. 264—282

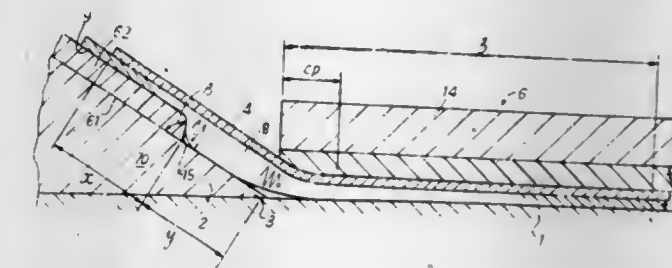
10 Claims

1. A creping machine for high speed microcreping sheet material, said machine comprising:

(a) a single carrier roll which is driven, said roll having a circumferential surface for advancing the sheet material;

(b) a stationary blade assembly positioned to press sheet material into entrained engagement with the circumferential surface of the carrier roll;

(c) a stationary retarder mounted downstream from a point of contact with the circumferential surface of the carrier roll, said retarder removing said sheet material from its entrained engagement with said carrier roll, said retarder having a discharge plane over which the sheet material



passes after disengagement from said circumferential surface;

(d) a single transverse upstream facing wall, said wall defining an angle of 60° to 120° from the discharge plane of said retarder;

(e) a resilient spring blade mounted in said stationary blade assembly, said spring blade projecting downstream from said assembly at least as far as said upstanding wall; whereby said roll, said wall and said spring blade define a creping zone therebetween for microcreping sheet material.

4,432,928

PROCESS OF MOULDING FILLED CURABLE COMPOSITIONS

John Barnard, Letchworth, and Sandor Z. M. Padanyi, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 5, 1982, Ser. No. 375,221

Claims priority, application United Kingdom, May 14, 1981, 8114968

Int. Cl.³ B29F 1/08

U.S. Cl. 264—519

6 Claims

1. A method of moulding a shaped article from a filled, curable composition having a viscosity of less than 50 poise at the temperature at which the composition is to be moulded and containing at least 20% by volume of a finely divided filler in which the composition is cured in a mould comprising at least two mould parts defining a cavity at least one of said mould parts being at a temperature of at least 70° C. wherein prior to introducing the curable composition into the mould cavity, the pressure inside the cavity is increased above atmospheric pressure, the dispersion is injected into the mould against this pressure and is subsequently cured.

4,432,929

PULSED NEUTRON GENERATOR TUBE POWER CONTROL CIRCUIT

James R. Bridges, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 17, 1981, Ser. No. 284,297

Int. Cl.³ G21G 4/02

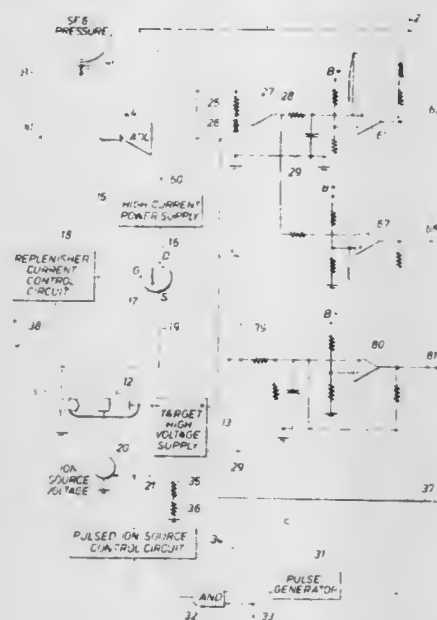
U.S. Cl. 376—119

12 Claims

1. A protective system to be used with a neutron generator tube having an ion source, a target and a replenisher in well logging apparatus wherein the tube operates with a high voltage supply for keeping the target at high voltage, a replenisher current in a specified range, an ion source, and wherein a target current of a specified value in said generator tube is desired for efficient operation of said tube, the apparatus comprising:

(a) first means for monitoring target current in said generator tube and for generating a signal representative thereof;

- (b) second means for monitoring ion source pulses in said generator tube and forming a signal representative thereof;
- (c) third means for monitoring replenisher current flow in said generator tube and forming a signal representative thereof; and
- (d) fourth means responsive to signals from said first, second and third means for enabling application of high voltage



power to the neutron tube to activate said neutron generator tube to an operative state, said fourth means continuing in operation in response to said first, second and third signals input thereto for the duration of operation of the neutron tube, and additionally forming enable signals indicative of the continued operation of the neutron tube within specified limits for input to said high voltage supply.

4,432,930

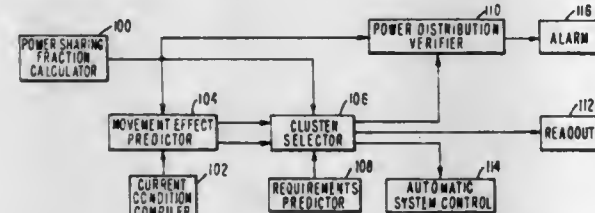
SPECTRAL SHIFT REACTOR CONTROL METHOD
Albert J. Impink, Jr., Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,054

Int. Cl.³ G21C 7/00

U.S. Cl. 376-215

6 Claims



1. A method of operating a nuclear reactor comprising: determining the current power density of each core zone; predicting the anticipated reactivity change of each of said core zones after movement of the corresponding reactor coolant displacer elements, based on the equation

$$\Delta R = K \times BU \times APD$$

where

ΔR = reactivity change of the core zone resulting from the movement of the corresponding displacer element;

APD = core zone power density before movement of the corresponding displacer element;

BU = burnup in MWD/MTU; and

K = a constant;

determining the reactivity change needed to achieve the desired reactor core power level;

- selecting an appropriate displacer element for movement to attain the desired reactivity change; and moving said selected displacer element relative to said core for attaining the desired reactor core power level.

4,432,931

INSPECTION SYSTEM

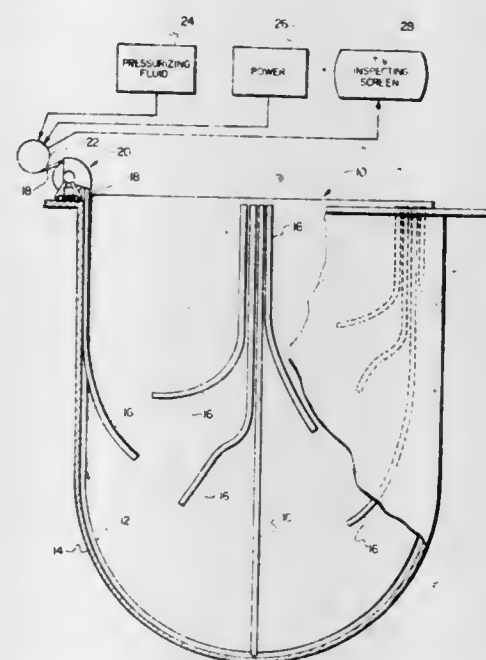
John L. Lockett, Chatsworth, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 2, 1981, Ser. No. 307,975

Int. Cl.³ G21C 17/08

U.S. Cl. 376-248

10 Claims



1. A system for remote visual inspection of a structure comprising: a primary vessel surrounded by a containment vessel; at least one substantially rigid fixed conduit member terminating at a first end adjacent an upper portion of said vessels and a second end adjacent an area to be inspected, said conduit member being provided with at least one aperture in the wall thereof adjacent the area to be inspected;

a housing containing a camera and a light source for insertion into said first end of said conduit member; means for controlling the temperature of said camera; support means for said housing, said support means including at least a first hollow, flexible hose member having a first end connected to said housing and a second end attached to a spool assembly positioned adjacent said upper portion of said vessels;

means for supplying electrical power to said camera and light source and for transmitting signals from said camera; display means for receiving signals from said camera; pressurizing means for introducing a fluid into said flexible hose member in an amount sufficient to provide a desired amount of rigidity to the hose member to facilitate movement of said housing and hose member through the rigid fixed conduit member and;

means for driving said support means into said conduit member to position said housing adjacent the area to be inspected.

4,432,932

REACTOR HEAD SHIELDING SYSTEM

Earl B. Jacobson, 510 S. Shore Dr., Crystal Lake, Ill. 60014, assignor to Earl B. Jacobson, Crystal Lake, Ill.

Filed Nov. 10, 1980, Ser. No. 207,183

Int. Cl.³ G21C 11/00

U.S. Cl. 376-287

6 Claims

1. A reactor head shielding system for a nuclear power

reactor head, said system comprising: a nuclear power reactor head;

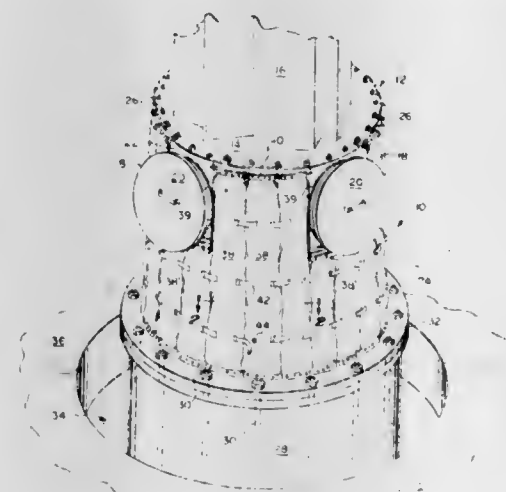
a plurality of flexible shielding means secured to said reactor head in an interleaved manner to form a double layer of said shielding means at all points around the covered portion of said reactor head, said plurality of shielding means substantially covering said reactor head on at least a substantial portion around the sides of said reactor head for substantially negating radiation exposure;

each of said shielding means including an offset configuration for interleaving along the length thereof with adjacent ones of said shielding means around the reactor head, said offset configuration formed by at least two sleeves secured and assembled together, each of said sleeves being secured to one another longitudinally along the length thereof to form a sealed seam therebetween and offset transversely to one another so as to enable the formation of said interleaved double layer of said shielding means at

said hollow sphere having a diameter not greater than two millimeters, and a quantity of a fuel including at least one



isotope of hydrogen contained within the interior of said hollow sphere in an amount sufficient to possess a pressure of at least ten atmospheres at room temperature.



4,432,934

DISPLACER ROD FOR USE IN A MECHANICAL SPECTRAL SHIFT REACTOR

Robert K. Gjertsen, Monroeville; John F. Wilson, Murrysville, and Raymond A. George, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,052

Int. Cl.³ G21C 7/26

U.S. Cl. 376-333

9 Claims

all points around said covered portion of said reactor head when said shielding means are juxtaposed to one another and secured longitudinally to each other and to said reactor head sufficiently to substantially eliminate any direct radiation paths between said juxtaposed shielding means; each of said sleeves including therein a pair of radiation attenuating blankets secured and assembled within an outer casing, said casings secured to one another longitudinally along the length thereof, each of said blankets and casings being secured transversely and longitudinally within its respective sleeve to eliminate any shifting and settling of radiation attenuating material when said shielding means are secured to said reactor head; and each of said shielding means including assembly means for detachably securing said shielding means to said reactor head, said assembly means including a mounting plate and plate-type means to secure one end of each of said two sleeves to said mounting plate in said offset configuration.

4,432,933

PROCESS FOR THE FABRICATION OF THERMONUCLEAR FUEL PELLETS AND THE PRODUCT THEREOF

Robert J. Teitel, and David E. Solomon, both of Ann Arbor, Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 339,558, Mar. 9, 1973, abandoned. This application Apr. 9, 1976, Ser. No. 675,530

Int. Cl.³ G21B 1/00; G21C 3/04

U.S. Cl. 376-152

12 Claims

1. A nuclear fuel pellet which comprises a hollow sphere having a homogeneously integral and continuous wall consisting essentially of at least one of the group of glass, ceramic, metal and plastic materials, said wall having a permeability rate for hydrogen isotopes which decreases with decreasing temperature and is sufficiently low at room temperature and one atmosphere pressure to retain within said sphere hydrogen isotopes at pressures of at least ten atmospheres, said wall of

1. A pressurized water nuclear reactor having low neutron absorbing displacer rods for selectively displacing reactor coolant, said displacer rods comprising:

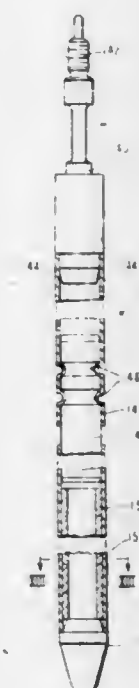
a top end plug;

a hollow stainless steel first tube attached at one end to said top end plug;

a solid Zircaloy mid rod extension attached at one end to said first tube;

a hollow Zircaloy second tube attached at one end to said mid rod extension; and

a bottom end plug attached to said second tube for displacing said reactor coolant when inserted into the core of said reactor.



4,432,935

METHOD OF PRODUCING POROUS BODY FOR SOLID ELECTROLYTIC CAPACITOR

Yoshimi Kubo; Shigeaki Shimizu; Tetsuo Suzuki, and Hitoshi Igarashi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,346

Claims priority, application Japan, Apr. 2, 1980, 55-43326

Int. Cl.³ B22B 3/16

U.S. Cl. 419-2

2 Claims

1. A method of producing a porous body for a solid electrolytic capacitor comprising the steps of: mixing powdered titanium hydride expressed by the general formula TiH_x (where $2 \leq x < 0.5$) and powdered aluminum, compression-molding the mixture to form an article, dehydrogenating the compression-molded article at a temperature of 400° to 500° C. for thirty to sixty minutes, subjecting the dehydrogenated, molded article to an alloying reaction at a temperature which is higher than 500° C. and below the melting point of aluminum for about one hour, and holding the alloyed article at a temperature of about 1000° for a predetermined period.

4,432,936

METHOD FOR ADDING INSOLUBLE MATERIAL TO A LIQUID OR PARTIALLY LIQUID METAL

Earl K. Keith, Clute, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1982, Ser. No. 412,349

Int. Cl.³ C22C 1/02, 32/00

U.S. Cl. 420-590

9 Claims

1. A method for adding substantially insoluble material to an at least partially liquid metal comprising:

- providing combination of a first metal having discrete degenerate dendrites and a plurality of substantially insoluble particles at least partially suspended in the first metal;
- mixing the composite with a second metal at a temperature greater than the solidus temperature of both the first metal and the second metal, said second metal being capable of forming a dendritic structure upon cooling from a liquid state to a solid state; and
- solidifying the mixture into a dendritic structure having a plurality of substantially insoluble particles at least partially suspended in the structure.

4,432,937

ZINC ALLOY FOR USE WITH ELECTRODE

Kenta Kuwayama, Tokyo; Junzo Nakagawa; Keishi Tomii, both of Annaka, and Kenji Hagimori, Takasaki, all of Japan, assignors to Toho Aen Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,102

Claims priority, application Japan, Aug. 11, 1981, 56-124743

Int. Cl.³ C22C 18/00

U.S. Cl. 420-513

4 Claims

1. A zinc alloy for use with an electrode comprising more than 0.01% of gallium and more than 0.01% of indium.

4,432,938

APPARATUS FOR CREATING A FLOW OF AIR PAST A PRODUCT CAPABLE OF BEING VAPORIZED

Murray O. Meetze, Jr., Columbia, S.C., assignor to Risdon Enterprises, Inc., Columbia, S.C.

Filed Apr. 30, 1981, Ser. No. 259,070

Int. Cl.³ A61L 9/12

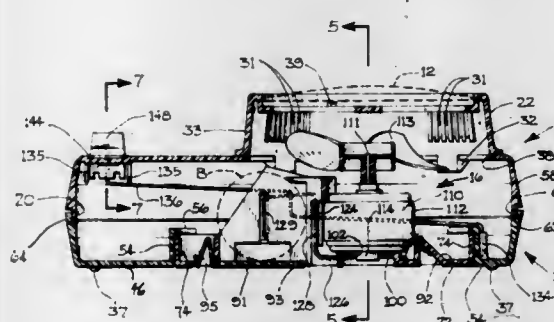
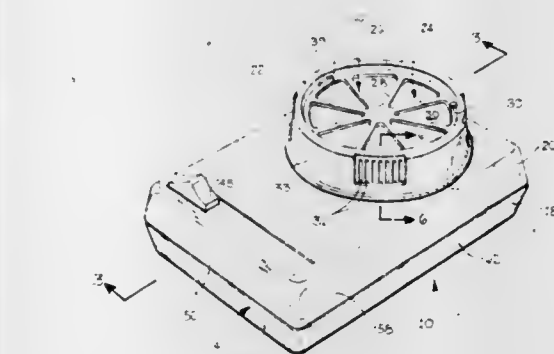
U.S. Cl. 422-49

17 Claims

1. An improved apparatus, for creating a flow of air past a product capable of being vaporized, powered by a battery having one terminal at each axially opposed end thereof, said apparatus comprising:

- a housing including a plurality of exterior walls defining an enclosed interior space with an access opening into said space and further defining an air intake port, an air discharge port, and a path for flow of air between said intake

and discharge ports; said housing further including means for supporting said product in said path; and
a mechanism, for creating air flow along said path, made as an integrated structure for assembly as a unit with said housing, said structurally integral mechanism including
(a) a direct current electric motor having two electrical contact lugs projecting from one end thereof and a rotary shaft projecting from an opposite end thereof;
(b) a fan mounted on said shaft to be driven by said motor;
(c) two resilient wire connectors each for connecting one lug of said motor to one terminal of a battery, the resilient characteristic of said connectors providing for effective electrical contact of said lugs to the terminals of a battery without further need for additional mechanical or soldered affixing means;



(d) a chassis comprising a base, means for mounting said motor on said base with said lugs in fixed position relative to one side of said base, a pair of partitions standing upwardly from said one side of said base and spaced by a distance slightly greater than the distance between the terminals of a battery to thereby define a battery compartment, and means for mounting each wire connector with one portion thereof resiliently urged against one lug of said motor and a second portion thereof resiliently urged to a location in said compartment for contacting one terminal of said battery; said chassis further being shaped and dimensioned to received in said access opening with the side of said base opposite said one side constituting a generally continuous extension of said exterior walls and with said motor, said fan, said connectors and said battery compartment positioned within said space and said fan located to create air flow along said path.

4,432,939

AMMONIA GAS ANALYZER

Atsuo Watanabe; Teruo Kaneko; Takeo Tanaka, and Yoshio Saito, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

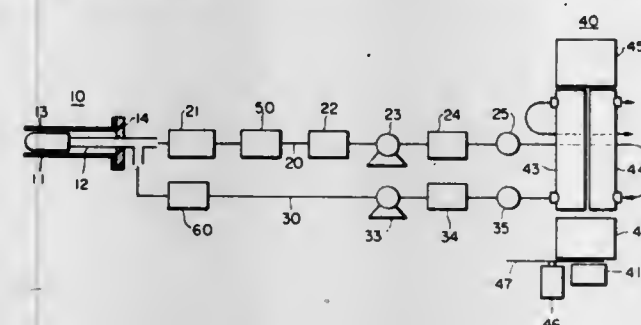
Filed Apr. 3, 1981, Ser. No. 250,790

Claims priority, application Japan, Apr. 14, 1980, 55-48815; Apr. 14, 1980, 55-50358[U]

Int. Cl.³ G01N 31/10, 21/00

U.S. Cl. 422-93

3 Claims



1. An ammonia gas analyzer comprising gas sampling means, a measuring gas channel connected to said gas sampling means, a comparison gas channel connected to said gas sampling means parallel to said measuring gas channel, said measuring gas channel including an NH_3/NO converter for converting NH_3 contained in a sample gas into NO and measuring means connected to said channels for measuring the concentration of NH_3 in the gas sampled by said gas sampling means by comparing the amount of NO in said measuring gas channel after conversion of the NH_3 with respect to the amount of NO in said comparison gas channel, a first sulphuric acid converter located in said comparison gas channel intermediate said sampling means and said measuring means and a second sulphuric acid converter located in said measuring gas channel intermediate said NH_3/NO converter and said measuring means for converting sulfuric compounds in said sample gas into sulfur dioxide.

4,432,940

REACTOR

Edward J. Buylas, Chester, Va.; Hugh H. Rowan, Chapel Hill, and Steven A. Young, Cary, both of N.C.; David Pendleburg, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

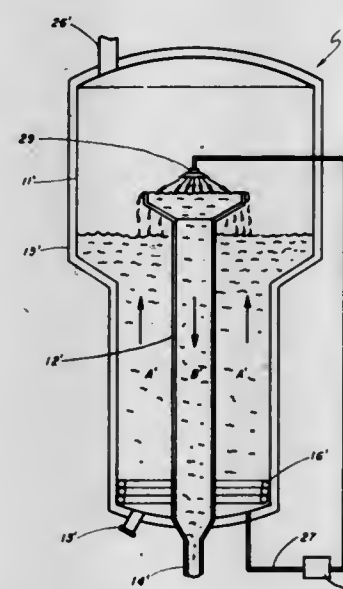
Corporation, Morris Township, Morris County, N.J.

Filed Mar. 15, 1982, Ser. No. 358,177

Int. Cl.³ C07C 69/82

U.S. Cl. 422-135

6 Claims



1. In a reactor, for the continuous polymerization of feed materials to higher viscosity process fluid, comprising a vertical, hollow vessel having an inlet for the introduction of feed

materials, an outlet for the discharge of process product and an exhaust for reaction vapors; means for heating the vessel; and an annular wall within the vessel attached thereto at its base and forming in conjunction therewith at least two reaction stages, the first stage being disposed between the wall and the vessel with the inlet opening thereto, the last stage being confined by the wall with the outlet discharging therefrom; the improvement comprising:

a recycle loop, connected to draw from the first stage for circulation of process fluid to be discharged just above and into the last stage by discharge means; whereby feed materials are introduced through the inlet to the first stage, circulated therefrom by the recycle loop to be discharged by discharge means just above and into the last stage, some of the process fluid in the last stage overflowing ultimately into the first stage to be recirculated and some of the process fluid in the last stage exiting to travel to the next reactor.

4,432,941

APPARATUS FOR THE DISTILLATION AND THERMAL CRACKING OF A CRUDE OIL FEEDSTOCK AND A REACTOR FOR USE THEREIN

Peter Spencer, 9 Links Close, Ashstead, Surrey, England

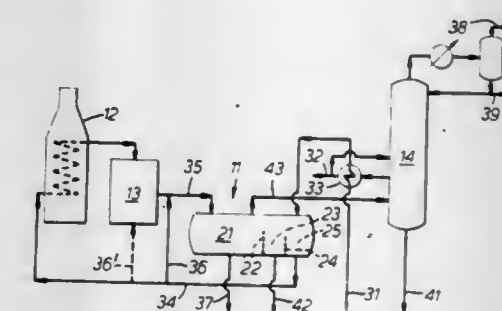
Filed Oct. 13, 1981, Ser. No. 311,018

Claims priority, application United Kingdom, Oct. 13, 1980, 8033027; Nov. 11, 1980, 8036126; Feb. 26, 1981, 8106098

Int. Cl.³ C10G 9/08

U.S. Cl. 422-140

8 Claims



1. Apparatus for the distillation and thermal cracking of a crude oil feedstock, said apparatus comprising:

- a distillation column;
- a reactor comprising:
 - an outer vessel;
 - an inner vessel located within said outer vessel, said inner vessel having an opening at its base to allow cracked products, including coke, to leave said inner vessel and to enter said outer vessel;
 - a liquid feedstock inlet in said inner vessel;
 - a gas outlet from said inner vessel;
 - one or more cracked products outlets leading from said outer vessel;
 - a discharge port near the bottom of said outer vessel for the discharge of coke; and
 - means for cooling the contents of said outer vessel;
- a separation vessel comprising:
 - a feedstock inlet;
 - a gas outlet leading to said distillation column;
 - a cracked products inlet leading from at least one of said one or more cracked products outlets leading from said outer vessel; and
 - a liquid outlet leading to said liquid feedstock inlet in said inner vessel;
- means for heating liquid withdrawn from said separation vessel liquid outlet prior to entry into said inner vessel; and
- means for cooling cracked products withdrawn from said one of said cracked products outlets in said outer vessel prior to entry into said separation vessel.

4,432,942

APPARATUS FOR FILLING A CONTAINER WITH RADIOACTIVE SOLID WASTES

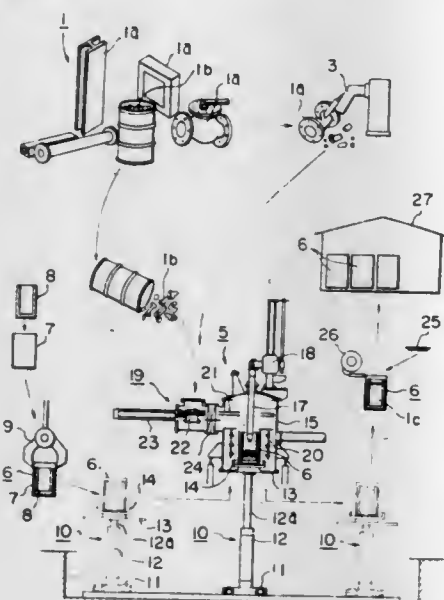
Toshio Adachi, 63 Omotedai Tenpaku-ken, Nagoya-shi, Aichi-ken, and Susumu Hiratake, 1662-9 Kizuki-cho, Kasugai-shi, Aichi-ken, both of Japan

Filed Oct. 13, 1981, Ser. No. 310,719

Claims priority, application Japan, Jan. 27, 1979, 54-8325

Int. Cl.³ G21F 9/30

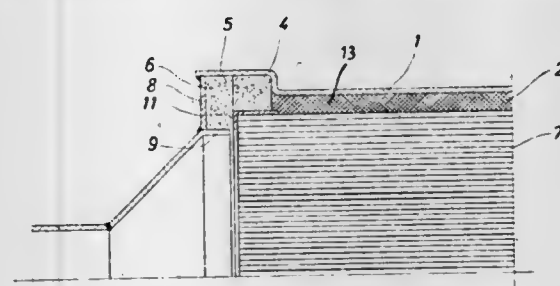
U.S. Cl. 422-159



5 Claims

opposed end edges and having one compressed metallic body ring in contact with the side portions of the end edges absorbing radial forces and one compressed metallic body ring in contact with the end portions of the end edges absorbing axial forces, said rings being disposed at said end edges in contact with the housing, and supporting and protecting rings of thin sheet metal disposed between and in contact with said rings and said end portion edges.

3. In a catalyzer for detoxifying exhaust gases from an internal combustion engine, wherein a monolithic catalyst body having an outer surface and facing ends is supported in a housing having an inner surface, by support means arranged between said inner surface of said housing and said outer surface of said monolithic catalyst body, the improvement comprising



said support means comprising elastically yielding means, and holding means for locating said elastically yielding means at least partially between each facing end of said monolithic catalyst body and the inner surface of said housing, whereby the monolithic catalyst body is elastically restrained in said housing against movement in all three dimensions of space, wherein said elastically yielding means are elastically deformable, heat resistant wire mesh damping rings having an inner diameter, said holding means comprising inner supporting means located in said housing for holding said rings at the respective inner diameter thereof whereby the damping rings are securely seated on the respective inner supporting means and thus between the inner housing surface and the respective facing end of the monolithic catalyst body.

4,432,944

ION EXCHANGE RECOVERY OF URANIUM

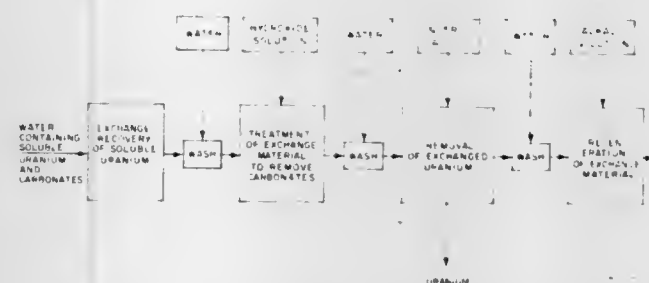
Henry H. Elliott, Pleasanton, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 22, 1980, Ser. No. 218,351

Int. Cl.³ C01G 43/00

U.S. Cl. 423-7

23 Claims



1. A process for recovering soluble uranium with an ion exchange material from carbonate-containing water, comprising the combination and sequence of steps of:

(a) contacting carbonate-containing water having soluble uranium therein with a mass of ion exchange material charged with at least one exchangeable ion selected from the group consisting of hydroxyl, carbonate and bicarbonate ions, and thereby removing and retaining thereon uranium ions from said carbonate-containing water;

(b) treating the mass of ion exchange material having the uranium ions retained thereon by passing therethrough a solution of a hydroxide selected from the group consisting of a

4,432,943

ELASTIC SUSPENSION FOR A MONOLITHIC CATALYST BODY IN A EXHAUST GAS CLEANING DEVICE

Reimar Musall, Burgdorf, and Wilhelm Wolsing, Hanover, both of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 376,338, Jul. 5, 1973, Pat. No. 4,328,187. This application May 19, 1975, Ser. No. 578,712

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1972, 2233886

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ F01N 3/15; B01J 8/02

U.S. Cl. 422-179

14 Claims

1. Device for the purification of waste gases of internal combustion engines comprising a housing having an inlet and an outlet and having at least one monolith through which the waste gases flow and which is disposed in said housing between said inlet and outlet, said at least one monolith having

metal hydroxide and ammonium hydroxide to expel any carbonate contained therein; and
(c) removing the retained ions comprising uranium from the ion exchange material by contacting said material with an acid and recovering the uranium.

4,432,945

REMOVING OXYGEN FROM A SOLVENT EXTRACTANT IN AN URANIUM RECOVERY PROCESS

Fred J. Hurst, Oak Ridge; Gilbert M. Brown, Knoxville, and Franz A. Posey, Concord, all of Tenn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 4, 1981, Ser. No. 318,081

Int. Cl.³ C01G 43/00

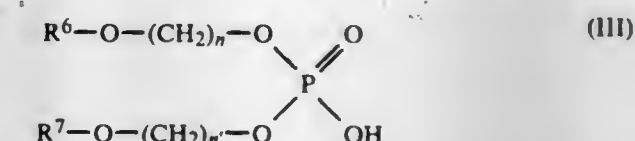
U.S. Cl. 423-10

8 Claims

1. In a method for effecting the selective recovery of uranium from a wet-process phosphoric acid solution by solvent extraction comprising the steps of contacting said solution with an organic solvent extractant containing dissolved oxygen to extract uranium from said solution and thereafter stripping the extracted uranium from the extractant by contacting the solvent mixture with a reductive strip solution of phosphoric acid and ferrous ion; the improvement comprising sparging said extractant with a nonoxidizing gas, thereby removing sufficient deleterious dissolved oxygen therefrom prior to contact with said reductive strip solution to effectively decrease the consumption of ferrous ion in the stripping step.



in which R^1 , R^2 and R^3 , are selected from the group consisting of alkyl, aryl or alkoxyalkyl radicals, and
(b) an acid organophosphorus compound of the formula



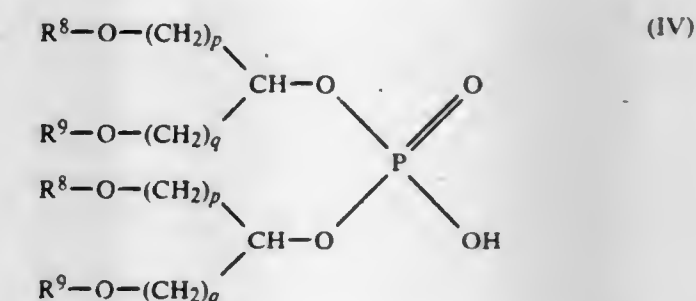
in which R^6 and R^7 , which are selected from the group consisting of alkyl or aryl radicals, and n and n' , which can be identical or different are numbers equal to 2 or 3.

5. A process for the recovery of uranium (IV) present in a phosphoric acid solution by contacting the said solution with an organic solvent able to extract the uranium, wherein the organic solvent comprises a system of extractants respectively constituted by:

(a) a neutral phosphine oxide of the formula:



in which R^1 , R^2 and R^3 , are selected from the group consisting of alkyl, aryl or alkoxyalkyl radicals, and
(b) an acid organophosphorus compound of formula



in which R^8 and R^9 , are selected from the group consisting of alkyl or aryl radicals, and p and q which can be the same or different, are equal to 1 or 2.

4,432,947

PROCESS FOR OBTAINING MOLYBDENUM AS A USEFUL PRODUCT FROM MOLYBDENIFEROUS SOLUTIONS CONTAINING ALKALI METAL CARBONATE, SULPHATE, HYDROXIDE OR HYDROGEN CARBONATE AND POSSIBLY URANIUM

Pierre Maurel, Aix-en-Provence, France, assignor to Uranium Pechiney Ugine Kuhlmann, France

Filed Jul. 16, 1982, Ser. No. 398,831

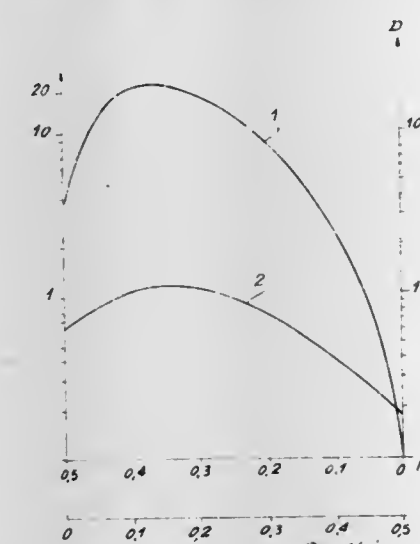
Claims priority, application France, Jul. 31, 1981, 81 15244

Int. Cl.³ C01G 39/02

U.S. Cl. 423-55

11 Claims

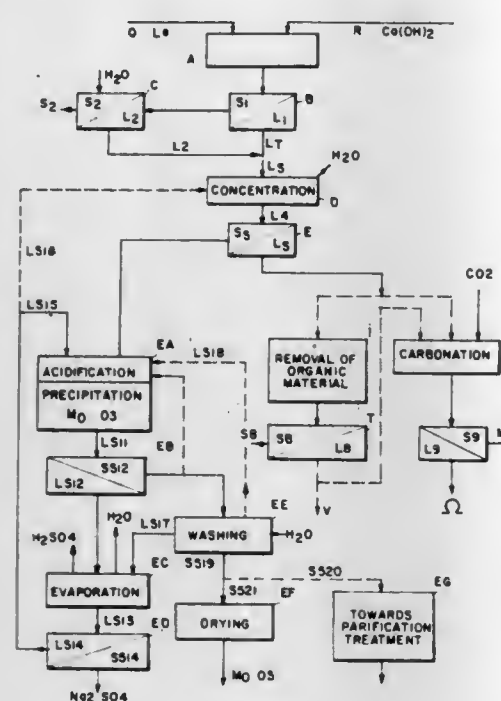
1. A process for obtaining molybdenum as a useful product from aqueous solutions to be purified, which contains, besides said molybdenum, alkali metal carbonate, sulphate, hydroxide or hydrogen carbonate, comprising adding lime to the solution for reaction at a temperature below the boiling point temperature of the solution to precipitate insoluble calcium salts as a first precipitate, separating the precipitate from the remaining alkali metal hydroxide-enriched liquor, concentrating the remaining liquor by evaporation to provide a level wherein the



1. A process for the recovery of uranium (VI) present in a phosphoric acid solution by contacting the said solution with an organic solvent able to extract the uranium, wherein the organic solvent comprises a system of extractants respectively constituted by:

(a) a neutral phosphine oxide of the formula:

alkali metal hydroxide is present in an amount up to 50% by weight to produce a second precipitate containing a mixture of alkali metal molybdate and sulphate, separating the second



precipitate, dispersing the separated precipitate mixture in an acidic aqueous liquor, heating the dispersion under pressure to cause precipitation of anhydrous MoO_3 from the remaining liquor containing alkali metal sulphate.

4,432,948

RECOVERY OF YTTRIUM AND EUROPIUM FROM CONTAMINATED SOLUTIONS

Herman R. Heytmeijer, Whippany, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 403,460, Jul. 30, 1982, Pat. No. 4,386,056. This application Oct. 20, 1982, Ser. No. 435,439. The portion of the term of this patent subsequent to May 13, 2000, has been disclaimed.

Int. Cl.³ C01F 17/00

U.S. Cl. 423-21.5

3 Claims

1. A method for recovering dissolved yttrium and europium from a solution including same, but which is contaminated with other ions, said method comprising:
 - adding to said contaminated solution hydrogen peroxide in predetermined amount and concentration sufficient to maintain the europium ions in the trivalent state, passing the resultant solution through a cation resin exchange column at least until the effluent yttrium and europium concentrations and contaminant concentrations are substantially the same as those in said contaminated solution,
 - eluting said exchange column with deionized water to remove therefrom residual contaminated solution,
 - stripping said exchange column by rinsing same with a predetermined amount of inorganic acid solution of sufficient strength to strip the yttrium and europium from the exchange column resin to obtain a strip solution,
 - rinsing said exchange column with deionized water to obtain a rinse solution,
 - combining said strip and rinse solutions to form a value solution,
 - heating said value solution to a predetermined temperature and adding thereto a predetermined amount of oxalic acid to precipitate yttrium oxalate and europium oxalate therefrom,
 - collecting said precipitate of yttrium oxalate and europium oxalate and rinsing same to remove possible residual contaminants, drying, and firing said precipitate to form the recovered yttrium oxide and europium oxide.

4,432,949 RECOVERY OF COBALT, MOLYBDENUM, NICKEL AND VANADIUM FROM AN AQUEOUS AMMONIA AND AMMONIUM SALT SOLUTION BY PRECIPITATING VANADIUM AND SUBSEQUENT SERIAL ION EXCHANGE

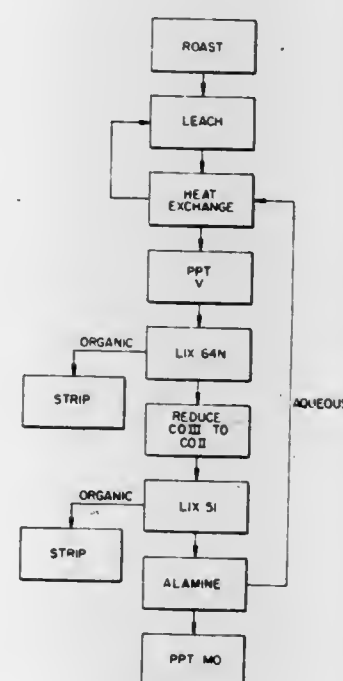
Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,988

Int. Cl.³ C01G 39/00, 41/00, 51/00, 31/00

U.S. Cl. 423-54

2 Claims



1. A process for separating metal values from an ammoniacal ammonium aqueous solution containing:
 - (i) vanadium;
 - (ii) at least one metal value selected from the group consisting of cobalt and nickel;
 - (iii) at least one metal value selected from the group consisting of molybdenum and tungsten; comprising the steps of:
 - (a) precipitating vanadium values by cooling the solution to about 0°-30° C.
 - (b) transferring nickel values from said solution into a first organic extractant comprising a hydroxyoxime;
 - (c) reducing cobalt values in said solution to the divalent state;
 - (d) transferring said divalent cobalt into a second organic extractant selected from the group consisting of oximes, dioximes and diketones;
 - (e) transferring molybdenum and tungsten metal values from said solution into a third organic extractant comprising a tertiary amine, and
 - (f) stripping each of said organic solutions with an aqueous stripping solution to form a metal-containing aqueous solution.

4,432,950

RECOVERY OF REFRACTORY METAL VALUES FROM SCRAP CEMENTED CARBIDE

Clarence D. Vanderpool; Richard A. Scheithauer, and Richard G. Warmington, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 16, 1982, Ser. No. 419,094

Int. Cl.³ C01G 41/00

U.S. Cl. 423-61

1 Claim

1. A process for recovering refractory metal values from a tungsten carbide body cemented with a metal binder wherein said body has an aluminum oxide coating, said process comprising treating said aluminum oxide coated cemented tungsten carbide body with sulfuric acid selected from the group con-

sisting of an aqueous solution wherein said sulfuric acid is at a concentration greater than about 70 percent by weight in an aqueous solution and fuming sulfuric acid, said sulfuric acid being at a temperature of from about 130 to about 330 degrees centigrade, said treating being for a suitable period of time to form aluminum sulfate and a resulting deteriorated coating; oxidizing said cemented carbide body having a deteriorated coating in an oxygen containing atmosphere to form an oxidized product, digesting said oxidized product in an aqueous solution of sodium hydroxide to form an aqueous solution of soluble tungsten and a sludge containing metal binder values, and separating said sludge from said aqueous solution.

4,432,952

PROCESS FOR SEPARATING GERMANIUM FROM AN AQUEOUS SOLUTION BY MEANS OF AN ALPHA-HYDROXYOXIME

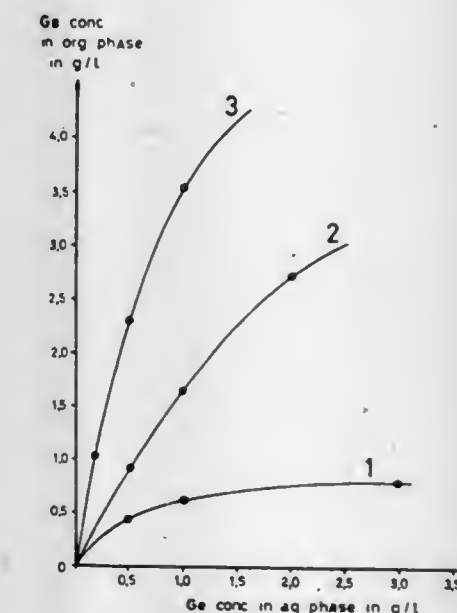
Achille De Schepper, Lichtaart-Kasterlee; Marc Coussement, Hove, and Antoine Van Peteghem, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium. Continuation of Ser. No. 285,581, Jul. 21, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,251.

Claims priority, application Luxembourg, Jun. 22, 1981, 83449

Int. Cl.³ B01D 11/04; C01G 17/00

U.S. Cl. 423-89

7 Claims



4,432,951

PROCESS FOR SEPARATING GERMANIUM FROM AN AQUEOUS SOLUTION

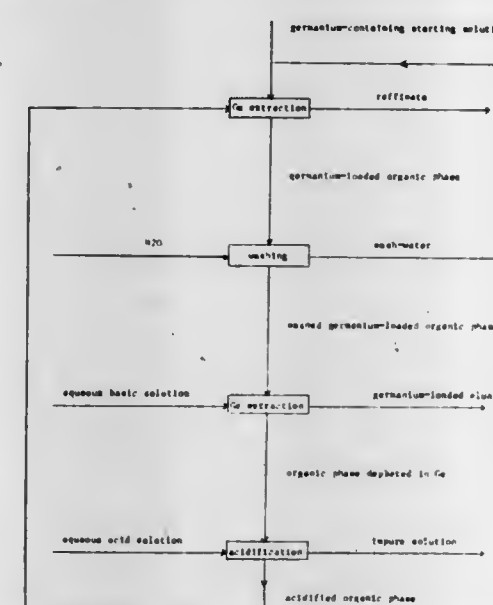
Achille De Schepper, Lichtaart-Kasterlee; Marc Coussement, Hove, and Antoine Van Peteghem, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium. Continuation of Ser. No. 285,580, Jul. 21, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,250.

Claims priority, application Luxembourg, Jun. 22, 1981, 83448

Int. Cl.³ B01D 11/04; C01G 17/00

U.S. Cl. 423-89

11 Claims



1. A process for separating germanium from a germanium-containing aqueous acid solution, comprising the steps of
 - (a) contacting said solution with an organic liquid including a substituted 8-hydroxyquinoline, thereby producing a germanium-loaded organic phase and an aqueous phase depleted in germanium;
 - (b) separating said germanium-loaded organic phase from said aqueous phase depleted in germanium,
 - (c) contacting at a temperature above 40° C. said germanium-loaded organic phase with an aqueous basic solution, the organic phase: aqueous phase volume ratio being less than 1, thereby producing an organic phase depleted in germanium and a germanium-loaded basic aqueous phase; and
 - (d) separating at a temperature above 40° C. said organic phase depleted in germanium from said germanium-loaded basic aqueous phase.

4,432,953

LEACHING COBALT FROM SPENT HYDROPROCESSING CATALYSTS WITH SULFUR DIOXIDE

Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,813

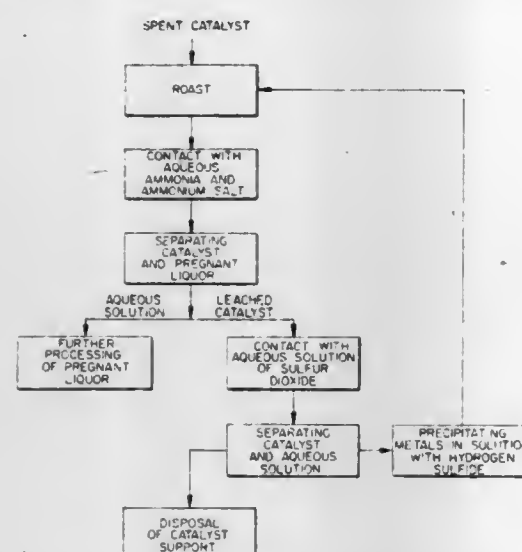
Int. Cl.³ C01G 51/00

U.S. Cl. 423-140

6 Claims

1. A process to extract cobalt from spent hydroprocessing catalyst particles comprising:
 - (a) roasting said catalyst particles in the atmosphere containing oxygen at a temperature in the range of between 400° C. and 600° C.;
 - (b) contacting said roasted catalyst particles with a first aqueous solution of ammonia and a compound selected from the group of ammonium-containing salts consisting of ammonium carbonate and ammonium sulfate, maintained at a temperature in the range of 85° C. to 95° C., in the presence of an oxygen-containing gas;
 - (c) separating said catalyst particles from said first aqueous solution containing cobalt values;

- (d) contacting said catalyst particles with a second aqueous solution of sulfur dioxide;
 (e) separating said catalyst particles from said second solution;



- (f) precipitating metals present in said second solution with hydrogen sulfide as metal sulfide; and
 (g) roasting said precipitated metal sulfides with fresh spent catalyst in step (a).

4,432,954

PRODUCTION OF GYPSUM HEMIHYDRATE WITH WASTE HEAT, AQUEOUS H_2SO_4 AND SULFURIC ACID SALTS

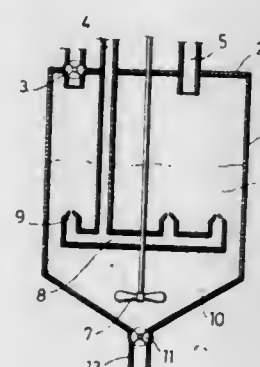
Heinrich Quante, Behringstr. 23, 4350 Recklinghausen, Fed. Rep. of Germany, assignor to Heinrich Quante, Recklinghausen, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 283,006

Claims priority, application Austria, Jul. 14, 1980, 3658/80; Fed. Rep. of Germany, Feb. 17, 1981, 3105709; May 5, 1981, 3117641

Int. Cl.³ C04B 11/00, 11/02; C01F 11/46
 U.S. Cl. 423—171

6 Claims



1. A method of converting calcium sulfate dihydrate recovered from flue-gas desulfurization in a power plant to fine-grain calcium sulfate hemihydrate, said method comprising the steps of:

- (a) heating an aqueous sulfuric-acid solution containing substantially 15 to 55% by weight sulfuric acid to a temperature such that with addition of calcium sulfate dihydrate the resulting dispersion will have a temperature above the decomposition temperature of calcium sulfate dihydrate to calcium sulfate hemihydrate;
 (b) introducing into the heated sulfuric-acid solution calcium sulfate dihydrate crystals of grain size of at most 250 microns to form a dispersion containing 10 to 50% by weight of the calcium sulfate dihydrate thereof;
 (c) continuously stirring the dispersion of step (b) to decom-

pose the calcium sulfate dihydrate and precipitate fine-grain calcium sulfate hemihydrate;

- (d) separating the fine-grain calcium sulfate hemihydrate formed in step (c) from the sulfuric-acid solution therein;
 (e) reheating the sulfuric-acid solution separated from the calcium sulfate hemihydrate in step (d) by bubbling flue gas from said power plant through said sulfuric-acid solution to evaporate water and returning the heated solution to step (b) for further decomposition of calcium sulfate dihydrate and repeating steps (b) through (e) therewith; and
 (f) drying the fine-grain calcium sulfate hemihydrate crystals separated from the solution in step (d).

4,432,955

PROCESS FOR DESORBING FISSION IODINE FROM NITRIC ACID FUEL SOLUTION

Edmund Henrich, Dettenheim, and Elmar Schlich, Linkenheim-Hochst., both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe and Nukem GmbH, Hanau, both of, Fed. Rep. of Germany

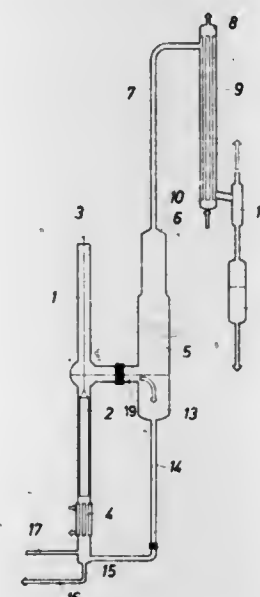
Filed Dec. 19, 1980, Ser. No. 218,193

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951339

Int. Cl.³ C01F 13/00

U.S. Cl. 423—249

11 Claims



1. In a process for desorbing fission iodine from a solution in a dissolver containing nitric acid and nuclear fuel, wherein at least a part of said solution is distilled by boiling and the resulting distillate is returned to the dissolver, the improvement comprising:

- (a) conducting the vapor produced during boiling of said solution in a reflux condenser, in which a portion of said vapor condenses to form a condensate, in countercurrent flow with the condensate, said condenser having parameters such that more than one theoretical stage is created in said condenser in which the distribution of iodine between the condensate and said vapor is in equilibrium;
 (b) returning said condensate directly into said dissolver in order to maintain a sufficiently constant volume of said solution in said dissolver;
 (c) removing said iodine from the condenser by passing through said condenser in ascending manner, a sufficient amount of a transporting gas, which includes at least a portion of said vapor, said transporting gas comprising at least one gas selected from the group consisting of water vapor, nitrogen oxides NO and NO₂, air components, and small quantities of at least one gas component selected from other noncondensable gas components and non-reactive to iodine gas components and removing the transporting gas and the gaseous iodine from the top of the condenser;

- (d) adjusting the temperature at which said transporting gas is removed from said condenser to between a temperature of at least about 40° C. and a temperature below the boiling temperature of said solution determined by the operating pressure of the process;
 (e) adjusting the rate and duration of the boiling of said solution during and after the dissolution of the nuclear fuel so that at least 20% by volume of said solution is converted to vapor in order to achieve the effective iodine desorption;
 (f) introducing into said solution nitrogen oxides selected from the group consisting of NO₂ and mixtures of NO and NO₂ at least in the course of one to several hours toward and after the end of the dissolution, in order to reduce hard to distill and non-distillable oxidized iodine species to a distillable form; and
 (g) adding to said solution toward the end of the desorption process, after the fission iodine content has dropped to several parts per thousand to several percent, inactive carrier iodine in an amount of about 5% to about 20% by weight of the total fission iodine content in the dissolved nuclear fuel, in order to accelerate the desorption of the iodine and to improve the degree of desorption.

4,432,956

PREPARATION OF MONOLITHIC SILICA AEROGELS, THE AEROGELS THUS OBTAINED AND THEIR USE FOR THE PREPARATION OF SILICA GLASS ARTICLES AND OF HEAT-INSULATING MATERIALS

Jerzy W. Zarzycki, Saint-Clement la Riviere, France; Michel Prassas, Gainesville, Fla., and Jean E. H. Phalippou, Montferrier, France, assignors to Corning France, Avon, France

Filed Jun. 1, 1982, Ser. No. 384,072

Claims priority, application France, Jun. 4, 1981, 81 11089

Int. Cl.³ C01B 33/16, 33/12

U.S. Cl. 423—338

10 Claims

1. In a process for the preparation of a silica aerogel which is monolithic and free of fissures and cracks and has at least one of its dimensions greater than 10 cm, in which process water and a non-aqueous solvent are added to a hydrolyzable silicon compound, the amount of water being sufficient to hydrolyze and polycondense the said compound to form a gel, the silicon compound being present in an amount of at least 40% by volume, relative to the total of the silicon compound plus the non-aqueous solvent, the whole, placed in a container of the desired shape, is subjected, in an autoclave containing an additional amount of the non-aqueous solvent used to form the solution, to temperature and pressure conditions which are such that the critical point of the solvent of the solution remaining after gelling is exceeded, without the liquid/vapor equilibrium curve of the solvent being broken at any time, and the solvent and any residual water present are then removed in order to obtain a silica aerogel,

the improvement wherein:

- (a) the water and non-aqueous solvent are added to the hydrolyzable silicon compound in such amounts that the resultant solution is homogeneous;
 (b) the autoclave treatment is carried out without the prior removal of water from the gel;
 (c) the autoclave is heated at a rate of at least 50° C./hour to a temperature above the critical temperature, and once the desired maximum temperature has been reached, the solvent is removed under substantially isothermal conditions, over a period of at most 5 hours; and
 (d) after the autoclave has returned to atmospheric pressure, the residual solvent is purged from the autoclave, the heating of the autoclave is stopped and the aerogel is withdrawn from the autoclave after cooling.

4,432,957

METHOD OF PRODUCING SILICON CARBIDE BODIES

Ashok K. Gupta; Ernő Gyarmati, both of Jülich; Hermann Kreutz, Monchen-Gladbach; Rudolf Münzer, Alsdorf; Aristides Naoumidis, and Hubertus Nickel, both of Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 352,007

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108259

Int. Cl.³ C01B 31/36; C04B 35/56

U.S. Cl. 423—345

6 Claims

1. Method of making silicon carbide bodies by impregnating and siliconizing with molten silicon, or by siliconizing with gaseous silicon, a precursor carbon-containing body incorporating a coked binder, in which method there is the improvement that a carbon powder which contains at least 20% by weight of activated carbon is the starting material which together with said binder, before coking of said binder, is used for molding the carbon-containing precursor body.

4,432,958

METHOD FOR THE SELECTIVE REMOVAL AND RECOVERY OF AMMONIA FROM AMMONIA- AND HYDROGEN SULFIDE-CONTAINING GAS MIXTURES

Nikolaus Schaefer, Essen; Winfried Dellmann, Kamen, and Gerd Louis, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

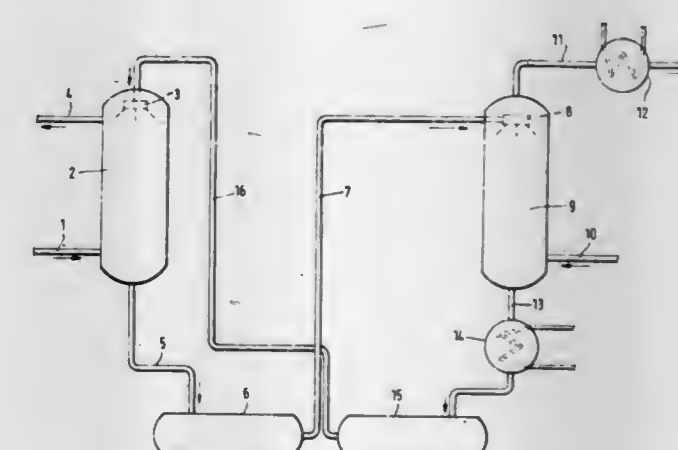
Filed Jan. 11, 1982, Ser. No. 338,563

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100568

Int. Cl.³ C01C 1/02

U.S. Cl. 423—356

11 Claims



1. Method for the removal and recovery of ammonia from ammonia- and hydrogen sulfide-containing gas mixtures through a washing with aqueous solutions of ammonium sulfite-bisulfite, comprising washing the gas mixture with an ammonium sulfite-bisulfite solution led in circulation, the surface tension of which solution is reduced to below 80×10^{-5} N/cm by addition of a surface active substance, to selectively wash out the ammonia, whereby the surface tension is the more reduced the more hydrogen sulfide is present in said gas mixture and the greater is the desired selectivity of ammonia washing, driving away ammonia gas from the wash solution enriched with ammonia, recovering the released ammonia, and leading the separated wash solution back into the gas wash in circulation.

4,432,959

PROCESS OF PRODUCING SODIUM CYANURATE
Tadao Shimamura, and Naoki Kano, both of Tokushima, Japan,
assignors to Shikoku Chemicals Corporation, Kagawa, Japan
Filed Aug. 3, 1982, Ser. No. 404,867
Int. Cl.³ C01C 3/00

U.S. Cl. 423—365

5 Claims

1. A process of producing sodium isocyanurate by reacting iso cyanuric acid in powder form with a carbonate in powder form selected from the group consisting of sodium carbonate, sodium hydrogencarbonate, and mixtures thereof, wherein at least one of said starting materials in powder form is a hydrate, comprising mixing the starting materials together while maintaining the same at a temperature at which free water is liberated from said hydrate.

5. A process of producing sodium isocyanurate by reacting isocyanuric acid in powder form with a carbonate in powder form selected from the group consisting of sodium carbonate, sodium hydrogen carbonate and mixture thereof, wherein each of said starting materials are in the anhydrous state, comprising adding water to the anhydrous in an amount sufficient to produce hydrates thereof at room temperature, and mixing the same together at a temperature and for a time sufficient to liberate free water from said hydrates.

4,432,960

THERMOCHEMICAL METHOD FOR PRODUCING HYDROGEN FROM HYDROGEN SULFIDE

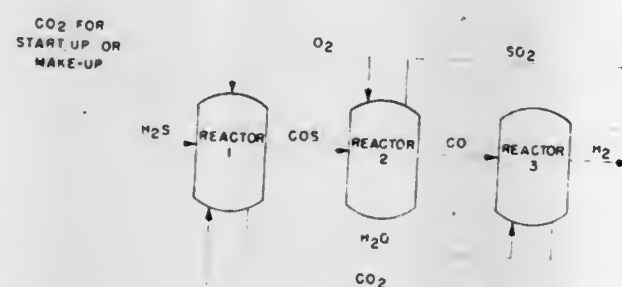
Daniel R. Herrington, Bainbridge, and Philip L. Kuch, Aurora, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,465

Int. Cl.³ C01B 17/50

U.S. Cl. 423—539

15 Claims



1. A thermochemical method for producing hydrogen from hydrogen sulfide, the method comprising:

- contacting hydrogen sulfide with carbon dioxide to form carbonyl sulfide and water,
- contacting the carbonyl sulfide produced in (a) with oxygen to form carbon monoxide and sulfur dioxide, and
- contacting the carbon monoxide produced in (b) with water to form carbon dioxide and hydrogen.

4,432,961

CATALYST AND PROCESS FOR OXIDIZING HYDROGEN SULFIDE

Robert H. Hass, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 191,864, Sep. 29, 1980, and a continuation-in-part of Ser. No. 27,033, Apr. 4, 1979. This application Dec. 30, 1981, Ser. No. 336,011
Int. Cl.³ C01B 23/14, 17/52; B01J 23/14, 29/16

U.S. Cl. 423—542

42 Claims

1. A process for oxidatively removing H₂S from a feed gas stream, said process comprising:

- contacting said feed gas stream in admixture with an oxidant gas comprising oxygen or SO₂ with a catalyst comprising vanadium and bismuth active catalytic components in a first reaction zone wherein a substantial proportion of said H₂S is converted to elemental sulfur at

temperatures between about 250° and 475° F., but a residual proportion of H₂S remains; and

- contacting at least a portion of said residual H₂S, in admixture with an oxidizing gas comprising sufficient oxygen to provide an excess thereof for the conversion to SO₂, with a catalyst in a second reaction zone maintained at a temperature between about 250° and 900° F., said catalyst in said second reaction zone comprising vanadium and bismuth active catalytic components on a carrier material, said vanadium and bismuth catalytic components each being present in a proportion above about 5 percent by weight, calculated as V₂O₅ and Bi₂O₃, respectively, and said contacting in said second reaction zone being such that at least 90% of the residual H₂S contacted in said second reaction zone is converted to SO₂ without the formation of a substantial amount of SO₃.

4,432,962

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Hugh W. Gowdy, Irvine, and Donald M. Fenton, Anaheim, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 233,790, Feb. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 50,193, Jun. 20, 1979, abandoned, and Ser. No. 50,192, Jun. 20, 1979, Pat. No. 4,283,379. This application Oct. 6, 1982, Ser. No. 433,027
Int. Cl.³ C01B 17/04; B01D 53/34

U.S. Cl. 423—573 R

21 Claims

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

- contacting said gas stream with a regenerable quinone-containing washing solution so as to absorb said hydrogen sulfide into said washing solution, the washing solution introduced into contact with said gas stream comprising an aqueous solution having a pH between about 5 and about 10 and containing (1) solubilized vanadium, (2) one or more water-soluble quinones capable of solubilizing tetravalent vanadium, (3) one or more water-soluble non-quinone aromatic compounds capable of solubilizing tetravalent vanadium, (4) thiocyanate ions and (5) a water-soluble carboxylate complexing agent;
- allowing the absorbed hydrogen sulfide to react with constituents of said washing solution so as to convert said absorbed hydrogen sulfide substantially exclusively to elemental sulfur;
- oxidatively regenerating the washing solution from step (b) so as to form a regenerated washing solution; and
- separating said elemental sulfur from said washing solution.

4,432,963

RADIOGRAPHIC SCANNING AGENT

John A. Bevan, Cincinnati, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 929,472, Jul. 31, 1978, Pat. No. 4,247,534. This application Jan. 14, 1981, Ser. No. 225,151
Int. Cl.³ A61K 43/00, 49/00

U.S. Cl. 424—1.1

9 Claims

1. Water-soluble stannous methanethiohydroxydiphosphonate.

4,432,964

TOPICAL COMPOSITION CONTAINING STEROID IN TWO FORMS RELEASED INDEPENDENTLY FROM POLYMERIC CARRIER

John W. Shell, Hillsborough, and Robert M. Gale, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 295,653, Aug. 24, 1981, abandoned.

This application Dec. 27, 1982, Ser. No. 453,358

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ A61K 9/22, 9/26, 31/58

U.S. Cl. 424—14

1 Claim

1. A topically applied composition for treating inflammation of a warm-blooded animal, wherein the composition comprises: a pair of micronized steroids consisting essentially of two topically acceptable different physical and chemical therapeutic forms of the same steroid, the pair selected from the group consisting of betamethasone, betamethasone acetate, betamethasone benzoate, betamethasone dipropionate, betamethasone valerate and betamethasone disodium diphosphate, and a bioerodible polymeric polyorthoester carrier containing from 50 nanograms to 1 gram of each therapeutic form of the micronized steroid pair, with both forms present in the bioerodible polyorthoester carrier without any interactions, and wherein, when the composition is administered topically, the composition administers the steroids by the polyorthoester bioeroding and administering the two different forms as a pair, for increasing the concentration of each steroid form topically, with the concentration of each steroid form topically applied being independent of the amount of the different steroid form topically applied for increasing the concentration of each steroid form available for passing into the tissues and steroid receptors of a warm-blooded animal in a therapeutically effective amount for treating inflammation over a prolonged period of time of 4 to 600 hours.

4,432,966

COMPRESSED TABLETS FOR DISINTEGRATION IN THE COLON COMPRISING AN ACTIVE INGREDIENT CONTAINING NUCLEUS COATED WITH A FIRST LAYER CONTAINING MICROCRYSTALLINE CELLULOSE WHICH IS COATED WITH AN ENTERIC ORGANIC POLYMER COATING

Paul Zeitoun, Reims, and Patrick Brisard, Paris, both of France, assignors to Roussel-UCLAF, Romainville, France

Continuation of Ser. No. 214,413, Dec. 8, 1980, abandoned. This application Aug. 31, 1982, Ser. No. 413,483

Claims priority, application France, Dec. 8, 1980, 79 30202

Int. Cl.³ A61K 9/24, 9/36

U.S. Cl. 424—21

7 Claims

1. A compressed tablet for oral administration and disintegration in the colon which consists essentially of:

- a microcrystalline cellulose-free compressed center piece containing an active agent;
- a first coating layer amounting to between about 0.5% and about 10% by weight of that of the center, coating the compressed center piece and consisting essentially of a mixture of a pharmaceutically acceptable lower alkyl ether of a cellulose film-forming organic polymer material which is not deteriorated by a neutral or alkaline aqueous medium, and from about 30% to about 80% by weight of the first coating layer of microcrystalline cellulose; and
- a second coating layer amounting to between about 2% to about 10% by weight of the center, coating the first coating layer and consisting essentially of a microcrystalline cellulose-free pharmaceutically acceptable enteric organic polymer coating material selected from the group consisting of cellulose acetylphthalate, hydroxypropylmethylcellulose phthalate, benzophenyl salicylate, cellulose acetosuccinate, copolymers of styrene and of maleic acid, formylated gelatin, salol, keratin, stearic acid, myristic acid, gluten, acrylic and methacrylic resins, and copolymers of maleic acid and phthalic acid derivatives; each of said coating layers containing a plasticizer selected from the group consisting of diethylphthalate, dibutylphthalate, propylene glycol, castor oil and mixtures thereof.

4,432,967

CONTRACEPTIVE COMPOSITION

Chester D. Szymanski, Martinsville, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Jun. 25, 1982, Ser. No. 392,266

Int. Cl.³ A61K 31/74, 31/78

U.S. Cl. 424—78

11 Claims

1. A contraceptive composition for vaginal administration which comprises an effective amount of a salt of a sulfonated homo- or copolymer of styrene and a pharmaceutically acceptable carrier, said composition being in the form of a cream, foam, jelly or suppository.

4,432,965

QUINIDINE SUSTAINED RELEASE DOSAGE FORMULATION

Alec D. Keith, Miami, and Charles Hsiao, Cooper City, both of Fla., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Jul. 9, 1982, Ser. No. 396,668

Int. Cl.³ A61K 9/22, 9/24, 9/32

U.S. Cl. 424—19

4 Claims

1. A sustained release oral dosage form for providing a patient with quinidine over a prolonged period of time which comprises a tablet core containing a pharmaceutically effective amount of quinidine, said tablet core coated with a sustained release polymeric coating which contains from about 5 to about 20 percent by weight polyethylene glycol component having a molecular weight of from about 500 to about 2000, and from about 80 to about 95 percent by weight polyvinylalcohol component comprising:

- about one to about ten parts by weight of a partially hydrolyzed polyvinylalcohol subcomponent molecular weight of from about 50,000 to about 110,000 having a degree of hydrolysis of about 75 to about 92 percent; and
- about one part by weight of a substantially completely hydrolyzed polyvinylalcohol subcomponent molecular weight of from about 90,000 to about 150,000 having a degree of hydrolysis in excess of 95%.

4,432,968

WEIGHT CONTROL WITH FAT IMBIBING POLYMERS

Judith L. Page; Daniel H. Haigh, both of Sanford, and James Peters, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 198,687, Oct. 20, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 313,052

Int. Cl.³ A61K 31/78, 31/74, 31/745

U.S. Cl. 424—81

78 Claims

1. A method of controlling body weight in animals, comprising administering into the gastrointestinal tract of an animal an effective amount of a pharmacologically-acceptable, solid, particulate, crosslinked, indigestible, fat imbibing, fat retaining polymer further characterized in that it swells in liquid lard, contains less than 100 ppm of residual monomer and has a volume average particle diameter of from about 0.05 to about 2000 microns, wherein the polymer is a crosslinked copolymer of an ethylenically unsaturated monomer selected from the

group consisting of isobornyl acrylate, isobornyl methacrylate, styrene or alkylstyrene and at least one ester of a C₈ to C₂₀ fatty alcohol with acrylic or methacrylic acid, crosslinked with a polyethylenically unsaturated crosslinking agent and which polymer imbibes and retains at least a portion of ingested dietary fat when the polymer is administered to the animal in a manner which results in the polymer and ingested dietary fat being in admixture in the gastrointestinal tract, whereby fat is excreted in association with the polymer.

4,432,969

PHARMACEUTICAL COMPOSITIONS

Frank R. Batchelor, Surrey, England, assignor to Beecham Group P.L.C., England

Filed Feb. 3, 1982, Ser. No. 345,534

Claims priority, application United Kingdom, Feb. 6, 1981, 8103778

Int. Cl.³ A61K 39/36

U.S. Cl. 424—91

10 Claims

1. An anti-allergenic pharmaceutical composition comprising a desensitizing effective amount of an inhalant allergen and an adjuvant effective amount of a saponin adjuvant, in combination with a pharmaceutically acceptable carrier.

4,432,970

6-BETA-HALOPENICILLANIC ACID 1,1-DIOXIDES AS BETA-LACTAMASE INHIBITORS

Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 96,832, Nov. 23, 1979, Pat. No. 4,397,783. This application Dec. 9, 1980, Ser. No. 214,742

Int. Cl.³ C07D 499/00; A61K 31/425

U.S. Cl. 424—114

11 Claims

1. (2S,5R,6R)-6-beta-Bromo-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid, S,S-dioxide, or a physiologically acceptable salt thereof or a readily hydrolyzable ester thereof.

4,432,971

PHOSPHONAMIDATE COMPOUNDS

Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

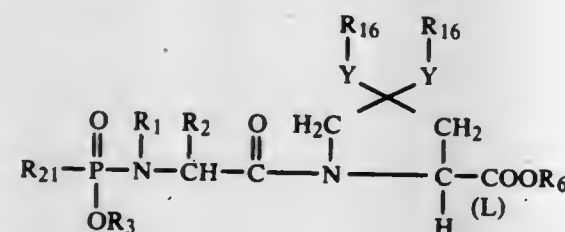
Continuation-in-part of Ser. No. 289,671, Aug. 31, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 392,977

Int. Cl.³ A61K 31/675, 37/00; C07F 9/65

U.S. Cl. 424—177

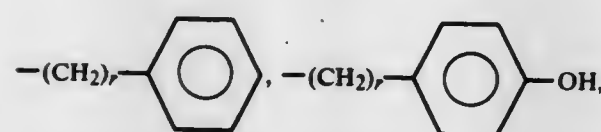
12 Claims

1. A compound of the formula

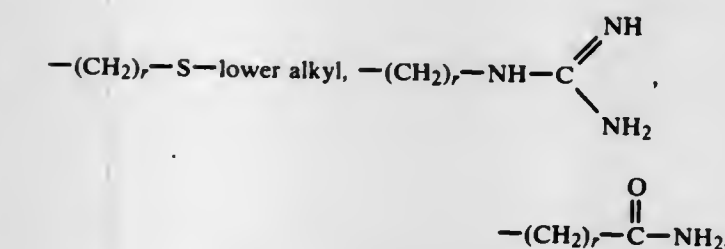
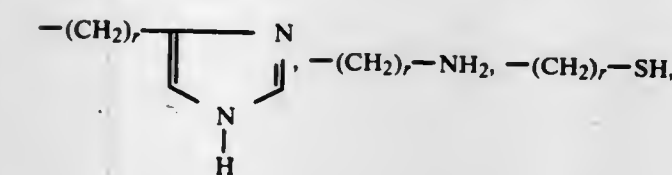
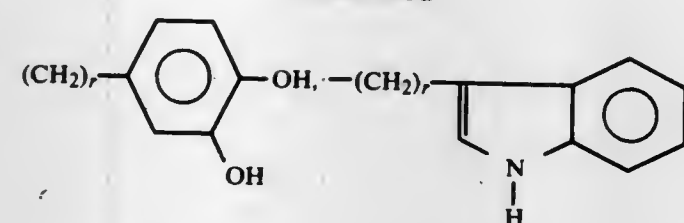


and a pharmaceutically acceptable salt thereof wherein:

Y is oxygen or sulfur and the R₁₆ groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent; R₁ is hydrogen, lower alkyl, or cycloalkyl; R₂ is hydrogen, lower alkyl, halo substituted lower alkyl,

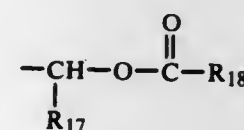


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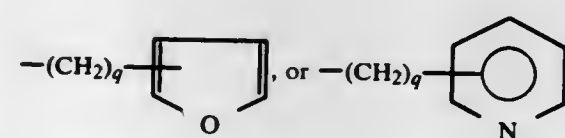
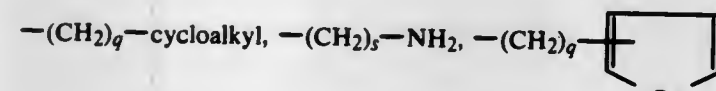
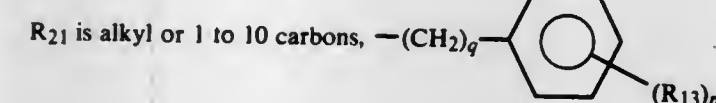
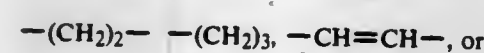


or R₁ and R₂ taken together are $-(\text{CH}_2)_n-$ wherein n is an integer from 2 to 4;

R₃ and R₆ are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, and



wherein R₁₇ is hydrogen, lower alkyl, cycloalkyl, or phenyl, and R₁₈ is hydrogen, lower alkyl, lower alkoxy, phenyl or R₁₇ and R₁₈ taken together are



R₁₃ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl; r is an integer from 1 to 4;

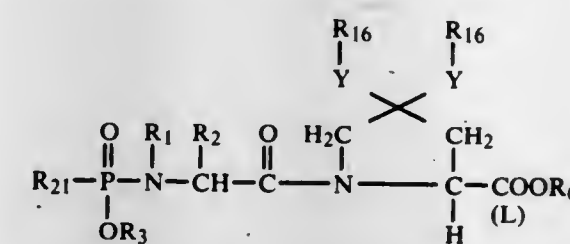
q is zero or an integer from 1 to 7;

s is an integer from 1 to 8; and

p is one, two or three provided that p is more than one only if R₁₃ is hydrogen, methyl, methoxy, chloro, or fluoro.

10. A composition useful for treating hypertension in a mammalian specie comprising a pharmaceutically acceptable car-

rier and an effective amount of a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



wherein R₁, R₂, R₃, R₆, R₂₁, Y, and R₁₆ are as defined in claim 1.

4,432,972

PHOSPHONAMIDATE COMPOUNDS

Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 392,977, Jun. 28, 1982, which is a continuation-in-part of Ser. No. 289,671, Aug. 3, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,411

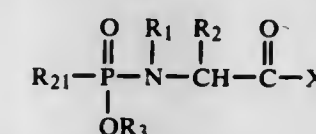
application Dec. 27, 1982, Ser. No. 453,411

Int. Cl.³ A61K 37/00, 31/66; C07F 9/44, 9/58

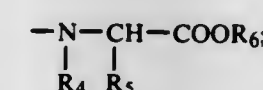
U.S. Cl. 424—177

18 Claims

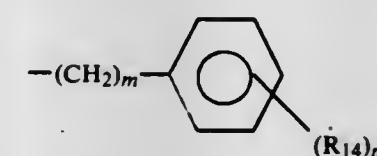
1. A compound of the formula



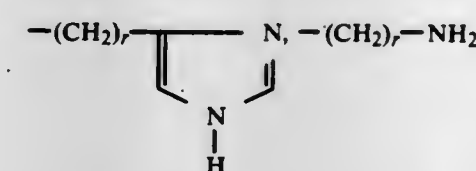
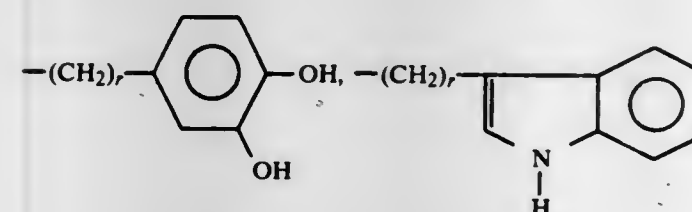
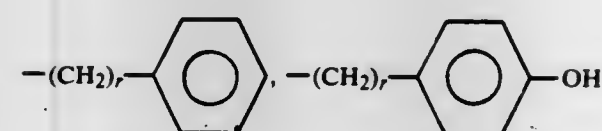
and pharmaceutically acceptable salts thereof wherein: X is



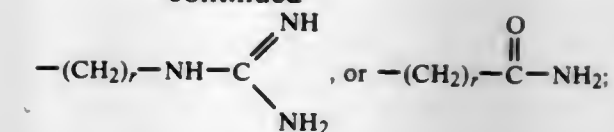
R₄ is hydrogen, lower alkyl, $-(\text{CH}_2)_m$ -cycloalkyl, or



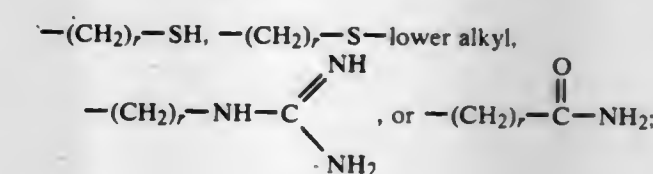
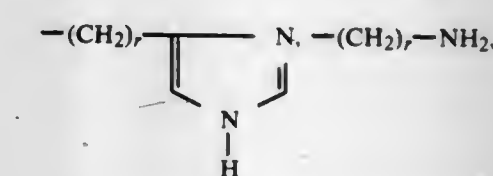
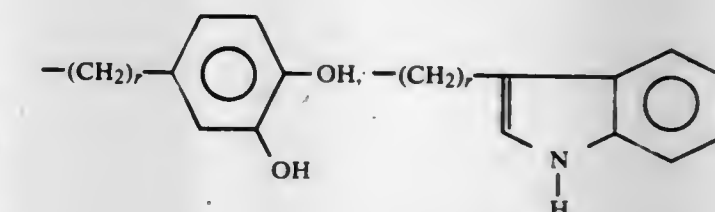
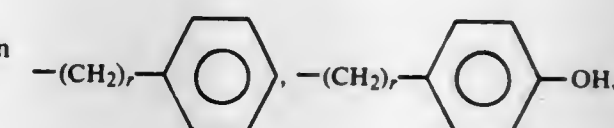
R₅ is hydrogen, lower alkyl,



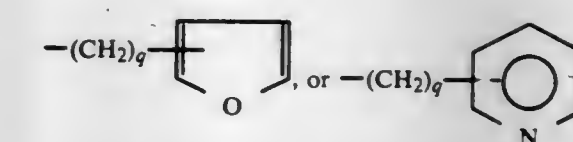
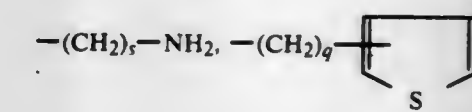
-continued



R₁ is hydrogen, lower alkyl, or cycloalkyl; R₂ is hydrogen, lower alkyl, halo substituted lower alkyl,



R₂₁ is alkyl of 1 to 10 carbons,



R₁₃ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R₁₄ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

r is an integer from one to four;

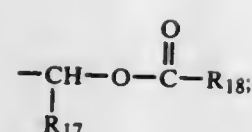
m is zero, one, two or three;

p is one, two or three provided that p is more than one only if R₁₃ or R₁₄ is hydrogen, methyl, methoxy, chloro, or fluoro;

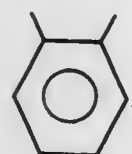
q is zero or an integer from one to seven;

s is an integer from one to eight;

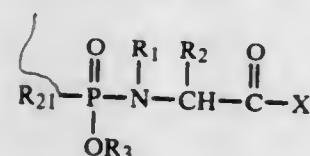
R₃ and R₆ are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, and



R₁₇ is hydrogen, lower alkyl, cycloalkyl, or phenyl; and R₁₈ is hydrogen, lower alkyl, lower alkoxy, phenyl, or R₁₇ and R₁₈ taken together are $\text{—(CH}_2\text{)}_2\text{—}$, $\text{(CH}_2\text{)}_3\text{—}$, —CH=CH— , or



18. A method of relieving pain in a mammalian specie which comprises administering to said mammalian specie an analgesically effective amount of a compound of the formula



or pharmaceutically acceptable salt thereof wherein X, R₁, R₂, R₃, and R₂₁ are as defined in claim 1.

4,432,973

BENZOYL- AND

 α -HYDROXYBENZYL-PHENYL-GLYCOSIDES AND APPLICATION THEREOF IN THERAPEUTICS

Francois Picart, Dijon, France, assignor to Societe de Recherches Industrielles (S.O.R.I.), Paris, France

Filed Oct. 22, 1981, Ser. No. 314,032

Claims priority, application France, Oct. 29, 1980, 80 23133

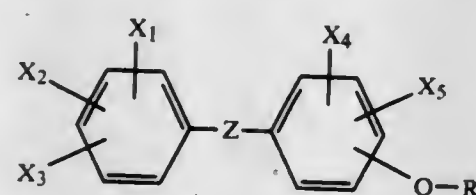
Int. Cl.³ A61K 31/70; C07H 15/20

U.S. Cl. 424—180

11 Claims

1. Benzoyl- and α -hydroxybenzyl-phenylglycosides selected from the group consisting of:

(i) compounds corresponding to general formula:



wherein:

Z represents CO or CHO; X₂, X₃, X₄ and X₅, which are identical or different, each represent hydrogen, halogen, an alkyl group with 1 to 4 carbon atoms, an alkoxy group with 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms substituted by one or more halogen atoms, a nitro group, a cyano group, a thiocarbonyl group, an isothiocarbonyl group, an NR'R'' group (where R' and R'', which are identical or different, each represent hydrogen or an alkyl group with 1 to 4 carbon atoms);

X₁ represents hydrogen, halogen, an alkyl group with 1 to 4 carbon atoms, an alkyl group with 1 to 4 carbon atoms substituted by one or more halogen atoms, an OH group, an alkoxy group with 1 to 4 carbon atoms, an alkoxy group with 1 to 4 carbon atoms substituted by one or more halogen atoms, a nitro group, a cyano group, a thiocarbonyl group, an isothiocarbonyl group, an NR'R'' group (where R' and R'', which are identical or different, each represent

hydrogen or an alkyl group with 1 to 4 carbon atoms), an —NH—CS—O—CH_3 group or an $\text{—O—C(CH}_3\text{)}_2\text{DO—}$ group (where R'' is an alkyl group with 1 to 4 carbon atoms) and

R represents an unsubstituted, non-hydrolyzable monosaccharide carbohydrate radical; or a non-hydrolyzable monosaccharide carbohydrate radical substituted with at least one substituent selected from the group consisting of acyl, alkyl and sulfonyl groups; and

(ii) when Z is CHO, the diastereoisomers of the compounds of (i).

11. A therapeutic composition containing in association with a physiologically acceptable excipient, an effective ulcer treating amount of a compound according to claim 1.

4,432,974

ANTIINFLAMMATORY AND/OR ANALGESIC 2,3-DIARYL-5-SILYL THIOPHENES

Stephen B. Haber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

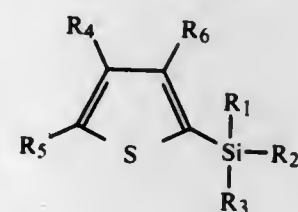
Filed Mar. 4, 1982, Ser. No. 354,643

Int. Cl.³ A61K 31/38, 31/44; C07F 7/08, 7/18

U.S. Cl. 424—184

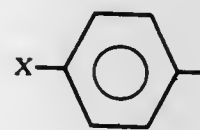
12 Claims

1. A compound having the formula:

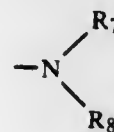


wherein

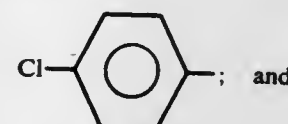
R₁, R₂ and R₃ are independently H, alkoxy of 1-2 carbon atoms, alkyl of 1-7 carbon atoms optionally substituted with halogen, alkenyl of 2-7 carbon atoms, phenyl or benzyl, with the proviso that the sum of the number of carbon atoms in R₁, R₂ and R₃ must be at least 1 and not greater than 9 with the additional proviso that no more than 2 of R₁, R₂ and R₃ are alkoxy; R₄ and R₅ are independently pyridyl or



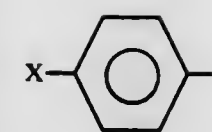
where X is H, F, Cl, R₇, OR₇, S(O)_nR₇ or



where n=0, 1 or 2; R₇=alkyl of 1-2 carbon atoms and R₈=alkyl of 1-2 carbon atoms; with the proviso that R₄ and R₅ cannot both be

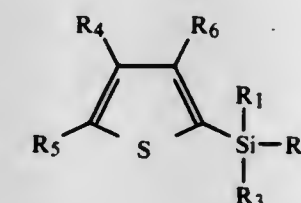


with the further proviso that when R₁, R₂ or R₃ is alkoxy, both R₄ and R₅ are



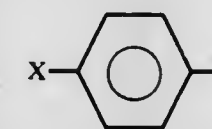
then X cannot be H or R₇; and R₆ is H, or alkyl of 1-2 carbon atoms; or a pharmaceutically suitable salt thereof.

11. A method of treating inflammation, pain or both in a mammal which comprises administering to a mammal afflicted with inflammation, pain or both an effective antiinflammatory or analgesic amount of at least one compound of the formula:

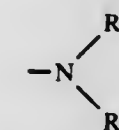


wherein

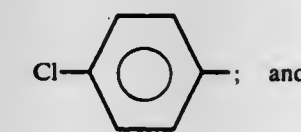
R₁, R₂ and R₃ are independently H, alkoxy of 1-2 carbon atoms, alkyl of 1-7 carbon atoms optionally substituted with halogen, alkenyl of 2-7 carbon atoms, phenyl or benzyl, with the proviso that the sum of the number of carbon atoms in R₁, R₂ and R₃ must be at least 1 and not greater than 9 with the additional proviso that no more than 2 of R₁, R₂ and R₃ are alkoxy; R₄ and R₅ are independently pyridyl or



where X is H, F, Cl, R₇, OR₇, S(O)_nR₇ or



where n=0, 1 or 2; R₇=alkyl of 1-2 carbon atoms and R₈=alkyl of 1-2 carbon atoms; with the proviso that R₄ and R₅ cannot both be



R₆ is H, or alkyl of 1-2 carbon atoms; or a pharmaceutically suitable salt thereof.

4,432,975

PROCESS FOR INTRODUCING VITAMIN B-12 INTO THE BLOODSTREAM

Alfred F. Libby, Fullerton, Calif., assignor to ICN Pharmaceuticals, Inc., Covina, Calif.

Continuation-in-part of Ser. No. 253,712, Apr. 13, 1981, abandoned. This application Oct. 19, 1981, Ser. No. 312,398

Int. Cl.³ A61K 31/68

U.S. Cl. 424—201

13 Claims

1. A process for enhancing the absorption of Vitamin B-12 into the bloodstream, comprising administering Vitamin B-12 sublingually as a micro-lozenge containing from about 0.1% to about 10% by weight cyanocobalamin or hydroxocobalamin.

4,432,976
CYCLOCARBONATE ESTERS OF 16 α ,17 α , DIHYDROXY
ANTI-INFLAMMATORY STEROIDS

Klaus Annen; Henry Laurent, and Helmut Hofmeister, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,756

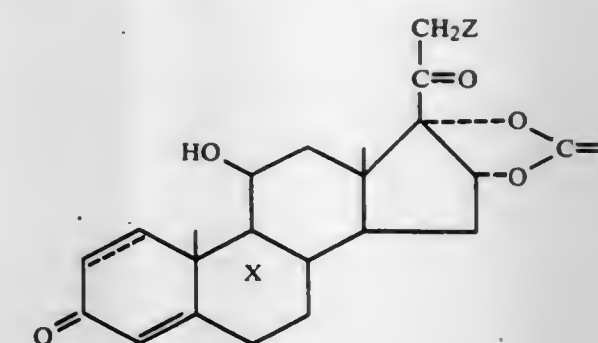
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133631

Int. Cl.³ A61K 31/58

U.S. Cl. 424—241

14 Claims

1. A corticoid of the formula



wherein

is a single bond or a double bond,

X is hydrogen, fluorine, or chlorine,

Y represents an oxygen atom, and

Z is hydrogen or alkanoyloxy of 2-6 carbon atoms.

14. A method of treating inflammation in a patient in need of such treatment comprising administering to the patient an antiinflammatorily effective amount of a compound of claim 1.

4,432,977

METHOD FOR DILATING THE SMOOTH MUSCLES OF THE UPPER URINARY TRACT

William M. Davis, Tucson, Ariz., assignor to William P. Poythress & Company, Tucson, Ariz.

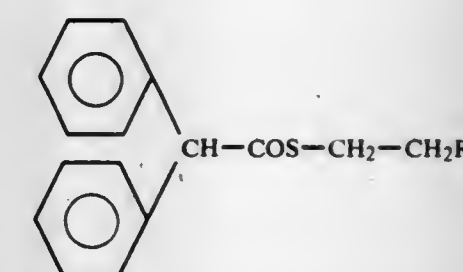
Filed Aug. 27, 1982, Ser. No. 412,238

Int. Cl.³ A61K 27/00, 31/24, 31/135, 31/445

U.S. Cl. 424—248.5

12 Claims

1. A method for dilating the smooth muscles of the upper urinary tract comprising administering to a patient requiring such treatment an effective amount of a di-N-substituted aminoethyl ester of diphenylthioacetic acid having the formula:



in which R represents a disubstituted amino radical of the group consisting of the diethylamino group, the morpholino group and the piperidino group.

4,432,978

HEXAHYDRO-TRANS-PYRIDOINDOLE

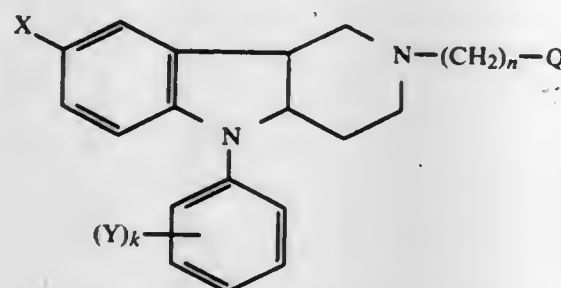
Willard M. Welch, Mystic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y. Division of Ser. No. 259,569, Jan. 16, 1981, Pat. No. 4,337,250, which is a continuation-in-part of Ser. No. 182,177, Aug. 28, 1980, abandoned, which is a division of Ser. No. 61,573, Jul. 30, 1979, Pat. No. 4,252,811. This application May 20, 1982, Ser. No. 380,182

Int. Cl.³ C07D 487/04; A61K 31/44, 31/50, 31/505

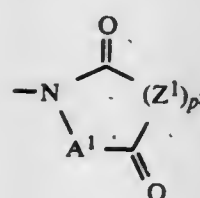
U.S. Cl. 424-249

13 Claims

1. A (+) enantiomeric, a mixture of (+) and (-) enantiomeric or (±) racemic 4a,9b-trans-hexahydro-1H-pyridoindole derivative of the formula



or a pharmaceutically acceptable salt thereof, wherein Q is



k is 1 or 2;

n is 2 to 9;

X and Y are each independently H, F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;

p is 0 or 1;

Z¹ is methano, ethano, etheno, o-benzo or NR²;

A¹ is oxygen, NR³, methano, ethano, etheno, propano, or o-benzo; and

R² and R³ are each independently H, (C₁-C₅)alkyl of 1 to 5 carbons, phenyl, benzyl or a ring mono or disubstituted form of phenyl or benzyl, wherein the monosubstituent and each of the disubstituents is independently selected from F, Cl, Br, OCH₃, CH₃ or CH₂CH₃;

with the provisos that when A¹ is methano, oxygen or NR³, p is 1; that when A¹ is propano, p is 0; and that when Z¹ is ethano, etheno or o-benzo, A¹ is NR³.

13. A method of treating psychoses and neuroses in a patient requiring major tranquilization which comprises administering to the patient by oral, intravenous, intramuscular or subcutaneous route an effective amount of a derivative of claim 1.

4,432,979

PYRIDONE COMPOUNDS

Henry F. Campbell, Lansdale, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

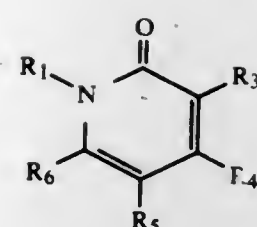
Continuation-in-part of Ser. No. 314,692, Oct. 26, 1981. This application Aug. 23, 1982, Ser. No. 410,645

Int. Cl.³ C07D 401/04; A61K 31/50, 31/505

U.S. Cl. 424-250

27 Claims

1. A compound according to the formula



wherein:

R₁ is hydrogen, alkyl, hydroxyalkyl or phenylalkyl;

R₂ is hydrogen, halo or haloalkyl;

R₄ and R₆ are each independently hydrogen or alkyl;

R₅ is a 6 membered heteroaryl ring, or a substituted 6 membered heteroaryl ring, including two nitrogen atoms in the ring; and, wherein:

substituted 6 membered heteroaryl ring means a heteroaryl group having one or more of the heteroaryl hydrogen atoms substituted by halo, alkyl, haloalkyl, hydroxyalkyl, hydroxy, alkylamino, dialkylamino, amino, acylamino, cyano or nitro; and the acid addition salts thereof.

24. A method for increasing cardiac contractility in a human or other mammal which comprises administering thereto an effective cardiostimulant amount of a compound according to claim 1.

4,432,980

PHARMACEUTICAL COMPOSITIONS

James S. Fleming, Jr., Manlius, and Joseph P. Buyniski, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 288,639, Jul. 30, 1981, Pat. No. 4,357,330.

This application Aug. 19, 1982, Ser. No. 409,736

Int. Cl.³ A61U 31/19, 31/505

U.S. Cl. 424-251

13 Claims

1. An oral pharmaceutical composition having an inhibitory activity on blood platelet aggregation consisting essentially of anagrelide and zomepirac, wherein the weight ratio of zomepirac to anagrelide is from about 22:1 to about 178:1.

4,432,981

2-(PYRIDINYL OR HYDROXYPHENYL)-8-SUBSTITUTED PYRIDO[2,3-D]PYRIMIDIN-5(8H)-ONES

George Y. Leshner, Schodack; Baldev Singh, and Stanley C. Laskowski, both of East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

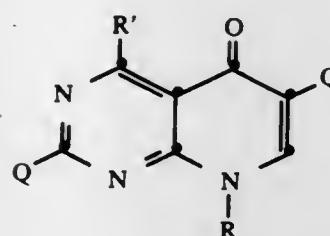
Filed Nov. 5, 1982, Ser. No. 439,361

Int. Cl.³ C07D 487/04; A61K 31/505

U.S. Cl. 424-251

16 Claims

1. 2-Q-4-R'-6-Q'-8-R-pyrido[2,3-d]pyrimidin-5(8H)-one having the formula



or acid-addition salt thereof, where Q is 4(or 3)-hydroxyphenyl, 4(or 3)-methoxyphenyl, 4(or 3)-pyridinyl or 4(or 3)-pyridinyl having one or two lower-alkyl substituents, R' is hydrogen or alkyl having from one to four carbon atoms, Q' is hydrogen, nitro or amino, and R is alkyl having from one to four carbon atoms, CH(C₂H₅)₂, (CH₂)_nCH=CH₂ where n is 1 or 2, or Y-Z where Y is alkylene having from two to four carbon atoms and having its connecting linkages on different carbon atoms and Z is hydroxy, OR₁ and NR₁R₂ where R₁ and R₂ are each methyl or ethyl.

4,432,982

POLYCYCLIC COMPOUNDS SUBSTITUTED ON THE A-RING, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND METHODS OF TREATING PSORIASIS WITH THEM

Csaba Szantay; Lajos Szabo; Gyorgy Kalaus; Mari Zajer nee Balazs; Lilla Forgach; Egon Karpati; Arpad Kiraly; Gyöngyver Kiraly nee Soos; Laszlo Szporny, and Bela Rosdy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Feb. 4, 1982, Ser. No. 345,633

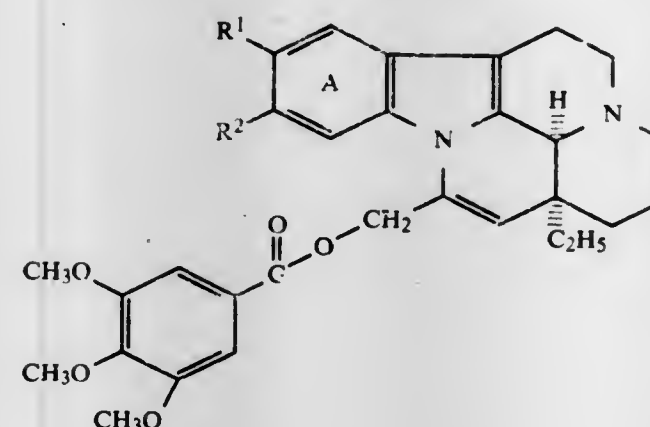
Claims priority, application Hungary, Feb. 11, 1981, 324/81

Int. Cl.³ A61K 31/435; C07D 461/00

U.S. Cl. 424-256

5 Claims

1. A compound of the formula (I)



wherein

R¹ is halogen and

R² is hydrogen; or

R¹ is hydrogen and R² is halogen, or a pharmaceutically acceptable acid addition salt thereof.

4. An anti-psoriasis composition which comprises as active ingredient a pharmaceutically effective amount of the compound defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof along with a pharmaceutically acceptable inert carrier.

5. A method of treating psoriasis which comprises the step applying to the skin to be treated a pharmaceutically effective amount of the compound defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,432,983

CONFORMATIONALLY RESTRICTED HISTAMINE H₂-RECEPTOR ANTAGONISTS CONTAINING A TROPANE RING

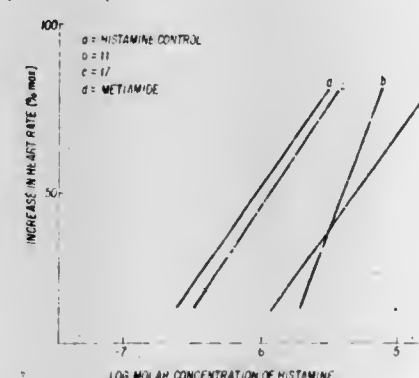
Thomas N. Riley, Oxford, Miss., and Jerry Bagley, Athens, Ga., assignors to Research Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 258,922

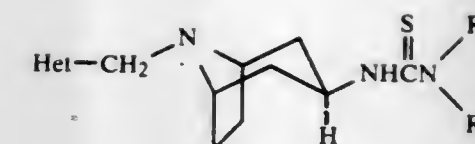
Int. Cl.³ A01N 31/46; C07D 451/04

U.S. Cl. 424-265

15 Claims



1. A histamine H₂-receptor antagonist, having the formula



wherein

R₁ represents C₁-C₄ alkyl or benzyl,

R₂ represents H or C₁-C₄ alkyl, and

Het represents an imidazole ring either unsubstituted or substituted with a C₁-C₄ alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or dimethylaminomethyl group.

6. A method of inhibiting histamine H₂-receptors which comprises administering to a human or animal in need of inhibition of said receptors an effective amount of the antagonist of claim 1.

4,432,984

ANTI-HYPERTENSIVE BENZODIOXAN DERIVATIVES

Bernard Dumaitre, Bobigny; Claude Perrin, Orsay; Pierre-Jean Cornu, Paris, and Gilles Streichenberger, Neuilly-sur-Seine, all of France, assignors to Emile Bouchard, Paris, France. Continuation of Ser. No. 134,476, Mar. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 11,162, Feb. 9, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,411

Int. Cl.³ A61K 31/445; C07D 405/06

U.S. Cl. 424-267

5 Claims

1. A compound selected from the group consisting of 1-[(2,3-dihydro {4H} 1,4-benzodioxin) 2-yl] methyl-4-(4-fluoro-α-methyl-α-hydroxy benzyl) piperidine and a therapeutically acceptable acid addition salt thereof.

4. A method for treating hypertension in hypertensive mammals which comprises administering to said patients suffering from hypertension a safe but effective amount of a compound of claim 1.

4,432,985

N-ALKYLATED CARBOXYLIC ACID DERIVATIVES AS ANTI-CONVULSANT AGENTS

Alex M. Nadzan, Gurnee, and George R. Granneman, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

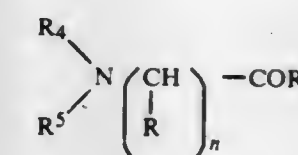
Filed Mar. 15, 1982, Ser. No. 358,167

Int. Cl.³ A61K 31/445; C07D 211/14

U.S. Cl. 424-267

15 Claims

7. A method of controlling convulsions or seizures comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula



wherein R is hydrogen or loweralkyl; R₁ is -OR₂ or -NR₂R₃ wherein R₂ and R₃ independently of one another denote hydrogen or loweralkyl; n is 0 or 1; R₄ and R₅ independently of one another denote loweralkyl or together with the nitrogen atom form a 5 or 6 membered saturated ring which may be substituted by loweralkyl; or a pharmaceutically acceptable salt thereof.

4,432,986

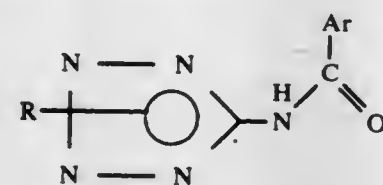
TETRAZOLES BONDED TO CERTAIN POLYCYCLIC AROMATIC SYSTEMS AND ANTI-ALLERGIC USE THEREOF

Edward H. Erickson, St. Paul, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

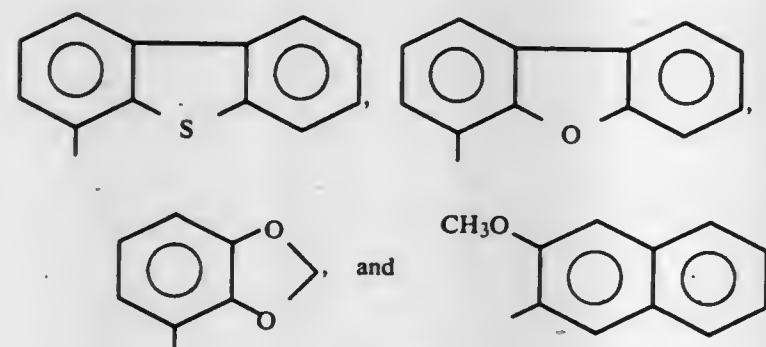
Continuation-in-part of Ser. No. 49,280, Jun. 18, 1979, abandoned. This application Mar. 23, 1982, Ser. No. 361,130
Int. Cl.³ C07D 257/02; A61K 31/41

U.S. Cl. 424-269

1. A compound of the formula



wherein R is hydrogen or lower (C₁₋₄) alkyl and Ar is selected from



4,432,987

CRYSTALLINE BENZENESULFONATE SALTS OF SULTAMICILLIN

Wayne E. Barth, East Lyme, and Vytautas J. Jasys, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.

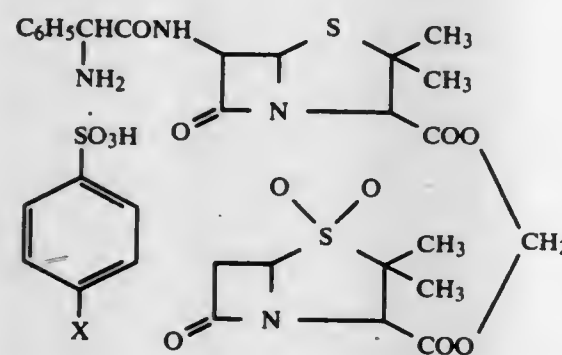
Filed Apr. 23, 1982, Ser. No. 371,156

Int. Cl.³ A61K 31/43; C07D 499/32

U.S. Cl. 424-271

8 Claims

1. A benzenesulfonic acid addition salt of sultamicillin of the formula



and hydrated forms thereof, wherein X is hydrogen or chloro.

7. A method of treating a bacterial infection in a mammalian subject, which comprises administering thereto an antibacterially effective amount of a compound according to claim 1.

4,432,988

ANTI-THROMBOTIC DIAZABICYCLOOCTANEDIONES
Clifford J. Harris, Orpington, and Paul Barraclough, Maidstone, both of England, assignors to The Wellcome Foundation Ltd., United Kingdom

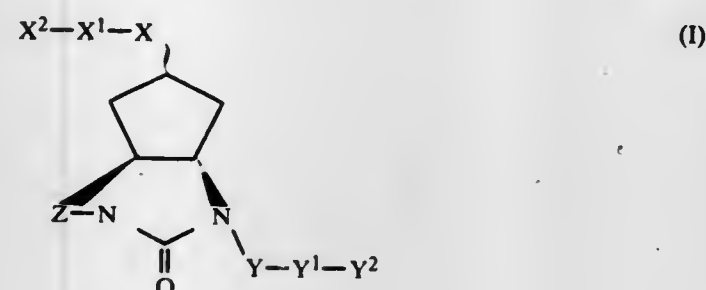
Filed Aug. 25, 1981, Ser. No. 296,138

Claims priority, application United Kingdom, Aug. 26, 1980, 8027561

Int. Cl.³ A61K 31/415; C07D 235/02

U.S. Cl. 424-273 R

1. A compound of the formula



wherein

X represents a sulphur atom (—S—) or oxygen atom (—O—) in the α or β -configuration;

X¹ represents a C₁₋₅ straight chain or branched alkylene group or C₃₋₅ straight chain or branched alkenylene group;

Z represents a hydrogen atom or a C₁₋₄ straight chain or branched alkyl group;

Y represents a group of formula —CR₂—CH₂— in which each R is independently selected from hydrogen and methyl;

Y¹ represents a methylene group substituted by hydroxyl, a methylene group substituted by hydroxyl and C₁₋₆ alkyl, a methylene group or a carbonyl group; and

Y² represents a C₁₋₇ straight chain or branched alkyl group, phenyl, benzyl or a C₄₋₇ cycloalkyl;

X² represents a carboxyl, carboxamide, hydroxymethylene, C₁₋₆ alkoxy carbonyl or 5-tetrazolyl group; or a salt of said compound of formula (1)

when either X² is carboxyl, or

Z is hydrogen or when

X² is carboxyl and Z is hydrogen.

9. A method for the treatment or prophylaxis of a thromboembolic disorder in a mammal which comprises administering to the said mammal a compound of claim 1 or a pharmaceutically acceptable salt thereof in an effective amount to treat or prevent said disorder.

4,432,989

α ARYL-1H-IMIDAZOLE-1-ETHANOLS

Homer K. Spencer, Randolph, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

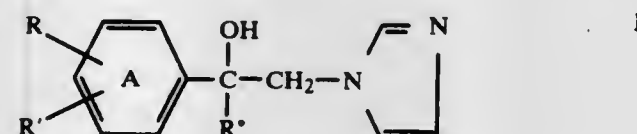
Continuation of Ser. No. 170,982, Jul. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 93,800, Nov. 13, 1979, abandoned. This application Apr. 27, 1982, Ser. No. 372,296

Int. Cl.³ C07D 233/64; A61K 31/415

U.S. Cl. 424-273 R

13 Claims

1. A compound of the formula:



wherein

R^{*} is cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion of 1 to 3 carbon atoms, said cycloalkyl and

4,432,991

THERAPEUTICALLY ACTIVE 3-AMINO-1-PHENYL(AND SUBSTITUTED PHENYL)-2-PYRAZOLINES

John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 282,905, Jul. 13, 1981, Pat. No. 4,360,680. This application Nov. 1, 1982, Ser. No. 438,080
Int. Cl.³ A61K 31/455; A01N 43/50

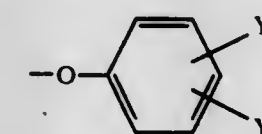
U.S. Cl. 424-273 P

6 Claims

1. A method of meliorating inflammation in a mammal which comprises administering to said mammal an effective anti-inflammatory amount of a compound selected from those of the formula:



or an optionally substituted phenoxy group in the 4-position of Ring A and having the formula:



R'' is hydrogen, alkyl of 1 to 4 carbon atoms or cation, or R and R' together represent alkenedioxy of 1 or 2 carbon atoms substituted onto adjacent carbon atoms of the phenyl Ring A, and

Y^{*} and Y are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms.

4,432,990

5-AMINOIMIDAZOLES AS IMMUNOREGULATORS

David Robinson, Shephed, England, assignor to Fisons plc, Ipswich, England

Filed May 11, 1982, Ser. No. 377,125

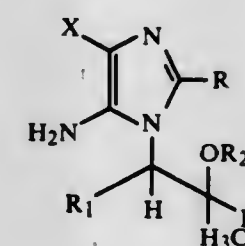
Claims priority, application United Kingdom, May 15, 1981, 8114895

Int. Cl.³ A61K 31/415; C07D 233/88, 233/90

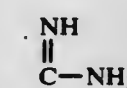
U.S. Cl. 424-273 R

9 Claims

1. A compound of formula I,



in which X is —CN, —CONH₂, —CSNH₂.



or —CO₂R₃.

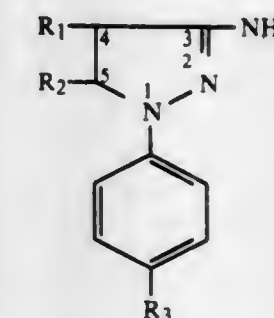
R is H or alkyl C 1 to 8,

R₁ and R₃, which may be the same or different, are each alkyl C 1 to 8, and

R₂ is H or alkanoyl C 2 to 8,

or a pharmaceutically acceptable acid addition salt thereof.

9. A method of treatment of a condition of the immunoregulatory system involving an auto-allergic component, which comprises administration of an effective amount of a compound according to claim 1 to a patient suffering from such a condition.

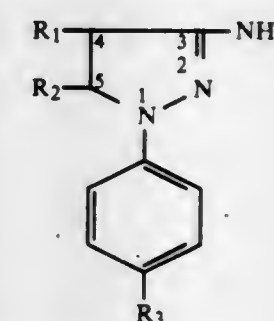


wherein R₁ is hydrogen or lower alkyl (C₁₋₄); R₂ is hydrogen, lower alkyl (C₁₋₄), phenyl or



where R₄ and R₅ are the same or different and are hydrogen, halogen, or lower alkyl (C₁₋₄); R₃ is hydrogen, lower alkyl (C₁₋₄), carboxy, methoxy, trifluoromethylcarbonyl or phenyl, with the proviso that when R₃ is hydrogen or lower alkyl (C₁₋₄), then R₂ must be disubstituted phenyl; and the pharmacologically acceptable acid-addition salts thereof.

5. A method of treating bacterial and/or fungal infections in a mammal which comprises administering to said mammal an effective antibacterial and/or antifungal amount of a compound selected from those of the formula:



wherein R₁ is hydrogen or lower alkyl (C₁₋₄); R₂ is hydrogen, lower alkyl (C₁₋₄), phenyl or



where R₄ and R₅ are the same or different and are hydrogen, halogen, or lower alkyl (C₁₋₄); R₃ is hydrogen, lower alkyl (C₁₋₄), carboxy, methoxy, trifluoromethylcarbonyl or phenyl; and the pharmacologically acceptable acid-addition salts thereof.

4,432,992
4-[5(AND**4-SUBSTITUTED-2-THIENYL-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE**

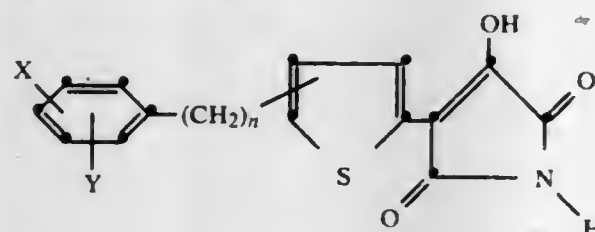
Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 5, 1979, Ser. No. 91,448
Int. Cl.³ A61K 431/38; C07D 409/04

U.S. Cl. 424—274

9 Claims

1. The compounds of the formula:



wherein

n is 0 to 2;

X and Y are independently hydrogen, halogen, loweralkyl containing 1 to 4 carbons, or a pharmaceutically acceptable salt thereof.

9. A method of treating persons afflicted with calcium oxalate kidney or bladder stones, or preventing the formation of kidney or bladder stones, which comprises administering to such a patient an effective amount of 4-[5-(4-chlorophenyl)-2-thienyl]-3-hydroxy-3-pyrrolidine-2,5-dione.

4,432,993

METHOD OF TREATING OBESITY, HYPERGLYCEMIA, INFLAMMATION AND PLATELET AGGREGATION

Michael J. Ferris, Sutton, England, assignor to Beecham Group Limited, England

Filed Sep. 24, 1981, Ser. No. 305,117

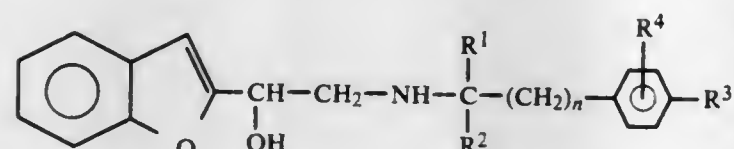
Claims priority, application United Kingdom, Sep. 26, 1980, 8031228

Int. Cl.³ A61K 31/34

U.S. Cl. 424—285

4 Claims

1. A method for treating obesity in humans or domestic animals comprising administering to an obese human or domestic mammal an effective, non-toxic amount of a compound of formula (I)



wherein

R¹ is hydrogen or methyl;R² is hydrogen or methyl;R³ is hydroxy, hydroxy (C₁₋₆) alkoxy, benzyloxy or a group

X—Y—Z

wherein

(i) X is a bond, Y is C₁₋₆ straight or branched alkylene or C₂₋₆ straight or branched alkenylene, and Z is hydrogen or carboxy or —COR⁵ in which R⁵ is C₁₋₆ straight or branched alkoxy or —NR⁶R⁷ in which R⁶ and R⁷ are the same or different and each is selected from hydrogen and C₁₋₆ straight or branched alkyl; or

(ii) X is oxygen, Y is C₁₋₆ straight or branched alkylene and Z is carboxy or —COR⁵ in which R⁵ is C₁₋₆ straight or branched alkoxy or —NR⁶R⁷ in which R⁶ and R⁷ are the same or different and each is selected from hydrogen and C₁₋₆ straight or branched alkyl; or

(iii) X is —O—CH₂—, Y is C₂₋₆ straight or branched alkenylene and Z is carboxy or —COR⁵, R⁵ is C₁₋₆ straight or

branched alkoxy or —NR⁶R⁷ and R⁶ and R⁷ are the same or different and each is selected from hydrogen and C₁₋₆ straight or branched alkyl,

R⁴ is selected from hydrogen, hydroxy, halogen, C₁₋₆ straight or branched alkyl or C₁₋₆ straight or branched alkoxy; and n is 1, 2 or 3 or a pharmaceutically acceptable salt thereof.

4,432,994

PESTICIDE COMPOUNDS, COMPOSITIONS AND METHODS

David P. Giles, Loughborough; John C. Kerry, Edwalton; Antonin Kozlik, Clifton; Bryan H. Palmer, Burton Joyce; Stephen W. Shutler, Hucknall, and Robert J. Willis, Carlton, all of England, assignors to The Boots Company, Nottingham, England

Division of Ser. No. 181,278, Aug. 25, 1980, Pat. No. 4,331,680.

This application Feb. 10, 1982, Ser. No. 347,591

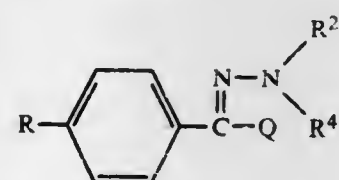
Claims priority, application United Kingdom, Aug. 31, 1979, 7930356

Int. Cl.³ A01N 47/12; C07C 125/065

U.S. Cl. 424—300

7 Claims

1. Compounds of formula I



in which Q is p-halophenyl or p-trifluoromethylphenyl and R is (C_nH_pF_qX_r)O where X is chlorine and n is 1 to 3, p is at least 1, q is at least 1, r is 0 to 2n-1, p+q+r=2n+1 and R⁴ is hydrogen and R² is an ester group of formula R⁵XCO, where X is oxygen or sulfur, and R⁵ is alkyl (optionally substituted by C₁₋₄ alkoxy; C₃₋₇ cycloalkyl; halogen; cyano; phenyl; naphthyl or phenoxy); cycloalkyl; alkenyl (optionally substituted by phenyl); alkynyl; 2-naphthyl; furyl; thienyl; pyridyl; morpholinyl; piperidyl or thiomorpholinyl.

5. A method of combating pests such as insects or acarids which comprise applying a compound according to claim 1 to the locus of the pest.

4,432,995

5-[2-ETHYLAMINO)-1-HYDROXYLETHYL] ANTHRANILONITRILE AND THE USE THEREOF IN MEAT PRODUCING ANIMALS

Jane A. Kiernan, Kendall Park, and Pamela K. Baker, Hopewell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 219,055, Dec. 22, 1980, Pat. No. 4,407,819, which is a continuation of Ser. No. 181,255, Aug. 25, 1980 abandoned, which is a continuation-in-part of Ser. No. 143,070, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 66,909, Aug. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 219,054, Dec. 22, 1980, Pat. No. 4,404,222, which is a continuation-in-part of Ser. No. 143,069, Apr. 24, 1980, abandoned which is a continuation-in-part of Ser. No. 66,908 Aug. 16, 1979, abandoned. This application Apr. 5, 1982, Ser. No. 365,138

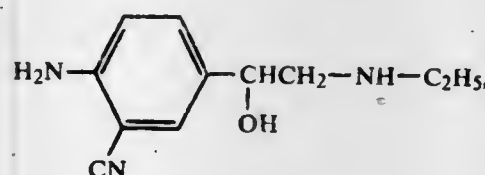
The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ A61K 31/275; C07C 121/50, 121/60, 121/74

U.S. Cl. 424—304

6 Claims

1. 5-[2-(ethylamino)-1-hydroxyethyl] anthranilonitrile of the formula



4,432,997

PROCESS FOR PRODUCING AROMA-CONTAINING FOOD PRODUCTS

Ernst H. Reimerdes, Kiel, Fed. Rep. of Germany, assignor to Dr. Otto Suwelack NACHF. GmbH & Co., Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,041

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106250

Int. Cl.³ A23C 9/12, 21/02; A23L 1/22

U.S. Cl. 426—7

11 Claims

1. A process for producing aroma-containing food products comprising

- separating exogenously or endogenously formed enzyme complexes from cultures of microorganisms suitable for developing specific aromatizing and flavoring agents,
- adding the separated enzyme complexes to an aqueous solution or suspension of a substrate whose composition corresponds to that of the basic food stuff to be aromatized,
- permitting the resultant mixture to undergo biochemical high speed ripening under conditions suitable for the formation of aromatizing and flavoring agents,
- terminating the biochemical high speed ripening by extensive inactivation of the enzyme complexes after the desired aromatizing and flavoring agent concentration has been reached, and
- adding the ferment solution or suspension containing the desired aromatizing and flavoring agents to a food substance to be aromatized in sufficient quantity to bring about aromatization.

4,432,996

HYPOCHOLESTEROLEMIC FERMENTATION PRODUCTS AND PROCESS OF PREPARATION

Vincent P. Gullo; Tony Y. K. Lam, both of Edison, and Richard L. Monaghan, Somerset, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 207,508, Nov. 17, 1980, Pat. No. 4,343,814.

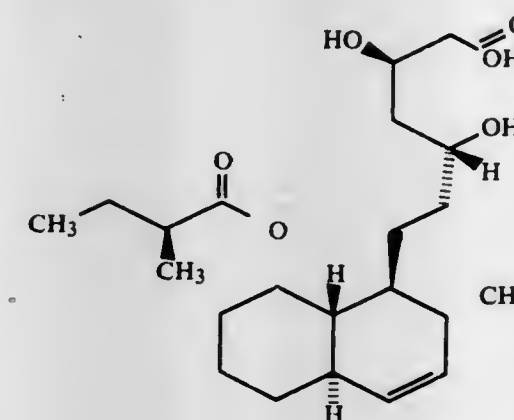
This application May 17, 1982, Ser. No. 378,934

Int. Cl.³ C07C 69/28, 69/76; A61K 31/22

U.S. Cl. 424—311

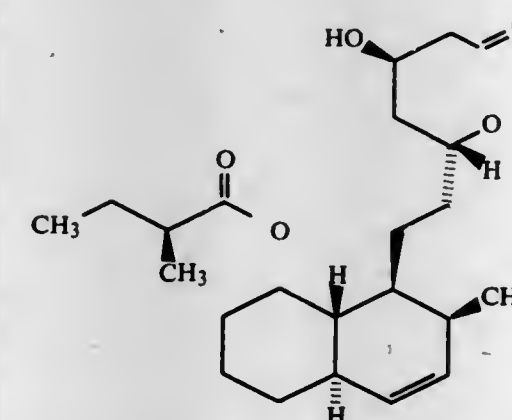
12 Claims

1. The compound:



or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylaminio.

7. An antihypercholesterolemic pharmaceutical composition comprising a pharmaceutical carrier and an effective antihypercholesterolemic amount of the compound:



or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylaminio.

4,432,998

PREPARATION OF BACTERIA CULTURES TOLERANT TO METAL IONS

Herbert R. Peer, Storm Lake, Iowa, assignor to Transagra Corporation, Storm Lake, Iowa

Continuation-in-part of Ser. No. 873,156, Jan. 27, 1978, Pat. No. 4,349,569. This application Sep. 3, 1982, Ser. No. 414,817

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.³ A23C 9/12; C12N 1/36, 1/20; C12R 1/23

U.S. Cl. 426—43

9 Claims

1. The improved process of producing non-clumping organisms of the class including Lactobacillus and Streptococcus cultured in the presence of cobalt carbonate to develop characteristics which enhance plant and animal growth when administered in small quantities, comprising the steps of,

- selecting a strain of said organisms that when cultured in the presence of said cobalt carbonate will become active in the enhancement of living animal and plant growth but which when subjected to the cobalt carbonate in culture in a nutrient medium develops the characteristic of clumping and a limitation on the percentage of acidity tolerated, sub-culturing said strain through a series of as many culture steps each in a fresh medium containing the cobalt carbonate and ammonium lactate as required to develop a non-clumping organism,
- producing a product by fermentation of the non-clumping organism in the presence of the cobalt carbonate and nutrients with an acidity higher than said limitation thereby increasing the production efficiency.

4,432,999

WHEY-SOYBEAN PRODUCT AND PROCESS FOR MAKING THE PRODUCT

Robert R. Bily, P.O. Box 3637, San Jose, Calif. 95156

Continuation-in-part of Ser. No. 300,699, Sep. 10, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,063

Int. Cl.³ A23C 21/06, 21/08; A23L 1/20

U.S. Cl. 426—583

10 Claims

1. The process of preparing a high protein whey-soybean product comprising cooking previously uncooked dry soy-

beans until they are cooked to a firm texture, comminuting the cooked soybeans in finely ground form in the presence of sufficient water to form a soy paste without evidence of free water in which constituents of the cooked soybeans released upon comminution of the cooked soybeans are uniformly dispersed in comminuted form in the soy paste, mixing said soy paste with sufficient whey solids to inter-react the whey constituents with the released constituents in the soy paste and form a paste without evidence of free water of the intermixed and inter-reacted constituents of the soy paste and the whey solids.

4,433,000

METHOD FOR PREVENTING SEPARATION IN FRUIT JUICE-CONTAINING PRODUCTS

Joe R. De Leon, and Maritza G. Boak, both of Houston, Tex., assignors to Coca Cola Company, Atlanta, Ga.

Continuation of Ser. No. 208,311, Nov. 19, 1980, abandoned.

This application Aug. 27, 1982, Ser. No. 412,243

Int. Cl.³ A23L 2/02

U.S. Cl. 426—599

11 Claims

1. A method for reducing separation of solids in a fruit juice-containing product comprising incorporating in said product from about 0.015 to about 0.20% of low viscosity propylene glycol alginate and from about 0.01 to about 0.10% of sodium carboxymethylcellulose, the percents being by weight of total single-strength product; the viscosity of the low viscosity propylene glycol alginate being from about 50 to 175 centipoise for a 2% w/w aqueous solution thereof and the viscosity of the sodium carboxymethylcellulose being from about 25 centipoise for 2% solids w/w aqueous solutions thereof to about 2500 centipoise for 1% solids w/w aqueous solutions thereof.

4,433,001

METHOD FOR PREPARING SCRAMBLED EGGS

Ralph E. Weimer, Lombard; Thaddeus J. Kalowski, Lisle, and Robert A. Novy, LaGrange Park, all of Ill., assignors to Restaurant Technology, Inc., Ill.

Filed Mar. 8, 1982, Ser. No. 355,687

Int. Cl.³ A23L 1/32

U.S. Cl. 426—614

9 Claims

1. A method of preparing scrambled eggs comprising the steps of disposing liquid eggs to be scrambled within each of at least two egg rings, each egg ring having a lower edge portion in intimate contact with a heated grill surface, rapidly moving the egg rings to and fro while maintaining said lower edge portions in said intimate contact with said grill surface, thereby to mix and rapidly move the eggs within the confines of said egg rings, and continuing said rapid movement until the eggs in each egg ring have congealed into a mass of cooked scrambled egg.

4,433,002

PROCESS FOR RAISIN PRODUCTION

Karl T. Zilch, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 133,942, Mar. 25, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 287,398

Int. Cl.³ A23L 1/212

U.S. Cl. 426—640

7 Claims

1. A method for increasing the drying rate of grapes for the production of raisins which comprises contacting the grapes for an effective period of time, but one which is insufficient to be detrimental to the raisin quality, with an aqueous solution maintained at a temperature from 60° C. to 98° C. containing 0.5 to 4 weight percent potassium carbonate and 0.5 to 5 weight percent of a lower alkyl ester of a C₈₋₂₂ fatty acid, said ester containing free fatty acid in an amount up to 10 percent by weight, and thereafter drying the grapes to the desired moisture content.

4,433,003

ELECTROGASDYNAMIC COATING SYSTEM

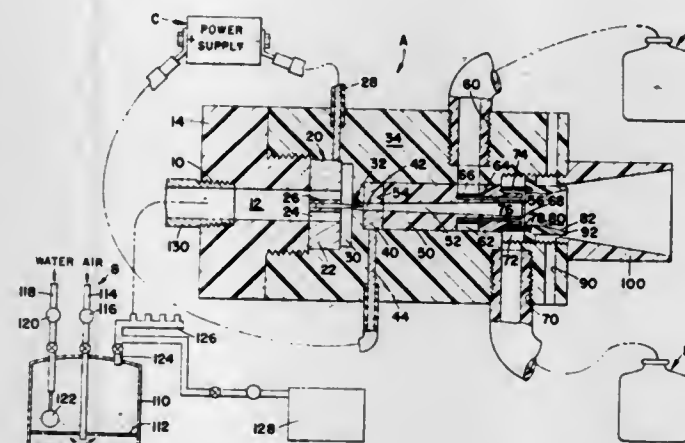
Meredith C. Gourdine, East Orange, N.J., assignor to Energy Innovations, Inc., East Orange, N.J.

Filed Oct. 13, 1981, Ser. No. 310,534

Int. Cl.³ B05D 1/06

U.S. Cl. 427—27

28 Claims



1. A method of electrogasdynamic spraying comprising: pressurizing a gas saturated with a condensable vapor; accelerating the saturated gas to a supersonic speed; passing the saturated gas through a corona discharge such that the vapor condenses into charged droplets on molecular ions injected by the corona discharge; passing the gas and charged droplets linearly and unrestricted from the corona discharge along an unrestricted dielectric passage directly to the atmosphere; aspirating particles of a first material peripherally into the passing gas and charged droplets, whereby the particle aspiration does not restrict the passing of the gas and charged droplets; spraying the gas, charged droplets, and peripherally aspirated first material particles directly into the atmosphere forming a charged cloud; and, coating the first material particles with charged droplets, electrostatic repulsion and a decrease in pressure from the dielectric passage to the atmosphere causing turbulence which intermixes the peripherally aspirated first material particles with the charged droplets, whereby even non-ionizable particles become coated with charge and assume a charged state.

19. A method of spraying comprising: entraining a condensable vapor into a gas; charging the vapor by causing the gas to flow past corona and attractor electrodes; spraying the gas and charged vapor and condensing the charged vapor to form a cloud of charged droplets; subsequent to forming the charged droplet cloud, mixing additional gas and entrained vapor with particles of a first material and condensing the additional vapor such that the particles become coated with charged droplets; spraying the charged droplet covered particles into the charged droplet cloud, whereby electrostatic repulsion between the charged cloud and the charged droplet covered particles raises the electrostatic potential of the charged particles; and, receiving the charged droplet covered particles on a grounded surface to dissipate the charge of the droplet covered particles and collect the coated particles.

4,433,004

SEMICONDUCTOR DEVICE AND A METHOD FOR MANUFACTURING THE SAME

Toshio Yonezawa, Yokosuka, and Masaharu Aoyama, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

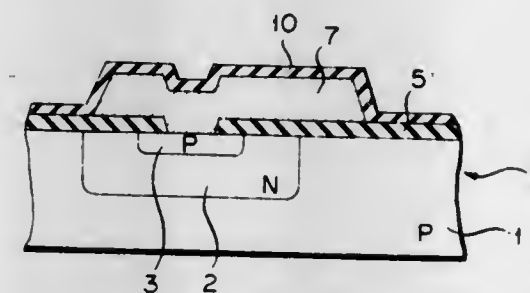
Filed Jul. 7, 1980, Ser. No. 166,182

Claims priority, application Japan, Jul. 11, 1979, 54-87717; Jul. 11, 1979, 54-87718

Int. Cl.³ H01L 21/283, 21/314

U.S. Cl. 427—38

11 Claims



1. A method for manufacturing a semiconductor device comprising the steps of forming a metal wiring layer comprising an Al alloy on the surface of a semiconductor substrate, and forming an alumina layer sufficiently thick for blocking water and Na containing at least one metal selected from the group consisting of Cu, Mg, Ni, Cr, Mn, Ti and Y on the surface of said metal wiring layer.

4,433,005

FATIGUE RESISTANT TITANIUM ALLOY ARTICLES

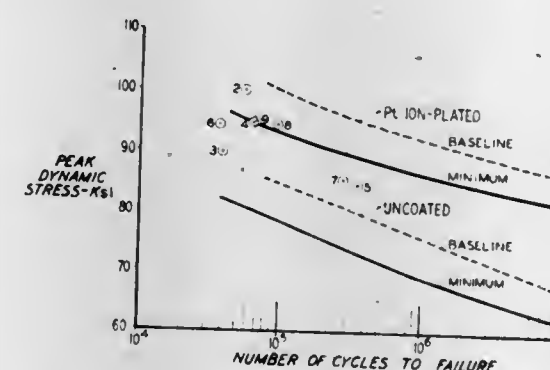
Brian A. Manty, Lake Park; Thomas A. Eckler, West Palm Beach, both of Fla., and Shiro Fujishiro, Yellow Springs, Ohio, assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 143,963, May 5, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,217

Int. Cl.³ B05D 3/06

U.S. Cl. 427—38

1 Claim



1. A method for increasing the elevated temperature fatigue strength of titanium articles which consists of using ion implantation to implant materials selected from the group consisting of the noble metals and titanium and mixtures thereof into the surface of the article under the following conditions: an incident ion energy between about 50 and about 200 kev with the total number of implanted ions exceeding about 10¹⁵ ions/sq. cm. of article surface but not exceeding about 10¹⁸ ions/sq. cm.

4,433,006

PROCESS FOR OXIDIZING SEMICONDUCTING COMPOUNDS, ESPECIALLY GALLIUM ARSENIDE

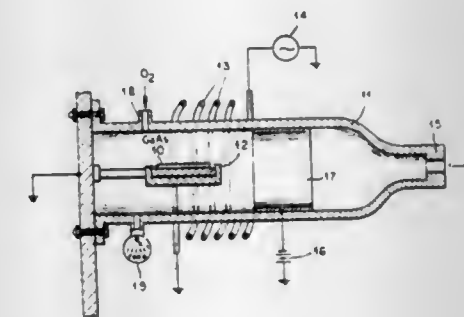
Antonio Cetronio, Rome, Italy, assignor to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy

Filed May 28, 1982, Ser. No. 383,179

Claims priority, application Italy, May 29, 1981, 48581 A/81 Int. Cl.³ B05D 3/06, 3/14, 5/12

U.S. Cl. 427—39

5 Claims



1. A process for providing a substrate of a semiconductive compound with an oxide layer, comprising the steps of placing said substrate in an atmosphere of highly ionized oxidizing gas, applying an anodic bias to said substrate, and heating said substrate to an elevated temperature significantly reducing the electrical resistivity of said compound.

4,433,007

PROCESS FOR COATING SUBSTRATES WITH AQUEOUS EMULSIONS CONTAINING ORGANOPOLYSILOXANES

Heinrich Marwitz; Kurt Ullrich, and Karl Huhn, all of Burg-hausen, Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,880

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105148

Int. Cl.³ B05D 3/14, 3/02

U.S. Cl. 427—54.1

15 Claims

1. A process for coating a substrate which comprises (A) coating the substrate with an aqueous emulsion containing: (1) A diorganopolysiloxane having terminal SiC-bonded vinyl groups and an average viscosity of from 1000 to 100,000 mPa.s at 25° C., (2) An organopolysiloxane having at least three Si-bonded hydrogen atoms per molecule, (3) A catalyst which promotes the addition of Si-bonded hydrogen to an aliphatic multiple bond, (4) A vinyl-containing trimethylsiloxy end-blocked diorganopolysiloxane which is present in an amount of from 3 to 30 parts by weight for each 60 to 90 parts by weight of diorganopolysiloxane (1), in which from 10 to 50 percent of the number of the organic radicals bonded to the Si atoms of the diorganopolysiloxane units are vinyl groups and the remaining organic radicals are free of aliphatic multiple bonds, (5) An organosilicon adhesive compound, and (6) At least one aqueous dispersion of a polymer selected from the group consisting of ethylene, vinyl acetate, acrylic acid esters, and copolymers thereof containing at least two of these monomers and thereafter (B) crosslinking the coated substrate.

8. The process of claim 1, wherein the coated substrate is crosslinked with ultraviolet light.

4,433,008

DOPED-OXIDE DIFFUSION OF PHOSPHORUS USING BOROPHOSPHOSILICATE GLASS

George L. Schnable, Lansdale, Pa., and Edward A. James, Pennington, N.J., assignors to RCA Corporation, New York, N.Y.
Filed May 11, 1982, Ser. No. 377,197
Int. Cl.³ B05D 5/12

U.S. Cl. 427—85

5 Claims

1. A method of diffusing phosphorus into a silicon substrate, said method comprising:
depositing directly on a surface of the substrate a layer of a borophosphosilicate glass; and heating the substrate and the layer to a temperature whereby phosphorus diffuses into the silicon and boron is retained in the glass, said temperature being below about 1000° C.

4,433,009

METHOD OF MANUFACTURING PRINTED CIRCUITS

Helmut Henze, and Ronald Capell, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,181

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021896

Int. Cl.³ B05D 5/12, 3/04; B44C 1/22; C03C 15/00

U.S. Cl. 427—97

15 Claims

1. A method of manufacturing printed circuits, comprising the steps of successively providing a base material having two sides and provided with an adhesive agent; forming a plurality of holes in the base material, in correspondence with a required conductors pattern, so as to subsequently provide for metal contact between conductive trains applied on both sides of a plate; coating the base material provided with the holes, by a photopolymer layer; selectively exposing and developing the photopolymer layer on the base material so as to release zones and boreholes for forming conductive paths, solder eyes and connecting contacts between both sides of the plate; selectively roughening the adhesive agent on the base material in the thus released zones; and applying a current-conductive layer in the regions of the thus released and roughened zones and boreholes so as to form the conductive paths, solder eyes and connecting contacts.

4,433,010

PROCESS FOR PREPARING GLASS CONSTRUCTIONS

Josef Pedain; Wolfgang Wellner, both of Cologne; Klus König, and Hermann Gruber, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,520

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1982, 3200430

Int. Cl.³ C03C 17/32

U.S. Cl. 427—160

6 Claims

1. A process for the preparation of glass construction comprising applying, to glass, a composition comprising a polyisocyanate component comprising at least one organic polyisocyanate and a polyol component, in quantities corresponding to an isocyanate index of from 80 to 130, wherein said polyol component comprises at least one dihydroxy polyester carbonate having a molecular weight of from 800 to 3000 which constitutes a reaction product of a hexanediol-(1,6) with ε-caprolactone, ε-hydroxycaproic acid, or a combination of these materials, in a molar ratio of hexanediol-(1,6) to ε-caprolactone, ε-hydroxycaproic acid, or a combination of these materials in the range of from 4:1 to 1:3, and diarylcarbonates.

4. A process for the preparation of glass constructions comprising applying to glass, a composition comprising an isocyanate prepolymer component which is a prepolymer comprising the reaction of a polyol component with excess quantities of a polyisocyanate component comprising at least one organic polyisocyanate, wherein said polyol component comprises at

least one dihydroxy polyester carbonate having a molecular weight of from 800 to 3000 which constitutes a reaction product of a hexanediol-(1,6) with ε-caprolactone, ε-hydroxycaproic acid, or a combination of these materials, in a molar ratio of hexanediol-(1,6) to ε-caprolactone, ε-hydroxycaproic acid, or a combination of these materials in the range of from 4:1 to 1:3, and diarylcarbonates.

4,433,011

TRACKING NOZZLE FOR VISCOUS FLUID APPLICATION

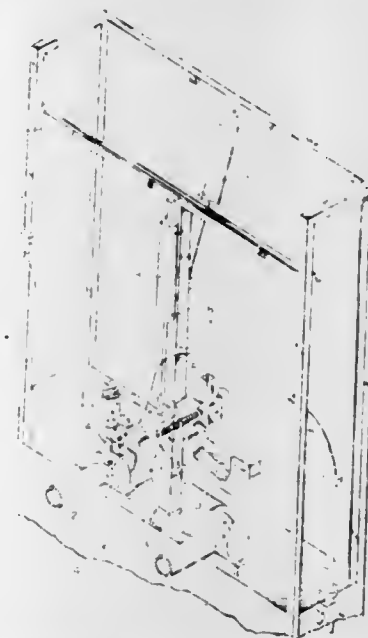
Douglas A. Larson, Chicago, Ill.; Kenneth L. Tacke; Craig A. White, both of Woodinville, Wash., and Ronald E. Paxton, Seattle, Wash., assignors to Rockcor, Inc., Redmond, Wash.

Filed Dec. 8, 1981, Ser. No. 328,607

Int. Cl.³ B60C 21/08; B29H 13/00

U.S. Cl. 427—231

22 Claims



8. A method for applying a continuous layer of viscous material of predetermined dimensions to the interior of a toroidal body comprising the steps of
positioning a dispenser in the interior of the toroidal body, providing relative rotation between the body and the dispenser,
dispensing the viscous material onto an interior surface of the body in a width less than the predetermined width of the desired layer,
moving the dispenser relative to the body to produce a layer of the viscous material of said predetermined dimensions.

4,433,012

A PROCESS FOR THE PYROLYTIC DEPOSITION OF ALUMINUM FROM TIBA

Rudolf A. H. Heinecke, Harlow, and Ronald C. Stern, Cheshunt, both of England, assignors to IIT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 168,845, Jul. 10, 1980, abandoned which is a continuation of Ser. No. 34,067, Apr. 27, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 324,729 Int. Cl.³ C23C 11/00, 13/00

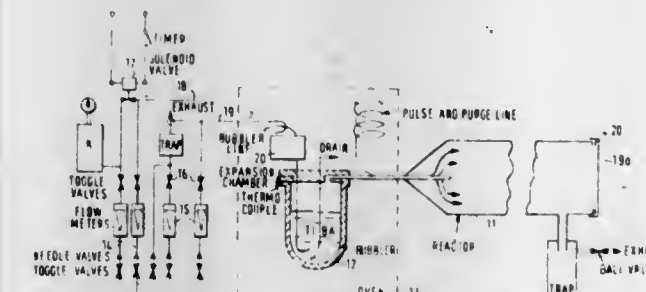
U.S. Cl. 427—252

8 Claims

1. A process for the pyrolytic deposition of aluminum from tri-isobutyl aluminum (TIBA) to form an aluminum film on a work piece, comprising the steps of:

- purging a reaction chamber with nitrogen prior to initiation of said deposition; and
- terminating the nitrogen purge and pyrolytically depositing aluminum on said workpiece, said depositing step comprising:
 - passing a stream of dry, oxygen-free inert gas through a quantity of liquid TIBA so as to entrain a portion of TIBA vapor;

- maintaining the liquid TIBA at a temperature between 80° and 90° C.;
- directing the inert gas and entrained TIBA to said reaction chamber in which said workpiece is disposed;
- maintaining a temperature in said reaction chamber within the range between 250° to 270° C. to cause the pyrolytic deposition of aluminum onto a surface of the workpiece; and



- supplying periodic pulses of dry, oxygen free inert gas without entrained TIBA to the reaction chamber during deposition whereby a substantially uniform TIBA concentration is maintained within the chamber and spent reactive gases resulting from the decomposition of TIBA are purged from the chamber.

4,433,013

PROCESS FOR IMPARTING HYDROPHOBICITY TO MINERAL SUBSTRATES

Josef A. Pühringer, Stockholm-Täby, Sweden, assignor to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 39,581, May 31, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,098

Int. Cl.³ B05D 3/10

U.S. Cl. 427—337

1 Claim

1. A process for imparting hydrophobicity to an inorganic porous mineral substrate comprising the steps of
applying a composition comprising a dispersion or emulsion formed of a first component selected from the group consisting of a silane, a condensation product of silane, and a hydrolysis product of silane; a second component consisting of 0.01 to 1.0% by volume deactivatable surfactant; and a medium wherein these components are dispersed or emulsified, selected from the group consisting of water and a water-alcohol mixture, to the mineral substrate; and thereafter
deactivating the surfactant by application thereto of liquid or gas containing a deactivating agent selected from the group consisting of alkaline, acid, reducing or oxidizing agents.

4,433,014

PIGMENTED, CORROSION RESISTANT, THERMOSETTING COATING COMPOSITIONS

Joseph E. Gaske, Mt. Prospect, and Hannu K. Pennanen, Elk Grove, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 21, 1982, Ser. No. 390,707

Int. Cl.³ B05D 3/02

U.S. Cl. 427—380

14 Claims

1. A pigmented, corrosion resistant, thermosetting organic solvent solution coating composition comprising, a resinous polyepoxide, a phenoplast resin cross-linking agent for said polyepoxide, a phosphoric acid ester catalyst which is the ester reaction product of ortho phosphoric acid with an aliphatic diol, a chromium-containing pigment providing resistance to corrosion, and a clay having the capacity to fix phosphate.

14. A method of protecting a metal surface subject to corrosion comprising, applying a coating of the coating composition of claim 1, baking the coating to remove solvents and provide a dry film without removing the phosphoric acid contained

therein, overcoating the dry film coating with a topcoat, and baking said doubly coated substrate at a temperature and for a time sufficient to cure said first coating.

4,433,015

TREATMENT OF METAL WITH DERIVATIVE OF POLY-4-VINYLPHENOL

Andreas Lindert, Troy, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

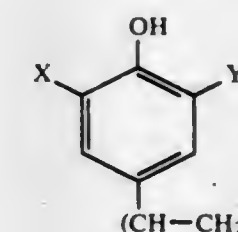
Filed Apr. 7, 1982, Ser. No. 366,449

Int. Cl.³ B05D 3/02

U.S. Cl. 427—388.4

12 Claims

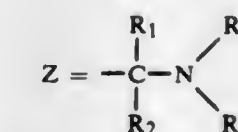
1. A stable aqueous composition comprising an effective amount of a water soluble or water dispersible compound selected from the group consisting of a polymer having the following general formula, acid salts thereof and mixtures thereof:



where:

n=from 2 up to a number at which the polymer is not water soluble or water dispersible;

X=H or Z;



Y=H, Z, CR₅R₆OR₇, or CH₂Cl;

R₁ through R₇=H, or an alkyl, aryl, hydroxy-alkyl, amino-alkyl, mercapto-alkyl or phospho-alkyl moiety, said R₁ through R₇ being of carbon chain lengths up to a length at which the compound is not water soluble or dispersible; wherein at least one of X or Y=Z and the Z moieties are present in sufficient amount that the compound is water soluble or water dispersible to form such stable aqueous composition.

4,433,016

MULTIPLE GLAZED UNIT BONDED WITH FIBER-REINFORCED SILICATE CEMENT

James E. Neely, Jr., Lower Burrell, Pa.

Continuation-in-part of Ser. No. 286,993, Jul. 27, 1981, Pat. No. 4,334,941. This application Jun. 14, 1982, Ser. No. 388,330

Int. Cl.³ E06B 3/24; C09J 1/02; B32B 13/04

U.S. Cl. 428—34

10 Claims

6. An article of manufacture which comprises:
a. at least two glass sheets in spaced relationship;
b. a cement composition consisting essentially of sodium silicate, potassium silicate, filler and reinforcing fibers; and
wherein said glass sheets are bonded together about the perimeter portion in spaced relationship by said cement composition and an organic sealant about the perimeter portion outside said cement.

4,433,017

THERMALLY REACTIVE WATER-SOLUBLE BLOCKED URETHANE PREPOLYMER

Sumio Goto, Moriyama; Takeshi Doi, Omibachiman, and Kazuo Sato, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Sep. 14, 1982, Ser. No. 418,121

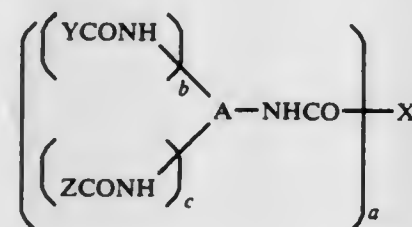
Claims priority, application Japan, Sep. 17, 1981, 56-148364; Oct. 13, 1981, 56-164850

Int. Cl.³ C08G 18/80; C08F 8/30

U.S. Cl. 528—45

12 Claims

1. A thermally reactive, water-soluble and water-stable urethane prepolymer having at least one ionizable group and a plurality of masked isocyanate groups capable of regenerating free isocyanate groups at an elevated temperature, said urethane prepolymer having the formula:



wherein

A is an organic bridging group having a valence of 3 to 5, X is the residue having a valence of 2 to 4 of an active hydrogen compound having a corresponding number of reactive hydrogen atoms, after removal of said reactive hydrogen atoms,

Y is a masking group for the masked isocyanate group,

Z is the residue of a compound having at least one reactive hydrogen atom and at least one ionizable group, after removal of said at least one reactive hydrogen atom,

a is the integer 2, 3 or 4, and

b and c are such that the sum of b+c equals 2, 3 or 4 and the products ab and ac are at least 2 and at least 1, respectively.

4,433,018

METHOD OF MANUFACTURING OF TEXTILE FLAT STRUCTURE AND TEXTILE WEB MANUFACTURED THEREBY

Günter Tesch, Fribourg, Switzerland, assignor to Breveteam S.A., Zug, Switzerland

Filed Dec. 10, 1981, Ser. No. 329,300

Claims priority, application Switzerland, Dec. 23, 1980, 9507/80

Int. Cl.³ D04H 11/00; D05C 17/02

U.S. Cl. 428—89

31 Claims

17. A textile flat structure with a texture and/or pattern at its upper side, comprising a carrier layer having an upper side and a lower side

a pile yarn tufted in said carrier layer and having pile loops projecting from said upper side of said carrier layer and forming an upper layer, and base loops extending at said lower side of said carrier layer, and wherein some of said pile loops had been engaged by needles and pushed through said carrier layer thereby said upper layer having at least non-uniform different pile heights; and

a lower layer arranged below said carrier layer and composed of a fiber material extending from said lower layer through said carrier layer into said upper layer so that said pile loops of said upper layer are mixed with definite fiber structures extending from said lower layer into said upper layer and anchored in at least one of said lower layer and carrier layer.

4,433,019

INSULATIVE FABRIC

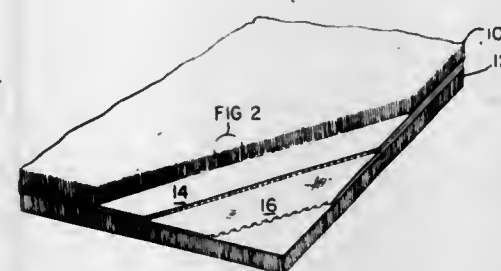
James F. Chumbley, 16108 Inglewood Rd., Bothell, Wash. 98011

Filed Nov. 8, 1982, Ser. No. 439,748

Int. Cl.³ B32B 5/12

U.S. Cl. 428—110

9 Claims



(I)

1. An insulative fabric, comprising:

(a) a central sheet of breathable, substantially crinkle-free, pliant, aluminized polymeric film having sufficient tensile strength for use as a quilting fabric in quilts, comforters, or clothing; and

(b) spaced layers of hollow, microtubular, filamentous insulation sandwiching the film, each layer being needle-punched through the film

(1) to reduce the overall thickness of the insulation without substantially reducing the insulative capacity of the fabric, and

(2) to provide passageways through the film so that the film is breathable,

wherein the fabric has a soft, fleecy quality; is of a substantially uniform, predetermined thickness; and is substantially noiseless when folded or wrinkled.

4,433,020

SHEET-LIKE MATERIAL, HEAT-INSULATING MATERIAL DERIVED THEREFROM AND METHODS OF MANUFACTURING SAME

Hiroshi Narukawa; Rentaro Tada; Yasuhira Takeuchi, and Osamu Ohara, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Oct. 21, 1982, Ser. No. 435,638

Claims priority, application Japan, Oct. 22, 1981, 56-169540; Apr. 14, 1982, 57-62782

Int. Cl.³ B32B 5/12

U.S. Cl. 428—113

33 Claims

1. A sheet-like material comprising 80 to 97% by weight of a non-inflammable fibrous substance, and 3 to 20% by weight of a binder consisting essentially of a thermoplastic resin, said fibrous substance being orientated at an angle of 3° to 80°, said material having an intermediate layer containing at least 2% by weight of said binder and at least 25% of the average quantity of said binder in said material.

4,433,021

SOUND ATTENUATION SANDWICH PANEL INCLUDING BARRIER MATERIAL FOR CORROSION CONTROL

Frank J. Riel, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 22, 1982, Ser. No. 421,126

Int. Cl.³ B32B 3/12

U.S. Cl. 428—116

14 Claims

1. An acoustic honeycomb sandwich panel having structural integrity for use on and around the high speed air and gas flow surfaces of a high-speed aircraft, comprising:

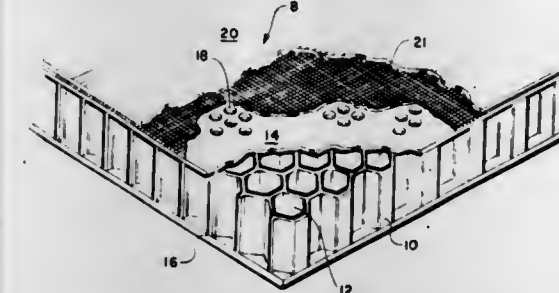
a honeycomb core having a multiplicity of cells disposed transversely to the panel;

a perforated facing sheet of thin sheet metal bonded to one core face;

an imperforate facing of thin sheet metal bonded to the other core face;

a thin layer of open weave non-metallic fabric providing spacing between the strands of the weave of a predetermined size disposed on substantially the entire surface of said perforated sheet remote from said core; and

a thin sheet of microporous metallic fabric constructed of a



metal different from said perforated sheet bonded to and covering substantially the entire surface of said perforated sheet remote from said core with said non-metallic fabric sandwiched therebetween, whereby the non-metallic fabric isolates the adjacent sheets and, the flow through air resistance of the microporous fabric and the perforated facing sheet is not affected by the interposition therebetween of said non-metallic fabric.

4,433,022

THREE-DIMENSIONAL CEILING BOARD FACING
William C. Schwartz, Greensboro, N.C., and Paul B. Blalock, Norwood, N.J., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 104,145, Dec. 17, 1979, Pat. No. 4,320,163.

This application Dec. 23, 1981, Ser. No. 333,715

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ B05D 5/00, 3/02; B32B 3/10, 5/20

U.S. Cl. 428—158

4 Claims



3. A decorative ceiling board consisting of a facing fabric laminated to a substrate, said facing fabric including on one surface thereof a uniform cellular layer of foamed and cured material having had printed thereon a foamable, expandable printing paste in a discontinuous predetermined architectural pattern, the foamable printing paste having been expanded and cured.

4,433,023

PANEL FOR ELEVATOR

Kazutoshi Ohta, and Kunio Sakakibara, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 337,507, Jan. 6, 1982, abandoned. This application May 11, 1983, Ser. No. 492,158

Claims priority, application Japan, Jan. 22, 1981, 56-7830[U]

Int. Cl.³ B32B 7/14, 3/28

U.S. Cl. 428—182

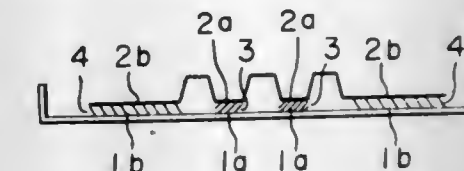
5 Claims

1. A vibrationally damped reinforced structural panel comprising:

a flat front plate having a first surface;

a corrugated reinforcing substrate, the corrugations of said substrate defining at least three aligned second surfaces,

said substrate being positioned adjacent said front plate such that said second surfaces face said first surface; a rigid cured binder bonding only central ones of said second surfaces to said first surface; and



an elastic material bonding only peripheral ones of said surfaces to said first surface, whereby said cured binder provides a fixed bonding between said front plate and substrate while said elastic material provides vibration damping.

4,433,024

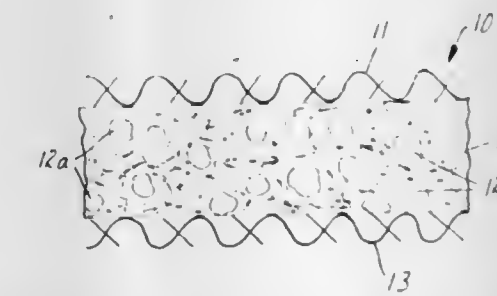
REDUCED-STRESS VAPOR-SORPTIVE GARMENTS
Gilbert L. Eian, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 23, 1982, Ser. No. 401,062

Int. Cl.³ B32B 27/14

U.S. Cl. 428—198

38 Claims



1. Reduced-stress vapor-sorbing garment having as one-component sheet material which comprises a permeable support fabric and, attached to the permeable support fabric, a fibrous web which exhibits an insulation value of less than about 0.4 clo and which comprises a coherent mass of melt-blown organic polymeric fibers and vapor-sorptive particles uniformly dispersed in the mass of fibers in an amount of at least 15 grams per square meter area of the sheet material.

4,433,025

HEAT REFLECTING WALL OR CEILING COVERING

Günter Pusch, Bannholzweg 12, 6903 Neckargemund 2; Dieter E. Aisslinger, Heidestr. 54, 6222 Geisenheim; Alexander Hoffmann, Schlostrasse 32, 6909 Rotenberg, and Klaus-Werner Pusch, Bannholzweg 10, 6903 Neckargemund 2, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 137,507, Apr. 4, 1980, Pat. No. 4,340,634, which is a continuation-in-part of Ser. No. 276,791, Jun. 24, 1981. This application Jun. 14, 1982, Ser. No. 388,494

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914476; Jul. 17, 1979, 2928848

Int. Cl.³ B32B 3/10, 3/28

U.S. Cl. 428—207

18 Claims

1. A heat-reflecting covering material for walls and ceilings, having a reflectivity for infrared radiation of more than 60%, comprising a laminate of

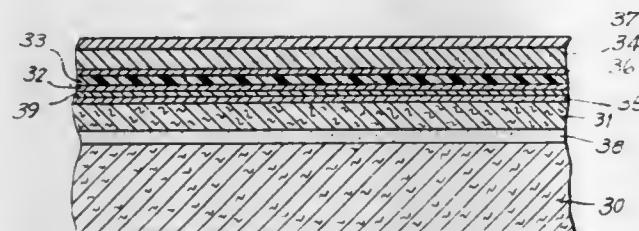
(a) a base substrate material made of wood paper having a weight range of 80 to 300 gms/m²;

(b) an adhesive lining of a lamination glue 5 to 30 μm in thickness on said base substrate material;

(c) a thin layer of a moisture and alkali resistant paper having a weight range of 40 to 100 gms/m² thereon;

(d) a clay coating of 2 to 30 μm thickness;

- (e) a base coat of priming layer in a thickness of 1 to 20 μm ;
 (f) a discontinuous aluminum layer 10 to 1000 nanometers in thickness;
 (g) a thin veneer protection layer in a thickness of 0.2 to 10 μm ;
 (h) a white base cover layer in a thickness of 1 to 20 μm providing the neutral white background;



- (i) a finishing veneer coating in a thickness of 0.2 to 2 μm and comprising a binder and at least one coloring agent, said veneer being substantially transparent in the wavelength range of 4 to 20 μm ; and
 (j) a molecular layer of dust and water repellent material in the thickness of 0.05 to 1.0 μm .

4,433,026

CLOTH-LIKE MATERIAL FOR FORMING A SURGICAL GOWN AND/OR A SURGICAL DRAPE AND METHOD OF MAKING THE SAME

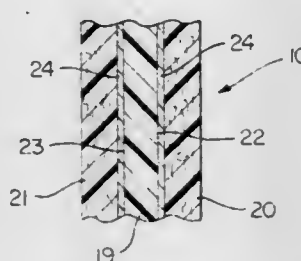
Bradley J. Molde, Pleasant Plains, Ohio, assignor to Standard Textile Company, Inc., Cincinnati, Ohio

Filed Oct. 29, 1981, Ser. No. 316,080

Int. Cl.³ B32B 7/00

U.S. Cl. 428—252

18 Claims



9. In a cloth-like material for forming a surgical gown and/or a surgical drape, the improvement wherein said material comprises a three-layer flexible laminate having a middle layer of plastic film material and two outer layers of plastic fabric material secured to opposed sides of said middle layer, said middle layer being substantially waterproof and air breathable, one of said outer layers being substantially dimensionally stable, the other of said outer layers being substantially dimensionally unstable so as to generally conform to said one outer layer, said outer layers being secured to said middle layer by adhesive means, said one outer layer comprising a poplin weave of a polyester continuous filament yarn, said other outer layer comprising a tri-cot knit of a polyester continuous filament yarn, said middle layer comprising an expanded polytetrafluoroethylene micro-porous film.

4,433,027

PROCESS FOR FINISHING TEXTILES WITH ALKOXYLATION PRODUCTS, AND COMPOSITIONS FOR THIS

Hans Deiner, Neusäss, and Bernhard Sandner, Diedorf, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 153,389, May 27, 1980, abandoned.

This application Dec. 10, 1982, Ser. No. 448,553

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922376

Int. Cl.³ B32B 7/00; B05D 3/02

U.S. Cl. 428—260

11 Claims

1. A process for finishing a textile which comprises applying to the textile a diluted composition which contains an emulsified or dissolved alkoxylation product of a hydrogen organopolysiloxane with at least one monovalent unsaturated alcohol having 11 to 18 carbon atoms, and heating the treated textile materials.

4,433,028

METHOD OF TREATING CELLULOSE DI-ACETATE FIBERS

Howard Groelinger, Plainview, N.Y., assignor to M.J.H. Converters, Inc., New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,276

Int. Cl.³ D02G 3/00; B05D 3/02

U.S. Cl. 428—378

12 Claims

1. A method of treating cellulose di-acetate fibers to reduce the shrinkage characteristics thereof comprising:

- immersing said fibers in a treating solution comprising a carrier, an organic thermosetting resin, a nonionic fluorocarbon long chain polymer and an acid liberating catalyst, wherein the fluorocarbon polymer plus the resin comprise between 2 and 25 weight percent of the solution, wherein the ratio by weight of polymer to resin is between 1:1 and 4:1, wherein the fluorocarbon polymer comprises a copolymer of at least 25 weight percent of a fluoroalkyl monomer and an alkylvinyl ether having the formula $\text{CH}_2=\text{CH}-\text{OR}$ wherein R represents a halogen substituted lower alkyl group, and wherein the carrier is selected from the group consisting of water, water plus a water soluble organic solvent, and an organic solvent, wherein the organic solvent is of the type which can be volatilized at a temperature below 300° F. without leaving a significant residue and of the type which can be mixed with the fluorocarbon and with the resin without reacting therewith;
- removing said fibers from said treating solution;
- drying said fibers with the treating solution thereon at a temperature below 300° F. to drive off substantially all of said carrier therefrom; and
- curing said fibers with the resin-polymer-catalyst combination thereon at a temperature in excess of 300° F. to polymerize said resin and effect cross-linkage thereof with said fluorocarbon polymer.

11. Acetate fibers treated in accordance with the method of claim 1.

4,433,029

EXPANDABLE THERMOPLASTIC POLYMER BEADS WITH METHOD OF PRODUCING SAME

Kenichi Senda, Akashi; Tatehiko Nishida, Himeji, and Masao Nakagawa, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 131,047, Mar. 17, 1980, Pat. No. 4,368,218.

This application Jul. 2, 1982, Ser. No. 394,683

Claims priority, application Japan, Mar. 19, 1979, 54-32680

Int. Cl.³ C08J 9/16, 9/18

U.S. Cl. 428—407

11 Claims

1. Expandable thermoplastic polymer beads comprising a core and a skin substantially surrounding and adhered to said

core, and a foaming agent contained in at least said core, said core consisting of a polymer made from one or more kind of vinyl monomers, said skin comprising a cross-linked olefin polymer produced by polymerizing one or more vinyl monomers in the presence of an olefin polymer and a cross-linking agent, and said foaming agent being gaseous or liquid at ordinary temperature and pressure and having a boiling point lower than the softening point of the core, wherein the weight ratio of said core to said skin is in the range of from 95:5 to 30:70.

4,433,030

PHOTOGRAPHIC SUPPORT

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1982, Ser. No. 372,793

Claims priority, application Japan, May 11, 1981, 56-70378

Int. Cl.³ B32B 27/10

U.S. Cl. 428—476.9

7 Claims

1. A water-proof photographic support comprising a paper sheet coated with a polyolefin on both surfaces thereof, in which the paper sheet contains an alkylketene dimer in an amount of 0.2–3.0% by weight based on the weight of absolutely dried pulp constituting the paper sheet, and a cationic polyacrylamide in an amount of 1/10–10/1 of the weight of the alkylketene dimer.

4,433,031

PRESERVATION OF WOOD

William R. Allen, Sr., Port Murray, N.J., assignor to Cherokee Industries, Inc., Hayward, Wis.

Division of Ser. No. 295,850, Aug. 24, 1981, Pat. No. 4,399,195.

This application May 5, 1983, Ser. No. 491,924

Int. Cl.³ B27K 3/40; B32B 21/08; C08K 5/13

U.S. Cl. 428—541

19 Claims

1. A method of treating wood, by causing the deep penetration of the wood by a treating composition, which comprises:

- placing the wood to be treated in an evacuation zone and exposing the wood to pressures below atmospheric pressure for a time sufficient to remove moisture and other volatiles from the wood;
- immersing the wood in a water based treating composition consisting essentially of an effective amount of a halogenated phenol wood preservative, a sufficient amount of a phenolic resin prepolymer which upon curing will prevent preservative migration, and an amount of a coupling agent sufficient to substantially maintain the preservative and the prepolymer in solution;
- maintaining the wood immersed in the treating composition under said reduced pressure until the solution has penetrated into the wood;
- increasing the pressure above the liquid to a pressure above atmospheric to thereby increase the penetration of the wood by said treating agent; and
- recovering the treated wood.

11. Treated wood produced by the process of claim 1.

4,433,032

HIGH CHROME WORK ROLL

Shiro Nakamura, Ashiya; Yoshihiro Nakagawa, Nishinomiya, and Takashi Hashimoto, Sakai, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Apr. 22, 1981, Ser. No. 256,568

Claims priority, application Japan, Oct. 26, 1979, 54-138461

Int. Cl.³ B32B 15/18

U.S. Cl. 428—682

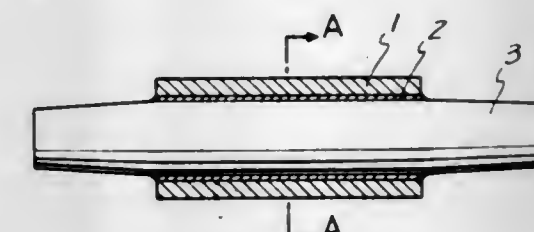
6 Claims

1. A high chrome work roll comprising an intermediary layer of a cast iron having, on the weight basis, 1.0–2.5% C, 0.5–1.5% Si, 0.5–1.5% Mn and 5–10% Cr, balance substantially Fe being provided between, and united, integrally in the metallurgical sense, with the outer layer of a cast iron having 2.0–3.2% C, 0.5–1.5% Si, 0.5–1.5% Mn, less than 0.08% P, less

than 0.06% S, 1.0–2.0% Ni, 10–25% Cr and 0.5–1.5% Mo, balance substantially Fe, and the core having 3.0–3.8% C, 2.3–3.0% Si, 0.3–1.0% Mn, less than 0.1% P, less than 0.02% S, and 0.02–0.1% Mg, balance substantially Fe,

wherein the hardness of the outer layer is 70–80 Hs.

2. A high chrome work roll comprising an intermediary layer of a cast iron having, on the weight basis, 1.0–2.5% C, 0.5–1.5% Si, 0.5–1.5% Mn, less than 1.5% Ni, 5–10% Cr and less than 1.0% Mo, balance substantially Fe being provided



between, and united, integrally in the metallurgical sense, with the outer layer of a cast iron having 2.0–3.2% C, 0.5–1.5% Si, 0.5–1.5% Mn, less than 0.08% P, less than 0.06% S, 1.0–2.0% Ni, 10–25% Cr, 0.5–1.5% Mo less than 1.0% Nb and less than 1.0% V, balance substantially Fe, and the core having 3.0–3.8% C, 2.3–3.0% Si, 0.3–1.0% Mn, less than 0.1% P, less than 0.02% S, less than 2.0% Ni, less than 1.5% Cr, less than 1.0% Mo and 0.02–0.1% Mg, balance substantially Fe, wherein the hardness of the outer layer is 70–80 Hs.

4,433,033

INDUSTRIAL METALS COATED WITH AWARUITE-LIKE SYNTHETIC NICKEL/IRON ALLOYS

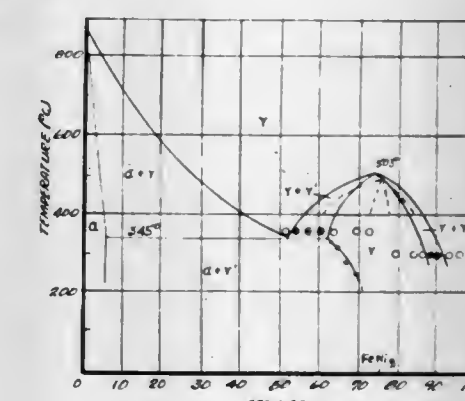
John M. Bird, 1187 Ellis Hollow Rd., Ithaca, N.Y. 14850

Filed Aug. 30, 1982, Ser. No. 412,700

Int. Cl.³ C23C 1/00, 5/00, 7/00

U.S. Cl. 428—682

25 Claims



LEGEND
 ○ 1: ONE PHASE REGION
 ● 2: TWO PHASE REGION
 ■ 3: THREE PHASE REGION
 ▲ 4: FOUR PHASE REGION
 ▼ 5: FIVE PHASE REGION
 ◆ 6: SIX PHASE REGION
 ◇ 7: SEVEN PHASE REGION
 ○ 8: EIGHT PHASE REGION
 ● 9: NINE PHASE REGION
 ■ 10: TEN PHASE REGION
 ▲ 11: ELEVEN PHASE REGION
 ▼ 12: TWELVE PHASE REGION
 ◆ 13: THIRTEEN PHASE REGION
 ◇ 14: FOURTEEN PHASE REGION
 ○ 15: FIFTEEN PHASE REGION
 ● 16: SIXTEEN PHASE REGION
 ■ 17: SEVENTEEN PHASE REGION
 ▲ 18: EIGHTEEN PHASE REGION
 ▼ 19: NINETEEN PHASE REGION
 ◆ 20: TWENTY PHASE REGION
 ◇ 21: TWENTY-ONE PHASE REGION
 ○ 22: TWENTY-TWO PHASE REGION
 ● 23: TWENTY-THREE PHASE REGION
 ■ 24: TWENTY-FOUR PHASE REGION
 ▲ 25: TWENTY-FIVE PHASE REGION
 ▼ 26: TWENTY-SIX PHASE REGION
 ◆ 27: TWENTY-SEVEN PHASE REGION
 ◇ 28: TWENTY-EIGHT PHASE REGION
 ○ 29: TWENTY-NINE PHASE REGION
 ● 30: THIRTY PHASE REGION
 ■ 31: THIRTY-ONE PHASE REGION
 ▲ 32: THIRTY-TWO PHASE REGION
 ▼ 33: THIRTY-THREE PHASE REGION
 ◆ 34: THIRTY-FOUR PHASE REGION
 ◇ 35: THIRTY-FIVE PHASE REGION
 ○ 36: THIRTY-SIX PHASE REGION
 ● 37: THIRTY-SEVEN PHASE REGION
 ■ 38: THIRTY-EIGHT PHASE REGION
 ▲ 39: THIRTY-NINE PHASE REGION
 ▼ 40: FORTY PHASE REGION
 ◆ 41: FORTY-ONE PHASE REGION
 ◇ 42: FORTY-TWO PHASE REGION
 ○ 43: FORTY-THREE PHASE REGION
 ● 44: FORTY-FOUR PHASE REGION
 ■ 45: FORTY-FIVE PHASE REGION
 ▲ 46: FORTY-SIX PHASE REGION
 ▼ 47: FORTY-SEVEN PHASE REGION
 ◆ 48: FORTY-EIGHT PHASE REGION
 ◇ 49: FORTY-NINE PHASE REGION
 ○ 50: FIFTY PHASE REGION

1. A product comprising an industrial metal having a corrosion protective coating of a corrosion resistant synthetic alloy consisting essentially of from about 64 to about 83 atomic % nickel and from about 17 to about 36 atomic % iron, said synthetic alloy having (a) an ordered crystalline structure which is in the single-phase γ' region of the phase diagram of V. T. Heumann and G. Karsten (FIG. 1), and having (b) essentially the properties of the naturally occurring iron-nickel mineral awaruite.

4,433,034

MAGNETIC BUBBLE LAYER OF THULIUM-CONTAINING GARNET

Devlin M. Gualtieri, Ledgewood; Paul F. Tumelty, Morristown, both of N.J., and Mathias A. Gilleo, deceased, late of Morristown, N.J. (by Margaret P. Gilleo, executrix), assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Apr. 12, 1982, Ser. No. 367,318
Int. Cl.³ G11C 11/02; C04B 35/50

U.S. Cl. 428—693

5 Claims

1. A magnetic bubble domain device comprising an iron garnet layer that is capable of supporting magnetic bubble domains and that has a composition nominally represented by the formula:



where R is at least one element of the group consisting of Y and the elements having atomic number from 57 to 71, a is from about 0.10 to about 0.18, b is from about 0.50 to about 0.70 and c is from about 0.8 to about 2.22;

a magnet for maintaining in the layer a magnetic field that varies with temperature throughout a temperature range at an average variation rate;

means adjacent to the layer for generating and moving the domains in the layer; and

a gadolinium gallium garnet substrate for supporting the device, whereby a bubble collapse field of the layer varies with temperature throughout the temperature range at about the average variation rate.

4,433,035

CATALYTIC CATHODE COMPOSITION FOR AIR-DEPOLARIZED CELL AND METHOD OF PREPARATION

Marian Wiacek, Mississauga, Canada, assignor to Duracell Inc., Bethel, Conn.

Filed Oct. 26, 1981, Ser. No. 315,320

Int. Cl.³ H01M 4/90

U.S. Cl. 429—27

11 Claims

1. A catalyst mix, for use as a cathode in an air depolarized cell, comprising a carbonaceous material, activated by a metal permanganate admixed with an unactivated carbonaceous material.

4,433,036

MULTICELL RESERVE BATTERY

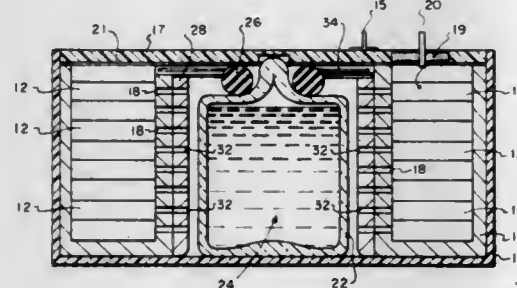
Robert J. Horning, Doylestown, and William J. Eppley, Skipack, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 31, 1982, Ser. No. 364,105

Int. Cl.³ H01M 6/36, 6/38

U.S. Cl. 429—114

2 Claims



1. A reserve battery comprising in combination: a plurality of galvanic cells; a casing housing said plurality of cells, said casing including a wall with a plurality of ports formed therein said ports providing an entry through which an electrolyte can flow in order to activate said cells; a reservoir for electrolyte;

a valve having a plurality of ports formed therein; means supporting said valve between said wall and said reservoir to permit relative movement there between; means urging said valve to a position relative to said wall where said wall ports and said valve ports are not aligned when the angular velocity of said battery is constant and permitting angular acceleration of said battery to cause said valve to move relative to said wall so that said valve ports and said wall ports come into alignment during angular acceleration of said battery.

4,433,037

HEAT ERASABLE PHOTOGRAPHIC ELEMENT AND PROCESS COMPRISING SILVER HALIDE

Thap DoMinh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 15, 1982, Ser. No. 398,483

Int. Cl.³ G03C 11/00, 5/16, 1/00

U.S. Cl. 430—19

53 Claims

1. A heat erasable photographic element comprising a support bearing, in a binder, in reactive association:

(a) photographic silver halide;

(b) a mild oxidizing agent which consists essentially of a cobalt(III) amine salt which, upon heating said photographic element, will oxidize any latent image silver in the photographic element; and,

(c) a weak complexing agent for the oxidized silver wherein said complexing agent is also a thermal solvent.

4,433,038

ELECTROPHOTOGRAPHIC COPYING PROCESS INVOLVING SIMULTANEOUS CHARGING AND IMAGING

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

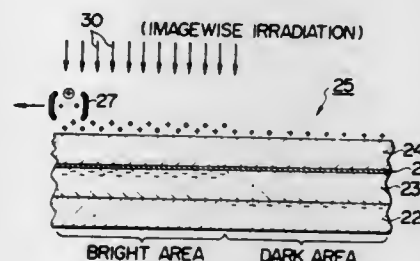
Filed Nov. 9, 1981, Ser. No. 319,327

Claims priority, application Japan, Nov. 12, 1980, 55-158090

Int. Cl.³ G03G 13/22

U.S. Cl. 430—55

4 Claims



1. An electrophotographic copying process for selectively forming a positive or a negative electrostatic latent image utilizing a photosensitive member for electrophotography which includes a conductive layer carrying a sequential lamination of a first and a second photoconductive layer thereon, the first photoconductive layer having a range of photoconductive response extending over a range of light rays from ultraviolet rays to visible light rays and defined as a first wavelength region, the second photoconductive layer being sensitive only to ultraviolet rays and defined as a second wavelength region, the process comprising a selective use of:

(A) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an original which is formed by radiation in the first wavelength region, followed by a uniform exposure of the photosensitive member to radiation in the second wavelength region to trap a charge in a portion of the photosensitive member corresponding to a dark area of the image to form a positive electrostatic latent image; or

(B) a step of charging the photosensitive member simultaneously with an irradiation thereof with an image of an

4,433,040

ELECTROPHOTOGRAPHIC TONER CONTAINING A METAL COMPLEX DYE

Isao Niimura; Hiroshi Imagome; Hiroyoshi Yamaga; Noboru Akuzawa, all of Tokyo; Kenji Yuta, Koriyama, and Takeo Kurahashi, Tokyo, all of Japan, assignors to Hodogaya Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,904

Claims priority, application Japan, Feb. 27, 1981, 56-26768; Jul. 8, 1981, 56-105641

Int. Cl.³ G03G 13/09

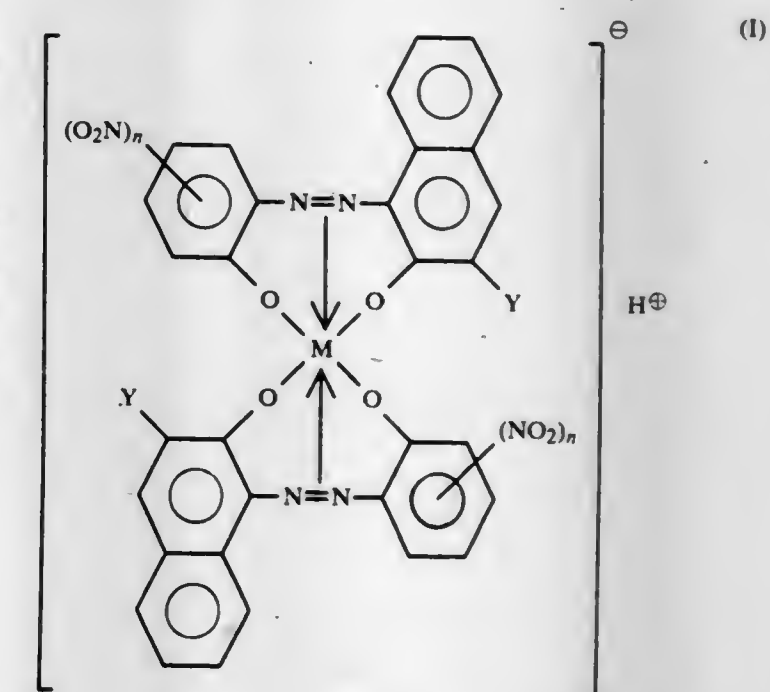
U.S. Cl. 430—109

4 Claims

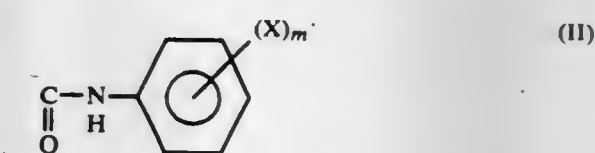
1. An electrophotographic toner capable of being electrified negatively comprising

(a) a binder resin; and

(b) an agent for coloring said toner and for controlling the negative charge of said toner comprising at least one 2:1 type metal complex of the formula (I):



wherein M represents a member selected from the group consisting of chromium and cobalt atoms, n represents an integer of 1 or 2, and Y represents a member selected from radicals of the formula (II):



wherein X represents a member selected from the group consisting of hydrogen and halogen atoms, lower alkyl radicals, lower alkoxy radicals and nitro radicals, and m represents an integer of from 1 to 3.

4,433,041

RECORDING METHOD

Keitaro Yamashita, Saitama, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,184

Claims priority, application Japan, Mar. 4, 1981, 56-30828; Mar. 4, 1981, 56-30829

Int. Cl.³ G03G 13/14, 13/22

U.S. Cl. 430—122

12 Claims

1. A recording method comprising the steps of: disposing a guide member at least a portion of which is transparent against a nonmagnetic and conductive sleeve of a cylindrical shape which is provided therein with a permanent magnet member having a plurality of magnetic

original which is formed by radiation of the first wavelength region, followed by an inverse charging which reduces the entire surface potential to substantially zero, subsequently followed by a uniform exposure of the photosensitive member to radiation in the first wavelength region to trap a charge in a portion of the photosensitive member corresponding to a bright area of the image to form a negative electrostatic latent image.

4,433,039

TRISAZO ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Nobuhiro Miyakawa, Abiko; Teruaki Higashiguti, Tokyo; Yumiko Sano, Ibaragi, and Masatomi Funato, Sakai, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Sep. 21, 1982, Ser. No. 420,875

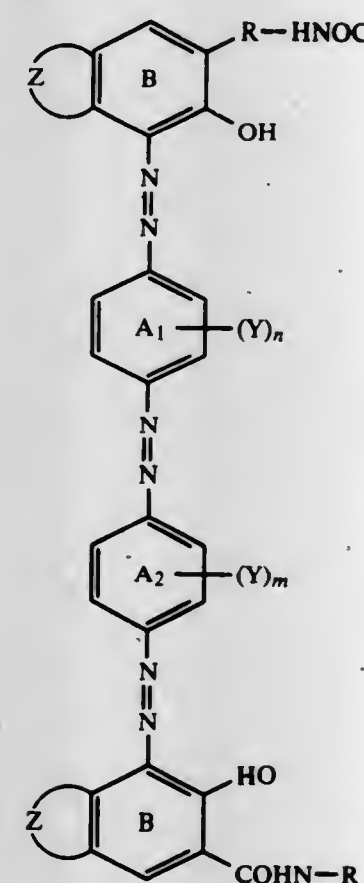
Claims priority, application Japan, Nov. 2, 1981, 56-174487

Int. Cl.³ G03G 5/06

U.S. Cl. 430—58

12 Claims

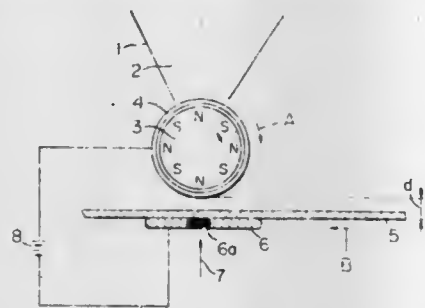
1. An electrophotographic photosensitive material which comprises an electrically conductive substrate and a photosensitive layer, wherein the photosensitive layer comprises a charge-generating layer containing a tris-azo pigment, which is formed on said electrically conductive substrate, said tris-azo pigment being a compound represented by the following formula:



wherein Y is a halogen atom, an alkyl group or alkoxy group as a substituent at the ortho-position to the azo group, n is 0, 1 or 2, m is 0, 1 or 2, Z is a benzene ring, naphthalene ring, indole ring, carbazole ring or benzofuran ring fused to the benzene ring B, and R is an unsubstituted or substituted phenyl, naphthyl or benzofuran group; dispersed in an electrically insulating binder, and a layer of a charge-transporting substance formed on the charge-generating layer.

poles on its surface, thereby forming a recording region between said guide member and said sleeve;
 supplying a dry developing powder having a magnetic property on said sleeve;
 rotating said permanent magnet member relative to said sleeve to form a magnetic brush at least in said recording region;
 passing a recording sheet paper at least a rear surface of which opposing said guide member is transparent along a front surface of said guide member in opposition to said sleeve to make a front surface of said recording sheet paper to be brought near to or in contact with said magnetic brush;
 emitting a light signal corresponding to a picture information signal to said recording region at least from a rear side of said guide member, whereby an electric charge pattern positively or negatively corresponding to said picture information signal is formed on the front surface of said recording sheet paper and at the same time said dry developing powder or said magnetic brush is deposited on said electric charge pattern to form a picture image of powder on the front surface of said recording sheet paper.

8. A recording method comprising the steps of:



disposing a guide member at least a portion of which is transparent against a nonmagnetic and conductive sleeve which is provided therein with a permanent magnet member having a plurality of magnetic poles on its surface, thereby forming a recording region between said guide member and said sleeve;
 supplying a dry developing powder having a magnetic property on said sleeve;
 rotating said permanent magnetic member relative to said sleeve to form a magnetic brush at least in said recording region;
 passing a recording sheet paper at least a rear surface of which opposing said guide member is transparent along a front surface of said guide member in opposition to said sleeve to make a front surface of said recording sheet to be brought near to or in contact with said magnetic brush;
 emitting a light signal corresponding to a picture information signal to said recording region at least from a rear side of said guide member to form a picture image of powder on the front surface of said recording sheet, said developing powder is a single component magnetic toner containing a photoconductive substance and the recording sheet is an ordinary paper of a volume resistivity of less than $10^{12} \Omega \cdot \text{cm}$.

4,433,042

ELECTROPHOTOGRAPHIC DEVELOPING METHOD USING MAGNETIC TONERS

Tsuneaki Kawanishi; Akio Mukoh; Hirosada Morishita, and Nobuyoshi Hoshi, all of Hitachi, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,197

Claims priority, application Japan, Dec. 10, 1980, 55-173297

Int. Cl.³ G03G 13/09

U.S. Cl. 430—126

6 Claims

1. A method for electrophotographic developing, the method comprising the steps of electrostatically forming a latent image on an organic photoconductive member, supplying a single component magnetic toner containing at least a

resin and fine particles of ferromagnetic material on a non-magnetic sleeve provided with a permanent magnetic means having a plurality of magnetic poles therein, the magnetic toner having a resistivity of more than $5 \times 10^{15} \Omega \cdot \text{cm}$ and a relative dielectric constant of less than 2.6, transporting the magnetic toner into a gap between the organic photoconductive member and the non-magnetic sleeve, attaching the magnetic toner to the organic photoconductive member, thereby developing the latent image into a visible image, electrostatically transferring the toner image thus formed on the organic photoconductive member onto a transfer sheet of ordinary paper having a low electric resistance with a bulk resistivity of not greater than $10^{12} \Omega \cdot \text{cm}$, and fixing the transferred image, thereby obtaining a final image.

4,433,043

WATER BASED PHOTOSENSITIVE COMPOSITION WITH HYDROLYZATE OF MAMMAL COLLAGEN

Yoshikatsu Sawada, Tokyo; Kazuo Shirakawa, Ichikawa, and Takeo Sugiura, Tokorozawa, all of Japan, assignors to Toppan Printing Co., Ltd. and Nippi, Inc., both of Tokyo, Japan

Filed Nov. 13, 1981, Ser. No. 321,048

Claims priority, application Japan, Nov. 18, 1980, 55-162141

Int. Cl.³ G03C 1/60, 1/71

U.S. Cl. 430—175

9 Claims

1. A water based photosensitive composition, comprising a water soluble hydrolyzate of a mammal collagen and a photosensitizer serving to cross-link the hydrolyzate when exposed to an active light, said hydrolyzate having a number-average molecular weight, M_n , of 2,000 to 30,000 and an intrinsic viscosity, $[\eta]$, of 0.060 to 0.155 dl/g in a 0.15 mole citric acid buffer solution maintained at 40° C., and being capable of maintaining the formability of the collagen fold.

8. The composition according to claim 1, wherein the photosensitizer is selected from the group consisting of bichromates, diazonium salts and paraformaldehyde condensates of diazonium salts.

4,433,044

DRY DEVELOPABLE POSITIVE PHOTORESISTS

Wolfgang H. Meyer, Urdorf, and Bernard J. Curtis, Gattikon, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,682

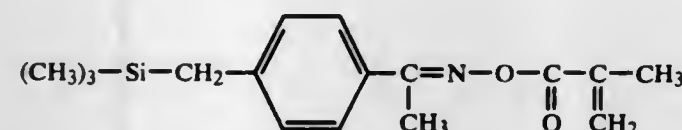
Int. Cl.³ G03F 7/26; G03C 1/76; C08F 30/08

U.S. Cl. 430—271

10 Claims

1. A method of forming a patterned layer on a substrate comprising:

(a) coating the substrate with a composition comprising the copolymer of a silicon-containing oxime ester of methacrylic acid represented by the formula



and an acrylate-containing monomer selected from the group consisting of acrylic acid, methacrylic acid and their esters, and a suitable solvent therefor;

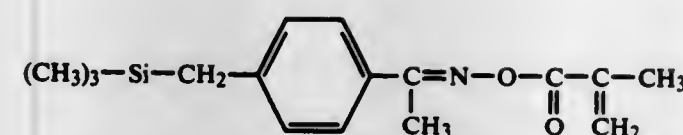
(b) drying the coating to form a resist film;

(c) irradiating selected portions of the film with a source of ultraviolet radiation;

(d) baking the film under vacuum; and

(e) dry developing the film to remove the irradiated portions thereof by etching in an oxygen plasma.

10. A copolymer of a silicon-containing oxime ester of methacrylic acid represented by the formula



and an acrylate-containing monomer selected from the group consisting of acrylic acid, methacrylic acid and their esters.

4,433,045

LASER MIRROR AND METHOD OF FABRICATION

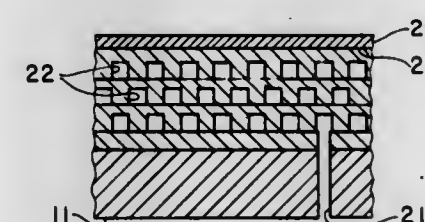
John G. Gowan, London, England, and Keith R. Shillito, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 342,996

Int. Cl.³ G03C 5/00; G02B 5/08

U.S. Cl. 430—321

4 Claims



1. A method for fabricating a fluid cooled laser mirror, including a heat exchanger defining a plurality of fluid conducting passageways therethrough, which comprises the steps of:

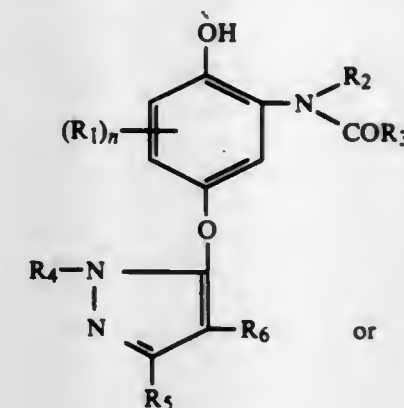
- providing a substrate comprising a carbon member;
- depositing onto said substrate a transitional layer comprising carbon and tungsten carbide; said transitional layer varying in composition from substantially totally carbon in contact with said substrate to substantially totally tungsten carbide remote from said substrate, said substrate and transitional layer defining a substructure;
- depositing onto said substructure a first layer of low melting point metal;
- applying to said first layer a coating of photoresist material;
- overlying onto said coating a photographic mask having a predetermined pattern cut therein to define selected masked and unmasked portions of said coating;
- exposing said unmasked portions of said coating to light to harden said unmasked portions of said coating;
- chemically removing said unmasked portions of said coating and that portion of said first layer underlying said unmasked portion of said coating;
- chemically removing said masked portion of said coating to provide a first intermediate structure comprising said substructure having thereon distinct areas of said low melting point metal configured in said predetermined pattern;
- vapor depositing on said first intermediate structure a tungsten-containing second layer covering said low melting point metal pattern to a predetermined thickness;
- removing said low melting point metal to provide a second intermediate structure comprising said first intermediate structure with said second layer applied and defining a plurality of passageways therethrough in said predetermined pattern; and
- applying a mirrored surface to said second layer.

4,433,046
SILVER HALIDE PHOTOGRAPHIC MATERIAL
 Morito Uemura; Kenichi Kishi; Satoshi Nakagawa, and Shuji Kida, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
 Filed May 28, 1982, Ser. No. 383,318
 Claims priority, application Japan, Jun. 3, 1981, 56-86066
 Int. Cl.³ G03C 7/16, 7/26

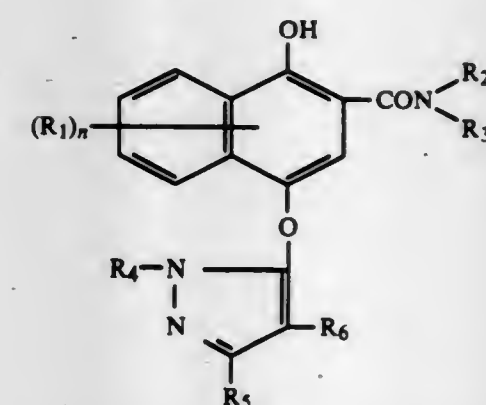
U.S. Cl. 430—385

6 Claims

1. A silver halide photographic material comprising a support provided thereon with a light-sensitive silver halide emulsion layer containing as a cyan-dye-forming coupler a compound of the formula



(1)



(2)

wherein R_1 is a halogen atom, an alkyl, alkoxy or acylamino group; R_2 and R_3 are respectively a hydrogen atom, an alkyl or aryl group and R_2 and R_3 may form a heterocyclic group by the condensation thereof; n is an integer of 0-3; R_4 is an alkyl, aryl, acyl or heterocyclic group; R_5 is an alkyl, aryl, alkoxy, amino, acylamino, sulfonamide, carboxy, alkoxy, carbonyl, carbamoyl, cyano or halogenated alkyl group; and R_6 is a hydrogen atom or an alkyl, alkoxy, carboxy, carbamoyl, hydroxy, acyloxy, nitro, amino, azo, acylamino, sulfonamide or acyl group.

4. A method for producing a cyan dye image by color development of an exposed silver halide photographic material of claim 1.

4,433,047

PHOTOGRAPHIC ELEMENTS CONTAINING DIRECT-POSITIVE EMULSIONS AND PROCESSES FOR THEIR USE

Robert A. Silverman, Rochester, and Harry A. Hoyer, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,313

Int. Cl.³ G03C 5/24

U.S. Cl. 430—409

23 Claims

1. A photographic element particularly adapted to forming a direct-positive image comprised of a support and, located on said support, a first, radiation-sensitive emulsion layer containing core-shell silver halide grain population having a coefficient of variation of less than 20%, and a second silver halide emulsion layer substantially incapable of forming a surface latent image within the direct-posit-

tive exposure latitude of the first emulsion layer and containing a second grain population capable of internally trapping photolytically generated electrons, said second grain population having an average diameter less than 70% that of said first grain population, and said first and second silver halide grain populations being present in a weight ratio of from 5:1 to 1:5.

4,433,048

RADIATION-SENSITIVE SILVER BROMIODIDE EMULSIONS, PHOTOGRAPHIC ELEMENTS, AND PROCESSES FOR THEIR USE

John C. Solberg, Rochester, N.Y.; Roger H. Piggin, Abbots Langley, United Kingdom, and Herbert S. Wilgus, Conesus, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. Continuation-in-part of Ser. No. 320,909, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,913

U.S. Cl. 430—434

Int. Cl.³ G03C 1/02

58 Claims



1. A radiation-sensitive emulsion comprised of: a dispersing medium and silver bromiodide grains, wherein at least 50 percent of the total projected area of said silver bromiodide grains is provided by tabular silver bromiodide grains having first and second opposed, substantially parallel major faces, a thickness of less than 0.3 micron, a diameter of at least 0.6 micron, and an average aspect ratio of greater than 8:1, said tabular silver bromiodide grains being comprised of, in an amount sufficient to improve the photographic response of said emulsion, tabular silver bromiodide grains having a central region extending between said major faces, said central region having a lower proportion of iodide than at least one laterally displaced region also extending between said major faces.

4,433,049

METHOD FOR PREPARING A LIGHT-SENSITIVE CUPROUS HALIDE EMULSION

Noboru Itoh; Toshiaki Takahashi; Keiji Ogi, and Atsushi Kamitakahara, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,647

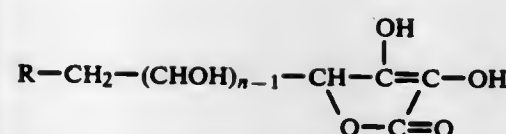
Claims priority, application Japan, Feb. 21, 1981, 56-24669

Int. Cl.³ G03C 1/72

U.S. Cl. 430—495

13 Claims

1. A method for preparing a light-sensitive cuprous halide emulsion which comprises reducing cupric ions in a liquid phase with an ascorbic acid derivative represented by the formula:



wherein R is a hydrogen atom or a hydroxyl group, and n is an integer of 1 to 4, provided that R is a hydroxyl group when n is 1, or alkali metal salts thereof, in the presence of halogen ions and from 0.1 to 5% by weight of a protective colloid.

4,433,050

DIRECT POSITIVE TYPE LIGHT SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takao Abe, and Satoru Hohnishi, both of Hino, Japan, assignors to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,644

Claims priority, application Japan, Sep. 11, 1980, 55-126859; Sep. 11, 1980, 55-126860

Int. Cl.³ G03C 1/02

U.S. Cl. 430—542

39 Claims

1. A direct positive type light sensitive silver halide photographic material which comprises, on said support, at least one layer containing an unfogged internal latent image type silver halide emulsion which, when applied onto a test piece, exposed for from 1/100 to 1 second, and developed for 3 minutes at 20° C. in an internal developing solution, produces an image having a maximum density of at least 5 times higher than the maximum density obtainable by the development for 4 minutes at 20° C. in a surface developing solution, said internal developing solution having the following composition
hydroquinone: 15 g
monomethyl-p-aminophenol sulfate: 15 g
sodium sulfite (anhydride): 50 g
potassium bromide: 10 g
sodium hydroxide: 25 g
sodium thiosulfate (crystals): 20 g
water: to bring the solution to one liter,
and said surface developing solution having the following composition
p-hydroxy phenylglycine: 10 g
sodium carbonate (crystals): 100 g
water: to bring the solution to one liter; and
an internal latent image type silver halide emulsion having fog centers in silver halide grains which, when applied onto a test piece, exposed for from 1/100 to 1 second and developed for 3 minutes at 20° C. in said internal developing solution, produces an image having a maximum density of at least 10 times higher than the maximum density obtainable by the development for 4 minutes at 20° C. in said surface developing solution, and has a degree of fogging such that when a sample composed of a transparent support comprising a polyethylene terephthalate film coated with the emulsion having fog centers in an amount of from 3.5 to 4.5 g/m² as the amount of silver, and developed in said internal developing solution at 20° C. for 3 minutes, the transmission density will be at least 0.50;

the proportion of the unfogged internal latent image type silver halide emulsion to the internal latent image type silver halide emulsion having fog centers in silver halide grains is from 10:0.03 to 10:30 in a molar ratio based on silver halide;
said internal latent image type silver halide emulsion having fog centers in silver halide grains is incorporated (i) in said layer containing said unfogged internal latent image type silver halide emulsion or (ii) in another layer of said photographic material when said photographic material comprises more than two layers.

4,433,051

DERIVATIVES OF α -DIFLUOROMETHYLORNITHINE USEFUL IN ANALYSIS

Gad Gilad; Varda Gilad, both of Ness Ziona, and Meir Wilchek, Rehovot, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Iceland

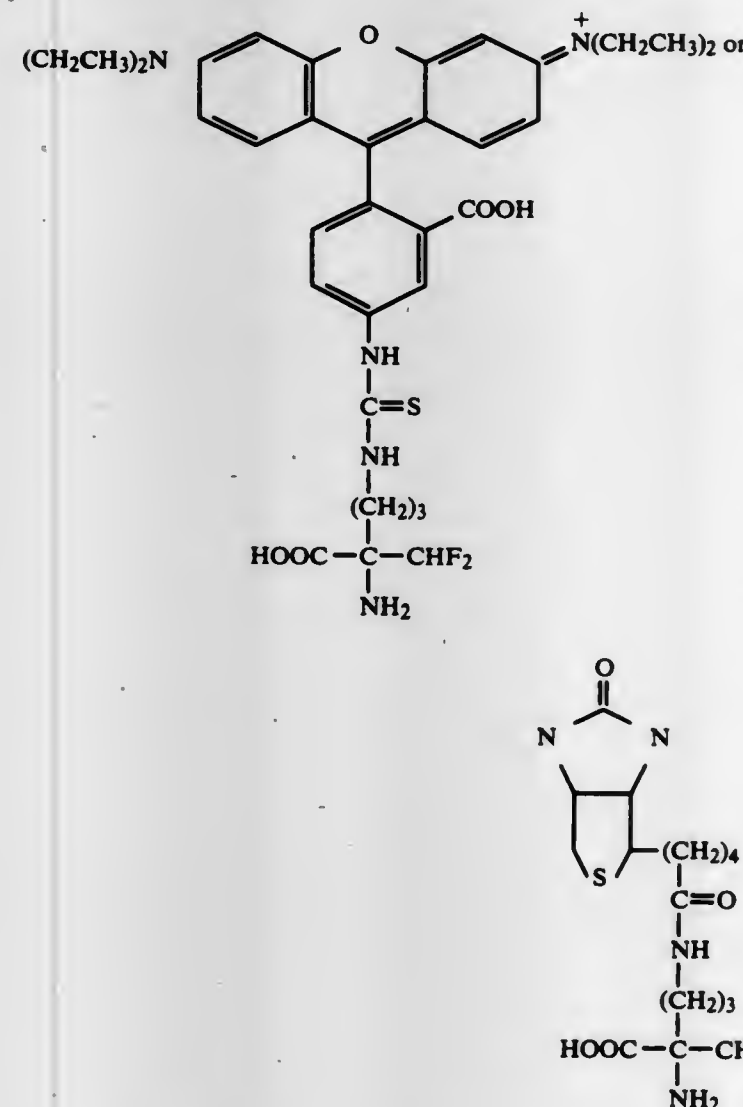
Filed Oct. 14, 1981, Ser. No. 311,981

Int. Cl.³ G01N 33/50; C12Q 1/00; C12N 9/99, 9/88

U.S. Cl. 435—7

4 Claims

1. A labelled derivative of α -difluoromethylornithine (α -dFMO), namely α -dFMO tagged with rhodamine B or with biotin, respectively, of the formulas



4. A process for the cytochemical localization of ornithine decarboxylase (ODC) activity comprising:
subjecting tissue samples to the action of an enzyme activated irreversible inhibitor of ODC which inhibitor has been labelled with specific molecules which render it visible by light or fluorescence microscopy; and
visually localizing the labelled inhibitor by light or fluorescence microscopy,
wherein said enzyme activated irreversible inhibitor of ODC is an α -dFMO derivative in accordance with claim 1.

4,433,052

PROCESS FOR PRODUCING INTERFERON

Masahiko Iizuka, Fujisawa; Hidenobu Kubota, Siga, and Emiko Sano, Yokohama, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,369

Claims priority, application Japan, May 29, 1980, 55-70862

Int. Cl.³ C12P 21/00, 21/02; C12N 5/00

U.S. Cl. 435—68

12 Claims

1. A process for producing interferon by treating animal cells proliferated on a positively charged microcarrier which comprises treating said proliferated cells, either before or before and during treatment of the cells with an interferon

inducer, with a negatively charged water-soluble macromolecular material selected from the group consisting of carboxymethyl cellulose, polyalginate, polyglutamate, pectin, cellulose phosphate, dextran sulfate, and heparin, maintaining said treated cells under conditions suitable for the production of interferon, and recovering interferon.

4,433,053

FERMENTATION PROCESS FOR THE PRODUCTION OF POLY(β -HYDROXY BUTYRIC ACID)

Lorenzo Hughes, Yarm, and Kenneth R. Richardson, Middlesbrough, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 10, 1981, Ser. No. 291,762

Claims priority, application United Kingdom, Aug. 19, 1980, 8027004

Int. Cl.³ C12P 7/52, 7/44, 7/42; C12N 1/38

U.S. Cl. 435—141

10 Claims

1. A continuous fermentation process for the production of bacterial cells containing poly (β -hydroxy butyric acid), comprising (i) continuously or intermittently supplying to a fermentation vessel containing a poly (β -hydroxy butyric acid)-accumulating micro-organism of the *Alcaligenes* genus, a micro-organism-free feed containing (a) an aqueous medium containing nutrient salts and (b), as a carbon and energy source, a water soluble compound that is assimilable by the micro-organism and which contains at least carbon and hydrogen, wherein said micro-organism-free feed includes a restricted amount of at least one of the elements selected from the group consisting of assimilable nitrogen, phosphorus, magnesium, sulphur and potassium, which elements are essential to growth of the micro-organism but not to accumulation of poly (β -hydroxy butyric acid), (ii) aerobically cultivating said micro-organism in said vessel so that it grows and accumulates poly (β -hydroxy butyric acid), and (iii) continuously or intermittently removing an equivalent amount of aqueous medium containing bacterial cells from the vessel so as to maintain the amount of aqueous medium in the vessel substantially constant, said restricted amount of elements being such that the bacterial cells removed from said vessel contain at least 25% by weight of poly (β -hydroxy butyric acid).

4,433,054

ENZYMATIC ACTIVE SUBSTANCE IMMOBILIZED IN A POLYSACCHARIDE GEL MATRIX

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto, and Isao Takata, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

Filed Nov. 20, 1981, Ser. No. 323,288

Claims priority, application Japan, Jan. 9, 1981, 56-2410

Int. Cl.³ C12N 11/10, 11/12, 11/04

U.S. Cl. 435—178

8 Claims

1. An immobilized enzymatic active substance which comprises an enzymatic active substance and an unsubstituted amino, monoalkylamino or dialkylamino group-introduced carrageenan wherein said group is present in said carrageenan in an amount such that there is 0.1 to 20 mg of nitrogen present per 1 g of dry weight of said carrageenan and each alkyl is individually 1 to 12 carbon atoms, said enzymatic active substance being entrapped within a gel matrix of said carrageenan.

4,433,055

DECOMPOSING PLANT

Manfred Kany, Feldstrasse 9, D-6601-kleinbittersdorf 5, Fed. Rep. of Germany

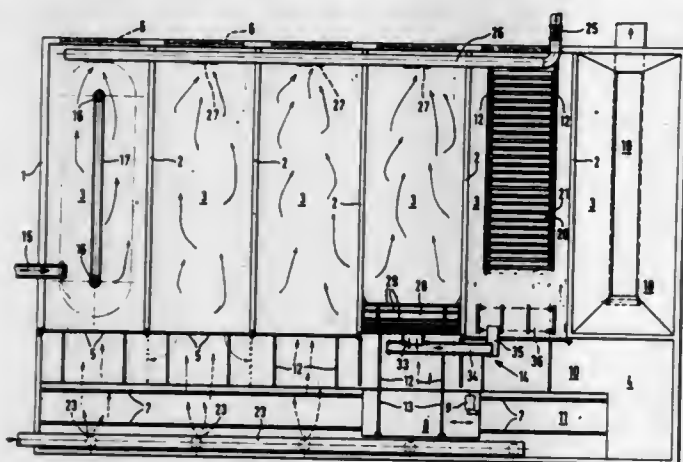
Filed Apr. 29, 1982, Ser. No. 373,124

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117451

Int. Cl.³ C12M 1/04

U.S. Cl. 435—313

26 Claims



1. A decomposing plant for refuse comprising:
- (a) decomposing means including a plurality of discrete decomposing compartments for decomposing material in batches, said compartments being disposed at substantially the same level, and each of said compartments being bounded by a sidewall having first sides and second sides, said compartments being disposed with first sides of successive compartments adjacent to one another, and selected ones of said second sides being provided with doors for access to the respective compartments;
 - (b) inlet means for admitting material to be decomposed into said decomposing means;
 - (c) outlet means for evacuating material which has undergone decomposition from said decomposing means;
 - (d) transfer means for transferring a batch of material between successive compartments in a direction from said inlet means towards said outlet means, said transfer means comprising a unit which is movable along and into said compartments, and said unit including means for transporting material over said sidewalls from one compartment to another; and
 - (e) aerating means for aerating the material in said compartments

4,433,056

PROCESS FOR PREPARATION OF CONTROL FOR USE IN ESTROGEN RECEPTOR TEST

Richard J. Baranczuk, 10127 Horton, Overland Park, Kans. 66202

Continuation-in-part of Ser. No. 305,108, Sep. 24, 1981. This application Dec. 21, 1981, Ser. No. 332,609

Int. Cl.³ G01N 33/50, 33/74

U.S. Cl. 436—8

10 Claims

8. A process for the production of a control sample for use in estrogen receptor assays; said process comprising the steps of:
- (a) inducing superovulation in rabbits;
 - (b) in conjunction with such superovulation inducing pregnancy in the rabbits;
 - (c) collecting uteri tissue from approximately 6 day pregnant rabbits following steps (a) and (b);
 - (d) freezing said tissue;
 - (e) shredding said tissue into relatively small strips;
 - (f) adding a buffer solution having a pH of approximately 7.5 to said tissue;
 - (g) homogenizing said buffer and tissue;

- (h) centrifuging said homogenized buffer and tissue;
- (i) removing the supernatant from said centrifuged buffer and tissue;
- (j) freezing said supernatant; and
- (k) subjecting said frozen supernatant to a vacuum so as to freeze dry said supernatant into dry flakes.

4,433,057

CHEMICAL REAGENT INDICATOR FOR THE IN VITRO DIAGNOSIS OF PREGNANCY

Maria R. de Gracia, 6 Avenue Dapples, Lausanne (Vaud), Switzerland

PCT No. PCT/FR80/00109, § 371 Date Feb. 5, 1982, § 102(e) Date Feb. 5, 1982, PCT Pub. No. WO82/00060, PCT Pub. Date Jan. 7, 1982

PCT Filed Jul. 3, 1980, Ser. No. 348,067

Claims priority, application France, Jun. 6, 1980, 80 12638

Int. Cl.³ G01N 33/52, 33/76

U.S. Cl. 436—65

16 Claims

1. A chemical reagent for the in vitro diagnosis of pregnancy, said reagent to be added to a urine sample from a female mammal, said reagent being obtained from combining the following components:
- (a) a buffer solution having a pH in the range of 5.2 to 6.6;
 - (b) a dye colorimetrically responsive to the presence of HCG in urine; and
 - (c) a chemical component for adjusting and stabilizing the pH of the urine sample when the chemical reagent is added thereto to a value of between 4 and 5.

4,433,058

MEMBRANE RECEPTOR ASSAY

James W. Deutsch, New Haven, Conn., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 23, 1981, Ser. No. 237,210

Int. Cl.³ G01N 33/60; G01T 1/00

U.S. Cl. 436—504

5 Claims

1. A method for determining in an aqueous assay medium the presence of acetylcholine in a sample suspected of containing said acetylcholine, said method employing a cell surface membrane receptor to said acetylcholine which is bound to said membrane and insoluble in said assay medium and a labeled antagonist to said acetylcholine, wherein said acetylcholine and said labeled antagonist specifically compete for the binding sites of said membrane-bound receptor and said label provides a detectable signal, the measured signal being related to the amount of label bound to receptor and unbound label; said method comprising:
- combining substantially simultaneously in an aqueous buffered medium said membrane-bound receptor, said sample and said labeled antagonist;
- incubating for sufficient time to allow for competition between labeled antagonist and acetylcholine resulting in partitioning of said labeled antagonist between said membrane-bound receptor and said assay medium in proportion to the amount of acetylcholine in said medium; and determining the level of signal as a result of said partitioning.

4,433,059

DOUBLE ANTIBODY CONJUGATE

Chi-Deu Chang, Bridgewater, and Henry A. Graham, Jr., Anandale, both of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Sep. 8, 1981, Ser. No. 299,764

Int. Cl.³ G01N 33/54, 33/58, 33/60

U.S. Cl. 436—512

23 Claims

1. An immunoassay reagent for detecting an antigen comprising:
- (a) a first immunoglobulin;
 - (b) a second immunoglobulin of different specificity than said first immunoglobulin and specific for the antigen to be detected; and

- (c) a hetero-bifunctional coupling reagent selectively coupling said first immunoglobulin to at least part of the interchain disulfide linkage of said second immunoglobulin.

15. A method for detecting the presence of a specified antigen within an aqueous sample comprising the steps of:

- (i) combining with said sample
- (a) an immunoassay reagent for detecting an antigen employing an indicator substance having an associated antigen comprising: a first immunoglobulin specific for said associated antigen, a second immunoglobulin specific for the antigen to be detected, and a hetero-bifunctional coupling reagent selectively coupling said first immunoglobulin to at least part of the interchain disulfide linkage of said second immunoglobulin, and
- (b) said indicator substance;
- (ii) agitating said combination;
- (iii) allowing said agitated combination to settle undisturbed; and observing said combination for the indicator substance whereby the presence of the antigen to be detected is indicated.

4,433,060

CHEMILUMINESCENT IMMUNOASSAYS WITH TRIPHENYLMETHANE DYES ACTIVATED BY H₂O₂ AND A CHLORAMINE

Bernd Frenzel, Spitzelbergstrasse 18a, 8000 München 71, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 267,414

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048447; Feb. 20, 1981, 3106444

Int. Cl.³ G01N 33/54, 33/58, 33/52

U.S. Cl. 436—518

7 Claims

1. A process for the quantitative or qualitative determination of antigens, antibodies, and their complexes by means of a chemiluminescent labelling substance excited or activated for chemiluminescence by an analytical reagent, which comprises the steps of:
- (a) forming a chemiluminescent complex by
 - (i) forming an antigen/antibody complex by means of a serological reaction;
 - treating said antigen/antibody complex with a chemiluminescent conjugate containing a chemiluminescent labelling substance in the form of a chemiluminescent triphenylmethane dye coupled to an antigen, antibody or antigen/antibody complex to give said chemiluminescent complex; or
 - (ii) directly forming said chemiluminescent complex by means of a serological reaction between said chemiluminescent conjugate and an antigen or antibody;
 - (b) separating said chemiluminescent complex;
 - (c) adding an exciting analytical reagent selected from mixtures of H₂O₂ with a chloramine; and
 - (d) measuring the chemiluminescence resulting from step (c).

4,433,061

RADIOIMMUNOASSAY FOR CYCLIC NUCLEOTIDES

Chih-Sheng Chiang, Chatsworth, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 1, 1981, Ser. No. 269,155

Int. Cl.³ G01N 33/56, 33/58, 33/60

U.S. Cl. 436—542

16 Claims

1. In a process for the determination of a cyclic nucleotide in a cyclic nucleotide containing body fluid by radioimmunoassay comprising the steps of admixing the body fluid, an antibody for the cyclic nucleotide, and a tracer; permitting reaction to occur for binding the tracer; separating bound tracer from free tracer; and measuring either the bound or free tracer to quantitatively determine the cyclic nucleotide, the improvement comprising the step of adding a source of divalent cation in an amount sufficient to minimize the interference of endoge-

nous calcium ion while admixing the antibody, tracer and body fluid.

4,433,062

MOLDABLE FLUOROPHOSPHATE GLASSES CONTAINING Nb₂O₅

Philippe L. P. Courbin, Bordeaux, and Jean P. Mazeau, Avon, both of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,354

Claims priority, application France, Jun. 4, 1982, 82 09731

Int. Cl.³ C03C 3/16, 3/18

U.S. Cl. 501—44

4 Claims

1. A glass composition of the fluorophosphate type containing niobium oxide having a softening point no higher than 500° C. and being suitable for direct forming of optical components through molding or pressing exhibiting precision surfaces selected from the group of:
- (a) a zinc-free glass composition having a refractive index higher than about 1.57 and an Abbe number higher than about 55 and consisting essentially, in weight percent on the oxide basis as batched, of

P ₂ O ₅	35-46	SrO	0-15
Al ₂ O ₃	3.5-6.5	MgO	0-7
Li ₂ O	0.8-3.0	BaO + CaO + SrO + MgO	28-47
Na ₂ O	3-10	CaO + SrO + MgO	<15
Li ₂ O + Na ₂ O	5-10.5	Nb ₂ O ₅	3-8.5
BaO	18-44	F	4.5-8
CaO	0-12		

and

- (b) an aluminum-free glass composition having a refractive index between about 1.68-1.85 and an Abbe number <38 and consisting essentially, in weight percent on the oxide basis as batched, of

P ₂ O ₅	30-35	Sb ₂ O ₃	0-25
Li ₂ O	0.5-5	PbO + Sb ₂ O ₃	20-50
Na ₂ O	0-10	BaO	0-20
Li ₂ O + Na ₂ O	0.5-10	Nb ₂ O ₅	13-21.5
PbO	0-40	F	1-12

4,433,063

HYDROGEN SORBENT COMPOSITION

Philip Bernstein, Glen Ridge, N.J.; James P. Coffey; Alan E. Varker, both of Warwick, N.Y.; John T. Arms, Monroe, N.Y.; William D. K. Clark, Warwick, N.Y., and Paul D. Goodell, Ridgewood, N.J., assignors to MPD Technology Corporation, Wyckoff, N.J.

Continuation-in-part of Ser. No. 226,455, Jan. 19, 1981, abandoned. This application Jan. 25, 1982, Ser. No. 342,072

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ B01J 20/26, 31/06

U.S. Cl. 502—402

19 Claims



1. A hydrogen sorbent composition comprising a hydridable material encradled throughout a fiber-containing polymeric

material having interconnecting pores therethrough, said composition being developed from a substantially dry mixture of compatible and non-reactive components consisting essentially of:

(A) a particulate hydridable material, a fibrillatable organic polymer and a major amount of removable pore-former, said pore-former being an organic polymer having a molecular weight of about 100,000 to about 1,000,000 and characterized in that it melts below the temperature at which any of the components of the mixture may react with each other, or

(B) a particulate hydridable material, a fibrillatable organic first polymer, a support-contributing second polymer and a major amount of removable pore-former; said porosity of the composition being developed in the mixture of components on removal of the pore-former after fibrillation of the fibrillatable polymer, whereby accessibility to the hydridable material in the composition is maximized.

12. A hydrogen sorbent composition, said composition being porous and comprising a hydridable material, discrete fibrils obtained from a fibrillatable first organic polymer, and a support-contributing second polymer, said hydridable material being distributed throughout the composition, and said composition being developed by processing of the components of the composition in the presence of a major amount of a removable pore-former and said porosity being developed on the removal of the pore-former, whereby accessibility to the hydridable material in the composition is maximized.

17. A hydrogen sorbent composition comprising a hydridable material encradled throughout a fiber-containing polymeric material having interconnecting porosity therethrough, said composition being developed from a substantially dry mixture of compatible and non-reactive components consisting essentially of:

(A) a particulate hydridable material, a fibrillatable organic polymer, and a major amount of removable pore-former, or

(B) a particulate hydridable material, a fibrillatable organic first polymer, a support-contributing second polymer and a major amount of removable pore-former; said pore-former being an organic polymer having a molecular weight of about 100,000 to 1,000,000 and being present in the mixture of component in the amount of about 70% to about 80% by volume, and said porosity of the composition being developed in the mixture of components on removal of the pore-former after fibrillation of the fibrillatable polymer, whereby accessibility to the hydridable material in the composition is maximized.

4,433,064

METHOD FOR IMPARTING RESISTANCE TO AXIAL DISPLACEMENT OF CONVOLUTIONS IN A CONVOLUTED CATALYST SUBSTRATE

Thomas E. Pignon, Sonning Common, Near Reading, England, assignor to Johnson Matthey Public Limited Company, London, England

Continuation-in-part of Ser. No. 223,085, Jan. 7, 1981, abandoned. This application May 24, 1982, Ser. No. 381,506
Claims priority, application United Kingdom, Feb. 19, 1980, 8005480

Int. Cl.³ B01J 35/04

U.S. Cl. 502—527

5 Claims

1. A method for imparting resistance to axial displacement of convolutions in a convoluted substrate of the type suitable for use in a catalyst unit, comprising a substrate coated with a layer of refractory oxide and useful in the purification of exhaust gases, the substrate comprising convolutions of superimposed plain and corrugated strips of metal wound around a common axis to form a generally cylindrical substrate having end faces transverse to the axis of the cylindrical substrate wherein convolutions of plain metal strip are spaced apart by convolutions of corrugated metal strip to define a plurality of passage-way channel extending axially between the end faces of the substrate so that exhaust gas under pressure can pass axially

through the substrate wherein the method comprises making from one to four weld runs each across a diameter of one of the end faces of the substrate so as to bridge superimposed convolutions of plain and the corrugated strip thereby increasing the resistance of the bridged convolutions to axial displacement relative to each other in response to displacing forces generated by exhaust gases passing through the channels.

4,433,065

PROCESS FOR THE PREPARATION OF HYDROCARBONS FROM CARBON-CONTAINING MATERIAL

Maarten J. van der Burgt; Sikke J. A. Boelema; Willem J. A. H. Schoeber, all of The Hague, and Pieter L. Zuidveld, Amsterdam, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1982, Ser. No. 355,065

Claims priority, application Netherlands, Mar. 24, 1981, 8101447

Int. Cl.³ C07C 1/04

U.S. Cl. 518—703

8 Claims

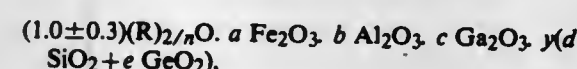
1. A process for the preparation of hydrocarbons from coal comprising the following steps:

(a) a finely comminuted coal is converted by gasification at a temperature from 1050° to 2000° C. in the presence of oxygen and steam into a gas mixture consisting substantially of carbon monoxide and hydrogen;

(b) the gas mixture obtained in step (a) is partially converted into an aromatic hydrocarbon mixture with the use of a bifunctional crystalline silicate catalyst which

(i) is capable of adsorbing more than 3% by weight of water at 25° C. and saturated water vapor pressure after dehydration at 400° C. in vacuo, and

(ii) has, in the dehydrated form, the following gross composition, expressed in moles of the oxides:



wherein

R=one or more mono- or bivalent cations,

a ≥ 0.1,

b ≥ 0,

c ≥ 0,

a + b + c = 1,

y ≥ 10,

d ≥ 0.1,

e ≥ 0,

d + e = 1, and

n = the valency of R, and

(iii) which contains one or more metal components with catalytic activity for conversion of an H₂/CO mixture into hydrocarbons and/or oxygen-containing hydrocarbons;

(c) the product of step (b) is separated into a liquid containing hydrocarbon with at least 3 carbon atoms and a gas containing unconverted hydrogen, carbon monoxide, nitrogen and resultant hydrocarbon gases; and

(d) at least a part of the gas product of step (c) is separated into (i) a gas consisting substantially of hydrogen, (ii) a gas consisting substantially of carbon monoxide, nitrogen and argon, and (iii) a gas consisting substantially of methane and ethane and wherein at least a part of gas (i) is recycled to step (b) and at least a part of gas (iii) is recycled to step (a).

4,433,066

METHOD FOR THE PREPARATION OF HIGH-CALORIC GASES, PARTICULARLY METHANE, BY MEANS OF A CATALYST FLUIDIZED BED

Erich Hackler; Claus Flockenhaus, both of Essen, and Werner Lommerzhelm, M. heim, all of Fed. Rep. of Germany, assignors to Didler Engineering GmbH, Essen

Filed Jan. 19, 1982, Ser. No. 340,738

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101739

Int. Cl.³ C07C 1/04

U.S. Cl. 518—706

2 Claims

1. In a method for the production of methane wherein feed gases containing CO and H₂ are passed through a fluidized catalytic bed having cooling elements therein, the improvement which comprises carrying out the conversion in at least two fluidized bed reactors and wherein the feed gas is introduced to the first reactor under pressure and to the subsequent reactors under a pressure which is less than the pressure of the preceding reactor, a portion of the gas produced in each reactor is fed to a collecting line, another portion of the gas produced from each reactor is fed to the next reactor as a diluting gas and still another portion of the gas produced in the first stage is compressed and returned to the first stage as a recycled diluting gas.

4,433,067

REACTION INJECTION MOLDED ELASTOMERS PREPARED FROM AMINE TERMINATED POLYETHERS, AMINE TERMINATED CHAIN EXTENDER AND AROMATIC POLYISOCYANATE

Doris M. Rice, and Richard J. G. Dominguez, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,160

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ C08G 18/14

U.S. Cl. 521—51

22 Claims

1. A reaction injection molded elastomer made by reacting in a closed mold ingredients comprising amine terminated polyethers of greater than 1,500 average molecular weight having greater than 50% of their active hydrogens in the form of amine hydrogens, an amine terminated chain extender and an aromatic polyisocyanate.

4,433,068

PROCESS FOR PRODUCING BONDED MACROBALLOON STRUCTURES AND RESULTING PRODUCT

John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021, and John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120

Continuation-in-part of Ser. No. 423,802; Sep. 27, 1982, Pat. No. 4,407,980. This application Feb. 17, 1983, Ser. No. 467,263

Int. Cl.³ C08J 9/24

U.S. Cl. 521—54

16 Claims

1. A process for producing high temperature and flame resistant macroballoon structures which comprises the steps of: reacting an oxoimine having the general formula:



where "X" is a positive integer from 2 to 4 with an aromatic tetracarboxylic acid dianhydride in a mole ratio thereof between about 0.05:1 and 1.5:1 to produce an N-substituted imide;

esterifying said N-substituted imide by mixing therewith a reactive solvent;

adding thereto at least one diamine;

drying the resulting liquid composition;

reducing the dried material to an average particle diameter of from about 0.5 to 10 mm.;

separating said particles from each other;

heating said particles to a temperature in the range of about

90° to 150° C. while substantially preventing interparticle contact, whereby said particles expand producing a plurality of discrete macroballoons; coating said macroballoons with a thin layer of a liquid bonding agent; bringing said macroballoons into contact with each other in a desired structural configuration; and curing said bonding agent to a dry state; whereby a lightweight structure of bonded macroballoons results.

4,433,069

METHOD FOR PREPARING FLAME RESISTANT POLYSILOXANE FOAMS AND FOAMS PREPARED THEREBY

Jack R. Harper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 3, 1983, Ser. No. 455,431

Int. Cl.³ C08J 9/02

U.S. Cl. 521—99

29 Claims

1. A cured, flame retardant polyorganosiloxane in the form of a blown foam containing

(1) at least five parts by weight per million parts by weight of said foam of platinum in elemental or chemically combined form, said foam having uniformly dispersed therein

(2) at least 0.1%, based on the weight of said foam, of at least one finely divided nonmetallic, fibrous heat resistant material, and

(3) at least 0.1%, based on the weight of said foam, of at least one finely divided nonmetallic, cellular heat resistant material,

wherein the combined concentrations of fibrous and cellular heat resistant materials do not exceed 40% of the total weight of said foam and the heat resistant materials do not soften or decompose below 1500° C.

4,433,070

CULTURED ONYX PRODUCTS AND METHODS THEREFOR

Gilbert B. Ross, 17640 Vincennes St., Northridge, Calif. 91324, and Theodore E. Stevens, 295 View Crest Dr., Azusa, Calif. 91702

Filed May 5, 1980, Ser. No. 146,749

Int. Cl.³ C08L 67/06

U.S. Cl. 523—171

26 Claims



1. A shaped structure having a polishable cultured onyx, cultured marble, or like mineral-appearing surface of predetermined hardness, said structure comprising a locally discontinuous phase comprising a synthetic organic resin portion hardened to said predetermined hardness and a visually distinguishable continuous phase comprising a synthetic organic resin portion separately hardened to said predetermined hardness with said discontinuous phase intimately distributed therein, whereby said structure surface is simulative of onyx or like mineral appearance and uniformly polishable in phase undifferentiated relation.

4,433,071

FLAME AND DRIPPING EMBER RETARDANT FLEXIBLE POLYURETHANE FOAMS

Gerald Fesman, Teaneck, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 14, 1982, Ser. No. 449,719

Int. Cl.³ C08G 18/14

U.S. Cl. 521—107

19 Claims

1. In a process for preparing flexible polyurethane foam by the reaction of a polyester polyol and an organic polyisocyanate wherein the improvement comprises:

adding to the polyurethane forming reactants a blowing agent comprising water, polyurethane forming catalyst, surfactant, and a flame and dripping ember retardant effective amount of an additive combination comprising (1) halogenated flame retardant, and (2) water or alcohol soluble uncrosslinked urea-formaldehyde resin which is unreactive with said organic polyisocyanate.

4,433,072

MIXTURES OF POLYMERS FOR MEDICAL USE

Christian Pusineri, Serezin du Rhone, and Jean Goletto, Ecullly, both of France, assignors to Hospal-Sodip, S.A., Meyzieu, France

Division of Ser. No. 417,323, Sep. 13, 1982, Pat. No. 4,394,462, which is a division of Ser. No. 103,894, Dec. 17, 1979, Pat. No. 4,408,026. This application Apr. 29, 1983, Ser. No. 489,707

Claims priority, application France, Dec. 15, 1978, 78 36065

Int. Cl.³ C08J 3/00

U.S. Cl. 523—105

10 Claims

1. Polymer compositions, useful especially in the medical field, consisting of a mixture of vinyl chloride polymer and a polyether—urethane with tertiary amine and/or ammonium groups and heparin, with the proportion of the polyether—urethane being from 1 to 99% by weight, relative to the total mixture.

4,433,073

OLEFINIC POLYMER COMPOSITION CONTAINING INORGANIC FILLER

Hironari Sano, Suzuka, and Hiroshi Yui, Yokkaichi, both of Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,734

Claims priority, application Japan, Jul. 17, 1980, 55-96825

Int. Cl.³ C08K 9/04, 3/26; C08L 33/02

U.S. Cl. 523—201

11 Claims

1. A high impact olefinic polymer composition comprising (1) a continuous matrix of a crystalline olefinic polymer which is selected from a crystalline homopolymer of ethylene or propylene, and a crystalline copolymer consisting essentially of a major proportion of at least one monomer selected from the group consisting of ethylene and propylene with a minor proportion of another ethylenically unsaturated monomer,

(2) a dispersed phase of an impact absorbing rubbery polymer component or its composite dispersed in the matrix, (3) a finely divided inorganic filler having a particle diameter less than 2 microns and smaller than that of the dispersed phase, said inorganic filler being filled substantially entirely in said dispersed phase,

(4) said dispersed phase being selected from the group of the following types I-IV:

I. a dispersed phase consisting of

(A') a reactive derivative of a crystalline olefinic polymer which cannot be uniformly mixed with the olefinic polymer forming the matrix, or

(B) a composition composed of a crystalline olefinic polymer (A) and the reactive derivative of the crystalline olefinic polymer (A'),

said (A') or (B) being surrounded by

(C) an impact absorbing rubbery polymer, and said inorganic filler (3) being filled in said (A) or (B);

II. a dispersed phase consisting of

(C') a reactive derivative of an impact absorbing rubbery polymer (C), or

(D) a composition composed of the rubbery polymer (C) and the reactive derivative of the rubbery polymer (C'), and said inorganic filler (3) being filled in the component (C') or (D),

III. a dispersed phase consisting of

(A) a crystalline olefinic polymer which cannot be uniformly mixed with the olefinic polymer forming the matrix,

said (A) being surrounded by

either (C') a reactive derivative of an impact absorbing rubbery polymer or (D) a composition composed of the rubbery polymer (C) and the reactive derivative of the rubbery polymer (C'), and

said inorganic filler (3) being filled in said component (C') or (D), and

IV. a dispersed phase consisting of

(A') a reactive derivative of a crystalline olefinic polymer which cannot be uniformly mixed with olefinic polymer forming the matrix, or

(B) a composition composed of a crystalline olefinic polymer (A) and the reactive derivative of the crystalline olefinic polymer (A'), said (A') or (B) being surrounded by either

(C') a reactive derivative of an impact absorbing rubbery polymer, or

(D) a composition composed of the rubbery polymer (C) and the reactive derivative of the rubbery polymer (C') and said inorganic filler (3) being filled in both (A') or (B) and (C') or (D), and

(5) said impact absorbing rubbery polymer (C) being an ethylene/propylene copolymer rubber, an ethylene/propylene/nonconjugated diene terpolymer, an ethylene/butene copolymer rubber, a styrene/conjugated diene copolymer, or a polydiolefin, and

(6) said reactive derivative of an impact absorbing rubbery polymer having hydrophilic groups introduced in the impact absorbing rubbery polymer, and

(7) said reactive derivative of a crystalline olefinic polymer having hydrophilic groups introduced in the crystalline olefinic polymer which cannot be uniformly mixed with the crystalline olefinic polymer forming the matrix.

4,433,074

DISCONTINUOUS FIBER PRETREATMENT

David H. Hawes, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,229

Int. Cl.³ C08K 7/02, 9/10

U.S. Cl. 523—207

6 Claims

1. An improved method of incorporating unregenerated discontinuous cellulose fibers within a vulcanizable elastomeric matrix including a fiber pretreatment which consists essentially of mixing from 3% to 15% by weight vinyl pyridine latex with an aqueous slurry of essentially delignified bleached hardwood fibers, said slurry having a consistency of from 10% to 35% subsequently expressing water and drying the treated fiber, wherein the improvement comprises hardwood fibers which have not been subjected to post-delignification drying.

4,433,075

QUALITY CONTROL PROCEDURE FOR DETERMINING PARTICLE CONCENTRATION IN POLYMERS

Paul C. Warren, Far Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 12, 1982, Ser. No. 441,222

Int. Cl.³ C08J 3/00; C08K 3/04

U.S. Cl. 523—303

9 Claims

1. A method for manufacturing a product that comprises a polymer composition that includes particles, said method comprising the steps of obtaining a representative portion of said polymer composition, preparing said representative portion, and performing a spectroscopic measurement on said prepared portion characterized in that said preparation comprises substantially dissolving said portion in a solvent in the substantial absence of the dissolution of said particles to form said prepared portion, measuring the level of light transmitted through said prepared portion, and from said measured level determining the suitability of said polymer composition.

4,433,076

COATING AGENT FOR MEDICAMENTS AND METHODS FOR MAKING AND USING THE SAME

Kurt H. Bauer; Hermann Osterwald, both of Freiburg; Klaus Lehmann, Rosdorf, and Dieter Dreher, Bickenbach, all of Fed. Rep. of Germany, assignors to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,486

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049179

Int. Cl.³ A01N 25/10

U.S. Cl. 523—342

7 Claims

1. The method for making an aqueous suspension of a synthetic resin copolymer, which suspension is adaptable to use for forming a coating on a medicament core to form an orally-ingestible pharmaceutical dosage unit form, which method comprises suspending powder granules of said copolymer, formed by spray drying an aqueous dispersion of said copolymer, in an aqueous solution of a plastizer for said copolymer or in an aqueous suspension of a plasticizer for said copolymer, said powder granules having a diameter between 20 and 60 microns and comprising loosely aggregated primary particles having a diameter of less than one micron, said copolymer comprising (a) 5 to 80 percent by weight of a water-soluble vinyl monomer selected from the group consisting of α , β -unsaturated mono- and dicarboxylic acids and the amides, the hydroxy lower alkyl esters, the monoalkyl- and dialkyl-amino lower alkyl esters, and the quaternary ammonium salts of such amino lower alkyl esters of said acids, vinyl pyrrolidone, and vinyl imidazole; and (b) 95 to 20 percent by weight of a monomer selected from the group consisting of styrene, vinyl acetate, olefins, and alkyl esters of acrylic acid and methacrylic acid having 1 to 10 carbon atoms in the alkyl portion thereof; the relative amounts of monomers (a) and (b) in said copolymer being such that the minimum film-forming temperature thereof is greater than 80° C., said copolymer further being water-insoluble in one portion of the region between pH 1.5 and 8 and water-soluble or water-swellaible in another portion of said region.

4,433,077

PROCESS FOR PREPARING CURABLE COMPOUNDS

Keith A. Callander, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Aug. 23, 1982, Ser. No. 410,654

Claims priority, application Canada, Sep. 23, 1981, 386486

Int. Cl.³ C08L 93/04

U.S. Cl. 523—344

7 Claims

1. A process for the production of soft compounds which are curable by heat to rubbery elastomers which process comprises the steps of:

adding to a trough type blade mixer one or more inorganic

fillers, organic tackifying resin, a butadiene-acrylonitrile polymer and an organic peroxidic compound polymerizable monomer having two or three polymerizable carbon-carbon double bonds, said trough type blade mixer, being selected from the group consisting of sigma-blade mixers, Z-blade mixers, horizontal dispersion-blade mixers and double Naben-blade mixers,

initiating the mixing in said mixer and continuing mixing for a time of from about 5 to about 30 minutes,

then adding to said mixer organic plasticizer and continuing mixing for a time of from about 5 to about 30 minutes,

then adding to said mixer an organic peroxidic compound and continuing mixing for a time of from about 5 to about 30 minutes,

said mixing being at a temperature of from about 20° to about 50° C.,

and removing the final mixture from said mixer as an essentially homogeneous soft compound.

4,433,078

WATERDISPERSIBLE CATIONIC RESINS FOR ELECTRODEPOSITION

Hilde Kersten, Erlenbach; Hans G. Zengel, Kleinwallstadt, both of Fed. Rep. of Germany, and Anton Toth, Creil, France, assignors to Akzo NV, Arnhem, Netherlands

Filed Dec. 3, 1980, Ser. No. 212,671

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014733

Int. Cl.³ C08L 63/08

U.S. Cl. 523—404

16 Claims

1. Water dispersible cationic resins for obtaining films with low pin hole formation and improved breakdown voltage, comprising the product of reaction of at least

(A) an epoxidized polydiene,

(B) a bisglycidylether of a polyphenol,

(C) an amide compound, which is formed by one or more higher, substantially multiply unsaturated fatty acids and a polyamine and which may comprise a ketimine group or a hydroxy group, and if necessary

(D) an organic secondary amine, at temperature from about 100° to 150° C., and/or

(E) a partially and/or fully masked polyisocyanate, at temperature below about 100° C., which product comprises excess epoxide groups and carbon-carbon double bonds.

4,433,079

WATER-DISPERSION ADHESIVE FOR EXTRUSION LAMINATION

Noriyuki Kobayashi, and Akihiko Funamoto, both of Chiba, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,698

Claims priority, application Japan, Mar. 19, 1982, 57-43916

Int. Cl.³ C08G 59/18; C09J 3/16

U.S. Cl. 523—404

7 Claims

1. Water-dispersion adhesives for extrusion lamination which comprise a dispersion of a resin in water, wherein the resin (A) is obtained from a reaction of a polyepoxy compound (B) with a reaction mixture (C) of a polyethyleneimine (D) and a monoepoxy compound (E).

4,433,080

WATER-BORNE HERMETIC VARNISH

Deno Laganis, Schenectady, and John Yodis, Amsterdam, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,387

Int. Cl.³ C08L 61/10, 63/00, 63/02

U.S. Cl. 523—414

19 Claims

1. A hydrolytically stable, heat-curable composition suitable for use as a hermetic varnish for coating wire made of copper, silver or aluminum, which consists essentially of an aqueous

solution of (1) a water-reducible, epoxy adduct which is a reaction product of

- (A) an epoxy resin which is a glycidyl ether of a dihydric phenol containing 1.3 to 2 epoxide groups per molecule and having an epoxy equivalent of about 600 to 1200,
 (B) aminobenzoic acid in an amount of 0.60 to 1.50 moles per epoxide equivalent weight,
 (C) a water-soluble organic solvent having a boiling point above 150° C. which is a glycol ether, a glycol ether carboxylic acid ester, an unsubstituted ketone or a ketone alcohol or a blend of such a solvent with up to 35% of a glycol ether and/or alkanol boiling below 150° C.,
 (D) sufficient quantity of a water soluble amine which is a tertiary alkyl amine, morpholine, N-(2-hydroxyethyl) morpholine or an alkanolamine to render the epoxy adduct soluble in water, (2) a water soluble or water reducible phenolic cross-linking agent which is a 2,2-bis(4-hydroxyphenyl)propane-formaldehyde resin having a 2,2-bis(4-hydroxyphenyl)propane to formaldehyde ratio of 1:2.0 to 3.5 on a molar basis, the phenolic cross-linking agent being 10 to 60% of the total of the phenolic and epoxy resin coating solids, the coating solids being not over 60% of the aqueous solution, the organic solvent being 30 to 90% of the total of organic solvent and water.

4,433,081

ELECTRICAL INSULATION BODY

Helmut Britsch, Schinznach-Dorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
 Filed Jan. 27, 1982, Ser. No. 343,266

Claims priority, application Switzerland, Feb. 11, 1981, 922/81

Int. Cl.³ C08K 3/36, 3/10

U.S. Cl. 523—457

10 Claims

1. An electrical insulation body in an environment of SF₆ gas comprising a matrix of a thermoset resin and a mineral filler, with the mineral filler comprising predominantly quartz powder and from about 5 to 50 percent by weight of said mineral filler of a second mineral powder component for increasing resistance to SF₆ cleavage products, which component comprises at least one alkaline earth metal carbonate.

4,433,082

PROCESS FOR MAKING LIQUID COMPOSITION OF PERFLUORINATED ION EXCHANGE POLYMER, AND PRODUCT THEREOF

Walther G. Grot, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1981, Ser. No. 259,506

Int. Cl.³ C08D 5/20

U.S. Cl. 524—755

34 Claims

1. A process for making a liquid composition of a perfluorinated ion exchange polymer having —SO₃M functional groups wherein M is H, Na, K or NR₄, and each R is separately H, CH₃ or C₂H₅, in a liquid medium, said liquid composition being liquid at room temperature, said process comprising contacting a said polymer having an equivalent weight in the range of 1025 to 1500 with a mixture comprising 20 to 90% by weight of water and 10 to 80% by weight of at least one member of the group consisting of methanol, ethanol, n-propanol, isopropanol, n-butanol, 2-butanol, 2-methoxyethanol, 2-ethoxyethanol, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, dioxane and acetonitrile at a temperature in the range of about 180° to 300° C. and below the critical temperature(s) of said member(s) employed, for at least 0.5 hour in a closed vessel, and separating from said liquid composition any lower density liquid phase present.

4,433,083

COMPOSITIONS OF MELT-PROCESSABLE POLYMERS HAVING IMPROVED PROCESSABILITY

Frederic N. Cogswell, Welwyn Garden City; Brian P. Griffin, St. Albans, and John B. Rose, Letchworth, all of England, assignors to Imperial Chemical Industries PLC, London, England
 Continuation of Ser. No. 207,708, Nov. 17, 1980, Pat. No. 4,389,174. This application Jun. 9, 1982, Ser. No. 386,683
 Claims priority, application United Kingdom, Nov. 30, 1979, 7941364; Nov. 30, 1979, 7941365

The portion of the term of this patent subsequent to May 11, 2000, has been disclaimed.

Int. Cl.³ C08L 1/08; C08G 18/00, 59/19, 83/00

U.S. Cl. 524—27

10 Claims

1. A melt-processable polymer composition comprising at least one polymer capable of forming an anisotropic melt and at least one other melt-processable polymer characterised in that the temperature range over which the polymer can form an anisotropic melt and the temperature range over which the melt-processable polymer may be melt processed overlap, with the proviso that the other melt-processable polymer may not become melt processable until blended with the anisotropic-melt-forming polymer.

4,433,084

HIGH-FLOAT, RAPID-SETTING EMULSION

Larry F. Ostermeyer, and Michael N. Guerin, both of West Lafayette, Ind., assignors to K. E. McConaughay, Inc., Lafayette, Ind.

Continuation-in-part of Ser. No. 381,543, May 24, 1982, abandoned. This application Sep. 28, 1982, Ser. No. 425,395

Int. Cl.³ B01J 13/00; C08L 95/00

U.S. Cl. 524—62

50 Claims

1. A method of manufacturing a high-float, rapid-setting emulsion which comprises first mixing, by weight of the finished emulsion, about 60% to about 80% asphalt with about 0.05% to about 4% tall oil, tall oil derivatives or mixtures thereof, and then combining and mixing said mixture with treated water comprising, by weight of the finished emulsion, 0% to about 4% tall oil, tall oil derivatives or mixtures thereof, from 0% to about 1% strong base and about 25% to about 35% water.

9. A method of manufacturing a high-float, rapid-setting emulsion which comprises first mixing about 60% to about 80% asphalt with about 0.1% to about 3.2% reacted tall oil, tall oil derivatives, or mixtures thereof, said reacted tall oil, tall oil derivatives or mixtures thereof comprising tall oil, tall oil derivatives or mixtures thereof reacted with 10%, by weight of the tall oil, tall oil derivatives or mixtures thereof in the reacted tall oil, tall oil derivatives or mixtures thereof, of a strong base, and then mixing and combining the asphalt-reacted tall oil, tall oil derivatives, or mixtures thereof mixture with treated water comprising about 0.1% to about 1% tall oil, tall oil derivatives or mixtures thereof, from 0 to about 1% strong base, and about 25% to about 35% water.

4,433,085

TRIAZOLIDINE-3,5-DIONE/FORMALDEHYDE/AMINE CONDENSATES AND COMPOSITIONS THEREOF

Ludwig Rottmaier, Odenthal, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
 Filed Jun. 29, 1981, Ser. No. 278,860

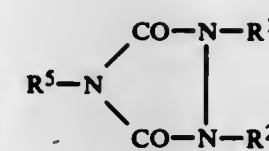
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027582

Int. Cl.³ C07D 403/04; C08K 5/34, 5/35

U.S. Cl. 524—83

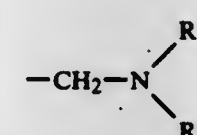
18 Claims

1. A compound of the formula



wherein

R¹ and R², independently of one another are each hydrogen, alkylcarbonyl having 2 to 21 carbon atoms or



wherein

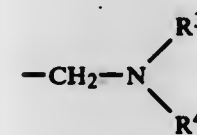
R³ is hydrogen, alkyl having 1 to 20 carbon atoms, cycloalkyl having 3 to 10 carbon atoms, unsubstituted aralkyl having up to 14 carbon atoms in the aryl moiety and up to 2 carbon atoms in the alkyl moiety, unsubstituted aryl having 6 to 14 carbon atoms, or a heterocyclic radical selected from the group consisting of a radical of pyrrolidine, piperidine, pyrazolidine, imidazolidine, oxazolidine, thiazolidine, piperazine, morpholine, thiomorpholine, hydantoin, 5,5-dimethylhydantoin, parabanic acid, barbituric acid and cyanuric acid and

R⁴ is alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, unsubstituted aralkyl having up to 14 carbon atoms in the aryl moiety and up to 2 carbon atoms in the alkyl moiety, unsubstituted aryl having 6 to 14 carbon atoms, or a heterocyclic radical selected from the group consisting of a radical of pyrrolidine, piperidine, pyrazolidine, imidazolidine, oxazolidine, thiazolidine, piperazine, morpholine, thiomorpholine, hydantoin, 5,5-dimethylhydantoin, parabanic acid, barbituric acid and cyanuric acid, alkylcarbonyl having 2 to 21 carbon atoms, alkenylcarbonyl having 3 to 21 carbon atoms or alkoxy-carbonyl having 2 to 20 carbon atoms, or

wherein

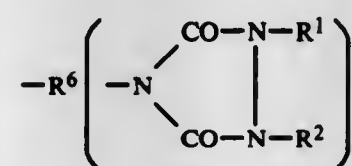
R³ and R⁴, together with the nitrogen atom to which they are attached, form a nitrogen-containing heterocyclic radical selected from the group consisting of a radical of pyrrolidine, pyrazolidine, imidazolidine, oxazolidine, thiazolidine, triazolidine, tetrazolidine, thiodiazolidine, piperidine, piperazine, morpholine, thiomorpholine, azacyclobutane and azacycloheptane, and

R⁵ is alkyl having 1 to 20 carbon atoms, cycloalkyl having 3 to 10 carbon atoms, unsubstituted aralkyl having up to 14 carbon atoms in the aryl moiety and up to 2 carbon atoms in the alkyl moiety, unsubstituted aryl having 6 to 14 carbon atoms, alkylcarbonyl having 2 to 21 carbon atoms or



wherein

R³ and R⁴ are as aforesaid or
 R⁵ is of the formula



wherein

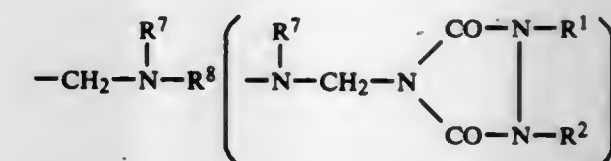
R⁶ is a (n+1)-valent C₁-C₂₀ aliphatic, C₃-C₁₀ cycloal-

phatic, C₈-C₁₆ araliphatic or C₆-C₁₄ aromatic hydrocarbon radical or one of said hydrocarbon radicals mono- or di-substituted by halogen, hydroxyl, C₁-C₄-alkoxy, cyano, amino, C₁-C₄-alkylamino, bis-(C₁-C₄-alkyl)-amino, C₂-C₄-alkoxycarbonyl or C₁-C₄-alkyl,

R¹ and R² are as aforesaid and

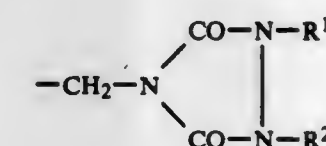
n is 1 or 2 or

R⁵ is of the formula



wherein

R⁷ is hydrogen, alkyl having 1 to 20 carbon atoms, cycloalkyl having 3 to 10 carbon atoms, unsubstituted aralkyl having up to 14 carbon atoms in the aryl moiety and up to 2 carbon atoms in the alkyl moiety, unsubstituted aryl having 6 to 14 carbon atoms, a heterocyclic radical selected from the group consisting of a radical of pyrrolidine, piperidine, pyrazolidine, imidazolidine, oxazolidine, thiazolidine, piperazine, morpholine, thiomorpholine, hydantoin, 5,5-dimethylhydantoin, parabanic acid, barbituric acid and cyanuric acid or



R⁸ is a (m+1)-valent C₁-C₂₀-aliphatic, C₃-C₁₀-cycloaliphatic, C₈-C₁₆-araliphatic, C₆-C₁₄-aromatic hydrocarbon radical or one of said hydrocarbon radicals mono- or di-substituted by halogen, hydroxyl, C₁-C₄-alkoxy, cyano, amino, C₁-C₄-alkylamino, bis-(C₁-C₄-alkyl)-amino, C₂-C₄-alkoxycarbonyl or C₁-C₄-alkyl,

R¹ and R² are as aforesaid and

m is 0, 1 and 2, a hydrogen atom being present instead of the radical in brackets if m is 0 and it being possible for R⁸ to be a carbonyl group when m is 1, said R¹, R² and R⁵ being selected so that said compound of said formula contains at least one group of the formula



18. A polyamide molding composition containing, as a flame-proofing agent, a compound of claim 1.

4,433,086

HEAT STABILIZED POLYMERS

Alva F. Harris, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,054

Int. Cl.³ C08K 5/09

U.S. Cl. 524—112

7 Claims

1. A polymer composition of improved stability comprising polymerized units derived from a vinylaromatic monomer, an ethylenically unsaturated anhydride monomer, and an ethylenically unsaturated nitrile monomer and from 0.1% to 8% by weight based on the composition weight of a tetrahalogenated aromatic dicarboxylic acid or anhydride of such an acid.

4,433,087

ALKYLATED 2,2'-BIPHENYLENE PHOSPHONATES AND STABILIZED COMPOSITIONS

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 75,289, Sep. 12, 1979, abandoned, which is a continuation of Ser. No. 964,407, Nov. 28, 1978, abandoned, which is a continuation of Ser. No. 866,749, Jan. 3, 1978, abandoned. This application May 26, 1981, Ser. No. 267,116

Int. Cl.³ C08K 5/52; C07F 9/15

U.S. Cl. 524—117

3 Claims

1. A composition comprising an ethylene or propylene homopolymer or copolymer stabilized against oxidative and thermal degradation by the presence therein of an effective stabilizing amount of (4,4',6,6'-tetra-tert-butyl-2,2'-biphenyl) phosphonate or (4,4'-dimethyl-6,6'-di-tert-butyl-2,2'-biphenylene) phosphonate.

2. The compound which is (4,4',6,6'-tetra-tert-butyl-2,2'-biphenylene) phosphonate.

3. The compound which is (4,4'-dimethyl-6,6'-di-tert-butyl-2,2'-biphenylene) phosphonate.

4,433,088

POLYPHENYLENE ETHER COMPOSITIONS AND PROCESS

William R. Haaf, Voorheesville; James A. Huebner, Glenmont, and Arthur Katchman, Delmar, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 238,543, Feb. 26, 1981, abandoned. This application May 26, 1982, Ser. No. 382,078

Int. Cl.³ C08K 5/51

U.S. Cl. 524—153

15 Claims

1. A composition comprising:

(a) a polyphenylene ether resin,

(b) a high impact polystyrene,

(c) an aromatic phosphate flame retardant agent, and

(d) an effective amount of an adhesion promoting agent consisting essentially of a low molecular weight polyolefin glycol, said composition being free from polyethylene.

4,433,089

INHIBITION OF POLYURETHANE HARDENING

C. Neil Keeney, Chesterfield, Mo.; Paul W. May, Jr., Fairview Heights, and Albert W. Morgan, Collinsville, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 942,231, Sep. 14, 1978, Pat. No. 4,349,640. This application Jun. 10, 1982, Ser. No. 386,835

Int. Cl.³ C08K 5/12

U.S. Cl. 524—294

12 Claims

1. Composition consisting essentially of butyl benzyl phthalate and, based on the weight of said phthalate, from about 0.1% to about 5% ethylene glycol.

4,433,090

VISCOSITY MODIFIERS FOR ACRYLAMIDE POLYMER

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 9, 1983, Ser. No. 502,830

Int. Cl.³ C08F 2/38

U.S. Cl. 524—295

9 Claims

1. An acrylamide polymer comprising acrylamide and a sufficient amount of cinnamic acid to substantially reduce the viscosity of the acrylamide polymer in solution.

4,433,091

PAINT MEDIUM FOR APPLYING OVERGLAZE DECORATION TO PORCELAIN AND AN OVERGLAZE PAINT ON BASIS OF THIS MEDIUM

Peter Poulsen, Lyngby, Denmark, assignor to Aktieselskabet Den kongelige Porcelainsfabrik, Copenhagen, Denmark
Filed Apr. 26, 1982, Ser. No. 371,987

Claims priority, application Denmark, May 6, 1981, 2010/81
Int. Cl.³ C08K 5/05; C08L 39/06

U.S. Cl. 524—386

6 Claims

1. In a non-turpentine, water-soluble, liquid paint medium for overglaze decoration of porcelain the improvement of a medium consisting essentially of, by weight:

15 to 40% of polyvinyl pyrrolidone or a mixture of polyvinyl pyrrolidone and aqueous polyethylene oxide;

45 to 85% of ethylene glycol, propylene glycol, a mixture of ethylene glycol and propylene glycol, or a mixture of any of the foregoing with water;

wherein the following ingredients are present in amounts up to:

5% of a non-ionic block copolymer of 2,000 molecular weight of which about 1,750 is propylene oxide and about 250 is ethylene oxide;

20% of butyl diglycol; and

5% of glycerol.

4,433,092

GREEN CERAMIC OF LEAD-FREE GLASS, CONDUCTIVE CARBON, SILICONE RESIN AND ALPO₄, USEFUL, AFTER FIRING, AS AN ELECTRICAL RESISTOR

Joseph Nemeth, Harsens Island, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of Ser. No. 241,490, Mar. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,404, Jan. 30, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 424,194

Int. Cl.³ H01C 7/00; C03C 3/08, 3/16

U.S. Cl. 524—414

4 Claims

1. A lead-free green ceramic body useful after firing as an electrical resistor and consisting essentially, on a solids basis, of from 60 to 75 percent of a glass frit, from 5 to 15 percent AlPO₄, from 1 to 4 percent conductive carbon and from 15 to 30 percent of a temporary binder which is a cured phenyl lower alkyl silicone resin, and wherein the glass frit consists essentially of from 0 to 5 percent Al₂O₃, from 25 to 45 percent SiO₂, from 17 to 25 percent B₂O₃, from 10 to 25 percent Na₂O, from 0 to 2 percent K₂O, from 2 to 10 percent CaO, from 5 to 20 percent BaO, from 2 to 5 percent Li₂O, from 0 to 2 percent MgO, from 0 to 2 percent TiO₂, from 0 to 2 percent MoO₃ and from 0 to 4 percent F or consists essentially of substantially 30 percent SiO₂, 2 percent P₂O₅, 5 percent B₂O₃, 10 percent Na₂O, 10 percent K₂O, 10 percent Li₂O, 30 percent TiO₂ and 3 percent Fe₂O₃ or consists essentially of substantially 21 percent Al₂O₃, 44 percent P₂O₅, 7 percent B₂O₃, 21 percent Na₂O, 3 percent Li₂O, and 4 percent F.

4,433,093

ANTI-CREVICE CORROSION SEALANT AND METHOD FOR ANTI-CREVICE CORROSION

Shigeru Shida, Hitachi; Nobuyoshi Hosaka, Ibaraki; Yuichi Ishikawa, Mito, and Osamu Nishida, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,017

Claims priority, application Japan, Jan. 25, 1982, 57-8917; Jan. 25, 1982, 57-8918

Int. Cl.³ C08K 3/10, 3/02

U.S. Cl. 524—433

7 Claims

1. An anti-crevice corrosion sealant which comprises a rubbery substrate containing 5–350% by weight of fine zinc powder, 20–100% by weight of magnesium oxide, and

20–200% by weight of electrostatically charged fine graphite powder, each on the basis of the rubbery substrate.

4,433,094

PNEUMATIC TIRES COMPRISING AN IMPROVED THREAD

Masaki Ogawa, Sayama, and Mikihiro Ikegami, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 17, 1982, Ser. No. 408,994

Claims priority, application Japan, Aug. 27, 1981, 56-133335
Int. Cl.³ C08K 3/04; C08L 9/06; B60C 11/00

U.S. Cl. 524—496

15 Claims

1. In a pneumatic tire comprising a tread, the improvement wherein said tread is composed of a rubber composition comprising 10 to 120 parts by weight of carbon black having an iodine adsorption number of not less than 36 mg/g and a dibutyl phthalate adsorption number of not less than 60 ml/100 g and 0.4 to 5 parts by weight of a vulcanizing agent based on 100 parts by weight of rubber content consisting of 40 to 100 parts by weight of styrene-butadiene copolymer rubber (hereinafter referred to as SBR-A) and 0 to 60 parts by weight of at least one diene rubber other than SBR-A; said SBR-A having a content of bound styrene (S) of 10 to 30% by weight and a content of 1,2-bond in butadiene portion (V) of 40 to 70% by weight, which are within a range of $65 \leq 1.7S + V \leq 100$, and satisfying that an amount of styrene sequence consisting of not less than 11 styrene monomer units is not more than 10% by weight of the content of bound styrene and an amount of styrene sequence consisting of not more than 5 styrene monomer units is not less than 80% by weight of the content of bound styrene.

4,433,095

AQUEOUS ADHESIVES CONTAINING WATER-DISPERSIBLE POLYISOCYANATE PREPARATIONS

Rudolf Hombach; Helmut Reiff, both of Leverkusen; Wolfgang Wenzel, Bergisch-Gladbach, and Manfred Dollhausen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,077

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112117

Int. Cl.³ C08L 31/04

U.S. Cl. 524—563

6 Claims

1. Aqueous adhesives comprising an aqueous polymer dispersion and a water-dispersible polyisocyanate having an average NCO-functionality of at least 2.2 and comprising

(a) an aromatic polyisocyanate having an NCO-functionality of at least 3 or a mixture of aromatic polyisocyanates having an average NCO-functionality of at least 2.2 and

(b) an emulsifier produced by reacting aromatic polyisocyanates with hydrophilic compounds containing isocyanate-reactive groups in an NCO/OH-equivalent ratio of at least 1:1, in a quantity sufficient to guarantee the dispersibility of the polyisocyanates.

4,433,096

POLYMERIZATION OF POLYDIORGANOSILOXANE IN THE PRESENCE OF FILLER

Gary N. Bokerman, and Neal R. Langley, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1983, Ser. No. 474,919

Int. Cl.³ C08K 3/10

U.S. Cl. 524—783

32 Claims

1. A method of polymerizing a hydroxyl endblocked polydiorganosiloxane in the presence of filler comprising
(A) mixing (i) 100 parts by weight of polydiorganosiloxane of the formula

HO(R₂SiO)_xH

wherein each R is a monovalent radical having from 1 to 18 carbon atoms selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals, and cyanoalkyl radicals, and x is from 3 to 200 and (ii) from 1 to 150 parts by weight of filler selected from the group consisting of inorganic reinforcing filler and inorganic extending filler to form a mixture,
(B) admixing sufficient catalyst of the formula

MO(R₂SiO)_xQ

wherein M is an alkali metal, tetraalkylphosphonium, or tetraalkylammonium radical; Q is an alkali metal, tetraalkylphosphonium, tetraalkylammonium, or hydrogen radical; R is as defined above; and z is at least 1, to cause condensation of the polydiorganosiloxane (i), and
(C) dehydrating the mixture by heating, at a temperature below that at which decomposition of the catalyst would occur, removing moisture for a time sufficient to polymerize the mixture, then
(D) inactivating the catalyst, to yield a stable silicone polymer-filler mixture in which the silicone polymer has a molecular weight greater than that of (i).

4,433,097

VINYL CHLORIDE RESIN TALC-EMBEDDED COMPOSITION AND METHOD OF MANUFACTURING SAME

Yoshihisa Tawada, Osaka; Tetsuro Yamamoto, Kobe; Minoru Ushioda, Amagasaki, and Kazuo Saito, Nishinomiya, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 226,784

Claims priority, application Japan, Jan. 22, 1980, 55-6586; Feb. 12, 1980, 55-16195

Int. Cl.³ C08F 2/44, 14/06; C08L 27/06; C08K 3/34

U.S. Cl. 524—789

16 Claims

1. A method of manufacturing vinyl chloride resin composition wherein talc is embedded within vinyl chloride base particles, comprising the steps of mixing said talc with either vinyl chloride monomer or a mixture of a vinyl chloride monomer in major proportions and other vinyl type monomer copolymerizable therewith in minor proportions, until said talc is substantially wetted with said monomer or monomer mixture; then adding to the resulting blend an aqueous medium and optionally a dispersant; and then polymerizing the resulting blend using an initiator soluble in said monomer or monomer mixture.

4,433,098

PROCESS FOR PREPARING A COPOLYMER AQUEOUS SOLUTION FROM WHICH A CATALYST RESIDUE IS REMOVED

Hirofumi Itoh; Teruaki Yamanashi, and Hirotsuke Imal, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan
Filed Oct. 19, 1981, Ser. No. 312,821

Claims priority, application Japan, Oct. 23, 1980, 55-148518

Int. Cl.³ C08F 6/08

U.S. Cl. 524—811

13 Claims

1. A process for preparing an aqueous solution of a butadiene-maleic anhydride copolymer from the polymerization liquid in which solution polymerization was carried out in the presence of azobisisobutyronitrile as a catalyst, which comprises the steps of:

adding water or a basic aqueous solution to the polymerization liquid;
distilling the polymerization solvent used for the solution polymerization; and then
distilling water and tetramethylsuccinonitrile with or without the addition of water or the basic aqueous solution.

4,433,099

PRODUCTION OF IMPACT-RESISTANT STYRENE POLYMERS

Friedrich-Wilhelm Küpper; Günter Padberg, both of Marl; Ulrich Reichert, Haltern, and Walter Trantmann, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,628

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018643

Int. Cl.³ C08F 279/02

U.S. Cl. 525—53

4 Claims

1. A method of producing impact-resistant modified styrene polymers having the characteristics: molecular weight M_v 150,000 to 170,000; gel content exceeding 22%, and a mean gel particle diameter of 1.7 to 4.5 microns, by continuously polymerizing a styrene solution of polybutadiene, possibly in the presence of diluents, in a cascade of at least three agitation vessels, at rising temperatures and in the presence of a peroxide initiator comprising:

(a) continuously introducing a solution of styrene consisting essentially of from about 8 to 10.5% by weight of polybutadiene rubber, based on said styrene and having more than 85% of a cis-1,4-structure into a first continuous stirred tank reactor, polymerizing said solution in the presence of about 1 to 7 m moles of an organic peroxide initiator having a single peroxide group or an equivalent amount of an organic peroxide initiator having a plurality of peroxide groups, said peroxide initiator having a half-life time exceeding 5 and less than 40 hours as measured in benzene at 100° C., said polymerizing being carried out for a residence time of about 0.8 to 1.6 hours with shearing agitation at temperatures of about 110° to 140° C., said dwell time being sufficient to produce a solid content of about 28 to 40% by weight;

(b) transferring the product of step (a) into at least one, but less than four additional continuous stirred tank reactors and continuing the polymerization at temperatures of about 130° to 160° C. for an additional residence time of about 1.0 to 1.8 hours in step (b) sufficient to produce a solid content of 60 to 73% by weight;

(c) transferring the product of step (b) into a further continuous stirred tank reactor and continuing the polymerization at a temperature of about 150° to 175° C. for an additional residence time of about 1.2 to 2.5 hours sufficient to produce a solid content exceeding 75% by weight and a residual organic peroxide initiator content less than 1% of the original amount; and

(d) removing volatile components at temperatures less than 260° C. under reduced pressures and recovering a product.

4,433,100

PRODUCTION OF NOVEL RESINS AND THEIR USES IN PRINTING INK COMPOSITIONS

James J. Laurito, Pittsburgh, Pa., assignor to Neville Chemical Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 260,935, May 8, 1981, abandoned, which is a continuation of Ser. No. 40,426, May 18, 1979, abandoned, which is a continuation of Ser. No. 839,408, Oct. 5, 1977, abandoned, which is a continuation of Ser. No. 434,270, Jan. 17, 1974, Pat. No. 4,056,498. This application Jul. 16, 1982, Ser. No. 399,003

The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.

Int. Cl.³ C08F 216/06

U.S. Cl. 525—54.42

40 Claims

1. A composition comprising:

(a) a predominant amount of dicyclopentadiene; and lesser amounts of

(b) at least one hydrocarbon selected from the group consisting of mono-olefins, diolefins, and polyenes each having

more than five carbon atoms, and having no aromatic rings; and

(c) at least one member selected from the group consisting of fatty acid-containing materials and rosin acid-containing materials.

4,433,101

BLENDS OF VINYL HALIDE-POLYOLEFIN GRAFT COPOLYMERS AND ABS POLYMERS

William H. Gibby, Jr., Edgewater Park, N.J., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 181,564, Aug. 27, 1980, abandoned. This application Apr. 1, 1981, Ser. No. 250,957

Int. Cl.³ C08L 51/00

U.S. Cl. 525—70

21 Claims

1. A moldable thermoplastic polymer composition consisting essentially of a blend of:

(a) a vinyl halide-hydrocarbon polyolefin graft copolymer consisting essentially of the product of bulk liquid phase polymerization of vinyl halide monomer alone or in combination with up to 50% by weight based on the total weight of monomer of another ethylenically unsaturated monomer copolymerizable therewith, in the presence of a free radical initiator compound for said polymerization, and about 0.05% to about 20% by weight, based upon said vinyl halide monomer, of a hydrocarbon olefin trunk polymer, and

(b) an ABS polymer comprising

(1) a mixture of a copolymer of acrylonitrile and a component selected from a group consisting of styrene, alpha methyl styrene, beta methyl styrene and mixtures thereof, with a minor amount of a copolymer of acrylonitrile and 1,3-butadiene, or

(2) a mixture of a copolymer of acrylonitrile and said component with a minor amount of a graft of a copolymer of acrylonitrile and said component onto poly-1,3-butadiene.

4,433,102

THERMOPLASTIC MOLDING MATERIALS

Franz Brandstetter, Neustadt; Juergen Hambrecht, Heidelberg, and Rudolf Stephan, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,208

Claims priority, application Fed. Rep. of Germany 3129378

Int. Cl.³ C08L 51/00

U.S. Cl. 525—75

2 Claims

1. A thermoplastic molding material containing

(A) 50-90% by weight, based on A+B, of a hard component comprising one or more copolymers of styrene or α -methylstyrene, or a mixture thereof, with acrylonitrile, these copolymers containing from 20 to 40% by weight of acrylonitrile as copolymerized units, and

(B) 50-10% by weight, based on A+B, of one or more graft copolymers comprising

(B₁) 40-80% by weight, based on (B), of a crosslinked acrylate polymer with a mean particle size of from 0.85 to 20 μ m (d_{50} value of the cumulative mass distribution) and with a glass transition temperature T_g below 0° C., onto which

(B₂) 20-60% by weight, based on (B), of a mixture of styrene and acrylonitrile in a weight ratio of from 88:12 to 65:35 is grafted,

the grafting base (B₁) having been prepared by carrying out the polymerization in the presence of crosslinking monomers, water, water insoluble initiators, emulsifier of from 0.1 to 3% by weight, based on the monomer(s), and an aliphatic alcohol of 10 to 30 carbon atoms, wherein prior to the polymerization, a mixture of water, the emulsifier and the long-chain alcohol is prepared by stirring for from 5 to 30 minutes at above the melting point of the alcohols.

4,433,103

IMPACT-RESISTANT METHACRYLIC RESIN COMPOSITION

Kazumasa Kamata, Hiroshima, and Masamitsu Tateyama, Yamaguchi, both of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,511

Int. Cl.³ C08L 51/00, 33/12; C08F 265/06

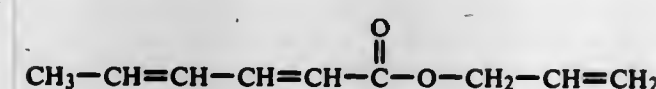
U.S. Cl. 525—81

27 Claims

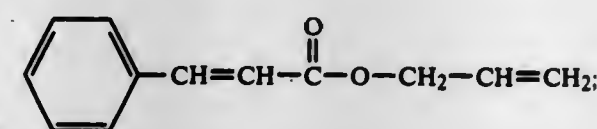
1. An impact-resistant methacrylic resin composition comprising a multilayer structure methacrylic resin composition [II] obtained by the following sequential four polymerization stages (i) through (iv):

(i) the first stage of forming 5 to 50 parts by weight of a hard crosslinked resin (A) containing at least 80% by weight of methyl methacrylate units;

(ii) the second stage of obtaining 100 parts by weight of a multilayer structure acrylic elastomer [I] by forming on the periphery of said hard crosslinked resin (A) 95 to 50 parts by weight of a layer of a crosslinked acrylic acid ester copolymer (B) by polymerizing a monomer mixture comprising 69.9 to 89.9% by weight of at least one alkyl acrylate having 1 to 8 carbon atoms in the alkyl group, 10 to 30% by weight of styrene or a mixture of styrene and a derivative thereof and 0.1 to 10% by weight of at least one compound selected from the group consisting of a compound of the formula:



and a compound of the formula:



(iii) the third stage of forming on the periphery of said elastomer [I] 5 to 100 parts by weight of a layer of a hard crosslinked resin (C) by polymerizing a crosslinkable monomer mixture comprising 80 to 99.9% by weight of methyl methacrylate, 0 to 19.9% by weight of at least one alkyl acrylate having 1 to 8 carbon atoms in the alkyl group, 0 to 10% by weight of other copolymerizable vinyl monomer and 0.1 to 10% by weight of a copolymerizable polyfunctional monomer having at least two carbon-to-carbon double bonds in the molecule; and

(iv) the fourth stage of forming on the periphery of said resin (C) 5 to 1000 parts by weight of a layer of a hard non-crosslinked resin (D) by polymerizing a non-crosslinkable monomer or non-crosslinkable monomer mixture comprising 80 to 100% by weight of methyl methacrylate, 0 to 20% by weight of at least one alkyl acrylate having 1 to 8 carbon atoms in the alkyl group and 0 to 10% by weight of other copolymerizable vinyl monomer, the resin (D)/resin (C) weight ratio being in the range of from 0.5 to 200.

4,433,104

POLYETHERIMIDE-FLUORINATED POLYOLEFIN BLENDS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Pittsfield, Mass.

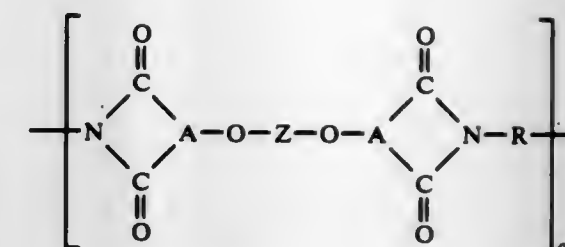
Filed Mar. 18, 1982, Ser. No. 359,260

Int. Cl.³ C08L 29/08

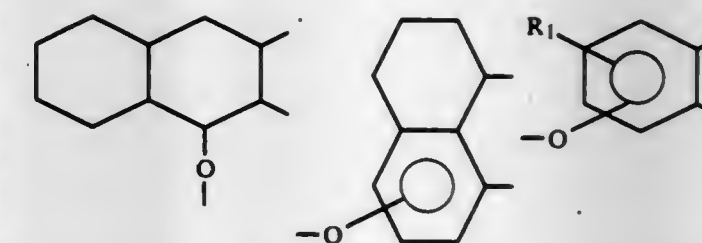
U.S. Cl. 525—180

9 Claims

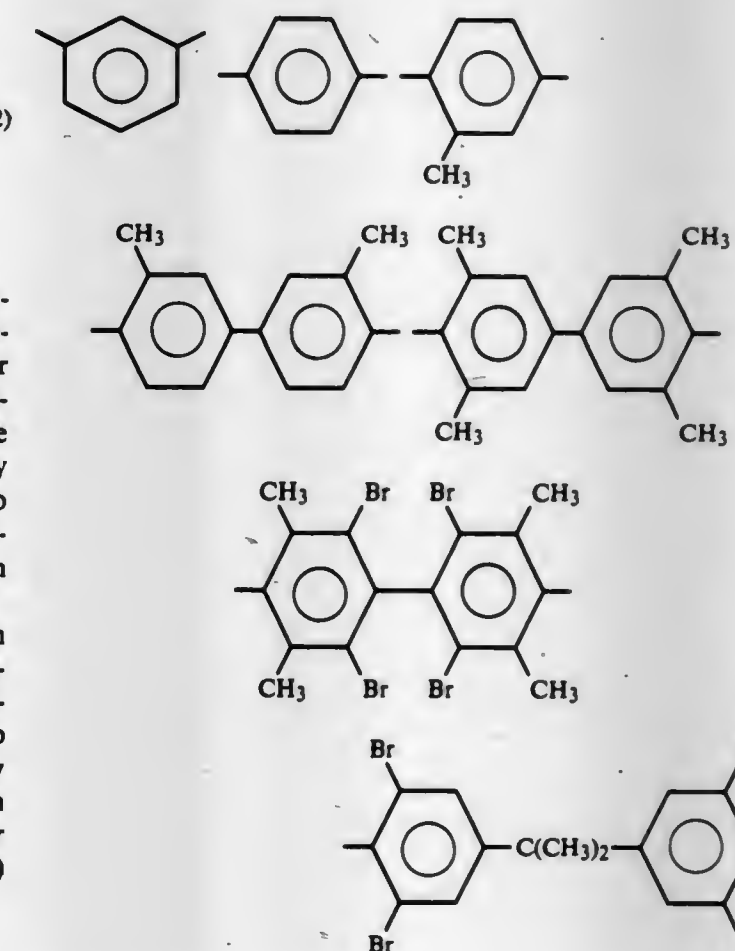
1. A composition comprising a blend of (a) a fluorinated polyolefin or copolymer thereof and (b) a polyetherimide which has the formula:



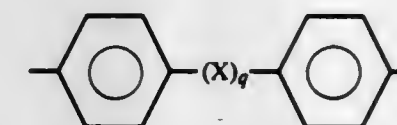
where a represents a whole number in excess of 1, the group —O—A— is selected from:



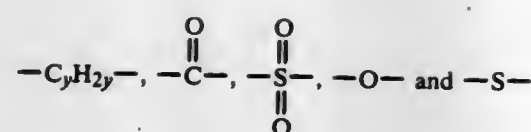
R' being hydrogen, lower alkyl or lower alkoxy, Z is a member of the class consisting of (1)



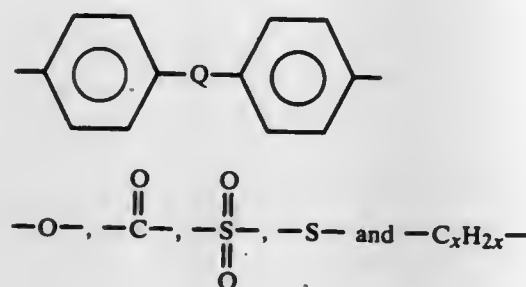
and (2) divalent organic radicals of the general formula:



where X is a member selected from the class consisting of divalent radicals of the formulas,



where q is 0 or 1, y is a whole number from 1 to 4, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6-20 carbon atoms and halogenated derivatives thereof, (2) alkylene radicals and cycloalkylene radicals having from 2-20 carbon atoms, C₍₂₋₈₎ alkylene terminated polydiorganosiloxane, and (3) divalent radicals included by the formula



where x is a whole number from 1 to 5 inclusive.

4,433,105

CHLORINATED RUBBER AND POLYVINYL CHLORIDE COMPOSITION CONTAINING THE SAME

Akira Matsuda, and Tetsuo Tojyo, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 4, 1981, Ser. No. 289,821

Claims priority, application Japan, Oct. 16, 1980, 55-145009

Int. Cl.³ C08F 8/20

U.S. Cl. 525-211

12 Claims

1. A chlorinated rubber having a chlorine content of 10 through 50% by weight of a Mooney viscosity (ML₁₊₄ at 100° C.) of about 20 through about 150, said chlorinated rubber being derived from the chlorination of (i) a copolymer rubber of ethylene and 1-butene having a mol ratio of ethylene/1-butene of 87/13 through 95/5 or (ii) a copolymer rubber of ethylene, 1-butene and 5-ethylidene-2-norbornene having a mol ratio of ethylene/1-butene of 87/13 through 95/5 and a content of the 5-ethylidene-2-norbornene of 20% by weight or less based on the weight of the copolymer.

4,433,106

PRODUCTION OF SULPHUR-MODIFIED POLYCHLOROPRENE RUBBERS

Rüdiger Musch, Bergisch-Gladbach; Wolfgang Konter, Neuss, and Wilhelm Göbel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,198

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143525

Int. Cl.³ C08L 11/00, 27/22

U.S. Cl. 525-215

5 Claims

1. A process for the production of sulphur-modified polychloroprene rubber comprising mixing 0.5 to 40% by weight of styrene-butadiene-rubber latex solids, based on total solids, with a polychloroprene latex containing from 0.3 to 0.7% by weight of sulphur based on chloroprene, followed by peptization, coagulation, filtration and drying.

4,433,107

POLYISOPRENE RUBBER COMPOSITIONS

Yasumasa Takeuchi; Mitsuhiro Sakakibara; Nobuo Tagata, all of Yokkaichi; Masaki Ogawa, Sayama; Yasushi Hirata, Higashimurayama, and Shigeru Tomihira, Kodaira, all of Japan, assignors to Bridgestone Tire Co., Ltd.

Filed Aug. 3, 1982, Ser. No. 404,750

Claims priority, application Japan, Aug. 19, 1981, 56-128779

Int. Cl.³ C08L 9/00

U.S. Cl. 525-232

7 Claims

1. A rubber composition comprising:

- (a) not less than 20 parts by weight of polyisoprene having a melting point of not less than 10° C., a cis-1,4 bond content of not less than 88% and a tetrahydrofuran insoluble matter content of not more than 5% by weight; and
- (b) the balance thereof of at least one other rubber.

4,433,108

PREPARATION OF STYRENE SUSPENSION POLYMERS

Hans G. Keppler, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,271

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125446

Int. Cl.³ C08F 2/18

U.S. Cl. 525-255

6 Claims

1. A suspension polymerization process for the preparation of polymeric beads of homopolymers of styrene or styrene copolymers which consist predominantly of styrene, wherein styrene polymers from previous suspension polymerization batches are used along with fresh styrene monomer, which process comprises:

- (a) dissolving styrene polymers from previous polymerization batches in styrene monomer to form a monomer phase, said polymers containing sparingly soluble metal phosphate suspension stabilizers;
- (b) dissolving phosphoric acid in water to form an aqueous phase;
- (c) dispersing the monomer phase in the aqueous phase by stirring at a temperature of from 10° to 80° C. for from 15 to 120 minutes to transfer the metal phosphate suspension stabilizers to the aqueous phase of the dispersion whereby the metal phosphate is dissolved in the aqueous phase;
- (d) adding to the dispersion a metal compound to form a sparingly soluble metal phosphate suspension stabilizer by precipitation; and
- (e) heating the dispersion containing the precipitated metal phosphate to initiate the suspension polymerization process.

4,433,109

STYRENE-BUTADIENE BLOCK COPOLYMER

Yasumasa Takeuchi, Yokohama; Mitsuhiro Sakakibara, Yokkaichi; Fumio Tsutsumi, Yokkaichi; Akio Takashima, Yokkaichi, and Iwakazu Hattori, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,862

Claims priority, application Japan, Dec. 17, 1980, 55-178226; Dec. 26, 1980, 55-186194; Dec. 26, 1980, 55-186195

Int. Cl.³ C08F 297/04

U.S. Cl. 525-314

8 Claims

1. A styrene-butadiene block copolymer having a Mooney viscosity (ML₁₊₄, 100° C.) of 10 to 150, a total vinyl content in the whole bound butadiene of 30 to 70% and a total bound styrene content of 10 to 40% by weight, which comprises a combination of (A) at least one styrene-butadiene random copolymer block having a bound styrene content of 10 to 50% by weight and a vinyl content of 25 to 50% in the butadiene portion, and (B) at least one styrene-butadiene random copolymer block having a bound styrene content of 1 to 30% by weight and a vinyl content of at least 60% in the butadiene

portion, the fraction of the block (A) being 10 to 90% by weight, a combination of (A') at least one styrene-butadiene random copolymer block having a bound styrene content of 20 to 50% by weight and a vinyl content of 40 to 75% in the butadiene portion, and (B') at least one polymer block having a bound styrene content of not more than 10% by weight and a vinyl content of more than 20% but not more than 50% in the butadiene portion, the fraction of the block (A') being 10 to 90% by weight, or a combination of (A'') at least one styrene-butadiene random copolymer block having a bound styrene content of 10 to 50% by weight and a vinyl content of 10 to 50% in the butadiene portion, (B'') at least one styrene-butadiene random copolymer block having a bound styrene content of 1 to 30% by weight and a vinyl content of at least 60% in the butadiene portion, and (C) at least one polybutadiene block having a vinyl content of 10 to 50%, each of the blocks (A'), (B') and (C) being contained in a proportion of at least 10% by weight.

4,433,110

PROCESS FOR PRODUCING PROPYLENE BLOCK COPOLYMERS

Kazuo Baba; Shyozo Kawamata, both of Chiba; Yoshiharu Fukui, Ehime; Selichiro Ima, Ehime, and Tatsuya Miyatake, Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 17, 1981, Ser. No. 255,005

Claims priority, application Japan, Apr. 21, 1980, 55-53450; May 26, 1980, 55-70451

Int. Cl.³ C08F 297/08

U.S. Cl. 525-323

5 Claims

1. A propylene block copolymer produced by polymerizing propylene, ethylene and 1-butene in two stages with a Ziegler-Natta catalyst by a process which comprises (A) supplying propylene and ethylene in the first stage and propylene and said 1-butene in the second stage, or (B) supplying propylene and said 1-butene in the first stage and propylene and ethylene in the second stage, to the polymerization system, wherein the amounts of propylene and ethylene supplied in the first stage of (A) or in the second stage of (B) are 90 to 99 wt% and 10 to 1 wt% based on the total amount of propylene and ethylene supplied in the first stage of (A) or in the second stage of (B), respectively, the amounts of propylene and said 1-butene supplied in the second stage of (A) or in the first stage of (B) are 60 to 98 wt% and 40 to 2 wt% based on the total amount of propylene and said 1-butene supplied in the second stage of (A) or in the first stage of (B), respectively, and the amounts of copolymers formed in the first and second stages are 20 to 90 wt% and 80 to 10 wt% based on the final block copolymer, respectively.

4,433,111

FLUORINE-CONTAINING HYDROGEL-FORMING POLYMERIC MATERIALS

Brian J. Tighe, Birmingham, and Howard J. Gee, Derbyshire, both of England, assignors to Kelvin Lenses Limited, Manchester, England

Filed Oct. 8, 1981, Ser. No. 309,581

Claims priority, application United Kingdom, Oct. 14, 1980, 8033137; Oct. 14, 1980, 8033061

Int. Cl.³ C08F 214/18; G02C 7/04

U.S. Cl. 525-326.2

15 Claims

1. A crosslinked, fluorine-containing polymeric material suitable for use in biomedical applications, containing units derived either by simultaneous copolymerisation and cross-linking or by copolymerisation and subsequent cross-linking of the following monomers:

- (1) 20 to 40 mole % of an amide of acrylic or methacrylic acid;
- (2) 25 to 55 mole % of an N-vinyl lactam of the N-vinyl pyrrolidone type;

(3) 5 to 20 mole % of a hydroxyalkyl ester of acrylic or methacrylic acid;

(4) 1 to 10 mole % of acrylic or methacrylic acid; and (5) at least about 5 up to about 10 mole % of a hydrophobic monomer component comprising two monomer types (a) and (b) as follows:

- (a) a fluorine-containing olefine, or fluorine-containing unsaturated alcohol, unsaturated carboxylic acid or ester or a non-fluorine-containing unsaturated alcohol which, after copolymerisation of monomers (1) to (5), is esterified using a fluorine-containing aliphatic carboxylic acid or derivative thereof; and
- (b) a non-fluorine-containing polymerisable hydrophobic vinyl monomer which is at least one monomer selected from the group consisting of vinyl aromatic hydrocarbons of the styrene type and hydrophobic esters of acrylic or methacrylic acid;

the monomers (1) to (5) totalling 100 mole %, the cross-linking having been effected with crosslinking amounts of a crosslinking agent, which, in the case of simultaneous copolymerisation and crosslinking, is an ester of a diol and acrylic or methacrylic acid or is divinylbenzene, or, in the case of crosslinking subsequent to copolymerisation, is a latent crosslinking agent which is a diamide of an unsaturated aliphatic carboxylic acid, an anhydride of an aliphatic or aromatic carboxylic acid, a diepoxide or dicumyl peroxide, the crosslinking agent having been used in an amount of up to 5 weight % based on the total weight of monomers (1) to (5).

4,433,112

PREPARATION OF A POLYVINYLPIRROLIDONE BY HEAT TREATMENT OF AN AQUEOUS SOLUTION OF A CONVENTIONAL POLYVINYLPIRROLIDONE

Ferdinand Straub, Hockenheim; Heinrich Hartmann, Limburgerhof; Paul Naegele, Neuhofen, and Karl Seib, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 197,022, Oct. 16, 1980, Pat. No. 4,330,451.

This application Mar. 15, 1982, Ser. No. 358,513

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942657

Int. Cl.³ C08F 8/00, 126/10

U.S. Cl. 525-326.9

3 Claims

1. Polyvinylpyrrolidone which is characterized by a viscosity of from 1,000 to 2,000 mPa.S at room temperature when admixed in water at a concentration of 2 percent by weight; said polyvinylpyrrolidone obtained by a process comprising:

- admixing an aqueous solution of polyvinylpyrrolidone of between 5 and 30% by weight obtained by free-radical polymerization, with a water-insoluble organic peroxide of between 0.5 and 5% by weight of polyvinylpyrrolidone; and
- heating said mixture in the absence of oxygen at between 20° to 250° C. for a sufficient period of time.

4,433,113

IONOMERS AS ANTISTATIC AGENTS

Fred E. Woodward, 200 Churchill Rd., West Palm Beach, Fla. 33405, and Alice Hudson, 728 Kalmia Dr., Lake Park, Fla. 33403

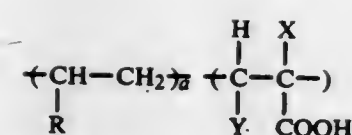
Filed Aug. 10, 1981, Ser. No. 291,403

Int. Cl.³ C08F 8/32

U.S. Cl. 525-327.5

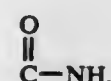
8 Claims

1. An ionomer composition comprising the water insoluble conductive salts of copolymers of alpha olefins and dicarboxylic acids of 4 and 5 carbon atoms of the general structure



in which at least one-tenth of the —COOH groups exist as the ionized anion —COO^- with a quaternary ammonium cation; the mole ratio of olefins (a) to dicarboxylic monomer is such that the combined weight of olefin for each dicarboxylic monomer unit is from at least 196 up to about 600; R is H or a hydrocarbon of 1 to 22 carbon atoms; and Y is H, and X is $\text{—CH}_2\text{COOH}$; or Y is —COOH , and X is H or CH_3 ; the quaternary ammonium cation is

(1) $\text{R}_1\text{R}_2\text{R}_3\text{R}_4\text{N}^+$ in which R_1 is alkyl or alkenyl containing about 12 to 22 carbon atoms and may be interrupted by O, S,

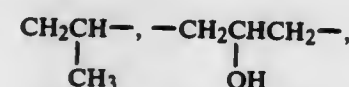


or phenyl, R_2 and R_3 are methyl, ethyl, propyl, hydroxyethyl, hydroxypropyl; or benzyl, and may be the same or different, and R_4 may be the same as R_1 or the same as R_2 or R_3 ; or

(2) Condensation products of fatty acids containing about 12 to 22 carbon atoms with alkylene polyamines or hydroxyalkyl amines of the general structure:



where B is $\text{—CH}_2\text{CH}_2\text{—}$, $\text{—CH}_2\text{CH}_2\text{CH}_2\text{—}$,



R_7 and R_8 are hydrogen methyl, ethyl, benzyl or hydroxy alkyl, and P is zero, 1 or 2; in which the amino-amide or imidazoline is quaternized with a methyl halide, or dimethyl or diethylsulfate.

4,433,114

DIENE RUBBER AND METHOD AND COMPOSITION FOR RUBBER TREATMENT

Aubert Y. Coran, and Chester D. Trivette, Jr., both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

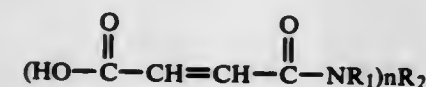
Continuation-in-part of Ser. No. 322,142, Nov. 17, 1981, abandoned. This application May 20, 1982, Ser. No. 380,185

Int. Cl.³ C08C 19/22, 19/20

U.S. Cl. 525—332.6

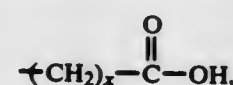
62 Claims

1. A composition comprising diene rubber treated, in the presence of a modification promoting amount of (A) sulfur or an organic sulfur compound capable of generating thiyl radicals, by (B) a compound of the formula

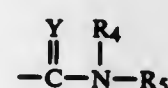
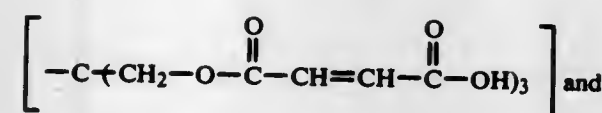
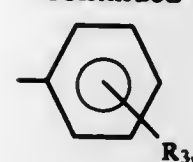


n being an integer of 1–3, wherein R_1 is hydrogen or alkyl of 1–10 carbon atoms and, if $n=1$, R_2 is selected from hydrogen,

alkyl of 1–10 carbon atoms, optionally forming a heterocyclic moiety with the N atom of the formula and R_1 , either with or without an added N or O atom,

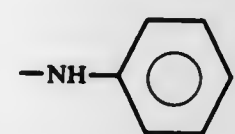


-continued



wherein Y is an oxygen or sulfur atom, x is an integer of 1–12, R_3 is:

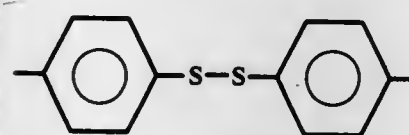
hydrogen, —COOH ,
alkoxy of 1–5 carbon atoms or



R_4 and R_5 are the same or different selected from:

hydrogen,
phenyl and
alkyl of 1–10 carbon atoms;

if $n=2$, R_2 is selected from phenylene, divalent aliphatic hydrocarbon radicals of 2–20 carbon atoms and



and if $n=3$, R_2 is s-triazinyl or a trivalent aliphatic hydrocarbon of 2–20 carbon atoms, said composition having been treated at a temperature of from 160° to 210° C. for a long enough time to impart to the composition improved green strength, tack or non-black filler interaction capability.

4,433,115

PHOSPHORUS-CONTAINING IMIDE RESINS

Indra K. Varma, New Delhi, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

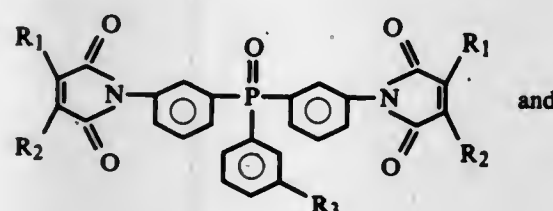
Continuation-in-part of Ser. No. 288,267, Jul. 30, 1981, Pat. No. 4,395,557. This application Jul. 11, 1983, Ser. No. 512,795

Int. Cl.³ B32B 7/00; C07D 207/26, 209/34; C08F 283/00

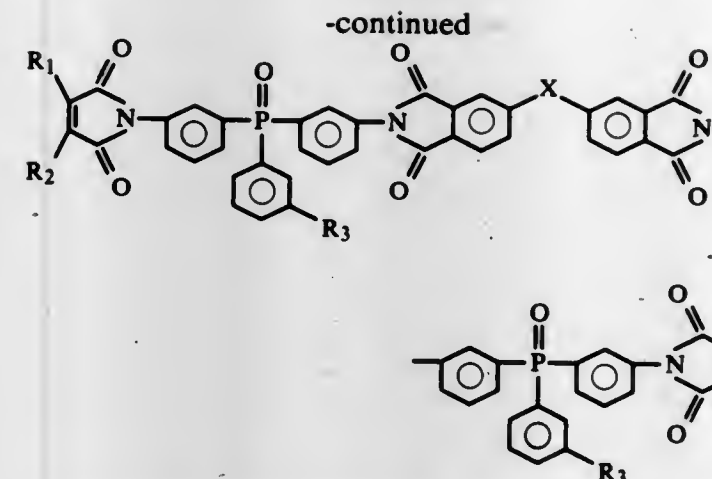
U.S. Cl. 525—417

20 Claims

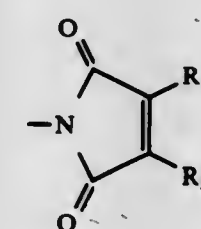
1. A fiber-reinforced imide polymer composite comprising reinforcing fiber in a cured polymer of an imide have a structure selected from



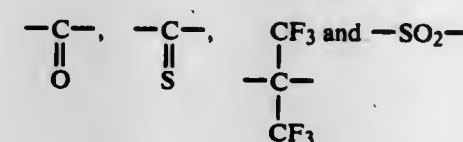
and



wherein R_1 and R_2 are selected from the group consisting of chlorine, methyl and hydrogen; R_3 is the amino group or an imide group



X is a linking entity selected from the group consisting of a valence bond, —O— , —S— , $\text{—C}_n\text{H}_{2n}\text{—}$ wherein n is 1, 2, or 3,



4,433,116

PROCESS FOR INCREASING THE RELATIVE VISCOSITY OF POLYCAPROLACTAM WITH PHOSPHITE COMPOUND

Theodore Largman, Morristown, and Shaul M. Aharoni, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 280,563, Jul. 6, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,210

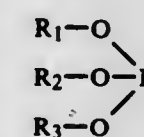
Int. Cl.³ C08G 69/48

U.S. Cl. 525—420

16 Claims

1. A process for decreasing the melt index and increasing the viscosity of polymers of caprolactam that comprises:

(a) forming a mixture of one or more of said polymers and an effective amount of one or more phosphite compounds of the formula:



wherein:

R_1 is alkyl or haloalkyl having from 2 to 12 carbon atoms or phenyl either unsubstituted or substituted with one or more halo or alkyl substituents having 1 to 12 carbon atoms;

R_2 and R_3 are individually R_1 , hydrogen or a metal cation; and

(b) heating said mixture for a period of time between about 1 minute and about 15 minutes at a temperature between about the melting point of said polymer and about 320° C.

to produce a polymer having increased relative viscosity; wherein said relative viscosity of said polymer of caprolactam is increased by at least about 20%.

4,433,117

COPOLYESTERAMIDE AND PRODUCTION OF THE SAME

Motowo Takayanagi, Fukuoka, and Yoshihumi Murata, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 8, 1983, Ser. No. 473,226

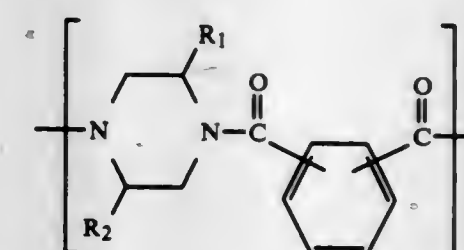
Claims priority, application Japan, Mar. 23, 1982, 57-46671; Mar. 23, 1982, 57-46672; Jul. 14, 1982, 57-123703

Int. Cl.³ C08F 283/04; C08G 69/48, 73/16

U.S. Cl. 525—425

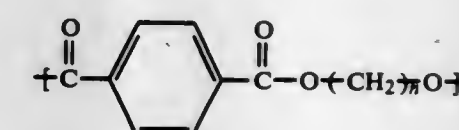
25 Claims

1. A random block copolyesteramide comprising 0.05 to 20 wt% of polyamide blocks composed of amide units represented by the formula (I)



(I)

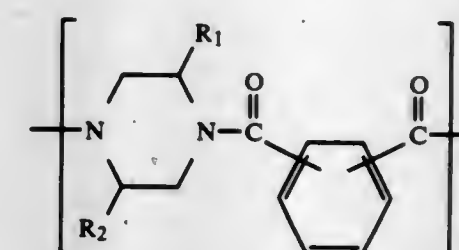
(where R_1 and R_2 are hydrogen or a methyl group) and 99.95 to 80 wt% of polyester blocks composed of ester units represented by the formula (II)



(II)

(where n is an integer of 2 to 4), said copolyesteramide having an intrinsic viscosity higher than 0.5, and the average number of the consecutive repeating amide units in said polyamide blocks being 2 to 40.

11. A process for producing a copolyesteramide which comprises dissolving a polyamide oligomer having the repeating unit represented by the formula (I) and having an average degree of polymerization of 2 to 40,



(I)

(where R_1 and R_2 are hydrogen or a methyl group) in a polyester monomer or a prepolymer thereof represented by the formula (III),



(III)

(where n is an integer of 2 to 4) and subsequently performing a polycondensation reaction.

4,433,118

POLY (P- AND M-METHYLENEBENZOATE) BLENDS WITH POLYARYLATES

Michael M. Schwartz, Aurora; Jack R. Knox, Naperville, and Edward E. Paschke, Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 301,362, Sep. 11, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 424,854
Int. Cl.³ C08L 67/02, 67/00

U.S. Cl. 525—437

13 Claims

1. A composition comprising a blend of (a) a polyarylate derived from a dihydric phenol and at least one aromatic dicarboxylic acid, ester, or acid chloride, and (b) a poly(methylenebenzoate) wherein said polyarylate is present in an amount of from about 1 to 99 weight percent and said poly(methylenebenzoate) is present in an amount of from about 99 to 1 weight percent.

4,433,119

LIQUID THERMOSETTING COMPOSITIONS CONTAINING HEMIFORMALS OF PHENOL

George L. Brode, and Sui-Wu Chow, both of Bridgewater Township, Somerville County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

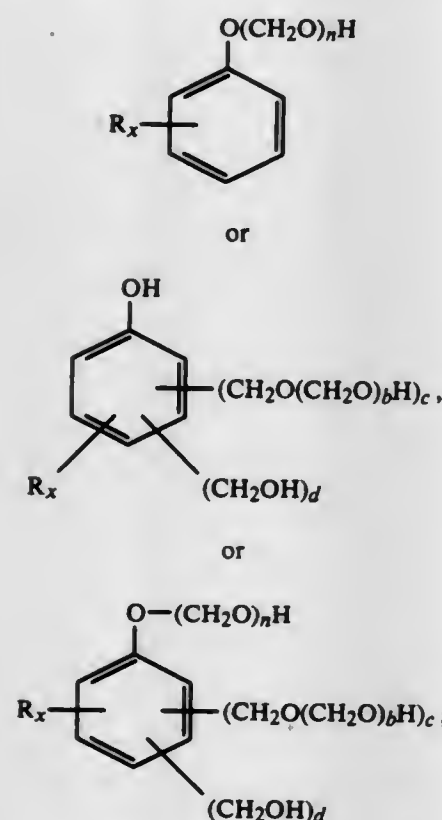
Filed Jan. 19, 1982, Ser. No. 340,720

U.S. Cl. 525—442

11 Claims

1. A liquid solution curable to a thermoset resin which comprises;

(I) From 40 to 80 weight percent, based on the total weight of the solution, of a hemiformal composition of a phenol having any one of the formulas:



wherein n is a positive number of greater than 1, b is 1 to about 5, and c is 1 to about 3, d is 0 to about 2, the sum of c and d is at least 1 and no greater than 3, the sum of c, d and x is at least 1 and no greater than 5, x is 0 to 3, R is a monovalent radical wherein x=0 for at least 50 weight percent, based on the hemiformal composition, of the hemiformal composition; and

(II) from 20 to 60 weight percent, based on the total weight of the solution, of a polymer capable of forming solution with the hemiformal composition of (I), said polymer being from the group: phenol-formaldehyde resoles, phenol formaldehyde novolacs, aromatic polyesters, aromatic polycarbonates, unsaturated polyesters, aromatic poly-

ethers, urea-formaldehyde resins and melamine-formaldehyde resins.

4,433,120

LIQUID PHENOLIC RESIN COMPOSITION AND METHOD FOR WAFERBOARD MANUFACTURE

Shui-Tung Chiu, New Westminster, Canada, assignor to The Borden Chemical Company (Canada) Limited, Toronto, Canada

Filed Sep. 30, 1981, Ser. No. 307,180

Int. Cl.³ C08L 61/10

U.S. Cl. 525—501

15 Claims

1. A method of preparing a pre-cure resistant liquid phenolic resin binder composition having a viscosity and surface tension which is sufficiently low to allow spray application as fine droplets to waferboard comprising the steps of:

- reacting phenol and formaldehyde in a formaldehyde to phenol molar ratio of 1:1 to 3:1 in a first stage in the presence of an alkaline catalyst at a temperature which is allowed to rise to between 80° C. and reflux to produce a highly-condensed and crosslinkage phenol-formaldehyde resin having an average molecular weight in the range of about 2000-6000 and a viscosity of 100-450 cps at 25° C.
- reducing the temperature of the resulting resin to 60°-70° C.
- adding a second portion of phenol and formaldehyde in a phenol to formaldehyde mol ratio of 1.5:1 to 3:1 and alkaline catalyst to the resin and cooking at 45°-70° C. until the formaldehyde is reacted to a free formaldehyde content of 0-4% to produce a non-resinous phenol-formaldehyde condensate comprising methylated phenols having an average molecular weight of about 200-300; and
- cooling the resulting liquid phenolic resin composition to a temperature below room temperature.

4,433,121

POLYMERIZATION PROCESS

Yasunori Kabu, Ichihara; Masayoshi Yasunaka; Yoshinori Morita, both of Iwakuni, and Masanori Motowoka, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,472

Claims priority, application Japan, Jul. 7, 1981, 56-105137

Int. Cl.³ C08F 2/04

U.S. Cl. 526—68

7 Claims

1. In a process for polymerizing a monomer capable of being formed, upon polymerization, into a solution having an upper cloud point of the corresponding polymer in a reaction medium being liquid under the reaction conditions, the polymerization being carried out under such conditions that the resulting polymer dissolves in the reaction medium; the improvement wherein

- the polymerization is carried out in a polymerization zone under a pressure of from atmosphere pressure to about 150 kg/cm²-G and at a temperature above the upper cloud point of said polymer solution and under conditions which enable the polymer solution to be separated into two phases,
- the polymerization is carried out under stirring conditions which maintain the two phases under said phase-separating conditions in a dispersed and mixed state, and
- the resulting polymer solution is sent to a separating zone located independently of said polymerization zone, thereby separating it into two phases in the separating zone at a temperature above the upper cloud point, and thereafter, the polymer-rich liquid phase as a lower layer is recovered while the polymer-lean liquid phase as an upper layer is recycled to the polymerization zone.

4,433,122

STOPPING/RESTARTING FREE RADICAL POLYMERIZATIONS

Raymond S. Knorr, Pensacola, Fla.; Joe D. Chandler, Decatur, Ala., and Loi N. Tran, Harvey, La., assignors to Monsanto Company, St. Louis, Mo.

Filed May 3, 1982, Ser. No. 373,822

Int. Cl.³ C08F 6/02, 20/44

U.S. Cl. 526—83

14 Claims

1. A method of stopping and restarting the free radical polymerization of vinyl monomer(s) comprising from 35% to 100% by weight of acrylonitrile and from 65% to 0% by weight, respectively, of at least one vinyl monomer copolymerizable therewith, wherein the polymerization utilizes a redox catalyst system comprising a promoter consisting of multivalent metal ions, a reducing agent and an oxidizing agent, said method comprising the steps of:

- stopping the polymerization by adding thereto sufficient chelating agent to chelate said multivalent metal ions,
- adding said monomer(s) to the polymerization in an amount sufficient to ensure that monomer radicals present at the time metal ions are chelated polymerize to form polymer having a specific viscosity corresponding substantially to that of polymer formed before the chelating agent was added and
- subsequently restarting the polymerization by adding thereto a multivalent metal compound or multivalent metal in an amount sufficient to provide a concentration of promoter corresponding substantially to the concentration of promoter present before the chelating agent was added.

4,433,123

POLYMERIZATION PROCESS FOR DRAG REDUCING SUBSTANCES

Mark P. Mack, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 7,088, Jan. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 953,144, Oct. 20, 1978, abandoned. This application May 12, 1981, Ser. No. 262,870

Int. Cl.³ C08F 4/64, 10/00

U.S. Cl. 526—139

14 Claims

1. A method for the production of ultrahigh molecular weight non-crystalline hydrocarbon soluble polymers comprising:

- preparing under an inert atmosphere a catalyst comprising
- (1) titanium trichloride,
- (2) a co-catalyst of the formula $\text{AlR}_n\text{X}_{3-n}$ where R is a hydrocarbon radical containing from 1 to 20 carbon atoms, X is hydrogen or halogen, and n is 2 or 3, a phosphorus compound of the formula $\text{PR}_1\text{R}_2\text{R}_3$, wherein R₁, R₂, and R₃ are, independently, aryl, alkyl, aralkyl, or alkaryl, each containing from 1 to 12 carbon atoms and placing the catalyst in contact with
- (b) C₂ to C₃₀ monoolefinic hydrocarbons, said contacting occurring at temperatures of from about -10° C. to about 40° C. to polymerize said olefins, then
- (c) ceasing polymerization at a polymer content level of 20% by weight or less based on the total reaction mixture.

4,433,124

ADHESIVE COMPOSITIONS

Takanori Okamoto; Hisakazu Mori, both of Kagawa, and Hideaki Matsuda, Kawaga, all of Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Nov. 23, 1981, Ser. No. 323,922

Claims priority, application Japan, Dec. 13, 1980, 55-175245

Int. Cl.³ C08F 220/28, 230/02

U.S. Cl. 526—277

9 Claims

1. A one-part adhesive composition which comprises

- 100 parts by weight of a mixture comprising 90 to 20% by

weight of a hydroxyl-containing polymerizable methacrylate represented by the following general formula (1),



wherein R₁ is an alkylene group having 2 to 4 carbon atoms and l stands for an integer of from 1 to 8, and 10 to 80% by weight of a polymerizable methacrylate having 2 or more methacrylic groups, in admixture with

- the following components (a) through (d),
- (a) 0.02 to 0.5 part by weight of a polymerizable phosphate represented by the following general formula (2),



wherein R₂ is hydrogen or methyl group, R₃ is an alkylene or halogenoalkylene group having 2 to 4 carbon atoms, m stands for an integer of from 1 to 8 and n stands for an integer of 1 or 2,

- (b) 0.5 to 5 parts by weight of 1,2,3,4-tetrahydroquinoline salt of o-benzoic sulfimide,
- (c) 0.005 to 1.0 part by weight of an organic hydroperoxide, and
- (d) 0.2 to 2.5 parts by weight of water.

4,433,125

OXYGEN PERMEABLE HARD CONTACT LENS

Shoji Ichinohe, Annaka; Kouzou Takahashi, Aichi, and Yasuharu Tanaka, Nagoya, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Toyo Contact Lens Co., Ltd., both of Japan

Filed Jan. 21, 1983, Ser. No. 459,981

Claims priority, application Japan, May 8, 1982, 57-77133; Aug. 7, 1982, 57-137597

Int. Cl.³ C08F 30/08

U.S. Cl. 526—279

7 Claims

1. An oxygen permeable hard contact lens made of a copolymer comprising (a) an organosilane or organosiloxane compound having in one molecule at least one group of the general formula (I):



wherein R¹ is hydrogen atom or methyl group, k is 0 or 1, and l is 1 or 3, and having at most 16 silicon atoms, and (b) a compound of the general formula (II):



wherein R¹ is as defined above, m is 0 or 1, n is 0 or an integer of 1 to 3, and R² is a straight or branched fluoroalkyl group having 2 to 21 fluorine atoms.

4,433,126

MODIFIED PHENOL-FORMALDEHYDE RESIN AND THE PRODUCTION THEREOF

Oscar H. H. Hsu, and Milford C. Tassler, both of St. Charles, Ill., assignors to Masonite Corporation, Chicago, Ill.

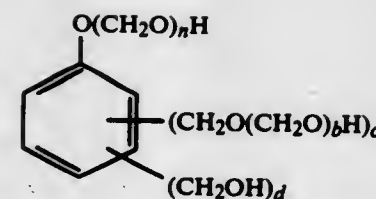
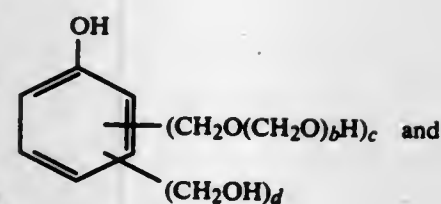
Filed Dec. 28, 1981, Ser. No. 334,881

Int. Cl.³ C08H 5/04; C08G 83/00

U.S. Cl. 527-105

5 Claims

1. A method of forming a modified phenol-formaldehyde binding resin for ligno-cellulose fibers, comprising reacting a concentrated aqueous extract obtained from the steam digestion of wood chips with phenol and formaldehyde under alkaline conditions at a temperature not exceeding about 100° C. until a resin with a viscosity of at least about 35 cps (Brookfield) is produced, the mole ratio of phenolic compounds to formaldehyde being in the range from 1:2 to 1:3, the weight of concentrated aqueous extract being from 5% to 50% of the weight of the phenol, calculated on the dry weight of each material.



wherein b is 1 to about 5, c is 1 to about 3, d is 0 to about 2, the sum of c and d is at least 1 and does not exceed 3, and n is greater than or equal to 1, said hemiformal being stable between about 35° C. and about 55° C. and curable to a phenolic resin in the presence of a phenol aldehyde resin curing catalyst.

4,433,127

ROOM TEMPERATURE CURABLE SILICONE COMPOSITIONS

Iwakichi Sugiyama, Narashino; Kiyoshi Endo, Motono, and Yukihisa Takaoka, Ushiku, all of Japan, assignors to Matsumoto Seiyaku Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Jun. 17, 1982, Ser. No. 389,465

Int. Cl.³ C08G 77/06

U.S. Cl. 528-17

6 Claims

1. A room temperature curable silicone composition comprising a silanol-terminated polyorganosiloxane compound selected from the group consisting of siloxane compounds having a hydroxy group bonded to a silicon atom and being capable of forming a two-dimensional network, a silyl isocyanate having three or more isocyanate groups directly bonded to a silicon atom and a Ti—O—P bond-containing organic compound.

4,433,128

EMBEDDING MASS BASED UPON FAST-REACTING POLYURETHANE CASTING RESIN

Gerhard Wick, Obernburg, Fed. Rep. of Germany, assignor to Akzo NV, Arnhem, Netherlands

Filed Nov. 22, 1982, Ser. No. 443,739

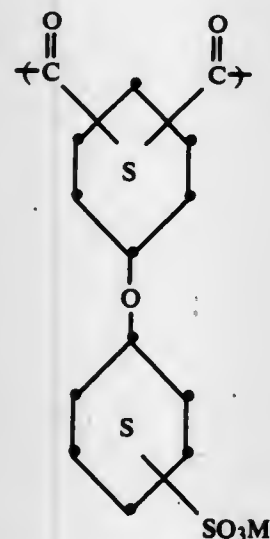
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147025

Int. Cl.³ C08G 18/18

U.S. Cl. 528-53

20 Claims

1. Embedding mass based upon polyurethanes produced from castor oil, comprising a polyurethane, which has been obtained through reaction of an aromatic polyisocyanate with a mixture of castor oil and trimethylolpropane to produce an NCO-group-displaying pre-adduct and polymerization of the pre-adduct with a polypropyleneglycol or a mixture of polypropyleneglycol and trimethylolpropane in the presence of catalyst, said embedding mass containing as catalyst about 0.005 up to 0.3% by weight, relative to the total weight of the polyurethane resin, of a mixture of a dialkyl tin dicarboxylate and a tertiary aliphatic mono- or diamine in weight ratio 1:1 up to 4:1, said employed polypropylene glycol being constructed of 25 up to 50 propylene oxide units.



wherein M is a monovalent cation selected from the group consisting of alkali metal and ammonium;
(b) 30 to 99.9 mole percent of recurring units derived from one or more additional polymerized copolymerizable polycarboxylic acids; and
(c) 100 mole percent of at least one polymerized copolymerizable diol, diamine or hydroxyamine.

4,433,129

HEMI-FORMALS OF METHYLOLATED PHENOLS

George L. Brode, and Sui-Wu Chow, both of Bridgewater Township, Somerville County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 19, 1982, Ser. No. 340,790

Int. Cl.³ C08G 8/10

U.S. Cl. 528-154

9 Claims

1. A liquid composition of a hemiformal of methylolated phenol having at least one of the following structures:

**4,433,131
COATING SOLUTION OF POLYETHERIMIDE MONOMERS**

Donald A. Bolon, and Thomas B. Gorczyca, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,707

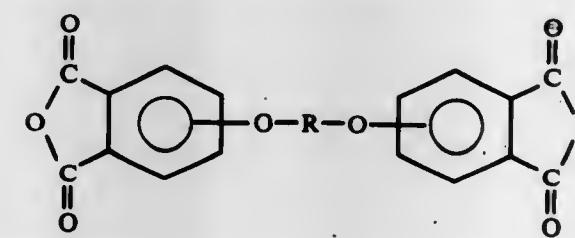
Int. Cl.³ C08G 73/10

U.S. Cl. 528-185

19 Claims

1. A monomeric coating solution comprising
(1) an organic residue selected from the group consisting of

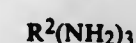
acidic derivatives of aromatic bis(ether anhydride) and esterified derivatives of aromatic bis(ether anhydride) obtained from monofunctional alcohols, said bis(ether anhydride) having the formula:



(2) an organic diamine having the formula:

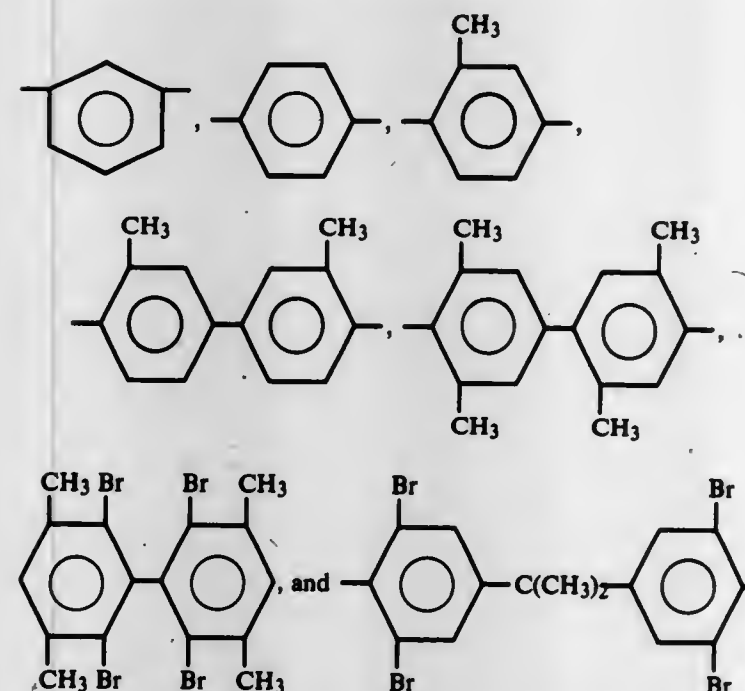


(3) an organic triamine having the formula:

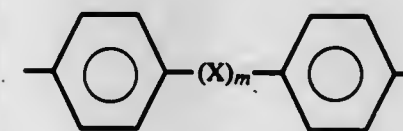


(4) water and

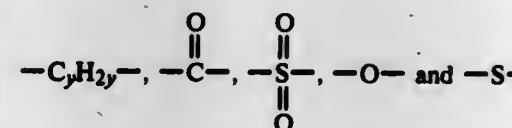
(5) a suitable organic solvent where R is a member selected from the class consisting of (A) divalent organic radicals having the following formulas:



and (B) divalent organic radicals of the general formula:
an (B) divalent organic radicals of the general formula:

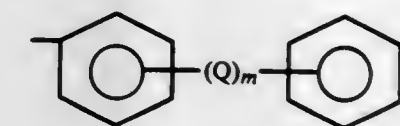


where m is 0 to 1 and X is a member selected from the class consisting of divalent radicals of the formulas,

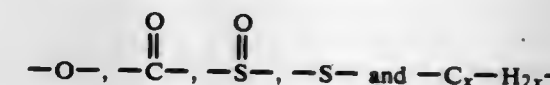


where y is an integer from 1 to 4, R¹ is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals having from 2 to about 20 carbon atoms, and cycloalkylene radicals having from 3 to about 30 carbon atoms, (c) from C₂ to about C₈ alkylene terminated polydi-

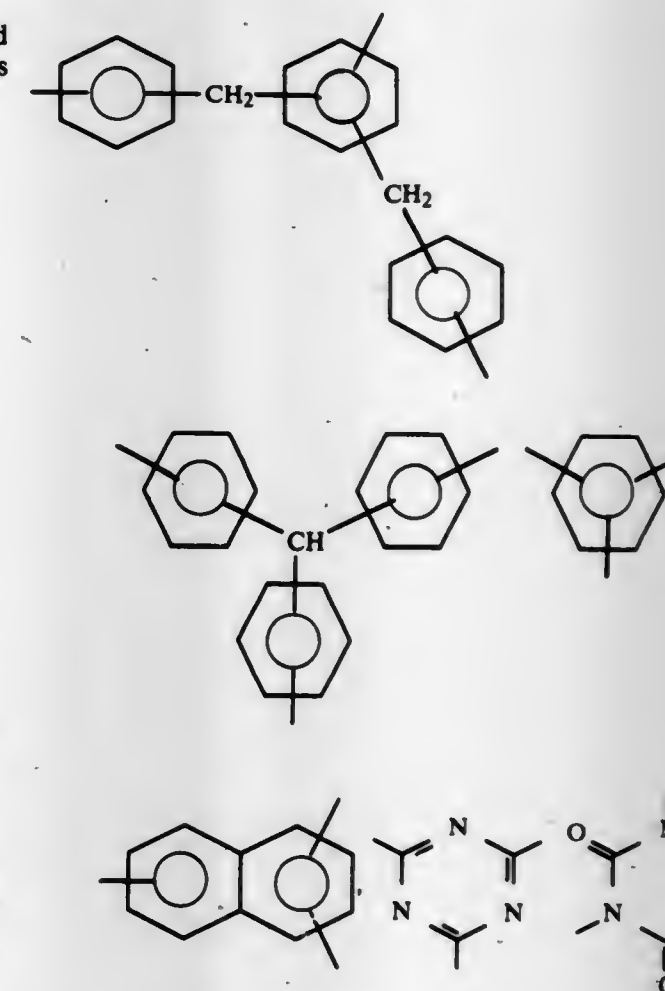
organosiloxane, and (d) divalent radicals of the general formula:



where m is as previously defined and Q is a member selected from the class consisting of:



where x is an integer from 1 to 5 inclusive and R² is a member selected from the class consisting of (a) the following trivalent aromatic radicals:



and (b) trivalent aliphatic radicals, or combinations thereof.

4,433,132

POLYESTERS CONTAINING BIS(TRIFLUOROMETHYL)BIPHENYLENE RADICALS

Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H., and Richard A. Minns, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

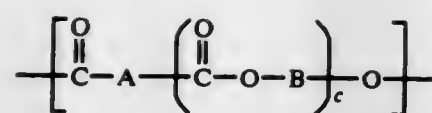
Filed Sep. 2, 1982, Ser. No. 414,473

Int. Cl.³ C08G 63/06, 63/18, 63/68

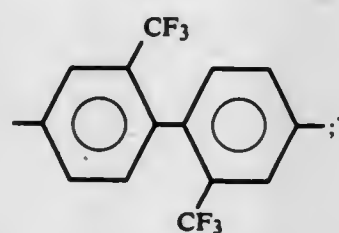
U.S. Cl. 528-191

14 Claims

1. A polymer comprising recurring units of the formula



wherein each of A and B is a divalent organic radical and c is zero or one; and wherein, when c is one, at least one of said A and B divalent organic radicals is a 2,2'-bis(trifluoromethyl)biphenylene radical having the formula



and wherein, when c is zero, said divalent organic radical A is a 2,2-bis(trifluoromethyl)biphenylene radical having the afore-said formula.

4,433,133

PROCESS FOR PRODUCING CROSSLINKED UREA-FORMALDEHYDE POLYMER PARTICLES

Naoyuki Ifuku; Akio Kurokawa; Kenzo Seita, all of Yokohama; Kaoru Usami, Kamakura, and Naoyuki Aikawa, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,811

Int. Cl.³ C08G 12/12

U.S. Cl. 528-232

10 Claims

1. A process for producing fine particles of crosslinked urea-formaldehyde polymer which comprises the steps of synthesizing a precondensate of urea and formaldehyde, allowing the precondensate to react by the addition of an aqueous solution of an acid catalyst, and then neutralizing the reaction mixture, characterized in that the filtrate resulting from the filtration step for separating the polymer particles is added to the reaction system at a stage of the reaction prior to the formation of a solid material consisting of crosslinked urea-formaldehyde polymer particles and in that the precondensate is obtained by reacting 1.0 mole of urea with 1.4 to 1.9 moles of formaldehyde at a pH of 6 to 10 and a temperature of 10° to 95° C.

4,433,134

PREPARATION OF ALKYL MERCAPTOALKANOATES FROM UNSATURATED CARBOXYLATES AND CO₂-CONTAMINATED H₂S

Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 62,660, Aug. 1, 1979. This application Aug. 12, 1982, Ser. No. 407,415

Int. Cl.³ C08G 63/04, 63/34

U.S. Cl. 528-279

27 Claims

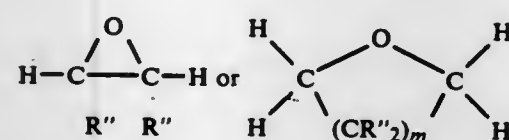
1. A method comprising: reacting carbon dioxide-containing hydrogen sulfide with an olefinically unsaturated carboxylate of the formula



wherein R' is an alkyl radical containing from 1 to 5 carbon atoms; each R is selected independently from hydrogen and R'; p is selected from 0, 1, 2 and 3; and the total number of carbon atoms in all the R groups does not exceed 15,

in the presence of a basic catalyst having an ionization constant of at least 2.0×10^{-5} at 25° C., to form a reaction product comprising mixed esters, and reacting thus-obtained mixed esters in the presence of a

transesterification catalyst with a poly(oxyalkylene)-polyol produced by reacting one or more epoxy-substituted hydrocarbons of the formula



wherein each R'' is selected independently from H and alkyl, the total number of carbon atoms in the molecule represented by the formula does not exceed 20, and m is an integer of from 1 to 10, with a polyol of the formula



wherein Y is a hydrocarbon moiety having at least two carbon atoms and a valence equal to the value of x, and x is an integer of at least two.

25. The method of claim 1 in which the transesterification catalyst is $\text{M(OR}'')_4$, wherein R'' is an alkyl group having from 1 to 10 carbon atoms and M is titanium or zirconium.

4,433,135

METHOD FOR THE PREVENTION OF HYDROLYSIS OF POLYESTERIFICATION CATALYSTS

Ronald W. Worley, Swannanoa, N.C., and David A. Johnson, Norton, Mass., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 14, 1982, Ser. No. 398,029

Int. Cl.³ C08G 63/04, 63/32

U.S. Cl. 528-282

8 Claims

1. In a polymerization reaction wherein a readily hydrolyzable species is employed as a catalyst, the improvement which comprises treating the starting materials for said polymerization reaction with aluminum sulfate in order to remove moisture therefrom.

4,433,136

PROCESS FOR PREPARING POLYAMIDE IN UNIFORMLY FLUIDIZED STATE

Akira Miyamoto; Senzo Shimizu; Kazuo Yamamiya, and Masahiro Harada, all of Kanagawa, Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,974

Claims priority, application Japan, Jun. 4, 1981, 56-85922

Int. Cl.³ C08G 69/28

U.S. Cl. 528-347

10 Claims

1. A process for preparing a polyamide which comprises effecting the polycondensation reaction of a reaction mixture comprising a diamine component containing at least 70 mole % of m-xylylene diamine and a dicarboxylic acid component containing at least 80 mole % of adipic acid at atmospheric pressure, characterized by starting the reaction at a temperature higher than the melting point of said dicarboxylic acid component; continuing the reaction while heating the reaction mixture at such a temperature that the reaction mixture is maintained in a uniformly-fluidized state; and further continuing the reaction, with the reaction mixture being maintained in a uniformly-fluidized state, by heating the reaction mixture at a temperature higher than the melting point of the resulting polyamide or lower than said melting point by an amount not exceeding 30° C. before conversion of said components to the polymer reaches 95%.

4,433,137

TRANSPARENT POLYAMIDE FROM BRANCHED CHAIN ARYLENE DIAMINE

Josef Pfeller, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardlsey, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,118

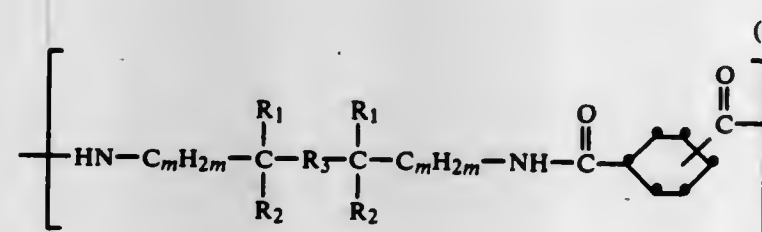
Claims priority, application United Kingdom, Jun. 19, 1981, 8119013

Int. Cl.³ C08G 69/26

U.S. Cl. 528-348

6 Claims

1. A transparent polyamide having a reduced specific viscosity of at least 0.3 dl/g, measured on a 0.5% solution in m-cresol at 25° C., and having recurring structural elements of formula I

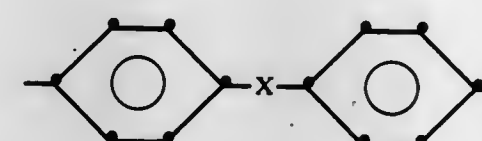


wherein

the two m independently of each other are an integer of from 4 to 16,

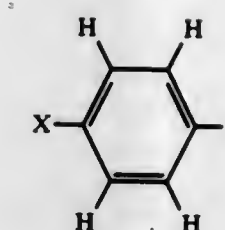
the two R₁ independently of each other are C₁₋₃ alkyl,

the two R₂ independently of each other are C₁₋₆ alkyl and R₃ is 1,4-phenylene or

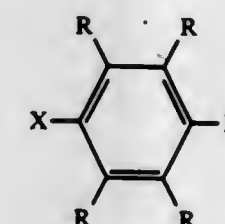


wherein

X is the direct bond, or X represents —CH₂—, —O—, —S— or —NH—, and whereby the carbonyl groups in the structural elements of formula I are linked to the benzene ring in the 1,3-position, 1,4-position or in mixture thereof.



(I)



(II)

wherein X is fluoro, chloro, bromo or iodo, and R is the same or different and each is selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms cycloalkyl having 5 to 20 carbon atoms, aryl having 6 to 24 carbon atoms, alkaryl having 7 to 24 carbon atoms, aralkyl having 7 to 24 carbon atoms, and two R moieties linked together forming aryl having 6 to 24 carbon atoms or a heterocyclic moiety having an oxygen, nitrogen or sulphur heteroatom and having 6 to 24 carbon atoms; with the proviso that at least one R is not hydrogen; component (b) is 0.1 to 2.4 mole percent, relative to the dihalogenobenzene, of a polyhalogenoaromatic of the formula



(III)

wherein

Ar is aryl or a heterocyclic moiety having an oxygen, nitrogen or sulphur heteroatom with said aryl and said heterocyclic each having from 6 to 24 carbon atoms;

X is fluoro, chloro, bromo or iodo; and

n is 3 or 4;

and component (c) is an alkali metal sulphide.

4,433,139

N-ACETYL-β-D-GLUCOSAMNIDES FOR DETERMINING N-ACETYL-β-D-GLUCOSAMINIDASE ACTIVITY

Yasunao Ogawa; Akira Noto, both of Osaka; Sachio Mori, Hyogo, and Mitsuru Yoshioka, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 11, 1982, Ser. No. 357,317

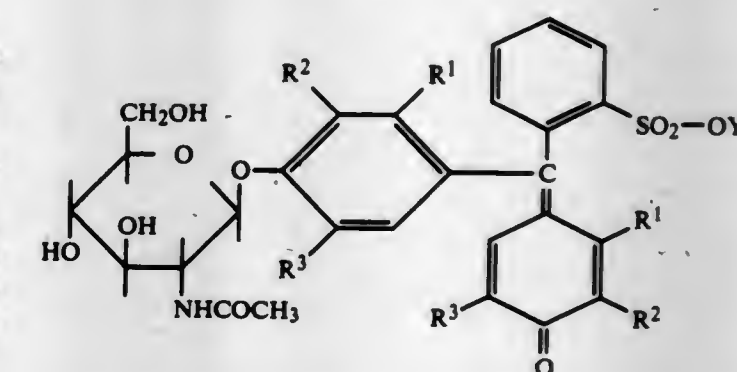
Claims priority, application Japan, Mar. 17, 1981, 56-39104

Int. Cl.³ C07H 5/04, 5/20

U.S. Cl. 536-17.2

1 Claim

1. An N-acetyl-β-D-glucosaminide of the formula:



wherein each of R¹, R² and R³ is hydrogen, lower alkyl, fluorine, chlorine, bromine, or iodine and Y² is an alkali metal from the group of lithium, sodium and potassium.

4,433,138

PROCESS FOR THE PREPARATION OF POLYARYLENE SULPHIDES

Karsten Idel; Dieter Freitag; Ludwig Bottenbruch, all of Krefeld, and Otto Neuner, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 379,036

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120538

Int. Cl.³ C08G 75/14

U.S. Cl. 528-388

7 Claims

1. In the process for preparation of high molecular weight thermoplastic branched polyarylene sulphide having a melt viscosity between 0.5×10^3 and 5×10^5 Pas by reacting halogenoaromatic compounds with alkali metal sulphides, the improvement comprises reacting components (a), (b) and (c) in a lactam without further metal salt catalyst with a molar ratio of (a):(c) in the range of 0.85:1 to 1.15:1 and a molar ratio of (c): solvent in the range of 1:2 to 1:15, for a time of up to 10 hours at a temperature of from 160° C. to 300° C., and in the presence of from 2 to 100 mole percent, relative to (c), of an N,N-dialkylcarboxamide; wherein component (a) is dihalogenobenzene with 50 to 100 mole percent of the formula

4,433,140

TRIDECADEOXYNUCLEOTIDE, PROCESS FOR PREPARATION THEREOF, AND USE THEREOF

Hartmut Seliger, Ulm-Lehr, Fed. Rep. of Germany; Eva Rastl, and Peter Swetly, both of Vienna, Austria, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,851

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3106982

Int. Cl.³ C07H 15/12, 17/00

U.S. Cl. 536—27



1. A tridecadeoxynucleotide of the formula dCCTTCTGGAAGT in substantially pure form.

4,433,141

INTERMEDIATE FOR USE IN THE PREPARATION OF CEPHALOSPORIN ANTIBIOTICS

William R. Jones, Greenford; Harish S. Trivedi, London, and Timothy L. Gane, Ruislip, all of England, assignors to Glaxo Group Limited, London, England

Division of Ser. No. 239,203, Mar. 3, 1981, Pat. No. 4,369,313, which is a continuation of Ser. No. 152,852, May 23, 1980, now abandoned.

This application Sep. 30, 1982, Ser. No. 429,134

Claims priority, application United Kingdom, May 25, 1979, 7918428

Int. Cl.³ C07D 501/38; A61K 31/545

U.S. Cl. 544—25

1 Claim

1. The N,N-dimethylformamide solvate of (6R,7R)-7-[(Z)-2-(2-tritylaminothiazol-4-yl)-2-(2-t-butoxycarbonylprop-2-oxymino)acetamido]-3-(1-pyridiniummethyl)ceph-3-em-4-carboxylate.

4,433,142

PROCESS FOR THE PREPARATION OF 7-(2-AMINO-2-PHENYLACETAMIDO) CEPHEM DERIVATIVES

Keizo Takayanagi, Gumma; Yasuhide Tanaka, Saitama; Tasuke Kawabata, Saitama; Fujio Nakamura, Saitama; Yukio Morita, Saitama; Shigeto Negi, Tokyo; Takeo Kanai, and Eiichi Morita, both of Saitama, all of Japan, assignors to Eisai Co., Ltd., Japan

Filed May 7, 1982, Ser. No. 376,214

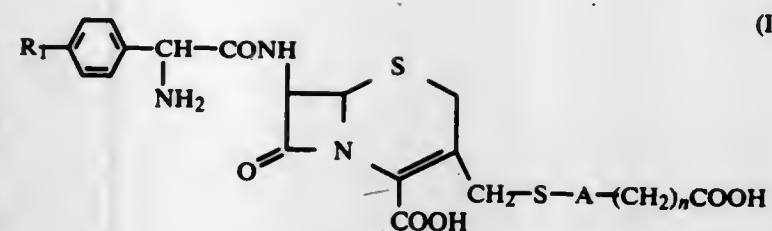
Claims priority, application Japan, May 15, 1981, 56-72173

Int. Cl.³ C07D 501/04, 544/29

U.S. Cl. 544—26

12 Claims

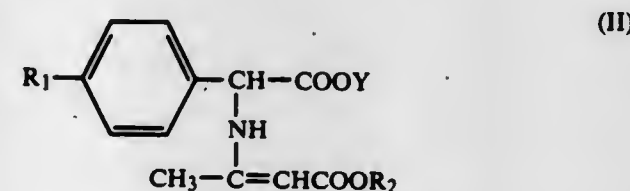
1. A process for preparing a 7-(2-amino-2-phenylacetamido)-cephem derivative represented by the formula (I):



1 Claim

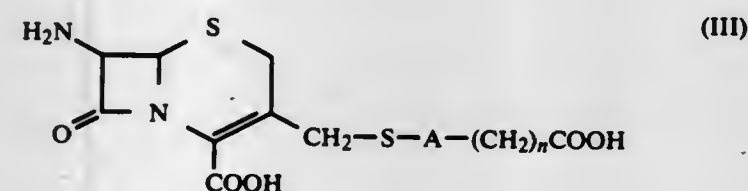
wherein R₁ is a hydrogen atom or hydroxyl group, n stands for 0, 1 or 2, and A denotes tetrazolyl, 1,3,4-thiadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-triazolyl, or 1,3,4-triazolyl or a direct bond coupling directly the sulfur atom and the —(CH₂)_nCOOH group together or a pharmaceutically acceptable salt thereof, which process consists essentially of the following consecutive steps:

(a) reacting a compound of the formula II:



wherein R₁ has the same significance as defined above, R₂ means a lower alkyl and Y represents an alkali metal, with a chloroformate;

(b) reacting the reaction product of step (a) with a compound having the formula (III):



wherein n and A have the same meaning as defined above or its pharmaceutically acceptable salt; and

(c) subjecting the reaction product of step (b) to hydrolysis by adding water thereto.

4,433,143

METHYLATED METHYLOLATED MELAMINE COMPOSITION

J. Owen Santer, East Longmeadow, and George T. Spitz, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 9, 1981, Ser. No. 300,549

Int. Cl.³ C07D 251/70

U.S. Cl. 544—196

4 Claims

1. A methylated methylolated melamine composition comprising a combined formaldehyde content in the range of about 2.4 to about 3.2 moles per mole of melamine and a combined methanol content in the range of about 2.3 to about 3.0 moles per mole of melamine and a combined methanol content in the range of about 0.7 to about 1.0 mole per mole of combined formaldehyde and possessing a first elution ratio in the range of about 0.1 to about 1.5 and a second elution ratio in the range of about 0.2 to about 1.1, and an oligomer content of no more than about 70 percent by weight.

4,433,144

GLYCOLURIL SALTS AND A PROCESS FOR THE PREPARATION THEREOF

Ludwig Rottmaier, Odenthal, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

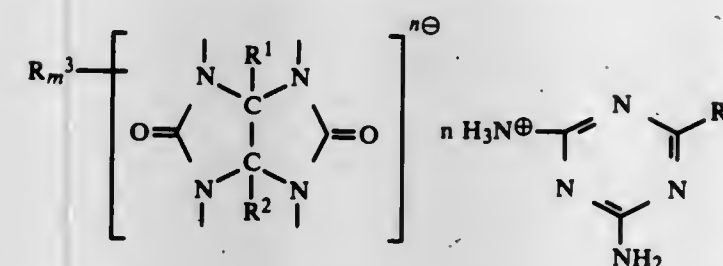
Continuation-in-part of Ser. No. 356,022, Mar. 8, 1982,

abandoned. This application May 17, 1982, Ser. No. 378,894
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109478

Int. Cl.³ C07D 487/04

U.S. Cl. 544—198

1. A glycoluril-triazine salt of the formula (I):



wherein:

R₁ and R₂ each independently represent hydrogen, an aliphatic C₁-C₂₀ or an aromatic C₆-C₁₀ radical,

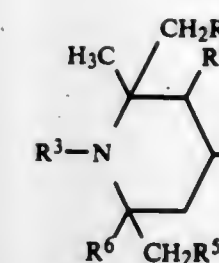
R₃ represents hydrogen, an aliphatic C₁-C₂₀, a cycloaliphatic C₄-C₁₅, an araliphatic C₇-C₁₅ or an aromatic C₆-C₁₅ radical,

R₄ represents hydrogen, an amino group, an aliphatic C₁-C₂₀, a cycloaliphatic C₄-C₁₇, an araliphatic C₇-C₁₇ or an aromatic C₆-C₁₅ radical,

n represents an integer from 1 to 4,

m represents 4-n,

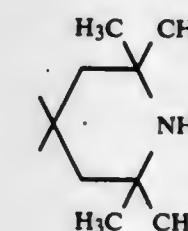
and the radicals R₁, R₂, R₃ and R₄ may each independently be substituted by hydroxyl, halogen or a C₁-C₄ alkoxy group.



(II)

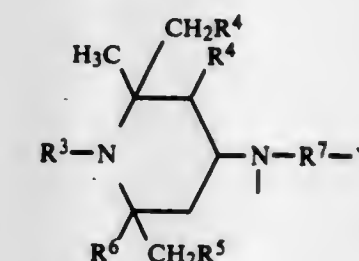
8 Claims

in which R³ is hydrogen or C₁- to C₁₈-alkyl, R⁴ and R⁵ are either identical and are hydrogen or a C₁- to C₅-alkyl group, in which case R⁶ is a methyl group, or R⁴ is hydrogen or C₁- to C₅-alkyl, and R⁵ and R⁶, together with the carbon atoms to which they are bonded, represent a C₅- or C₆-cycloalkyl ring or a group of the formula



(III)

X is a group of the formula



in which R³, R⁴, R⁵ and R⁶ have the meaning already given, R⁷ represents an alkylene group which has 2 to 4 C atoms and can be substituted by a methyl group and Y represents a group of the formula —OR⁸ or —N(R⁹)₂, in which R⁸ = C₁- to C₁₈-alkyl and R⁹ = methyl or ethyl, with the proviso that —R⁷—Y is other than —CH₂CH₂—OH, and, R¹ is an alkylene group of the formula —(CH₂)_m—, in which, in the case where m=0, the indices r and n can be identical or different and represent an integer from 2 to 6, but in the case where m=1, 2 or 3, the index 1 represents 2 or 3 and the indices r and n are identical and likewise represent 2 or 3.

4,433,145

TRIAZINE STABILIZERS

Hartmut Wiezer, Gersthofen, and Gerhard Pfahler, Augsburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

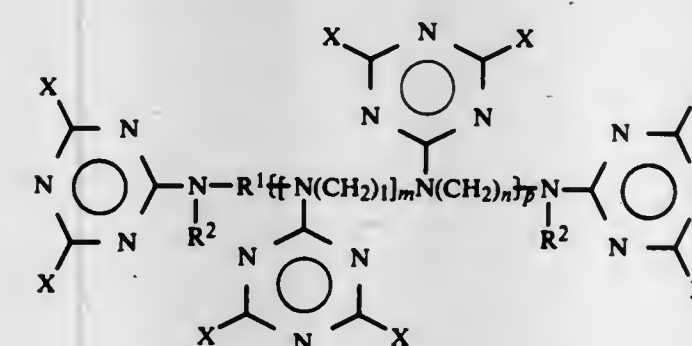
Filed Nov. 3, 1980, Ser. No. 203,236

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944729

Int. Cl.³ C07D 401/14

U.S. Cl. 544—198

1. A triazine compound of the formula



in which p is 1, R² represents hydrogen, a C₁- to C₆-alkyl group or a group of the formula

4,433,146

PROCESS FOR THE PREPARATION OF MELAMINE

Joseph H. M. Beckers, Heerlen, and Rudolf Sipkema, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Apr. 16, 1982, Ser. No. 368,972

Claims priority, application Netherlands, Apr. 7, 1982, 8201480

Int. Cl.³ C07D 251/60

U.S. Cl. 544—201

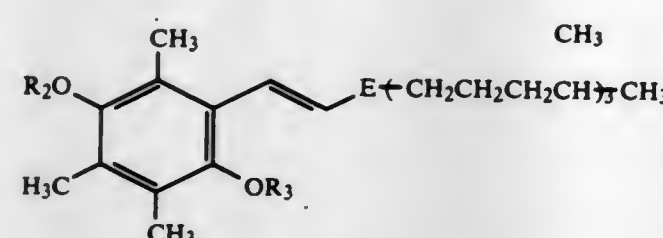
11 Claims

1. In a process for the preparation of melamine from urea or thermal decomposition products thereof wherein a gaseous reaction mixture containing melamine, ammonia, and carbon dioxide is formed, and wherein

said ammonia and carbon dioxide, after separation of melamine therefrom, and water vapor are condensed in a condensing zone maintained at a pressure of between about 0.5 and 70 bar to form an aqueous solution of ammonium carbamate, and

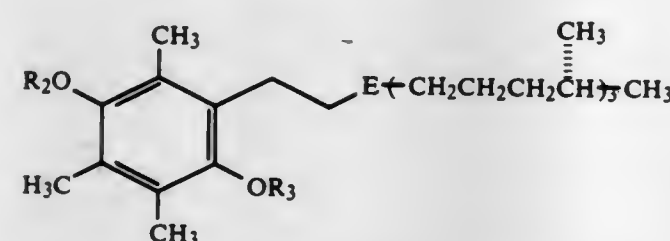
said aqueous solution of ammonium carbamate is increased in pressure to at least about 100 bar, heated and introduced into a urea synthesis zone wherein at least a portion of said

starting with an optically active compound of the formula

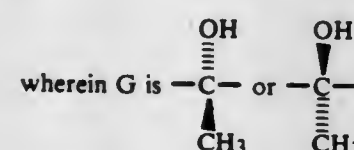
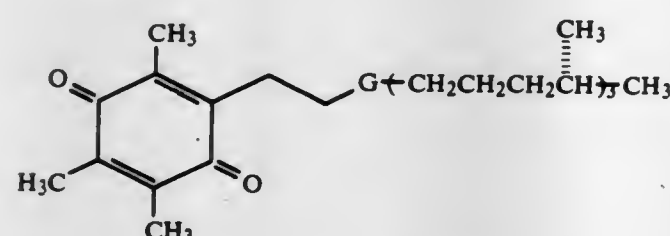


and R₁, R₂ and R₃ are protecting groups for hydroxyl functions which comprises

(1) catalytically hydrogenating the double bond in the aliphatic chain of the starting compound to form an optically active compound of the formula



wherein E, R₂ and R₃ are the same as defined above, (2) removing the protecting groups R₁, R₂ and R₃ from the product of step (1) and then treating same with an oxidizing agent to form an optically active compound of the formula



and (3) effecting cyclization of the product of step (2) to obtain said optically active alpha-tocopherol.

4,433,160

PROCESS FOR PRODUCING α -ARYLALKANOIC ACID ESTER

Takehiro Amano, Urawa; Kensei Yoshikawa, Kitamoto; Tatsuhiko Sano; Yutaka Ohuchi, both of Ohmiya; Michihiro Ishiguro, Kurashiki; Manzo Shiono, Kurashiki; Yoshiji Fujita, Kurashiki, and Takashi Nishida, Kurashiki, all of Japan, assignors to Taisho Pharmaceutical Company, Ltd., Tokyo, Japan

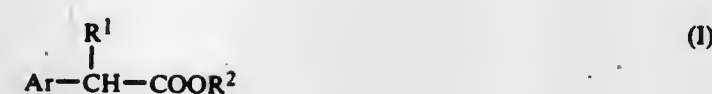
Filed Aug. 25, 1982, Ser. No. 411,480

Claims priority, application Japan, Aug. 26, 1981, 56-134781 Int. Cl.³ C07L 69/76

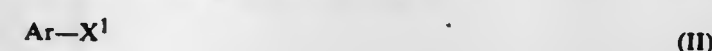
U.S. Cl. 560-56

8 Claims

1. A process for producing an α -arylalkanoic acid ester represented by the general formula



wherein Ar represents an aryl group which may optionally be substituted, and R¹ and R², independently from each other, represent a lower alkyl group, which comprises reacting a Grignard reagent prepared from an aryl halide of the general formula



wherein Ar is as defined above and X¹ represents a halogen atom, and magnesium, with an α -haloalkanoic acid ester of the general formula



wherein R¹ and R² are as defined above, and X² represents a halogen atom, said reaction of the Grignard reagent with the α -haloalkanoic acid ester of general formula (III) being carried out in the presence of a catalytic amount of a nickel compound.

4,433,161

METHYL P-(ω -ACETOXYALKOXY) BENZOATE AND METHOD OF PREPARATION

Shalaby W. Shalaby, Mountainville; Edgar S. Schipper, Cranford, and Donald F. Koelmel, Lebanon, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 8, 1982, Ser. No. 355,976

Int. Cl.³ C07C 69/78

U.S. Cl. 560-66

5 Claims

1. A process for producing methyl p-(4-acetoxy-n-butoxy) benzoate comprising reacting methyl p-hydroxybenzoate with an α,ω acetoxy bromo- or chloro-n-butane, in the presence of a base and an organic solvent, under substantially anhydrous conditions to yield methyl p-(4-acetoxy-n-butoxy) benzoate.

4,433,162

METHOD FOR PREPARING AN ESTER OF NITROACETIC ACID

Toshikazu Hamamoto, and Ryoji Sugise, both of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Dec. 6, 1982, Ser. No. 447,471

Claims priority, application Japan, Dec. 17, 1981, 56-202545 Int. Cl.³ C07C 76/02

U.S. Cl. 560-156

16 Claims

1. A method for preparing an ester of nitroacetic acid which comprises;

(1) a first step of subjecting a vinyl ester of a fatty acid and a nitrogen oxide to reaction with each other in the presence of a gas containing molecular oxygen in a solvent; and

(2) a second step of subjecting the resultant reaction product of the first step to reaction with an alcohol.

4,433,163

PROCESS FOR THE PRODUCTION OF 3,3-DIMETHYLGLUTARIC ACID OR ITS ESTERS

Pavel Lehky, Naters, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Filed May 24, 1982, Ser. No. 381,342

Claims priority, application Switzerland, May 27, 1981, 3474/81

Int. Cl.³ C07C 67/42, 51/34

U.S. Cl. 560-204

8 Claims

1. Process for the production of 3,3-dimethylglutaric acid or its methyl ester, ethyl ester, propyl ester, isopropyl ester, butyl ester, isobutyl ester, pentyl ester or hexyl ester from dimedone comprising converting dimedone with ozone into an ozone-addition product and converting the ozone-addition product by hydrolysis into the 3,3-dimethylglutaric acid or by alcoholysis into one of its esters.

4,433,164

ESTERS OF β,γ -UNSATURATED CARBOXYLIC ACIDS BY CARBONYLATION OF CONJUGATED DIENES

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 20, 1982, Ser. No. 341,101

Claims priority, application France, Jan. 23, 1981, 81 01205

Int. Cl.³ C07C 67/38

U.S. Cl. 560-207

24 Claims

1. A process for the preparation of an ester of a β,γ -unsaturated carboxylic acid, comprising carbonylating a conjugated diene with carbon monoxide, at a temperature ranging from about 50° to 150° C., under a carbon monoxide pressure ranging from about 50 to 300 bars, and in the presence of (i) an alcohol corresponding to the desired ester, (ii) a halogen hydride, (iii) a palladium catalyst which comprises palladium metal, a palladium oxide, or a salt of palladium, or ionic complex thereof, the anion coordinated with the palladium cation of which being a hard or intermediate base, the ratio of halogen hydride to palladium being at least 5, and (iv) a quaternary onium salt of nitrogen, phosphorus or arsenic, said nitrogen, phosphorus or arsenic being tetracoordinated with carbon atoms and the anion of said salt comprising a hard or intermediate base.

4,433,165

PROCESS FOR STABILIZING CARBONYLATION CATALYST IN SOLUBLE FORM

Thomas C. Singleton, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1980, Ser. No. 221,230

Int. Cl.³ C07C 51/10, 51/12, 67/36, 67/37

U.S. Cl. 562-519

4 Claims

1. In a carbonylation process wherein at least one reactant selected from the group consisting of an alcohol, an ester derivative of said alcohol, a halide derivative of said alcohol and an ether derivative of said alcohol is (1) reacted with carbon monoxide in a liquid phase in a reaction zone and in the presence of a catalyst system that contains (a) a rhodium component, and (b) an iodine or bromine component, (2) passing at least a portion of the liquid reaction mass in which the carbon monoxide has been depleted from the reaction zone to a separation zone, and (3) recycling the remaining liquid reaction mass from the separation zone to said reaction zone, the improvement which comprises adding to the carbon monoxide deficient zones of the process an amount of a stabilizer component selected from N,N,N',N'-tetramethyl-o-phenylenediamine and 2,3'-dipyridyl, said amount being sufficient to maintain the rhodium component in soluble form.

4,433,166

PROCESS FOR STABILIZING CARBONYLATION CATALYST IN SOLUBLE FORM

Thomas C. Singleton, Texas City, Tex., and Frank E. Paulik, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1980, Ser. No. 221,231

Int. Cl.³ C07C 51/10, 51/12, 67/36, 67/37

U.S. Cl. 562-519

10 Claims

1. In a carbonylation process wherein at least one reactant selected from the group consisting of an alcohol, an ester derivative of said alcohol, a halide derivative of said alcohol and an ether derivative of said alcohol is (1) reacted with carbon monoxide in a liquid phase in a reaction zone and in the presence of a catalyst system that contains (a) a rhodium component, and (b) an iodine or bromine component, (2) passing at least a portion of the liquid reaction mass in which the carbon monoxide has been depleted from the reaction zone to a separation zone, and (3) recycling the remaining liquid reaction mass from the separation zone to said reaction zone, the improvement which comprises adding to the process an amount of a tin component which may be tin or a tin compound, said amount being sufficient to maintain the rhodium component in soluble form.

4,433,167

PROCESS FOR THE MANUFACTURE OF METHACRYLIC OR ACRYLIC ACID

Masanobu Ogawa, and Toshitake Kojima, both of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Japan Continuation of Ser. No. 141,009, Apr. 17, 1980, abandoned; which is a continuation of Ser. No. 959,499, Nov. 13, 1978, abandoned; which is a division of Ser. No. 758,352, Jan. 10, 1977, Pat. No. 4,138,363

This application Mar. 4, 1982, Ser. No. 354,723

Claims priority, application Japan, Nov. 27, 1976, 51-141784

Int. Cl.³ C07C 51/25, 57/055

U.S. Cl. 562-534

5 Claims

1. A process for the production of methacrylic or acrylic acid by the oxidation of methacrolein or acrolein with molecular oxygen in the presence of steam in the vapor phase by using a catalyst consisting essentially of the following composition:



wherein X denotes at least one element selected from the group consisting of potassium, sodium, rubidium, lithium, cerium, beryllium, magnesium, calcium, vanadium, strontium, zinc, thorium and rhenium, the subscripts a, b, c, d and e denote the number of the Pd, P, Sb, X and O atoms, and wherein a is 1, b is 1 to 42, c is 0.1 to 15, d is 0.1 to 15 and e is a number determined by the valences of the other elements and is from 3.7 to 143.5.

4,433,168

PROCESS FOR THE PURIFICATION OF CRUDE 3,4,3',4'-TETRAAMINODIPHENYL

Hans Schubert, Kelkheim, and Konrad Baessler, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst AG., Frankfurt, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,670

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111470

Int. Cl.³ C07C 87/50

U.S. Cl. 564-309

10 Claims

1. A method for purifying crude copper-contaminated 3,4,3',4'-tetraaminodiphenyl (TAD), directly isolated from a reaction mixture in which it has been prepared by the ammonolysis of 3,3'-dichlorobenzene with excess ammonia and in the presence of a catalyst containing copper, which method consists essentially of

(1) washing said isolated crude TAD with an aqueous solution of NH₃ and

(2) subsequently washing the ammonia-washed TAD with water until it is neutral.

4. A method for purifying crude copper-contaminated 3,4,3',4'-tetraaminodiphenyl (TAD), directly isolated from a reaction mixture in which it has been prepared by the ammonolysis of 3,3'-dichlorobenzene with excess ammonia and in the presence of a catalyst containing copper, which method consists essentially of

- (1) washing said isolated crude TAD with an aqueous solution of NH_3 ,
- (2) subsequently washing the ammonia-washed TAD with water until it is neutral,
- (3) then dissolving the washed, neutral TAD by heating in water containing an absorbent and an effective amount of a water-soluble reducing agent, and
- (4) precipitating the TAD from such an aqueous solution by cooling the solution.

4,433,169

DIAMINES AND A PROCESS FOR THEIR PREPARATION

Hans-Joachim Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 343,652

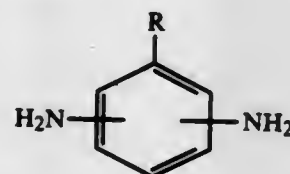
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105362

Int. Cl.³ C07B 11/00; C07C 76/02, 85/11

U.S. Cl. 564—419

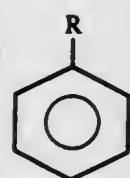
1 Claim

1. A mixture of homologues and isomers of diamines corresponding to the formula



in which R denotes a saturated, straight-chained aliphatic hydrocarbon group having 8-15 carbon atoms which mixture has been prepared by

- (a) dinitrating a hydrocarbon corresponding to the general formula



in the form of a mixture of homologues and isomers which hydrocarbons have a boiling range according to ASTM D 86 of 10°-50° C. at 1013 mbar within the temperature range of from 270° C. to 330° C.; and

- (b) hydrogenating the nitro groups present in the product of (a).

4,433,170

NOVEL BIS(AMINOETHYL)ETHER DERIVATIVES USEFUL AS POLYURETHANE CATALYSTS

Robert L. Zimmerman, Austin, and Ernest L. Yeakey, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

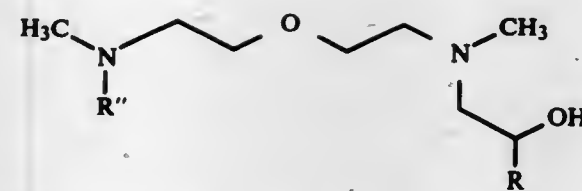
Filed Jul. 20, 1981, Ser. No. 284,427

Int. Cl.³ C07C 93/04, 91/04, 91/12, 91/10

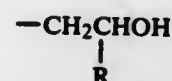
U.S. Cl. 564—508

3 Claims

1. A composition of matter having the formula



where R is hydrogen or lower alkyl and R'' is methyl or



4,433,171

SULPHONES HAVING A

1,5-DIMETHYL-HEXA-1,5-DIENYLENE GROUP

Pierre Chabardes, Sainte Foy-les-Lyon; Marc Julia, Paris, and Albert Menet, Colmar, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 759,474, Jan. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 328,537, Feb. 1, 1973, Pat. No. 4,331,814. This application Feb. 4, 1982, Ser. No. 345,748

Claims priority, application France, Feb. 2, 1972, 72.03482; Apr. 10, 1972, 72.12477

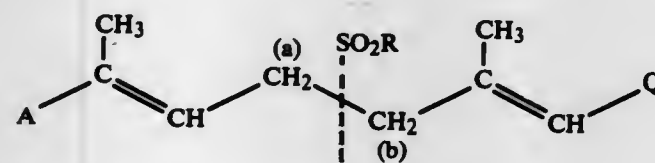
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ C07C 147/06

U.S. Cl. 568—33

5 Claims

1. A sulfone of the formula:



wherein A represents 2-(2,6,6-trimethyl-cyclohex-1-enyl)-ethenyl, R is an aryl radical substituted with a fluorine atom, a bromine atom, or an alkoxy group, and the sulfonyl group $-\text{SO}_2\text{R}$ replaces a hydrogen atom on carbon (a) or (b), and Q is an esterified primary alcohol group $-\text{CH}_2\text{OH}$, or the primary alcohol group $-\text{CH}_2\text{OH}$, or a free aldehyde group or an acetal group, or the sulfonyl group $-\text{SO}_2\text{R}$ replaces a hydrogen atom on carbon atom (a) and Q is an esterified primary alcohol group $-\text{CH}_2\text{OH}$.

4,433,172

PRODUCTION OF DIHYDROXY ARYLOPHENONES

John B. Rose, Letchworth, and Michael B. Cinderey, Knebworth, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 24, 1982, Ser. No. 410,995

Claims priority, application United Kingdom, Sep. 17, 1981, 8128177

Int. Cl.³ C07C 45/54

U.S. Cl. 568—319

3 Claims

1. A process for the production of 4,4'-dihydroxybenzophenone which comprises reacting diphenyl carbonate in the presence of a fluoroalkane sulphonic acid.

4,433,173

ACETOPHENONE PURIFICATION

Vijai P. Gupta, Berwyn; Frank W. Melpolder, Wallingford, and Walter A. Mameniskis, Drexel Hill, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 2, 1982, Ser. No. 384,317

Int. Cl.³ C07C 45/83

U.S. Cl. 568—324

9 Claims

1. A process for the purification of acetophenone from mixtures containing difficulty separable impurities consisting essentially of alkyl, alkyl aromatic, alkylated benzyl alcohol or hydroaromatic compounds having volatilities relative to acetophenone within the range from about 0.9 to 1.1 which process comprises extractive distillation of the mixture with an added solvent selected from the group consisting of oligomers of 1,2-glycols, said oligomers having from 4 to 9 carbon atoms per molecule, and recovering high-purity acetophenone from the bottoms stream of said extractive distillation.

4,433,174

PROCESS FOR PREPARATION OF ALPHA, BETA-UNSATURATED ALDEHYDES USING AMS-1B BOROSILICATE CRYSTALLINE MOLECULAR SIEVE

Gary P. Hagen, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 26, 1982, Ser. No. 401,548

Int. Cl.³ C07C 47/20

U.S. Cl. 568—459

18 Claims

1. A process for the preparation of alpha, beta-unsaturated aldehydes by reacting formaldehyde with a reactant aldehyde of formula RCH_2CHO wherein R is a member of the class consisting of $-\text{H}$, $-\text{alkyl}$, $-\text{aryl}$, $-\text{alkaryl}$, $-\text{cycloalkyl}$, and $-\text{alkylaryl}$ radicals, in the presence of AMS-1B borosilicate crystalline molecular sieve catalyst under reaction conditions wherein the reactant aldehyde:formaldehyde mole ratio is from about 1:1 to 20:1 at a temperature within the range of from about 250° C. to about 430° C.

4,433,175

PROCESS FOR THE PRODUCTION OF PURE NEOHEXANOL

Manfred Kaufhold, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,265

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146493

Int. Cl.³ C07C 29/136, 31/125, 44/29

U.S. Cl. 568—471

14 Claims

1. A process for the production of neohexanol of a purity of above 99%, a chlorine content of less than 10 ppm, and a sulfur content of less than 5 ppm, comprising esterifying 3,3-dimethylbutyric acid of a chlorine content below 650 ppm with an alkanol of a normal boiling point above 117° C.; separating the ester by distillation into chlorine rich fractions of chlorine contents above 10 ppm and chlorine poor fractions of chlorine contents below 10 ppm, during which step the chlorine content of the distillate or the sump is continuously controlled by sampling; hydrogenating the ester with a chlorine content below 10 ppm to form neohexanol, over a barium-activated copper chromite catalyst under a hydrogen pressure of 200-300 bar, at a temperature of 120°-220° C., and with a catalyst load of 0.05-1.0 liter of hydrogenation feed/liter of catalyst.hour.

14. A process for the preparation of neohexanol comprising preparing neohexanol of a purity above 99%, a chlorine content <10 ppm and a sulfur content <5 ppm by a process comprising esterifying 3,3-dimethylbutyric acid of a chlorine content below 650 ppm with an alkanol of a normal boiling point above 117° C.; separating the ester by distillation into chlorine rich frac-

tions of chlorine contents above 10 ppm and chlorine poor fractions of chlorine contents below 10 ppm, during which step the chlorine content of the distillate or the sump is continuously controlled by sampling;

hydrogenating the ester with a chlorine content below 10 ppm to form neohexanol, over a barium-activated copper chromite catalyst under a hydrogen pressure of 200-300 bar, at a temperature of 120°-220° C., and with a catalyst load of 0.05-1.0 liter of hydrogenation feed/liter of catalyst.hour; and dehydrogenating the resultant neohexanol to form neohexanol.

4,433,176

PROCESS FOR PREPARING ACETALDEHYDE FROM METHANOL AND SYNTHESIS GAS USING A NOVEL CATALYST COMPOSITION

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,429

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ C07C 47/06

U.S. Cl. 568—487

21 Claims

1. A process for preparing acetaldehyde from methanol and syngas which comprises contacting a mixture of methanol, carbon monoxide and hydrogen with a catalytic amount of an iodide or iodine-free catalyst composition comprising ruthenium powder, a cobalt-containing compound, selected from the group consisting of cobalt oxides, cobalt salts, cobalt carbonyls and derivatives of aforesaid cobalt compounds, a rhodium-containing compound, selected from the group consisting of rhodium oxides, rhodium salts, rhodium carbonyls, rhodium hydrocarbons, and derivatives of aforesaid rhodium compounds, an onium base or salt, and maintaining the resulting mixture at a temperature of from 100° C. to 350° C. and pressure of 1000 psi to 6500 psi for sufficient time to produce the acetaldehyde.

4,433,177

PROCESS FOR PREPARING ACETALDEHYDE FROM METHANOL AND SYNTHESIS GAS USING A NOVEL CATALYST COMPOSITION

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,260

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ C07C 47/06

U.S. Cl. 568—487

23 Claims

1. A process for preparing acetaldehyde from methanol and syngas which comprises contacting a mixture of methanol, carbon monoxide and hydrogen with a catalytic amount of an iodide or iodine-free catalyst composition comprising ruthenium powder, a cobalt-containing compound, from the group consisting of cobalt oxides, cobalt salts, cobalt carbonyl compounds and derivatives thereof, an amine, and an onium base or salt, and heating the resulting mixture to a temperature of at least 100° C. and a pressure of at least 500 psi for sufficient time to produce the acetaldehyde.

4,433,178

PROCESS FOR PREPARING ACETALDEHYDE FROM METHANOL AND SYNTHESIS GAS USING A NOVEL CATALYST COMPOSITION

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,430

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ C07C 47/06

U.S. Cl. 568—487

16 Claims

1. A process for preparing acetaldehyde from methanol and syngas which comprises contacting a mixture of methanol, carbon monoxide and hydrogen with a catalytic amount of an iodine-free catalyst composition comprising ruthenium powder, a cobalt-containing compound, selected from the group consisting of cobalt oxides, cobalt salts, cobalt carbonyls and derivatives of aforesaid, and a quaternary onium compound, selected from the group consisting of quaternary ammonium salts, quaternary ammonium bases, quaternary phosphonium salts and quaternary phosphonium bases, and heating the resulting mixture to a temperature above 150° C. and a pressure above 500 psi for sufficient time to produce acetaldehyde.

4,433,179

PROCESS FOR THE PREPARATION OF DI- AND POLY-ALLYL ETHERS

Friedrich Lohse, Oberwil, and Charles E. Monnier, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,810

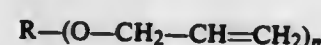
Claims priority, application Switzerland, Aug. 25, 1980, 6386/80

Int. Cl.³ C07C 41/16

U.S. Cl. 568—664

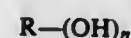
9 Claims

1. A process for the preparation of an allyl ether of the formula I



(I)

in which R is an n-valent aliphatic, araliphatic, cycloaliphatic or cycloaliphatic-aliphatic radical and n is a number of at least 2, by reacting a hydroxy compound of the formula II



(II)

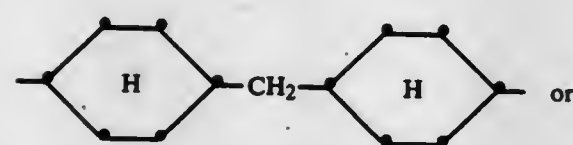
in which R and n are as defined in formula I and the OH groups are bonded to primary or secondary aliphatic C atoms, with allyl chloride or allyl bromide in the presence of a catalyst and in an alkaline medium, which comprises carrying out the reaction by means of phase transfer catalysis, 0.8 to 5 mols of allyl chloride or allyl bromide, 1 to 6 mols of aqueous or solid sodium hydroxide and, as the phase transfer catalyst, 2 to 20 mol % of a quaternary ammonium salt, a quaternary ammonium base or a crown ether being employed per one hydroxyl equivalent of the compound of the formula II, and the reaction being carried out in the temperature range from 20 to 100° C.

8. An allyl ether of the formula I



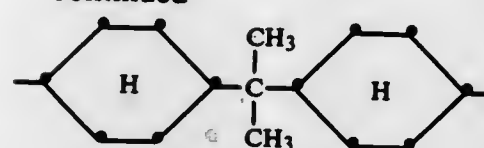
(I)

wherein R is a radical of the formulae



or

-continued



and n is the number 2.

4,433,180

PROCESS FOR THE PREPARATION OF 2-ALKENYL 1,1,2-TRIFLUORO-2-HALOGENOETHYL ETHERS

Konrad von Werner, Burgkirchen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 325,846, Nov. 30, 1981, abandoned. This application May 18, 1982, Ser. No. 379,438

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045473

Int. Cl.³ C07C 41/05

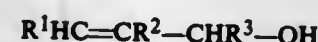
U.S. Cl. 568—684

2 Claims

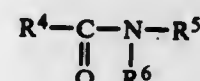
1. A process for the preparation of a 2-alkenyl 1,1,2-trifluoro-2-halogenoethyl ether of the formula



wherein R¹, R² and R³ denote hydrogen atoms or alkyl groups having 1 to 3 C atoms and X is Cl or F, by reacting alcohols of the formula



with fluoroolefins of the formula CFX=CF₂ wherein R¹, R², R³ and X have the abovementioned meaning, in the presence of an alkali metal hydroxide as catalyst, which comprises carrying out the reaction in the presence of a substantially anhydrous N,N-dialkylcarboxylic acid amide of the formula



wherein R⁴ denotes a hydrogen atom or an alkyl radical having 1 to 3 C atoms, R⁵ and R⁶ denote alkyl radicals having 1 to 3 C atoms or R⁴ and R⁵ together form a cyclic methylene bridge —(CH₂)_y— in which y is 2 to 4, as the solvent, and with intimate mixing of the reactants.

4,433,181

PROCESS FOR RECOVERING A CRYSTALLIZATION MEDIUM

Samuel N. Holter, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 158,995, Jun. 12, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,537

Int. Cl.³ C07C 37/84

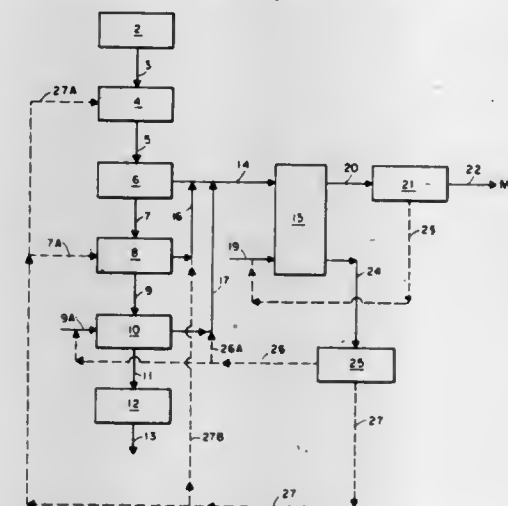
U.S. Cl. 568—750

10 Claims

1. A process to recover the crystallization medium for separating a 2,6-disubstituted phenol (DSP) from a feedstock containing it and a phenol in which only one of the 2 or 6 carbon positions is substituted (MSP), said process comprising:

- crystallizing said DSP from said feedstock with a water miscible, non solvent crystallization medium;
- separating the resultant DSP crystals from said crystallization medium and feedstock;
- washing said DSP crystals with crystallization medium;
- washing said DSP crystals with water;
- passing the wash water from (d) and the crystallization medium from (c) along with the crystallization medium and feedstock of (b) to an extraction means and extracting MSP with a water immiscible and crystallization medium immiscible extractant;

(f) stripping the extractant from the MSP of (e) and recycling the extractant for use in step (e); and



(g) separating water from the crystallization medium of step (e) and recycling the water for use in step (d) or (e) and recycling the crystallization medium for use in step (a), (c) or (e).

4,433,182

INSECTICIDAL

2,2'-BRIDGED[1,1'-BIPHENYL]-3-YLMETHYL ESTERS
Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

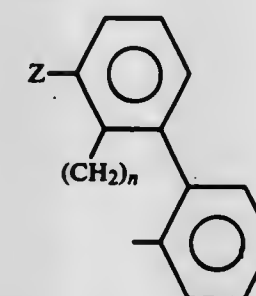
Division of Ser. No. 259,111, Apr. 30, 1981. This application Dec. 17, 1981, Ser. No. 331,506

Int. Cl.³ C07C 33/34

U.S. Cl. 568—808

4 Claims

1. 2,2'-Bridged[1,1'-biphenyl]-3-ylmethyl compounds of the formula



wherein Z is Y—CH₂— or R₁, and

- when Z is Y—CH₂—, n is 2-4, and Y is hydroxyl, and
- when Z is R₁, n is 2-4, and R₁ is lower alkoxy carbonyl; or n is 3-4, and R₁ is halogen, cyano, hydroxycarbonyl, or chlorocarbonyl.

4,433,183

PROCESS FOR THE PREPARATION OF (+)-P-MENTHA-2,8-DIEN-1-OL

Charles Fehr, Versoix, and Günther Ohloff, Bernex, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Apr. 8, 1982, Ser. No. 366,553

Claims priority, application Switzerland, May 4, 1981, 2875/81

Int. Cl.³ C07C 35/14

U.S. Cl. 568—829

4 Claims

1. Process for preparing (+)-(1S,4R)-p-mentha-2,8-dien-1-ol, which comprises

- epoxidizing (+)-(R)-limonene to yield a diastereomeric mixture of (+)-(1R,2S,4R)-1,2-epoxy-8-p-methene and (+)-(1S,2R,4R)-1,2-epoxy-8-p-methene by means of an organic peracid;
- treating the above mixture with thiophenol in an inert organic solvent in the presence of sodium or potassium

- carbonate at a temperature near the boiling point of the selected solvent or mixture of solvents to yield (+)-(1S,2S,4R)-2-phenylthio-8-p-methene-1-ol after separation thereof from unreacted (+)-(1R,2S,4R)-1,2-epoxy-8-p-methene;
- oxidizing the thus obtained 2-phenylthio-8-methene into the corresponding sulfoxide, and
- heating (1S,2S,4R)-1-hydroxy-8-p-methene-2-phenylsulfoxide of step (c) at a temperature comprised between about 400° C. and 450° C.

4,433,184

MULTI-STAGE CATALYTIC CONVERSION OF ALDOSES TO ALDITOLS

Derk T. A. Huibers, Pennington, N.J.; James C. Chao, West Nyack, N.Y., and Rajni C. Shah, Lawrenceville, N.J., assignors to HRI, Inc., Gibbstown, N.J.

Filed Apr. 27, 1981, Ser. No. 258,225

Int. Cl.³ C07H 1/00

U.S. Cl. 568—863

18 Claims

1. A multi-stage process for producing high-purity alditol solution by catalytic conversion of monosaccharides, comprising the steps of:

- preheating a feed of at least 10 W % monosaccharides solution in water and hydrogen gas to at least about 100° C., said feed having a pH of 7 to 13 and passing the heated feedstream mixture through multiple catalytic reaction zone connected in series, wherein each zone contains a particulate catalyst comprising high-activity nickel on an inert support;
- mixing an alkali solution with the feed stream to each reaction zone to maintain pH of the effluents of said reaction zones above about 4.5;
- maintaining the reaction zones at conditions within the range of 130°–180° C. temperature, 500–2000 psig hydrogen partial pressure, and 0.5–16 V_h/hr/V_c space velocity, for achieving at least about 98 W % overall conversion of the monosaccharides feed to alditol; and
- withdrawing product containing substantially alditol in water solution.

4,433,185

TWO STAGE SYSTEM FOR CATALYTIC CONVERSION OF OLEFINS WITH DISTILLATE AND GASOLINE MODES

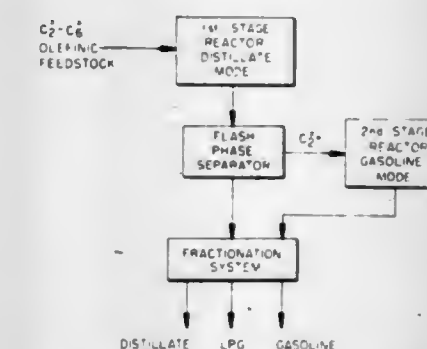
Samuel A. Tabak, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,705

Int. Cl.³ C07C 3/00, 3/03, 3/10, 3/62

U.S. Cl. 585—312

10 Claims



1. A continuous process for converting an olefinic feedstock containing ethylene and C₃⁺ olefins by catalytic oligomerization to produce heavier hydrocarbons in the gasoline or distillate boiling range which comprises:

- contacting the olefinic feedstock in a first catalyst reactor zone with a crystalline zeolite oligomerization catalyst at elevated pressure and moderate temperature under conditions favorable for conversion of C₃⁺ olefins to a first

- reactor effluent stream rich in distillate range hydrocarbons;
- (b) flashing the distillate-rich stream and separating the first reactor effluent stream into a liquid stream rich in distillate and a vapor stream rich in ethylene;
- (c) contacting the ethylene-rich stream from step (b) in a second catalyst reactor zone with a crystalline zeolite oligomerization catalyst at moderate pressure and elevated temperature under conditions favorable for conversion of ethylene and other lower olefins to a second reactor effluent stream rich in olefinic gasoline range hydrocarbons;
- (d) reactionating effluent from the second reactor zone to recover a gasoline stream; and
- (e) recycling at least a portion of the gasoline stream to the first reactor zone.

4,433,186

CATALYSTS FOR PARA-ETHYLTOLUENE DEHYDROGENATION

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 449,913, Dec. 15, 1982. This application Jun. 2, 1983, Ser. No. 500,490

Int. Cl.³ C07C 5/32

U.S. Cl. 585—445

5 Claims

1. A process for the dehydrogenation of para-ethyltoluene to selectively form para-methylstyrene, said process comprising contacting a feed comprising para-ethyltoluene and steam under steam dehydrogenation reaction conditions with a catalyst composition comprising:

- from about 30% to 60% by weight of iron oxide, calculated as ferric oxide;
- from about 13% to 48% by weight of potassium compound, calculated as potassium oxide;
- from about 0% to about 5% of chromium compound, calculated as chromic oxide; and
- from about 1% to 15% by weight of a gallium compound, calculated as gallium trioxide.

4,433,187

PROCESS FOR SELECTIVELY PRODUCING PARA-XYLENE

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 12,868, Feb. 16, 1979, Pat. No. 4,270,017. This application Jun. 9, 1980, Ser. No. 157,211

Int. Cl.³ C07C 2/68

U.S. Cl. 585—466

18 Claims

1. A process for selectively preparing para-xylene which comprises contacting toluene with a methylating agent, under methylation conditions, in the presence of a phosphorus-modified catalyst comprising a silica polymorph in combination with an inorganic refractory oxide, said catalyst having an alkali content of less than about 1.3 milliequivalents per gram as available alkali.

4,433,188

PREPARATION OF OLEFINS FROM METHANOL AND/OR DIMETHYL ETHER

Wolfgang Hoelderich; Wolf D. Mross, both of Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Del.X Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,814

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3135618

Int. Cl.³ C07C 1/20

U.S. Cl. 585—640

10 Claims

1. A two-stage process for the preparation of lower olefins from methanol and/or dimethyl ether by catalytic conversion at from 300°–550° C. in the presence of zeolite catalysts, wherein the selectivity for C₅⁺ hydrocarbons is suppressed and the overall selectivity for C₁–C₄ hydrocarbons is opti-

mized, which comprises; reacting methanol and/or dimethyl ether over borosilicate zeolite catalyst at from 300°–550° C. in a first reaction stage, removing C₂ and C₃ olefins after the first reaction stage in a working-up stage as gas, passing the remaining C₄ olefins, C₁–C₄ paraffins and liquid reaction mixture to a second reaction stage, reacting the remaining hydrocarbons in the second reaction stage at from 300°–550° C. over borosilicate zeolite catalyst, removing aromatics from the product of the second reaction stage, and recycling the remaining reaction product to the working-up stage.

4,433,189

CATALYTIC CONVERSION OF METHANOL TO LIGHT OLEFINS

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 359,559, Mar. 18, 1982, abandoned.

This application Jun. 9, 1983, Ser. No. 501,963

Int. Cl.³ C07C 1/20

U.S. Cl. 585—640

11 Claims

1. A process for producing a hydrocarbon mixture containing light olefins by contacting a methanol feed with a catalyst consisting essentially of a bound or unbound crystalline aluminosilicate zeolite having a Constraint Index of about 1 to 12 and a silica to alumina molar ratio of at least about 12, said catalyst not being modified by incorporation of essentially any material other than binder into or onto the zeolite, said contacting occurring in a reaction zone under methanol conversion reaction conditions, said process comprising:

co-feeding to said reaction zone along with said methanol feed a diluent which provides in said reaction zone an O₂-containing gas in an amount sufficient to increase the selectivity of the conversion reaction for production of C₂ to C₄ olefins, said amount of O₂-containing gas being further sufficient to provide a molar ratio of molecular oxygen to methanol of from about 0.01:1 to 0.25:1.

4,433,190

PROCESS TO CONVERT LINEAR ALKANES

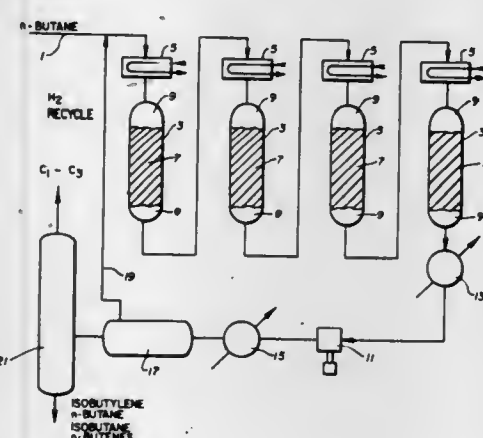
David L. Sikkenga, Wheaton; Thomas D. Nevitt, Naperville, and Norman F. Jerome, Elmhurst, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 422,821

Int. Cl.³ C07C 5/124, 5/30, 5/36, 5/40

U.S. Cl. 585—660

28 Claims



1. A process to convert a substantially linear alkane to dehydrogenated and isomerized products comprising contacting such alkane under conversion conditions comprising a temperature of about 250° to about 650° C., a pressure of about 0.1 to about 50 atmospheres, a hydrogen/hydrocarbon molar ratio of 0 to about 10 and a weight hourly space velocity of about 0.1 to about 40 hr⁻¹ with an AMS-1B crystalline borosilicate-based catalyst composition containing an ion or molecule of a noble metal.

4,433,191

SKELETAL ISOMERIZATION OF N-ALKENES

Antonio E. Eleazar, Freehold; Ronald M. Heck, Frenchtown; Joseph C. Dettling, Howell Township, Monmouth County, and Yiu-Kwan Lui, Parlin, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Sep. 30, 1982, Ser. No. 430,297

Int. Cl.³ C07C 5/28, 5/30

U.S. Cl. 585—671

10 Claims

1. A method for converting a linear isomerizable olefin to its branched isomers, comprising, passing the linear olefin in admixture with its paraffinic analogue through a vessel containing an isomerization catalyst consisting essentially of a Group VIII metal on an activated alumina base, and a halide absorbed thereon at a pressure and at a temperature sufficient to convert at least 15% of the linear olefin to its skeletal isomer.

4,433,192

CONDENSATION OF NATURAL GAS OR METHANE INTO GASOLINE RANGE HYDROCARBONS

George A. Olah, 2252 Gloaming Way, Beverly Hills, Calif. 90210

Filed Sep. 1, 1981, Ser. No. 298,486

Int. Cl.³ C10L 1/16

U.S. Cl. 585—709

4 Claims

1. A process for the heterogeneous gas-phase condensation of natural gas or methane into gasoline-range hydrocarbons comprising the steps of:

- pretreating the natural gas or methane by catalytic dehydrogenation at a temperature between 50° and 250° C. to form a mixture of methane and lower olefins in the C₂ to C₄ range;
- condensing the resulting mixture of methane and lower olefins at a temperature between 50° and 250° C. in the presence of a superacid catalyst having a Hammett acidity function H₀ less than -11.9 to form hydrocarbon mixtures in the gasoline range.

4,433,193

PROCESS FOR THE PRODUCTION OF ETHANE

Paul E. Koppel, Lexington; Joseph J. Williams, Sudbury, both of Mass., and Herman N. Woebecke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Filed Oct. 16, 1981, Ser. No. 312,157

Int. Cl.³ C07C 9/06; C10G 47/22

U.S. Cl. 585—752

17 Claims

- A process for the production of ethane comprising:
- introducing a feedstock comprising mainly aromatic hydrocarbons and hydrogen into a non-catalytic reactor zone, the amount of hydrogen being between 1 and 4 times the stoichiometric requirement to convert all carbon in said feedstock into methane;
- reacting said feedstock at a temperature between 1100° and 1600° F. and pressure between 300 and 2500 psia for less than 240 seconds;
- discharging the resultant ethane-containing reaction product from said zone; and
- immediately cooling said product.

4,433,194

PURIFICATION OF CYCLOHEXANE

Ted Symon, Lombard, and Dusan J. Engel, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 6, 1983, Ser. No. 492,306

Int. Cl.³ B01D 3/34; C10G 29/12; C07C 17/38, 21/00

U.S. Cl. 585—803

8 Claims

1. A method for the purification of cyclohexane which comprises treating said cyclohexane with titanium tetrachloride, contacting said treated cyclohexane with an adsorbent, subjecting said cyclohexane to fractional distillation in the presence of a purification agent comprising an alkali metal borohydride or aluminum hydride to remove contaminants therefrom, and recovering the purified cyclohexane.

4,433,195

SEPARATION OF TRANS- AND CIS-OLEFINS

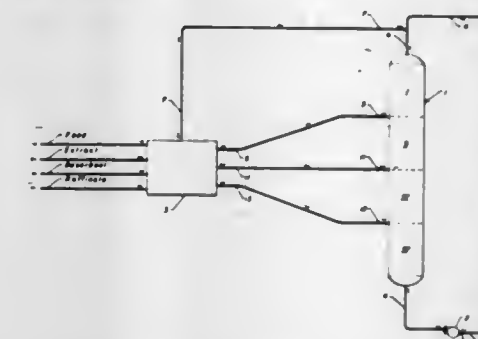
Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 2, 1983, Ser. No. 471,397

Int. Cl.³ C07C 7/12

U.S. Cl. 585—820

22 Claims



1. A process for separating a trans-olefin from a feed containing a trans-olefin and a cis-olefin, comprising contacting said feed at adsorption conditions with an adsorbent comprising silicalite to effect selective adsorption of said trans-olefin and removing said cis-olefin from contact with said trans-olefin containing adsorbent.

4,433,196

COLOR PRECURSOR REMOVAL FROM DETERGENT RANGE ALKYL BENZENES

Kang Yang, and James D. Reedy, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 25, 1982, Ser. No. 392,431

Int. Cl.³ B01D 15/00

U.S. Cl. 585—823

10 Claims

1. A method for removing precursors causing color in sulfonated alkyl benzene from said alkyl benzene prior to sulfonation comprising contacting non-sulfonated alkyl benzenes with a solid adsorbent to remove said precursors, where said adsorbent is at least one material selected from the group consisting of (1) bauxite clays containing from about 0.1 to about 20% by weight of at least one material selected from the group consisting of ferric oxide, titanium dioxide, and zirconium oxide, said clay contacted with from about 0.1 to about 20% by weight of sulfuric acid, then activated for removal of color precursors by calcining the mixture at a temperature and time sufficient to activate the adsorbent prior to use, and (2) crystalline zeolites suspended in a silica alumina matrix, wherein said adsorbent contains from about 5% to about 20% by weight of zeolite, based on the total weight of the adsorbent, and then activated for removal of color precursors by calcining the mixture at a temperature and time sufficient to activate the adsorbent prior to use.

4,433,197

REMOVING BORON TRIFLUORIDE FROM COORDINATION COMPOUND CONTAMINANTS IN ORGANIC LIQUIDS

Roger F. Vogel, Jefferson Township, Butler County, Pa.; Ajay M. Madgavkar, Irvine, Calif., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jul. 8, 1982, Ser. No. 396,256

Int. Cl.³ C07C 7/12, 3/18

U.S. Cl. 585—823

8 Claims

1. A method for removing boron trifluoride from a coordination compound of boron trifluoride and an organic polar compound present as a minor contaminant in a hydrocarbon liquid which comprises contacting a particulate silica composition with a hydrocarbon liquid contaminated with said coordination compound of boron trifluoride and an organic polar compound whereby the boron trifluoride is separated from said organic polar compound out of the coordination compound and out of the hydrocarbon liquid by the silica and said separated organic polar compound remains in the hydrocarbon liquid.

ELECTRICAL

4,433,198

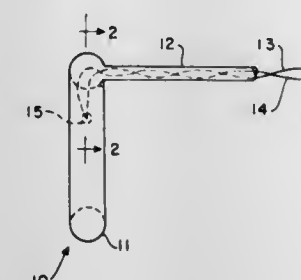
DEVICE TO MEASURE TEMPERATURE OF AN ANNULAR ELASTOMERIC SEAL

William E. Berner, Englewood, and Thomas H. Wical, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 8, 1982, Ser. No. 366,742
Int. Cl.³ H01L 35/02

U.S. Cl. 136—230

4 Claims



1. An improved reciprocating seal, including an annular elastomeric seal in combination with a device for measuring the temperature of said annular elastomeric seal, which comprises:

- a. a thermocouple, having a pair of electrically conducting wires connected thereto, embedded within and near the center of the annular body of said elastomeric seal; and
- b. a sleeve having a first end thereof terminating within and molded to said elastomeric seal near said thermocouple, said sleeve enclosing said conducting wires.

4,433,199

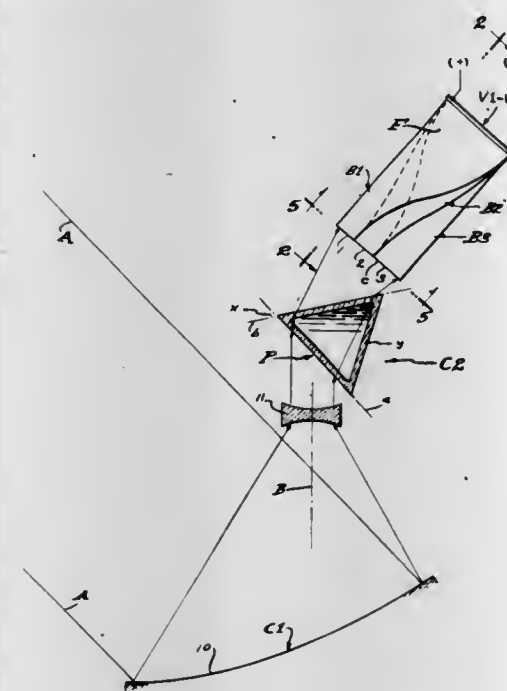
SOLAR INSOLATION AND CONCENTRATION BY COUPLED FIBER OPTICS

Gerald W. Middy, 938 20th St., Santa Monica, Calif. 90403

Filed Jun. 17, 1982, Ser. No. 389,440
Int. Cl.³ H01L 31/04

U.S. Cl. 136—246

8 Claims



1. Solar insolation and power generation means which includes:

- a primary concentrator means comprising a linear parabolic reflector projecting a narrowed band of light through a first plane,
- a secondary concentrator means comprising, in combination, a prism disposed to receive said narrowed band of light through said first plane and by refraction projecting said light in the form of a spectrum of substantially mono-

chromatic areas of light from a second plane and through a third source plane, and a plurality of bundles of fiber optic light pipes having source ends aligned at said third source plane with a substantially monochromatic area of light and arranged in pairs of bundles coupled into single bundles thereof by means of bifurcated couplings therefor and having light concentrating ends remote from said source ends,

and a power generation means comprising a photo voltaic cell at a fourth plane coincidental with and coextensive with said concentrating ends of each of said plurality of bundles and receiving said substantially monochromatic light for electrical power generation.

4,433,200

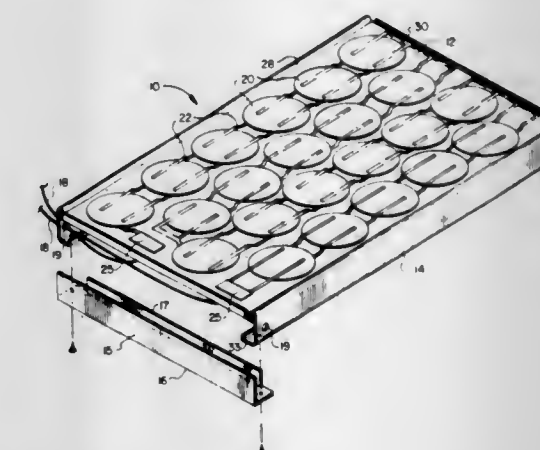
ROLL FORMED PAN SOLAR MODULE

Theresa L. Jester, Palmdale; John W. Yerkes, Chatsworth; Charles F. Gay, Northridge, and William R. Bottenberg, Thousand Oaks, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 2, 1981, Ser. No. 307,912
Int. Cl.³ H01L 31/04

U.S. Cl. 136—251

9 Claims



1. A solar cell module comprising:

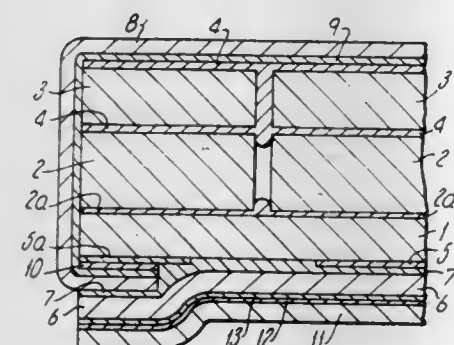
- a metal substrate formed from a single sheet of material having a generally rectangular planar central portion having upper and lower surfaces, upturned flanges extending essentially at right angles from edges of said upper surface, downturned flanges extending from at least two opposed upturned flanges at substantially right angles to said central portion and extending beyond said lower surface,
- a first pottant sheet covering and supported by said upper surface,
- a plurality of solar cells positioned on said first pottant sheet,
- a second pottant sheet covering and supported by said circuit and said first pottant sheet,
- a substantially transparent superstrate covering said second pottant sheet, and
- terminals extending through said metal substrate to provide external connections to said circuit,
- wherein said upturned flanges extend above said upper surface by a distance about equal to the combined thicknesses of said first and second pottant sheets, said circuit and said superstrate, and
- wherein said first and second pottant sheets are fused together and fill substantially all space between said substrate, said solar cells and said superstrate, and also fill the space between the edges of said superstrate and the inner surfaces of said upturned flanges to form a weatherproof seal around edges of said module.

4,433,201

SOLAR POWER ARRAYS FOR SPACECRAFT
Christakis N. Fellas, Hatfield, England, assignor to British Aerospace Public Limited Company, London, England
Filed May 3, 1982, Ser. No. 374,022
Claims priority, application United Kingdom, May 2, 1981, 8113615

Int. Cl.³ H01L 31/04

U.S. Cl. 136—251



1. A solar cell power generating array for a spacecraft having a protective cover sheet over a surface portion of the array, the cover comprising an outer layer of flexible transparent plastics material and a layer, nearer the said array surface portion than said outer layer, of transparent, electrically conductive material.

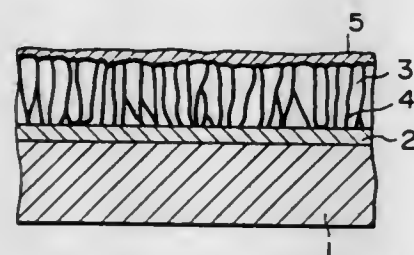
4,433,202

THIN FILM SOLAR CELL

Eiichi Maruyama, Kodaira; Toshikazu Shimada, Tokyo; Yasuhiro Shiraki, Hino; Yoshifumi Katayama, Tokorozawa; Hirokazu Matsubara, Tokyo; Akitoshi Ishizaka, Kokubunji; Yoshimasa Murayama, Koganei, and Akira Shintani, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 26, 1982, Ser. No. 362,115
Claims priority, application Japan, Mar. 30, 1981, 56-45554
Int. Cl.³ H01L 31/06

U.S. Cl. 136—255

12 Claims



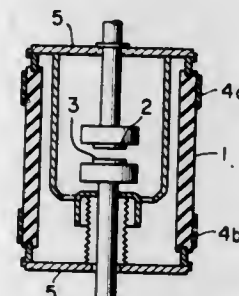
1. A thin film silicon solar cell formed on a substrate, comprising:
a layered structure disposed on the substrate, including at least a first electrode, a thin film comprising silicon formed on said first electrode, and a second electrode formed on said silicon thin film, at least one of said first and second electrodes being transparent, and said structure including at least one barrier layer or junction for separating photo-ionized carriers,
wherein the silicon thin film comprises a mixed phase of polycrystalline phase and a substantially terminated amorphous phase and includes at least about 50% by volume of fibrous crystalline grains, each of which has a bottom diameter of not larger than 1 μ m and a height of at least 50 nm, and has its grain boundaries substantially terminated.
5. A thin film silicon solar cell as set forth in claims 1 or 2, wherein said junction comprises a PIN junction.

4,433,203

ELECTRICAL INSULATOR WITH WATER-REPELLENT OIL-BLEEDING INSULATION BANDS
Kunihiko Takagi, Tama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed Sep. 24, 1982, Ser. No. 423,292
Claims priority, application Japan, Oct. 15, 1981, 56-163430
Int. Cl.³ H01B 17/50; H01H 33/66

6 Claims U.S. Cl. 174—30

7 Claims



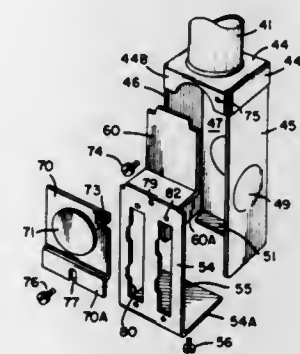
1. An electrical insulator having a substantially cylindrical outer peripheral surface and having a plurality of water-repellant oil-bleeding insulation bands disposed on said outer surface.

4,433,204

JUNCTION BOX FOR POKE-THRU FLOOR FITTINGS
Emil S. Wuertz, Madison, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.
Filed Aug. 9, 1982, Ser. No. 406,177
Int. Cl.³ H02G 3/08

U.S. Cl. 174—48

11 Claims

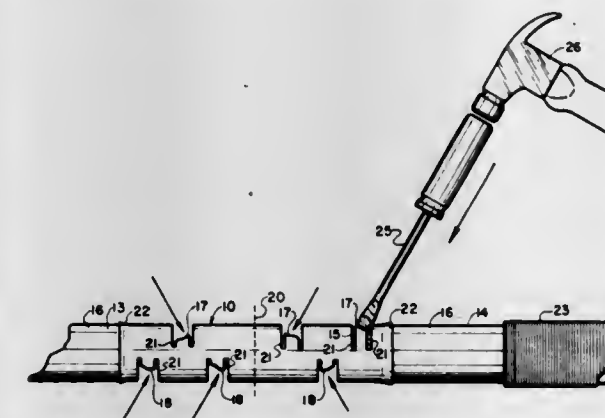


1. In a fitting mounted in an aperture in a floor structure having respective upper and lower floor surfaces for providing communications service and power service between the lower and upper floor surfaces including, a hollow junction box mounted on the fitting adjacent the lower floor surface, wherein the junction box comprises:
a first side wall comprised of respective upper and lower exterior covers detachably mounted on the box in adjacent relationship and a second side wall opposite said first side wall;
a divider member in said box for separating the communications service conductors from the power service conductors, said divider member extending laterally from the lower cover toward said second side wall and upwardly in said box opposite the upper cover to provide two partitioned compartments for the communications and the power service conductors, respectively.

4,433,205

COMPRESSIVE CABLE CONNECTOR
John E. Summers, P.O. Box 5433, Charlotte, N.C. 28225
Continuation-in-part of Ser. No. 31,423, Apr. 19, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,738
Int. Cl.³ H01R 4/20
U.S. Cl. 174—84 C

2 Claims



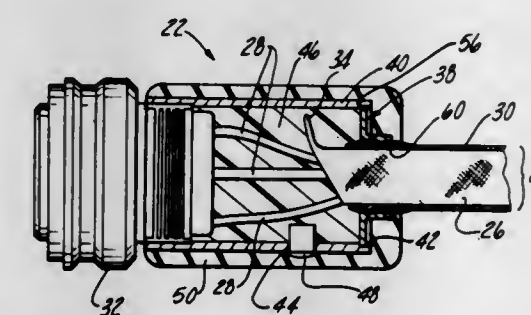
1. A cable connector for joining together two ends of malleable metal cable, said cable connector comprising a sleeve formed from malleable metal and having an axis and a smooth inner surface, said sleeve including a plurality of deformable portions formed in axially spaced relation to each other on one side of the axis of the sleeve and defined along the corresponding surface of the sleeve by slots extending radially from said corresponding surface of the sleeve toward the axis of the sleeve at the axially spaced margins of their respective deformable portions; whereby the two ends of cable may be pushed into opposite ends of the sleeve toward abutting relation with each other and subjacent the series of deformable portions, after which the deformable portions of the sleeve and the malleable metal cable subjacent thereto may be reoriented inwardly toward the axis of the sleeve.

4,433,206

EMI SHIELDED CONNECTOR ASSEMBLY
John Lewis, Binghamton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Dec. 10, 1981, Ser. No. 329,154
Int. Cl.³ H01R 13/658

U.S. Cl. 174—356

5 Claims



1. An EMI shielded connector assembly comprising a cable connector body, a cable having at least a first cover overlying jacketed wires and terminating in a braided tail, a second braided cover overlying the first cover, the jacketed wires extending beyond the first and second covers and inserted in the connector body; and a back-shell receiving the cable at one end and pressed fit to the connector body at the other end, the back-shell having an aperture therein adapted to receive potting compound within the shell; characterized by a ferrule member encircling the cable between the first cover and the second cover; a ferrule clamping member compressing the second cover to said ferrule member forming an interference fit;

means securing said ferrule clamping member to the back-shell;
potting compound filling the interior of the back-shell and securing the tail of the first cover and the jackets of the wires therein; and
means closing the aperture and with the back-shell and said ferrule clamping member forming an EMI shield over the cable and connector body.

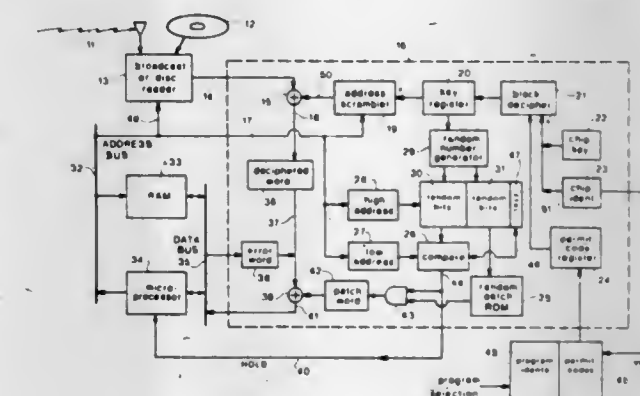
4,433,207

CRYPTOGRAPHIC DECODER FOR COMPUTER PROGRAMS

Robert M. Best, 16016 Ninth Ave. Northeast, Seattle, Wash. 98155
Filed Sep. 10, 1981, Ser. No. 300,797
Int. Cl.³ H04L 9/00

U.S. Cl. 178—22.09

17 Claims



14. A cryptographic apparatus for deterring unauthorized execution of computer programs of instructions stored in enciphered form as a plurality of portions of enciphered information, the apparatus comprising:

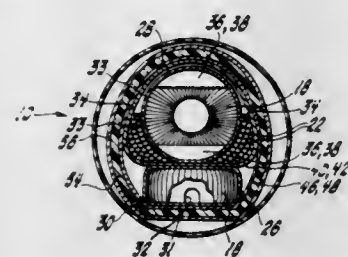
means for deciphering an enciphered program key as a function of a secret chip key to produce a deciphered program key corresponding to a selected program;
means for deciphering portions of said enciphered information as a function of said deciphered program key to produce deciphered instructions in said selected program;
table means for storing a plurality of digital addresses and a corresponding plurality of multiple-bit digital words;
means for determining whether a memory address matches one of the digital addresses in said table means;
means for reenciphering a plurality of said deciphered instructions or portions thereof to produce reenciphered instructions to be stored at memory locations specified by memory addresses, the reenciphering being performed on an instruction or portion thereof if said determining means determines that the memory address of the instruction matches one of the digital addresses in said table means, the reenciphering being a function of the digital word in said table means corresponding to the matching digital address; and
means for redeciphering one of said reenciphered instructions whenever the instruction is fetched for execution from a memory location specified by a memory address matching one of the digital addresses in said table means, the redeciphering being performed as a function of the digital words in said table means corresponding to the digital address that matches the memory address of the instruction, thereby restoring reenciphered instructions to unenciphered form during execution of said selected program.

4,433,208

PRESSURIZABLE TELEPHONE LOAD COIL ASSEMBLY

David C. Noetzelmann, Sr., Minatare, Nebr., assignor to Midwec Torold & Capacitor Corporation, Rolling Meadows, Ill.
 Filed Aug. 27, 1981, Ser. No. 296,678
 Int. Cl.³ H01F 17/08, 27/04, 15/02
 U.S. Cl. 178—46

13 Claims



6. A pressurizable telephone load coil assembly, comprising: a section of pressurizable telephone cable having a plurality of conductors; said conductors being electrically connected to a plurality of toroidal telephone load coils; a first portion of said plurality of toroidal telephone load coils being disposed in a flat enclosure holding said first portion of said plurality of load coils in a side-by-side relationship and defining an opening therethrough for passage of wire leads of said load coils therethrough; said wire leads passing therethrough; a second portion of said plurality of toroidal telephone load coils being disposed in a generally tube-shaped enclosure for holding said second portion of said plurality of said load coils in a stacked relationship and defining at least one opening therethrough for passage of wire leads of said load coils therethrough; said wire leads passing therethrough; binding means disposed around said flat enclosure and said generally tube-shaped enclosure for holding said enclosures in a parallel relationship to form a load coil package; a heat shrinkable tube having a first closed end and second open end disposed around said load coil package; said second open end being shrunk by heating to conform to said section of pressurizable telephone cable and to form an airtight seal thereto.

4,433,209

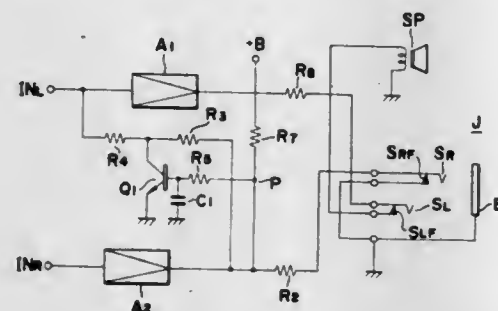
STEREO/MONAUROAL SELECTING CIRCUIT

Nobuyuki Kurosawa, Yokohama, and Kazuaki Suda, Asaka, both of Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Apr. 24, 1981, Ser. No. 257,392
 Claims priority, application Japan, Apr. 25, 1980, 55-56801[U]

Int. Cl.³ H04S 7/00

U.S. Cl. 381—1

19 Claims



1. A stereo/monaural selecting circuit comprising: first and second signal transmission channels for transmitting first and second signals, respectively; first and second amplifier means provided in said first and second transmission channels, respectively; a first binaural connecting device having first and second

signal terminals connected to said first and second amplifier means, respectively; mixing means provided between said first and second signal transmission channels to mix said first and second signals; and

controlling means including transistor means connected to said mixing means for automatically rendering said mixing means inoperative in response to said first binaural connecting device being connected with a second binaural connecting device having corresponding first and second signal terminals.

7. A stereo/monaural selecting circuit comprising: first and second signal transmission channels for transmitting first and second channel signals, respectively; first and second amplifying means provided in said first and second signal transmission channels, respectively; binaural jack means having first and second signal terminals connected to said first and second amplifying means, respectively; for receiving one of a binaural plug device and a monaural plug device; mixing means provided between said first and second signal transmission channels for mixing said first and second channel signals; and control means connected to said mixing means for automatically rendering said mixing means inoperative in response to when a said binaural plug device having corresponding first and second signal terminals being connected with said binaural jack means.

4,433,210

INTEGRATED CIRCUIT PHONEME-BASED SPEECH SYNTHESIZER

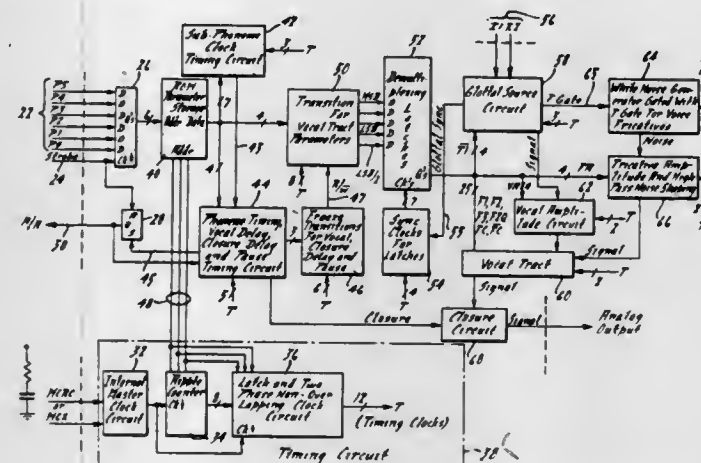
Carl L. Ostrowski, Mt. Clemens, Mich., and Bertram White, Tustin, Calif., assignors to Federal Screw Works, Detroit, Mich.

Continuation of Ser. No. 156,483, Jun. 4, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,356

Int. Cl.³ G10L 1/00

U.S. Cl. 381—53

12 Claims



1. In a phoneme-based speech synthesizer including parameter storage means for producing, for each phoneme, on a first data bus a plurality of multiplexed digital control parameters defining target values for said control parameters, and a vocal tract model that is controlled in accordance with the current values of said control parameters; the improvement comprising digital transition means for sequentially transitioning said control parameters so that the values of said control parameters are gradually changed from said current values toward said target values, including:

output means for providing on a second data bus the multiplexed current values of said control parameters; demultiplexer means for demultiplexing the signal on said second data bus and producing a corresponding plurality of parallel digital output signals comprising the current values of said plurality of control parameters; and

arithmetic circuit means for calculating a factor related to a predetermined percentage of the difference between the target value signal on said first data bus and the current value signal on said second data bus, adding said factor to said current value signal at a predetermined rate, and providing the resulting value signal to said output means.

4,433,211

PRIVACY COMMUNICATION SYSTEM EMPLOYING TIME/FREQUENCY TRANSFORMATION

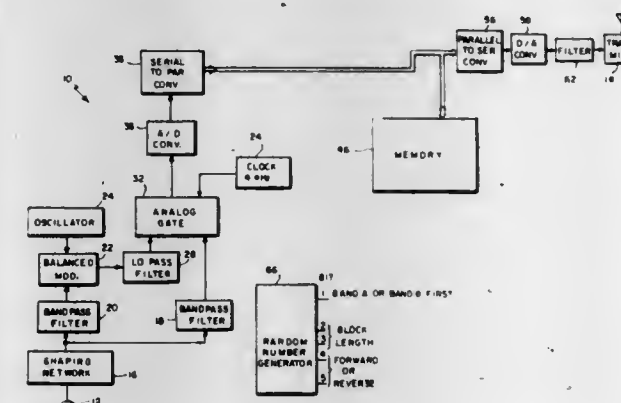
Arnold M. McCalmont, Acton, and Matthew W. Slate, Sudbury, both of Mass., assignors to Technical Communications Corporation, Concord, Mass.

Filed Nov. 4, 1981, Ser. No. 317,947

Int. Cl.³ H04K 1/06; H04L 9/00

U.S. Cl. 179—1.5 S

24 Claims



1. A privacy communication system comprising
 A. means for splitting a voice signal into a selected number of frequency bands;
 B. means for generating a pseudo-random key word;
 C. means for dividing each said band into segments of different time duration in accordance with the pseudo-random key word;
 D. means for compressing said segments in time and expanding them in frequency by a factor equal to the number of frequency bands into which the voice signal was divided; and
 E. means for transmitting said time-compressed segments, the transmitted signal having substantially the same time-bandwidth product as the voice signal.

4,433,212

TELEPHONE LINE INTERFACE CIRCUIT

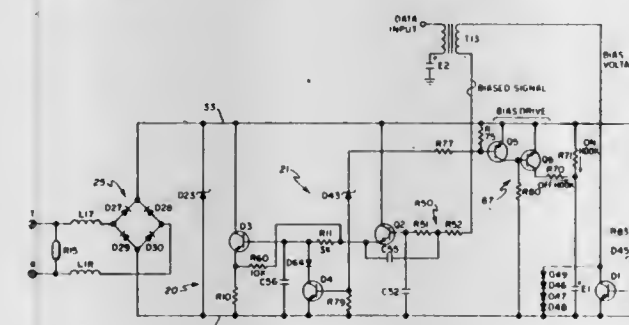
Donald W. Moses, Minneapolis, Minn.; Charles Hustig, Hudson, Wis., and C. Ray Ballard, Venice, Fla., assignors to Applied Spectrum Technologies, Inc., Minneapolis, Minn.

Filed Jun. 21, 1982, Ser. No. 390,183

Int. Cl.³ H04M 11/00

U.S. Cl. 179—2 C

15 Claims



1. A communications medium interface circuit which couples data to a telephone line having at least one telephone

connected thereto during all normal operating conditions of the line comprising:

a first transistorized output stage connected to the telephone line having a low bridging impedance operative when the associated telephone connected to the telephone line is off-hook;

a second transistorized output stage connected to the telephone line having a high bridging impedance operative when the associated telephone connected to the telephone line is on-hook; and

means connected to the telephone line and operatively connected to each of the output stages for sensing when the associated telephone is on-hook or off-hook and for switching the circuit between the first output stage and the second output stage in response to the condition of the telephone line such that data is operably coupled to the telephone line by the first stage when the telephone is off-hook and the data is operably coupled to the telephone line by the second stage when the telephone is on-hook.

4,433,213

SUBSCRIBER'S LINE CIRCUIT FOR TELECOMMUNICATIONS NETWORKS

Raymund Albers, Eckental, and Hans G. Widder, Nuremberg, both of Fed. Rep. of Germany, assignors to Te Ka De Felten & Guillaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

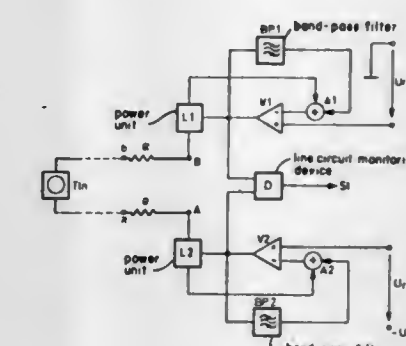
Filed Feb. 1, 1982, Ser. No. 344,779

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104138

Int. Cl.³ H04M 1/76, 19/00

U.S. Cl. 179—18 FA

8 Claims



1. A line circuit for telecommunications networks, particularly for telephone networks, comprising at least one user line loop connected to a terminal station; two sources of constant current arranged symmetrically to the terminal station in the user line loop for keeping current in the loop constant irrespective of the length of the loop; each of said current sources comprising a power unit having a power output connected to the terminal station, a feedback output for delivering a regulating signal which may contain interference signal components, and a control input; a differential amplifier defining an output, a non-inverting input and an inverting input, the output of said differential amplifier being connected to the control input of the power unit; an adder having an output and two inputs, the output of said adder being connected to the inverting input of the amplifier, one of the inputs of the adder being connected to the feedback output of the power unit; a source of reference voltage connected to the non-inverting input of the amplifier; and a bandpass filter connected between said control input of the power unit and the other input of said adder to pass through the frequency band of interference signals at an opposite phase than the interference signal components from the feedback output of said power unit.

4,433,214

ACOUSTICAL TRANSDUCER WITH A SLOTTED PISTON SUSPENSION

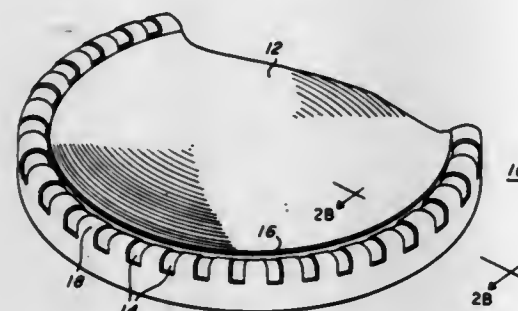
Leon Jasinski, Fort Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1981, Ser. No. 334,391

Int. Cl.³ H04R 9/00, 9/04

U.S. Cl. 179—115.5 ES

14 Claims



1. An improved unified piston suspension assembly for utilization of an electrodynamic acoustical transducer, the piston suspension assembly comprising in combination:
 - a curved center sound radiating dome;
 - a curved piston suspension of resilient plastic material, the suspension formed from the same piece of resilient material as the curved center sound radiating dome;
 - said curved piston suspension having stress-relieving elongated slots integral therein, each of said stress-relieving slots having a predetermined reduced thickness relative to the thickness of the surrounding piston suspension and being positioned at predetermined intervals along the circumference of said piston suspension;
 - said suspension defining means for relieving certain bending stresses experienced along the radii of the curved sound radiating dome and certain perpendicular concentric stresses during the operation of the associated electrodynamic acoustical transducer.

4,433,215

SOLID STATE HYBRID CIRCUITS

Donald W. Wortman, Central Islip, N.Y., assignor to TII Corporation, Copeague, N.Y.

Continuation-in-part of Ser. No. 15,407, Feb. 26, 1979, Pat. No. 4,278,847. This application Jul. 10, 1981, Ser. No. 282,056

Int. Cl.³ H04B 1/58

U.S. Cl. 179—170 NC

13 Claims

1. An electronic hybrid for coupling a two-wire signal transmission line to a signal source and to a signal-receiving load in a communication system, said electronic hybrid comprising a two-wire port adapted to be electrically connected to said two-wire line for receiving incoming differential information signals from said line, a signal transmit port adapted to be electrically connected to said signal-receiving load, a signal receive port adapted to be electrically connected to said signal source for receiving signals from said source, means connected intermediate said two-wire port and said transmit port for converting the received incoming differential information signals into first single-ended signals and for applying said single-ended signals to said transmit port for transmission to said signal-receiving load, first and second transistors, means for applying second single-ended signals received at said receive port to said first transistor, means electrically connected to and cooperating with said first and second transistors for converting the second single-ended signals applied to said first transistor into outgoing balanced differential signals each having one signal component on a preselected electrode of said first transistor and the other signal component on a preselected electrode of said second transistor, said preselected electrodes of said first and second transistors being electrically connected to said two-wire port for applying the outgoing differential signal thereto for transmission over said line, and further means electrically connected to said first and second transistors for

maintaining a high a.c. output impedance on said preselected electrodes of said transistors.

4,433,216

FACEPLATE ASSEMBLY FOR TELECOMMUNICATIONS TERMINALS AND OTHER TERMINALS

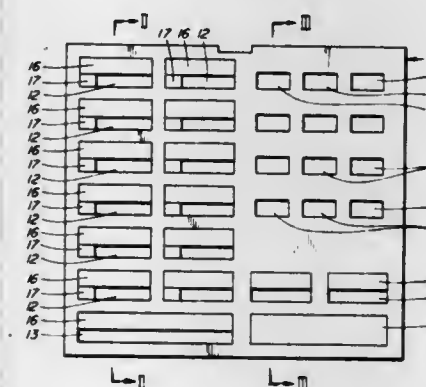
Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 12, 1982, Ser. No. 357,776

Int. Cl.³ H04M 1/02

U.S. Cl. 179—178

7 Claims



1. A faceplate assembly for a telecommunications terminal, comprising:
 - two flat rectangular members in superposed position, a top member and a bottom member;
 - a plurality of apertures in each member, the apertures in one member aligned with the apertures in the other member;
 - a plurality of window areas in said top member, each window area associated with and adjacent to an aperture;
 - means defining a plurality of channels between the top and bottom members, each channel extending to an edge of the faceplate assembly and open at said edge for insertion and removal of a card;
 - each channel extending below at least one window area.

4,433,217

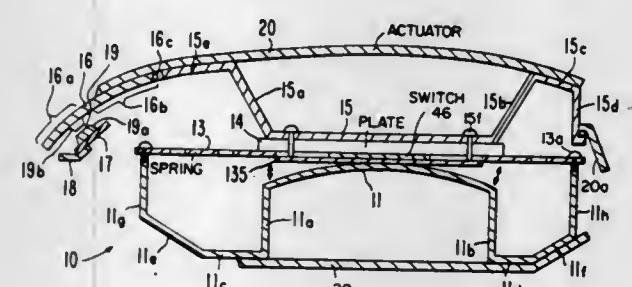
HAND CONTROLLER MULTIPLE CIRCUIT SWITCH
William M. Griffith, Menlo Park, Calif., assignor to Koala Technologies Corporation, Santa Clara, Calif.

Filed Aug. 16, 1982, Ser. No. 408,328

Int. Cl.³ H01H 13/70, 3/00, 25/00; A63F 7/06

U.S. Cl. 200—5 R

6 Claims



1. An electrical switch for use in a hand controller for use in controlling the motion of a cursor on a video display, wherein said hand controller includes a first portion containing a portion of a spherical surface convexly mounted thereon and a second portion containing a flat surface over a part thereof, said first and second portions being arranged so that said flat surface on said second portion is capable of being rocked over said portion of a spherical surface on said first portion, and includes deflectible spring means extending between said first and second portions for restoring said first and second portions

to their nominal positions in the absence of a disturbing force applied thereto;

wherein said electrical switch means is mounted on the bottom of said flat plate between said flat plate and said portion of a spherical surface and wherein said electrical switch means comprises:

- a top portion attached to said flat plate, said top portion comprising a substantially flat sheet of insulative material containing thereon a first electrically conductive surface at all points on the side not facing said flat plate except a portion in the middle thereof at said nominal positions of said first and second portions;

- a bottom portion beneath said top portion containing thereon on the side facing said top portion a second electrically conductive surface, wherein said second electrically conductive surface has an outer periphery of substantially the same shape as the outer periphery of said first electrically conductive surface and wherein said second electrically conductive surface is arranged to lie directly beneath said first electrically conductive surface, and further wherein said second electrically conductive surface contains four triangular-shaped portions, the base of each triangular shaped portion abutting a selected portion of the periphery of said bottom portion and the sides of each triangular shaped portion intersecting said periphery such that each triangular-shaped portion is electrically separated from the two adjacent triangular-shaped portions; and wherein said second electrically conductive surface includes:

- selected conductive fingers extending from each of said sides of said triangular-shaped portions toward but not in contact with the two adjacent triangular-shaped portions such that the fingers extending from one triangular-shaped portion to an adjacent triangular-shaped portion are interdigitated with the fingers extending from the adjacent triangular-shaped portion to the one triangular-shaped portion; and

- an annular band of insulative material separating the outer periphery of said first electrically conductive surface from said second electrically conductive surface with an air space formed between said first electrically conductive surface and said second electrically conductive surface such that said first electrically conductive surface is not in contact with said second electrically conductive surface except in response to rocking pressure applied to said flat plate, whereby rocking movement of said flat plate and resultant contact with said spherical surface between said first and second electrically conductive surfaces activates the switch means at that position.

4,433,218

ELECTRICAL INSTRUMENT WITH REMOVABLE CALIBRATING KNOB

Amede R. Provencher, Marlboro, Mass., assignor to Kidde, Inc., Clifton, N.J.

Filed Aug. 17, 1981, Ser. No. 293,449

Int. Cl.³ H01H 19/00; G05G 1/10

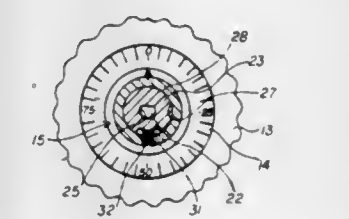
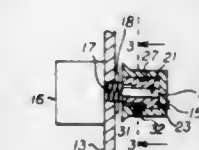
U.S. Cl. 200—11 R

10 Claims

1. An electrical instrument comprising:
 - a housing comprising a face plate;
 - a component for providing a variable electrical characteristic, said component being retained by said housing;
 - a shaft having one end coupled to said component and rotatable to vary said electrical characteristics, said shaft extending through said face plate and having an opposite end adjacent thereto;
 - a coupling means attached to said opposite end of said shaft, said coupling means and said shaft being shaped and arranged to permit only one given relative angular position therebetween and to prevent relative rotational movement therebetween while allowing relative axial movement

therebetween during removal of said coupling means from said shaft;

- a knob attached to said coupling means, said knob and said coupling means being shaped and arranged to allow both relative axial and rotational movement therebetween;
- a locking means activatable to prevent said relative move-



ment between said knob and said coupling means so as to permit removal of said knob and coupling from said shaft as a unit and to insure the repositioning thereof in said given relative angular position upon replacement of said unit on said shaft; and

a scale located on said face plate adjacent to said knob so as to indicate the relative angular position thereof.

4,433,219

DIFFERENTIAL PRESSURE SWITCH WITH SQUARE DIAPHRAGM PLATE SUPPORTED BY THE DIAPHRAGM

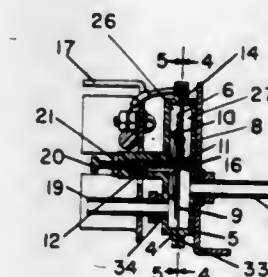
Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Filed Feb. 22, 1982, Ser. No. 350,820

Int. Cl.³ H01H 35/34

U.S. Cl. 200—83 R

3 Claims



1. A differential switch comprising:
 - a housing including a pair of housing sections clamped together and formed to define between them an essentially square diaphragm chamber of restricted depth;
 - an essentially square diaphragm of compliant material clamped between said housing section in fluid tight seal relation about said chamber;
 - an essentially square diaphragm plate anchored to one side of said essentially square diaphragm and in juxtaposition thereto;
 - an essentially square diaphragm plate formed with projections to limit movement of said diaphragm plate with respect to said housing;
 - said essentially square diaphragm plate formed with a recessed boss to accept a compression spring;
 - said compression spring is connected to an adjustment screw threadedly mounted in said housing;
 - said adjustment screw is locked exteriorly of said housing with a torque nut;
 - said essentially square diaphragm plate has formed projecting rivets for anchoring said essentially square diaphragm,

electrical connection, and electrical contact in juxtaposition thereto,
 said electrical contact is normally in contact with an adjacent said electrical contact anchored to the housing,
 said electrical contact is provided with means for connecting to a terminal on abutments of said housing,
 said adjacent electrical contact is provided with means for connecting to an adjacent terminal on abutments of said housing,
 said housing sections have means for connecting the portions of said chamber on either side of said diaphragm to differential gas pressure sources,
 said spring being proportioned to normally hold said electrical contact in engagement with said adjacent electrical contact in one position of said spring,
 whereby, as pressure differentials on either side of said diaphragm increase, the spring changes and said electrical contact becomes disengaged from the said adjacent electrical contact.

4,433,220

HIGH-VOLTAGE CIRCUIT BREAKER

Anton Bühler, Triengen, and Peter Hug, Safenwil, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

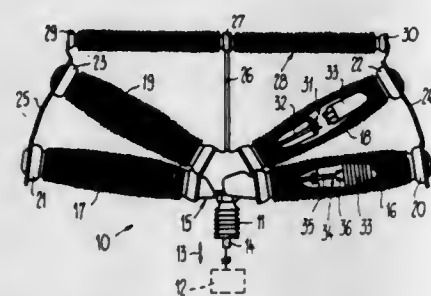
Filed Mar. 15, 1982, Ser. No. 358,217

Claims priority, application Switzerland, Apr. 22, 1981, 2618/81

Int. Cl.³ H01H 33/16

U.S. Cl. 200—144 AP

8 Claims



1. A high-voltage circuit breaker comprising:
 means defining at least one primary switch position;
 means defining a series circuit of an auxiliary switch position containing a cut-on resistor;
 said primary switch position being connected in parallel with said series circuit of said auxiliary switch position and said cut-on resistor;
 a drive rod displaceable between a cut-on position and a cut-off position;
 means for driving said drive rod;
 a respective lever drive means operatively connected with a related one of said switch positions and operatively coupling each said switch position with said drive rod;
 said lever drive means of said primary switch position containing a double-arm lever;
 a stationarily arranged and rotatably mounted shaft about which there is pivotably mounted said double-arm lever;
 said double-arm lever having a first end and a second end;
 said primary switch position having a movable switching element;
 said first end of said double-arm lever being coupled with said drive rod and said second end with said movable switch element of said primary switch position;
 said lever drive means of said auxiliary switch position being structured such that during a cut-on stroke there is initially closed said auxiliary switch position and such again opened at the end of said cut-on stroke;
 said lever drive means of said auxiliary switch position comprising a pivotable arm member driven by said double-arm lever;
 said pivotable arm member having a free end;

cam means;
 pivot shaft means for mounting said cam means at said free end of said pivotable arm member so as to be movable between two stable positions about said pivot shaft means which extends essentially parallel to said rotatably mounted shaft;
 said cam means having a cam track; and
 said auxiliary switch position containing a movable switching element carrying a cam follower engageable with said cam track.

4,433,221

IMPEDANCE CONTACT ASSEMBLY FOR AN ELECTRIC CIRCUIT BREAKER

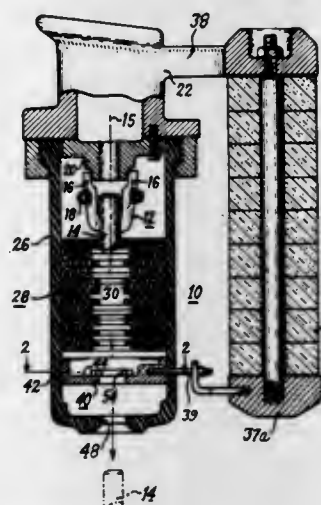
Harold N. Schneider, Springfield; James H. Simpson, Media, and Raymond F. Weidman, Springfield, all of Pa., assignors to General Electric Company, King of Prussia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,223

Int. Cl.³ H01H 33/16

U.S. Cl. 200—144 AP

5 Claims



1. In an electric circuit breaker,
 (a) a pair of separable interrupting contacts, one of which comprises a contact rod having a longitudinal axis along which said contact rod is movable during circuit-making and circuit-breaking operations,
 (b) an impedance contact assembly for making electrical contact with said contact rod along two sides of said contact rod when the contact rod is located near the other interrupting contact,
 (c) an impedance connected between said impedance contact assembly and said other separable interrupting contact,
 (d) said impedance contact assembly comprising:
 (i) a ring of conductive metal to which said impedance is electrically connected,
 (ii) two slots in said ring at diametrically-opposed locations,
 (iii) a U-shaped spring member of conductive metal having two spaced-apart arms and a bight portion interconnecting said arms at one end of the arms, the other end of the arms constituting free ends, the spring member being positioned with its bight portion in one of said slots and the free ends of said arms in the other of said slots and having a resilience tending to bias said free ends apart and against the walls of said other slot,
 (e) the path of movement of said contact rod extending between said spaced-apart arms so that said arms slidably engage said contact rod at opposite sides thereof as said contact rod is moved along said path while near said other interrupting contact,
 (f) said contact rod at the end of a circuit-breaking operation leaving the space between said spaced-apart arms and forming an arc between said contact rod and one of said arms, and

(g) said contact rod having a diameter sufficiently large as to force said free ends of said arms into higher pressure engagement with the walls of said other slot when the contact rod reenters the space between said arms during a circuit-making operation.

4,433,222

MINIATURIZED PUSH BUTTON SWITCH

Yasuo Kodaira, Tokyo, Japan, assignor to Nihon Kaihiki Industrial Company, Ltd., Tokyo, Japan

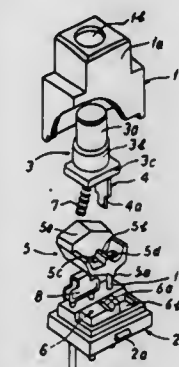
Filed Jan. 5, 1982, Ser. No. 337,113

Claims priority, application Japan, Jan. 31, 1981, 56-11646

Int. Cl.³ H01H 3/46

U.S. Cl. 200—153 J

10 Claims



1. A push button switch comprising a switch body defining an enclosure;
 support surface means disposed within said enclosure;
 a pivotable converter disposed above and supported by said support surface means, one of said converter and said support surface means having a projection formed thereon and the other one of said converter and said support surface means having a depression formed therein for cooperating with said projection such that said converter pivotably engages said support surface means and is pivotable between first and second positions with respect to an imaginary fulcrum plane, said projection and said depression defining a pivot joint and a pivot axis;
 an operator actuable push rod extending through said switch body into said enclosure with a base which is spaced from said converter, said push rod being axially displaceable with respect to a displacement axis and having a depending, elongated converter actuator spaced from and substantially parallel to said displacement axis for pushing against said converter at a single predetermined location thereon so as to pivot said converter in the direction of said second position when said push rod is displaced from an unactuated limit position;
 compression spring means disposed between said push rod and said converter for biasing said push rod toward said limit position and said converter toward said support surface means;
 three spaced stationary contact members aligned in a row, said row extending transversely with respect to said fulcrum plane and being axially spaced from said pivot joint with respect to said pivot axis; and
 an elongated movable contact member fixedly mounted on said converter relatively above said pivot axis and in relative alignment with said stationary contact members such that said movable contact member bridges the central one of said stationary contact members and is arcuately displaced into and out of sliding contact with the respective end ones of said stationary contact members as said converter is pivoted between said first and second positions.

4,433,223

PRESSURE-SENSITIVE ADHESIVE AND APPLICATION THEREOF

Willis A. Larson, and Anthony J. Van Zeeland, both of Crystal Lake, Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Aug. 24, 1981, Ser. No. 295,717

Int. Cl.³ H01H 3/12

U.S. Cl. 200—159 B

5 Claims



1. A membrane switch having a membrane and a substrate spaced therefrom, spaced electrical contacts on said membrane and substrate, and a pressure sensitive conductive adhesive securing said membrane and substrate together and providing an electrical connection therebetween.

4,433,224

ACTUATOR MECHANISM WITH ENHANCED TACTILE CHARACTERISTICS

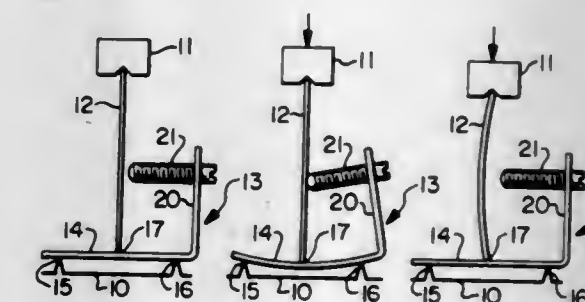
Robert D. Kitchen, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 18, 1982, Ser. No. 435,010

Int. Cl.³ H01H 5/18

U.S. Cl. 200—330

16 Claims



1. An actuator mechanism with enhanced tactile characteristics, comprising:
 a frame;
 a resilient column mounted in said frame aligned with and adapted to accept a force along a first axis; and
 force transfer means mounted on said frame and having a first portion for receiving a force along the first axis from said resilient column and a second portion for responsively applying a force transverse to the first axis to said resilient column at an intermediate location thereon, said resilient column being adapted to buckle in a direction transverse to the first axis and positioned to be deflected by the second portion of said force transfer means when a predetermined force is applied to the first portion thereof, whereby buckling of said resilient column is repeatably controlled.

4,433,225

KEYTOP LEVELLING MECHANISM

Dean S. Cowles, Spokane, Wash., assignor to General Instrument Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,127

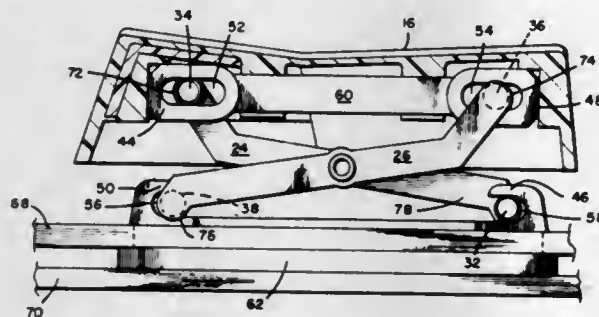
Int. Cl.³ H01H 3/12

U.S. Cl. 200—340

9 Claims

7. A keytop levelling mechanism for use in conjunction with a substantially hollow L-shaped keytop, said mechanism comprising:

a scissors-like linkage having first, second, third, and fourth ends adapted to fit between the ascender portion of said L-shaped keytop and a base situated under said keytop; first means for mounting said first and second ends within the hollow portion of said ascender portion at longitudinally opposed ends thereof; and second means for mounting said third and fourth ends to said base;



said first and second mounting means adapted to provide articulating joints enabling said linkage to collapse in scissors-like fashion when said keytop is moved toward said base, whereby said scissors-like linkage maintains said keytop level throughout its movement toward and away from said base.

4,433,226

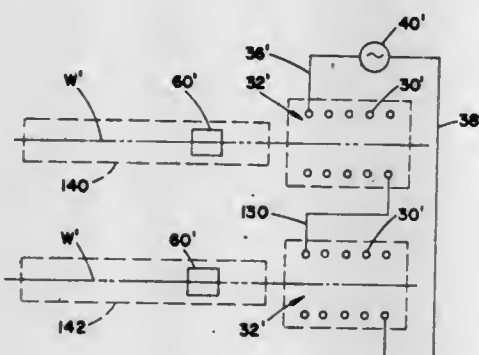
METHOD AND APPARATUS FOR INDUCTION HEATING OF AN ELONGATED WORKPIECE

Richard L. Wagar, Wadsworth, Ohio, assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Nov. 12, 1981, Ser. No. 320,550
Int. Cl.³ H05B 6/06

U.S. Cl. 219—10.41

2 Claims



1. A method for inductively heating an elongated workpiece to a generally uniform temperature over the length thereof wherein said workpiece has a first portion with a uniform cross-section extending over a major part of the workpiece length and a second portion with a cross-section greater than said one portion, said method comprising the steps of:

- providing a plurality of substantially identical multi-turn inductors, each having an entrance end and an exit end, with said inductors being laterally spaced apart from each other coaxially about a plurality of parallel spaced apart workpaths;
- feeding simultaneously substantially identical workpieces longitudinally along said plurality of workpaths at some predetermined rate of travel toward and through said inductors from said entrance end, each of said workpieces having a first portion with a uniform cross-section extending over a major portion of the workpiece length and a second portion with a cross-section greater than said first portion;
- sensing one of said workpiece first and second portions adjacent the entrance end of each inductor;
- causing each inductor to be energized to a preselected first level at least during said step of feeding for induc-

tively heating said one of said workpieces first and second portions to generally a preselected temperature as it passes through the inductor;

- changing the energization level of each inductor to a predetermined second level different from said first level at some first preselected time interval following said step of sensing for inductively heating the other of said workpiece first and second portions to generally said preselected temperature as it passes through the inductor; and,
- thereafter returning each inductor to said first level of energization.

4,433,227

METHOD OF INDUCTIVELY HEATING WORKPIECES TO A UNIFORM TEMPERATURE

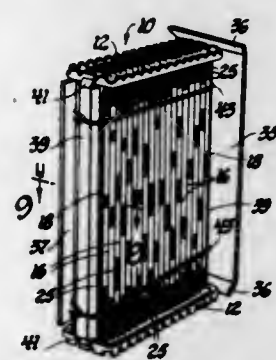
Craig E. Brittin, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 20, 1982, Ser. No. 419,942

Int. Cl.³ H05B 6/06

U.S. Cl. 219—10.41

8 Claims



1. A method of inductively heating a plurality of metal members to a substantially uniform temperature comprising the steps of:

- placing at least two adjacent members in a heating cavity so that during inductive heating outer member surfaces not facing another heated member will tend to lose heat by radiation,
- locating metal radiator panels in the heating cavity adjacent the said outer member surfaces, and
- establishing an alternating magnetic field in the heating cavity for inductively heating the members and for inductively heating the radiator panels to a temperature near that of the members whereby the heated panels radiate toward the outer member surfaces to reduce the net radiation from the outer member surfaces to provide uniform heating of the elements.

4,433,228

MICROWAVE PLASMA SOURCE

Shigeru Nishimatsu, Kokubunji; Keizo Suzuki, Hachioji; Noriyuki Sakudo, Ome; Ken Ninomiya, Tokyo; Hideo Koike, Tokorozawa; Osami Okada, Chofu; Shinjiro Katagiri, Katsuta, and Sadaaki Okudaira, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 319,987

Claims priority, application Japan, Nov. 12, 1980, 55-158300

Int. Cl.³ H05G 9/06

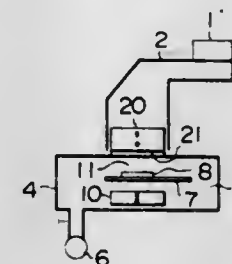
U.S. Cl. 219—10.55 R

20 Claims

1. A microwave plasma source comprising: a vacuum room which includes a discharging space in which discharge gas is introduced; means for introducing microwave energy through a propa-

gating path leading to said discharging space to provide a microwave electric field in said discharging space; and

with said shaft of said fixed portion extending horizontally.



a permanent magnet located in said propagating path leading to said discharging space for generating a magnetic field in said discharging space.

4,433,229

ELECTRODE ROLL FOR RESISTANCE WELDING

Yonekichi Morikawa, Shizuoka; Toshio Shimizu; Eichi Yoshida, both of Shimizu; Tsuyoshi Konagaya, Yaizu, and Keizo Hirayama, Tokyo, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

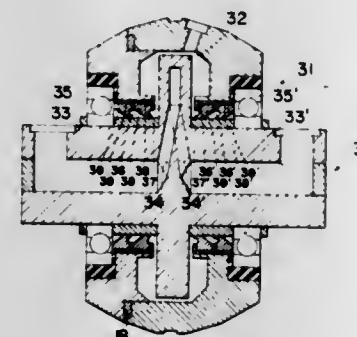
Filed Nov. 16, 1981, Ser. No. 321,927

Claims priority, application Japan, Nov. 29, 1980, 55-168321

Int. Cl.³ B23K 11/06; H01R 39/30

U.S. Cl. 219—84

3 Claims



1. In an electrode roll for resistance welding which includes a fixed portion of stepped tubular form including a shaft and a disc portion at the longitudinal center of said shaft, said disc portion having opposite side surfaces, a peripheral surface and a diameter which is larger than the diameter of said shaft; a rotary portion surrounding said fixed portion, supported in a freely rotatable manner by the end portions of said shaft and having inner surfaces which respectively face said opposite side surfaces of said disc portion to define respective side gaps therebetween, and face said peripheral surface of said disc portion to define a peripheral gap therebetween; and isolation parts adjacent said fixed portion which isolate said side gaps and said peripheral gap air-tightly from the outside and define isolated spaces therein for holding lubricating oil, a conductive liquid metal being held in said side gaps and said peripheral gap, the improvement wherein:

- said peripheral gap has a width which enables it to pull up said conductive liquid metal along said peripheral gap when said rotary portion rotates, so as to fill up said peripheral gap with said conductive liquid metal;
- said side gaps each having a larger width than said width of said peripheral gap; and
- the widths of said side gaps and peripheral gap being such, and the amount of said conductive liquid metal held in said side gaps and said peripheral gap being sufficient, that said peripheral gap is filled up with said conductive liquid metal during rotation of said rotary portion, and the level of said conductive liquid metal in said side gaps is below said isolation parts so as not to enter said isolated spaces, when said electrode roll is allowed to stand nonrotatively

4,433,230

METHOD OF MANUFACTURING A VACUUM VESSEL PROVIDED WITH A RADIATION-PERMEABLE WINDOW

Tetsu Sano, Tokyo; Takezou Yasuzuka; Hisao Ishiwata, both of Yokohama, and Tatsuo Simizu, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

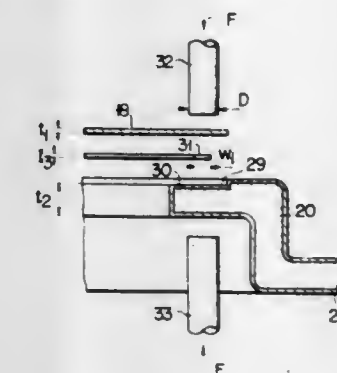
Filed Jun. 3, 1981, Ser. No. 270,214

Claims priority, application Japan, Jun. 5, 1980, 55-74945

Int. Cl.³ B23K 11/20

U.S. Cl. 219—118

4 Claims



1. A method of manufacturing a vacuum vessel, which comprises the steps of:

- superposing a radiation-permeable window member of titanium or alloys thereof, a support frame of iron or alloys thereof and a metal foil insert member having a lower melting point than the transformation point of the window member in such a manner that the metal foil insert member is interposed between the window member and the support frame;
- holding the superposed members between a pair of welding electrodes;
- applying a pressure of 40 to 200 kg/cm² to the welding electrodes;
- conducting an electric current through said electrodes to heat-melt the insert member at a temperature lower than the transformation point of the window member thereby welding the window member and the support frames together; and
- successively carrying out said welding in such a manner that the adjacent welded portions are in contact with each other contiguously all along the periphery of the window member.

4,433,231

ELECTRIC IRON HAVING STACKED THERMOSTAT ASSEMBLY WITH INTEGRAL OVERTEMPERATURE PROTECTION CONTROL

Charles A. Balchunas, Bethany, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 4, 1981, Ser. No. 260,320

Int. Cl.³ H05B 1/02; H01H 37/76; D06F 75/26

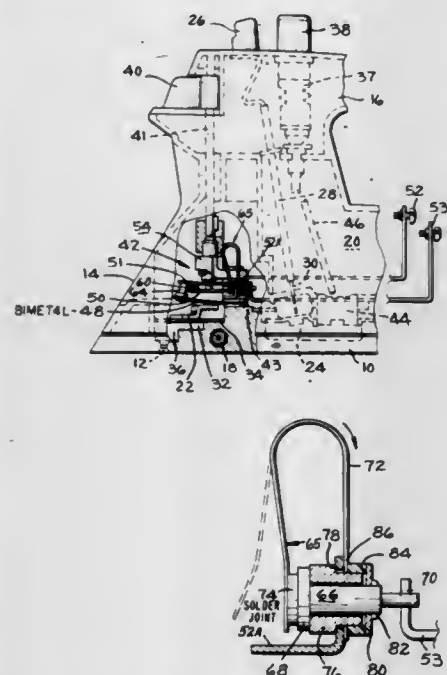
U.S. Cl. 219—253

8 Claims

1. In a stacked thermostat adjustable assembly including a connecting member, a lower heat deformable blade, a conductive intermediate stiff spring blade electrically connected to said member, a first electric terminal, a conductive upper less stiff spring blade electrically connected to a second terminal, with all blades supported, secured, and spaced apart at one end by interposed insulators, and cooperable electrical contacts on said conductive blades for making an electrical circuit therebetween with means transmitting movement between the heat deformable blade to said upper blade to make and break said

electric circuit and control heat to a medium sensed by said thermostat, the improvement of an overtemperature control means as part of said stacked assembly comprising,

- a conducting rivet at said assembly secured and electrically connected to said first electric terminal,
- a conducting compressed spring member soldered at one end to said rivet said solder joint being fusible to melt and break the circuit between said spring member and rivet at a selected temperature,
- insulating means between the other spring end and said first terminal,



said other end of said spring being electrically connected to said connecting member to complete said electrical circuit from said first terminal through said rivet, spring, connecting member, blades and contacts to said second terminal,

said spring extending generally perpendicular to the rivet axis and parallel to and adjacent the stacked assembly, whereby said spring responds to the same heat as said deformable blade in series with said assembly for fast heat response.

4,433,232

HEATING APPARATUS

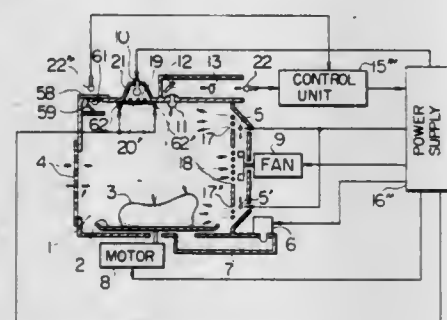
Hajime Tachikawa, Fujisawa, and Shuji Ohkawa, Yokohama, both of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan

Filed May 29, 1981, Ser. No. 268,351

Int. Cl.³ H05B 1/02

U.S. Cl. 219—502

5 Claims



1. A heating apparatus comprising:
 - a heating chamber;
 - heating means capable of heating an object to be heated placed in said heating chamber so that the color of a surface of said object changes to a given extent as the heating progresses;
 - light source means emitting light of visible spectrum range

illuminating the surface of said object placed in said heating chamber;

first photo sensor means for sensing the wavelength of light of visible spectrum range, reflected from the surface of said object being heated;

means for storing an output of said first photo sensor means at an initial heating stage in every heating cycle;

means for judging the degree of charring of the surface of said object in response to the value stored in said storing means and an output from said first photo sensor means which changes in accordance with heating progress;

means for controlling the heating operation of said heating means in response to an output from said judging means; and

second photo sensor means for sensing the intensity of light reflected from the surface of said object being heated, said judging means judging the degree of charring of the surface of said object in response to the output from said first sensor means as well as an output from said second photo sensor means.

4,433,233

SILICON CARBIDE HEATING ELEMENTS

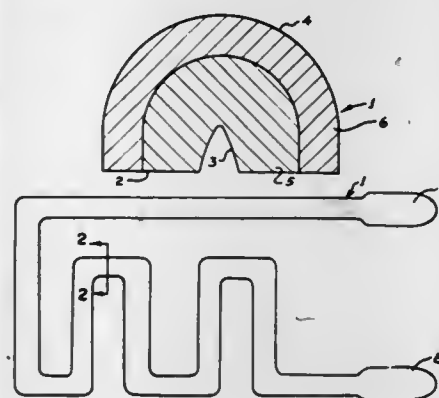
Frank J. Hierholzer, Jr., Florissant; John A. Ancona, Affton, and Gerald L. Shelton, St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 79,424, Sep. 27, 1979, Pat. No. 4,328,529, which is a division of Ser. No. 832,555, Sep. 12, 1977, Pat. No. 4,302,508, which is a continuation of Ser. No. 513,729, Oct. 10, 1974, abandoned. This application Oct. 23, 1981, Ser. No. 314,102

Int. Cl.³ H05B 3/10

U.S. Cl. 219—553

13 Claims



1. In an electrical resistance heating element comprising a heating member formed of silicon carbide and at least one electrical contact held to said heating member, the improvement wherein a part of said contact is embedded in said silicon carbide and is bonded to said silicon carbide by said silicon carbide, and wherein said contact is a metal strip and including at least one opening in said contact, said silicon carbide extending into said opening and forming an interference fit with said contact.

4,433,234

MECHANICAL PRESELECTION COUNTER

Fritz Kübler, VS-Schwenningen, Fed. Rep. of Germany, assignor to Ing. Fritz Kübler, Zählerfabrik GmbH, Schwenningen, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,507

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112678

Int. Cl.³ G06F 15/18

U.S. Cl. 235—132 E

21 Claims

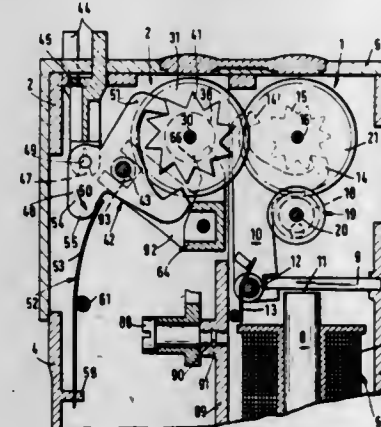
1. A mechanical preselection counter, comprising:
 - a counter provided with figure rollers and a zero-setting device for said figure rollers including means for operative relationship therebetween;

a preselection unit provided with preselection rollers and transmission gears, with the number of said preselection rollers and said transmission gears respectively corresponding to the number of said figure rollers; said transmission gears being operatively connected with said figure rollers and being respectively provided with at least two openings;

an adjustment element associated with each preselection roller for adjusting the latter, said adjustment elements being held in the rest position by spring force;

a coupling device for connecting said adjustment elements with said zero-setting device;

actuating elements for operating said adjustment elements;



keying devices respectively associated with said transmission gears and said preselection rollers, each keying device having at least two axially projecting noses adapted to project through said openings of an associated transmission gear, with said preselection rollers being provided with recesses respectively coordinated with said openings of said transmission gears; and

a releasing rack for loading said keying devices toward said preselection rollers; with the noses of a given keying device being spaced from one another, as well as with the recesses of a given preselection roller being spaced from one another, in such a way that said noses, during a complete rotation of the associated transmission gear, drop into the recesses of an associated preselection roller in only one position.

4,433,235

FOCUSING POSITION DETECTING DEVICE IN OPTICAL MAGNIFYING AND OBSERVING APPARATUS

Nobuyuki Akiyama; Yoshimasa Ohshima, and Mitsuyoshi Koizumi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

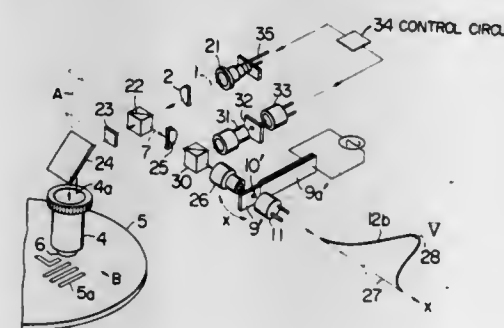
Filed Oct. 9, 1981, Ser. No. 310,240

Claims priority, application Japan, Oct. 9, 1980, 55-140610; May 25, 1981, 56-78096

Int. Cl.³ G01J 1/20, 1/32

U.S. Cl. 250—201

9 Claims



1. A focusing position detecting device in which a laser

beam is directed through an objective lens toward and onto the surface of an object to form a minute spot on the surface of said object, and the beam reflected from the surface of said object is sensed to detect the focusing position of said objective lens, said device comprising:

- (a) laser beam emitting means for emitting the laser beam;
- (b) an incidence optical system guiding the laser beam emitted from said laser beam emitting means toward said objective lens;
- (c) a focusing position detecting optical system guiding from said objective lens the beam reflected from the surface of said object so as to lead said reflected beam toward a concentrating point, said optical system including at least an oscillating plate provided with a pin-hole or a slit in the vicinity of the concentrating point of said reflected beam and arranged for oscillation in the direction of the optical path of said reflected beam and a first photoelectric element converting the intensity of the reflected beam passing through the pin-hole or slit of said oscillation plate into a corresponding electrical quantity;
- (d) a reflected beam intensity measuring optical system receiving a portion of said reflected beam for measuring the intensity of said reflected beam, said optical system including at least a second photoelectric element detecting the intensity of said reflected beam; and
- (e) control means receiving the intensity-indicative output from said second photoelectric element as an input for controlling the intensity of the laser beam emitted from said laser beam emitting means whereby to maintain the constant the intensity-indicative output from said second photoelectric element.

4,433,236

AUTOMATIC BRIGHTNESS CONTROL AND WARNING CIRCUIT FOR IMAGE INTENSIFIER TUBE

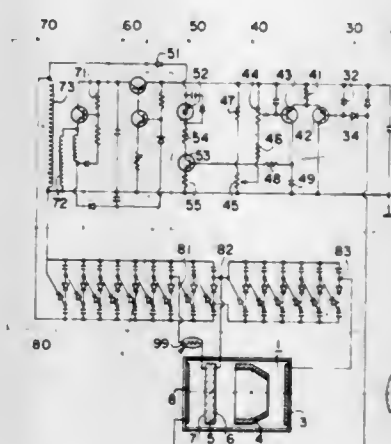
Mitsuhiko Shimada, Hamamatsu, Japan, assignor to Hamamatsu Photonics Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 15, 1981, Ser. No. 330,810

Int. Cl.³ H01J 3/14

U.S. Cl. 250—213 VT

6 Claims



1. An automatic brightness control and warning circuit for an image intensifier tube which includes a photocathode, a microchannel plate having input and output electrodes and a phosphor screen, comprising:

- (a) a screen current rectifying circuit which rectifies a current of the phosphor screen and obtains a signal corresponding to the brightness of the phosphor screen;
- (b) a differential amplifier which compares the signal obtained in the screen current rectifying circuit with a reference signal and generates a signal which increases proportionally to the phosphor screen

signal of the differential amplifier; thereby an internal resistance of the transistor being controlled;

(e) a direct current power source applying a bias voltage to the microchannel plate;

(f) a photoconductor connected with the direct current power source in series with respect to the microchannel plate and photoelectrically coupled to the gas discharge tube; and

(g) a delaying element provided in a path for the signal from an output terminal of the phosphor screen current rectifying circuit and a control input terminal of the transistor; whereby enabling automatic brightness control so as to slightly increase the phosphor screen current in the automatic brightness control region of the brightness of the phosphor screen, and when an incident light into the photocathode is excessive, blinking the phosphor screen by a relaxation oscillation determined by the delaying element and the characteristic of the gas discharge tube.

4,433,237

COATING SYSTEM CONTROL HAVING A SENSOR INTERFACE WITH NOISE DISCRIMINATION

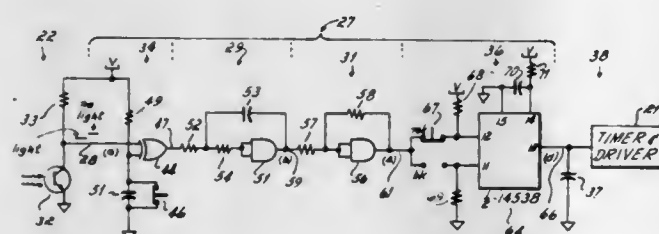
Timothy S. Matt, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Sep. 14, 1981, Ser. No. 301,522

Int. Cl.³ G01V 9/04

U.S. Cl. 250—222.1

10 Claims



1. In a system for automatically coating objects with a coating material having means for discharging the coating material in response to a control signal, means for moving the objects relative to the discharge means in a path past the discharge means and a timing and driver circuit for generating, in response to a sensor signal at an input, a delayed control signal which is coupled to the discharge means, an improved sensor circuit arrangement comprising:

object detecting means, including a sensor positioned along the path, for producing an object detection signal at an output when an object reaches a particular position along the path;

an integrator coupled to the output of the object detecting means operable to produce at an output a signal representative of the integral of the detecting means output; and a trigger circuit coupled to the integrator output and operable to produce a wave having substantially sharp edges at an output which is coupled to the input of the timing and driver circuit.

4,433,238

OPTICAL MEASUREMENT SYSTEM FOR SPECTRAL ANALYSIS

Morgan Adolfsson; Torgny Brogårdh; Sture Göransson, and Christer Övren, all of Västerås, Sweden, assignors to Asea Aktiebolag, Västerås, Sweden

Filed Oct. 19, 1981, Ser. No. 312,750

Claims priority, application Sweden, Oct. 21, 1980, 8007376

Int. Cl.³ G02B 5/14

U.S. Cl. 250—227

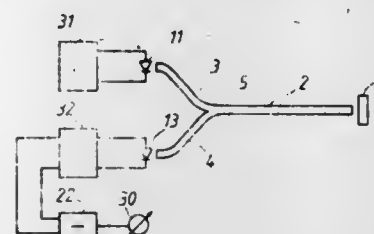
20 Claims

1. An optical measuring device for measuring at least one parameter of an object at a given location, which device comprises:

a source of incident light which incident light, during a

parameter-measuring operation, has a given spectral distribution,

a sensor adapted to be positioned at said given location and to emit output light when irradiated by said incident light, the spectral response of said output light to said incident light during a parameter-measuring operation being changed by a change in the parameter to be measured,



a light detector adapted to generate an output measuring signal when irradiated, during a parameter-measuring operation, with said output light from said sensor, optical means for transmitting incident light to said sensor and transmitting output light from said sensor to said light detector, and electronic means for sensing and controlling the temperatures of the light source and the light detector in intervals when the parameter-measuring operation is discontinued.

4,433,239

METHOD AND APPARATUS FOR ON-LINE MONITORING OF BITUMEN CONTENT IN TAR SAND

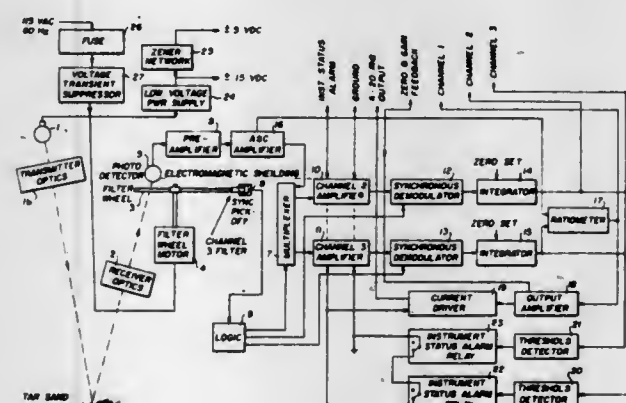
Gordon R. Thompson, Edmonton, Canada, assignor to Petro-Canada Exploration Inc., Calgary

Filed Feb. 12, 1981, Ser. No. 233,992

Int. Cl.³ G01V 9/04; G01J 3/38

U.S. Cl. 250—255

2 Claims



1. A method for monitoring the bitumen content trends of an advancing layer of tar sand, comprising:

shining an uninterrupted beam of near infrared radiation onto the surface of said advancing tar sand to produce reflected radiation;

filtering a first portion of the reflected radiation through a first filter which passes only wavelengths of about 2180 to about 2260 nm;

filtering a second portion of reflected radiation through a second filter which passes only wavelengths of about 2270 to about 2350 nm;

sensing the radiation passed by the first filter and producing an electrical signal indicative of its intensity;

sensing the radiation passed by the second filter and producing an electrical signal indicative of its intensity;

establishing a ratio of said signals and producing an electrical output indicative of said ratio and which is indicative of the bitumen content of the tar sand; and

continuing the foregoing steps sufficiently frequently to give

a reading representative of the bitumen content of the tar sand.

4,433,240

METHOD AND APPARATUS FOR MEASURING GAMMA RAYS IN A BOREHOLE

Bronislaw Seeman, Meudon, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

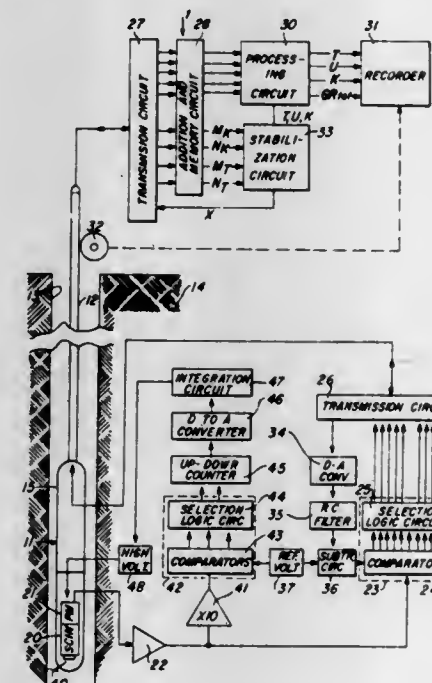
Filed Jun. 4, 1981, Ser. No. 270,670

Claims priority, application France, Jun. 25, 1980, 80 14066

Int. Cl.³ G01V 5/00

U.S. Cl. 250—256

29 Claims



1. An apparatus for measuring gamma rays coming from formations traversed by a borehole, comprising:

detection means for converting the gamma rays into electric pulses whose amplitudes are related to the energies of the gamma rays;

discrimination means for sorting these electric pulses according to their amplitudes in order to furnish information on the energy spectrum of the received gamma rays, said discrimination means comprising means for separating the electric pulses at least into two first contiguous windows located on each side of a first predetermined value and into two second contiguous windows located on each side of a second predetermined value, said predetermined values corresponding to two reference peaks wherein at least one of said reference peaks is a peak provided by thorium, uranium, or potassium gamma ray spectra coming from the formations;

means responsive to the pulses of said first and second windows in order to generate an error signal; and

means responsive to said error signal for modifying the response of the measurement apparatus in order to stabilize said response.

4,433,241

PROCESS AND APPARATUS FOR DETERMINING MOLECULE SPECTRA

Ulrich Boeal, Sommerstr. 7, 8000 München 90; Hans J. Neusser, Eggmühlerstr. 6, 8000 München, and Edward W. Schlag, Osterwaldstr. 91, 8000 München 40, all of Fed. Rep. of Germany

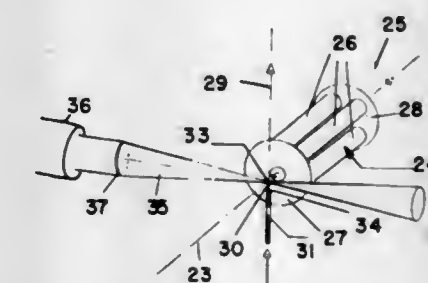
Continuation of Ser. No. 97,643, Nov. 27, 1979, abandoned. This application Feb. 16, 1982, Ser. No. 349,322

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942386

Int. Cl.³ B01D 59/44

U.S. Cl. 250—282

11 Claims



7. A method for determining molecular spectra of isotopic mixtures comprising the steps of:

(a) introducing unseparated isotopic mixtures of molecules having a structured spectrum through a nozzle means to form an effluent molecular beam;

(b) directing said molecular beam from said nozzle means into a photoreaction vessel along a first axis;

(c) directing a laser beam along a second axis substantially perpendicular to said first axis within said photoreaction vessel;

(d) focusing said laser beam to a point within said molecular beam;

(e) adjusting the wavelength of said laser beam within a spectral range included within said structured spectrum;

(f) adjusting the intensity of said laser beam to perform stimulation of selected molecules in said molecular beam to energy levels just above the ionization threshold thereof by at least two absorption steps to ionize said selected molecules;

(g) accelerating the selected molecules so ionized along a third axis in said reaction vessel perpendicular to a plane formed by said first and second axes;

(h) providing a mass spectrometer on said third axis for determining the concentration of selected masses of said ionized selected molecules; and

(i) correlating said mass concentrations of the selected wavelengths of said laser beam to produce a two-dimensional molecular spectra having parameters of wavelength and mass, whereby the geometrical relationship between said laser beam, molecular beam and said beam of ionized molecules causes the immediate separation of ionized molecules from unionized molecules within the photoreaction vessel and enhances the ionization efficiency of said photoreaction vessel.

4,433,242

ESR HOLLOWS MOLTEN METAL/SLAG INTERFACE DETECTION

Bernard Harris, Chelmsford, Mass., and Howard J. Klein, Kokomo, Ind., assignors to Cabot Corporation, Boston, Mass.

Filed Aug. 20, 1981, Ser. No. 294,536

Int. Cl.³ G01N 23/00; G01T 1/20

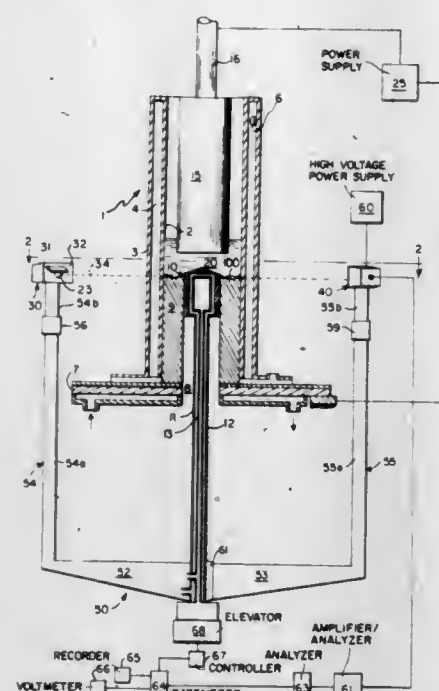
U.S. Cl. 250—358.1

16 Claims

1. In an ESR hollows furnace comprising a crucible; a mandrel located substantially coaxially within said crucible, said mandrel being upwardly driven to define a progressive annular casting zone between said mandrel and said crucible; and means to deliver a consumable metallic electrode into said

crucible and to maintain a substantially constant spacing between the upper end of said mandrel and the lower end of said electrode, the improvement which comprises: a molten metal slag interface detection system comprising a gamma radiation source and a scintillation counter, said source and said counter each being stationed exterior said crucible, means to maintain said source and said counter in fixed spatial relationships with

higher value upon scanning of said reference mark than upon scanning said sample.



respect to said mandrel and to one another, said source being oriented to direct a gamma radiation beam therefrom along a radiation path which traverses said annular casting zone without direct contact of said beam with said mandrel, said counter being oriented to sense said source radiation beam upon traversal thereof through said annular casting zone and said crucible and said counter being operative to produce a detectable electrical signal responsive to said sensed beam.

4,433,243

ELECTRON BEAM EXPOSURE APPARATUS
Kazumitsu Nakamura, Katsuta, and Masaru Miyazaki, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

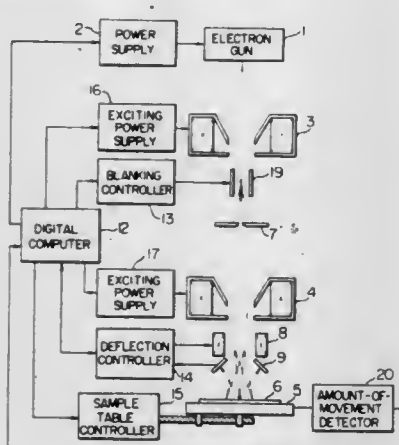
Filed Jul. 30, 1981, Ser. No. 288,451

Claims priority, application Japan, Aug. 1, 1980, 55-105017

Int. Cl.³ G01K 1/08; B23K 15/00

U.S. Cl. 250—397

10 Claims



1. An electron beam exposure apparatus comprising:
means for generating an electron beam;
means for scanning a reference mark formed on a sample by said electron beam so as to determine the position of the reference mark, and for scanning said sample so that a predetermined pattern with respect to the position of said reference mark is formed on said sample; and
means for changing the energy of said electron beam to a

4,433,244 APPARATUS FOR IRRADIATING TUBING CONNECTIONS

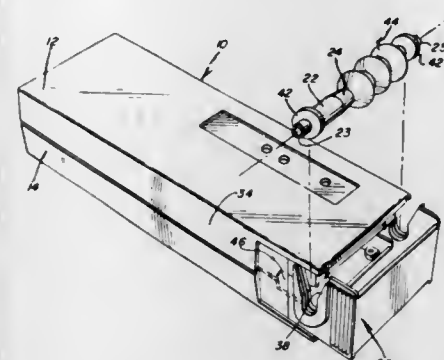
Lawrence R. Hogan, Lake Villa, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 19, 1982, Ser. No. 359,740

Int. Cl.³ A61L 2/10; G21K 5/08; H01J 37/20

U.S. Cl. 250—455.1

17 Claims



1. In apparatus for irradiating a connected pair of tubing ends for antibacterial effect therein, the improvement comprising, in combination:

a housing which carries an antibacterial radiation source; a drawer means slidable into and out of said housing, said drawer means defining a pair of vertical slots in opposed side walls thereof having open upper ends for receiving and positioning said connected tubing ends in the drawer means when the drawer means is in open position, and moving the tubing ends into proximity with the antibacterial radiation source by closing of the drawer means.

4,433,245

FRAUNHOFER LINE DISCRIMINATOR

Sherman K. Poultney, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 25, 1982, Ser. No. 342,613

Int. Cl.³ F21V 9/16

U.S. Cl. 250—458.1

13 Claims

1. An apparatus for detecting fluorescence of materials in a sunlit scene, comprising,
optical means directed to receive reflected sunlight from the scene,
said optical means comprising,
first means providing a fringe pattern of a preselected Fraunhofer line,
second means focusing said fringe pattern at a predetermined focal plane,
a first plurality of light detectors disposed to receive light from a selected ring in said fringe pattern,
a second plurality of light detectors disposed to receive light away from said selected ring,
each one of said second plurality of light detectors being adjacent an associated one of said first detector,
processor means connected to said light detectors for calculating the fluorescence in the light detected from each individual spot in a scene viewed by each of said first plurality of light detectors.

4,433,246 BLACKBODY RADIATION SOURCE FOR PRODUCING CONSTANT PLANAR ENERGY FLUX

Richard S. Muka, Topsfield, and Carl J. Russo, Ipswich, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.
Division of Ser. No. 262,838, May 12, 1981. This application
May 28, 1982, Ser. No. 382,852
Int. Cl.³ H05B 1/00

U.S. Cl. 250—492.1

3 Claims



1. A blackbody radiation source for producing a constant planar energy flux including infrared radiation in combination with a support member for positioning a semiconductor wafer in close coupled opposition to said source, said support member comprising refractory metal internal thermal shield means positioned on the opposite side of said source from said wafer, for reflecting said infrared radiation and reducing thermal losses, and said internal shield means comprising a concave shield member for receiving said semiconductor wafer for thermal treatment, thereby providing uniform heating through the thickness of said wafer.

4,433,247

BEAM SHARING METHOD AND APPARATUS FOR ION IMPLANTATION

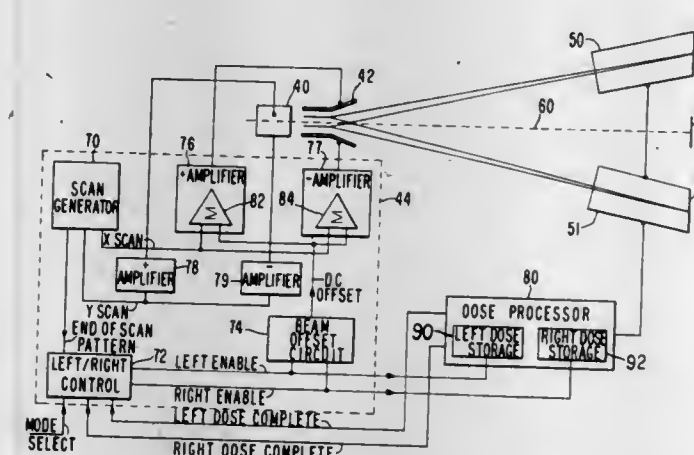
Norman L. Turner, Gloucester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 28, 1981, Ser. No. 306,056

Int. Cl.³ G01N 23/00

U.S. Cl. 250—492.2

5 Claims



1. Apparatus for ion implantation of at least two workpieces mounted in fixed positions in said apparatus during ion implantation, said apparatus comprising:
means for production of an ion beam having a straight segment with a longitudinal axis;
ion beam scanning means comprising
means for successively and repetitively directing said beam from said longitudinal axis to each workpiece for a predetermined time interval which is small in comparison with the thermal time constant of each workpiece when mounted in said apparatus,
means for deflecting said beam during each of said time intervals in a two-dimensional scan pattern over the surface area of the one of said workpieces to which said beam is directed, and
means for synchronizing said scan pattern to said time interval such that an integral number of scan patterns is completed during each time interval; and
means for individually measuring ion beam dosage of each

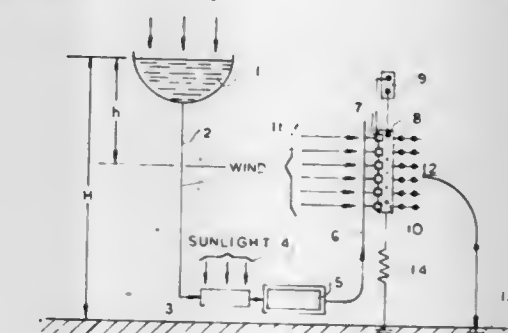
workpiece and for discontinuation of ion beam scanning when a predetermined ion beam dosage is measured, whereby the temperature rise of each workpiece is less than that produced when said workpiece is implanted on a continuous basis and the ion beam dosage applied to each workpiece is uniform over the surface area of the workpiece and is accurately controlled.

4,433,248 CHARGED AEROSOL WIND/ELECTRIC POWER GENERATOR WITH SOLAR AND/OR GRAVITATIONAL REGENERATION

Alvin M. Marks, 166-35 Ninth Ave., Whitestone, N.Y. 11357
Filed Apr. 7, 1982, Ser. No. 366,139
Int. Cl.³ H02N 1/00

U.S. Cl. 290—44

17 Claims



1. A charged aerosol generator and a load combination, comprising a charged liquid droplet emitter means, a gas stream, a grounded collector electrode at a distance from said emitter means, a load, said load being connected between said emitter means and said collector electrode, the said emitter means producing charged droplets which have a ratio of radius to number of electron charges of at least 100 Å per electron charge, said gas stream flowing around said emitter means and receiving said charged droplets whereby the heat/kinetic power of said gas stream is transduced to electric power at said load, and a solar source to supply power to said emitter means.

4,433,249

ENERGY CONSERVATION SYSTEM

Walter E. Long, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 11, 1981, Ser. No. 301,180

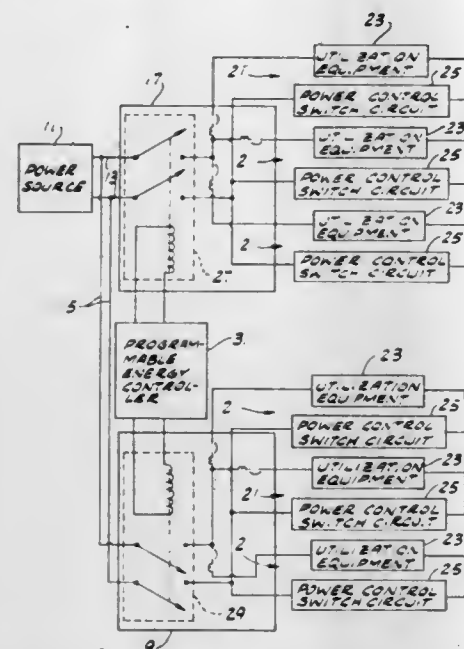
Int. Cl.³ H02J 1/00

U.S. Cl. 307—31

13 Claims

1. An energy conservation system for use with a power source which supplies power over premises wiring to utilization equipment such as lighting equipment and the like, said system comprising:
means independent of the magnitude of the electrical load drawn by the utilization equipment for temporarily interrupting at predetermined times the supplying of power from the power source to at least a portion of the utilization equipment; and
at least one switching circuit connected in series between the power source and said portion of the utilization equipment, said switching circuit being responsive to the temporary interruption of power to open the circuit between the power source and said portion of the utilization equipment.

ment and to maintain said circuit open after the temporary interruption of power ceases, thereby automatically deen-



energizing said portion of the utilization equipment upon interruption of the power.

4,433,250

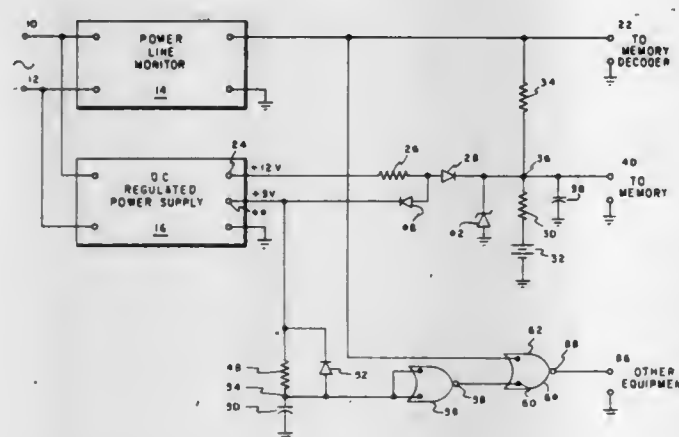
POWER SUPPLY CONTROL APPARATUS
Jawed M. Khan, Clearwater, Fla., assignor to GTE Business Communication Systems Inc., McLean, Va.

Filed Jul. 29, 1982, Ser. No. 402,867

Int. Cl.³ H02J 9/00

U.S. Cl. 307-66

5 Claims



1. Apparatus adapted for connection to an alternating current source and a direct current power supply powered by said source, said supply being operative when the source is enabled and being disabled when the source is inoperative, said apparatus comprising:

- first, second and third terminals;
- a power line monitor connected at its input to said source and at its output to said first terminal, said monitor being operative to maintain said first terminal at a selected potential when the source is operative, said monitor being rendered inoperative and being unable to maintain said first terminal at any potential when said source is inoperative;
- a battery;
- a first resistor connected in circuit with said battery;
- first means connected to said supply, said first resistor and said second terminal to charge said battery and to maintain said second terminal at a selected potential when the supply is disabled;
- a second resistor connected between said first resistor and

said first terminal to maintain said first terminal at a different potential when said monitor is inoperative; and second means connected to said first terminal, said supply, and said third terminal to maintain said third terminal at a selected potential when said monitor is operative and to maintain said third terminal at a different potential when said monitor is inoperative, said second means including a NOR gate having an output connected to said third terminal, a first input coupled to said supply and a second input connected to said first terminal.

4,433,251

POWER SUPPLY CIRCUITRY

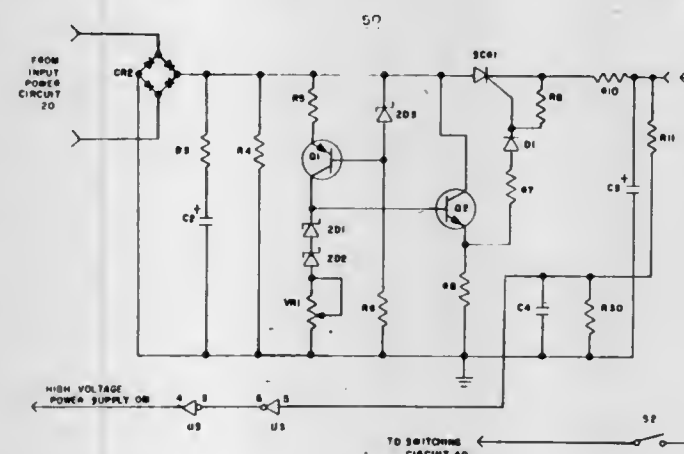
William D. Banks; Frank G. Bond, both of Shrewsbury, and Raymond L. Naylor, Framingham, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Sep. 21, 1981, Ser. No. 304,298

Int. Cl.³ H03K 17/56, 17/60, 3/26

U.S. Cl. 307-246

3 Claims



1. Improved drive circuitry of the type including an electrical storage element, means for routing electrical energy from said electrical storage element to a load during "on" periods, and means for recharging said electrical storage element during intervening "off" periods, a time-varying potential, a silicon controlled rectifier for receiving said time-varying potential and delivering a recharging current to said electrical storage element, and a threshold regulating means for establishing a predetermined voltage at the gate of said silicon controlled rectifier,

wherein the improvement comprises an improved threshold regulating means for said silicon controlled rectifier comprising a zener diode, and means for providing an essentially constant current through said zener diode.

4,433,252

INPUT SIGNAL RESPONSIVE PULSE GENERATING AND BIASING CIRCUIT FOR INTEGRATED CIRCUITS

Scott C. Lewis, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,438

Int. Cl.³ H03K 5/135, 17/284; H03L 1/00

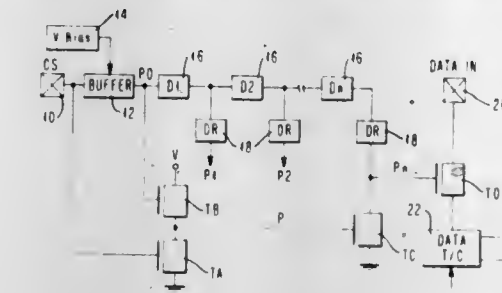
U.S. Cl. 307-269

14 Claims

1. A signal generating circuit for an integrated circuit device responsive to first and second externally applied input signals occurring at an externally determined time interval, including a first internal signal generating circuit responsive to the first external signal for generating a first internal signal, a second internal signal generating circuit responsive to the first internal signal for generating a second internal signal having a predetermined timing relationship with the second external input signal, the second internal signal generating circuit being responsive to variations in device and environmental parameters such that the time interval between the first and second internal signals is variable, wherein the first internal signal generating circuit is characterized by:

means for causing the time interval between the first input

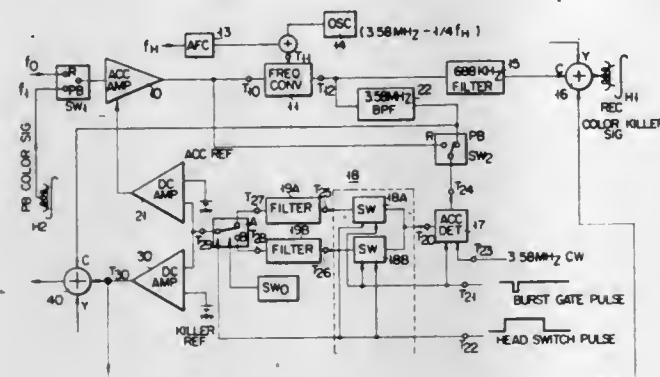
signal and the first internal signal to vary inversely as the time interval between the first internal signal and the second internal signal in response to the same parameters which cause the time interval between the first internal



to a sampling pulse when in a low impedance state and disconnecting said sample signal input terminal from said first hold circuit in response to said sampling pulse when in a high impedance state;

a second hold circuit;

a second sample signal gate circuit for connecting said sample signal input terminal and said second hold circuit in response to said sampling pulse when in a low impedance state and disconnecting said sample signal input terminal from said second hold circuit in response to said sampling



pulse when in a high impedance state, said second sample signal gate circuit functioning in complementary fashion with respect to said first sample signal gate circuit; gate circuit driving means for selectively and complementarily driving said first and second sample signal gate circuits in response to a control pulse having a different period than that of said sampling pulse; and sample signal gate circuit control means for forcing one of said first and second sample signal gate circuits, which is not driven by said gate circuit driving means, to be in a high impedance state in response to said control pulse.

4,433,256

LIMITER WITH DYNAMIC HYSTERESIS

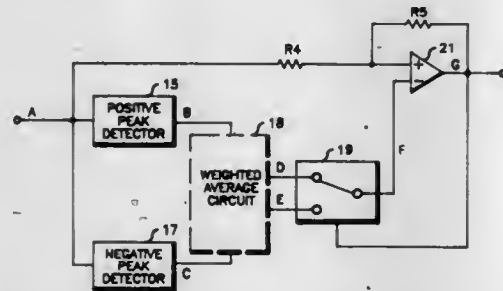
Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1982, Ser. No. 395,208

Int. Cl.³ H03K 5/08, 5/153

U.S. Cl. 307—358

8 Claims



1. A method for creating a limiter circuit with dynamic hysteresis comprising the steps of:

- (1) detecting the positive and negative peaks of an input waveform,
- (2) taking at least two weighted averages of said positive and negative peaks,
- (3) alternately choosing one of said weighted averages,
- (4) comparing said input waveform with said chosen weighted average,
- (5) generating a first output signal if the chosen weighted average is greater than the input waveform and generating a second output signal if the chosen weighted average is less than the input waveform.

4,433,257

VOLTAGE SUPPLY FOR OPERATING A PLURALITY OF CHANGING TRANSISTORS IN A MANNER WHICH REDUCES MINORITY CARRIER DISRUPTION OF ADJACENT MEMORY CELLS

Hiroyuki Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

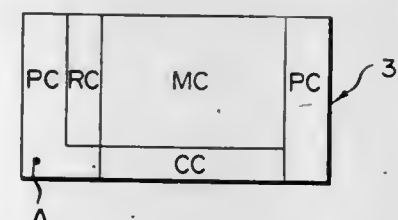
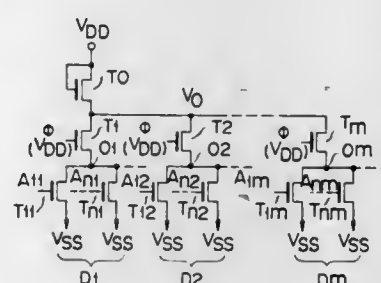
Filed Feb. 24, 1981, Ser. No. 237,699

Claims priority, application Japan, Mar. 3, 1980, 55-26415; Apr. 3, 1980, 55-43870

Int. Cl.³ H03K 3/013, 17/16

U.S. Cl. 307—443

29 Claims



1. A MOS integrated circuit device comprising: a plurality of charge retention circuit elements formed on a semiconductor substrate;
- a peripheral circuit for operation of said charge retention circuit elements having charging transistors which provide logic signals at their source electrodes, said charging transistors being formed on the semiconductor substrate and positioned near to the charge retention circuit elements, a first voltage being applied to the gate electrodes of said charging transistors; and
- voltage supply means formed on the semiconductor substrate for supplying a second voltage to the drain electrodes of said charging transistors, said second voltage cooperating with said first voltage to operate the charging transistors in a triode region for a predetermined time thereby to prevent the charge retention characteristics of the charge retention circuit elements from being degraded.

4,433,258

COMPLEMENTARY SCHOTTKY TRANSISTOR LOGIC CIRCUIT

Kenji Kaneko, Hachioji; Takahiro Okabe, Tokyo; Minoru Nagata, Kodaira, and Yutaka Okada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 245,163

Claims priority, application Japan, Mar. 18, 1980, 55-34380

Int. Cl.³ H03K 19/092, 19/088

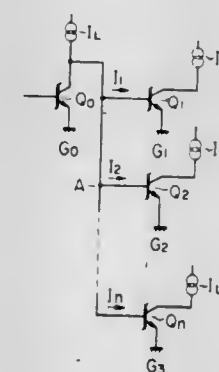
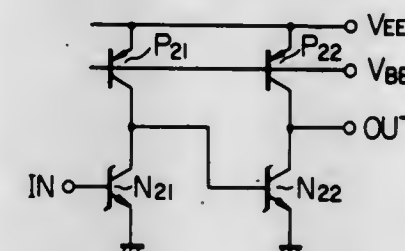
U.S. Cl. 307—456

12 Claims

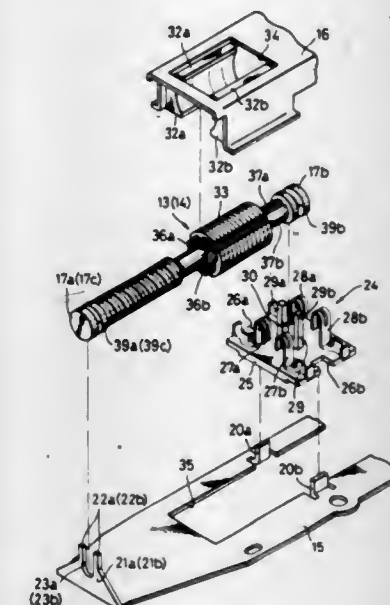
1. A logic circuit comprising a plurality of basic circuits each including at least one single-collector driver transistor provided with a clamping Schottky diode, the emitter of said driver transistor being grounded, the base of said driver transistor being used as an input terminal and the collector thereof being used as an output terminal for said basic circuit, each of said basic circuits further including a constant current load transistor coupled to said output terminal of each said basic circuit, wherein the output terminal of a preceding stage basic

circuit is coupled directly to the input terminal of the subsequent stage basic circuit, said logic circuit further comprising means for adjusting the amplitude of said constant current provided by each of said constant current load transistors to operate the driver transistor of the subsequent stage, with said clamping Schottky diode forward biased, in a shallow saturation mode when said subsequent stage driver transistor is in an ON state.

10. A logic circuit comprising a plurality of basic circuits each including at least one single collector driver transistor provided with a clamping Schottky diode, the emitter of said driver transistor being grounded, the base of said driver tran-



pole faces facing radially toward each other and being spaced apart in a direction parallel with said base plate by a minimum distance greater than the maximum diametrical dimension of said rotor magnet, said field yoke having



an open side between said pole faces so that said rotor magnet can extend through said open side and in between said pole faces when said field yoke is displaced toward said base plate after the reception of said bearings by said bearing receiving means.

4,433,260

HYSTERESIS SYNCHRONOUS MOTOR UTILIZING POLARIZED ROTOR

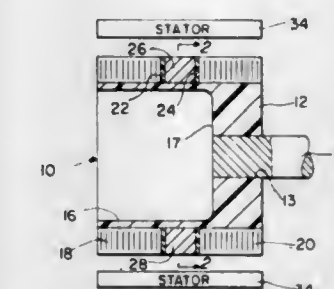
Leon E. Welsbord, Secaucus, and Francis W. Wessbecher, Morris Plains, both of N.J., assignors to The Slinger Company, Little Falls, N.J.

Filed Oct. 12, 1982, Ser. No. 433,714

Int. Cl.³ H02K 21/12

U.S. Cl. 310—156

7 Claims



ELECTRIC ROTATING MACHINE

Toshihiko Okamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,804

Claims priority, application Japan, Dec. 24, 1980, 55-186036[U]

Int. Cl.³ H02K 5/00

U.S. Cl. 310—89

18 Claims

1. An electric rotating machine comprising: a rotor assembly including a rotor shaft, a rotor magnet disposed on said shaft with radial pole faces thereon, a pair of bearing supporting opposite ends of said shaft, and a rotary motion transmitting element disposed on said shaft; a base plate having bearing receiving means thereon formed to receive said bearings in directions perpendicular to said base plate when said rotor assembly is displaced toward said base plate with said rotor shaft extending substantially parallel with said base plate; and a field yoke formed of magnetic material and having at least one field magnet disposed therein with opposite magnetic

1. In a hysteresis synchronous motor having a centrally disposed shaft having a longitudinal axis and a stator coaxial with the shaft and a rotor assembly, said rotor assembly comprising:

- connecting means for mounting the rotor assembly on the shaft;
- first and second hysteresis rings coaxial with the shaft and mounted in axially spaced relationship to each other;
- a plurality of peripherally spaced coplanar juxtaposed arcuate-shaped permanent magnets located in radially spaced coaxial relation to the shaft and forming an annular assembly located between the rings, the magnets having similar poles positioned in confronting relation to form a flux distribution around the periphery of the rotor, the distribution characterized by sharp flux peaks in the vicinity of the confronting poles, together with a first and second non-magnetic spacing means located between first and second confronting surfaces of the magnets and axially spaced said first and second hysteresis rings disposed on

either side thereof for limiting the magnetic shunting effect of the rings.

4,433,261

ROTOR FOR PERMANENT MAGNET TYPE SYNCHRONOUS MOTORS

Masayuki Nashiki, and Yoshio Hamada, both of Nagoya, Japan, assignors to Kabushiki Kaisha Okuma Tekkoshu, Nagoya, Japan

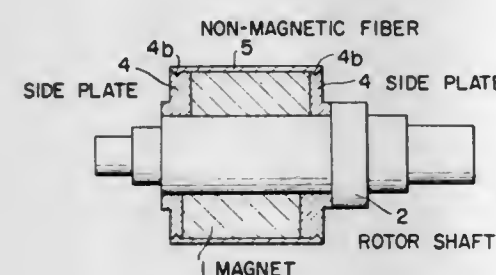
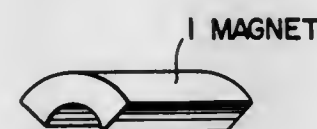
Filed Mar. 8, 1983, Ser. No. 473,342

Claims priority, application Japan, Mar. 24, 1982, 57-46603

Int. Cl.³ H02K 21/14

U.S. Cl. 310-156

5 Claims



1. A rotor of a permanent magnet type synchronous motor of the type that a plural number of columnar magnets having sectorial cross section are adhered to a rotor shaft on the outer periphery thereof, which is characterized in that end surfaces of at least one of said magnets are made to project in axial direction, that side plates of non-magnetic material having grooves of the same configuration as the section of said magnets are placed on both sides of said magnets so as to engage the grooves with the magnet end surfaces facing thereto and are fixed to said rotor shaft by means which can prevent circumferential displacement, and that the outer periphery of at least said magnets is wound with non-magnetic fibers and secured with resin.

4,433,262

METHOD OF LOCKING CONDUCTORS IN A DYNAMOELECTRIC MACHINE ROTOR AND ROTOR HAVING LOCKED CONDUCTORS

Paul W. Greenlee, Hendersonville, Tenn., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 30, 1978, Ser. No. 965,034

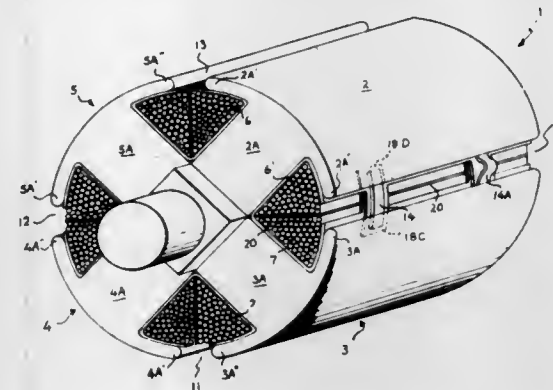
Int. Cl.³ H02K 3/48

U.S. Cl. 310-214

7 Claims

1. In a dynamoelectric machine rotor with a plurality of salient poles and coiled conductors randomly wound on said poles, the improvement comprising a plurality of stiff, deformable locking members each positioned, respectively, to span a predetermined axially limited portion of the coiled conductors in a slot defined by two adjacent poles and to place the opposite ends of each locking member, respectively, under a tip portion of one of said adjacent poles, thereby to place each locking member in compressive engagement against a respective one of said axially limited portions of the conductor to lock them in the slot, the combined axial length of said predetermined axially limited portions comprising less than twenty percent of the axial length of said slot, and including a sheet of insulating paper disposed around the coiled conductors in said

slot to insulate them from the poles defining the slot, said sheet of insulating paper being generally coextensive with the walls of said slot immediately adjacent the coiled conductors, except



for tab portions of said sheet of paper that extend from at least one of the edges thereof and under said locking members thereby to insulate the locking members from the conductors.

4,433,263

COMMUTATOR HAVING SEGMENTS WITH A VARIED DIMENSION

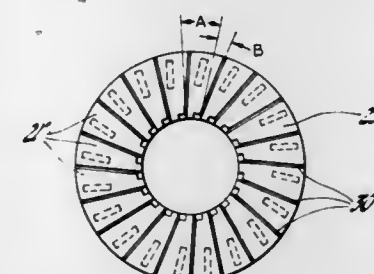
Richard E. Longhouse; William D. Cornwell, Jr., both of Dayton, and Harry C. Buchanan, Jr., Spring Valley, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 23, 1982, Ser. No. 391,127

Int. Cl.³ H02K 13/04

U.S. Cl. 310-233

4 Claims



1. A commutator of the type adapted to be rotationally driven by a dynamoelectric machine and having a plurality of spaced, electrically conducting segments adapted to consecutively contact at least one stationary, electrically conducting brush member as the commutator is rotationally driven, each of said segments having a physical dimension (A) determining the relative time duration of brush contact with said segment during said rotation, said commutator being subject to the generation of audible tonal brush noise between said brush and said consecutive segments during said rotation which includes frequency components including a fundamental frequency component at a frequency related to the frequency at which said consecutive segments pass said brush, wherein said physical dimension (A) of said consecutive segments varies from each segment to the next according to a predetermined pattern effective to vary the relative time of brush contact from each segment to the next during said rotation and thus reduce the amplitude of said fundamental frequency component relative to other frequency components, whereby said brush noise is made less tonal in character and thus less annoying.

4,433,264

ELECTRODE STRUCTURE FOR A ZINC OXIDE THIN FILM

Hiroshi Nishiyama, and Takeshi Nakamura, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

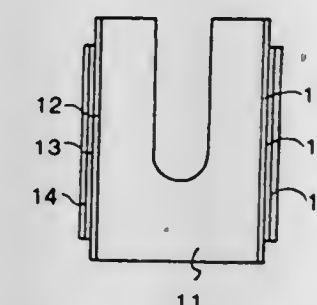
Filed Jun. 3, 1983, Ser. No. 500,828

Claims priority, application Japan, Jun. 30, 1982, 57-114445

Int. Cl.³ H01L 41/08

U.S. Cl. 310-321

7 Claims



1. An electrode structure for a zinc oxide thin film comprising an electrode and a SnO₂ layer between the surface of the zinc oxide thin film and the electrode.

4,433,265

COOLED DISCHARGE LAMP HAVING A FLUID COOLED DIAPHRAGM STRUCTURE

Helmut Fischer, Hanau; Jürgen Schäfer, Hasselroth, and Günter Thomas, Hanau, all of Fed. Rep. of Germany, assignors to Original Hanau Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

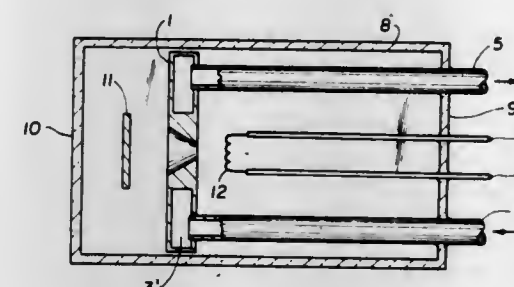
Filed Jun. 3, 1980, Ser. No. 156,104

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923724

Int. Cl.³ H01J 61/34, 61/52, 61/64

U.S. Cl. 313-22

16 Claims



1. Cooled discharge lamp, particularly for generation of specific spectral output comprising a closed, gas-tight lamp housing (8, 9, 10) formed with a window (10); a cathode (12) and an anode (11) positioned in alignment with said window in the housing; electrical current supply conductors (6, 7) extending through the lamp housing and connected to the cathode, a metal diaphragm structure (1) formed with a diaphragm opening (2) therethrough and positioned between said cathode and anode, and metallic cooling fluid supply and removal duct means (4, 5) sealed into and extending through the walls of the lamp housing into the interior thereof, and wherein the diaphragm structure is disk-like and formed with interior duct means (3, 3'), said fluid supply duct means being connected to said interior duct means.

4,433,266

ELECTRICAL IGNITION PROBE MEANS AND METHOD OF MAKING THE SAME

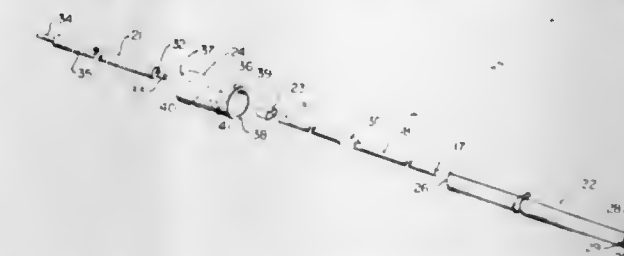
Fred Riehl, Greensburg, Pa., assignor to Robert Shaw Controls Company, Richmond, Va.

Filed Mar. 6, 1981, Ser. No. 241,003

Int. Cl.³ H01T 13/04; F23Q 3/00, 3/70

U.S. Cl. 313-135

20 Claims



1. In an electrical ignition probe means having an electrode wire provided with a sparking end and an opposed end spliced to an end of an ignition wire that has electrical insulation thereon and disposed inboard of said end of said ignition wire, said probe means having a rigid electrically insulating body provided with opposed ends and telescoped on said electrode wire in such a manner that said opposed ends of said body are respectively disposed inboard of said ends of said electrode wire, and electrically insulating means overlapping adjacent parts of said body and said electrical insulation on said ignition wire to electrically insulate the spliced ends of said electrode wire and said ignition wire, the improvement wherein said insulating means comprises a rigid electrically insulating tubular member having opposed ends and an opening means passing through said opposed ends thereof and telescopically receiving said spliced ends and said adjacent parts of said electrode wire and said ignition wire therein.

4,433,267

CRT INTERNAL CONTACTOR POSITIONING MEANS

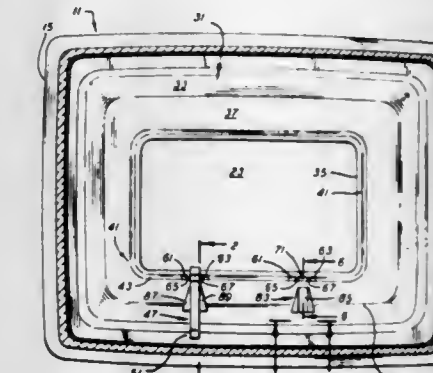
Alan T. Kuryla, Geneva; Carl W. Penird, Waterloo, and Peter G. Puhak, Seneca Falls, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,920

Int. Cl.³ H01J 29/06

U.S. Cl. 313-402

8 Claims



1. An improvement in a cathode ray tube having a longitudinal axis therethrough and an internal magnetic shielding member spatially positioned within the coated funnel portion thereof, said shielding member being formed as a substantially continuous bowl-like sidewall having a substantially full frontal opening and a smaller rear opening defined by the terminal perimeter of a continuous ledge instanding toward said axis from a transition region between said ledge and said sidewall, said ledge having a fluting formed therein adjacent the terminal perimeter thereof; said shielding member having at least one associated longitudinal metallic contactor formed as an integration of a clip-type attachment element, an opposed contact element and an intermediate flexural element, said attachment element being affixed to said fluting to orient said

contactor in a position to make electrical connection with said funnel coating, said improvement being positioned means for maintaining accurate placement of said contactor on said shielding member, said means comprising: the combination of a pair of like spatially-related nubs formed of material raised from said fluting at two spaced apart cuts therethrough located on both sides of said contactor; and trough-like retention means formed as an indentation in said ledge and adjacent sidewall portion of said shielding member extending through the transition region thereof, said retention means being substantially in line with said nubs and dimensioned to accommodate placement of at least a portion of the flexural element of said contactor therein.

4,433,268

DEFLECTION YOKE FOR A COLOR CATHODE RAY TUBE

Junichi Arisato, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

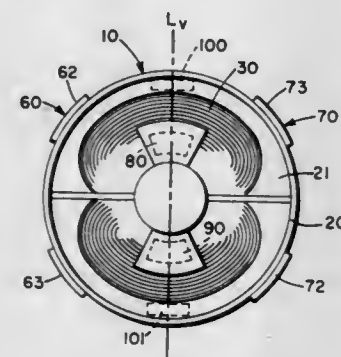
Filed Jun. 19, 1981, Ser. No. 275,156

Claims priority, application Japan, Aug. 20, 1980, 55-114523

Int. Cl.³ H01F 3/12

U.S. Cl. 313-440

6 Claims



1. A deflection yoke for a color cathode ray tube having a substantially rectangular screen comprises: a substantially cylindrical core surrounding said tube; a pair of horizontal deflection coils between said tube and said core for generating a horizontal deflection magnetic field having a pincushion distribution; a pair of vertical deflection coils wound around said core and facing each other for generating a vertical deflection magnetic field having a pincushion distribution; front end magnetic members mounted at the large diameter end of said core; said members having arms at positions which substantially correspond to the corners of said screen of said tube; and a pair of rear end magnetic members mounted between said tube of said vertical deflection coils and at the small diameter end of said core, said rear end magnetic members facing each other for deforming a portion of the vertical deflection magnetic field into a barrel distribution.

4,433,269

AIR FIREABLE INK

Nicholas W. Kay, Mine Hill, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 22, 1982, Ser. No. 443,581

Int. Cl.³ H01J 17/00

U.S. Cl. 313-632

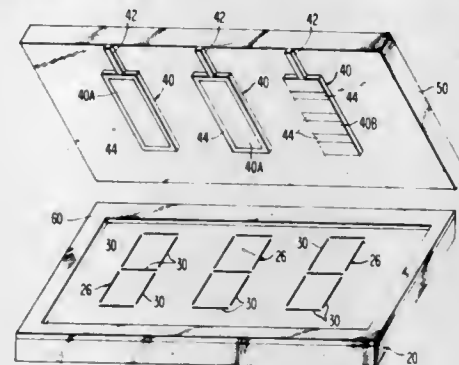
6 Claims

1. An ink formulation for forming conductive elements by a screening operation including in percent by weight, nickel 34-55; aluminum 10-14; aluminum/silicon alloy 18-24; lead glass frit binder 16-20; and a vehicle 12-14, the nickel having an average particle size of about one micron; the aluminum having an average particle size of about three microns; and the aluminum/silicon alloy having a particle size in the range of five to ten microns.

4. A display panel comprising

a gas-filled envelope made up of a base plate and a glass face plate hermetically sealed together to form said envelope which is filled with an ionizable gas,

at least one glow cathode electrode in said envelope, a transparent conductive anode electrode on said face plate inside said envelope positioned in operative relation with said cathode electrode, and a reinforcing conductor in contact with at least a portion of said anode electrode,



said reinforcing conductor being screened on said face plate with an ink formulation including in percent by weight, nickel 34-55, aluminum 10-14, aluminum/silicon alloy 18-24, lead glass frit binder 16-20, and a vehicle 12-14, the nickel having an average particle size of about one micron, the aluminum having an average particle size of about three microns, and the aluminum/silicon alloy having a particle size in the range of five to ten microns.

4,433,270

REVERSIBLE PERIODIC MAGNETIC FOCUSING SYSTEM

Sergei S. Drozdov, ulitsa Narodnogo Opolchenia, 24, korpus 1, kv. 104; Mikhail V. Kiselev Dmitriev, Domodedovskaya ulitsa, 11, Korpus, Kv. 12; Sergei V. Lebedinsky, Profsojuznaya ulitsa, 46, Korpus 2, Kv. 31; Sergei N. Nazarov, ulitsa Dnepropetrovskaya, 23, Korpus 3, Kv. 47; Jury V. Lavrentiev, ulitsa Kakhovka, 10/12, Korpus 1, Kv. 21; Pavel V. Nevsky, Profsojuznaya ulitsa, 49, Korpus 1, Kv. 89; Nina V. Kutshcheva, ulitsa Bolshaya Gruzinskaya 20, Kv. 16, all of Moscow, U.S.S.R.

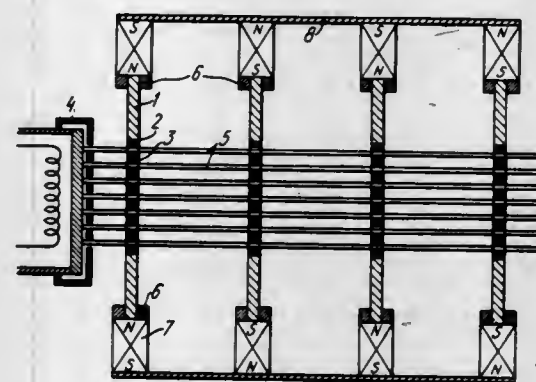
PCT No. PCT/SU80/00008, § 371 Date Aug. 17, 1981, § 102(e) Date Aug. 17, 1981, PCT Pub. No. WO81/02221, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 28, 1980, Ser. No. 293,627

Int. Cl.³ H01J 23/08

U.S. Cl. 315-5.35

17 Claims



1. A reversible periodic magnetic focusing system to increase the perveance of the electron flow comprising: a successive arrangement of permanent magnets magnetized in an opposite sense; magnetically soft pole shoes interposed between the permanent magnets, each pole shoe having a hole for passage of an electron flow; and grids with meshes, receives in the holes of said pole shoes, said grids being of a magnetically soft material and having magnetic, thermal and electric contact with the pole shoes, the respective meshes of the grids of the pole shoes being arranged coaxially.

4,433,271

HIGH PRESSURE DISCHARGE LAMP

Akihiro Inoue, Chigasaki, and Akihiro Kamiya, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

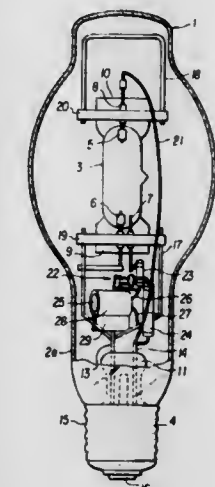
Filed May 18, 1981, Ser. No. 264,408

Claims priority, application Japan, Jul. 15, 1980, 55-99852[U]

Int. Cl.³ H01J 17/34; H05B 41/08

U.S. Cl. 315-63

5 Claims



1. A high pressure discharge lamp comprising: a discharge tube having a main electrode at each end thereof; an outer bulb housing said discharge tube; a circuit for starting said discharge tubes; and a glow starter covered with a heat shield member and disposed between said discharge tube and said outer bulb wherein said heat shield member comprises a heat insulating covering member wrapped around a major portion of the surface area of said glow starter and a mounting member engaging said covering member whereby said glow starter is subject to decreased heat radiation from said discharge tube and whereby said glow starter is protected from heat during the manufacturing of said lamp.

4,433,272

HIGH-PRESSURE DISCHARGE LAMP

Seiichi Ogawa, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

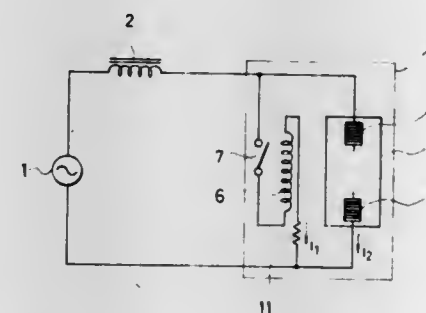
Filed Aug. 5, 1981, Ser. No. 290,142

Claims priority, application Japan, Aug. 18, 1980, 55-112743

Int. Cl.³ H05B 41/18

U.S. Cl. 315-290

5 Claims



1. In a high-pressure discharge lamp in which a starting circuit, consisting of a thermal switch and a resistor connected in series, is connected in parallel with an arc tube, and said arc tube is connected to a power supply via a mercury lamp ballast connected in series with said arc tube, the improvement comprising means for controlling the starting current i_1 of the starting circuit and the current i_2 of the arc tube according to the following relationship:

$$i_1/i_2 \leq 0.69 \times 10^{-3} X + 0.24$$

wherein

$X \leq 200$,

where i_1 denotes the current in amps that flows into said starting circuit when the lamp is to be turned on, i_2 denotes the current in amps that flows into said arc tube after the lamp is turned on, and X denotes the output power in watts of said ballast.

4,433,273

CAMERA MOTOR BELT DRIVE SYSTEM

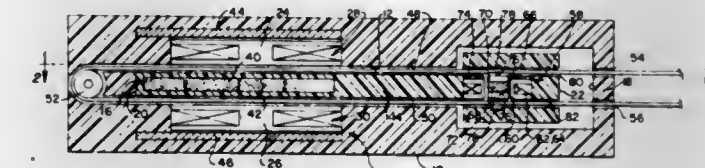
Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 21, 1982, Ser. No. 341,202

Int. Cl.³ H02K 4/00, 7/06; G03B 1/22, 17/50

U.S. Cl. 318-135

14 Claims



1. A stepper drive system comprising: a frame, and a carriage mounted for reciprocable movement along a given path in said frame, said frame and carriage including a linear motor energizable for reciprocally driving said carriage between given limits within said frame; at least one linear belt flight; means for guiding said belt flight longitudinally of said frame along at least a portion of both sides of said carriage; belt flight engaging means mounted on said carriage within said guided belt, said engaging means being selectively energizable for engaging said belt flight at either side of said carriage; and means for energizing said motor and said engaging means for synchronizing movement of said carriage with operation of said belt engaging means to advance said one belt flight through a succession of steps upon continuous reciprocal carriage movement, said energizing means including means for energizing said engaging means to alternately engage said belt flight along opposing sides of said carriage in synchronism with the alternate direction of movement of said carriage.

4,433,274

HOME SECURITY AND GARAGE DOOR OPERATOR SYSTEM

Dean C. Duhamel, 19836 Jerome, Apt. 238, Roseville, Mich. 48066

Division of Ser. No. 140,045, Apr. 14, 1980, Pat. No. 4,360,801. This application Jul. 27, 1981, Ser. No. 287,336

Int. Cl.³ H02H 7/085

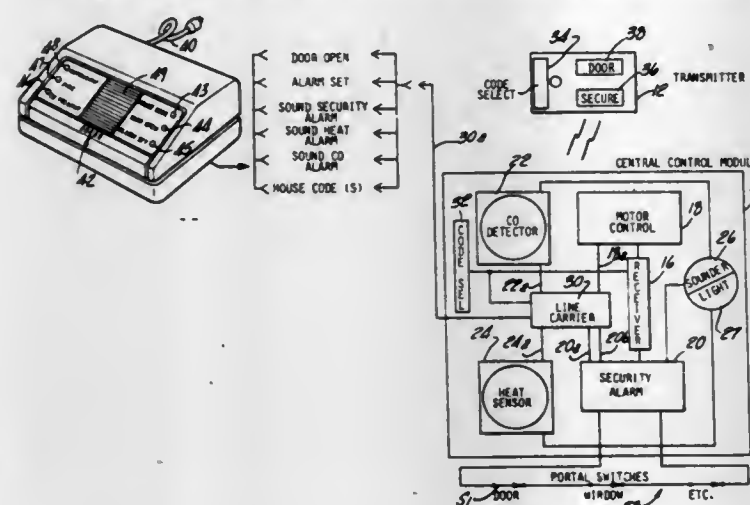
U.S. Cl. 318-283

1 Claim

1. In a garage door operator of the type having a door drive motor, an overload switch for the motor, an integrated security alarm system, and a power supply normally connected to both the motor and the alarm system, the improvement comprising:

circuit means interconnecting the power supply, the motor, the overload switch and the alarm system including detector means for monitoring the condition of the overload switch and providing a first logical signal level to the

motor and to the alarm system to maintain normal operation thereof but responsive to the opening of said overload



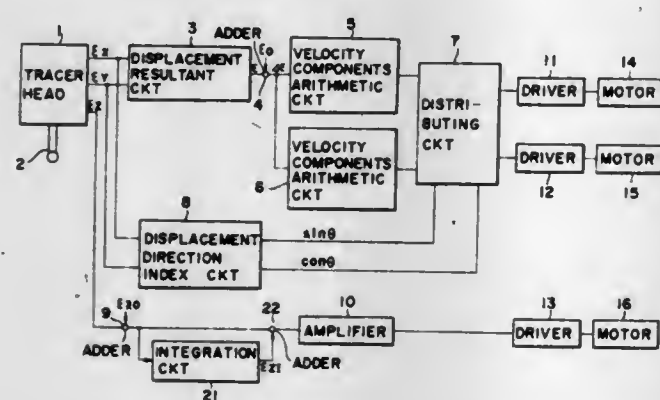
switch to provide a second logical signal level which selectively disables only the motor.

4,433,275

THREE-DIMENSIONAL TRACER CONTROL SYSTEM
Ryoji Imazeki, and Etsuo Yamazaki, both of Hachioji, Japan, assignors to Fujitsu Fanuc Ltd., Tokyo, Japan
Filed Jun. 2, 1981, Ser. No. 269,592
Claims priority, application Japan, Jun. 3, 1980, 55-74832
Int. Cl.³ H02P 7/06

U.S. Cl. 318—578

2 Claims



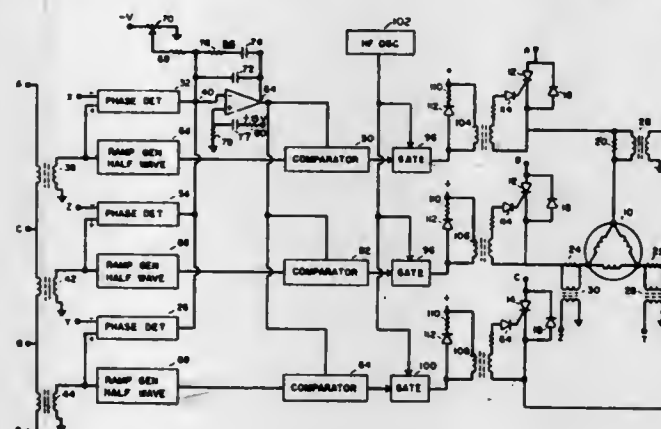
1. A three-dimensional tracer control system which traces the configuration of a model based on direction displacement signals from a tracer head, said system comprising:
said tracer head providing X-, Y- and Z-axis direction displacement signals as said direction displacement signals;
X-Y means for controlling the tracing of said tracer head in the X-Y plane according to said X- and Y-axis direction displacement signals and a desired value of a function thereof;
an integration circuit for integrating the difference between said Z-axis direction displacement signal and a desired value thereof;
an adder for adding together said difference and the output from said integration circuit; and
means for controlling the trace velocity in the Z-axis direction in accordance with the output signal from said adder.

4,433,276

THREE PHASE POWER FACTOR CONTROLLER
Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 199,765, Oct. 23, 1980, abandoned.
This application Mar. 14, 1983, Ser. No. 476,244
Int. Cl.³ H02P 7/36

U.S. Cl. 318—729

21 Claims



1. A power factor control system for a three phase A.C. induction motor comprising:
first, second and third phase detection means for sampling the current and voltage in each of said three phases and providing discrete outputs wherein each is proportional to the in-phase state of one discrete phase;
summing means for combining the three current-voltage state outputs of said detection means and providing a current-voltage state signal at three times the rate of a sample from one of said phases;
means for providing a power factor command signal;
difference means for subtracting said command signal from said current-voltage state signal to provide a difference signal;
signal conditioning means responsive to said difference signal for providing a control signal which is essentially smooth with respect to the average value of said current-voltage state signal, but includes changes occurring at a change in motor loading; and
control means, including switching means connected in series with each phase input of said motor, said switching means being responsive to said control signal for varying the "on" time of each cycle of input power to a said phase input as a direct function of load on a said motor.

4,433,277

BATTERY CHARGING SYSTEM
James A. Carollo, and Wayne A. Kalinsky, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 21, 1982, Ser. No. 390,151
Int. Cl.³ H02J 7/00

U.S. Cl. 320—24

10 Claims

1. A battery charger comprising:
means for providing a power source which delivers a charging signal to a battery;
means coupled to said means for providing a power source and responsive to a control signal for controlling the charging signal delivered to a battery to be one of a first charging signal, a second maintenance charging signal and a third charging signal;
first means for providing a first reference signal representative of a first predetermined charge level of a battery;
second means for providing a second reference signal which is variable in accordance with the temperature of a battery and is representative of a second predetermined charge level of a battery;

means for sensing the charge level of a battery and providing a charge level output signal;
means responsive to said charge level output signal and said first reference signal for providing a control signal to said means for controlling and causing it to deliver a first charging signal when said battery charge level is less than said first predetermined charge level and a second maintenance charging signal when said battery charge level is equal to or greater than said first predetermined charge level;

part of discharge and producing a signal which is representative of the amount of charge remaining in the battery pack.

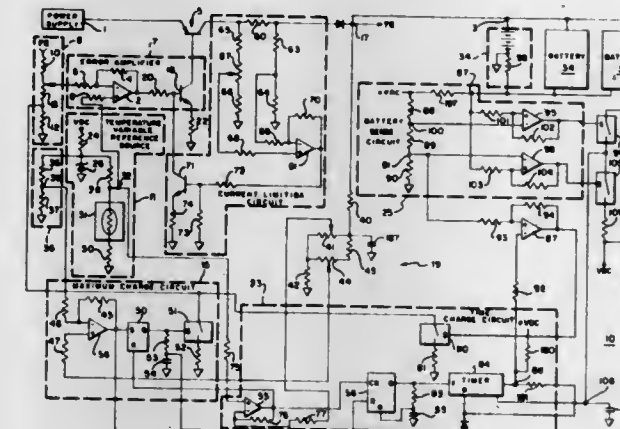
4,433,279

FREE PISTON HEAT ENGINE STABILITY CONTROL SYSTEM

Suresh K. Bhat, Niskayuna, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed Feb. 20, 1981, Ser. No. 236,460
Int. Cl.³ H02K 35/00; H02P 9/04

U.S. Cl. 322—3

4 Claims



means responsive to said charge level output signal and said second reference signal for detecting when a battery charge level equals said second predetermined charge level and providing a control signal to said means for controlling and causing it to deliver a third charging signal for a predetermined charge period; and
means responsive to the termination of said predetermined charge period for providing a control signal to said means for controlling and cause it to deliver said second maintenance charging signal.

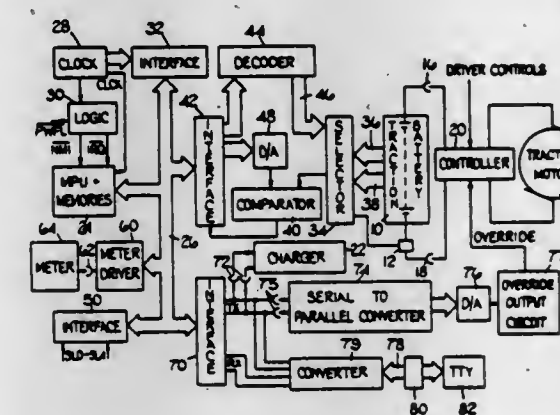
4,433,278

BATTERY STATE OF CHARGE EVALUATOR SYSTEM
Michael W. Lowndes, Moseley; Derek S. Adams, Solihull, and Neville J. Arlidge, Kings Heath, all of England, assignors to Lucas Industries Limited, Birmingham, England
Filed Nov. 18, 1980, Ser. No. 208,097
Claims priority, application United Kingdom, Jun. 28, 1980, 8021285

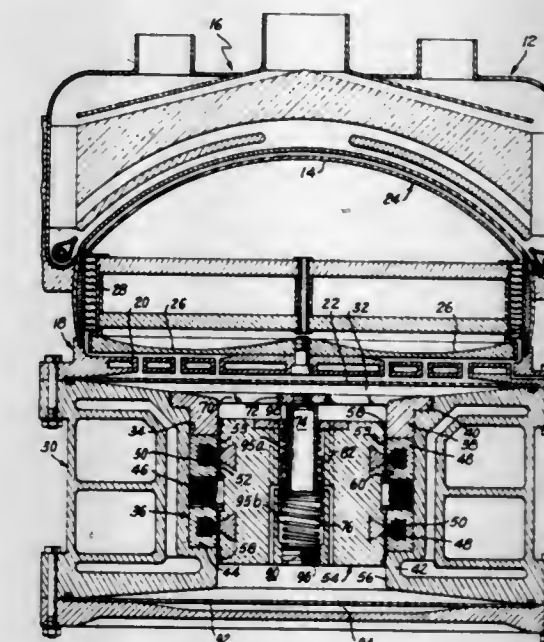
Int. Cl.³ G01R 29/24; H02J 7/00

U.S. Cl. 320—48

16 Claims



1. A state of charge evaluator system comprising:
a traction battery pack having a plurality of cells connected in series and divided into a plurality of sub-packs each of which includes one or more cells;
means connected across the individual sub-packs for measuring the voltages of the individual sub-packs;
means for selecting the sub-pack having the lowest voltage; and
means for determining the state of charge of the battery pack, said means using the voltage of said sub-pack having the lowest voltage for determining the state of charge in the last



1. A stability control system for a Free Piston Stirling Engine driving a linear alternator having field windings and an armature in the form of a plunger and wherein said alternator output voltage is a function of plunger stroke and current in the field windings, and the engine power is a function of plunger stroke, comprising:
an electrical circuit coupled between the output of said alternator and the input of said field windings for controlling the current to said field windings as a function of said alternator output voltage so that the change in power demand of said alternator with change in stroke is greater than the change in power supplied by said engine with changes of stroke, whereby said Free Piston Stirling Engine operation is stable.

4,433,280

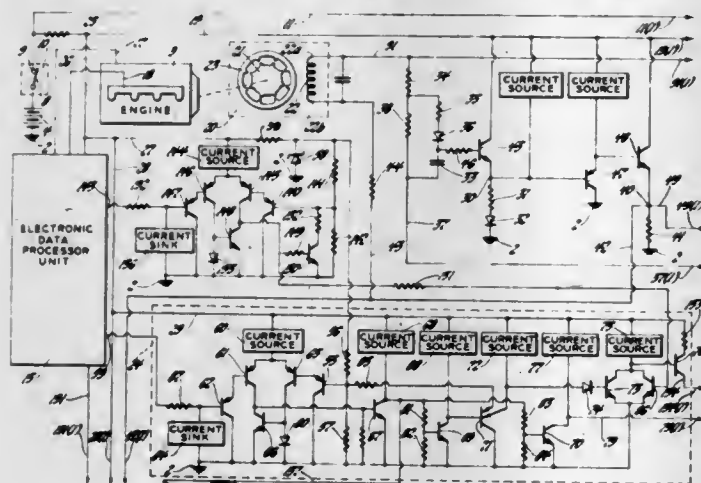
INTERNAL COMBUSTION ENGINE IGNITION SYSTEM
Timothy F. Lindgren, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 101,762, Dec. 10, 1979, Pat. No. 4,317,437.
This application Dec. 14, 1981, Ser. No. 330,666
Int. Cl.³ F02P 5/08, 1/00

U.S. Cl. 322—89

1 Claim

1. In combination with an electrical generator assembly of the type having at least a rotatable rotor member and an output coil in which a series of alternating current signals is magnetically induced while the rotor member is rotated, a circuit for producing an output signal upon a selected polarity transition of each cycle of the series of alternating current signals comprising:
means for producing a reference potential signal of a first potential level that is of a first selected incremental potential value greater than the potential level upon a selected first terminal end of said electrical generator assembly output coil;
first circuit means effective when activated to increase said reference potential signal to a second potential level that is

of a second selected incremental potential value greater than said first potential level; and means responsive to said reference potential signal and the potential level upon the other second terminal end of said electrical generator assembly output coil for deactivating said first circuit means when the potential upon said other second terminal end of said electrical generator assembly output coil has attained a level substantially equal to that of said reference potential signal resulting from the activated said first circuit means whereby the potential level of said reference potential signal is reduced to said first



potential level and for reactivating said first circuit means whereby the potential of said reference potential signal is increased to the potential level resulting from the activated said first circuit means and for producing an output signal when the potential upon said other second terminal end of said electrical generator assembly output coil has attained a level substantially equal to that of said reference potential signal of said first potential level whereby an output signal is produced upon a selected polarity transition of each cycle of said alternating current signals produced by said electrical generator assembly.

4,433,281

METHOD FOR DETECTING BREAKDOWNS IN AN ELECTROSTATIC FILTER

Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 213,031

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949752

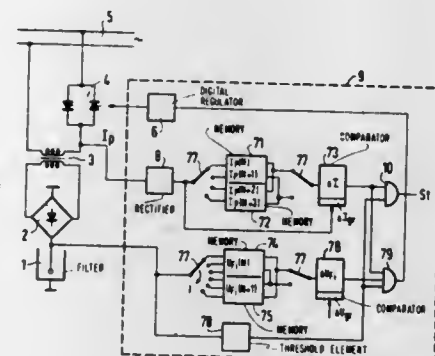
Int. Cl.³ G05F 1/455

U.S. Cl. 323—246

4 Claims

1. In a method for detecting breakdowns in an electrostatic filter which is fed from an a-c voltage source via a rectifier, a high-voltage transformer and a final control element, and wherein the overstepping of a given difference voltage value of single measured values of equal phase position of successive

half waves of the filter d-c voltage is used as breakdown criterion, the improvement comprising presetting the difference



voltage value as a percent of the respective measured filter voltage.

4,433,282

MONOLITHIC VOLTAGE DIVIDER

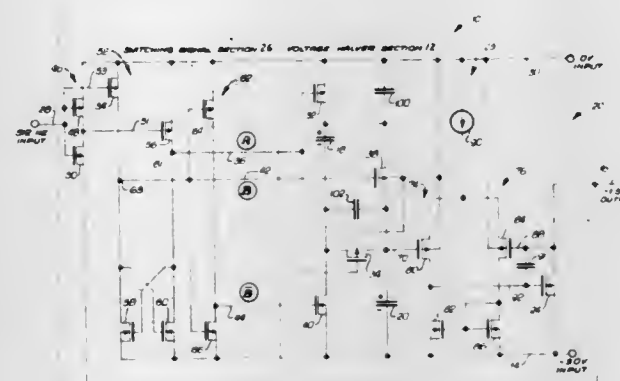
David R. Squires, Los Altos, Calif., assignor to Intersil, Cupertino, Calif.

Filed Dec. 8, 1981, Ser. No. 328,519

Int. Cl.³ G05F 1/56

U.S. Cl. 323—281

20 Claims



1. A monolithic integrated circuit for dividing the voltage supplied by a power supply comprising: a plurality of capacitors wherein one of the capacitors is a reference capacitor; switching means for periodically coupling at least two of the capacitors in series to the power supply during a first time period and for periodically coupling at least two of the capacitors in parallel during a second time period such that the voltage across one of the capacitors provides a reference voltage which approaches a predetermined fraction of the supply voltage of the power supply; and a voltage regulator having an input operably connected to the capacitor providing the reference voltage, and an output which provides a supply voltage at the predetermined fraction of the power supply, said voltage regulator having an input impedance in excess of 10 megohms to minimize loading of the capacitors.

4,433,283

BAND GAP REGULATOR CIRCUIT

John E. Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,889

Int. Cl.³ G05F 3/20

U.S. Cl. 323—314

19 Claims



1. A band gap regulator comprising a transconductance amplifier including first and second transistors, each having an emitter, a resistive network, a load circuit and a current source, and, a negative feedback circuit coupled to the emitters of said transistors through said resistive network, said load circuit and said feedback circuit each having an impedance with a similar temperature coefficient of voltage and said current source being connected to said feedback circuit and to said resistive network.

4,433,284

POWER LINE COMMUNICATIONS BYPASS AROUND DELTA-WYE TRANSFORMER

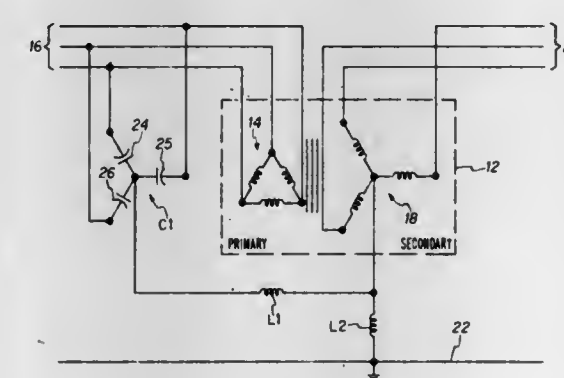
William C. Perkins, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 7, 1982, Ser. No. 366,127

Int. Cl.³ H04B 3/56

U.S. Cl. 323—361

7 Claims



1. A circuit for bidirectionally bypassing a delta-wye transformer, having a primary-to-secondary voltage ratio R, with a communication signal having a carrier frequency, which signal is to be transmitted as a balanced phase-to-neutral signal on three-phase lines on the delta windings side of the transformer and on the wye windings side thereof, comprising:

a set of three capacitors, each having one side thereof connected at a node to form a wye configuration, and each having the other side connected to a different one of the lines on the delta side of the transformer; an inductor with inductance L1 connected between the node of the wye configuration of capacitors and the common node of the wye windings of the transformer; and an inductive reactor with inductance L2 connected from the

node of the wye windings of the transformer to a common neutral for the three phase lines, said capacitors, inductor and inductive reactor being selected with values so that the parallel combination of the capacitors is substantially resonant at the carrier frequency with the series combination of L1 and L2.

4,433,285

INTEGRATED TUBE SOCKET ASSEMBLY

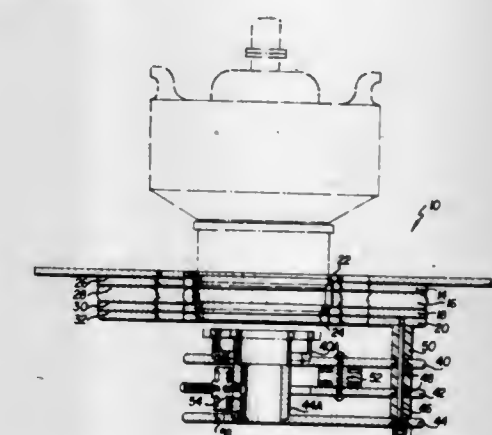
Joseph W. Rayburn, Bowie, Md., assignor to Arinc Research Corp., Annapolis, Md.

Filed May 13, 1982, Ser. No. 377,801

Int. Cl.³ H01J 19/62

U.S. Cl. 323—364

6 Claims



1. A socket assembly for removably supporting a tube and providing electrical connection therewith comprising: a first contact means for connection to a first filament connector on a tube; a second contact means for connection to a second filament connector on a tube, said first and second contact means being adapted to be electrically connected with a tube filament so as to cause electric currents to flow therethrough; a third contact means for receiving a signal; a plurality of capacitors positioned between said third contact means and said first and second contact means, respectively, said capacitors being so positioned that a signal travelling from said third contact means simultaneously to said first and second contact means will travel substantially an equal distance to the filament within a tube from which the signal is transmitted; whereby a signal travels from said third contact means to said filament substantially simultaneously through said first and second contact means through respective capacitors such that distortion is minimized.

4,433,286

IDENTIFICATION OF MATERIALS USING THEIR COMPLEX DIELECTRIC RESPONSE

William D. Gregory, Vienna; Larry H. Capots, Annandale; Luigi Morelli, Sterling, all of Va.; John Muhlke, III, Bethesda, and Thomas A. Nolan, Jr., Chevy Chase, both of Md., assignors to Georgetown University, Washington, D.C.

Division of Ser. No. 28,452, Apr. 9, 1979. This application Aug. 10, 1979, Ser. No. 65,440

Int. Cl.³ G01R 27/26

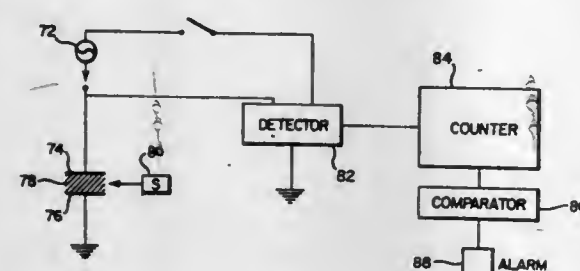
U.S. Cl. 324—61 R

6 Claims

3. Apparatus for identifying materials having frequency-responsive conductive and/or dielectric properties, comprising:

(a) capacitive means for producing a capacitive output signal and for producing a change in capacitive value when said material is placed in physical association therewith, said capacitive means including a capacitive element connected in series; (b) capacitive response means connected with said capaci-

tive element for evaluating the change of capacitive value from the capacitive means, said capacitive response means including a detector; and



(c) frequency generating means connected across said capacitive means for applying a plurality of frequencies thereto, and for producing a balanced electrical output signal which is reflective of the capacitive value of the capacitive means and which identifies said material.

4,433,287

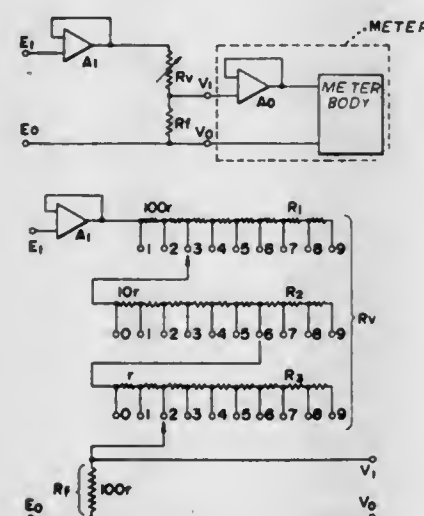
RANGE SWITCHING DEVICE FOR ELECTRIC METER
Akio Morita, and Isamu Watanabe, both of Kawasaki, Japan, assignors to Riken Denchi Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 37,017, Apr. 27, 1979. This application Mar. 10, 1981, Ser. No. 242,228

Claims priority, application Japan, Oct. 12, 1978, 53-124617 Int. Cl.³ G01R 15/08, 1/30

U.S. Cl. 324-115

4 Claims



1. A range switching device for a voltage measuring electric meter, said device comprising input terminals for the voltage signal to be observed, an impedance converting operational amplifier high in input impedance but low in output impedance having its input connected to one of said input terminals, and a variable resistance and a fixed resistance connected in series between the output of said amplifier and said other input terminal, said electric meter being connected across the ends of said fixed resistance through an impedance converting operational amplifier to impart high input impedance thereto, said variable resistance comprising a succession of groups of resistors with the resistors in each such group corresponding in number and being connected in series, the individual resistors of each such group having the same resistance value while the resistance values of the resistors in said successive groups are successive multiples to a common base number of the fixed resistance value, switching contacts in the connections between adjacent pairs of individual resistors in each such group, and at the respective ends of the series of each such group, a switch for each said group arranged for switching between the switching contacts for that group, and means connecting one end of the first of said resistor groups in such said succession of groups to said amplifier output, means connecting one end of each of the second through the last of such groups to the switch for the

next preceding group, and means connecting the switch for the last of said groups to the end of said fixed resistance.

4,433,288

METHOD AND APPARATUS FOR DETERMINING MINORITY CARRIER DIFFUSION LENGTH IN SEMICONDUCTORS

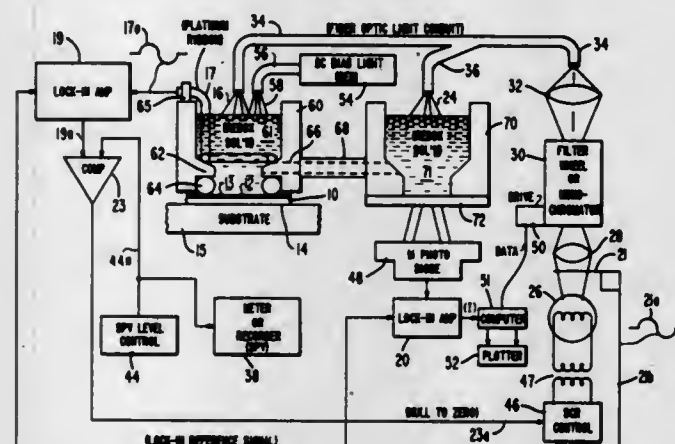
Arnold R. Moore, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,918

Int. Cl.³ G01R 31/26

U.S. Cl. 324-158 D

31 Claims



1. A method for determining the minority carrier diffusion length of a sample of semiconductor material, the sample having two major surfaces, one of the surfaces arranged for illumination and the other surface shielded from illumination including the steps of:

- covering a portion of the one major surface of the sample with an electrolyte solution containing redox couples having redox (oxidation-reduction) potential in the range of +0.6 to -1.65 volts, said electrolyte solution being soluble, stable and non-reactive to the semiconductor material and free of solid or gaseous products and forming a liquid Schottky barrier at said surface portion;
- illuminating a portion of the one major surface of the sample with monochromatic light that is of a selected wavelength by passing said light through said redox couple solution;
- providing an electrical signal representing the surface photovoltage (SPV) on the sample generated in response to said light;
- controlling the SPV electrical signal to a predetermined value; and
- providing a first electrical signal representing the illuminating intensity (I) incident upon the sample, and a second electrical signal representing the wavelength of the light.

4,433,289

METHOD FOR INSPECTING STEEL BILLETS WITH A DRY MIXTURE OF MAGNETIC PARTICLES AND A WATER SOLUBLE CARRIER SOLID

Adolf Mlot-Fijalkowski, Lincolnwood, and Paul K. Borrows, Schaumburg, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Jan. 15, 1981, Ser. No. 225,312

Int. Cl.³ G01N 27/84; G01R 33/12; H01F 1/28

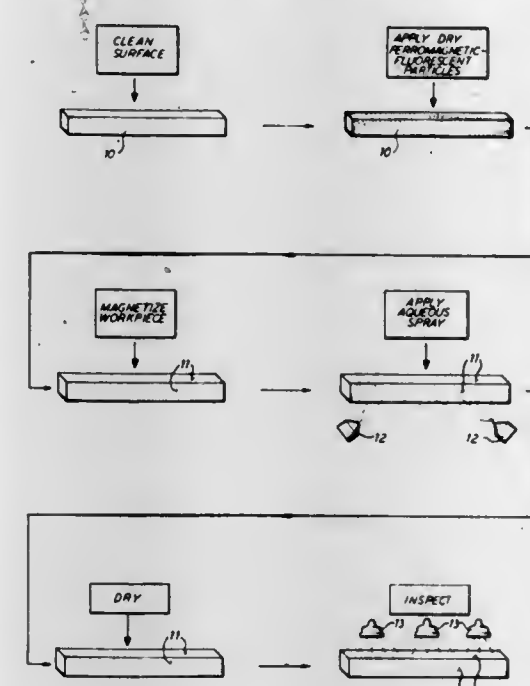
U.S. Cl. 324-215

5 Claims

1. A method for inspecting a magnetizable workpiece which comprises:

- applying to the surface of said workpiece a dry mixture of magnetic particles containing a fluorescent pigment adhered thereto and a water-soluble carrier solid capable of adhering to the surface upon activation by an aqueous medium,
- magnetizing said workpiece to cause the magnetic particles

to adhere to surface imperfections while carrying the fluorescent pigment to such imperfections thereby providing indications of the location of such imperfections,



applying an aqueous spray to said indications to activate said carrier solid into an adhesive bonding said particles to said imperfections, and drying the workpiece to cause setting of the activated adhesive and provide fluorescent pigment at such indications.

4,433,290

MAGNETIC COATING THICKNESS COMPARATOR HAVING PARALLEL MAGNETIC RODS WITH NONMAGNETIC SLIDE INDICATORS

Frank Koch, Ogdensburg, N.Y., assignor to DeFelsko Corporation, Ogdensburg, N.Y.

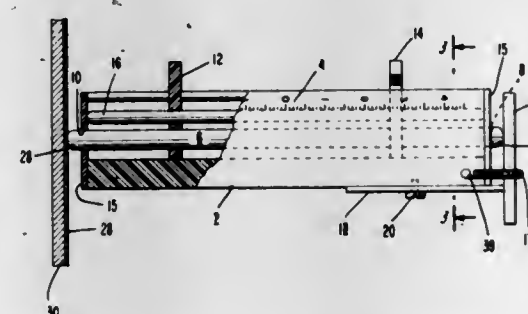
PCT No. PCT/US82/01602, § 371 Date Jul. 7, 1983, § 102(e) Date Jul. 7, 1983, PCT Pub. No. WO83/01833, PCT Pub. Date May 26, 1983

Continuation-in-part of Ser. No. 320,508, Nov. 12, 1981, abandoned. This PCT application Nov. 12, 1982, Ser. No. 514,766

Int. Cl.³ G01B 7/10; G01R 33/12

U.S. Cl. 324-230

21 Claims



1. A coating thickness comparator comprising:
 - (a) a permanent rod magnet having a middle, a reference pole and a measuring pole;
 - (b) a ferromagnetic rod arranged parallel to said permanent rod magnet;
 - (c) first and second nonmagnetic slides supporting said permanent rod magnet and said ferromagnetic rod and maintaining said rods substantially parallel to one another said slides being arranged for longitudinal movement along said rods;
 - (d) a housing including means for indicating said middle of said permanent rod magnet; and
 - (e) a standard ferromagnetic base abutting said reference

pole, and a ferromagnetic base having a coating thereon abutting said measuring pole; a position of said nonmagnetic slides when pushed together to coincide indicating a thickness of said coating.

4,433,291

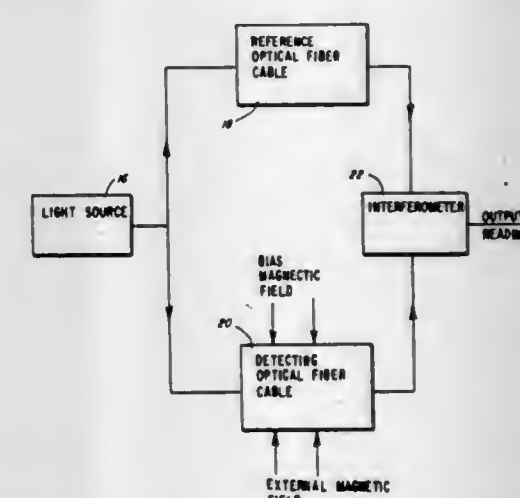
OPTICAL FIBER FOR MAGNETOSTRICTIVE RESPONSIVE DETECTION OF MAGNETIC FIELDS
Amnon Yariv, San Marino, Calif., and Harry V. Winsor, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 9, 1981, Ser. No. 223,635

Int. Cl.³ G01R 33/02; G02B 5/14

U.S. Cl. 324-244

18 Claims



7. A detector for detecting the presence of a magnetic field comprising:

- a light transmission means for transmission of light there-through,
- a magnetostrictive means magnetostrictively responsive to a magnetic field circumpositionally and superjacent covering the light transmission means about the cross-section of the light transmission means and along a length of the light transmission means for changing the optical path length of the light transmission means along the physical length of the light transmission means in response to the magnetic field, and
- a means sensitive to the effect upon the light transmission of the light transmission means in response to the magnetic field for determining the presence of the magnetic field.

4,433,292

ARRANGEMENT OF A POLYCHROME CATHODE-RAY TUBE FOR OPERATION WITH A RESERVED ELECTRON GUN

Jean Claude Frebault, Paris, France, assignor to Thomson-CSF, Paris, France

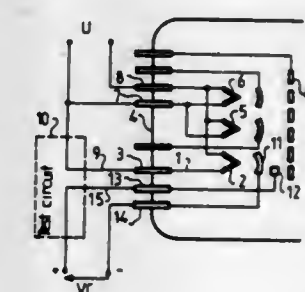
Filed May 4, 1981, Ser. No. 260,102

Claims priority, application France, May 8, 1980, 80 10247

Int. Cl.³ G01R 31/024

U.S. Cl. 324-404

7 Claims



1. A polychrome cathode-ray tube comprising:

three electron guns, each gun having a heated filament, and a cathode with an emission surface for emitting electrons; a base fitted with contact pins, said filaments being connected in parallel to a first and a second of said contact-pins, said cathodes being respectively connected to a third, a fourth and a fifth of said contact-pins; and means for performing an external check on emission of one of the three electron guns and for indirectly checking at the same time heating of said one gun, said checking means comprising an ancillary test circuit and an additional electrode constitution an anode inserted in proximity to the cathode and intermediate the cathode and grid of said one gun so as to form a diode with said cathode, said anode being connected to a sixth contact-pin within the interior of the tube, said sixth pin being adapted to be connected externally to an associated supply circuit via said ancillary test circuit.

4,433,293

METHOD AND APPARATUS FOR DETECTING ABNORMAL CONDITIONS OF CIRCUIT BREAKERS
Akira Aoyagi, and Shinichi Ikeda, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

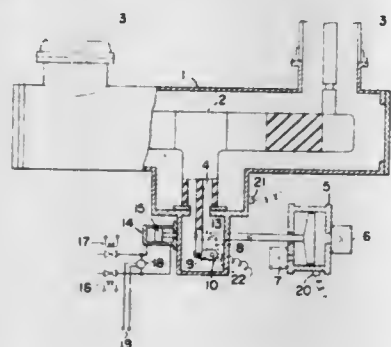
Filed Mar. 20, 1981, Ser. No. 246,061

Claims priority, application Japan, Mar. 31, 1980, 55-40250

Int. Cl.³ G01R 31/32

U.S. Cl. 324-424

5 Claims



2. An apparatus for detecting an improper operation condition of a circuit breaker having contacts provided inside a casing, at least one of which is movable, for opening and closing a circuit in an electric power line, said circuit breaker including an operating mechanism for operating said movable contact, said apparatus comprising:

means for driving said movable contact at a significantly lower speed than the speed with which said movable contact moves during a normal, in use, contact opening or closing operation of said circuit breaker;

a plurality of measuring units mounted on said casing for measuring a plurality of examination data and producing electric signals representing said measured examination data; and

means for displaying said electric signals for comparison.

4,433,294

METHOD AND APPARATUS FOR TESTING A BATTERY
Robert W. Windebank, Woodbury, Conn., assignor to Firing Circuits, Inc., Norwalk, Conn.

Filed Jun. 5, 1981, Ser. No. 270,823

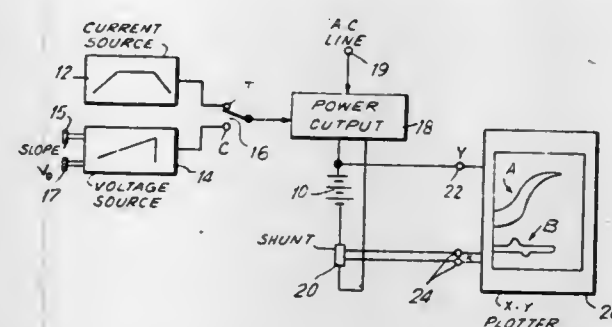
Int. Cl.³ G01N 27/46

U.S. Cl. 324-426

34 Claims

25. Apparatus for testing a battery comprising energizing means coupled to said battery to selectively supply current and voltage thereto; sensing means coupled to said battery to sense voltage thereacross; and data processing means programmed

to control said energizing means to supply a gradually increasing current followed by a gradually decreasing current to said



battery and to determine the charge condition of said battery as a function of the sensed voltage.

4,433,295

PROCESS AND APPARATUS FOR DETERMINING THE STATE OF CHARGE OF A BATTERY

Edmond Zaugg, Petit-Lancy, Switzerland, assignor to Montres Rolex S.A., Switzerland

Continuation-in-part of Ser. No. 337,105, Jan. 5, 1982,

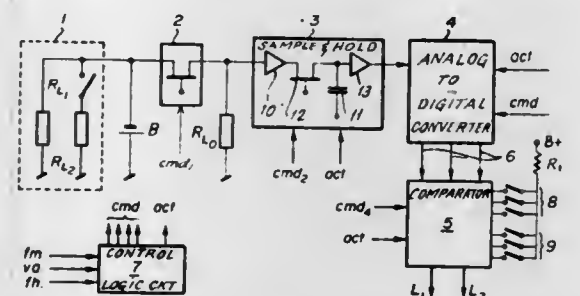
abandoned. This application Jan. 8, 1982, Ser. No. 338,153

Claims priority, application Switzerland, Jan. 5, 1981, 13/81

Int. Cl.³ G01N 27/46

U.S. Cl. 324-429

22 Claims



1. A process for determining the state of charge of a battery supplying electrical power to an instrument of the type which includes a current consuming component having at least two consumption levels, one of said levels being a minimum current consumption level defined as a minimum load and a second of said levels being a maximum consumption level defined as a maximum load, said process comprising the steps of:

(a) monitoring the load condition of said current consuming component to determine if it presents said minimum or said maximum load to said battery;

(b) periodically connecting said battery to a reference load but only when said current consuming components presents said minimum load to said battery;

(c) sampling the voltage across said reference load when said battery is connected to said reference load;

(d) comparing the sampled voltage to a number of predetermined voltage levels each which correspond to a different state of charge of the battery so as to determine the state of charge of the battery; and

(e) generating at least one output signal which indicates a state of charge of the battery as determined by said comparing step.

4,433,296

ELECTROSTATIC SYSTEM ANALYZER
James A. Kolibas, Broadview Heights, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jul. 22, 1981, Ser. No. 285,740

Int. Cl.³ G01N 27/60

U.S. Cl. 324-452

10 Claims

1. An analyzer for a high voltage electrostatic coating system comprising:

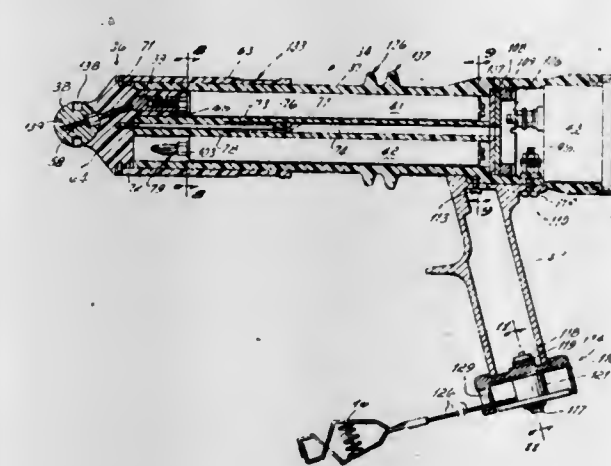
an analyzer body of a generally insulating material having a first and a second portion, the two portions being positionable relative to one another;

a spherical conductive ball electrode removably received on said first portion of said analyzer body, contactable with test points of the electrostatic coating system, mounted on said first portion of the analyzer body;

a plurality of high voltage resistors mounted in said second portion of the analyzer body;

means for connecting the resistors in series;

an ammeter having first and second terminals for coupling



current therethrough, said first terminal being coupled to an end of said series-connected resistors;

means for coupling said second terminal of said ammeter to an electrical ground; and

means for selectively coupling said electrode to different resistors of said plurality of resistors dependent upon the relative position between said first and second portions of said analyzer body, whereby the resistance between said electrode and said ammeter may be varied to compensate for resistance variations among test points of an electrostatic coating system by varying the relative position between said first and second analyzer body portions.

4,433,297

TIME AVERAGED AMPLITUDE COMPARISON ELECTROMETER

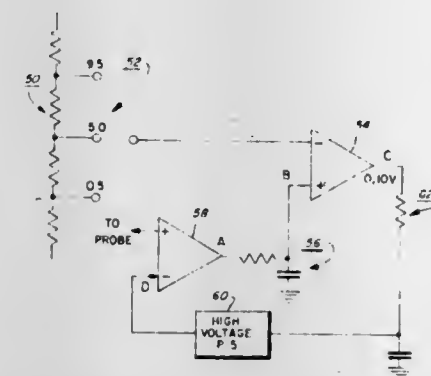
Robert F. Buchholt, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 276,235

Int. Cl.³ G01R 29/12

U.S. Cl. 324-457

11 Claims



1. Apparatus for measuring charge potentials on an electrostatic surface comprising

a voltage divider,

a selector switch connected to the voltage divider for selecting a voltage level,

an electrometer probe and input amplifier disposed adjacent the electrostatic surface,

a variable high voltage power supply communicating with the probe and input amplifier, a voltmeter connected

across the variable high voltage power supply to measure a discrete voltage level, and

control circuitry including a comparator, the input of the comparator connected to the selector switch and the input amplifier, and

a filter network, the output of the comparator connected to the input of the filter network, the output of the filter network connected to the variable high voltage power supply whereby upon suitable selection of voltage levels by the selector switch, the discrete voltage level can be determined in response to variable voltage levels on the electrostatic surface being sensed by the electrometer probe.

4,433,298

CALIBRATED APPARENT SURFACE VOLTAGE MEASUREMENT APPARATUS AND METHOD

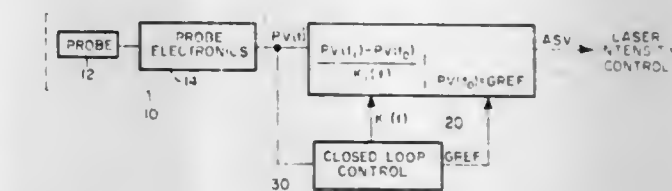
Charles S. Palm, San Antonio, Tex., assignor to Datapoint Corporation, San Antonio, Tex.

Filed Nov. 12, 1981, Ser. No. 320,184

Int. Cl.³ G01R 29/12

U.S. Cl. 324-457

15 Claims



1. Apparatus for measuring the apparent surface voltage (ASV) on an electrostatic/electrophotographic imaging medium (such as the photoconductive surface of an electrophotographic drum) using a relatively low cost ASV probe, periodically recalibrating probe sensitivity to compensate for variations in environmental and electrical conditions such as temperature, relative humidity, and electrical circuit performance, the calibrated ASV measurement apparatus comprising:

(a) a probe, including a sensing head with a defined sensing field, responsive to ASV on the imaging medium to provide (for a given probe-to-medium spacing) a probe voltage output PV according to the following relation:

$$PV = K_1(t) \cdot ASV + F(t)$$

where probe sensitivity $K_1(t)$ varies over time due to changes in environmental and electrical conditions, and $F(t)$ is a voltage that varies with time due to electronic drift and offset effects;

(b) GREF potential means for periodically, during a measurement interval, exposing said probe to a reference potential GREF at time t_0 such that when said probe is exposed to the ASV on the imaging medium at some later time t_1 , a differential probe voltage $PV(t_1) - PV(t_0)$ is obtained and ASV can be determined according to the following relation:

$$ASV = \frac{PV(t_1) - PV(t_0)}{K_1(t)} + GREF$$

(c) a calibration target, disposed in at least a portion of said probe's sensing field at least during periodic calibration intervals, switchable between two predetermined potentials CTV_0 at time ct_0 and CTV_1 at time ct_1 , said probe being responsive only to the potentials on said calibration target during the calibration interval such that a differential probe voltage $PV(ct_1) - PV(ct_0)$ is derived from the potentials on the calibration target according to the following relation:

$$CTV_1 - CTV_0 = \frac{PV(ct_1) - PV(ct_2)}{K_2(t)}$$

where $K_2(t)$ is a sensitivity factor associated with the calibration target which varies over time with changes in environmental and electrical conditions in a corresponding manner to the probe sensitivity $K_1(t)$;

(d) calibration means responsive to the differential probe voltage $PV(ct_1) - PV(ct_2)$ obtained during each calibration interval to provide an indication of the change in the sensitivity factor $K_2(t)$ for the calibration target, and to correspondingly recalibrate probe sensitivity $K_1(t)$ to compensate for variations in environmental and electrical conditions, thereby insuring accurate ASV measurements.

4,433,299

METHOD AND APPARATUS FOR MEASURING INTERFACIAL ELECTROKINETIC PHENOMENA

Yoshio Kawai, Musashino, and Kiyoshi Kitagawa, Komae, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

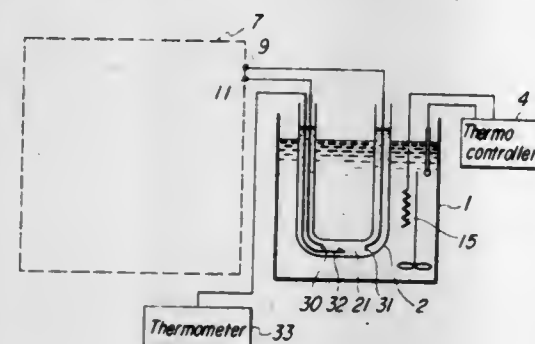
Filed Feb. 27, 1981, Ser. No. 238,822

Claims priority, application Japan, Mar. 7, 1980, 55-28915; Jan. 26, 1981, 56-9799

Int. Cl.³ G01N 27/62

U.S. Cl. 324-464

9 Claims



1. A method of observing electrophoretic phenomena of charged particles in a sample, comprising:

a first step of preheating the sample by supplying an alternating current to the sample at a frequency high enough to keep the charged particles in the sample substantially stationary; and

a second step of supplying a direct current to the sample thus preheated so as to observe the electrophoretic phenomena, and maintaining the electric power dissipation in the sample due to the direct current substantially equal to the electric power dissipation in the sample due to the alternating current.

4,433,300

FM DEMODULATOR INCLUDING AUTOMATIC THRESHOLD CONTROL CIRCUIT

Frank W. Ingle, 814 Richardson Ct., Palo Alto, Calif. 94303

Filed Jul. 27, 1981, Ser. No. 287,478

Int. Cl.³ H03D 3/00

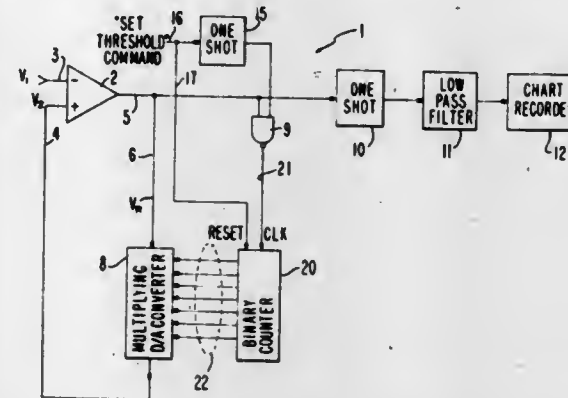
U.S. Cl. 329-136

19 Claims

1. In an FM demodulating apparatus, having a threshold signal setting period and an operation period, an automatic threshold control circuit comprising:

means responsive to a threshold signal and an input signal due to noise on an input line during said threshold signal setting period for providing an output signal which changes polarity each time the difference between the amplitude of said threshold signal and said input noise signal changes polarity; and

means responsive to said input noise signal exceeding a predetermined magnitude within said threshold signal



setting period for controlling the magnitude of said threshold signal.

4,433,301

EQUALIZATION PREAMPLIFIER WITH HIGH FREQUENCY GAIN PEAKING

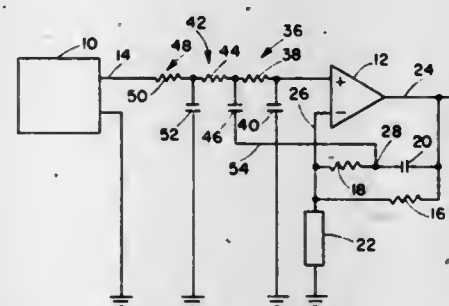
Henry J. Luke, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Rockford, Ill.

Filed May 11, 1981, Ser. No. 262,372

Int. Cl.³ H03F 3/191

U.S. Cl. 330-109

10 Claims



1. An equalizing preamplifier circuit comprising: an operational amplifier having an inverting input terminal, a noninverting input terminal and an output terminal; a feedback circuit connected between said inverting input terminal and said output terminal including a first resistor and a second resistor wherein the resistance of said first resistor is greater than the resistance of said second resistor and a feedback capacitor connected in series between said second resistor and said operational amplifier output terminal; and an input filter including two low pass RC sections connected to said operational amplifier noninverting input;

and means for connecting a capacitor of the second RC section from said noninverting terminal to the node of said feedback circuit between said feedback capacitor and said second resistor.

4,433,302

AMPLIFIER WITH INDEPENDENT QUIESCENT OUTPUT VOLTAGE CONTROL

Robert B. Davies, and Ira Miller, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1982, Ser. No. 352,903

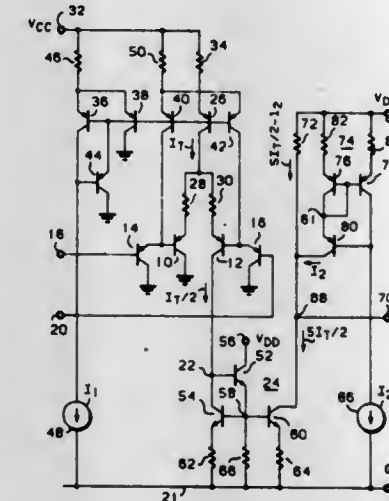
Int. Cl.³ H03F 3/45

U.S. Cl. 330-257

5 Claims

1. An amplifier having an input terminal responsive to an input having rising and falling transitions, and an output terminal for providing a quiescent output voltage when said input is in one of said transitions, said circuit comprising: current means coupled to said input terminal and responsive

to said input for establishing a predetermined current at a node; load means coupled to said current means through said node and having a load current; and



mirror means coupled to both said load means and said current means at said node and having a mirror current, said predetermined current being substantially similar to the summation of said load current and said mirror current, said node coupled to said output terminal.

4,433,303

PUSH-PULL AMPLIFIER CIRCUIT WITH FIELD-EFFECT TRANSISTORS

Katuhiko Sasaki, Tokyo, Japan, assignor to Pioneer Electronics Corporation, Tokyo, Japan

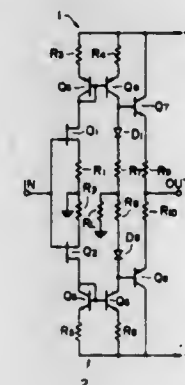
Filed Aug. 31, 1981, Ser. No. 298,143

Claims priority, application Japan, Sep. 4, 1980, 55-126071

Int. Cl.³ H03F 3/30

U.S. Cl. 330-264

5 Claims



1. A push-pull amplifier circuit comprising:

first and second field-effect transistors opposite in electrical conductivity to each other, a common input signal being applied to the gates of said first and second field-effect transistors;

first and second impedance elements connected respectively between the source of said first field-effect transistor and a common reference potential point and between the source of said second field-effect transistor and said common reference potential point; and

current generating means, comprising first and second current mirror circuits receiving inputs from said first and second field-effect transistors, respectively, for outputting currents which have predetermined ratios with respect to currents in said first and second field-effect transistors, respectively, said currents thus outputted being applied to a common load.

4,433,304

AUTOMATIC NOISE REJECTION FOR USE IN SCANNER AND THE LIKE

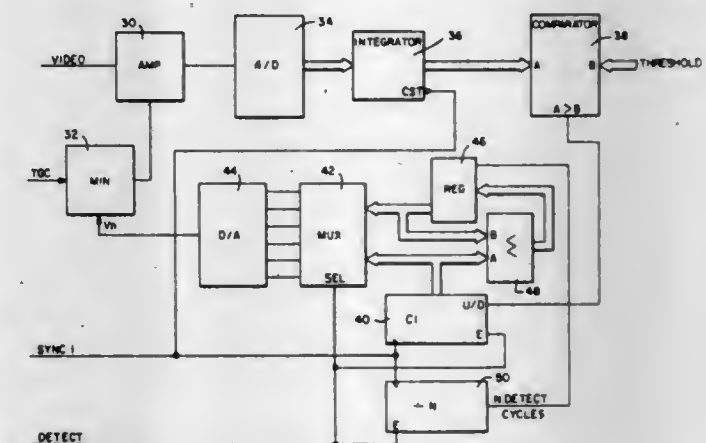
Gary L. Engle, Fair Oaks, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Aug. 19, 1981, Ser. No. 294,159

Int. Cl.³ H03G 3/10

U.S. Cl. 330-281

7 Claims



1. Circuitry for variably amplifying a signal in response to a time gain control signal and in which noise rejection is provided comprising

a variable gain amplifier including an input terminal for receiving an input signal, a control terminal for receiving a time gain control signal, and an output for an amplified signal,

first comparator means having first and second input terminals for receiving two signals for comparison and an output terminal for providing a comparison signal,

first means for receiving an amplified signal from said output of said variable gain amplifier and providing a first signal to said first terminal of said first comparator means,

second means for applying a threshold voltage to said second input of said comparator means,

counter means responsive to a comparison signal at said output terminal of said comparator means,

second comparator means having first and second input terminals for receiving two signals for comparison and an output terminal for receiving one of said two signals in response to the comparison,

third means for applying an established time gain control signal to said first input of said second comparator means,

fourth means for applying a signal derived from said counter means to said second input of said second comparator means, and

fifth means for applying a signal at said output terminal of said second comparator means to said control terminal of said variable gain amplifier.

4,433,305

AMPLIFIER CIRCUIT

Akio Ozawa, Susumu Sueyoshi, Keishi Sato, Kikuo Ishikawa, Kiyomi Yatsuhashi, Satoshi Ishii, and Masamichi Yumino, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,792

Claims priority, application Japan, Sep. 21, 1979, 54-121646; Sep. 21, 1979, 54-121649

Int. Cl.³ H03F 3/04

U.S. Cl. 330-296

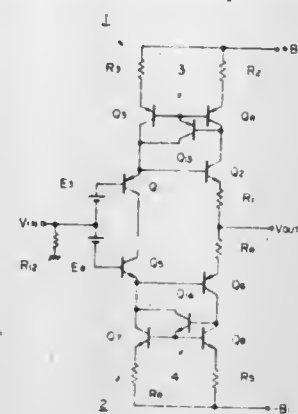
7 Claims

1. An amplifier circuit comprising: a first transistor having a base to which an input signal is applied;

a second transistor of the conductivity type opposite that of said first transistor having a base coupled to an emitter of said first transistor;

means for supplying currents to said emitter of said first

transistor and a collector of said second transistor, the ratio of said currents being constant; and



at least one resistor coupled in series with at least one of said collector and an emitter of said second transistor for producing an output signal having a component in proportion to said current in said second transistor.

4,433,306

AUDIO-FREQUENCY POWER AMPLIFIER

Hideo Honda, Yokohama; Chikara Tsuchiya, Tokyo; Yoshiaki Sano, Kawasaki; Toshio Hanazawa, Kawasaki, and Harumi Handa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

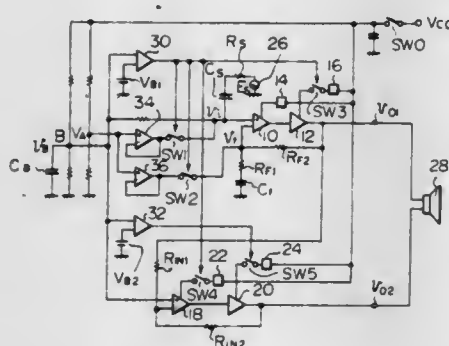
Filed Jul. 1, 1981, Ser. No. 279,457

Claims priority, application Japan, Jul. 4, 1980, 55-90537

Int. Cl.³ H03H 3/04

U.S. Cl. 330-297

8 Claims

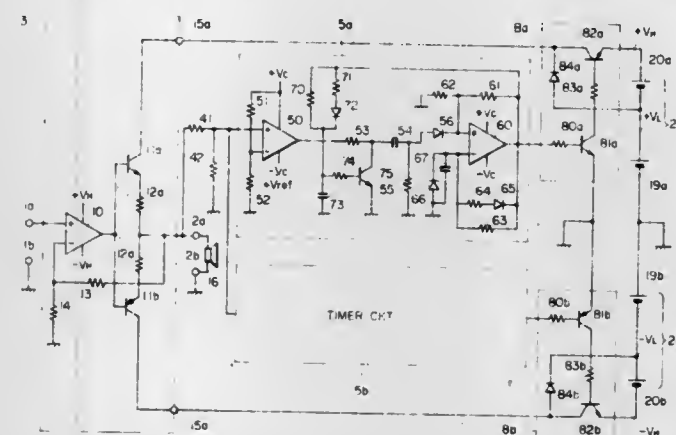


1. An audio-frequency power amplifier comprising: a power switch through which a power supply voltage is provided when said power switch is closed; first amplifying means for producing an output signal at an output port; second amplifying means for producing an output signal at an output port, said output signal having a phase which is the inverse of the phase of the output signal from said first amplifying means; a low impedance load directly connected between the output ports of said first and second amplifying means; first operation control means, operatively connected to said power switch and said first amplifying means, for activating said first amplifying means after the closing of said power switch; and second operation control means, operatively connected to said power switch and said second amplifying means, for maintaining the output port of said second amplifying means in a floating state for a first predetermined period of time after said first amplifying means is activated, and for activating said second amplifying means, after said first predetermined period of time, by providing the power supply voltage to said second amplifying means.

4,433,307
POWER SUPPLY CHANGEOVER TYPE POWER AMPLIFIER
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 16, 1981, Ser. No. 321,621
Int. Cl.³ H03F 3/20

U.S. Cl. 330-297

16 Claims



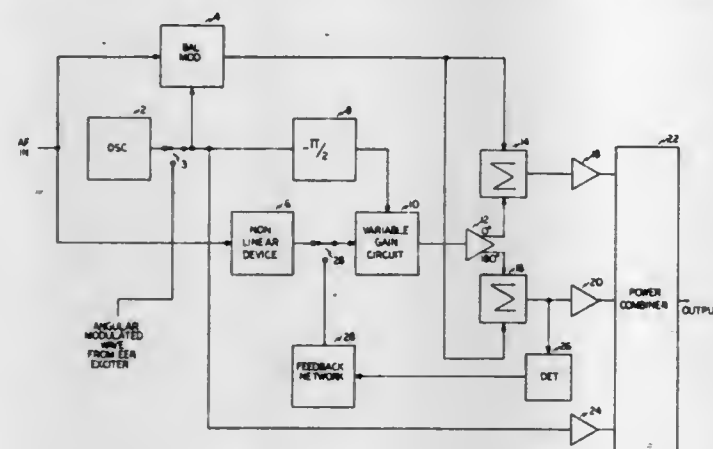
4,433,312

METHOD AND MEANS FOR MODULATING WAVES
Leonard R. Kahn, 137 E. 36 St. (Apt. 6A), New York, N.Y. 10016

Filed Dec. 18, 1981, Ser. No. 332,018
Int. Cl.³ H03C 1/50, 1/52, 5/00

U.S. Cl. 332—22

16 Claims



1. The method of producing an envelope modulated wave by use of three signal amplifiers comprising the following steps:

- generating an unmodulated carrier wave,
- amplifying said unmodulated carrier wave in a first signal amplifier,
- phase modulating a portion of the carrier wave generated in step (a) with an input signal to produce a first phase modulated wave,
- amplifying said first phase modulated wave in a second signal amplifier,
- phase modulating another portion of the carrier wave generated in step (a) with the input signal to produce a second phase modulated wave,
- amplifying said second phase modulated wave in a third signal amplifier, and,
- combining the amplified waves resulting from steps (b), (d) and (f) to produce the desired envelope modulated wave.

4,433,313

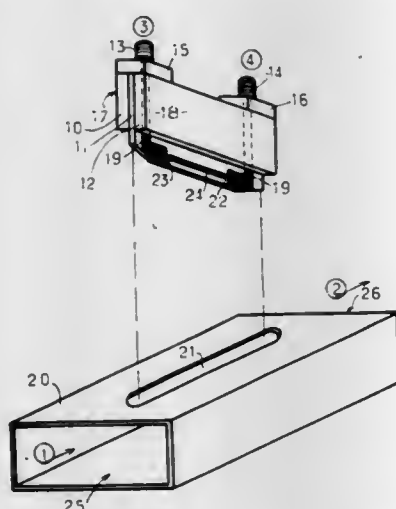
APPARATUS FOR MICROWAVE DIRECTIONAL COUPLING BETWEEN A WAVEGUIDE AND A STRIPLINE

Jacques Saint, Houilles, and Gerard Collignon, Savigny sur Orge, both of France, assignors to Societe d'Etude du Radant, France

Filed Sep. 9, 1981, Ser. No. 300,603
Claims priority, application France, Sep. 12, 1980, 80 19693
Int. Cl.³ H01P 5/18, 5/107

U.S. Cl. 333—109

15 Claims



1. A directional microwave coupler to couple microwave

energy from a waveguide transmission line to a stripline transmission line comprising:

- a longitudinal slot fashioned in a side of said waveguide;
- a central conductor of said stripline extending through said slot and into said waveguide; and
- phase-shifting means including at least one capacitor mounted in series with said central conductor for equalizing the phase velocity of the microwaves in said conductor and the phase velocity of the microwaves in said waveguide adjacent to said conductor.

4,433,314

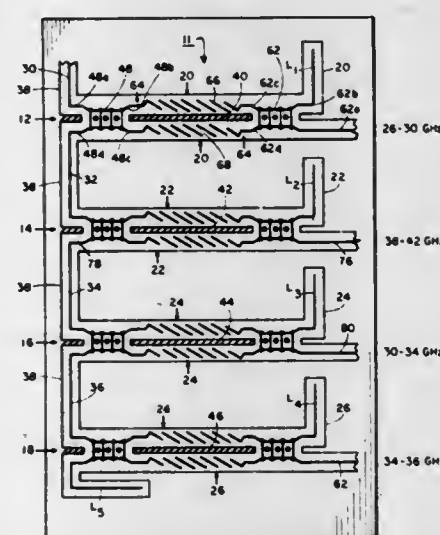
MILLIMETER WAVE SUSPENDED SUBSTRATE MULTIPLEXER

Alfred R. Hialop, and David Rubin, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1982, Ser. No. 341,357
Int. Cl.³ H01P 1/213

U.S. Cl. 333—110

13 Claims



1. A multiplexer for separating the components of a signal having signal components in N bands of frequencies comprising:

- a dielectric substrate;
- first means disposed on said substrate for receiving a signal including signal components within at least one of N bands of frequencies;

N suspended substrate channel dropping filters disposed on said dielectric substrate each having an input port, a signal pass output port and a signal reject output port, a first one of said N channel dropping filters having its input port operably coupled to said first means and each of the remaining N-1 channel dropping filters having its input port operably coupled to the signal reject output port of one of the other N-1 channel dropping filters;

a metallic housing forming a cavity surrounding said dielectric substrate, said first means and said N channel dropping filters;

each of said N channel dropping filters comprising:

- a first hybrid coupler;
- a bandpass filter operably coupled to said first hybrid coupler;
- a second hybrid coupler operably coupled to said bandpass filter;
- each of said bandpass filters comprising first and second substantially identical edge-coupled filters;
- said metallic housing having a top portion and a bottom portion; and
- each pair of said first and second substantially identical edge-coupled filters having a metallic wall positioned between first and second edge-coupled filters and extending between said metallic housing top and bottom portions.

4,433,315

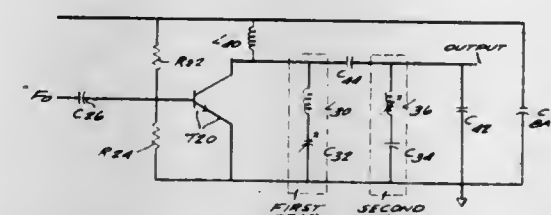
TUNABLE COUPLING NETWORK

Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 24, 1981, Ser. No. 324,665
Int. Cl.³ H03H 7/01; H03B 5/08

U.S. Cl. 333—174

6 Claims



1. A multiplier for generating a signal at a desired harmonic of a fundamental frequency excitation comprising:

- a non-linear amplifier stage for providing, in response to said fundamental frequency excitation signal, an output including frequency components at said fundamental frequency and at harmonics thereof; and

a tuned circuit having rejection notches above and below a passband frequency range including the desired harmonic of the fundamental frequency said tuned circuit including at least one tunable value component and one fixed value component, the circuit values of said fixed and tunable components being selected such that the circuit is tunable to select a desired harmonic over a predetermined range of fundamental frequencies, the tuning of said tunable component causing the rejection notches to move such that they are maintained at a predetermined frequency ratio with respect to the passband when the circuit is tuned so that the passband tracks the desired harmonic of the fundamental frequency over a range of fundamental frequencies.

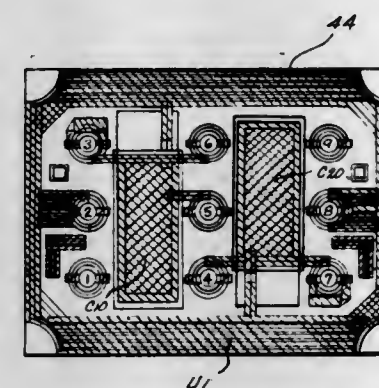
4,433,316

CRYSTAL FILTER AND METHOD FOR FABRICATION
Gerald E. Roberts, Lynchburg, and Alfred G. Staples, Evergreen, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Aug. 28, 1981, Ser. No. 297,498
Int. Cl.³ H03H 9/205, 9/60

U.S. Cl. 333—189

10 Claims



6. A crystal filter, comprising:

- a ceramic substrate;
- a thick film circuit formed on said ceramic substrate including at least one capacitor, said thick film circuit comprising a lower electrode formed on the substrate, a dielectric layer formed on the lower electrode and an upper electrode formed on the dielectric layer; and
- two coupled-dual resonator crystals mechanically coupled to the substrate and electrically coupled with the thick film circuit to form the crystal filter.

4,433,317

CONTROLLED FLOATING CONTACTOR SWITCH

Robert H. Twyford, Great Falls, Va., assignor to Mechanical Enterprises, Inc., Herndon, Va.

Continuation-in-part of Ser. No. 340,366, Jan. 18, 1982, abandoned. This application Dec. 16, 1982, Ser. No. 450,227
Int. Cl.³ H01H 1/66, 51/00

U.S. Cl. 335—151

13 Claims



1. A switch comprising:

- a housing having a cavity therein;
- a pair of contact members mounted in said cavity with the ends thereof spaced to provide opposed contact surfaces, each said contact surface being defined within an area bounded by the periphery of the contact member end, and portions of said surfaces being spaced a predetermined distance with said distance being less than the spacial distance between the remainder of the areas of said surfaces;
- a floating contactor member disposed between said contact surfaces having a dimension in the direction of said contact members at least as great as said predetermined distance;
- a resilient sleeve enclosing said contact surfaces and the space therebetween so as to encircle and resiliently support said contactor member; and
- actuator means associated with said housing to apply force through said sleeve on said contactor member to displace said contactor member and said resilient sleeve to effect closing of said switch by interengagement between said members.

4,433,318

DEFLECTION YOKE FOR A PICTURE TUBE OF A PROJECTION COLOR TELEVISION RECEIVER SET
Nobutaka Okuyama, Toshiharu Shimizu, and Yoshikazu Naito, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 391,963
Claims priority, application Japan, Jun. 26, 1981, 56-98221;
Oct. 26, 1981, 56-170018

Int. Cl.³ H01F 5/00

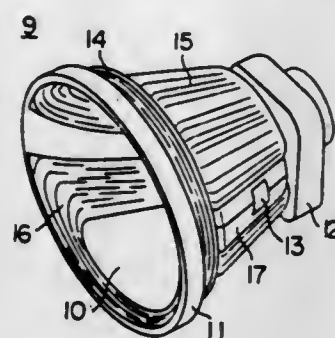
U.S. Cl. 335—213

10 Claims

1. A deflection yoke for a picture tube of a projection color television receiver set, comprising:

- a generally horn-shaped core;
- a vertical deflection winding toroidally wound on said core;
- a saddle-shaped horizontal deflection winding arranged in said core;
- a generally horn-shaped separator arranged between said

vertical deflection winding and said horizontal deflection winding; and
 (5) a solenoid-shaped auxiliary coil having a center axis thereof substantially aligned to a center axis of said core



and arranged adjacent to said vertical deflection winding, said auxiliary coil being electrically connected to said vertical deflection winding to receive a vertical deflection current thereto.

4,433,319

MOISTURE SENSOR AND METHOD OF MANUFACTURING THE SAME

Ernst Lüder, Stuttgart, and Traugott Kallfass, Grossbottwar, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

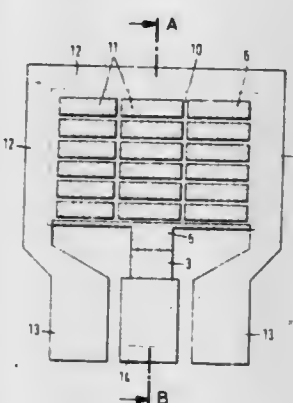
Filed Jun. 9, 1981, Ser. No. 272,065

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024297

Int. Cl.³ H01L 7/00

U.S. Cl. 338—34

36 Claims



1. A moisture sensor comprising a thin layer of tantalum oxide applied to a moisture insensitive substrate and at least two electrodes placed on the tantalum oxide layer spaced apart from each other wherein the tantalum oxide layer comprises the oxide of highly resistive low density tantalum where the tantalum in the layer applied to the substrate has a density of less than 15 g/cm³, and preferably less than 14 g/cm³.

4,433,320

DEW SENSOR

Michihiro Murata, Kyoto, and Akira Kumada, Ootsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

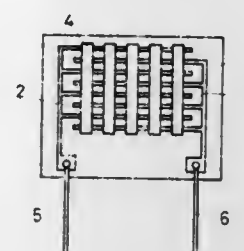
Filed Aug. 18, 1982, Ser. No. 409,028

Int. Cl.³ H01L 7/00

U.S. Cl. 338—35

1. A dew sensor, comprising:
 a substrate,
 a pair of opposing detecting electrodes formed on said substrate, and
 a plurality of humidity sensitive members formed on said substrate, said plurality of humidity sensitive members

being spaced apart and each connecting said opposing detecting electrodes such that a plurality of exposed



boundary areas are formed between said humidity sensitive members and said electrodes.

4,433,321

PRESSURE TRANSDUCER

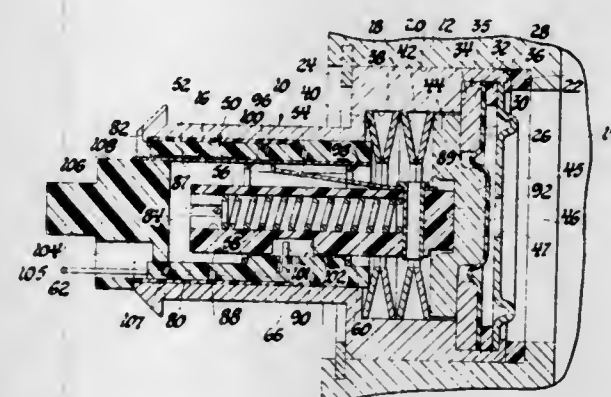
Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1982, Ser. No. 418,201

Int. Cl.³ H01L 10/10

U.S. Cl. 338—42

3 Claims



1. In a pressure transducer adapted for communication with a pressure system producing a variable pressure signal wherein the transducer has a potentiometer including a resistor connectable with a supply conductor and a ground conductor and a relatively movable conductive wiper connectable with a control conductor and a pressure sensor responsive to the variable pressure signal to move the wiper along the resistor so as to convert the variable pressure signal into a variable voltage signal: the improvement comprising the resistor being in the form of a strip having a resistance portion located intermediate two terminal portions, and resistor mounting means for mounting the strip in the transducer so that the terminal portions remain in conductive relationship in the potentiometer for connection with the supply conductor and ground conductor while the strip is slidably adjustable external of the transducer to adjust the resistance portion relative to the wiper to thereby enable ready calibration of the voltage signal with respect to the pressure signal without entering the transducer.

4,433,322

VARIABLE RESISTOR

Masaru Hirayama, Nobuaki Anzai, and Ryusuke Shirouzu, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,974

Claims priority, application Japan, Feb. 18, 1981, 56-20728[U]; Mar. 23, 1981, 56-39046[U]

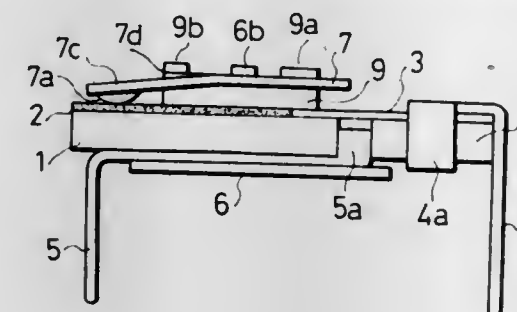
Int. Cl.³ H01C 10/32

U.S. Cl. 338—162

6 Claims

1. In a variable resistor including an insulating substrate carrying a resistance layer, a slider mounted for rotation relative said insulating substrate and having a contact portion adapted to be turned in sliding contact with said resistance layer, and an

insulating spacer separating said slider from said insulating substrate; the improvement wherein said slider is provided with a plurality of holes extending therethrough, and said insulating spacer is formed from a synthetic resin molded into



its shape directly onto a surface of said slider with portions of said synthetic resin extending through said holes to secure said spacer and said slider integrally together to form a unitary component.

4,433,323

GROUND PROXIMITY WARNING SYSTEM WITH TIME AND ALTITUDE BASED MODE SWITCHING

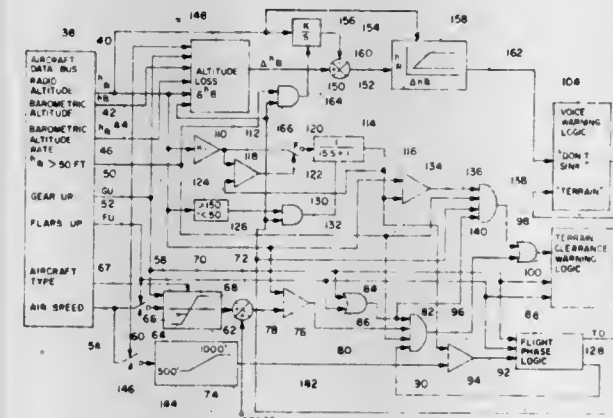
Michael M. Grove, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Rockford, Ill.

Filed Feb. 4, 1982, Ser. No. 345,891

Int. Cl.³ G08B 23/00

U.S. Cl. 340—970

32 Claims



1. A ground proximity warning system for aircraft comprising:

a source of signals representing aircraft flight parameters;
 a source of a signal representing aircraft radio altitude;
 means responsive to said radio altitude signal for generating a time based altitude signal that increases as a function of increasing radio altitude and time;
 a first warning mode means responsive to said flight parameter signals and said radio altitude signal for generating a warning signal in accordance with a first predetermined relationship between flight parameters;
 a second warning mode means responsive to said flight parameter signals and said radio altitude signal for generating said warning signal in accordance with a second predetermined relationship between flight parameters;
 and
 means operatively connected to said first and said second warning mode means and responsive to said time based altitude signal for deactivating said first warning mode means.

4,433,324

DEVICE TO PROMOTE THE MOVEMENT OF BUSES BY ALLOCATION OF PRIORITY OF CROSSING OF AN INTERSECTION CONTROLLED BY TRAFFIC LIGHTS

Francis Guillot, "Les Hauts de Cimiez", 44, avenue de la Marne, 06100 Nice, France

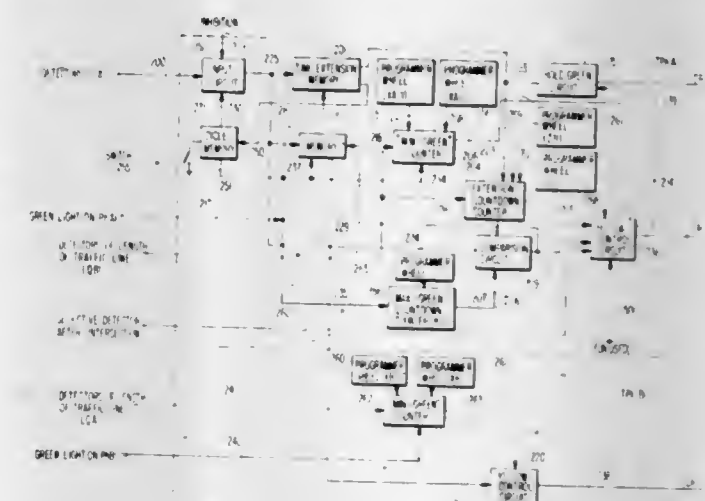
Continuation-in-part of Ser. No. 765,009, Feb. 2, 1977, abandoned. This application Apr. 10, 1979, Ser. No. 28,920

Claims priority, application France, Mar. 21, 1975, 75 10336

Int. Cl.³ G08G 1/095, 1/07, 1/08

U.S. Cl. 340—923

5 Claims



1. Device to promote movement of buses by allowing them priority of passage through intersections which are controlled by lights, with said priority modified by the movement of the other vehicular traffic, said device comprising a controller CR of the lights of the intersection; a unit T Ph A for each of the streets Ph A on which the buses travel, each T Ph A unit having means to receive from said controller information on the state of the green light on street Ph A, and means to receive, from bus detectors DS A1, information that a bus traveling on said street Ph A is approaching the intersection, and means to receive, from detectors of the state of the traffic movement LQ B1, information as to whether traffic adjacent the intersection on a cross street Ph B is moving or non-moving; said unit having two programmer wheels 255 and 256 for selectively setting two minimum time durations X A 11 and X A 12 of the green lights of said street Ph A, one corresponding to the "moving traffic" information and the other corresponding to the "non-moving traffic" information received from said traffic movement detectors, and two programmer wheels 267 and 268 for selectively setting two time durations of time extensions Z 11 and Z 12 for extension of the green light of said street Ph A, one corresponding to said "moving traffic" information and the other corresponding to said "non-moving traffic" information, and a programmer wheel 265 for selectively setting a time duration Y 10 which is the maximum permitted duration of the green light of said street Ph A; the unit T Ph A having means to act on controller CR of the lights of the intersection to speed the passage of buses detected by DS A1 on Ph A without unduly delaying traffic detected by LQ B1 on Ph B; and a unit T Ph B for each of the streets Ph B on which no bus travels, the T Ph B unit having means to receive from controller CR, information on the state of the green light of said street Ph B, and from detectors of the state of the traffic LQ A1, information as to whether the traffic adjacent the intersection on the same street Ph A as the bus is moving or non-moving, the T Ph B unit comprising two programmer wheels 260 and 261 for selectively setting two minimum time durations X B 11 and X B 12 of the green light of said street Ph B, the T Ph B unit having means to act on controller CR of the intersection lights to promote the flow of the traffic in which the bus would otherwise be delayed.

4,433,325

OPTICAL VEHICLE DETECTION SYSTEM

Ryobei Tanaka, Osaka; Akinobu Kitamura; Takaaki Otake, both of Nagaokakyo, and Yutaka Kato, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

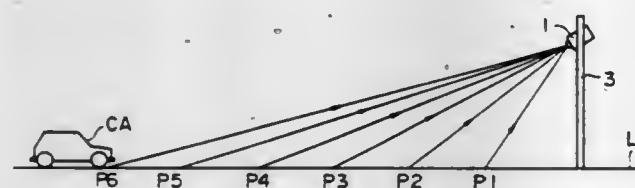
Filed Sep. 29, 1981, Ser. No. 306,775

Claims priority, application Japan, Sep. 30, 1980, 55-137391; Oct. 6, 1980, 55-140105

Int. Cl.³ G08G 1/00, 1/04

U.S. Cl. 340—937

6 Claims



1. An optical vehicle detection system comprising: camera means for catching the image of a vehicle running in a selected roadway lane to generate an output video signal, inquiring means for inquiring if said output video signal includes a predetermined vehicle shadow signal component, and processing means associated with said inquiring means, for processing said output video signal as a signal having a component of shadow cast by a vehicle, when said output video signal includes the predetermined shadow signal component.

4,433,326

POWER LINE COMMUNICATION SYSTEM USING THE NEUTRAL AND GROUND CONDUCTORS OF A RESIDENTIAL BRANCH CIRCUIT

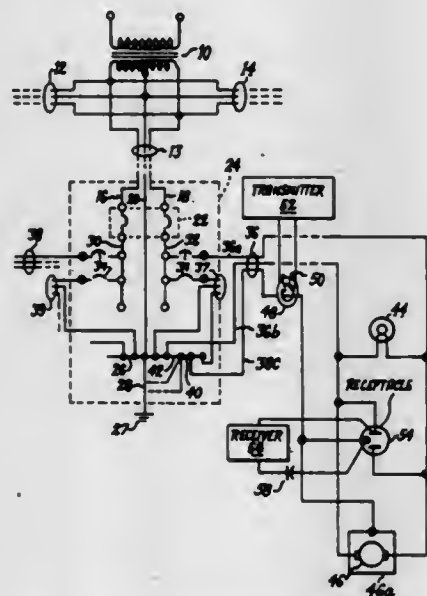
Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,631

Int. Cl.³ H04M 11/04

U.S. Cl. 340—310 A

13 Claims



1. A power line communication system for signalling over a low voltage AC power distribution system for distributing electrical power at an AC power frequency throughout a building, wherein the power distribution system includes a load center and a plurality of branch circuits, the load center having at least one main busbar to which a main of a service entry feed is connected and a neutral bus to which a neutral cable of the service entry feed is connected, the neutral bus being solidly clamped to ground potential, each branch circuit having a line conductor electrically connected with the main busbar and a neutral conductor terminated in electrical con-

nection with the neutral bus, said communication system comprising, in combination:

- A. a signal communication link consisting of at least one of the branch circuits, said one branch circuit including, in addition to a line conductor and a neutral conductor, a ground conductor terminated within the load center in common electrical connection with the neutral bus and neutral conductor and otherwise electrically isolated from the neutral conductor downstream from the load center;
- B. a transmitter for transmitting voltage signals of a frequency greater than the power frequency;
- C. a receiver tuned to receive said voltage signals;
- D. a signal coupling transformer having a core magnetically linked with a segment of one of the neutral and ground conductors of said one branch circuit to provide one winding thereof and a second winding wound on said core connected with one of said transmitter or said receiver, whereby an impedance is created in said segment across which said voltage signals are developed; and
- E. capacitive coupling means connecting the other of said transmitter or said receiver across the neutral and ground conductors of said one branch circuit at a location downstream from said transformer, said coupling means exhibiting a high impedance at the power frequency, whereby voltage signals appearing on one of the ground and neutral conductors with respect to the other propagate along said one branch circuit between said transmitter and receiver, said voltage signals being precluded from propagating onto the neutral cable of the service entry feed by virtue of the neutral bus being clamped to ground potential at the voltage signal frequency.

4,433,327

APPARATUS FOR CONVERTING NUMERAL REPRESENTING DATA CODING FORMATS RECEIVED OR DERIVED BY A CENTRAL PROCESSING UNIT

Philippe M. A. Vallet, Lardy, and Annie M. M. Vinot nee Ricot, Sucy-en-Brie, both of France, assignors to CII Honeywell Bull, Paris, France

Filed Mar. 31, 1981, Ser. No. 249,410

Claims priority, application France, Apr. 1, 1980, 80 07287

Int. Cl.³ G06F 3/00

U.S. Cl. 340—347 DD

9 Claims



1. Apparatus for converting numeric representing characters derived by a data processing system externally of a data processor unit into numeric characters processed internally in the unit, the external characters being coded in any of: (a) first and second successive multi-bit words, each including a like number (N) of multiplets, each including a like number (M) of bits, where N and M are integers greater than two, alternate multiplets of the first and second words representing numeric values having different significant bit positions, the remaining multiplets of the first word and all but one of the remaining multiplets of the second word representing numerical values in a given table representing numeric characters in a particular data coding format, the one remaining multiplet of the second word representing a sign allocated to the numeric value of the alter-

nate multiplets of the first and second words, (b) third and fourth successive multi-bit words, each including a like number (N) of multiplets, each including a like number (M) of bits, wherein alternate multiplets of the third and fourth words represent numeric values having different significant bit positions, the remaining multiplets of the first and second words and all but one of the remaining multiplets of the second word representing numerical values in a given table representing numeric characters in a particular data coding format, (c) fifth multi-bit words, each including N multiplets each including M bits, (N-2) multiplets of the fifth words representing numeric values having different significant bit positions, a first remaining multiplet of the fifth words representing the sign of the fifth words, the second remaining multiplet of the fifth words completing the fifth words, (d) sixth multi-bit words, each including R multiplets each including M bits, where R is less than N, one multiplet of the sixth words representing the sign of the sixth words having the same position as the first remaining multiplet of the fifth words, the remaining multiplets of the sixth words representing numeric values having different significant bit positions; the internal characters being coded in multi-bit words each including N multiplets each including M-bits, each multiplet of the internal code representing a numeric character having a different significant bit position, the converting apparatus comprising: first buffer register means internal of the data processor unit responsive to the externally derived characters, the first buffer register means including first and second sections, each section including N segments, each segment storing M bits, the first section being responsive to the first, third, fifth and sixth words, the second section being responsive to the second and fourth words segments A, B... D of the first section being responsive to the alternate multiplets of the first and third words, segments E, F... H of the second section being responsive to the alternate multiplets of the second and fourth words, segments I, J... L of the first section being responsive to the remaining multiplets of the first and third words, segments B... D, I, J... L of the first section being responsive to the (N-2) multiplets of the fifth words and the R multiplets of the sixth word, segment A of the first section being responsive to the second remaining multiplet of the fifth words, (R-1) of segments A, B... D of the first section being responsive to the remaining multiplets of the sixth words, segment P of the first section being responsive to the sign representing multiplets of the fifth and sixth words, segment Q of the second section being responsive to the sign representing multiplet of the second word, a first multiplexer having N segments with input terminals connected to output terminals of the N segments of the first and second buffer register sections, each segment of the first multiplexer handling M bits simultaneously, an M bit error checking network responsive to an M bit signal indicative of the sign of the character being converted, first and second gate means respectively connected between output terminals of segments P and Q and input terminals of the checking network for selectively coupling the M bits of segments P and Q to M input terminals of the checking network, an operation register of the processor having M×N input terminals connected to M×N output terminals of the N segments of the multiplexer, the processor unit including a control source for controlling connections between output terminals of the first buffer register means and the M×N input terminals of the operation register via the N segments of the first multiplexer and segments P and Q of the checking network via the first and second gate means so that when:

- (a) the first and second words are simultaneously converted (1) the alternate multiplets in segments A, B... D of the first section and in segments E, F... H of the second section are simultaneously coupled via the multiplexer to the operation register to the exclusion of the multiplets in the remaining segments of the first and second sections and (2) the sign representing multiplet in segment Q of the second section is coupled via the second gate means to the checking network,
- (b) the third and fourth words are simultaneously converted the alternate multiplets in segments A, B... D of the first

section and in segments E, F... H of the second section are simultaneously coupled via the multiplexer to the operation register to the exclusion of the multiplets in the remaining segments of the first and second sections; (c) the fifth words are converted (1) the multiplets in segments A, B... D, I, J... L in the first section are simultaneously coupled via the N segments of the multiplexer to the operation register to the exclusion of the multiplets in the remaining segments of the first and second sections and (2) the multiplet in segment P of the first section is coupled via the first gate means to the checking network; (d) the sixth words are converted (1) the multiplets in the (R-1) segments A, B... D of the first section are coupled via (R-1) segments of the multiplexer to the operation register to the exclusion of the multiplets in the remaining segments of the first and second sections, and (2) the multiplet in segment P of the first section is coupled via the first gate means to the checking network.

4,433,328

MOTION SENSING ENERGY CONTROLLER

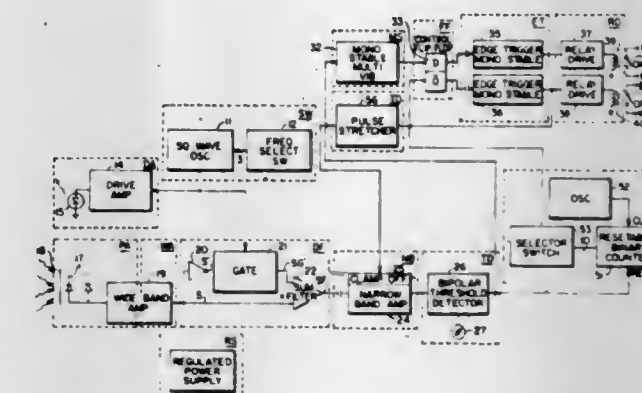
Marc E. Saphir, 4 Commodore Dr., Suite 441, Emeryville, Calif. 94608, and Michael A. Reed, 3086 W. Avenida Cresta, Tucson, Ariz. 85705

Filed Jan. 16, 1980, Ser. No. 112,387

Int. Cl.³ G08B 13/24

U.S. Cl. 340—555

46 Claims



1. A method for detecting the presence or absence of relatively low frequency motions of objects in a zone of interest, said method comprising the steps of: propagating high frequency modulated radiation lying in a predetermined portion of the spectrum into said zone of interest; detecting said radiation reflected from objects in said zone, said detecting including the step of generating electrical signals representative of the detected radiation; processing the detected radiation to determine the presence of relatively low frequency variations therein, said processing including the step of normalizing said electrical signals to remove variations caused by changes in the level of background radiation present in said zone, said normalizing including the steps of generating inverted amplified signals from the original electrical signals, partial cycle gating of said inverted amplified signals, and summing the partial cycle gated signals with the original electric signals; and generating a control signal when said low frequency variations are present.

4,433,329

ULTRASENSITIVE APPARATUS AND METHOD FOR DETECTING CHANGE IN FLUID FLOW DURING THE OCCURRENCE OF A TRANSIENT CONDITION

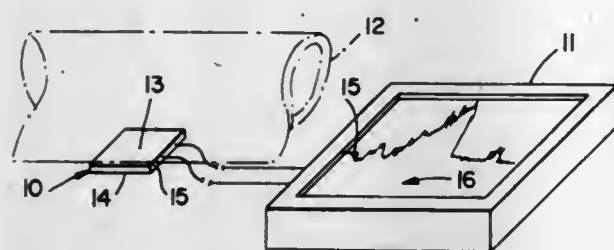
Stephen F. Streib, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 5, 1980, Ser. No. 184,559

Int. Cl.³ G08B 21/00; G01K 17/00

U.S. Cl. 340-606

11 Claims



1. Method of providing detection of change of fluid flow within a fluid-carrying body from a location completely exterior thereof, while maintaining the integrity of the interior of the body intact comprising:

- positioning a heat flux sensing transducer-meter exterior of but in heat conducting contact with the exterior of said body;
- monitoring change in fluid flow interior of said body by generating a transient cascaded output signal proportional to transient variation in heat flux detected exterior of said body at said transducer-meter;
- indicating at least said transient cascaded output signal as a function of time.

4,433,330

APPARATUS FOR DISPLAYING CHARACTERS ON A PICTURE SCREEN OF A DISPLAY UNIT

Ivan Furjanic, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

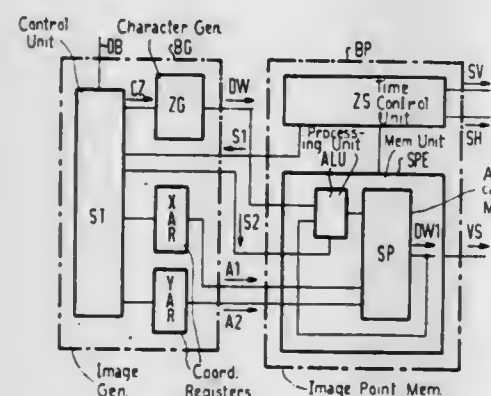
Filed Mar. 24, 1981, Ser. No. 247,077

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013706; Apr. 15, 1980, 3014437

Int. Cl.³ G09G 1/00

U.S. Cl. 340-750

11 Claims



1. An apparatus for displaying characters on a picture screen of a display unit line by line comprising:

- an image generator including a character generator for generating data words corresponding to the shapes of the characters to be displayed;
- an image repetition memory interconnected between said image generator and said display unit and a means for periodically reading out the contents of said image repetition memory;
- an allocated memory connected to said image repetition memory having one memory element allocated to each raster point on said picture screen, said data words

being stored in said memory elements at random addresses for display on said picture screen in any desired pattern; and

- a processing unit having a logic linkage interconnected between said allocated memory and said image generator for combining data words read out of said memory elements in said allocated memory with data words from said image generator and for entering a combined data word formed therefrom by said processing unit in said allocated memory for storage therein.

4,433,331

PROGRAMMABLE LOGIC ARRAY INTERCONNECTION MATRIX

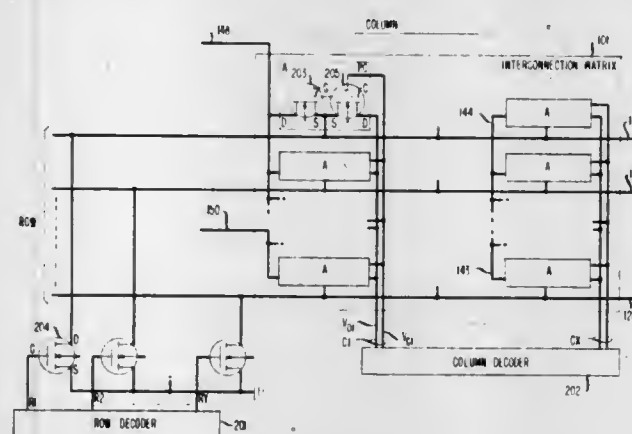
Paul W. Kollaritsch, Hazlet, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1981, Ser. No. 330,222

Int. Cl.³ H04Q 9/00; H03K 19/20

U.S. Cl. 340-825.83

16 Claims



1. An electrical interconnection matrix comprising a plurality of substantially orthogonally disposed and electrically isolated rows and columns of electrical conductors including programmable cross points at intersections between the row and column conductors for enabling electrical connection therebetween

characterized in that

- said column conductors are arranged in groups, each of said column conductors comprising two or more electrically isolated colinear segments, the segments of different groups having programmable cross points to a unique group of row conductors.

4,433,332

APPARATUS FOR REMOTELY DETERMINING THE POSITION OF ROTATING OBJECTS

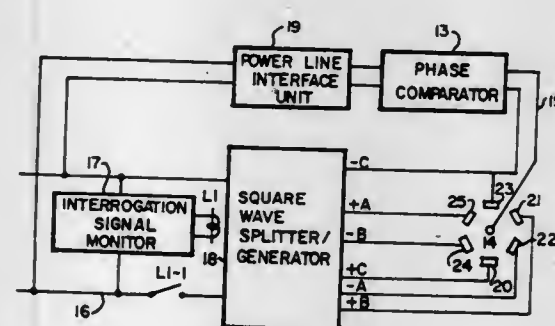
Thomas D. Wason, Raleigh, N.C., assignor to Cain Encoder Co., Greenville, N.C.

Filed Nov. 24, 1980, Ser. No. 209,878

Int. Cl.³ G08C 19/10

U.S. Cl. 340-870.37

2 Claims



1. An improved apparatus for remotely monitoring the angular position, speed, and/or direction of rotation of a member as

4,433,334

PASSIVE RANGING SYSTEM

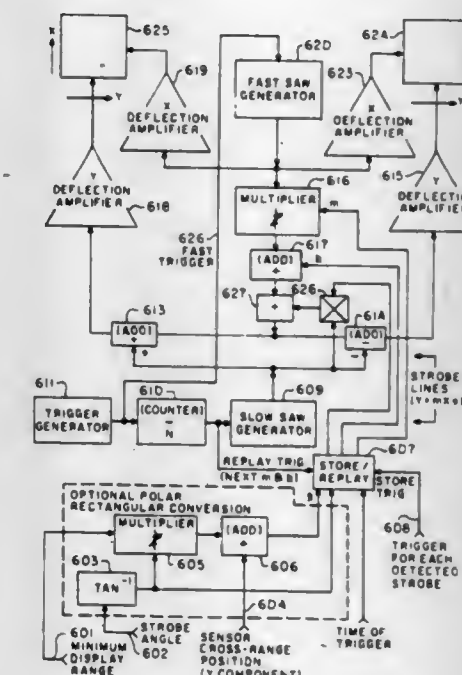
William J. Caputi, Jr., Centerport, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 21, 1982, Ser. No. 423,427

Int. Cl.³ G01S 3/02

U.S. Cl. 343-450

3 Claims



it rotates about an axis of rotation and defines a circumferential path comprising:

- means for generating an electric field in which the resultant vector representing maximum field strength rotates in a path parallel to said circumferential path of the rotating member and includes said circumferential path therein;
- a reading electrode means fixedly positioned within said electric field and symmetrically placed with respect to said axis of rotation for sensing a voltage change responsive to the crossing of said rotating member by said resultant vector and emitting an output signal responsive to said voltage change; and
- said means for generating the electric field and said reading electrode both being positioned in confronting, spaced relation to, but in no way otherwise mechanically or electrically connected to said rotating member other than that a portion of said rotating member is within the path of said rotating electric field;
- said means for generating a rotating electric field comprising:
 - means for generating a polyphase voltage having a plurality of signals, each separated from the other by a prescribed phase angle, and each signal shaped as a square wave;
 - a plate positioned in spaced, confronting, parallel relation to said circumferential path;
 - a plurality of exciting electrodes defining a circular array around a center point aligned with said axis of rotation of said rotating member, successive electrodes being connected to successive signals of said polyphase voltage.

4,433,333

TRANSMITTER PEAK POWER EFFICIENT PSEUDO-BLINK ARM DECOY SYSTEM

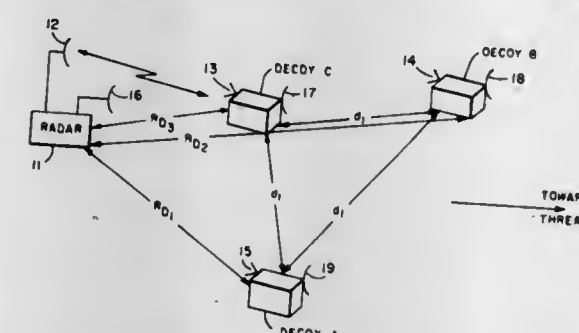
David V. Manogian, Lynnfield; Bernard H. Labitt, Needham, and Joseph R. Wood, Lawrence, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1981, Ser. No. 269,282

Int. Cl.³ G01S 7/36

U.S. Cl. 343-18 E

4 Claims



1. A method for simulating false locations of a radar transmitter comprising the steps of locating a plurality of decoy transmitters spaciouly from each other and said radar transmitter; providing said decoy transmitters with segmented antennas so that each antenna will cover a different portion of a predetermined required azimuth and elevation coverage area when using a selected portion of its antenna; switching means associated with said decoy transmitters so as to sequentially switch antenna segments which are transmitted on said decoy transmitter transmitters so that each decoy sequentially covers a different portion of said required coverage area in a cyclical manner; and selecting said antennas segments of the decoy transmitters such that the entire required azimuth and elevation coverage area is radiated by the decoy transmitters at all times.

1. Apparatus for determining the location and velocity of a target from the angle of strobes emitted by the target, the time of the strobes, and the cross-range position of the sensor at the time of each strobe, comprising:

- a first cathode-ray tube,
- a second cathode-ray tube,
- a first Y deflection amplifier connected to the first cathode-ray tube to control the Y deflection of the first tube,
- a second Y deflection amplifier connected to the second cathode-ray tube to control the Y deflection of second tube,
- a first X deflection amplifier connected to the first cathode-ray tube to control the X deflection of the first tube,
- a second X deflection amplifier connected to the second tube to control the X deflection of the second tube,
- a store-replay unit means for accepting the following four input: a trigger to store each strobe, the arc tangent of the strobe angle, and a function equal to a minimum display range desired multiplied by the arc tangent of the strobe angle, all added to the sensor cross range position, and the time of the strobe said store replay unit means storing and processing such inputs as delineated in paragraph (1),
- a trigger generator,
- a fast saw-tooth generator, receiving as an input the trigger from the trigger generator to initiate each saw-tooth pulse, the output saw-tooth being supplied to the X deflection amplifiers to provide a sweep of the cathode-ray tubes,
- a divide-by-N-counter receiving as an input the trigger from the trigger generator to produce a lower frequency trigger output at a frequency equal to the trigger generator frequency divided by N, the lower frequency trigger output being in synchronism with the trigger from the trigger generator,
- a slow saw-tooth generator receiving the slow trigger output of the divide-by-N-counter to initiate each saw-tooth wave,
- means for coupling the slow trigger output from the divide-by-N-counter to the store replay unit means to cause the store replay unit means to provide the following outputs: a time of strobe, the slope of the strobe line (m) and the intercept of the strobe line (b), derived from the

- minimum display range, the cross range position and the arc tangent of the strobe angle as delineated in paragraph (g),
- (m) a first multiplier receiving as inputs the output of the fast saw-tooth generator and the slope (m),
- (n) a first adder receiving as inputs the output of the first multiplier and the strobe intercept (b),
- (o) a second multiplier accepting as inputs the time from the store replay unit means and the output of the slow saw-tooth generator,
- (p) a second adder accepting as inputs the output of the first adder and the output of the second multiplier,
- (q) a third adder accepting as inputs the output of the second adder and the output of the slow saw-tooth generator, and supplying its output to the first Y-deflection amplifier for deflecting the first cathode-ray tube in the Y direction,
- (r) a first subtracter accepting as its first input the output of the second adder and as its second input the output of the slow saw-tooth generator, the second input being subtracted from the first in the subtracter to produce a difference output which is supplied to the second Y-deflection amplifier for deflecting the second cathode-ray tube in the Y direction, and
- (s) means for coupling the output from the fast saw-tooth generator to both the first and second X-deflection amplifiers to deflect the first and second cathode tubes in the X-direction.

4,433,335

LOCATING DEVICE

David W. Wind, Dartmouth, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

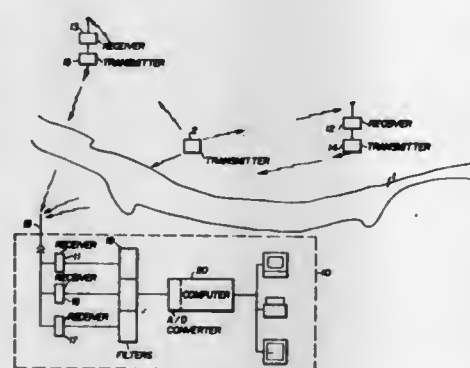
Filed May 16, 1978, Ser. No. 909,398

Claims priority, application Canada, May 31, 1977, 279484

Int. Cl.³ G01S 3/02

U.S. Cl. 343-463

13 Claims



1. Apparatus for determining the location of a transmitter comprising:
- (a) receiving means including at least two spaced receivers for receiving electromagnetic radiation from the transmitter,
- (b) means for demodulating said radiation individually from each of said receivers,
- (c) means for Fourier transforming the demodulated radiation from each of said receivers, and for providing signals representative of the radiation as a function of frequency,
- (d) means for performing a complex division of each of said signals, to establish a signal representing the phase difference between the demodulated radiation from each of the signals, and
- (e) means for providing a signal representative of the time difference based on said phase difference for defining a hyperbolic surface of rotation on which the transmitter is located.

4,433,336
THREE-ELEMENT ANTENNA FORMED OF
ORTHOGONAL LOOPS MOUNTED ON A MONOPOLE

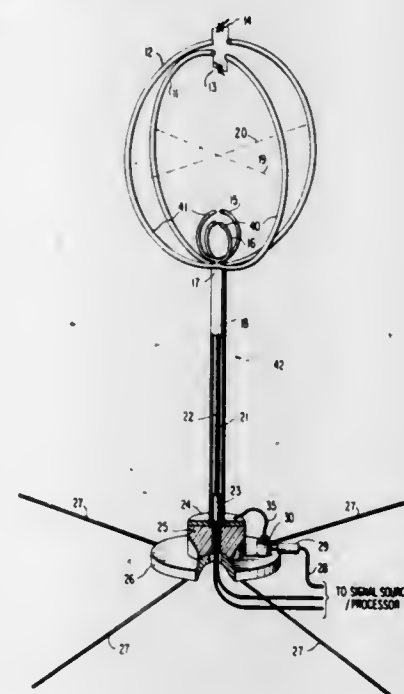
Alan R. Carr, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 5, 1982, Ser. No. 346,314

Int. Cl.³ H01Q 7/00

U.S. Cl. 343-728

9 Claims



1. A three-element antenna comprising: a monopole antenna; and first and second loop antennas mounted on and electrically coupled to one end of said monopole antenna, said loop antennas having axes orthogonal to one another and to a longitudinal axis of said monopole antenna, each of said loop antennas comprising an outer primary loop and a smaller inner secondary loop disposed in the same plane as that of said primary loop and electrically coupled thereto.

4,433,337

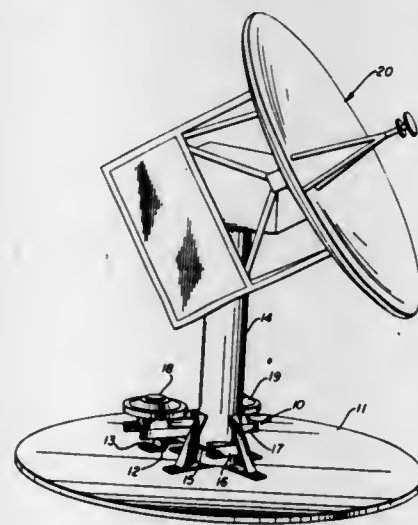
PASSIVE STABILIZATION CONVERSION UNIT
Dorsey T. Smith; Albert H. Bieser, both of Garland, and Warren H. Kintzinger, Richardson, all of Tex., assignors to Tracor BEI, Inc., Garland, Tex.

Filed Jul. 22, 1980, Ser. No. 171,247

Int. Cl.³ H01Q 1/18

U.S. Cl. 343-765

18 Claims



1. In a combination gyro and pendulum weight passive stabilization sending conversion interconnect and stabilized receiving structure system: combination dual axis gyro and

pendulum weight passive stabilization sending means; a dynamically balanced dual axis gimbal mounted stabilized receiving unit physically mountable separately and remotely from the sending means; dual axis conversion interconnect structure; with first electrically actuatable interconnect means electrically connected between a first axis of the dual axis of said gyro and pendulum weight passive stabilization sending means and the corresponding first axis of said stabilized receiving unit, and with second electrically actuatable interconnect means electrically connected between a second axis of the dual axis of said gyro and pendulum weight passive stabilization sending means and the corresponding second axis of said stabilized receiving unit; with electrically actuatable decoupling means for electrically decoupling said first interconnect means and said second interconnect means; and wherein each said first and second independent interconnect means includes motion to signal translation means; signal transmission means; and signal to motion translation means.

4,433,338

MULTIPLE-COLOR RECORDING APPARATUS

Shuichi Nakagawa; Sadao Tamura; Setsuo Satoh; Mamoru Sanagi; Hirosho Otsu; Shigenobu Miyamoto, and Hiroyuki Takahashi, all of Tokyo, Japan, assignors to Yokogawa Hoku-shin Electric Corporation, Tokyo, Japan

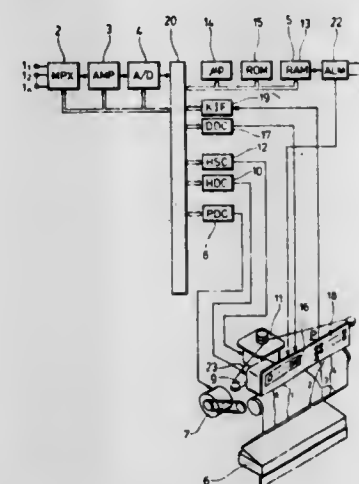
Filed Mar. 8, 1982, Ser. No. 355,783

Claims priority, application Japan, Mar. 31, 1981, 56-45896[U]; May 22, 1981, 56-77734

Int. Cl.³ G01D 9/32

U.S. Cl. 346-34

4 Claims



1. A multiple color recording apparatus comprising an input switching mechanism for successively selecting and delivering a plurality of input analog signals; a signal converter for converting said plurality of input analog signals into digital signals; a first memory for temporarily storing said digital signals; a paper feed mechanism for feeding and moving a sheet of recording paper; a recording means for recording dots in multiple colors on said sheet of recording paper, said recording means comprising a plurality of recording elements arranged along a direction transverse to direction of travel of said recording paper for recording different colors of dots; a head scanning mechanism for scanning said recording means; a second memory for temporarily storing digital signal related to the position of said recording means; and a processing unit operable on a predetermined program for reading all data out of said first memory and data out of said second memory, said unit adapted to effect a phase correction by a phase difference signal related to a reference recording element of each of said recording elements for correcting the color dot recording position to a predetermined position allocated to each data stored in said first memory and thereupon detect selective data out of said phase corrected data stored in said first memory having a minimum difference with said data stored in said second memory, and for moving said recording means along the

direction of scanning by a selected interval in response to said minimum difference and for enabling said recording means to print dots on said sheet of recording paper when said minimum difference falls to zero, thereby to produce analog recording of signal levels of a plurality of input analog signals in the form of a dot pattern of different colors allocated to said signals respectively.

4,433,339

DIRECT-WRITING RECORDER

Takehiko Sakaguchi, Nagano, Japan, assignor to Hioki Denki Kabushiki Kaisha, Nagano, Japan

PCT No. PCT/JP81/00016, § 371 Date Sep. 16, 1981, § 102(e) Date Sep. 16, 1981, PCT Pub. No. WO81/02201, PCT Pub. Date Aug. 6, 1981

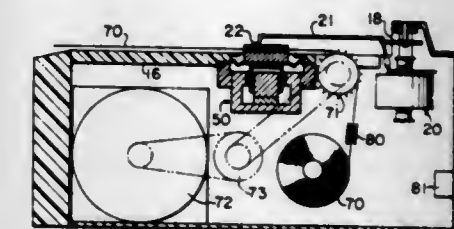
PCT Filed Jan. 23, 1981, Ser. No. 305,630

Claims priority, application Japan, Jan. 23, 1980, 55-6520; Mar. 18, 1980, 55-34554

Int. Cl.³ G01D 15/02

U.S. Cl. 346-78

9 Claims



1. In a direct-writing dot type recorder: printing means including a movable printing element for dot printing on a record medium; feeding means for intermittently feeding in a stepwise manner a record medium so as to intermittently position successive print areas of the record medium in spaced-apart relationship from the printing element; and means synchronized with the intermittent feeding of the record medium for periodically displacing the record medium toward the printing element so as to bring successive print areas of the record medium into contact with the printing element during the successive pause intervals occurring between the intermittent feeding motion of the record medium, said means for periodically displacing the record medium comprising an electromagnetic vibrator unit including a vibratable vibrator plate, a cover member attached to the vibrator plate, means defining a gap between the cover member and the vibrator plate and through which extends the record medium, means defining an opening in the cover member for receiving therethrough the printing end of the printing element, and electromagnetic means responsive to an electrical drive signal for electromagnetically vibrating the vibrator plate to effect displacement of the record medium toward the printing element to bring the record medium into contact with the printing end of the printing element.

4,433,340

OPTICAL RECORDING MEDIUM

Massao Mashita, Yokohama; Nobuaki Yasuda, Zushi, both of Japan; Tomoyuki Ishibashi, deceased, late of Yokohama, Japan, and Satoshi Ishibashi, legal representative, Himeji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

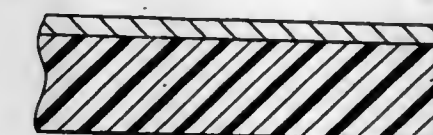
Filed Mar. 22, 1982, Ser. No. 360,665

Claims priority, application Japan, Apr. 3, 1981, 56-49392

Int. Cl.³ G01D 15/34

U.S. Cl. 346-135.1

16 Claims



1. An optical recording medium comprising: recording layer means including a mixture layer containing

tellurium as a base material and at least carbon at a predetermined ratio, for receiving an energy beam such as a laser beam whose intensity is changed in accordance with quantized information and for recording desired information by melt-deforming in response to the intensity of the energy beam, and
substrate means for supporting said recording layer means.

4,433,341

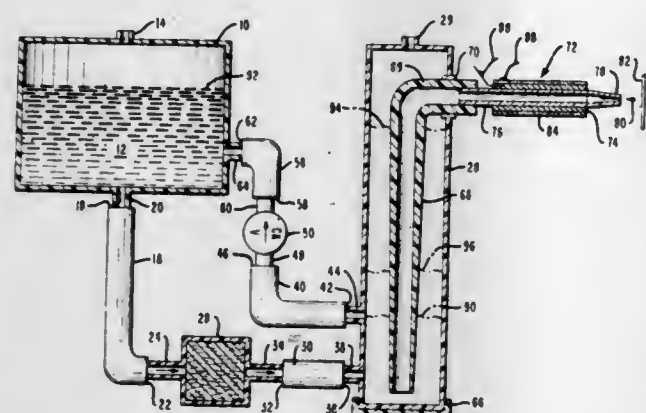
INK LEVEL CONTROL FOR INK JET PRINTER
Jacob E. Thomas, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 7, 1982, Ser. No. 385,965

Int. Cl.³ G01D 15/18

U.S. Cl. 346-140 R

18 Claims



1. Means for controlling the level of ink in an ink jet printing system comprising
first means containing a quantity of ink,
second means containing a quantity of ink,
means providing an ink supply line and an ink return line connecting the first and the second ink containing means,
means operably associated with said second containing means for ejecting ink in droplet form,
means for moving said second containing means in reciprocating manner to thereby effect pumping of ink between the second and the first containing means, and
means associated with the ink return line for permitting intermittent flow of ink therethrough from the second to the first containing means and establishing a first ink level in the second containing means during printing operation and for allowing flow of ink through the ink supply line from the first to the second containing means and establishing a second ink level in the second containing means during non-printing.

4,433,342

AMORPHOUS SWITCHING DEVICE WITH RESIDUAL CRYSTALLIZATION RETARDATION

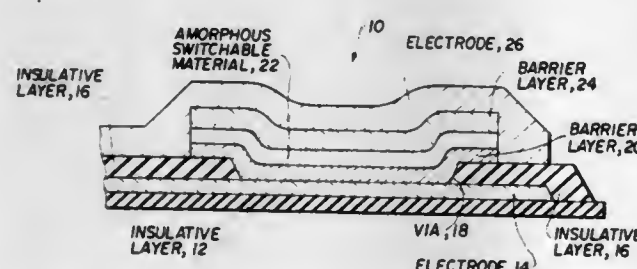
Vipin N. Patel, Melbourne, and John L. Conarroe, Jr., Melbourne Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 6, 1981, Ser. No. 251,106

Int. Cl.³ H01L 45/00

U.S. Cl. 357-2

2 Claims



1. An amorphous semiconductor device switchable from a high resistance amorphous state to a low resistance crystalline state comprising:

a pair of electrode structures;
a layer of amorphous germanium telluride forming the switchable layer between said pair of electrode structures; and
a thin retarding layer of amorphous germanium material between said germanium telluride layer and each electrode structure.

4,433,343

EXTRINSIC INFRARED DETECTOR WITH DOPANT SITE CHARGE-NEUTRALIZATION

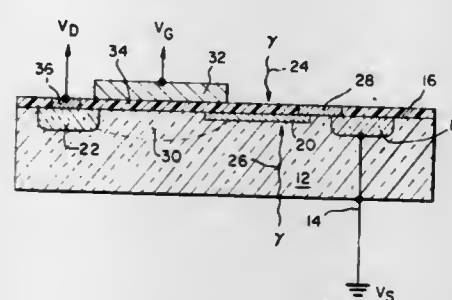
Michael A. Levine, 261 E. Alegria Ave. #22, Sierra Madre, Calif. 91024

Filed Dec. 22, 1981, Ser. No. 333,465

Int. Cl.³ H01L 27/14, 29/78

U.S. Cl. 357-30

6 Claims



1. A monolithic infrared detector comprising:
a substrate formed from a substrate of semiconductive material, said substrate being of a first conductivity type;
a detector area at the top of said substrate of extrinsic semiconductive material consisting essentially of said substrate semiconductive material and one or more dopants to form an extrinsic detector region, said detector region being of a second conductivity type;
a source region formed from said substrate semiconductive material and being of said first conductivity type;
a drain channel formed from said substrate semiconductive material and being of said second conductivity type;
means for permitting the flow of carriers from within said detector area to said drain channel; and
an external electrical contact between said source region and said detector area whereby charge neutrality at an extrinsic material site within said detector area may be maintained by carrier conduction from said source region through said external contact into said detector region and through said detector region to said extrinsic material site after a carrier at said site has been excited by a photon of infrared light and has flowed to said drain channel.

4,433,344

AUTOMATIC TELEVISION ANTENNA CONTROL SYSTEM

James H. Gradin, Irvine, and John S. Joseph, Los Alamitos, both of Calif., assignors to Sundstrand Data Control, Inc., Rockford, Ill.

Filed Nov. 25, 1981, Ser. No. 324,902

Int. Cl.³ H04B 7/08; H01Q 3/24

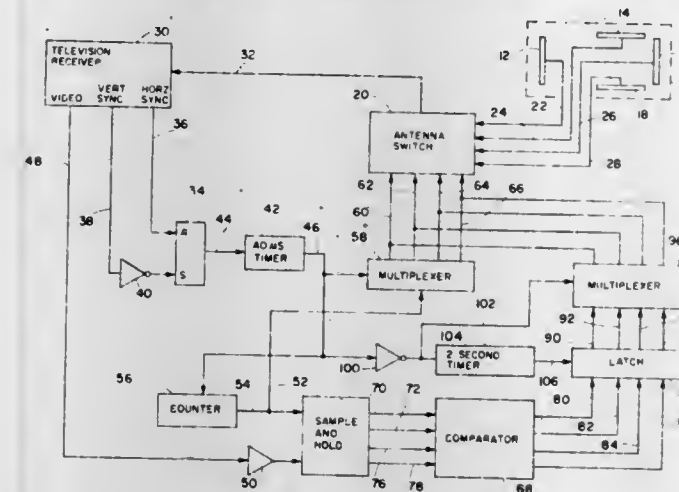
U.S. Cl. 358-181

16 Claims

1. A television antenna control circuit for use with a television receiver and an antenna system having a plurality of directional antennas comprising:
antenna switch means for selectively connecting each of the directional antennas to the television receiver;
sampling means operatively connected to the television receiver and to said antenna switch means for sampling a video output signal of the television receiver for each directional antenna;

comparator means operatively connected to said sampling means for comparing said video output signals for each directional antenna selected and generating a logic signal representing the antenna producing the strongest video signal;

timing means operatively connected to said antenna switch means and said sampling means as well as the television receiver for causing said sampling means to selectively sample the video output signal for each directional antenna for a predetermined amount of time in response to synchronizing signals from the television receiver; and



antenna control means operatively connected to said comparator means and said antenna switch means for connecting the directional antenna producing the strongest video signal to the television receiver in response to said logic signal.

4,433,345

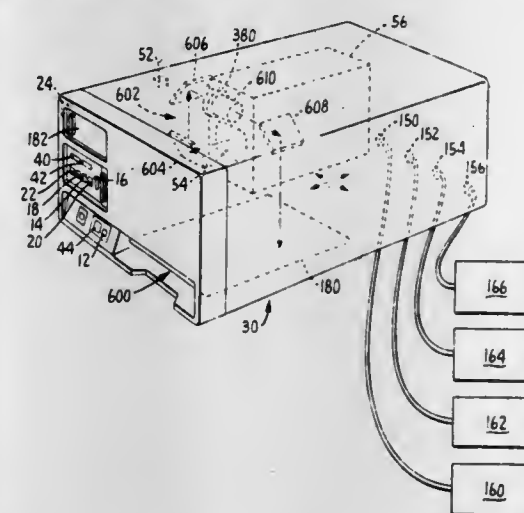
VIDEO IMAGE RECORDING METHODS AND DEVICES
David H. Haddick, Berkeley; George E. Lyon, San Francisco, and David A. Menzimer, Morgan Hill, all of Calif., assignors to LogE/Dunn Instruments, Inc., San Francisco, Calif.

Filed Jun. 19, 1981, Ser. No. 275,257

Int. Cl.³ H04N 5/84

U.S. Cl. 358-244

20 Claims



1. A video image recording device for photographically recording video generated images having a brightness level for exposing a photographic emulsion within limits of an exposure range, further comprising:

first index value display means for displaying selected values of a first index, each of which corresponds to a particular value of video image display screen light output;
second index value display means for displaying selected values of a second index, each of which corresponds to a particular value of video image display screen light output, said first and second index values representing intensity limitations for said image brightness level;
a first index value display control means for manually controlling the magnitude of the index value displayed by said first index value display means;

second index value display control means for manually controlling the magnitude of the index value displayed by said second index value display means, whereby an operator may select and display desired index values representing brightness level requirements for said images;
a first plurality of memory storage locations for storing plural representations of particular values of said first index; and
a second plurality of memory storage locations for storing plural representations of particular values of said second index, whereby said video recording device is provided with information for determining the brightness levels of said images for specific films.

4,433,346

RASTER INPUT SCANNER

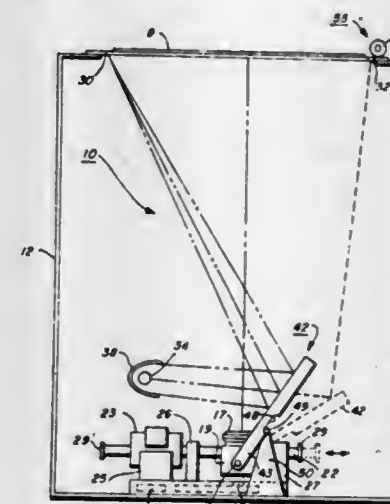
James C. Stoffel, Rochester; Ned J. Seachman, Penfield; Jack R. Hauber, Webster, and William Kingsley, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1982, Ser. No. 364,131

Int. Cl.³ H04N 1/10, 1/12

U.S. Cl. 358-293

8 Claims



1. A high speed raster input scanner comprising a transparent platen for supporting documents to be scanned; lamp means for providing a wedge-shaped beam of light to illuminate at least N lines of the document thereon; a movable mirror for sweeping said beam across said platen; at least one scanning array; said array comprising a two dimensional array for reading N image lines; optical means interposed between said platen and said array for focusing N image lines of said document on said array; and drive means to move said document in synchronism with scanning operation of said array to scan said document lines N times whereby to enhance the operational speed of said scanner, and where said document is supported on said platen, said drive means moving said lens means and said mirror in synchronism with scanning operation of said array to scan said document lines N times whereby to enhance the operational speed of said scanner.

4,433,347

APPARATUS FOR AUTOMATICALLY REPRODUCING SIGNALS IN ACCORDANCE WITH A MODE OF THE RECORDED SIGNALS

Hiroyuki Sugiyama, Isehara; Kenji Yoshihara, Chiba; Yasuhiro Yusa, Fujisawa; Ryoza Abe, and Masaki Sakurai, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 18, 1981, Ser. No. 293,834

Claims priority, application Japan, Aug. 19, 1980, 55-113761
Int. Cl.³ H04N 5/76

U.S. Cl. 358-342

6 Claims

1. An apparatus for reproducing signals from a rotary recording medium which may be either a first type or a second

magnitude and direction of any phase difference occurring between the signals as played back from said tracks; and

electrically responsive driver means mechanically coupled to said playback head and electrically coupled to said phase comparison means for rotating said playback head about an axis perpendicular to said medium, a distance and direction determined by said output current, thus changing the azimuth angle of said playback head gaps with respect to said tracks to dynamically compensate for any phase difference determined by said phase comparison means;

said driver means including a DC motor having a housing, an armature rotatably mounted with said housing having a generally cylindrical first portion and a second portion including a semi-cylindrical side and an angulated side, said angulated side having two radially opposing peaks projecting therefrom which are symmetrically disposed about the axis of rotation for said armature, and a pair of elongate field magnets each being affixed at radially opposing positions within said housing, and each having a peaked portion projecting inwardly from said housing whereby the magnetic forces of said field magnets tend to rotate said armature to a home position when no current is applied to said coil.

4,433,352

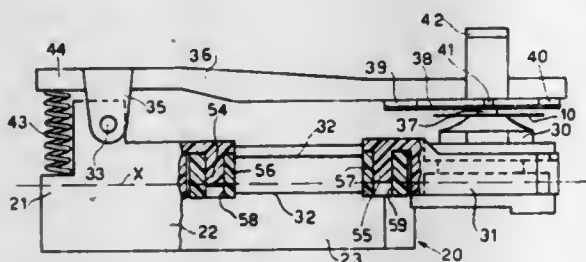
DEVICE FOR RECORDING AND/OR READING BINARY DATA ON BOTH FACES OF A FLEXIBLE MAGNETIC DISK

Giuliano De Marco, Ivrea, and Roberto Gemi, Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jul. 1, 1981, Ser. No. 279,625

Claims priority, application Italy, Jul. 14, 1980, 68110 A/80
Int. Cl.³ G11B 5/58, 21/20

U.S. Cl. 360—105

8 Claims



1. A device for recording and/or reading binary data on both faces of a flexible magnetic disk, comprising rotating means for rotating said disk, means for defining a nominal plane on which lies a first face of said disk, a carriage movable radially relative to said disk, a first magnetic head mounted on a support element for recording and/or reading binary data on said first face, said first magnetic head in a rest position interfering with said nominal plane of said disk by a predetermined amount, an arm having a first end pivoted with respect to said carriage and a second end movable towards a second face of said disk, a second magnetic head gimball mounted on the second end of said arm in an opposite position with respect to binary data on the second face of said disk, means for connecting said support element to said carriage in such manner that said support element and said first magnetic head can move only along an axis perpendicular to said nominal plane, said connecting means comprising a pair of leaf springs disposed parallel therebetween and substantially parallel to said nominal plane, each one of said leaf springs having a first extremity fixed to said carriage and a second extremity fixed to said support element, whereby said support element is cantilevered from said carriage and said two leaf springs, said carriage and said support element forming an articulated parallelogram, and urging means operating on said arm for urging said second magnetic head towards said second face of said disk with a predetermined load so as to modify in operation said predeter-

mined amount of interference of said first magnetic head with said nominal plane.

4,433,353

POSITIVE SEQUENCE UNDERVOLTAGE DISTANCE RELAY

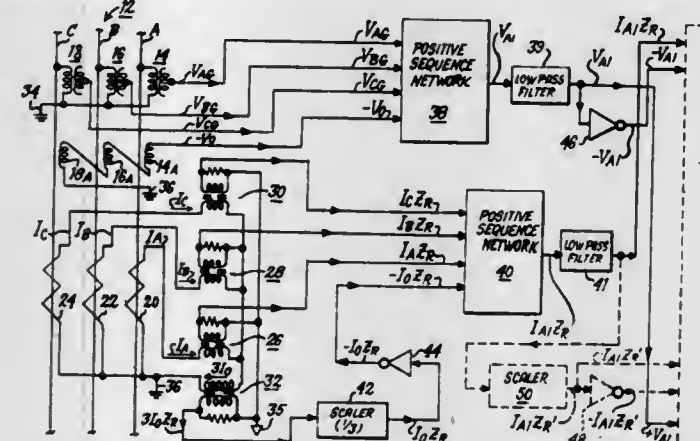
Stanley B. Wilkinson, Havertown, Pa., assignor to General Electric Company, King of Prussia, Pa.

Filed Jul. 29, 1982, Ser. No. 403,269

Int. Cl.³ H02H 3/26, 7/26

U.S. Cl. 361—80

12 Claims



1. An undervoltage distance relay for association with a three phase transmission line and adapted to provide a blocking signal in response to the occurrence of a fault behind the relay but providing no blocking signal in response to the occurrence of a fault on the transmission line in front of the relay, the relay comprising:

(a) means for developing quantities $-V_1$, $+V_1$, and $I_1 Z_R$, where:

V_1 is a signal representative of the positive sequence component of the phase to ground or phase to phase voltages of the transmission line,

I_1 is a signal representative of the positive sequence component of the phase currents of the transmission line when V_1 is related to phase to ground voltage and is a signal representation of the positive sequence component of the delta currents when V_1 is related to phase to phase voltage,

Z_R is a replica impedance of the equivalent positive sequence source impedance behind the relay and is of a magnitude equal to or greater than a quantity of a constant K times said equivalent positive sequence source impedance,

(b) first summing means for summing $I_1 Z_R$ and $-V_1$ and developing a signal $(I_1 Z_R - V_1)$,

(c) first means for receiving said signal $(I_1 Z_R - V_1)$ and developing an output signal $(-K)(I_1 Z_R - V_1)$, where K is a constant having a value selected between the range of 0.5 to 1.0 and has an out-of-phase relationship with $(I_1 Z_R - V_1)$, said first means having a short term memory that enables it to continue developing said output signal after removal of or change to the received signal,

(d) second summing means for receiving and summing together said signals $(I_1 Z_R - V_1)$ and $(-K)(I_1 Z_R - V_1)$, so as to develop a signal $(1-K)(I_1 Z_R - V_1)$, expressed as an operating V_{OP} signal,

(e) second means for receiving said $+V_1$ signal and developing a polarizing signal V_{POL} representative of the $+V_1$ signal, said second means having a short term memory that enables it to continue developing said polarizing signal after removal of or change to the received $+V_1$ signal, and,

(f) coincidence detection means for comparing the phase of the operate signal V_{OP} with the phase of the polarizing signal V_{POL} and developing a blocking signal when the phase coincidence between V_{OP} and V_{POL} exceeds a predetermined duration.

4,433,354

GAS-DISCHARGE SURGE ARRESTER

Gerhard Lange, and Jürgen Boy, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

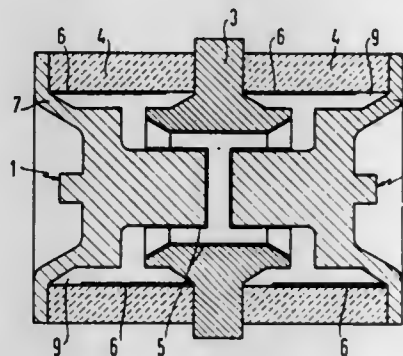
Filed Jan. 13, 1982, Ser. No. 339,157

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100924

Int. Cl.³ H02H 9/06

U.S. Cl. 361—120

5 Claims



1. Gas-discharge two-path surge arrester having two axially opposing main electrodes defining a discharge gap therebetween and a middle electrode coaxially and annularly surrounding the discharge gap and connected to the main electrodes, respectively, by a tubular insulating housing, at least one strip of electrically conductive material disposed on the inner surface of the tubular housing and extending over a part of the length thereof, comprising respective elastic transition members disposed at the ends of the tubular insulating housing, said transition members respectively forming a part of the main electrodes, each of the main electrodes being formed of an outer cylindrical part of relatively larger diameter having a substantially planar end face and an inner cylindrical part of relatively smaller diameter integral with and extending substantially coaxially to the outer cylindrical part from said substantially planar end face thereof, the respective inner cylindrical parts of the main electrodes being juxtaposed and being disposed in stepped relationship to their respective outer cylindrical parts of larger diameter, the main electrodes forming a discharge path, the middle electrode being formed as a hollow cylinder having outwardly flaring conical inner surfaces at the ends thereof and forming a respective main discharge path with both of the main electrodes, the main electrodes and the middle electrode being mutually overlapping at a region whereat they are provided with an electrode activating material.

4,433,355

ELECTRONIC LOCKS FOR DOORS

Ivan Chew, Wolverhampton, and John Verhaeg, Kingswinford, both of England, assignors to Yale Security Products Ltd., Willenhall, England

PCT No. PCT/GB81/00029, § 371 Date Nov. 3, 1981, § 102(e) Date Nov. 3, 1981, PCT Pub. No. WO81/02603, PCT Pub. Date Sep. 17, 1981

PCT Filed Feb. 27, 1981, Ser. No. 320,972

Claims priority, application United Kingdom, Mar. 4, 1980, 8007325

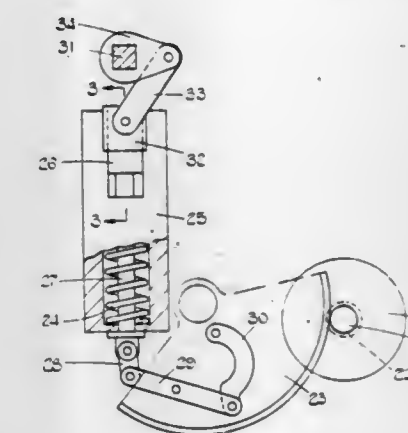
Int. Cl.³ H01H 47/00

U.S. Cl. 361—172

13 Claims

1. An electronic lock for a door comprising the combination of an operating member for displacing a locking element, an electronic circuit controlling the operation of the lock, said circuit being in a lock-operating condition only upon being electrically energised and upon receiving predetermined information supplied thereto by an authorized lock user, and electrical generator means mechanically connected to the operating member so as to generate electrical power for the lock and its electronic circuit when the operating member is moved, the generator means comprising resilient means drivingly con-

nected to the operating member so as to store mechanical energy during initial movement of the operating member, release means operable by the operating member to release said



resilient means and connecting means connecting the resilient means to an electrical generator so that said resilient means, when released, drives the generator.

4,433,356

CONTROL CIRCUIT FOR TRANSFORMER RELAY

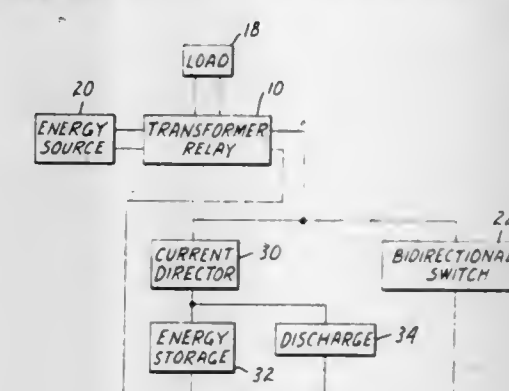
Gerald A. Wyatt, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 19, 1982, Ser. No. 369,837

Int. Cl.³ H01H 51/30, 47/00

U.S. Cl. 361—191

18 Claims



1. A control circuit in combination with a transformer relay, said transformer relay having a primary winding adapted to be coupled to an alternating current energy source, having a load switch adapted to control the application of said energy source to a load, and having a secondary winding which controls said load switch to a selected position depending upon current flow in said secondary winding above a predetermined switching threshold in a selected direction, comprising:

first current directing means for allowing a flow of current in one direction only;

energy storage means for momentarily allowing a current flow upon application of energy before becoming charged; and

discharge means coupled to said energy storage means, and discharge means for allowing said energy storage means to substantially discharge while said control circuit is not activated;

said energy storage means and said first current directing means being coupled in series and being adapted to be coupled with said secondary winding of said transformer relay;

whereby current is momentarily allowed to flow in a selected direction in said secondary winding above said predetermined switching threshold upon activation of said control circuit, and

whereby said load switch of said transformer relay is con-

trolled to a selected position upon activation of said control circuit.

4,433,357

DRIVE CIRCUIT FOR A LATCHING RELAY

Hiroshi Nishimura, Yoshie Watari, and Yuusaku Matsubara, all of Osaka, Japan, assignors to Matsushita Electric Works Ltd., Osaka, Japan

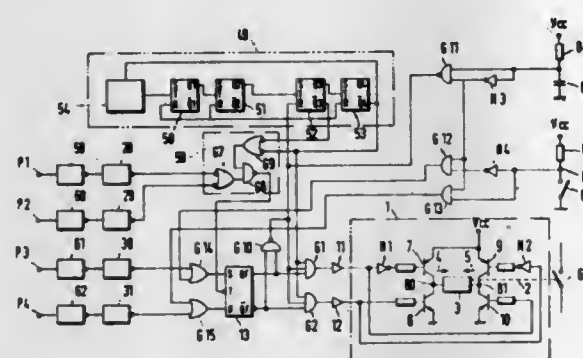
Filed Oct. 7, 1981, Ser. No. 309,397

Claims priority, application Japan, Oct. 13, 1980, 55-143536; Oct. 13, 1980, 55-143537; May 31, 1981, 56-83229

Int. Cl.³ H01H 47/18

U.S. Cl. 361-196

4 Claims



1. A drive circuit for a latching relay comprising a flip-flop responding to a first input signal and to a second input signal entered into the drive circuit and providing alternately a first control signal and an inverse control signal as an output corresponding to a change in the flip-flop's stable condition; a timer connected to the output of the flip-flop for receiving the first control signal and the inverse control signal; a semiconductor switching circuit connected to the timer with the timer controlling the semiconductor switching circuit for a constant time period, which produces a control signal in response to a first input signal and an inverse control signal to said control signal in response to a second input signal; a latching relay connected to the semiconductor switching circuit with the latching relay receiving from the semiconductor switching circuit a time limit output such that even if said first and second input signals are given to the drive circuit in an extremely short time after said timer responds to said control signal coming from the flip-flop, a sufficient time period is provided for said time limit output in order to energize and keep on said semiconductor switching circuit during the time period of current sufficient for said latching relay and where even when the output of said control signal is cut off between the first input signal and the second input signal, the latching relay keeps its existing relay working condition; a pair of delay circuits connected to the flip-flop for cutting a noise input signal; a pair of logic gates connected in series each to a corresponding one of said series connected delay circuits and logic gates, which is connected in feedback to an input-output terminal of the other one of said series connected delay circuits and logic gates such that the stable condition of the flip-flop changes in response to said first and second input signals, and when the stable condition changes, a logical value of each output is temporarily made equal.

4,433,358 TORCH FOR CUTTING, WELDING OR HEATING

Yosinori Kubota, Kobe, Japan, assignor to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France

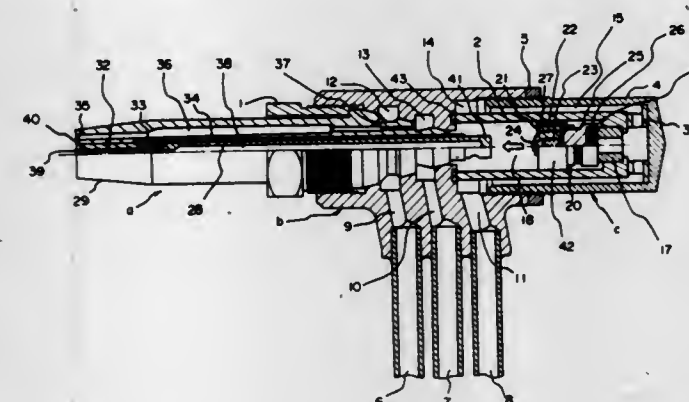
Filed Aug. 16, 1982, Ser. No. 408,506

Claims priority, application Japan, Aug. 18, 1981, 56-128969; Feb. 15, 1982, 57-20504[U]; Feb. 26, 1982, 57-28087[U]

Int. Cl.³ F23Q 3/01

U.S. Cl. 361-260

10 Claims



9. A cutting, welding or heating torch comprising, in combination:

- a nozzle having concentric tubular members with discharge ends forming a first pair of electrodes;
- a piezoelectric assembly disposed within the pressure fluid channel portion of the torch head, the piezoelectric assembly including a second pair of electrodes respectively connected to the electrodes in said first pair and percussion means movable within said pressure fluid channel portion from a standby position to an operative position in response to the application of fluid pressure to said channel portion, said percussion means producing a high voltage across said second pair of electrodes upon the movement of the percussion means to said operative position to thereby form a spark across said first pair of electrodes; and
- means for automatically returning the percussion means from its operative position to its standby position.

4,433,359

METALLIZED FILM CAPACITORS

Takeshi Hamabe, Nishinomiya, and Tatsuya Nakamura, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

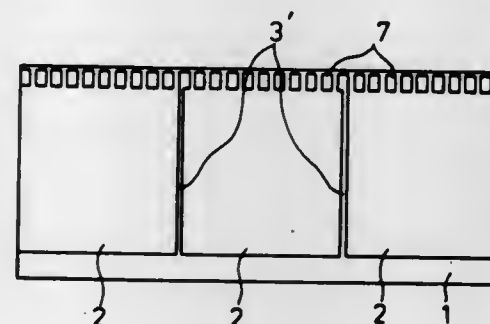
Filed Mar. 12, 1982, Ser. No. 357,616

Claims priority, application Japan, Mar. 19, 1981, 56-41180; May 28, 1981, 56-82265; Jun. 19, 1981, 56-95856

Int. Cl.³ H01G 1/13, 3/10

U.S. Cl. 361-273

11 Claims



1. A metallized plastic film capacitor having at least one vapour-deposited metal layer electrode and a counter electrode characterized in that

- (a) said at least one vapour-deposited metal layer electrode of the same polarity electrode formed of a metallized strip

- which has been split into a plurality of segmental electrodes,
- (b) each of the segmental electrodes of the same polarity being connected together at the same potential by an external connecting layer of a conducting material,
- (c) each of the segmental electrodes, constituting a minute capacitor in combination with said facing counter electrode through a dielectric material layer interposed therebetween, and
- (d) plural narrow paths for current being formed on at least one side face of confronting segmental electrodes.

4,433,360

TUBULAR CERAMIC CAPACITOR

Kikuo Wakino, and Yoshio Arakawa, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

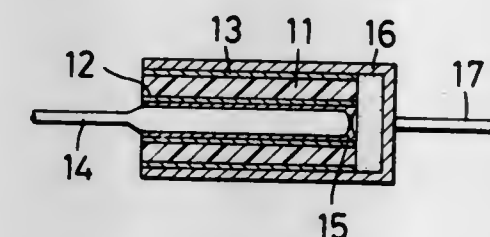
Filed Oct. 22, 1981, Ser. No. 313,963

Claims priority, application Japan, Oct. 24, 1980, 55-152751[U]

Int. Cl.³ H01G 1/01, 1/153

U.S. Cl. 361-305

5 Claims



1. A tubular ceramic capacitor, comprising: a tubular ceramic dielectric member having a bore of substantially uniform diameter formed through substantially the entire length thereof; external and internal electrodes formed on the outer and inner surfaces, respectively, of said dielectric member; a lead terminal formed of Dumet wire and extending from a position outside said dielectric member into said bore and through substantially the entire length of said bore, the portion of said lead terminal located in said bore using uniform and cylindrical in form and having a diameter substantially equal to the diameter of said bore; a solder interfacing the outer surface of said lead terminal and internal electrode, said solder serving to both physically and electrically connect said lead terminal to said internal electrode; and a conductive cap terminal having an inner diameter substantially equal to the outer diameter of said dielectric member and being fitted over the outer surface of said dielectric member so as to be in electrical contact with said external electrode, said cap terminal including a lead wire projecting from a closed end of said cap terminal.

4,433,361

COVER WITH ELECTRICALLY INSULATED CURRENT CONDUCTION

Franz-Josef Wolf, Sprudelallee 19, D-6483 Bad Soden-Salmuenster, and Rudolf Klaschka, Tannenweg 9, D-7896 Wutöschingen 3, both of Fed. Rep. of Germany

PCT No. PCT/EP81/00011, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/02219, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 30, 1981, Ser. No. 285,128

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003763

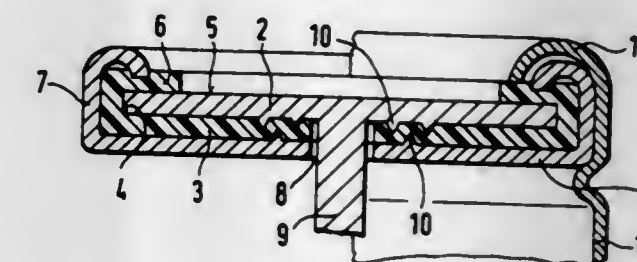
Int. Cl.³ H01G 9/00; H01M 2/08

U.S. Cl. 361-433

11 Claims

1. A cover with electrically insulated current leadthrough for closing cup-shaped compartments of electrical components, comprising a lead-through element in the form of a lead-through disc having a lead-through post extending there-

from, said lead-through post being integrally formed with said lead-through disc, a permeation-proof and electrical insulating material disposed over a first side of said lead-through disc, a cover plate disposed over said permeation-proof and electrical insulating material such that the latter is disposed between said cover plate and said lead-through disc, said cover plate and said permeation-proof and electrical insulating material having openings through which said lead-through post extends, said opening in said permeation-proof and electrical insulating material and said opening in said cover plate being of substantially the same size and configuration as that of said lead-through post, said cover plate having an outer diameter substantially extending at least to the outer diameter of said lead-



through disc, said permeation-proof and electrical insulating material having an outer edge portion extending around the outer edge and partially onto a second side, opposite said first side, of said lead-through disc, and connecting means mechanically securing said cover plate, said permeation-proof and electrical insulating material and said lead-through element together to thereby provide a sandwich construction arrangement consisting of said lead-through disc, said permeation-proof and electrical insulating material, and said cover plate with the aforesaid sandwich construction extending substantially from said lead-through post to the outer diameter of said lead-through disc to provide enhanced sealing of gases and vapors.

4,433,362

REMOTELY CONTROLLABLE ILLUMINATION APPARATUS

Itsumi Ban, 3-50-18, Higashi-otsumi, Nerima-ku, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,926

Claims priority, application Japan, Aug. 18, 1980, 55-116095[U]

Int. Cl.³ H04M 1/22

U.S. Cl. 362-86

7 Claims



1. A remote controllable illumination apparatus comprising: a luminous body;
- a microphone for producing an electric output signal upon receiving an acoustic signal generated from a remote sound generating source;
- a filter circuit for removing frequencies corresponding to less than 5 KHz;
- an amplifier circuit for amplifying said output signal of said microphone;

a lighting control circuit means for turning on said luminous body responsive to said amplified output signal and for turning off said luminous body after a predetermined period of time.

4,433,363

AUDIO LIGHT CHANDELIER

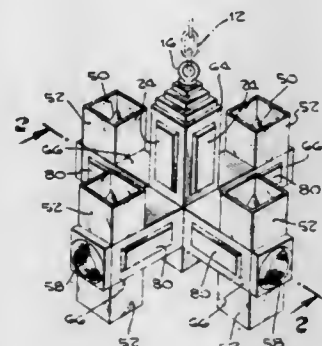
Franz K. Weber, Canoga Park, Calif., assignor to Modulite Corporation, Canoga Park, Calif.

Filed Jun. 9, 1982, Ser. No. 386,695

Int. Cl.³ H04M 1/22

U.S. Cl. 362—86

9 Claims



1. A composite illumination and audio system comprising, in combination:

a mechanical structure adapted to be suspended from a wall or ceiling;

an illuminating system supported by said mechanical structure;

an audio system also supported by said mechanical structure; said mechanical structure providing a resonant cavity for said audio system; and

an electrical power supply circuit for furnishing electrical power both to said illuminating system and to said audio system.

4,433,364

LIGHTED HANDGRIP

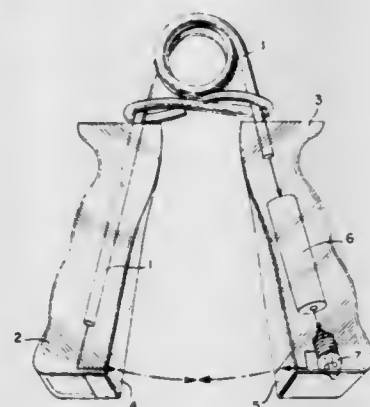
Edward E. Noble, R.R. #1, Box 176, Edgewood Rd., Eureka, Ill. 61530

Filed Mar. 21, 1979, Ser. No. 22,721

Int. Cl.³ F21V 33/00

U.S. Cl. 362—109

3 Claims



1. A handgrip comprising, a pair of elongated handles to be gripped by the hand and of a size to be engaged by the whole hand throughout the width of the hand,

means mounting the handles together for movement of the handles toward and from each other in pivotal movement about a pivot axis that is disposed longitudinally beyond the handles whereby substantially the whole body of the hand grip is disposed longitudinally beyond the pivot axis, the mounting means including spring means biasing the handles apart and yielding to enable the handles to be

moved toward each other into interengagement, and the spring means being of great strength whereby the handles can be moved into such interengagement only by the full strength of the hand,

the handgrip including an electrical circuit which itself includes a battery, light bulb, and contacts, one of the contacts being in each of the handles, and the contacts being exposed for interengagement in response to the handles being moved into interengagement, and effective when so interengaged for completing circuit and lighting the light bulb, the electric circuit being normally open and closed only when the handles are interengaged.

4,433,365

MINIATURE FLASHLIGHT

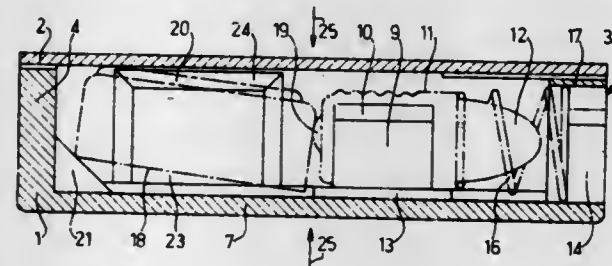
Jean P. Rousseau, 98, Rue de Miromesnil, 75008 Paris, France
Filed Mar. 28, 1983, Ser. No. 479,619

Claims priority, application France, Mar. 26, 1982, 82 05228

Int. Cl.³ F21L 7/00

U.S. Cl. 362—189

6 Claims



1. A miniature flashlight consisting of a case (1) of moulded plastics material closed by a cover (2) that is at least partly metallic and containing a cell (18), an electric bulb (11-12) and a pressure spring (16), the whole being of a flat shape and comprising two facing walls formed respectively by the bottom wall (7) of the case and by at least a portion of the cover (2); the cell (18) consisting of a flat cylindrical cell the casing of which is in contact with the centre contact stud (19) of the bulb and the opposite polarity contact of which is oriented towards the cover (2); the bottom wall (7) of the case (1) comprising parts (9, 10) to house and restrain the socket (11) of the bulb (12); and one at least of the said two facing walls (7 and 2) being flexible enough for compression of the whole unit between the fingers (25) to bring the socket (11) or the pile (18) contact (20) into contact with the conducting portion of the cover (2), characterized in that the pressure spring (16) is located between the bulb (12) and the light outlet opening (14) made in one end wall (3) and in that a ramp (21) is provided close to the other case (1) end wall (4) enabling the axial thrust of the spring (16), transmitted to the cell (18) by the centre contact stud (19) of the bulb (12), to be converted into a transverse thrust ensuring contact between the cell (18) conducting contact (20) and the conducting wall of the cover (2).

4,433,366

POOL LIGHT MOUNTING STRUCTURE

Charles E. Wade, 3601 S. Sentous, #E-149, West Covina, Calif. 91792

Filed Sep. 30, 1982, Ser. No. 429,538

Int. Cl.³ F21V 29/00

U.S. Cl. 362—267

11 Claims

1. A structure for mounting an electrical light bulb under water to a construction such as a swimming pool, the structure including:

a light bulb enclosure having:

a body with:

an outer circumferential flange; and

a frustoconical portion adjacent said outer circumferential flange;

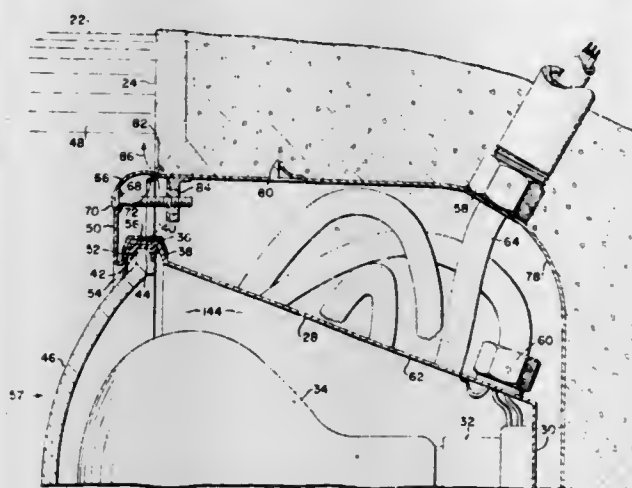
a light bulb socket within said body;

a waterproof connection to said light bulb socket through said body;

a lens with:

an outer circumferential flange positioned adjacent said outer circumferential flange of said body; and

a seal between said outer circumferential flange of said



body and said outer circumferential flange of said lens; and

a mounting ring having:

a frustoconical inner portion in contact with said seal;

and

means for connecting said mounting ring to the construction.

4,433,367

LUMINAIRE MOUNTING STRUCTURE

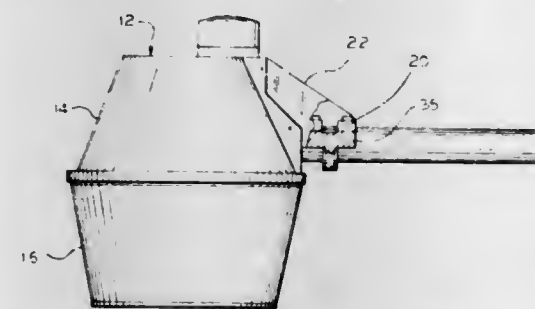
Billy L. Shelby, Memphis, and Giovanni DeCandia, Germantown, both of Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,749

Int. Cl.³ B60Q 1/00

U.S. Cl. 362—370

9 Claims



1. Mounting structure for affixing the housing of an outdoor luminaire on a substantially horizontal, generally cylindrical mast, said structure including a discontinuous tubular body integrally secured to said housing and forming a bore adapted to receive the mast therein, an end face of said luminaire forming the inner end of said bore to butt against the end of the mast, said body comprising a first semi circular section integrally connected to said end face, a second semi circular section spaced axially from the first section with an air space separating said two sections axially, and with said sections aligned to enclose a like portion of the mast, and a single semi circular section diametrically aligned with the air space intermediate between said first and second sections with the single section joined to the first and second sections at the axial ends of the single section, and a reinforcing boss at the center of the single section adapted to receive a set screw therein to bear against the mast to support said housing on said mast.

4,433,368

POWER SUPPLY CIRCUIT FOR A VARIABLE ELECTRICAL SOURCE

Hak-Ki Choi, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jan. 5, 1982, Ser. No. 337,162

Claims priority, application Rep. of Korea, Apr. 1, 1981, 1981/2305[U]; Apr. 1, 1981, 1981/2306[U]; Apr. 1, 1981, 1981/2307[U]; Apr. 1, 1981, 1981/2308[U]

Int. Cl.³ H02M 1/14

U.S. Cl. 363—45

3 Claims

1. An AC to DC converter circuit for use with AC supply signals of various voltages, comprising:

a rectifying circuit which produces rectified current at its output when connected directly to a source of alternating current having any voltage within a broad range;

a phase-controlling element connected to the output of the rectifying circuit for controlling the phase of the rectified current signal;

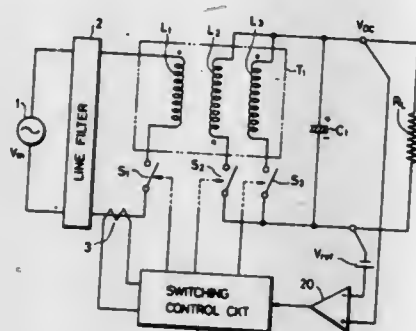
a trigger signal-generating circuit for generating a trigger signal for regulating the operation of the phase-controlling element;

a ripple-removing filter circuit connected to the output of said phase-controlling element for removing the ripple component of the DC signal and for providing a relatively constant and substantially ripple-free output signal at an output terminal for energizing an electrical appliance, comprising: a first resistor and first capacitor connected in series between the input of the ripple-removing circuit and ground; at least two transistors arranged in Darlington configuration having their collectors connected to the input of the ripple-removing circuit, the base input of the first Darlington transistor connected to the junction point of the first resistor and first capacitor through a first diode, and the emitter output of the last Darlington transistor connected to the output of the filter circuit, said filter circuit also having rapid start-up means for conducting the Darlington configuration transistors more quickly relative to the time constant of the first resistor and first capacitor, said rapid start-up means comprising a second resistor and second capacitor connected in parallel with, and having a time constant shorter than, the first resistor and first capacitor; and a second diode connected between the base input of the first Darlington transistor and the junction point of the second resistor and second capacitor, said second diode having a smaller forward voltage value than said first diode.

4,433,369

POWER SUPPLY CIRCUIT FOR ELECTRICAL APPARATUS

Masao Noro, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
 Filed Mar. 17, 1982, Ser. No. 359,162
 Claims priority, application Japan, Mar. 24, 1981, 56-042775
 Int. Cl.³ H02P 13/26
 U.S. Cl. 363-84 13 Claims



1. A power supply circuit for an electrical apparatus, comprising:

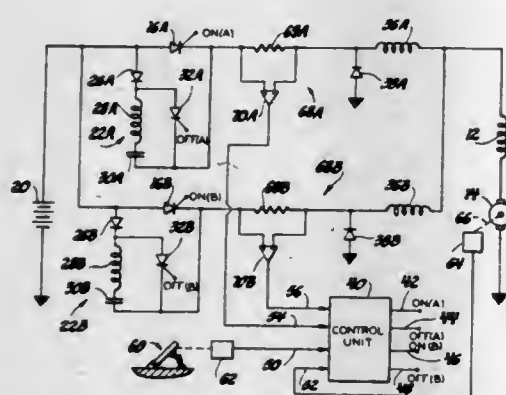
- a power transformer having a primary winding adapted to be applied with an AC voltage and having a secondary winding;
- a smoothing circuit connected to the secondary winding of the power transformer;
- first switching means connected in series to said primary winding for applying said AC voltage to said primary winding of said transformer with timing which is at least twice during each one-half cycle of said AC voltage; and
- first detecting means for detecting a current value of said primary winding to control the switching timing of said first switching means by virtue of a result of its detection; the controlling of said switching timing being performed so that the current value of said primary winding is kept from exceeding a predetermined value, in such manner that when the current value of the primary winding is less than the predetermined value, the AC voltage is supplied to the primary winding, and that this supply is suspended when the predetermined value is reached.

4,433,370

MULTIPLE PHASE CHOPPER CURRENT LIMITING

Sam M. Karadseh, Troy, and Thomas A. Radomski, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1982, Ser. No. 362,274
 Int. Cl.³ H02M 3/315; H02P 7/28; H02H 7/122
 U.S. Cl. 363-124 5 Claims



1. A chopper mechanism of the type wherein current from a common source is sequentially applied to a load through at least two separate current paths in like duration pulses and at a common repetition rate and wherein the current turn-off in each path must be either after or more than a predetermined

time prior to the initiation of current flow in the other path to ensure reliable current commutation, the improvement comprising:

- phase control means normally effective to initiate current flow in the paths according to a predetermined phase relationship;
- overcurrent turn-off means responsive to the magnitude of current in each path and operative to cause a current turn-off for any path wherein the current exceeds a reference limit; and
- means activated by operation of said overcurrent turn-off means for overriding said phase control means and delaying the initiation of current flow in the other path when the current turn-off caused by said overcurrent turn-off means would fall within the predetermined time prior to the normal initiation of current in said other path so that said predetermined time occurs after the overcurrent turn-off by a time at least as long as said predetermined time, thereby ensuring reliable current commutation.

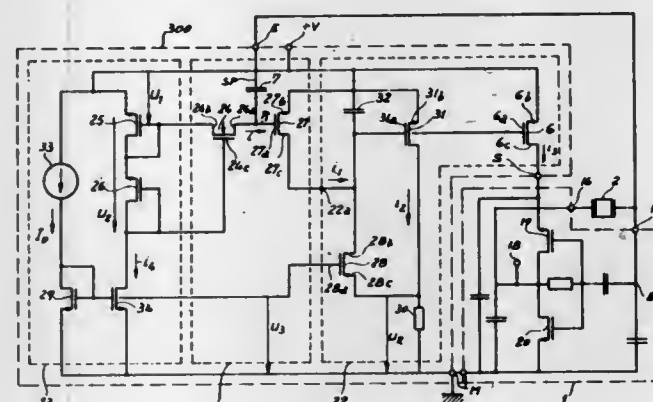
4,433,371

CONVERTER FOR CONVERTING AN A.C. VOLTAGE INTO A DIRECT CURRENT AND AN OSCILLATOR CIRCUIT USING SAID CONVERTER

Oskar Lenthold, Tschugg, Switzerland, assignor to Ebauches Electroniques, S.A., Switzerland

Filed Sep. 24, 1981, Ser. No. 305,276
 Claims priority, application Switzerland, Oct. 16, 1980, 7730/80

Int. Cl.³ H02M 7/217; H03B 5/36
 U.S. Cl. 363-127 7 Claims



1. A converter for converting an a.c. voltage having an amplitude A into a direct current, comprising:

- a first supply terminal;
- a second supply terminal;
- an input terminal for receiving the a.c. voltage;
- an output terminal for outputting the direct current i_3 ;
- a first elementary converter connected to said input terminal for receiving the a.c. voltage, said first elementary converter producing a pulsed direct current, the mean value of which is a steeply rising function of the amplitude A of the a.c. voltage; and
- a second elementary converter connected to said first elementary converter for receiving said pulsed direct current for producing at said output terminal the current i_3 , the value of which is a steeply falling function of said mean value of said pulsed direct current such that there is in a certain range of values of A, substantially:

$$i_3 = C_1(A_M - A)$$

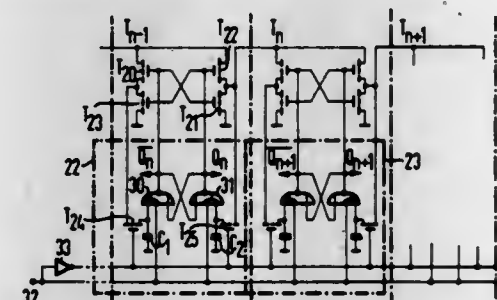
in which C_1 is a constant parameter and A_M is a particular value of A in said range of values.

4,433,372

INTEGRATED LOGIC MOS COUNTER CIRCUIT

Dieter Eichrodt, and Friedhelm Elsen, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
 Division of Ser. No. 94,931, Nov. 16, 1979, Pat. No. 4,323,982, which is a continuation of Ser. No. 841,798, Oct. 13, 1977, abandoned. This application Dec. 15, 1981, Ser. No. 330,891
 Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647982

Int. Cl.³ H03K 21/16
 U.S. Cl. 377-116 3 Claims



1. A multi-stage logic circuit operable as a synchronous binary counter comprising:

- a plurality of increasingly significant counter stages for each digit of a multi-digit binary number to be counted; each counter stage including
- a bistable trigger stage having first and second signal inputs and having two complementary outputs forming the outputs for the counter stage containing the bistable trigger stage, said inputs assuming one of two possible states in dependence upon the value of the binary digit supplied to said first signals inputs thereof;
- a first pair of transfer transistors having respective control electrodes for receiving the complement of said binary digits applied to said first signal inputs;
- a carry signal input for receiving a carry signal from an immediately preceding less significant counter stage;
- a carry signal output connected to a carry signal input for an immediately following more significant counter stage;
- a transfer gate having two second pairs of series-connected transfer transistors, the controlled paths of said second pairs of transfer transistors each being connected to said carry signal input and the control electrodes of each of said second pairs of transfer transistors being mutually cross-coupled and being additionally respectively connected to said complementary outputs of said bistable trigger stage, the series-connected nodes of the controlled paths of each of said second pairs of transfer transistors being respectively connected to said second signal inputs of said bistable trigger stage through the respective controlled paths of said first pair of transfer transistors, and the series-connected node of the controlled paths of one of said second pairs of transfer transistors forming said carry stage output.

4,433,373

APPARATUS FOR PROGRAMMING NUMERICALLY PATH CONTROLLED PROCESSING DEVICES

Walter Miller, Traunstein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

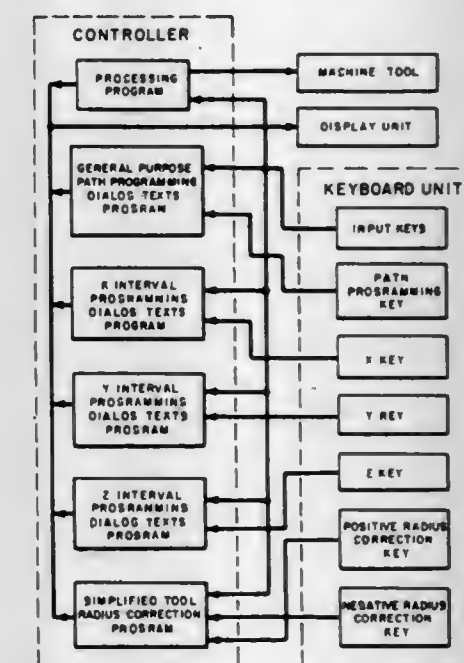
Filed Jul. 27, 1981, Ser. No. 287,098
 Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028708

Int. Cl.³ G06F 15/46
 U.S. Cl. 364-171 10 Claims

1. In a programmable, numerically path controlled processing device of the type comprising a multiple axis controller for controlling the processing device along at least two axes; a display unit coupled to the controller; means, included in the

controller, for displaying on the display unit a first set of dialog texts suitable for multiple axis path programming; and a keyboard input unit comprising input key means for the entry of digital programming data to the controller, the improvement comprising:

means, included in the controller, for displaying on the display unit a second, abbreviated set of dialog texts,



simpler than the first set of dialog texts, each of said second set of dialog texts suitable for single axis, axially parallel interval programming of paths parallel to a respective one of the at least two axes, but unsuitable for multiple axis path programming; and means for selectively activating a selected one of the means for displaying the first set of dialog texts and the means for displaying the second set of dialog texts.

4,433,374

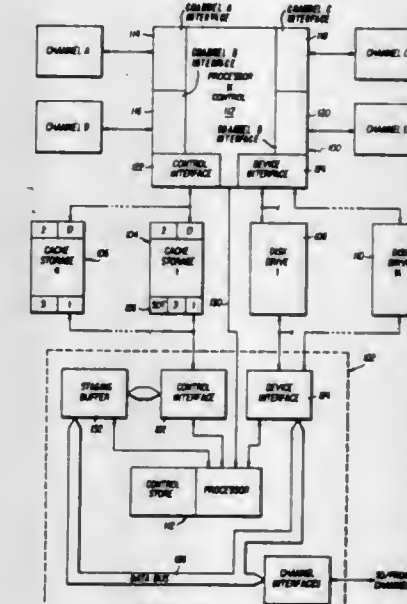
CACHE/DISK SUBSYSTEM WITH CACHE BYPASS

Merlin L. Hanson, Arden Hills; Robert E. Swenson, Mendota Heights, and Arnold R. Schmalzbauer, Minneapolis, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 207,091
 Int. Cl.³ G06F 7/02

U.S. Cl. 364-200

7 Claims



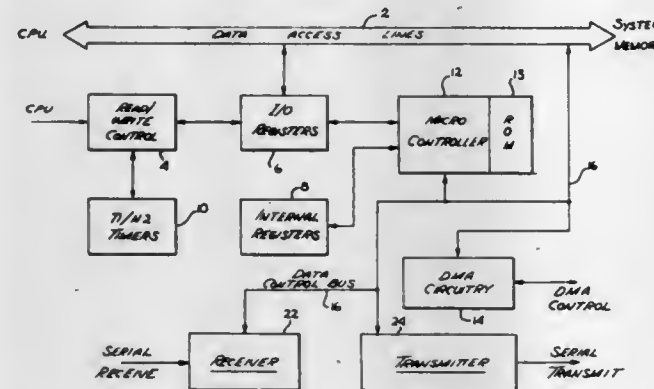
1. In a data processing system of the type having, a bulk memory having addressable space for storing data; a host processor for issuing read or write commands, each

4,433,378
CHIP TOPOGRAPHY FOR MOS PACKET NETWORK
INTERFACE CIRCUIT
 Geary L. Leger, Mentone, Calif., assignor to Western Digital, Irvine, Calif.

Filed Sep. 28, 1981, Ser. No. 306,508
 Int. Cl.³ G06F 3/00, 1/00, 13/00

U.S. Cl. 364-200

4 Claims



1. A metal oxide semiconductor (MOS) chip for a micro packet network interface circuit (MPAC) implementing a preselected packet network switching protocol, for use in conjunction with an external central processing unit (CPU) having a system memory, and for communicating with external communications circuitry, said MPAC comprising:

- a chip interface circuitry adapted to couple said MPAC to signal lines of external circuitry;
- read/write control circuitry coupled to said CPU through said chip interface circuitry, for receiving control signals from and control sending signals to said CPU;
- timing/counting circuitry coupled to said read/write control circuitry, for indicating when a certain event has occurred and for counting the number of times said certain event has occurred;
- input/output (I/O) registers coupled to said read/write control circuitry, for storing control information received from said CPU through said read/write control circuitry;
- a microcontroller coupled to said I/O registers, for regulating the functions of the MPAC;
- read only memory (ROM) coupled to said microcontroller, for storing microinstructions used by said microcontroller;
- internal registers coupled to said microcontroller, for temporarily storing information for said microcontroller;
- a data control bus coupled to and controlled by said microcontroller, for routing control signals and data signals among certain circuitry of said MPAC;
- data access lines coupled to said CPU and said system memory through said chip interface circuitry, and to said I/O registers and said data control bus, for receiving information and transmitting information between said CPU and/or said system memory, and said data control bus and/or said I/O registers;
- direct memory access (DMA) circuitry coupled to said data control bus, and to said system memory through said chip interface circuitry, for accessing information from said system memory through said data control bus independently of said CPU;
- receiver circuitry coupled to said data control bus and to a serial input from said external communications circuitry through said chip interface circuitry, for receiving serial data from said external circuitry, for converting said serial data into a parallel format and verifying the validity of said data, and for making said data available to said data control bus;
- transmitter circuitry coupled to said data control bus and to a serial output to said external communications circuitry through said chip interface circuitry, for accepting data in parallel format from said data control bus and appending to said data certain control and verification

information, and for converting said data to a serial format and transmitting said serial data to said external communications circuitry;

wherein said interface circuitry forms a quadrilateral outer framework on said MOS chip; said ROM is disposed within one corner of said interface circuitry; said microcontroller is disposed adjacent to said ROM and along part of a first side of said interface circuitry; said DMA circuitry is disposed adjacent to said microcontroller, and within a second corner of said interface circuitry and along part of a second side thereof; said transmitter circuitry is disposed adjacent to said microcontroller and said DMA circuitry, and along part of a second side of said interface circuitry; said receiver circuitry is disposed adjacent to said transmitter circuitry, and within a third corner of said interface circuitry and along part of a third side thereof; said data access lines comprise part of said third side of said interface circuitry, and are disposed adjacent to said receiver circuitry; said timing/counting circuitry is disposed adjacent to said receiver circuitry and said data access lines and within the fourth corner of said interface circuitry; said read/write control circuitry comprises part of the fourth side of said interface circuitry, and is disposed adjacent to said receiver circuitry; said I/O registers are disposed adjacent to said timing/counting circuitry, said ROM, said microcontroller, and said read/write control circuitry; and said internal registers are disposed adjacent to said I/O registers, said ROM, and said microcontroller.

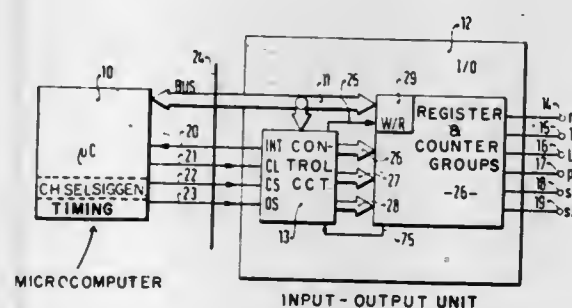
4,433,379
MICROCOMPUTER SYSTEM WITH INPUT/OUTPUT
UNIT CONNECTED TO THE REMAINDER OF THE
SYSTEM BY A SINGLE MULTIBIT BUS AND SEVERAL
SEQUENTIAL DATA LINES
 Manfred Schenk, Fellbach; Winfried Klötzner, Maulbronn, and Edmund Jeenicke, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,376
 Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943903

Int. Cl.³ G06F 3/00

U.S. Cl. 364-200

11 Claims



1. A simplified computer system having a computer unit of the so-called microcomputer type and an input-output unit, connected to said computer unit over a data bus, for transferring externally determined values to said computer unit, said input-output unit having a register-and-counter portion comprising a plurality of registers and a plurality of counters, said system further comprising the improvement which consists in that, in order to avoid the use of a separate multiple-connection address bus between said computer unit and said input-output unit:

only a single multibit bus serving as said data bus, and not substantially more than four one-way signal connections, of which two are respectively for chip-select (CS) and data strobe (DS) functions, are provided to interconnect said computer unit and said input-output unit, and for contribution to the addressing of said register-and-counter portion of said input-output unit, the latter unit has a control circuit (13) connected to a part of said data bus

and also connected to said computer unit by said not more than four signal connections;

said control circuit (13) includes a decoder (40) having an input connected to said data bus port, for providing a variety of control commands and directing said commands from said data bus respectively to various registers and counters of said register-and-counter portion by way of different outputs (41-46) of said decoder which are connected to said register-and-counter portion (76) of said input-output unit.

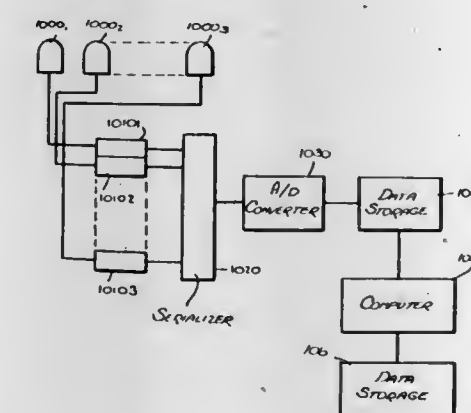
4,433,380
TOMOGRAPHIC SCANNER

Manlio G. Abele, Garden City, and Christopher H. Marshall, New York, both of N.Y., assignors to Philips Medical Systems, Inc., Shelton, Conn.

Continuation-in-part of Ser. No. 635,165, Nov. 25, 1975, Pat. No. 4,128,242. This application Nov. 15, 1977, Ser. No. 850,892

U.S. Cl. 564-414

36 Claims



1. A method of displaying X-ray attenuation data produced in a two dimensional field by a computed tomography scanner calculating the difference between the local value of the data at a data point in the field and the average value of the data in a region of the field which surrounds said point for each point in said field, and displaying the value of said difference as a signed gray scale value at a point in a picture which corresponds to said data point.

4,433,381
CONTROL SYSTEM FOR AN INTERNAL COMBUSTION
ENGINE

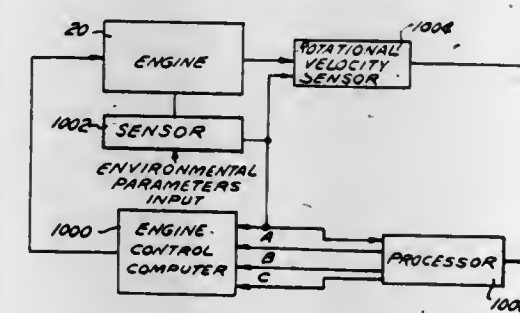
John R. Wilkinson, Dearborn, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 188,803, Sep. 19, 1980, Pat. No. 4,380,800. This application Jul. 23, 1982, Ser. No. 401,439

Int. Cl.³ G06F 15/20

U.S. Cl. 364-431.05

11 Claims



1. A control system for an internal combustion engine of the type having a movable output member which moves in response to combustion of fuel in at least one chamber in said engine, said control system comprising:

means responsive to the movement of the output member for

generating an operating signal which is a function of the actual velocity and position of the output member from a predetermined position;

means for generating a reference signal which is a function of the actual velocity and position of the output member from a predetermined position;

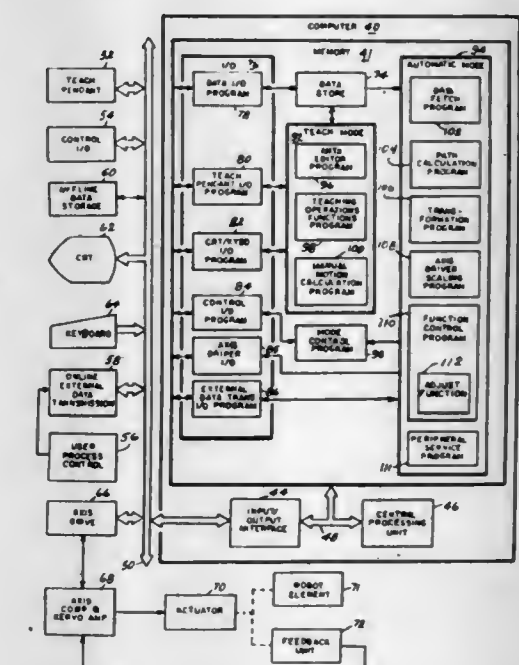
control means responsive to said operating signal and reference signal for generating a control signal which is a function of the change of velocity of the output member with respect to position of the output member for both said operating signal and said reference signal to control an operating parameter of the engine.

4,433,382
APPARATUS FOR AUTOMATICALLY ADJUSTING THE
PROGRAMMED LOCATION OF A ROBOT ARM
 Carole S. Cunningham; Charles M. Linser; Brian J. Resnick, and Ronald L. Tarvin, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jul. 20, 1981, Ser. No. 285,378
 Int. Cl.³ G05B 19/23; G06F 15/46

U.S. Cl. 364-474

8 Claims



1. An apparatus for moving a tool centerpoint of a function element to positions defining a cycle of operation, the rectangular coordinates of positions being represented by programmed sets of input signals, the apparatus being connected to a user process control, the user process control producing further sets of input signals representing rectangular coordinates of adjusted positions, the adjusted positions being defined for selected programmed positions having adjust function signals associated therewith, the apparatus comprising:

- a machine having machine members connected to one end of the function element and actuators associated with the machine members for providing a plurality of axes of motion to move the tool centerpoint, said plurality of axes of motion and the machine members defining a generalized coordinate system; and
- a machine control including a memory for storing sets of input signals, a data communication interface for exchanging sets of input signals between the user process control and the machine control and a servomechanism circuit connected to the actuators, the machine control comprising:
 - means responsive to stored input signals for controlling the actuators to move the tool centerpoint to successive programmed positions.
 - means responsive to the tool centerpoint arriving at a programmed position and to an adjust function signal for suspending the cyclic progression through successive programmed positions.

- (3) means responsive to a set of input signals received from the process control during suspension of cyclic operation for causing the actuators to move the tool center-point to an adjusted position, and
- (4) means for resuming the cyclic progression through successive programmed positions.

4,433,383

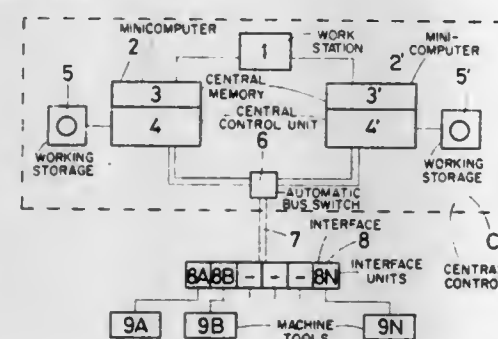
INSTALLATION COMPRISING A PLURALITY OF NUMERICALLY CONTROLLED MACHINE TOOLS
 Roger Maurer, Rue du 11 Novembre, 74460 Marnaz, France
 Filed Dec. 30, 1980, Ser. No. 221,216

Claims priority, application Switzerland, Dec. 27, 1979, 11456/79

Int. Cl.³ G05B 19/417; G06F 15/46

U.S. Cl. 364-474

7 Claims



1. An installation comprising N machine tools numerically controlled by a computer common to all of the machine tools, each machine tool having n motors to be monitored and controlled, said installation further comprising a data and program input station, monitor means for controlling each machine in accordance with a desired independent program and N interface units connected by at least one bus to said computer, said units being allocated and adapted to individual ones of said machines tool, characterized by the fact that said computer is a minicomputer operating in real time which together with said input station comprises a single centralized control device for simultaneously controlling all N machine tools and all n motors of each machine tool, said minicomputers being adapted to transmit all work commands and all check and state signals respectively, and having a maximum context switching time of 900 ns and a cycle time which is no more than one-fifth of the context switching time, and comprises a central memory as a working storage to store all work programs to be run, and further characterized by the fact that each interface circuit comprises n sections for checking each of the n motors of a machine tool and is a circuit of at least 2n bits, and a monitor integrated circuit connected to the output of each of said sections and assigned and adapted to each motor for all comparison and state functions controlled directly by said minicomputer, and a common identification line connecting all identification lines of said sections.

4,433,384

PATTERN DATA HANDLING SYSTEM FOR AN ELECTRON BEAM EXPOSURE SYSTEM
 Donald W. Berrian, Topsfield, and Billy W. Ward, Rockport, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 5, 1981, Ser. No. 309,156
 Int. Cl.³ G02B 27/00; H01J 37/00

U.S. Cl. 364-525

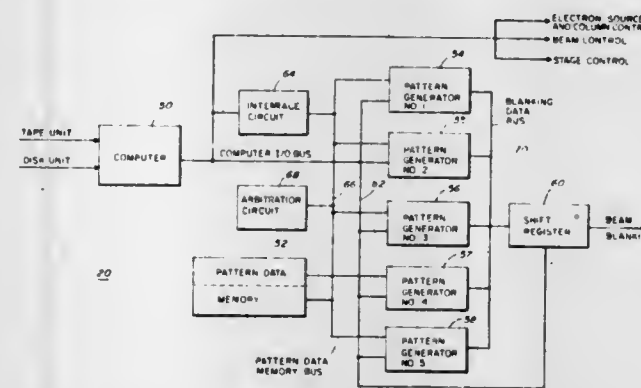
14 Claims

1. In an exposure system in which a beam selectively irradiates multiple abutting stripe areas of a workpiece, a pattern data handling system for providing beam blanking data comprising:

memory means operative to store figure data which describes features of a pattern to be irradiated, said figure data being subdivided into multiple blocks of segment

figure data, each corresponding to a segment of one of said stripe areas; and

processing means simultaneously operative to convert at least one of said blocks of segment figure data to a bit map containing beam blanking information for the respective



segment and to serialize beam blanking information in another bit map to provide continuous beam blanking data, whereby figure data conversion is performed simultaneously with irradiation of said workpiece.

4,433,385

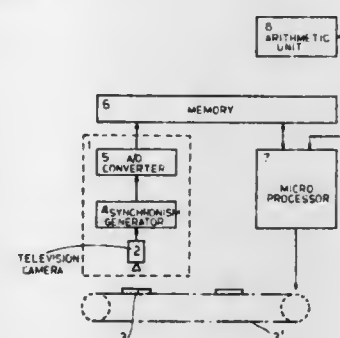
METHOD AND APPARATUS FOR REAL TIME DETECTION OF FAULTS IN INDUSTRIAL OBJECTS
 Mario M. De Gasperi, Milan; Antonio Raccu, Turin, and Dario Nari, Barge, all of Italy, assignors to Tasco S.p.A., Milan, Italy

Filed Jan. 13, 1981, Ser. No. 224,665

Claims priority, application Italy, Jan. 14, 1980, 19205 A/80
 Int. Cl.³ G06F 15/46

U.S. Cl. 364-554

11 Claims



1. A method for detection of object faults, in real time, and comprising the steps of:

scanning an object to be checked and detecting luminance levels of each of a finite number of dots thereof to provide analog image signals corresponding to each dot and indicative of said luminance levels;

converting said analog signals to corresponding digital signals according to a luminance level scale and storing said digital signals in a memory to provide a digitized object image;

dividing said digitized object image into a predetermined number of areas having a predetermined number of said dots;

calculating standard deviations for digitized luminance values of the dots of each area into which the digitized object image has been divided according to the formula:

FEBRUARY 21, 1984

ELECTRICAL

1337

$$\sigma = \sqrt{\frac{\sum_{i=1}^n x_i^2}{n} - \left(\frac{\sum_{i=1}^n x_i}{n}\right)^2}$$

wherein:

x_i = luminance value of the individual dots pertaining to an area, and

n = number of dots in the area;

storing said standard deviations of said areas; providing digitized reference standard deviation values corresponding to each of said areas;

comparing each of said standard deviations with said corresponding digitized reference standard deviation values; and

providing a fault signal when a threshold is exceeded during said comparing.

4,433,386

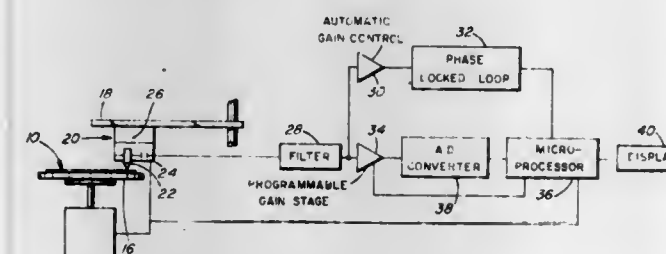
SURFACE RELIEF MEASURING EQUIPMENT
 Grantley O. Este, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 8, 1980, Ser. No. 214,221

Claims priority, application Canada, Oct. 1, 1980, 361296
 Int. Cl.³ G01B 7/06

U.S. Cl. 364-563

8 Claims



1. Apparatus for measuring the thickness of a coating comprising:

a turntable for supporting and rotating a flat substrate bearing a regularly sectorized coating pattern, wherein in use, the centers of the coating pattern and the turntable are substantially coincident;

tracking means for bearing on a top surface of the patterned substrate, the tracking means vertically moveable in a direction perpendicular to the substrate;

means for moving the tracking means radially of the turntable;

a transducer operably connected to the tracking means for generating an electrical signal in response to vertical movement thereof;

a band pass filter for passing a component of the transducer electrical output at a frequency corresponding to the frequency of traversal of the pattern sectors by the tracking means;

and means for measuring amplitude of the filtered signal to provide an indication of coating thickness.

4,433,387

SYSTEM FOR PROCESSING DATA RECEIVED FROM A PORTABLE DATA STORE AND FOR CLEARING THE STORE

Robert E. Dyer, Dunwoody; Scott C. Swanson, Roswell, and Robert A. Hicks, Norcross, all of Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Aug. 12, 1980, Ser. No. 177,334

Int. Cl.³ G06F 3/04, 13/00

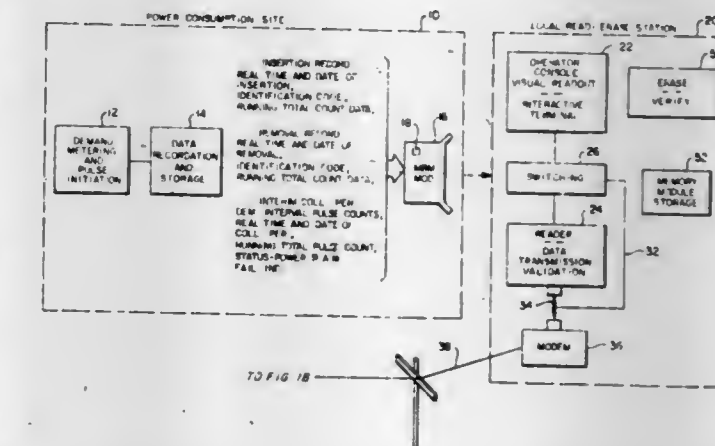
U.S. Cl. 364-900

32 Claims

1. A system for reading data words contained in portable data storage means, said data words representative of data

signals from a data source, and for treating said data signals comprising:

reader means including: a receptacle for receiving said portable data storage means in signal communicating relationship, first and second signal storage means, and first signal processing means responsive to an activation command signal for transferring a first group of said data words from a predetermined location within said portable data storage means to said first signal storage means, said signal processing means being further responsive to a transmit command signal for transmitting said first group of data words stored within said first signal storage means to said second signal storage means and then to an output of said



reader means and for transferring a second group of data words from said portable data storage means to said first signal storage means while said first group of data words are being transmitted from said second signal storage means; and

translator means having an input for receiving, when activated, signals representing said transmitted data words from said output of said reader means and including second signal processor means for generating said activation command signal and said transmit command signal and for analyzing the validity of said transmitted data words and effecting the select recordation thereof upon a storage medium.

4,433,388

LONGITUDINAL PARITY

DuWayne D. Oosterbaan, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 6, 1980, Ser. No. 194,633

Int. Cl.³ G06F 11/00

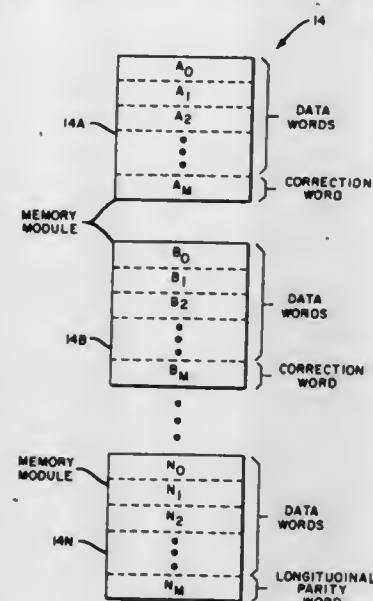
U.S. Cl. 364-900

9 Claims

1. In a data processing system having a plurality of memory modules, each memory module having a plurality of memory locations for storing data bits, said data processing system having a parity memory location for storing parity bits, the improvement comprising:

a correction word memory location in each of said memory modules for storing correction word bits in each of said modules, the parity bits stored in said parity memory location being computed by logically combining said correction word bits with the data bits stored in said memory modules, so that a change in the data bits stored

in one of said memory modules can be accompanied by a change in the correction word bits stored in that one



memory module so as not to require a change in the parity bits stored in said parity memory location.

4,433,389

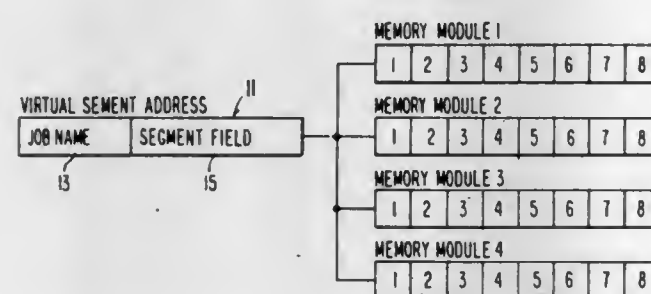
MEMORY ADDRESS TRANSLATION SYSTEM FOR ACCESSING MEMORY LOCATIONS VIA JOB NAMES
Kenneth L. York, Huntingdon Valley, and Oscar B. Stram, Paoli, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 972,916, Dec. 26, 1978. This application
Mar. 16, 1981, Ser. No. 244,152

Int. Cl.³ G06F 7/00, 7/38, 7/50

U.S. Cl. 364—900

7 Claims



1. A memory address translation apparatus for a data storage system having a plurality of memory modules, each memory module therein having a plurality of addressable storage locations, said data storage system addressed by a data name and an address segment, each data name and each address segment having a plurality of least significant bits and a plurality of most significant bits, said memory address translation apparatus comprising:

storage location address means including least significant bit means receiving said plurality of least significant bits of said data name and said address segment for exclusively ORing said received plurality of least significant bits of said data name with said received plurality of least significant bits of said address segment to generate at the output thereof the address of an addressable storage location in said plurality thereof; and

memory module address means including most significant bit means, permuting means and adder means; said most significant bit means receiving said plurality of most significant bits of said data name and said address segment for exclusively ORing said received plurality of most significant bits of said data name with said received plurality of most significant bits of said address segment and for generating an output thereof;

said permuting means receiving said output of said most

significant bit means and said plurality of said least significant bits of said address segment for exclusively ORing the output of said most significant bit means with said plurality of least significant bits of said address segment and for generating an output thereof; and

said adder means receiving said output of said permuting means and said output of said least significant bit means for adding in modulo N fashion said output of said permuting means with said output of said least significant bit means to address a memory module in said plurality thereof, said N being equal to the number of memory modules in said plurality thereof.

4,433,390

POWER PROCESSING RESET SYSTEM FOR A MICROPROCESSOR RESPONDING TO SUDDEN DEREGULATION OF A VOLTAGE

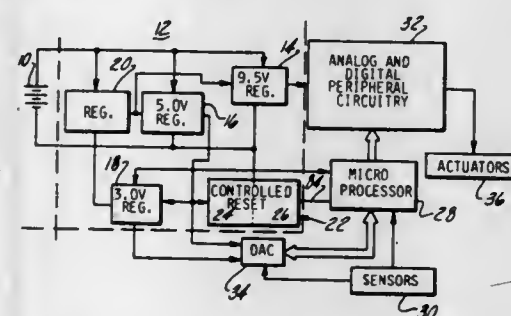
Ralph W. Carp, Newport News, and Danny O. Wright, Grafton, both of Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 30, 1981, Ser. No. 288,591

Int. Cl.³ G06F 9/00, 11/00

U.S. Cl. 364—900

4 Claims



1. A power processing reset system for a microprocessor responding to a sudden deregulation of a voltage, the system comprising:

a battery for providing various voltage and current levels; at least one voltage regulated supply electrically connected to said battery and said supply operative to regulate its output voltage over a predetermined range of battery voltages;

a voltage regulator electrically connected to the battery and operative to produce a fixed output voltage that is less than said output voltage from said voltage regulated supply;

comparator amplifier means responsive to said fixed output voltage and a ratiometrically derived voltage from said one voltage regulated supply and operable to generate a control signal whenever said ratiometrically derived voltage is not equal to said fixed output voltage said control signal for controlling said one voltage regulated supply to equalize said ratiometrically derived voltage and said fixed output voltage; and

monitor means responding to said control signal to generate a minimum time based reset pulse to reset the microprocessor when said voltage regulated supply begins to fall below its regulated output when said ratiometrically derived voltage remains less than said fixed output voltage.

4,433,391

BUFFERED HANDSHAKE BUS WITH TRANSMISSION AND RESPONSE COUNTERS FOR AVOIDING RECEIVER OVERFLOW

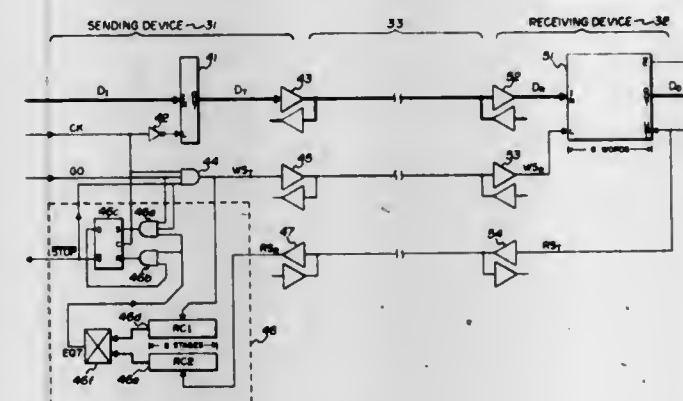
Hanan Potash, La Jolla, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 17, 1981, Ser. No. 293,494

Int. Cl.³ G06F 3/04, 13/00

U.S. Cl. 364—900

9 Claims



1. A digital system including:

a data bus;

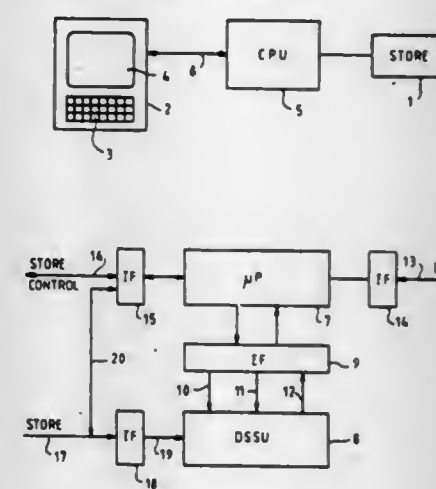
a sending means coupled to said bus for transmitting words over said bus, and for generating a control signal which is not transmitted over the bus as each word is transmitted;

a receiving means, coupled to said bus at a location remote from said sending means, having a storage means with a predetermined storage capacity of greater than one word for storing said transmitted words after they have propagated over said bus;

a means, located at said receiving means, for sending a response signal over said bus whenever a word is removed from said storage means; and

a control means, located at said sending means for receiving said control signal without any propagation delay over said bus, for receiving said response signal after it has propagated over said bus, and for inhibiting said sending means from transmitting words over said bus whenever the number of received control signals minus the number of received response signals equals said predetermined storage capacity.

means and means connecting the comparison cells to compare the contents of corresponding positions of said data stream buffer and said search store and to compare the contents of positions of said data stream buffer adjacent said corresponding positions with said corresponding positions of said search store, and



logic combination means to combine logically the outputs of predetermined groups of said comparison cells to give indications of an exact match and matching within a predetermined distance

when said search key data is the same as said data stream or differs from said data stream but only by a predetermined amount.

4,433,393

SEMICONDUCTOR MEMORY DEVICE

Atsushi Oritani, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

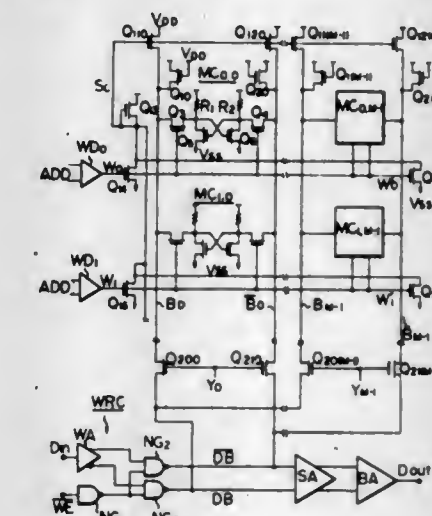
Filed Oct. 13, 1981, Ser. No. 310,975

Claims priority, application Japan, Oct. 15, 1980, 55-144161

Int. Cl.³ G11C 7/00

U.S. Cl. 365—203

7 Claims



1. An improved semiconductor memory device of the type including a plurality of word lines, a plurality of bit lines crossing said word lines, a plurality of memory cells disposed at the cross points between said word lines and said bit lines, and load circuits each connected between one of said bit lines and a voltage source, a memory cell disposed at the cross point of a word line and a bit line being selected by selecting said word line and said bit line, wherein the improved memory device further comprises charging circuit means, operatively connected in parallel with said load circuits, for detecting the switching period when the potentials of all the word lines are at the potential level of a non-selected condition and for elec-

4,433,392

INTERACTIVE DATA RETRIEVAL APPARATUS

Paul A. Beaven, Romsey, England, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,831

Claims priority, application European Pat. Off., Dec. 19, 1980, 80304654

Int. Cl.³ G06F 11/00; G06K 9/00; G11C 7/00

U.S. Cl. 364—900

4 Claims

1. An interactive data retrieval apparatus comprising a data store to store data records, a keyboard to enable an operator to enter search key data and control data, a data processor to control the storage and retrieval of data records in said data store, and search means to compare search key data entered by the operator with data read from said store thereby to locate a data record within said data store, the search means including,

a search store for storing said entered search key data, a data stream buffer and means for clocking successive bytes of data records forming a data stream which is read from said data store through said data stream buffer, and comparison logic means to compare the contents of said data stream buffer within the contents of said search store and to indicate that a match has occurred

wherein the improvement comprises, a plurality of comparison cells in said comparison logic

trically charging all the bit lines during the switching period of word line potentials.

4,433,394

FIRST-IN FIRST-OUT STORAGE AND PROCESSING UNIT MAKING USE THEREOF

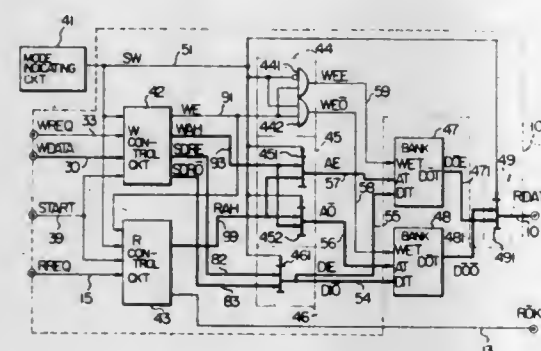
Shunichi Torii, Musashino; Shigeo Nagashima, Hachioji, and Koichiro Omoda, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,186

Claims priority, application Japan, Sep. 19, 1980, 55-129326
Int. Cl.³ G11C 19/00

U.S. Cl. 365—221

15 Claims



1. A first-in first-out memory comprising: a plurality of memory banks each capable of read and write modes of operation; first indicating means for generating a mode indicating signal sequentially and cyclically indicating a write mode of operation for said memory banks in a predetermined order in response to a clock signal; write control means responsive to said mode indicating signal and sequentially received data signals for writing said sequentially received data signals into different ones of said memory banks according to said predetermined order and at the sequential timings when said write mode is indicated for said different memory banks; second indicating means responsive to an applied read request signal for generating a read address signal indicating an address of one of said memory banks for effecting readout of the next data signal; and read control means responsive to said mode indicating signal and said read address signal for reading out said next data signal from said indicated address of said one memory bank, including first means for detecting the presence of said next data signal in a memory bank in dependence on the difference between the total number of data signals already written into the memory banks and the number of data signals already read out of said memory banks and second means for reading out said next data signal when said one memory bank is not in a write mode.

4,433,395

APPARATUS AND METHOD FOR REFRESHING NON-VOLATILE MEMORY

Sadahiro Iyehara, Suita; Kazumi Kawashima; Minoru Ueda, both of Takatsuki; Keisuke Yamamoto; Tatsuhiro Hosokawa, both of Ibaraki, and Yukio Furuta, Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 27, 1981, Ser. No. 257,618

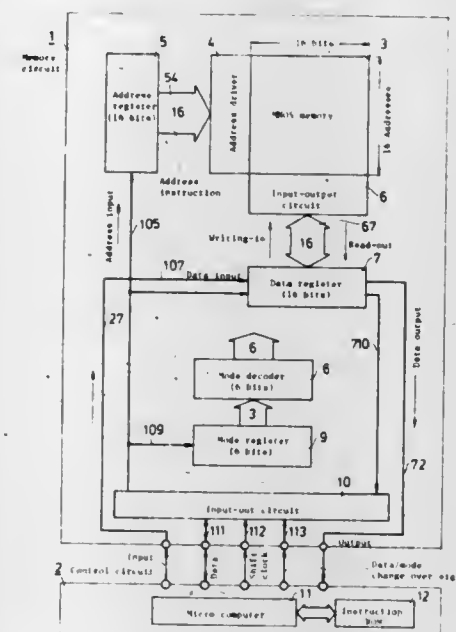
Claims priority, application Japan, May 6, 1980, 55-60156
Int. Cl.³ G11C 13/00

U.S. Cl. 365—222

12 Claims

1. An apparatus for refreshing a non-volatile memory having a plural number of addresses comprising: (a) a data register connected to an input-output circuit of said non-volatile memory;

- (b) an address register connected to an address driver of said non-volatile memory;
- (c) an input circuit connected to said data register and said address register;
- (d) a control circuit means including a microcomputer and an instruction ROM;
- (e) a non-volatile refreshing buffer memory for, in the refreshing operation of said non-volatile memory, temporarily storing the contents of an address selected sequentially from said non-volatile memory; and



- (f) said control circuit means including means for issuing control signals for reading a data signal out from a selected address of said non-volatile memory, writing said read out data into said non-volatile refreshing buffer memory, reading out said data signal from said non-volatile refreshing buffer memory, and writing said read out data signal again into said selected address from which the data signal was read out.

4,433,396

SONAR RECEIVERS

Phillip L. M. Johnson, and John R. Walden, both of Somerset, England, assignors to Plessey Overseas Limited, Ilford, England

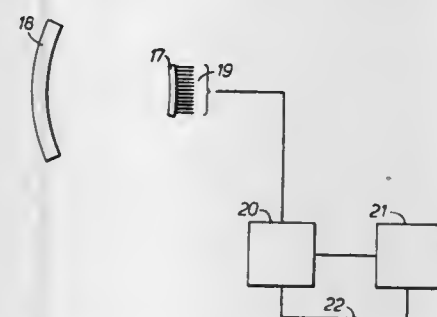
Filed Sep. 8, 1981, Ser. No. 300,128

Claims priority, application United Kingdom, Sep. 10, 1980, 8029193

Int. Cl.³ G01S 7/54, 15/42

U.S. Cl. 367—105

16 Claims



1. A sonar receiver, comprising an inwardly curved reflector arranged to direct received sonar signals onto a transducer system, which transducer system comprises an array of transducers distributed over an inwardly curved path facing the reflector such that each transducer is directed towards the center of the reflector and is responsive to sonar signals received from a particular direction to provide an output signal, indicative of a reflecting object, the amplitude of which signal is related to distance of the reflecting object.
2. A sonar receiver as claimed in claim 1, including sequen-

tial selection means arranged to couple the outputs of the transducers sequentially to a display device for indicating, in response to a signal, the direction and distance of a reflecting object.

4,433,397

CIRCUIT ARRANGEMENT FOR THE FORMATION AND PROCESSING OF GROUP SIGNALS

Egidius Arens, Achim, and Ravin Patel, Achim-Blerden, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

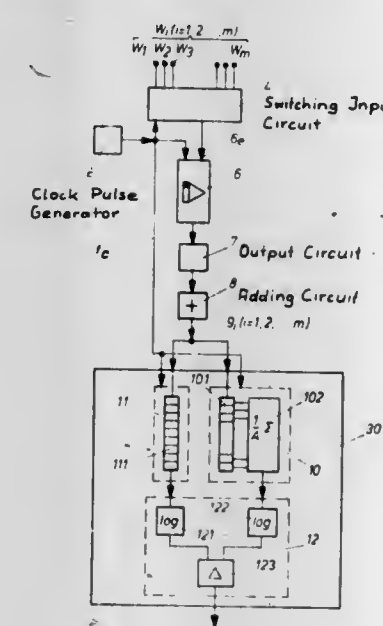
Filed Dec. 17, 1981, Ser. No. 331,885

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048240

Int. Cl.³ G01S 3/80, 3/00

U.S. Cl. 367—122

10 Claims



1. In a circuit arrangement for forming a succession of group signals in the ranging art for a momentarily effective characteristic of a group of adjacent group characteristics obtained from received signals originating from a number n of adjacently aligned transducers from a larger plurality of m transducers in a signal receiving system, the group signals being formed by varied, quantized time delays determined by the geometric arrangement of the plurality of m transducers in the signal receiving system and by the propagation speed of impinging signals in the transmission medium, the circuit arrangement including:

- input circuit means coupled to the plurality of m transducers for the repeated, consecutive interrogation of each individual transducer in succession to derive correspondingly successive received signal values, the input circuit means having a single output for providing representations of the received signal values in the order in which they are derived;
- memory circuit means having one read-in point coupled to the single output of the input circuit means, the memory circuit means being provided with a plurality of memory locations which are sequentially removed from the read-in point and each of which is capable of storing one received signal value representation, the number of memory locations being at least determined by the maximum time delay which must be imparted to the first interrogated received signal value, for storing each signal value representation appearing at the output of the input circuit means in succession so that each such representation, after read-in to the memory circuit means, consecutively occupies in steps the memory locations which are further removed from the read-in point;
- output circuit means coupled to the memory circuit means for the non-destructive read-out of stored representations of interrogated signal values which were received from a number n of adjacent transducers, from those of the memory

- locations which correspond to required time delays with respect to the read-in point; and
- adding circuit means coupled to the output circuit means and responsive to signals therefrom, and having an output at which appears successive group signals for a corresponding succession of adjacent group characteristics, the improvement wherein said circuit arrangement further comprises: integrating circuit means connected to the output of said adding circuit means for forming a representation of the mean value of a predetermined number of successive group signals;
- time delay means connected to the output of said adding circuit means for delaying each group signal appearing at said adding circuit means output by a selected time which is no greater than the time interval over which the predetermined number of successive group signals appear at said adding circuit means output; and
- ratio forming means having inputs connected to receive each representation formed by said integrating circuit means and each delayed signal from said time delay means and having an output at which appears a representation of the signal to noise ratio of each successive group signal appearing at the output of said adding circuit means.

4,433,398

ULTRASONIC TRANSDUCER

Masao Kodera, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

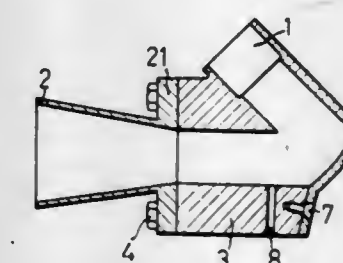
Filed May 20, 1981, Ser. No. 265,692

Claims priority, application Japan, Aug. 25, 1980, 55-120380[U]

Int. Cl.³ H04R 1/34

U.S. Cl. 367—140

4 Claims



1. An ultrasonic transducer comprising: an ultrasonic vibrator having a cylindrical body for transmitting and receiving ultrasonic waves; a cylindrical horn for imparting directivity to said ultrasonic waves; a cylindrical wave guide connecting said vibrator and said horn, said guide being bent so that said vibrator is positioned above said horn; a reflecting plate having a paraboloidal reflecting surface exposed within the bent portion of said guide for reflecting said ultrasonic waves passing therethrough; one end of said wave guide being coaxially connected to said horn and the other end to said vibrator; the central axis of said wave guide coaxially aligned with said vibrator intersecting the central axis of said guide coaxially aligned with said horn on said paraboloidal reflecting surface; and said vibrator being positioned at the focal point of said paraboloidal reflecting surface.

4,433,399

ULTRASONIC TRANSDUCERS

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorlano, Jr. and Donald P. Massa, Trustees

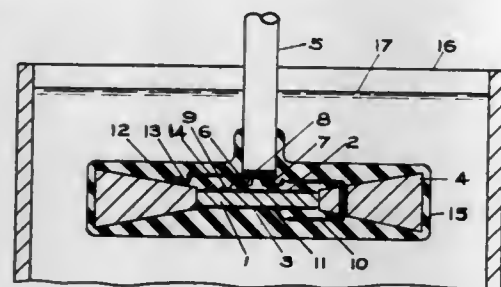
Continuation-in-part of Ser. No. 54,812, Jul. 5, 1979, abandoned.

This application Oct. 28, 1981, Ser. No. 315,640

Int. Cl.³ H04R 17/00

U.S. Cl. 367-157

10 Claims



1. In combination in an electroacoustic transducer adapted for generating sound in a liquid, a vibratile transducer element having a circular peripheral vibratile surface, an acoustic transmission line comprising a metallic washer-shaped structure with a center circular opening and characterized in that the radial dimension of said washer-shaped transmission line is greater than the thickness dimension of said transmission line, means for bonding said circular peripheral vibratile surface of said transducer element to the periphery of the circular opening in said acoustic transmission line, electrical terminal means connected to said transducer element for receiving alternating current electrical signals to operate said transducer element and a sound conducting rubber-like waterproof housing molded or potted to completely enclose said vibratile transducer element and said transmission line.

4,433,400

ACOUSTICALLY TRANSPARENT HYDROPHONE PROBE

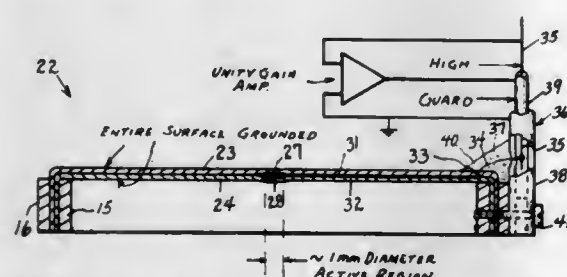
Alme S. DeReggi, Boys, and Gerald R. Harris, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 210,044

Int. Cl.³ H04R 17/00

U.S. Cl. 367-163

8 Claims



1. A hydrophone device comprising supporting hoop means of a selected area, sheet means of biaxially oriented polymer material secured in said hoop means and held thereby in a taut condition, said polymer sheet means having a poled piezoelectric area of predetermined size, the selected area of said sheet means defined by said hoop means being larger than the size of said poled piezoelectric area, and said poled piezoelectric area being located in said sheet means in spaced relation to said hoop means such that said hoop means during use remains outside the region of the medium subjected to the acoustic energy and the point being probed by said hydrophone device, said sheet means having respective electrode means of deposited metal on opposite sides of said poled piezoelectric area, said sheet means having a thickness selected such that it is substantially acoustically transparent in liquid, and respective electrical leads of deposited metal on said sheet means, connected to said electrode means and extending toward the periphery of said sheet means, said deposited electrode means and electrical leads comprising metal films having thicknesses selected such that the electrode means and electrical leads do not affect the acoustical transparency of said sheet means, wherein said sheet means comprises two identical polymer membranes bonded together defining respective piezoelectric laminae and being provided with abutting deposited electrodes about 1 mm in diameter and with opposite outer metallized ground plane coatings, with a plurality of said poled piezoelectric areas therebetween, wherein said electrical leads include respective superimposed strips of deposited metal between the two membranes, connected to the electrodes and having a common connection junction near the perimeters of the membranes, a transmission line secured to said hoop means, said transmission line having an outer conductor sleeve and a center conductor, means connecting said common connection junction to said center conductor, and means connecting said outer ground plane coatings to said outer conductor sleeve, the membranes each having a poled piezoelectric area adjacent said electrodes, and said piezoelectric areas being oppositely poled, whereby the piezoelectric laminae are electrically connected in parallel.

ected to said electrode means and extending toward the periphery of said sheet means, said deposited electrode means and electrical leads comprising metal films having thicknesses selected such that the electrode means and electrical leads do not affect the acoustical transparency of said sheet means, wherein said sheet means comprises two identical polymer membranes bonded together defining respective piezoelectric laminae and being provided with abutting deposited electrodes about 1 mm in diameter and with opposite outer metallized ground plane coatings, with a plurality of said poled piezoelectric areas therebetween, wherein said electrical leads include respective superimposed strips of deposited metal between the two membranes, connected to the electrodes and having a common connection junction near the perimeters of the membranes, a transmission line secured to said hoop means, said transmission line having an outer conductor sleeve and a center conductor, means connecting said common connection junction to said center conductor, and means connecting said outer ground plane coatings to said outer conductor sleeve, the membranes each having a poled piezoelectric area adjacent said electrodes, and said piezoelectric areas being oppositely poled, whereby the piezoelectric laminae are electrically connected in parallel.

4,433,401

ELECTRONIC TIMEPIECE HAVING A STEPPING MOTOR AND DRIVING CIRCUIT COMPENSATED FOR POWER SOURCE VARIATIONS

Masaharu Shida, and Makoto Ueda, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

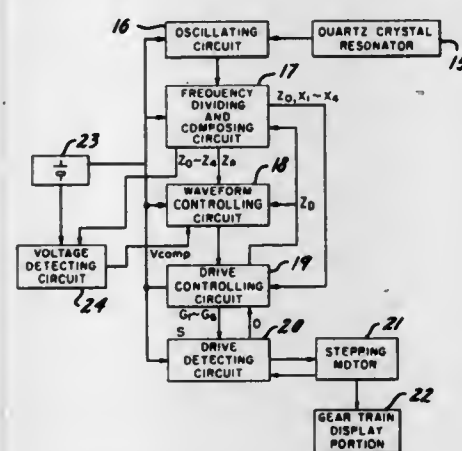
Filed Jul. 10, 1980, Ser. No. 168,319

Claims priority, application Japan, Sep. 18, 1979, 54-119799

Int. Cl.³ G04B 9/00

U.S. Cl. 368-204

11 Claims



1. An electronic timepiece, comprising:
a stepping motor having a rotor;
a rotation detection circuit for detecting rotation and non-rotation conditions of said rotor and for developing an output signal indicative of the condition of said rotor;
a power source;
a voltage detecting circuit for detecting the output voltage of said power source and for developing an output signal indicative of the detected output voltage of said power source; and
driving control circuit means for generating a pulse driving signal each pulse of which comprises a plurality of sub-pulses and for applying the pulse driving signal to drive said stepping motor, said driving control circuit means comprising means responsive to the output signal of said voltage detecting circuit for determining the effective pulse width of each pulse of said pulse driving signal according to the detected output voltage of said power source, and correction pulse generating means responsive to the output signal of said rotation detection circuit for

applying a correction pulse to drive said stepping motor when non-rotation of said rotor is detected by said rotation detection circuit after the application of a driving pulse to said stepping motor.

4,433,402

REFERENCE SIGNAL DETECTION CIRCUIT IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Isami Kaneda, Yokohama; Susumu Sakakibara, Sagami, and Yasushi Sano, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

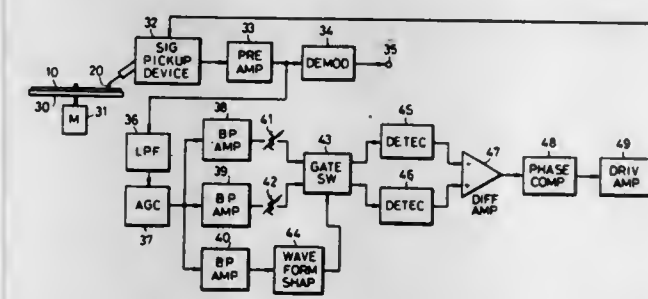
Filed Oct. 13, 1981, Ser. No. 310,767

Claims priority, application Japan, Oct. 13, 1980, 55-142748

Int. Cl.³ G11B 21/10

U.S. Cl. 369-43

4 Claims



1. A reference signal detection circuit in a rotary recording medium reproducing apparatus having a reproducing transducer for reproducing an information signal recorded on a rotary recording medium and reference signals for a tracking servo system, said reference signal being recorded in a form of a tone burst, said transducer reproducing said signals from said rotary recording medium rotating at a predetermined rotational speed, and tracking servo loop means responsive to said tracking servo reference signals picked up from said recording medium for performing a tracking servo operation according to the tracking servo signal, said tracking servo loop means having a gain cross-over frequency, where the open-loop gain becomes zero, said detection circuit constituting a part of said track servo loop means and comprising a single rectifying and smoothing circuit means responsive to said transducer for rectifying and smoothing said reproduced reference signals obtained in the form of tone burst,

said rectifying and smoothing circuit means having a low-pass filter characteristic with a cutoff frequency which is within a frequency range between substantially one-third and twice said gain cross-over frequency in the gain characteristic of said tracking servo loop means, and means responsive to said rectifying and smoothing circuit means for producing an output which is indicative of an amplitude of the tracking servo signal.

4,433,403

OPTICAL DISC RECORDING AND RETRIEVAL SYSTEM

Sueki Baba, Osaka; Tomio Yoshida, Katano; Nobuo Akahira, Yawata, and Tadaoki Yamashita, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 15, 1981, Ser. No. 254,274

Claims priority, application Japan, Apr. 15, 1980, 55-49717

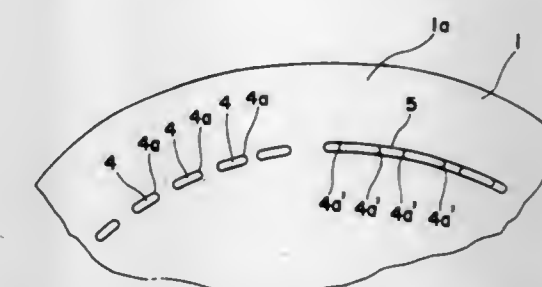
Int. Cl.³ G11B 27/22, 27/30

U.S. Cl. 369-48

5 Claims

1. A signal recording and retrieval system comprising:
a means for recording a primary signal on a recording track provided on a recording medium by projecting thereonto a laser beam which has been modulated by said primary signal;
a means for further recording a secondary signal, by superposition, onto a section of said recording track having a previously recorded primary signal which is to be deleted, by projecting said laser beam thereonto, said laser beam

being modulated by said secondary signal and said secondary signal having a frequency band which is different from a frequency band of said primary signal;
a means for retrieving a signal including said primary signal from said recording track;
a means for extracting said secondary signal from said retrieved signal during the retrieval thereof;



and a means for inhibiting an outputting of said retrieved primary signal by controlling a gate means provided in a transmission path of said retrieval signal during these periods of time when a separated secondary signal is present in said retrieved signal.

4,433,404

VARIETY PLAYING SOUND REPRODUCING DEVICE

Katsumi Watanabe, Kawasaki, Japan, assignor to Ozen Corporation, Tokyo, Japan

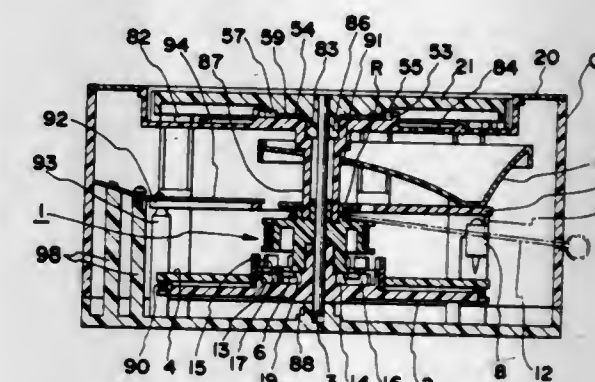
Filed Oct. 1, 1981, Ser. No. 307,534

Claims priority, application Japan, Jul. 24, 1981, 56-116142

Int. Cl.³ G11B 3/00, 17/00

U.S. Cl. 369-66

6 Claims



1. An improved sound reproducing device comprising:
a casing;
a center shaft mounted within the casing;
a turn table fixedly attached to the center shaft;
a record disc mounted on the turn table and having a plurality of recorded grooves, each having a start and an end point of sound reproduction;
a constant torque spring motor for driving the turn table;
a tone arm mounted within the casing;
a pickup carried by the tone arm, the pickup being positioned above the record disc;
return spring means mounted within the casing for biasing the pickup toward the start point of sound reproduction on the record disc;
a sound transmitting member disposed within the casing;
a speaker connected to the sound transmitting member, the sound transmitting member being interposed between the tone arm and the speaker;
a pull string for winding the constant spring torque motor, the pull string releasing engagement of the pickup with the record disc when the string is stretched straight under tension to allow the pickup to return to the start point of sound reproduction on the record disc;

the constant torque spring motor and turntable each having a face that coaxially confronts the face of the other, a one-way clutch interposed between the turn table and the constant torque spring motor for driving the turn table in a direction of sound reproduction of the record disc, the one-way clutch comprising:

- a guide face on one of the confronting faces surrounding the center shaft and defining a holding space therearound;
- a plurality of locking faces projecting radially inward from the guide face and facing a direction opposite from the direction of rotation of the record disc for sound reproduction, the locking faces being unequally spaced around the guide face;
- a plurality of slant faces, each continuously inclining from a tip end of a locking face toward the guide face;
- a plurality of generally circular locking pieces freely movable within the holding space around the center shaft, the locking pieces having a diameter larger than the extent of protection of the locking face from the guide face; and
- a plurality of locking projections extending radially about the center shaft, the locking projections being disposed on the other of the two co-axially confronting faces of the constant torque spring motor and the turn table.

4,433,405

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS HAVING A MECHANISM FOR CONNECTING A LID MEMBER TO A JACKET

Takashi Saito, Ayase, and Masafumi Mochizuki, Yamato, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

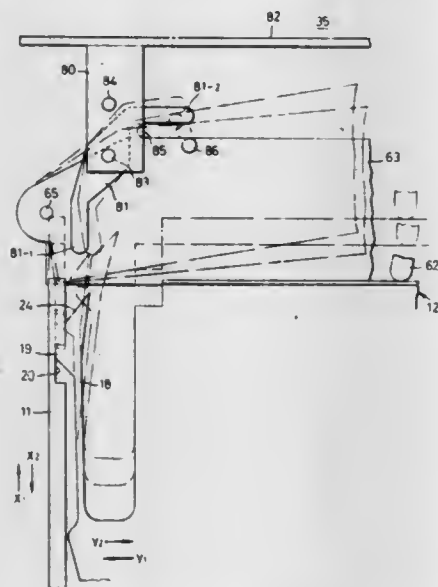
Filed Aug. 20, 1981, Ser. No. 294,802

Claims priority, application Japan, Aug. 20, 1980, 55-117740[U]

Int. Cl.³ G11B 5/82, 25/04

U.S. Cl. 369-77.2

6 Claims



1. A reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket having a space for accommodating said rotary recording medium and an opening for enabling said rotary recording medium to go into and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said lid member having engaging arms for engaging said jacket, said rotary recording medium reproducing apparatus comprising:

- means for defining an inserting opening in said apparatus through which said case is inserted;
- lid member locking means located at an innermost part of said reproducing apparatus, for locking said lid member to said lid member locking means when said case is inserted into a final inserting position within said reproducing apparatus, and for releasing the locking with respect to said lid member

when an empty jacket is inserted into the final inserting position within said reproducing apparatus; and

- a lid member-jacket disconnecting mechanism comprising disengaging members for deforming said engaging arms from an original state and releasing an engagement of said engaging arms with said jacket to disconnect said lid member from said jacket when said case is inserted into the final inserting position within said reproducing apparatus and then pulled from said reproducing apparatus, said disengaging members maintaining said engaging arms in a deformed state when said jacket is pulled from said reproducing apparatus so that said lid member is locked by said lid member locking means and kept within said reproducing apparatus, and a mechanism for operating said disengaging members so as to release said engaging arms from the deformed state and enable said engaging arms to resiliently return to the original state and engage said jacket, to thereby connect said lid member with said jacket, in response to an operation in which an empty jacket is inserted into and then pulled from the final inserting position within said reproducing apparatus.

4,433,406

ROTARY RECORDING MEDIUM CLAMPING MECHANISM

Takashi Saito, Ayase, Masafumi Mochizuki, Yamato, and Norimasa Arai, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

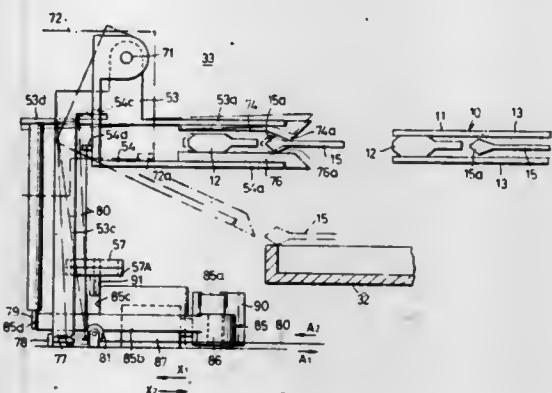
Filed Aug. 26, 1981, Ser. No. 296,496

Claims priority, application Japan, Aug. 26, 1980, 55-117335

Int. Cl.³ G11B 17/04

U.S. Cl. 369-77.2

7 Claims



7. A rotary recording medium reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket provided with a space for accommodating said rotary recording medium and an opening for enabling said rotary recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said rotary recording medium reproducing apparatus comprising:

- an inserting opening in said apparatus through which said case is inserted;
- a rotary recording medium clamping mechanism in an innermost part of said reproducing apparatus, for clamping an outer peripheral groove guard of said rotary recording medium when said case is inserted into said reproducing apparatus and then said jacket is pulled from said reproducing apparatus; and
- turntable means for rotating said rotary recording medium clamped and left inside said reproducing apparatus, said rotary recording medium clamping mechanism comprising a rotatable lower clamp member, a mechanism for holding said lower clamp member in a substantially horizontal position upon clamping, an upper clamp member rotatable to oppose said lower clamp member and having projection means projecting downwardly at a tip end thereof, and a mechanism for locking said upper clamp member, after said outer peripheral groove guard of said rotary recording

medium enters between said upper and lower clamp members, when said projection faces the inner side of said outer peripheral groove guard,

said locking mechanism comprising a lock lever undergoing a rotation interrelatedly with a case insertion into said reproducing apparatus, and a mechanism for holding said lock lever, when said case is inserted to the innermost position, at a position where said lock lever has rotated at this time instant, said lock lever, at a rotational position held by said holding mechanism, engaging a part of said upper clamp member to lock the same so that said projection does not move upwards.

4,433,408

CANTILEVER FOR PICKUP CARTRIDGE

Koichi Azuma, Masahiro Nagasawa, Hiroshi Yamazoe, and Masaki Aoki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 116,837, Jan. 30, 1980, abandoned, which is a division of Ser. No. 941,908, Sep. 13, 1978, Pat. No. 4,212,838. This application Mar. 9, 1982, Ser. No. 356,268

Claims priority, application Japan, Sep. 20, 1977, 52-113520; Sep. 20, 1977, 52-113521

Int. Cl.³ G11B 3/02, 3/46

U.S. Cl. 369-170

8 Claims



1. A cantilever for a pickup cartridge comprising an elongated cylindrical base and a layer of boron or boride deposited around said base by low pressure chemical vapor deposition, said layer exhibiting a high specific modulus of elasticity ratio higher than 5,000 Kg/mm².

4,433,407

METHOD AND APPARATUS FOR RECORDING VIDEO SIGNALS INTO A METAL SUBSTRATE

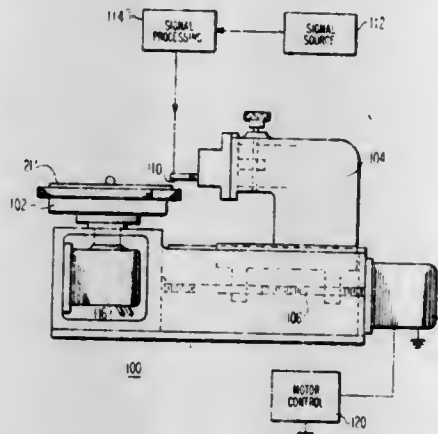
George H. N. Riddle, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,388

Int. Cl.³ G11B 3/00

U.S. Cl. 369-127

16 Claims



1. Apparatus for recording information signals along a spiral information track in a disc-shaped substrate, comprising:

- a turntable adapted for rotating said disc-shaped substrate;
- means for cutting a depression in a surface of said disc-shaped substrate;
- means for establishing relative motion between said cutting means and said disc-shaped substrate such that said cutting means cuts a depression in the form of a spiral path in said surface of said disc-shaped substrate; wherein when said relative motion establishing means cuts said depression in the form of a spiral path having a constant pitch a ridge is formed on a cutting edge of said means cutting which deleteriously affects the previously cut information; and
- means for varying said relative motion means such that said spiral path is formed having a pitch that varies to affect a dimension of said depression such that said depression varies continuously across said surface of said disc-shaped substrate to reduce said ridge on said cutting edge; said depression being cut in a contiguous spiral path in said surface such that no land areas separate adjacent convolution of said spiral path.

4,433,409

PICK-UP ASSEMBLY FOR VIDEO DISC PLAYER

Mahito Tsuji, Yawata, Toshiyuki Kudo, Hirakata, and Kazuo Itoh, Matsubara, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

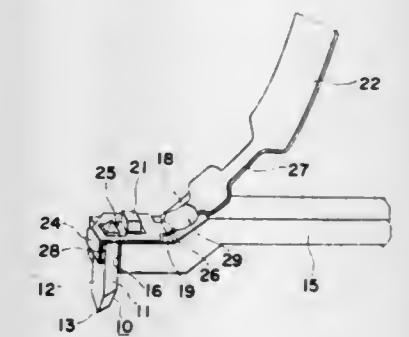
Filed Mar. 11, 1982, Ser. No. 357,322

Claims priority, application Japan, Mar. 13, 1981, 56-35884[U]

Int. Cl.³ G11B 17/06

U.S. Cl. 369-170

5 Claims



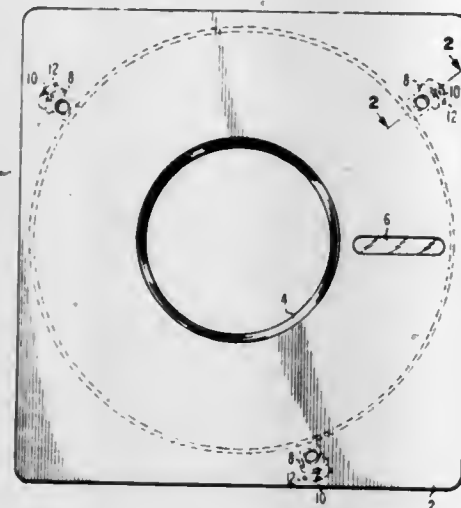
1. A pick-up assembly which comprises, in combination:

- a generally square cross-sectional elongated stylus having first and second planar surfaces disposed opposite to and generally parallel to each other, and having an electrode provided on said first planar surface of said stylus so as to extend lengthwise thereof;
- a generally elongated stylus carrier having first and second support faces formed at one end thereof so as to lie at right angles to each other, said stylus having said second planar surface and one adjacent surface secured to said first and second support faces so as to position said first planar surface of said stylus to face in a direction away from said carrier, said stylus so secured extending generally transversely of the longitudinal axis of the carrier; and
- a generally strip-shaped resilient fly lead having one end bent to protrude generally perpendicular to the remaining portion thereof so as to form a lateral plane surface parallel to said first planar surface of said stylus, said bent end being physically and electrically connected to said electrode.

4,433,410

PROTECTIVE CARTRIDGE FOR OPTICAL DISCS
 Bohdan W. Stryj, Cinnaminson, and Angelo G. Lazzery, Oaklyn,
 both of N.J., assignors to RCA Corporation, New York, N.Y.
 Filed Jun. 30, 1982, Ser. No. 393,605
 Int. Cl.³ G11B 17/04, 23/02; B65D 85/57
 U.S. Cl. 369-291

10 Claims



1. A record package comprising:
 a disc record;
 an enclosure for protecting an information bearing surface of said disc record, said enclosure having a cavity for housing said disc record, said enclosure having a plurality of apertures of a predetermined shape formed therethrough; and
 a plurality of holding means, coupled to said enclosure, for holding said disc record such that said disc record is suspended in said cavity and said information bearing surface is spaced from a side surface of said enclosure, each of said plurality of holding means being slidably positioned in said enclosure and biased to engage the outside rim of said record disc to suspend said record disc in said cavity, each of said plurality of holding means having an aperture of said predetermined shape formed therethrough, respective ones of said plurality of apertures formed in said holding means being offset with respect to respective ones of said plurality of apertures formed in said enclosure when said plurality of holding means engage said outside rim of said record disc;
 pin means, arranged on means for utilizing said record package, said pin means engaging said record package such that respective ones of said plurality of apertures formed in said holding means are aligned with respect to respective ones of said plurality of apertures formed in said enclosure, said pin means disengaging said holding means from said outside rim of said record disc for sliding said plurality of holding means to disengage said record disc to permit said disc record to rotate within said cavity.

4,433,411

TELEPHONE SWITCHING NETWORK FOR DIGITAL SPEECH TRANSMISSION

Stanislaus Gefroerer, Taufkirchen, and Werner Vollmeyer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
 Filed Sep. 15, 1981, Ser. No. 302,642
 Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036649

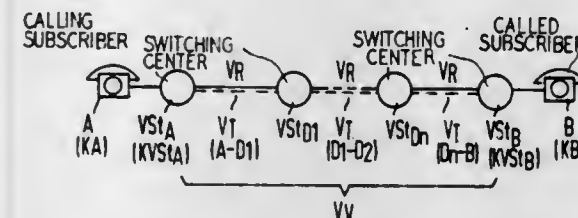
Int. Cl.³ H04J 3/16

U.S. Cl. 370-80

21 Claims

1. A telephone switching network for digital speech transmission, comprising:
 a plurality of switching centers capable of being connected in tandem between an originating subscriber terminal and a destination subscriber terminal;
 means in each of said switching centers for receiving dialing

information and establishing virtual connections between the originating and destination switching centers connected to the originating and destination subscribers;
 means for subdividing the speech into speech phrases;
 means in each switching center for assigning real connections between two switching centers only for transmission of a respective speech phrase;
 means for transmitting a speech phrase in the form of a digital information section in real time over the real connection including a destination identifier indicating the virtual partial connections to be traversed, the digitized speech phrase and an end identifier indicating the end of the digitized speech phrase;



means for releasing the established real connection after termination of transmission of an information section;
 means for disconnecting the virtual connection upon termination of a call;
 means for subdividing said digital speech phrases, by rastering, into predetermined intervals or time slots corresponding to 64 octets, each phrase corresponding to an arbitrary number of successive time slots; and
 means in said switching centers for suppressing integer time slots of a phrase when no real connection is available and transmitting in real time the remainder of the phrase at the beginning of a new unsuppressed time slot in response to a real connection becoming available.

4,433,412

METHOD AND APPARATUS FOR TESTING AND VERIFYING THE OPERABILITY OF REGISTER BASED STATE MACHINE APPARATUS

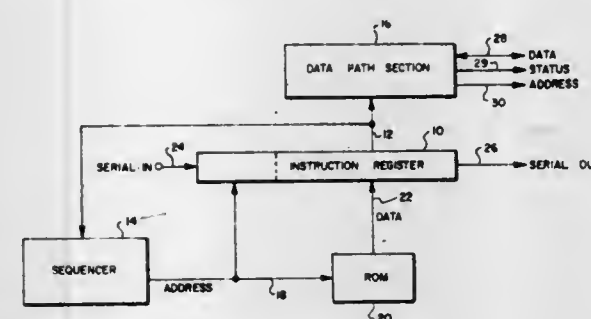
David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 15, 1981, Ser. No. 264,179

Int. Cl.³ G06F 11/00

U.S. Cl. 371-25

6 Claims



1. State machine test apparatus comprising, in combination:
 instruction register means including an address section and a data path section;
 read only memory (ROM) means, connected to said register means for supplying addressed words thereto in response to receipt of appropriate input address signals;
 sequencer means connected between said register means and said ROM means for supplying said input address signals to both said ROM means and to said address section of said register means in response to receipt of appropriate control signals from said register means;
 test signal supply means, connected to said register means, for supplying predetermined instructions to said register

means whereby addressed words are returned to said register means from said ROM means; and
 test signal apparatus output means for outputting from said register means both the addressed word returned by said ROM means in response to a predetermined instruction as supplied by said test signal supply means and the address last stored in said register means from said sequencer means, whereby the outputted word can be compared to a predetermined desired response.

4,433,413

BUILT-IN APPARATUS AND METHOD FOR TESTING A MICROPROCESSOR SYSTEM

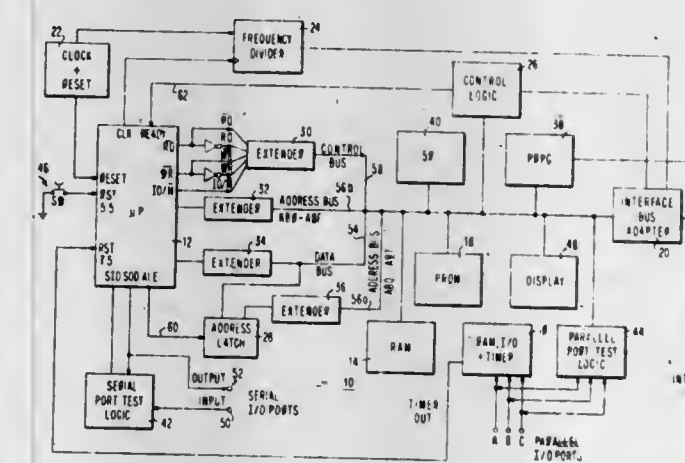
Patrick P. Fasang, Mount Laurel, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Oct. 22, 1981, Ser. No. 314,044

Int. Cl.³ G06F 11/00; G01R 31/28

U.S. Cl. 371-25

10 Claims



1. Apparatus built into a computer system having a microprocessor, said apparatus being adapted for testing the overall functional operation of the system and comprising, in combination:

memory means, electrically connected to the microprocessor, for storing a sequence of test instructions to be executed by the microprocessor;
 data source means, electrically connected to the microprocessor, for providing test input data to be acted upon by the microprocessor when the microprocessor is under control of the test instructions;
 signature register means, electrically connected to the microprocessor, for acquiring test output data resulting from the functional operation of the microprocessor acting upon said test input data when the microprocessor is under control of the specified test instructions, said signature register producing actual test signatures from said test output data;
 comparator means, connected to receive said actual test signatures, for determining the coincidence or non-coincidence of said actual test signatures with corresponding predicted test signatures representative, respectively, of the functional operation of the system were error-free; and
 means, connected to said comparator means, for communicating to outside the system the coincidence or non-coincidence determined by said comparator means.

4,433,414

DIGITAL TESTER LOCAL MEMORY DATA STORAGE SYSTEM

Maurice E. Carey, Troy, N.Y., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 30, 1981, Ser. No. 307,322

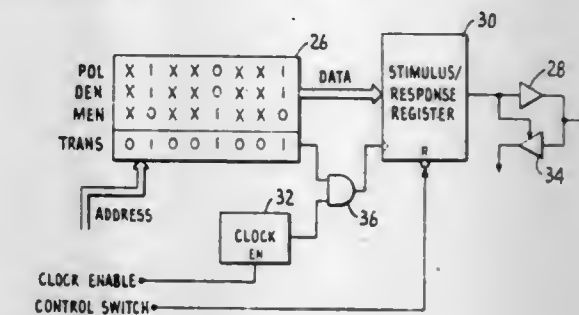
Int. Cl.³ G01R 31/28

U.S. Cl. 371-27

13 Claims

1. In a digital tester for testing electronic components, having a data channel that is operatively connected to the elec-

tronic component including an associated local memory having at least as many address locations as there are cycles in a testing procedure with a different location being addressed during each cycle in a testing procedure, a method of loading the local memory with digital information relating to the operation to be performed in the data channel during a test, comprising the steps of:



- loading vectors describing transitions to be made in the operation to be performed in the data channel only at the address locations of the local memory that correspond to the test cycles in which said transitions are to take place; and
 loading into each address location of the local memory data that is indicative of whether the vector information stored in the address location is valid transition data.

4,433,415

PCM SIGNAL PROCESSOR

Tadashi Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

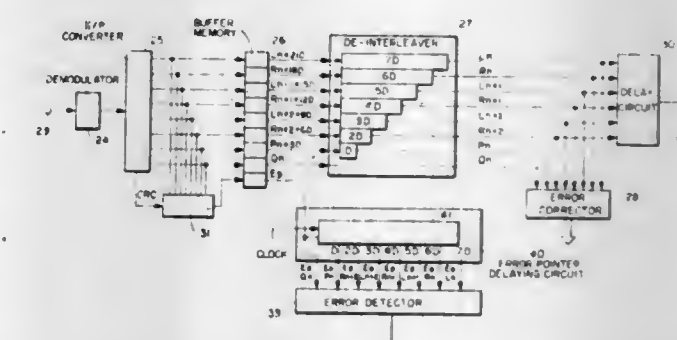
Filed Sep. 10, 1981, Ser. No. 300,737

Claims priority, application Japan, Sep. 16, 1980, 55-128332

Int. Cl.³ G06F 11/10

U.S. Cl. 371-37

6 Claims



1. A pulse code modulation (PCM) signal processor for extracting data words from a serial PCM data block also containing an error detection and correction code, said signal processor comprising:

serial-to-parallel converter means for converting said serial PCM data block into a parallel format, said serial-to-parallel converting means having terminals each outputting in parallel a different one of said data words and said error detection and correction code;
 de-interleave means connected to said terminals of said serial-to-parallel converter means for adding different delays to said data words such that all of said data words appear synchronously at the output of said de-interleave means;
 means connected to said terminals of said serial-to-parallel converter means for forming an error pointer from said data words and said error detection and correction code, said error pointer comprising data word error pointers each indicating the presence of an error in a different one of said data words;
 an error pointer shift register connected to said error pointer forming means for synchronizing said error pointer with

said de-interleave means such that each data word error pointer is synchronized with its corresponding data word; and
means connected to said error pointer shift register and to said de-interleave means for detecting and correcting errors in said data words from said de-interleave means using said data word error pointers from said error pointer shift register.

4,433,416

PCM SIGNAL PROCESSOR

Tadashi Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

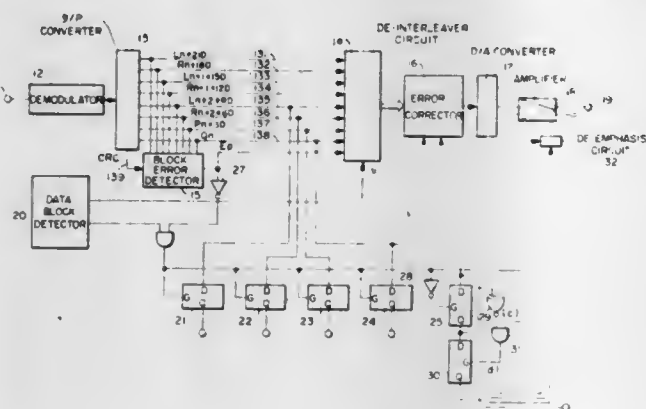
Filed Sep. 10, 1981, Ser. No. 300,738

Claims priority, application Japan, Sep. 16, 1980, 55-128331

Int. Cl.³ G06F 11/10

U.S. Cl. 371-37

4 Claims



1. A pulse code modulation (PCM) signal processor for extracting signal processor control words from a serial PCM data stream also containing error detection and correction words, said PCM signal processor comprising:

serial-to-parallel converter means for converting said serial PCM data stream into a parallel form, said serial-to-parallel converter means including terminals for outputting said signal processor control words and said error detection and correction words;

error detecting means responsive to said control words and said error detection and correction codes and connected to said serial-to-parallel converter means terminals for forming an error signal having a first state indicating the presence of an error in said control words and a second state indicating the absence of an error in said control words;

first means coupled to said serial-to-parallel converter means for storing first signal processor control signals from said signal processor control words when said error signal is in said second state and for preventing the storage of said first signal processor control signals when said error signal is in said first state; and

second means connected to said serial-to-parallel converter means for storing second signal processor control signals from said signal processor control words when said error signal is initially in said first state and subsequently in said second state and when said second signal processor control signals from signal processor control words of two successive PCM data streams are equivalent, said second storing means thereby reducing the chance of erroneous operation by the receipt of random errors in PCM control signals by ensuring that second signal processor control signals be the same in two successive PCM data streams before storage of said signals.

4,433,417 NONPLANAR SUBSTRATE INJECTION LASERS GROWN IN VAPOR PHASE EPITAXY

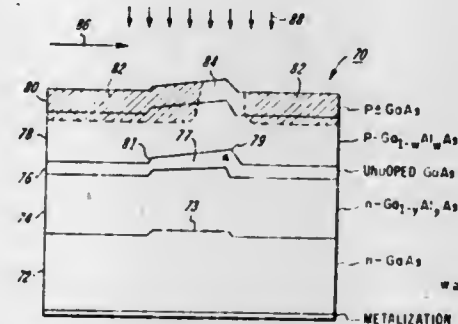
Robert D. Burnham, Palo Alto; Donald R. Scifres, Los Altos, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 29, 1981, Ser. No. 268,596

Int. Cl.³ H01S 3/19

U.S. Cl. 372-45

21 Claims



1. In an injection laser comprising a plurality of contiguous layers of semiconductor material deposited by chemical phase epitaxy on a semiconductor substrate, said substrate provided with a nonplanar pattern, one of said layers forming an active layer with a nonplanar active region for optical wave propagation under lasing conditions, the improvement comprising a continuous lateral spatial thickness variation transversely across said active region wherein the thickness of said active region is slightly greater along at least one portion of said active region compared to the remainder of said active region, said variation to provide an effective lateral refractive index variation within said active region thereby permitting the maintenance of the lowest order transverse mode along the plane of said active region about said one portion of said active region.

4,433,418

OFF-AXIS ASTIGMATIC UNSTABLE LASER RESONATOR

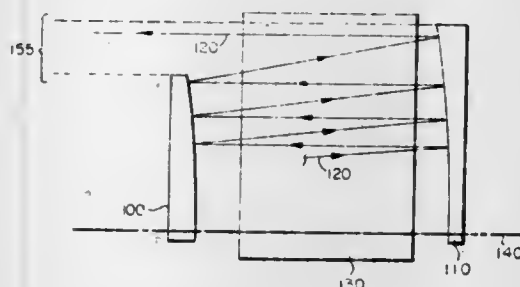
Irl W. Smith, Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 6, 1981, Ser. No. 232,085

Int. Cl.³ H01S 3/08

U.S. Cl. 372-95

11 Claims



1. In combination:
a gain medium;
means, including a resonant cavity and having disposed in such cavity the gain medium, for urging electromagnetic waves in said cavity and passing through the gain medium outwardly in a predetermined direction towards a predetermined peripheral portion of the gain medium; and,
wherein the urging means has an astigmatic aberration, such aberration having a greater magnification along the predetermined direction than along a direction perpendicular to said predetermined direction.

4,433,419 ELECTRODE PURGE SLEEVE FOR GLASS MELTING FURNACES

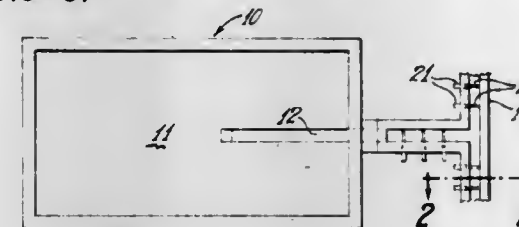
Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 23, 1982, Ser. No. 371,159

Int. Cl.³ C03B 5/027

U.S. Cl. 373-37

12 Claims



1. A gas purge sleeve assembly for an electric heating electrode mounted horizontally in a hearth of a furnace comprising in combination with an electric heating electrode made of a material subject to attack and deterioration by the atmosphere under high temperature operating conditions, a tubular section having an internal configuration conforming to that of the exterior of the electrode in the region to be protected against atmospheric attack and an internal dimension slightly larger than said electrode portion, said tubular section extending over a length of the electrode from the refractory wall of the hearth through which the electrode extends to a position along the length of the electrode safely beyond that which, during operation of the electrode, reaches a high temperature at which the electrode material is subject to deterioration by attack of atmospheric gases, said tubular section being sealed against gas leakage at said wall and being provided with a second gas seal against leakage of gas therefrom at the opposite end of said tubular section being provided with a gas inlet means for supply of inert gas thereto under pressure, a gas outlet means having a closing valve associated therewith, whereby gas can be released from said tubular section to purge atmospheric gases from said sealed tubular section and to which pressure instrumentation may be connected for monitoring of the internal pressure of inert gas supplied to said section.

4,433,420

METHOD AND APPARATUS FOR DETERMINING THE LEVEL OF SLAG CONTAINING IRON OR IRON COMPOUNDS IN A GLASS MELTING FURNACE

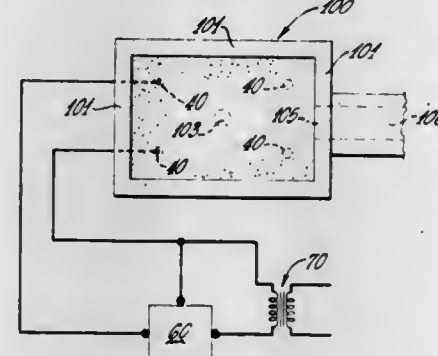
Charles S. Dunn, Pataskala, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 10, 1982, Ser. No. 376,812

Int. Cl.³ C03B 5/027; F27D 21/04

U.S. Cl. 373-39

13 Claims



1. An apparatus for determining the level of slag containing iron and iron compounds in a glass melting furnace comprising:

a furnace enclosure having sidewalls and a bottom wall; electrically conductive elements protruding through the walls of the furnace enclosure above the lowest level of

the bottom wall at a level at which the slag is to be detected;
a means for determining the change in resistance between pairs of the electrically conductive elements; and
a means responsive to the change in resistance to activate an audible alarm to initiate the draining of the slag.

4,433,421

CONTROLLED ATMOSPHERE MELTING OF MOLTEN SLAG CHARGE

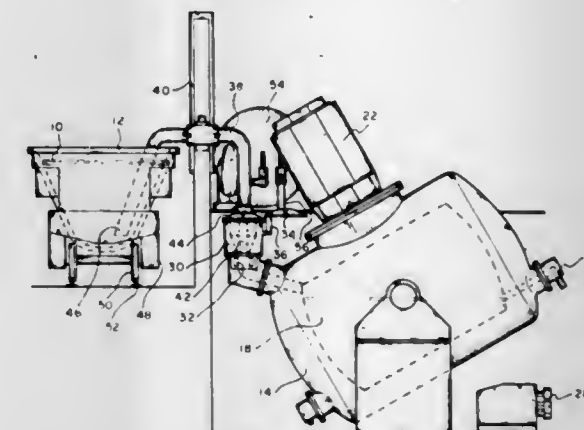
Patrick J. Wooding, Moorestown, N.J., assignor to Wooding, Indian Mills, N.J.

Filed Dec. 7, 1981, Ser. No. 328,422

Int. Cl.³ F27D 3/14

U.S. Cl. 373-79

5 Claims



1. In an electric melting furnace for the production of mineral wool from slag including a carbon-lined fully enclosed crucible, means for controlling the atmosphere within said crucible, electric means for heating the slag within said crucible, a taphole for removing molten slag from said crucible and means for feeding slag into said crucible for heating the same without allowing atmospheric gases to enter said crucible; the improvement in said feeding means including means for feeding molten slag into said crucible and including an inlet feed port and a refractory lined feed tube having one end adapted to be placed in sealing engagement with said inlet feed port and means for reducing the atmospheric pressure within said feed tube to at least initiate the flow of molten slag from an external receptacle into said tube and then into said crucible.

4,433,422

FREQUENCY MEASURING SYSTEM FOR ALTERNATING FREQUENCY SIGNALS

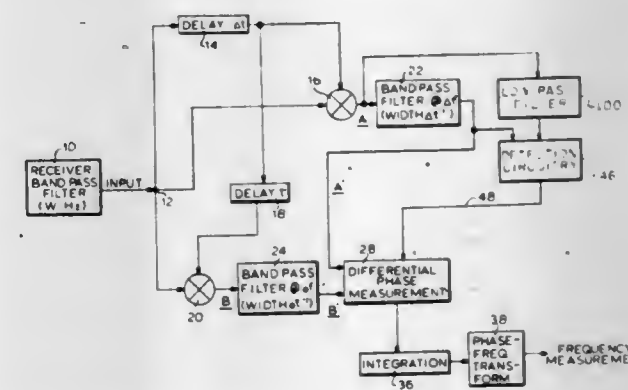
Richard R. Kurth, Sudbury, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,196

Int. Cl.³ H04B 3/46; H04M 1/50

U.S. Cl. 375-10

21 Claims



1. A method of measuring the center frequency of an incom-

ing frequency shift keyed signal having known shift frequency, known key rate, and known key period comprising

- delaying the incoming signal by a first time interval to produce a first delayed signal,
- multiplying the first delayed signal by incoming signal to produce a first product signal having sum and difference components,
- filtering the first product signal to pass the difference component thereof while rejecting the sum component thereof,
- delaying the incoming signal by a second time interval, not equal to said first time interval, to produce a second delayed signal,
- multiplying the second delayed signal by the incoming signal to produce a second product signal having sum and difference components,
- filtering the second product signal to pass the difference component thereof while rejecting the sum component thereof,
- multiplying the difference component of the first product signal with the difference component of the second product signal to produce a third product having phase sum and phase difference components,
- filtering the third product to pass the phase difference component and to reject the phase sum thereby producing a phase angle signal representing the phase difference between the difference component of the first product signal and the difference component of the second product signal,
- transforming the phase angle signal into a frequency signal.

4,433,423

HIGH QUALITY DELTA MODULATOR

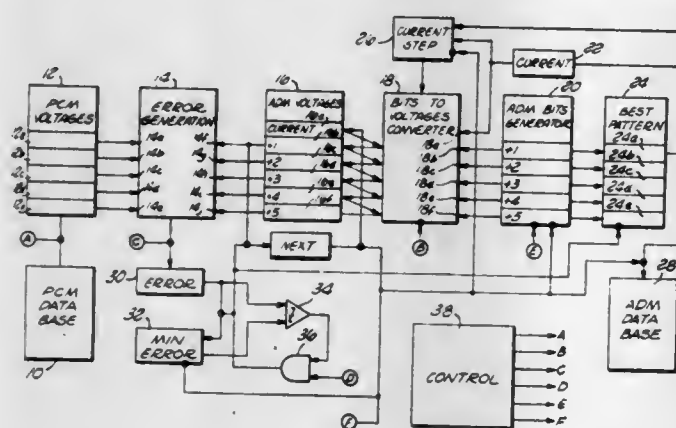
Scott M. Golding, Costa Mesa, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jan. 29, 1982, Ser. No. 344,131

Int. Cl.³ H03K 13/22; H04B 12/04

U.S. Cl. 375—30

11 Claims



1. A method for generating a series of delta modulation data signals at a predetermined clock rate, corresponding to a predetermined analog waveform, comprising the steps of:
 - (a) providing a series of generated digital signals corresponding to amplitude values of said waveform, and having a sample rate equal to said predetermined clock rate;
 - (b) storing sequential groups of sequential digital signals taken from said series;
 - (c) providing a series of predetermined patterns of delta modulation data signals for each said group of sequential digital signals;
 - (d) converting said patterns of delta modulation signals into corresponding sequences of derived digital signals corresponding to the amplitude values, taken at said sample rate, of a delta modulation waveform derivable from said sequence by way of delta demodulation;
 - (e) comparing, for each said group of generated digital signals, each of said sequences of derived digital signals with its associated group, and selecting for each said group said

sequence of derived digital signals which has the least quantifiable difference, according to a predetermined relationship, with said associated group of generated digital signals; (f) storing in a sequential order at least one delta modulation signal from each said pattern of delta modulation signals associated with said selected sequences.

4,433,424

MULTICHANNEL COMMON CLOCK

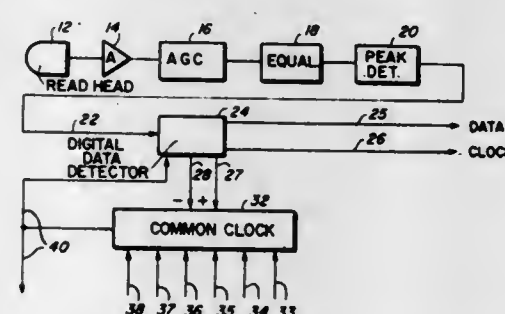
Louis Taber, and Don G. East, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1981, Ser. No. 262,719

Int. Cl.³ H04L 7/02

U.S. Cl. 375—106

9 Claims



1. In a data transmission system wherein data is transmitted to or from magnetic storage means on multiple parallel channels in the absence of a synchronizing channel, with single source clocking information incorporated with data on each channel,
 - variable frequency clocking means operative at a clocking rate which is an integral multiple of the channel signal baud rate,
 - means for supplying signals from said clocking means to each individual channel subsystem,
 - means associated with the clocking means and each channel operable at the bit rate or any subharmonic of the bit rate for monitoring the phase error of each channel of the system with respect to said clocking signals, and means for applying a clock correction signal to said variable frequency clocking means which is a function of the phase errors of all the data channels of the system, whereby data transmitted under single-source clocking control can be resynchronized for further processing by utilizing a single clock for the multiple channel.

4,433,425

METHOD AND APPARATUS FOR DETECTING THE TRAINING SEQUENCE FOR A SELF-ADAPTING EQUALIZER

Bogena de Jaeger, Paris, France, assignor to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Dec. 9, 1981, Ser. No. 329,096

Claims priority, application France, Dec. 12, 1980, 80 26455

Int. Cl.³ H04L 7/10

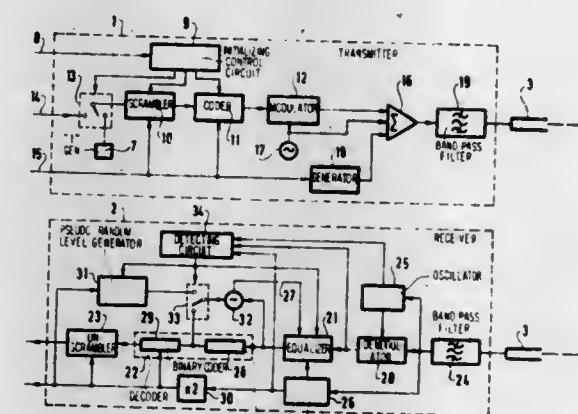
U.S. Cl. 375—113

8 Claims

1. A method for detecting a training sequence for initializing a self-adaptive equalizer of a receiver located at one end of a synchronous data transmission system having at the other end a transmitter comprising a coder transforming groups of n consecutive bits into corresponding successive multivalent symbols, where n is an integer not less than unity, a group of n consecutive first logic state bits being transformed into a null symbol having a frequency spectrum null and a sequence of groups of n consecutive second logic state bits in a sequence of symbols having a frequency spectrum substantially constituted by a single large amplitude line, said system being of a type which uses, when setting up a link, an initializing procedure comprising a synchronizing sequence followed by a training sequence, the synchronizing sequence at least ending with a

period during which a sequence of groups of n consecutive second logic state bits are transmitted and the training sequence beginning with at least one group of n first logic state bits; wherein the method of detecting the training sequence comprises the steps of:

- monitoring the symbols received at said one end but not yet equalized;



- detecting in said received symbols the presence of a wave of large amplitude with a frequency spectrum substantially constituted by a single large amplitude line;
- detecting the presence of a first drop in absolute amplitude that follows in said received symbols the presence of said wave and lasts for at least one symbol period; and
- treating said detected drop as constituting said null symbol corresponding to the first group of n first logic state bits at beginning of the training sequence.

4,433,426

CONTROL SYSTEM FOR PRINTING MACHINES

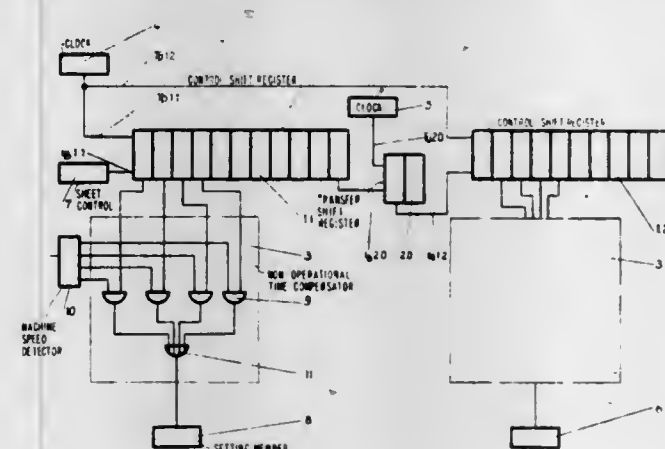
Karl-Helz Förster, Dresden; Henner Hettmann, Coswig; Volker Eichler, Weinböhla; Albrecht John, Dresden; all of German Democratic Republic, assignor to VEB Kombinat Polygraph "Werner Lamberz", Leipzig, German Democratic Rep.

Filed Jun. 16, 1980, Ser. No. 160,099

Int. Cl.³ G06F 7/38

U.S. Cl. 377—2

7 Claims



1. A control system for providing an exact periodic synchronization of a plurality of working elements of a printing machine having a sheet feeder and a speed detector with a plurality of outputs, comprising at least one control shift register and a transfer shift register each having a clock input, an information input and a plurality of stages provided respectively with an output; a first timing device connected to the clock input of the control shift register; a source of sheet control pulses coupled to the information input of said control shift register to start up the shifting operation; at least one nonoperative time compensator including a logic switching circuit connected to the outputs of said seed detector and to a first group of the stages of said control shift register, and an output connected to

one of said working elements; and a second timing device for generating a synchronizing pulse during each working cycle of the machine, said transfer shift register having its information input connected to one output in another group of stages of said control shift register and its clock input connected to said second timing device to activate a subsequent working element.

4,433,427

METHOD AND APPARATUS FOR EXAMINING A BODY BY MEANS OF PENETRATING RADIATION SUCH AS X-RAYS

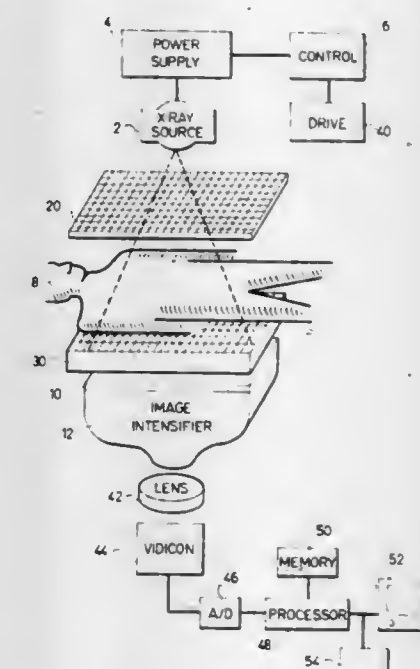
Daniel I. Barnea, Tel-Aviv, Israel, assignor to Elscint, Inc., Boston, Mass.

Filed Jan. 26, 1982, Ser. No. 342,732

Int. Cl.³ G03B 41/16

U.S. Cl. 378—146

24 Claims



1. A method of examining a body by means of penetrating radiation projected through the body onto a two-dimensional radiation-sensitive surface to produce a two-dimensional pattern of the radiation absorbed by the body; characterized in:
 - disposing, between the body and the source of said radiation, a pre-body collimator having a two-dimensional array of radiation-transmitting holes each bordered by radiation non-transmitting walls;
 - effecting a plurality of successive exposures of said body by projecting said radiation through said collimator and said body during a plurality of successive exposure periods in each of which the radiation source is at a different location with respect to the collimator, such that during the successive exposures, the radiation from the source impinging on the same elements of the radiation-sensitive surface passes along different ray paths defined by the holes in the collimator;
 - detecting and storing the radiation level received by said radiation-sensitive surface elements during each of said exposure periods;
 - and processing said stored radiation levels to reconstruct said two-dimensional radiation pattern with enhanced resolution.

DESIGNS

FEBRUARY 21, 1984

272,674

FRONT PANEL FOR A CAP

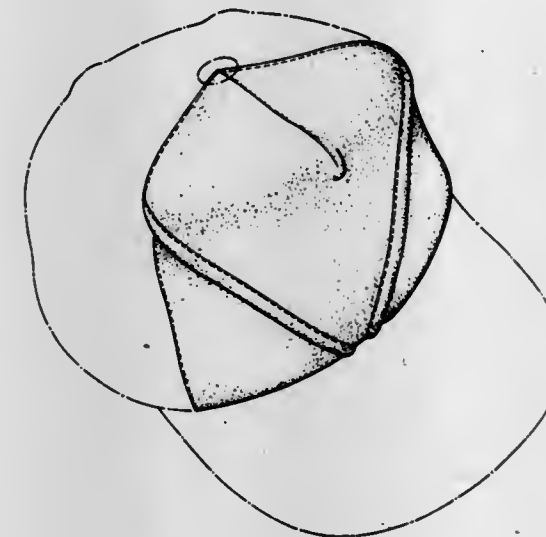
Robert G. Varsane, Oxford, Conn., assignor to U.S. Cap, Inc., Prospect, Conn.

Filed Sep. 16, 1980, Ser. No. 187,732

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-260



272,676

COMBINED FLASHLIGHT AND UMBRELLA

Arch J. MacDonald, 6755 24th Ave. NW., Seattle, Wash. 98117

Filed Aug. 17, 1981, Ser. No. 293,600

Term of patent 14 years

Int. Cl. D3-03

U.S. Cl. D3-5



272,675

SHOE SOLE

Pierre Bidegain, Pau, France, assignor to Bidegain S.A., Pau, France

Division of Ser. No. 9,810, Feb. 6, 1979, Pat. No. Des. 259,522.

This application Jun. 16, 1981, Ser. No. 274,236

Claims priority, application France, Nov. 21, 1978, 855

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-320



272,677

WALKING CANE

Steven C. Bove, 5225 Brookdale Dr., Brooklyn Park, Minn. 55443, and Herbert J. Garelick, 661 Woodlawn Ave., St. Paul, Minn. 55116

Filed Dec. 18, 1981, Ser. No. 332,167

Term of patent 14 years

Int. Cl. D3-03

U.S. Cl. D3-9



272,678

CARRYING CASE FOR DOLLS

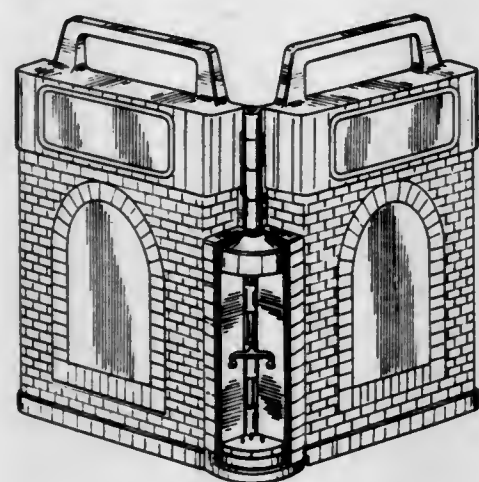
Dale I. Goldberg, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.

Filed Nov. 25, 1981, Ser. No. 325,077

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-73



272,679

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,861

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,680

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,862

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,681

TOOTHBRUSH

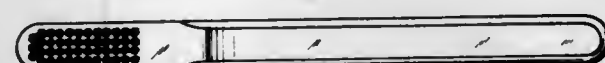
Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,863

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,682

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,864

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,683

TOOTHBRUSH

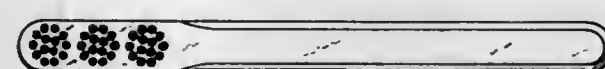
Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,865

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,684

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 263,938

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,685

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,047

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,686

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,122

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,687

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,123

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,688

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,124

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25



272,689

TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,125

Term of patent 14 years

Int. Cl. D4-02

U.S. Cl. D4-25

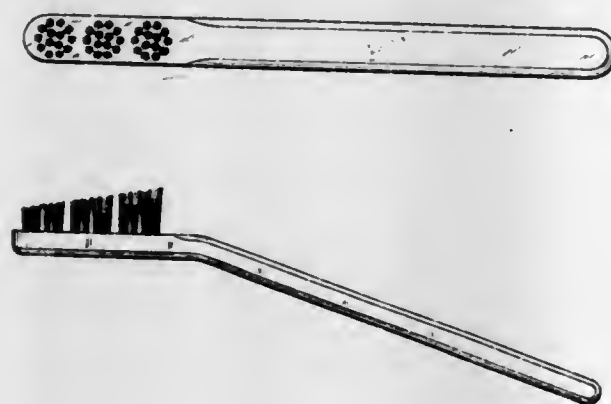


272,690
TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,191
Term of patent 14 years
Int. Cl. D4-02

U.S. Cl. D4-25

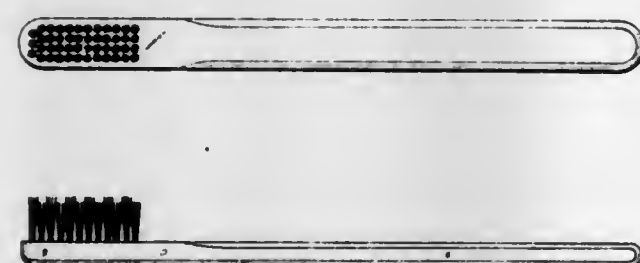


272,691
TOOTHBRUSH

Gabriele Stocchi, Rome, Italy, assignor to Avantgarde S.p.A., Italy

Filed May 15, 1981, Ser. No. 264,192
Term of patent 14 years
Int. Cl. D4-02

U.S. Cl. D4-25

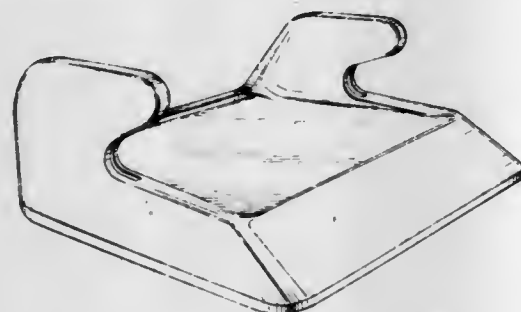


272,692
CHILD'S SECURITY SEAT FOR VEHICLES

Leif Hallgren, Hyltebruk, Sweden, assignor to Hallgrens Industri AB, Hyltebruk, Sweden

Filed Jan. 4, 1982, Ser. No. 336,573
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-9

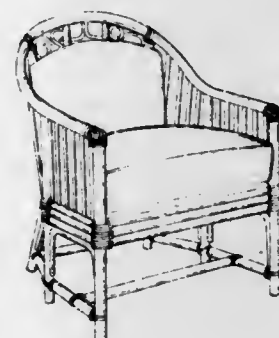


272,693
CHAIR

Mike T. Claman, 475 Park Ave., New York, N.Y. 10022

Filed Jun. 22, 1981, Ser. No. 275,916
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-57

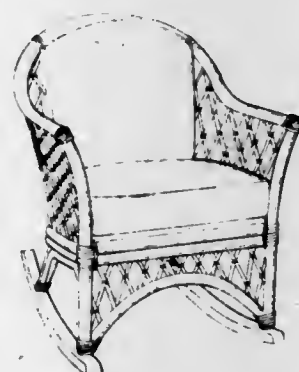


272,694
ROCKING CHAIR

Mike T. Claman, 475 Park Ave., New York, N.Y. 10022

Filed Jun. 22, 1981, Ser. No. 275,919
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-57

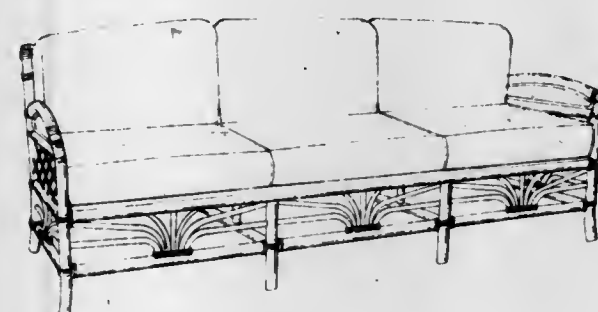


272,695
SOFA

Mike T. Claman, 475 Park Ave., New York, N.Y. 10022

Filed Jul. 17, 1981, Ser. No. 284,363
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-57

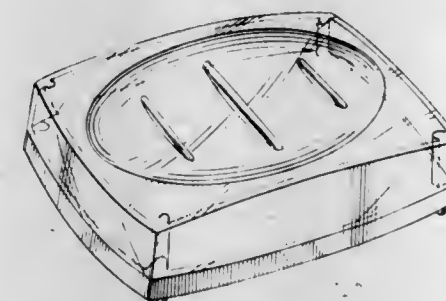


272,696
STANDING SOAP DISH

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,837
Term of patent 14 years
Int. Cl. D23-02

U.S. Cl. D6-89

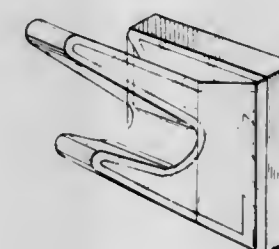


272,697
ROBE HOOK

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Oct. 8, 1981, Ser. No. 309,836
Term of patent 14 years
Int. Cl. D6-06; D8-08

U.S. Cl. D6-122



272,699

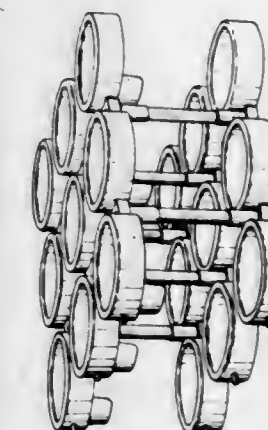
MODULAR STORAGE RACK FOR BOTTLES OR THE LIKE

Danny Godfrey, 21 Meadow View Rd., Bexley, Kent DA5 1HP, England

Filed Nov. 16, 1981, Ser. No. 321,902
Claims priority, application United Kingdom, May 21, 1981, 1000600

Term of patent 14 years
Int. Cl. D06-04

U.S. Cl. D6-188



272,700
RUG

Sally G. Irish, R.F.D. 2, Box 172A, Marshall, Va. 22115

Filed Aug. 26, 1981, Ser. No. 296,536
Term of patent 14 years
Int. Cl. D6-11

U.S. Cl. D6-211

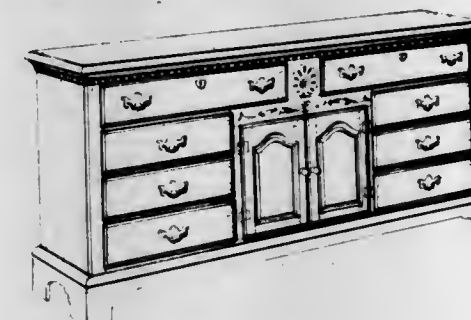


272,698
DRESSER OR THE LIKE

Harold V. Aubert, High Point, and Charles M. Horton, Troutman, both of N.C., assignors to American Drew Division of Sperry and Hutchinson Furniture, Inc., High Point, N.C.

Filed Apr. 8, 1981, Ser. No. 252,267
Term of patent 14 years
Int. Cl. D06-04

U.S. Cl. D6-154



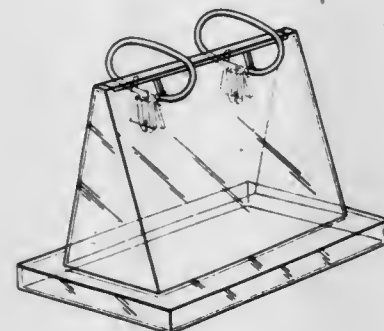
272,701

PHOTOGRAPH DISPLAY

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Oct. 22, 1981, Ser. No. 314,004

Term of patent 14 years
Int. Cl. D6—07

U.S. Cl. D6—234



272,703

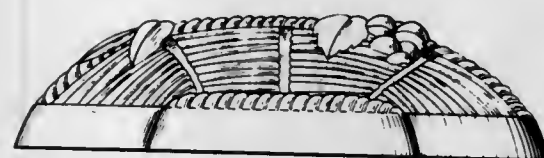
FOOD MOLD

David W. Miller, Salem, Mass., assignor to Benjamin & Medwin, Inc., New York, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,785

Term of patent 14 years
Int. Cl. D07—02

U.S. Cl. D7—43



272,704

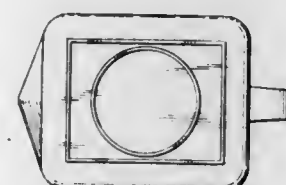
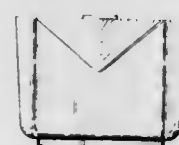
MEASURING CUP

Lawrence D. Smith, Ramsey, N.J., assignor to IDL Mfg. & Sales Corp., Carlstadt, N.J.

Filed Sep. 25, 1981, Ser. No. 305,465

Term of patent 14 years
Int. Cl. D07—01; D10—04

U.S. Cl. D7—50



272,702

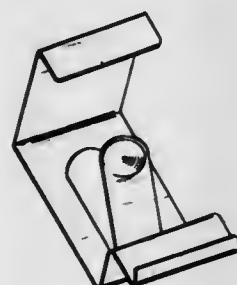
SPRING CLIP FOR FRAMELESS PICTURE MOUNTING

John M. Kingsley, Jr., 16 Will Merry La., Greenwich, Conn. 06830

Filed Apr. 8, 1981, Ser. No. 252,090

Term of patent 14 years
Int. Cl. D6—07

U.S. Cl. D6—246



272,705

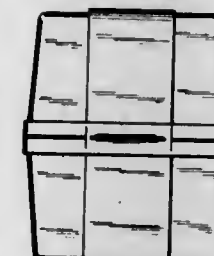
PORTABLE COOLER

Marten Gottsegen, Chicago; Fred F. Drucker, Lincolnshire, and Henry Glass, Northfield, all of Ill., assignors to Gotham Chicago Corporation, Chicago, Ill.

Filed Nov. 5, 1980, Ser. No. 204,257

Term of patent 14 years
Int. Cl. D07—01; D03—01

U.S. Cl. D7—77



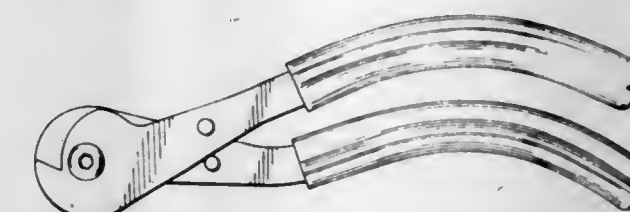
272,707

LARGE HEADED CABLE CUTTER

Frank E. Shaffer, 33 Beach Dr., Newport Beach, Calif. 92660
Continuation-in-part of Ser. No. 29,994, Apr. 16, 1979, Pat. No. Des. 261,477. This application Apr. 20, 1981, Ser. No. 255,870

Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—52



272,708

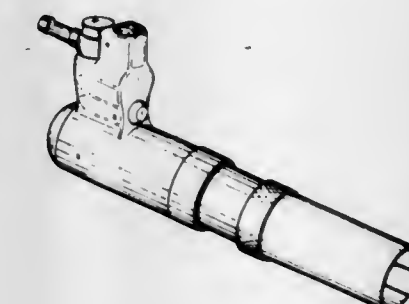
PNEUMATIC RIVETING HAMMER

Per A. L. Gidlund, Täby, and Per G. Wedlin, Huddinge, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Jun. 18, 1981, Ser. No. 274,716

Claims priority, application Sweden, Dec. 18, 1980, 80002561

Term of patent 14 years
Int. Cl. D8—02

U.S. Cl. D8—61



272,709

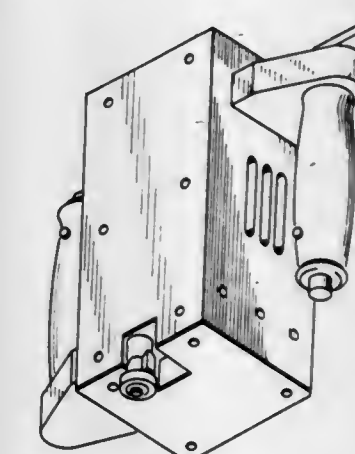
POWER TOOL FOR LAMINATE TRIMMING AND EDGE FINISHING

Henry Atherton, 1545 Vine St., Denver, Colo. 80206

Filed Nov. 18, 1981, Ser. No. 322,532

Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—67



272,706

HALF ROUND HARDIE

Walter H. Garner, P.O. Box 369, Arroyo Grande, Calif. 93420

Filed Oct. 9, 1981, Ser. No. 310,144

Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—46



272,710

PAVING BREAKER

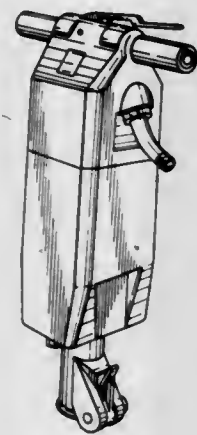
Milton J. Antonick, Royal Oak, and Stanley E. Thorwaldsen,
Grosse Pointe Farm, both of Mich., assignors to Thor Power
Tool Company, Aurora, Ill.

Filed Dec. 1, 1981, Ser. No. 326,240

Term of patent 14 years

Int. Cl. D8—02

U.S. Cl. D8—67



272,712

COMBINED SLIDE HAMMER NAIL PULLER AND BUILDING WRECKING TOOL

Steven R. Allen, Star Rte., Box 858, Glenwood, Oreg. 97120

Filed Dec. 30, 1981, Ser. No. 335,605

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—89



272,711

WOODWORKING STRAIGHT EDGE

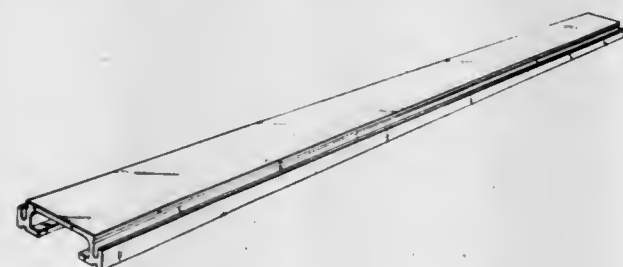
Norman Grisct, 380 Jennifer La., Orange, Calif. 92669

Filed Sep. 4, 1981, Ser. No. 299,489

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—71



272,713

HAND PLANE

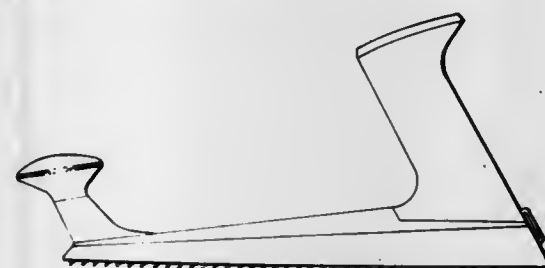
Robert R. Hayes, Euclid, and George H. Frost, Kent, both of
Ohio, assignors to Oatey Co., Cleveland, Ohio

Filed Aug. 14, 1981, Ser. No. 292,993

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—90



272,714

COMBINED SLIDING SCREEN DOOR PULL WITH SCREEN GUARD THEREFOR

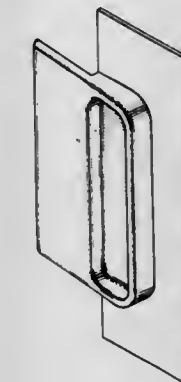
C. William LeGrand, 1460 N. Grove Ave., Upland, Calif. 91786

Filed Jan. 12, 1981, Ser. No. 224,093

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—301



272,717

SAFETY HOOK

Christian Faiddé, Marignies, France, assignor to S.A.R.L.
Wichard, Thiers, France

Filed Jul. 14, 1981, Ser. No. 283,295

Claims priority, application France, Jan. 14, 1981, 810118

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—367



272,718

STRAIN RELIEF CABLE FASTENER

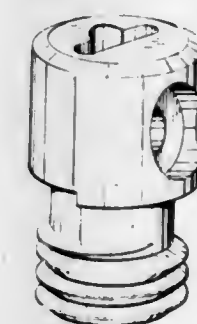
Giltner J. Knudson, 3269 Minnesota, Costa Mesa, Calif. 92627

Filed Jul. 27, 1981, Ser. No. 287,233

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—387



272,715

CHILD SAFETY LATCH

Wilbur J. Bailey, Wethersfield, Conn., assignor to The Stanley
Works, New Britain, Conn.

Filed Oct. 7, 1981, Ser. No. 309,445

Term of patent 14 years

Int. Cl. D8—07

U.S. Cl. D8—331



272,716

CORD LOCK

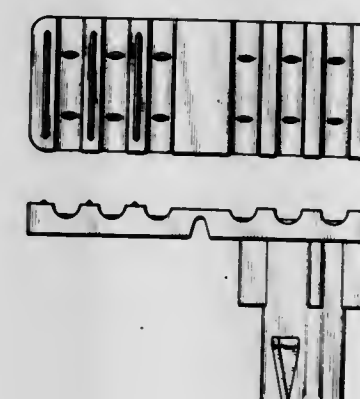
Rudolph E. Muench, Shelby, N.C., assignor to Fasco Controls
Corporation, Shelby, N.C.

Filed Oct. 7, 1981, Ser. No. 309,243

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—356



272,719

PLATE FOR ASSEMBLING ELEMENTS OF AGRICULTURAL MACHINERY OR THE LIKE

Magne Skjaeveland, Oksnevadskogen, Norway, assignor to
Kverneland A/S, Kvernaland, Norway

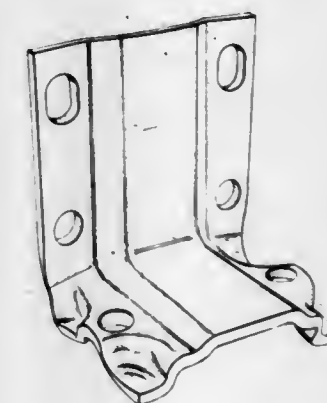
Filed Aug. 6, 1981, Ser. No. 290,706

Claims priority, application Norway, Feb. 11, 1981, 61728

Term of patent 14 years

Int. Cl. D8—08; D15—04

U.S. Cl. D8—394



272,720

PLATE FOR ASSEMBLING ELEMENTS OF AGRICULTURAL MACHINERY OR THE LIKE
Magne Skjæveland, Oknevedskogen, Norway, assignor to Kverneland A/S, Kvernaland, Norway

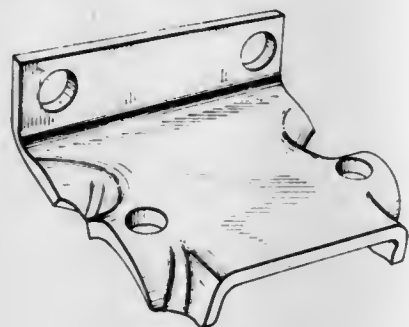
Filed Aug. 6, 1981, Ser. No. 290,708

Claims priority, application Norway, Feb. 11, 1981, 61727

Term of patent 14 years

Int. Cl. D8-08; D15-04

U.S. Cl. D8-394

272,721
BOTTLE

Alan P. Grey, 38/39 The Esplanade, St. Helier, Jersey, Channel Islands

Filed Dec. 1, 1980, Ser. No. 211,624

Claims priority, application United Kingdom, May 29, 1980, 995069

Term of patent 14 years

Int. Cl. D9-07

U.S. Cl. D9-349



272,722

JAR OR THE LIKE

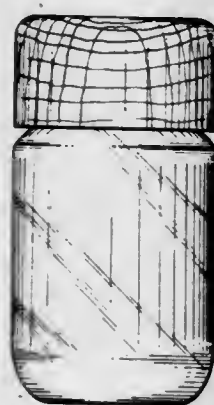
David Haakenson, Star Route, LaPorte, Minn. 56461

Filed Sep. 18, 1981, Ser. No. 303,394

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-352



272,723

BOTTLE OR THE LIKE

Robert Baker, Winchester, England, assignor to American Home Products Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,700

Claims priority, application United Kingdom, Mar. 25, 1981, 999629

Term of patent 14 years

Int. Cl. D9-07

U.S. Cl. D9-377



272,724

CARRIER CASE BLANK

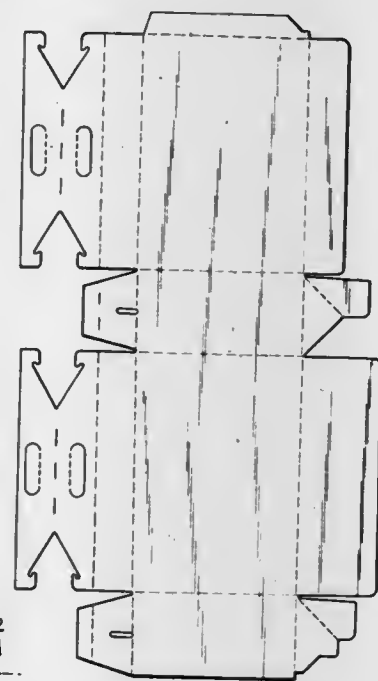
Earl J. Killy, Gainesville, Fla., assignor to Manville Service Corporation, Denver, Colo.

Filed Aug. 3, 1981, Ser. No. 289,442

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-433



272,725

PULL TAB TEAR CAP FOR MEDICAL LIQUID CONTAINER

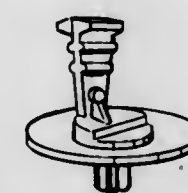
Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,338

Term of patent 14 years

Int. Cl. D9-07

U.S. Cl. D9-435

272,728
SLED

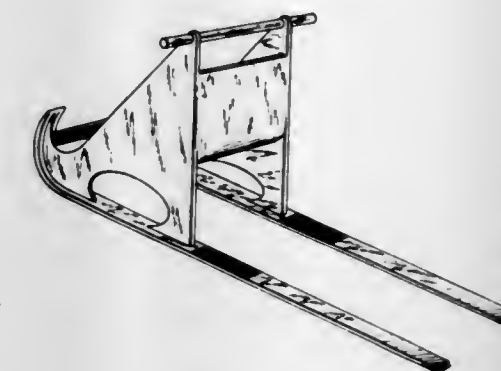
Linda M. Svensson, and Agneta E. Svensson, both of 2 Bourne St., Worcester, Mass. 01602

Filed Nov. 23, 1981, Ser. No. 324,094

Term of patent 14 years

Int. Cl. D12-14

U.S. Cl. D12-9



272,729

MOTORCYCLE SIDE COVER

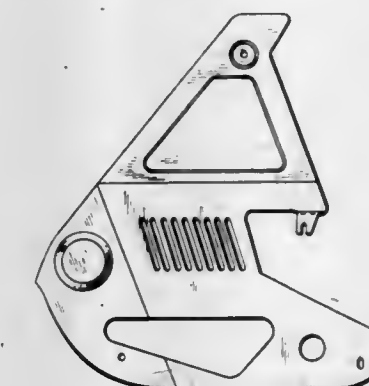
Alwin J. Stahel, Saint Paul, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.

Filed Jul. 1, 1981, Ser. No. 279,541

Term of patent 14 years

Int. Cl. D12-17

U.S. Cl. D12-126



272,730

VEHICLE TIRE

Tooru Osawa, Urawa, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,890

Claims priority, application Japan, May 29, 1981, 56-22943

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-147



272,726

BOX FOR CULTIVATING VEGETABLES OR THE LIKE

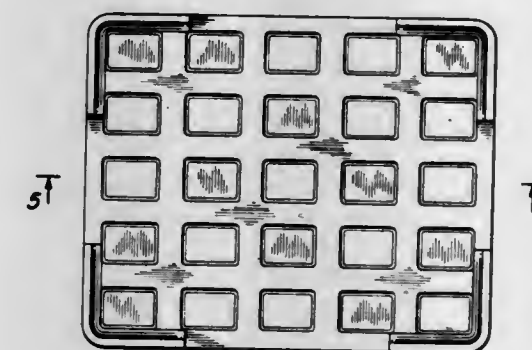
Toshiro Kaneko, 1397 Obama, Yaizu-shi, Shizuoka-ken, Japan

Filed Sep. 24, 1981, Ser. No. 305,372

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-155



272,727

BOX FOR CULTIVATING VEGETABLES OR THE LIKE

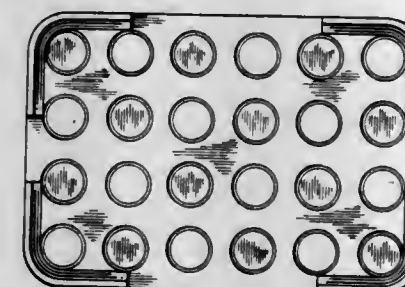
Toshiro Kaneko, 1397 Obama, Yaizu-shi, Shizuoka-ken, Japan

Filed Sep. 24, 1981, Ser. No. 305,373

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-155



272,731

MOTORCYCLE FAIRING

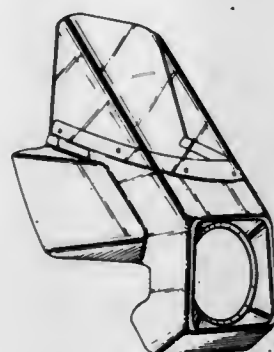
David G. Firth, Burnsville, Minn., assignor to Firth Design Group Inc., Minneapolis, Minn.

Filed Feb. 12, 1981, Ser. No. 233,878

Term of patent 14 years

Int. Cl. D12-17

U.S. Cl. D12-182



272,732

EXPLOSION PROOF ENCLOSURE FOR ELECTRICAL APPARATUS OR SIMILAR ARTICLE

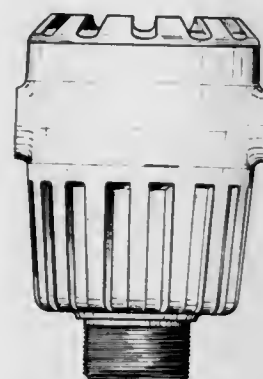
Brian E. Moore, Greenwood, and Richard D. Buis, Indianapolis, both of Ind., assignors to Endress + Hauser, Inc., Greenwood, Ind.

Filed May 11, 1981, Ser. No. 262,343

Term of patent 14 years

Int. Cl. D13-99

U.S. Cl. D13-13



272,733

180° CABLE STRAIN RELIEF AND COVER FOR AN ELECTRICAL CONNECTOR

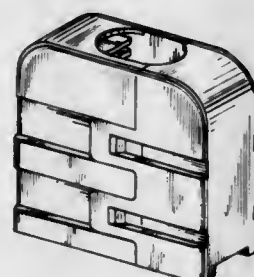
Pete Cosmos, and Earl W. McCleerey, both of Mechanicsburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 28, 1981, Ser. No. 306,030

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-24



272,734

SWITCH

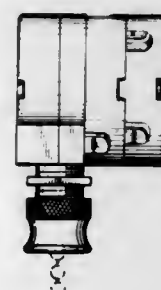
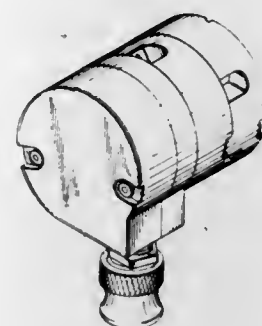
Wolfgang F. Bienwald, Melville, and David B. Balaban, Douglaston, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Jan. 13, 1982, Ser. No. 340,406

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-32



272,735

TELEPHONE MOUNT INDICIA DISPLAY

William G. Frick, Jr., 2240 White Oak Dr., Northbrook, Ill. 60062

Filed Sep. 14, 1981, Ser. No. 302,060

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-59



272,736

PUSHBUTTON DIAL FOR A TELEPHONE SET OR THE LIKE

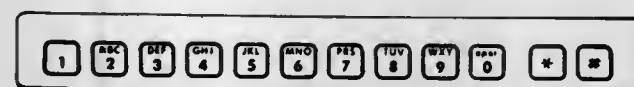
John E. Kaczko, Elk Grove Village, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Nov. 16, 1981, Ser. No. 322,059

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-66



272,737

RADIO

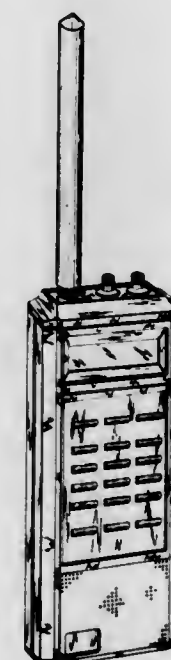
John C. Coons; Jean M. Beirise, both of Cincinnati, Ohio; Richard E. Riley, Indianapolis, Ind.; James M. Gray, Greenwood, Ind., and Mark L. Stow, Indianapolis, Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed Nov. 18, 1981, Ser. No. 322,519

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-68



272,739

WORD PROCESSOR

Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

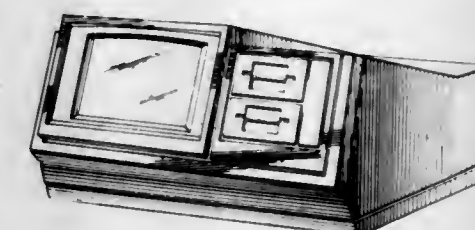
Filed Aug. 20, 1981, Ser. No. 294,425

Claims priority, application Japan, Feb. 24, 1981, 56-7574

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-106



272,740

FLOPPY DISC DRIVE

Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

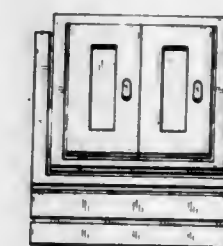
Filed Aug. 20, 1981, Ser. No. 294,428

Claims priority, application Japan, Feb. 24, 1981, 56-7578

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-109



272,738

CONSOLE FOR DATA PROCESSING EQUIPMENT

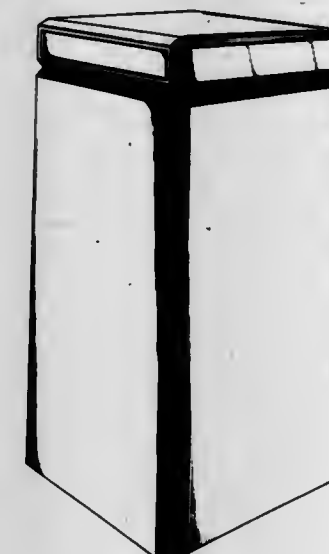
Melvin H. M. Best, Topanga, Calif., assignor to Teradata Corporation, Inglewood, Calif.

Filed Nov. 2, 1981, Ser. No. 317,317

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-102



272,741

DATA PRINTER

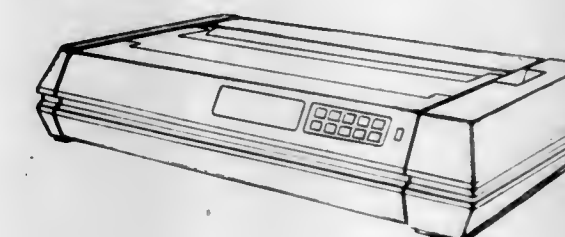
Werner H. Mailer, Waynesboro, and Carl R. Cline, II, Staunton, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Dec. 4, 1981, Ser. No. 327,399

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-111



272,742

ATTACHMENT FOR SNOW SHOVEL

Daiji Hoshino, Tokyo, Japan, assignor to Komatsu Zenoah Co., Tokyo, Japan

Filed Mar. 13, 1981, Ser. No. 229,284

Claims priority, application Japan, Aug. 6, 1980, 55-318181

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-11



272,744

X-RAY-FILM-PROCESSOR

Norbert Schlagheck, Fuerstenfeldbruck, and Lutz Rabold, Söcking, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

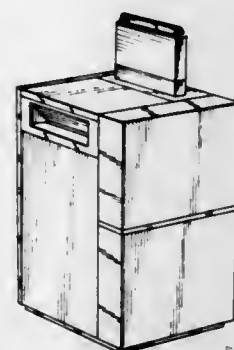
Filed Dec. 12, 1980, Ser. No. 216,601

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 5MR587G175/802

Term of patent 14 years

Int. Cl. D16-03; 24-01

U.S. Cl. D16-34



272,745

ADJUSTABLE OPTICAL COUPLER DEVICE

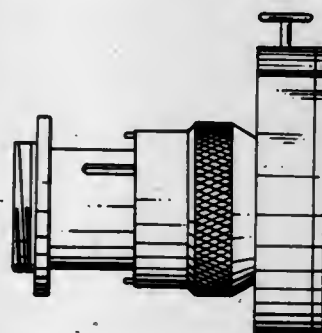
Richard E. Feinbloom, New York; Richard Lepczynski, Brooklyn, and Waldyslaw Oleksy, New York, all of N.Y., assignors to Designs for Vision, Inc., New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,461

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-130



272,746

ORGAN

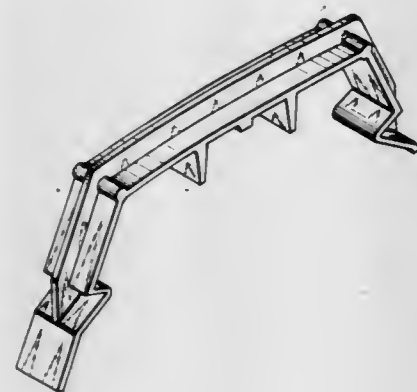
David J. Knox, 13016 Ladana Ct., Santa Fe Springs, Calif. 90670

Filed Jun. 8, 1981, Ser. No. 271,483

Term of patent 14 years

Int. Cl. D15-09; D8-08

U.S. Cl. D15-144



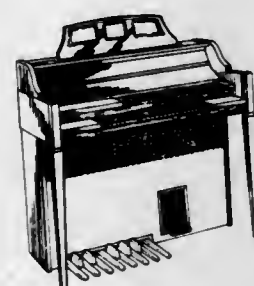
Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 15, 1981, Ser. No. 273,619

Term of patent 14 years

Int. Cl. D17-01

U.S. Cl. D17-6



272,747

DEMOUNTABLE STRINGED MUSICAL INSTRUMENT

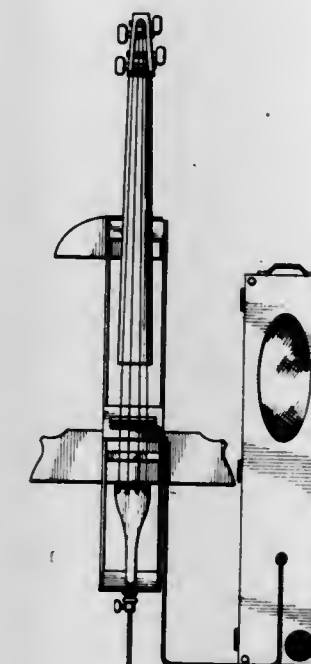
Ernest Nussbaum, 6009 Johnson Ave., Bethesda, Md. 20817

Filed Nov. 25, 1981, Ser. No. 324,752

Term of patent 14 years

Int. Cl. D17-03

U.S. Cl. D17-14



272,749

ARTISTS TEMPLATE

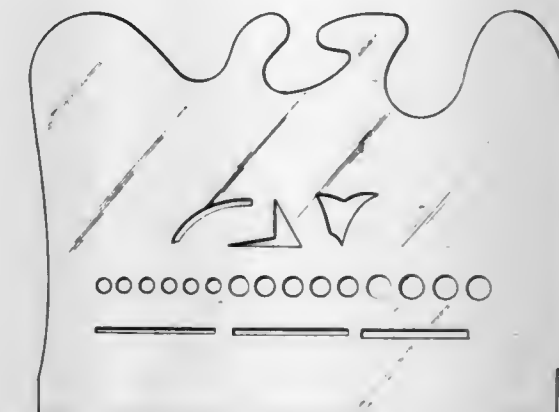
Radu Vero, 345 E. 80th St., New York, N.Y. 10021

Filed Mar. 26, 1982, Ser. No. 362,296

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. 19-39



272,750

WRITING INSTRUMENT OR SIMILAR ARTICLE

Richard Luntz, P.O. Box 24234, Lyndhurst, Ohio 44924

Filed Jun. 17, 1981, Ser. No. 274,497

The portion of the term of this patent subsequent to Jul. 12, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-45



272,748

POCKET INSERT FOR A NOTEBOOK

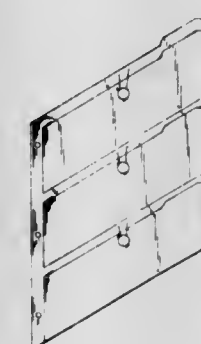
Velma R. Kirk, 6035 Zora St., La Mesa, Calif. 92041

Filed Nov. 3, 1980, Ser. No. 203,044

Term of patent 14 years

Int. Cl. D19-04

U.S. Cl. D19-33



272,751

AERIAL TOY

Rogers F. Brackmann, Wheaton, Ill., assignor to H.H.B. Inc., Downers Grove, Ill.

Filed Jul. 7, 1980, Ser. No. 166,138

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-86



272,752

TOY SPACE VEHICLE

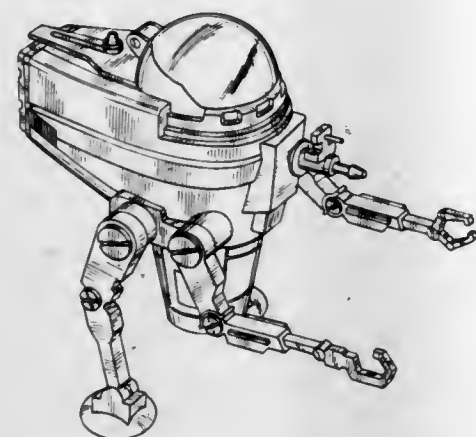
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.

Filed May 20, 1982, Ser. No. 380,159

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-87



272,753

HAND PUPPET

Lowell J. Carlson, Buffalo, Minn., assignor to Carlson Dolls Co., Maple Lake, Minn.

Filed Mar. 11, 1982, Ser. No. 357,267

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-153



272,754

GOLF GRIP AID

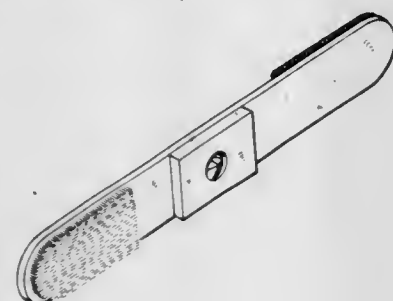
John H. Brewer, 17827 St. Andrews Dr., Poway, Calif. 92064

Filed Nov. 12, 1981, Ser. No. 320,423

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-234



272,755

STOVE GRILLE

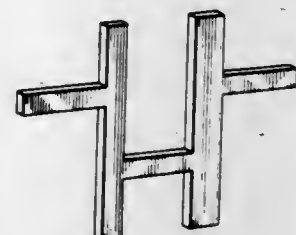
Arthur Evans, Williamstown, Mass., assignor to Mohawk Industries, Inc., Adams, Mass.

Filed Jun. 17, 1980, Ser. No. 160,362

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-128



272,756

FRONT PANEL FOR A FIREPLACE

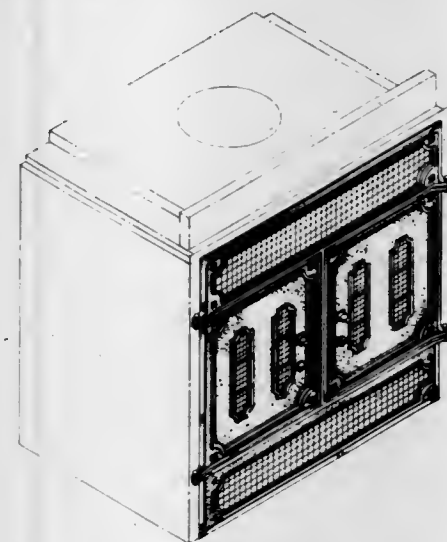
Thomas R. Rehberg, Orange, and John W. Moroney, Glendora, both of Calif., assignors to Mobex Corporation, Fullerton, Calif.

Filed Jan. 12, 1982, Ser. No. 338,893

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-128



272,757

AIR CLEANER OR THE LIKE

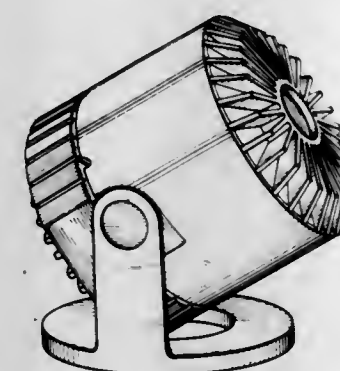
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Rival Manufacturing Co., Kansas City, Mo.

Filed Oct. 19, 1981, Ser. No. 312,508

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-149



272,760

CERAMIC BRIQUETTE FOR A COOKING GRILL

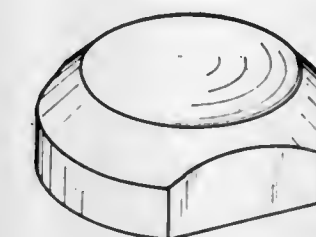
Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,191

Term of patent 14 years

Int. Cl. D23-05

U.S. Cl. D23-166



272,761

CERAMIC BRIQUETTE FOR A COOKING GRILL

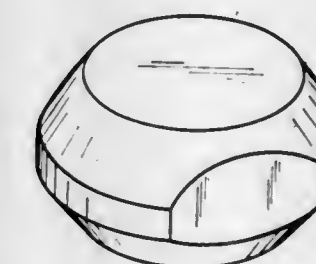
Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,193

Term of patent 14 years

Int. Cl. D23-05

U.S. Cl. D23-166



272,758

CERAMIC BRIQUETTE FOR A COOKING GRILL

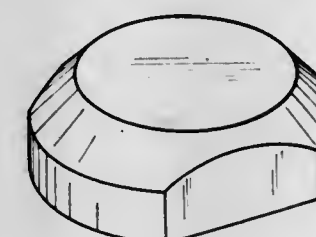
Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,189

Term of patent 14 years

Int. Cl. D23-05

U.S. Cl. D23-166



272,762

FLEXIBLE CONTAINER FOR MEDICAL LIQUIDS

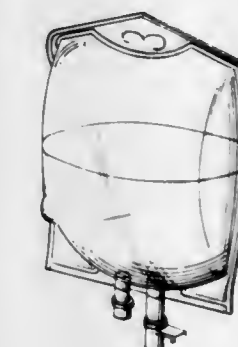
John C. Tanner, II, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 8, 1981, Ser. No. 271,731

Term of patent 14 years

Int. Cl. D24-04

U.S. Cl. D24-58



272,759

CERAMIC BRIQUETTE FOR A COOKING GRILL

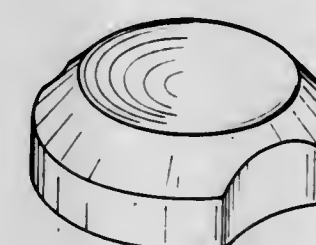
Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,190

Term of patent 14 years

Int. Cl. D23-05

U.S. Cl. D23-166



272,763

DENTAL HYGIENE DEVICE

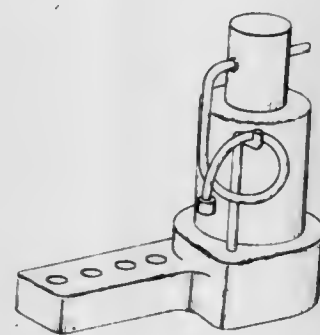
Quentin H. Coffman, 13414 Doty Ave., Hawthorne, Calif. 90250

Filed Oct. 19, 1981, Ser. No. 312,407

Term of patent 14 years

Int. Cl. D24—03

U.S. Cl. D24—15



272,764

ORTHOPEDIC PIN

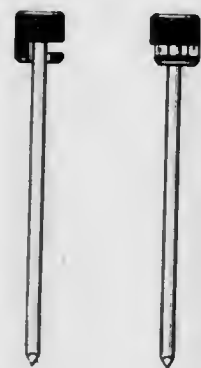
Charles L. Dohogne, San Pedro, Calif., assignor to ACE Orthopedic Manufacturing, Inc., Los Angeles, Calif.

Filed Oct. 14, 1980, Ser. No. 196,691

Term of patent 14 years

Int. Cl. D24—03

U.S. Cl. D24—33



272,765

RESTAURANT BUILDING

Gerald S. Office, Jr., New Carlisle, Ohio, assignor to Ponderosa, Inc., Vandalia, Ohio

Filed Jan. 26, 1982, Ser. No. 342,868

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—25



272,766

CORNER BRACKET FOR USE ON A SCAFFOLD, OR SIMILAR ARTICLE

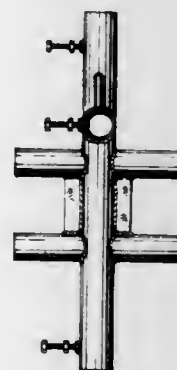
Nathan J. Guerriero, 10140 Utica Way, Cherry Valley, Calif. 92223

Continuation-in-part of Ser. No. 291,621, Aug. 10, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,999

Term of patent 14 years

Int. Cl. D25—99

U.S. Cl. D25—68



272,767

PANEL FOR FLOORS, WALLS, OR THE LIKE

Josef Nemeth, Kungälv, Sweden, assignor to Aktiebolaget Wicanders Korkfabriker, Alvängen, Sweden

Continuation of Ser. No. 730,534, Oct. 7, 1976. This application Jun. 11, 1982, Ser. No. 387,670

Claims priority, application Sweden, Apr. 9, 1976, 811; Apr. 9, 1976, 812; Apr. 9, 1976, 813; Apr. 9, 1976, 814; Apr. 9, 1976, 815; Apr. 9, 1976, 816

Term of patent 14 years

Int. Cl. D25—01

U.S. Cl. D25—80



272,768

PALLET OR THE LIKE

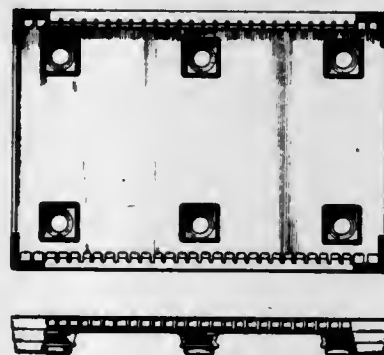
John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Nov. 2, 1981, Ser. No. 317,031

Term of patent 14 years

Int. Cl. D9—08

U.S. Cl. D34—38

**LIST OF PATENTEES**

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF FEBRUARY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Waria, Tapio; and Lindroos, Sven-Eric E., 4,432,835, Cl. 162-212.000.
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Wright, Felix W., 4,432,415, Cl. 165-166.000.
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Carlsson, Harry, 4,432,144, Cl. 33-180.0AT.
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Lind, Lars; Melin, Kent; and Sandberg, Lars, 4,432,430, Cl. 180-197.000.
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Dawe, Garfield A., 4,432,761, Cl. 604-253.000.
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Gross, James R.; and Bujan, Albert F., 4,432,759, Cl. 604-411.000.
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Sugiyama, Hiroyuki; Yoshihara, Kenji; Yusa, Yasuhiro; Abe, Ryo; and Sakurai, Masaki, 4,433,347, Cl. 358-342.000.
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Miura, Haruo; and Abe, Yoshiaki, 4,432,697, Cl. 416-198.00A.
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Granat, Rodney J., 4,432,246, Cl. 73-862.530.
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McAusland, Robert R., 4,432,371, Cl. 128-660.000.
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Raisin, Jean-Pierre; Helffer, Bernard; and Chirouze, Jean L., 4,432,295, Cl. 112-262.300.
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Harata, Kazuaki; Morimoto, Satoshi; and Tsuda, Keishiro, 4,432,802, Cl. 106-163.00R.
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Largman, Theodore; and Aharoni, Shaul M., 4,433,116, Cl. 525-420.000.
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Ifuku, Naoyuki; Kurokawa, Akio; Seit, Kenzo; Usami, Kaoru; and Aikawa, Naoyuki, 4,433,133, Cl. 528-232.000.
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Wietecha, Robert L., 4,432,569, Cl. 285-18.000.
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Wada, Satomi, 4,432,911, Cl. 261-44.00C.
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Andoh, Masamoto; Ohori, Harumi; and Kiriya, Takashi, 4,432,586, Cl. 303-115.000.
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Madsen, Rud F.; Nielsen, Werner K.; and Kristensen, Steen, 4,432,806, Cl. 127-48.000.
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Poulsen, Peter, 4,433,091, Cl. 524-386.000.
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Niimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, 4,433,040, Cl. 430-109.000.
- Akzo NV: See—
Kersten, Hilde; Zengel, Hans G.; and Toth, Anton, 4,433,078, Cl. 523-404.000.
- Wick, Gerhard, 4,433,128, Cl. 528-53.000.
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Worley, Ronald W.; and Johnson, David A., 4,433,135, Cl. 528-282.000.
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Adams, Ronald W.; and Johnson, Theodore W., 4,432,822, Cl. 156-148.000.
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Korsak, Andrew J., 4,432,142, Cl. 33-174.00F.
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Demers, Donald R.; and Allemand, Charly D., 4,432,644, Cl. 356-316.000.
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- Buyalos, Edward J.; Rowan, Hugh H.; and Young, Steven A., 4,432,940, Cl. 422-135.000.
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Hirayama, Masaru; Anzai, Nobuaki; and Shirouzu, Ryusuke, 4,433,322, Cl. 338-162.000.
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Shell, John W.; and Gale, Robert M., 4,432,964, Cl. 424-14.000.
- Urquhart, John; and Theeuwes, Felix, 4,432,754, Cl. 604-56.000.
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Sarurai, Nobuo; and Kobayashi, Morimasa, 4,432,260, Cl. 83-13.000.
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- Ament, Eduard: See—
Andres, Rudolf; and Ament, Eduard, 4,432,566, Cl. 280-807.000.
- American Chemical & Engineering Co.: See—
Bachmann, Andrew G., 4,432,829, Cl. 156-307.300.
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Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,432,991, Cl. 424-273.00P.
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- Milioniis, Jerry P.; and Fischer, Joel E., 4,432,787, Cl. 71-94.000.
- Woodruff, Keith; and Villamarin, Arturo A., 4,432,102, Cl. 4-228.000.
- American Hospital Supply Corporation: See—
Chiang, Chih-Sheng, 4,433,061, Cl. 436-542.000.
- Amesso, Claudio; and Donaggio, Paolo, to Industrie Pirelli. Building block for floors and walls of a building, 4,432,177, Cl. 52-309.170.
- Analytical Radiation Corporation: See—
Wieder, Irwin; and Wollenberg, Robert H., 4,432,907, Cl. 260-429.200.
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Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., 4,433,233, Cl. 219-553.000.
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Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,432,290, Cl. 110-346.000.
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- Andre, Thierry M.: See—
Melchior, Jean F.; and Andre, Thierry M., 4,432,206, Cl. 60-606.000.
- Andreas Stihl: See—
Kohler, Gisbert; Weiss, Hermann; and Landwehr, Gotz, 4,432,139, Cl. 30-381.000.
- Andreassen, Knut A.; Eide, Olav A.; and Beyer, Gerhard. Diaphragm for water electrolysis, 4,432,859, Cl. 204-296.000.
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- Andrillon, Patrick: See—
Bugaut, Andre; and Andrillon, Patrick, 4,432,769, Cl. 8-414.000.
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- Angleboard Inc.: See—
Liebel, Henry L., 4,432,678, Cl. 410-151.000.
- Anko Motors, Inc.: See—
Anderson, David S.; and Kottke, Lawrence F., 4,432,707, Cl. 417-477.000.
- Annen, Klaus; Laurent, Henry; and Hofmeister, Helmut, to Schering Aktiengesellschaft. Cyclocarbonate esters of 16 α ,17 α , dihydroxy anti-inflammatory steroids, 4,432,976, Cl. 424-241.000.
- ANSALDO S.p.A.: See—
Ripamonti, Paolo, 4,432,517, Cl. 246-28.00F.
- Anzai, Nobuaki: See—
Hirayama, Masaru; Anzai, Nobuaki; and Shirouzu, Ryusuke, 4,433,322, Cl. 338-162.000.
- Aoki, Masaki: See—
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,433,408, Cl. 369-170.000.
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- Aoyama, Masaharu: See—
Yonezawa, Toshio; and Aoyama, Masaharu, 4,433,004, Cl. 427-38.000.
- Aparicio, Thomas, Jr.; and Graham, Ron, to Gratec, Inc. Adjustable powered wrench, 4,432,256, Cl. 81-57.390.
- Apollo Label Company: See—
Jurinak, Edward L., 4,432,282, Cl. 101-350.000.
- Applied Spectrum Technologies, Inc.: See—
Moses, Donald W.; Hustig, Charles; and Ballard, C. Ray, 4,433,212, Cl. 179-2.00C.
- Aquino, Dolores C.: See—
Euker, Charles A., Jr.; Wesselhoft, Robert D.; Dunkleman, John J.; Aquino, Dolores C.; and Gouker, Toby R., 4,432,773, Cl. 48-197.00R.
- Arai, Akira: See—
Kuroda, Sigeaki; Arai, Akira; Senshu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, 4,432,694, Cl. 415-170.00A.
- Arai, Norimasa: See—
Saito, Takashi; Mochizuki, Masafumi; and Arai, Norimasa, 4,433,406, Cl. 369-77.200.
- Arakawa, Yoshio: See—
Wakino, Kikuo; and Arakawa, Yoshio, 4,433,360, Cl. 361-305.000.
- Arendash, Joseph M., to White Consolidated Industries, Inc. Vertical axis rotary loop taker, 4,432,293, Cl. 112-231.000.
- Arendt, Gerhard; Benz, Roland; Engenhardt, Reinhold; and Schmidt, Viktor, to Lucke Apparate-Bau GmbH. Apparatus for the continuous production and laying down of yarn loops, 4,432,501, Cl. 242-47.000.
- Arendt, Hans F.: See—
Hoffmann, Ernst H.; and Arendt, Hans F., 4,432,111, Cl. 8-158.000.
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Rayburn, Joseph W., 4,433,285, Cl. 323-364.000.
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- Arlidge, Neville J.: See—
Lowndes, Michael W.; Adams, Derek S.; and Arlidge, Neville J., 4,433,278, Cl. 320-48.000.
- Armco Inc.: See—
Lawson, John E., 4,432,670, Cl. 405-224.000.
- Arms, John T.: See—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,433,063, Cl. 502-402.000.
- Armstrong World Industries, Inc.: See—
Addie, Lee W.; and Ollinger, James C., 4,432,182, Cl. 52-480.000.
- Forry, John S.; and Garrick, John R., 4,432,714, Cl. 425-83.100.
- Aronson, Alfred L.: See—
Angel, James H.; and Aronson, Alfred L., 4,432,375, Cl. 128-705.000.
- Arro-Mac Manufacturing Inc.: See—
Smith, Ronald A., 4,432,106, Cl. 4-633.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: See—
Yamawaki, Maokuni; Suzuki, Shozo; and Furuta, Tadaaki, 4,432,871, Cl. 210-195.100.
- Asahi Kogaku Kogyo Kabushiki Kaisha: See—
Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; and Okamoto, Ikuzo, 4,432,617, Cl. 351-211.000.
- Asea Aktiebolag: See—
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Övren, Christer, 4,433,238, Cl. 250-227.000.
- Ashihara, Yoshihiro: See—
Sugiyama, Masami; Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,432,896, Cl. 260-112.50R.
- Ashland Oil, Inc.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
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- Myers, George D., deceased; Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., 4,432,863, Cl. 208-113.000.
- Atlanta Attachment Company: See—
Price, Elvin C.; and Dasher, Preston B., 4,432,294, Cl. 112-262.300.
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Gupta, Vijai P.; Melpolder, Frank W.; and Mameniskis, Walter A., 4,433,173, Cl. 568-324.000.
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- Austin Company, The: See—
Musto, Dominick J.; and Lerner, Harold, 4,432,648, Cl. 356-387.000.
- Automobiles Citroen: See—
Petiot, Jean P., 4,432,740, Cl. 464-146.000.
- Automotive Products Limited: See—
Windsor, Harry M., 4,432,445, Cl. 192-0.076.
- Aviation Electric Ltd.: See—
Hawes, David J., 4,432,201, Cl. 60-39.161.
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Landry, James E.; and Babb, Richard B., 4,432,209, Cl. 62-62.000.
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Thompson, William L.; and Willey, Michael S., 4,432,242, Cl. 73-861.220.

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Gregory, Edward W.; and Baer, Gregory G., 4,432,420, Cl. 166-355.000.
- Baessler, Konrad: See—
Schubert, Hans; and Baessler, Konrad, 4,433,168, Cl. 564-309.000.
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Riley, Thomas N.; and Bagley, Jerry, 4,432,983, Cl. 424-265.000.
- Baguet, Paul R., to S.A.R.L. Commodore International. Device for controlling the opening and closing of fluidtight doors, 4,432,164, Cl. 49-209.000.
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Demers, Donald R.; and Allemand, Charly D., 4,432,644, Cl. 356-316.000.
- Baker International Corporation: See—
Bowyer, Michael L., 4,432,417, Cl. 166-120.000.
- Baker, Pamela K.: See—
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- Bakker, Harry J.: See—
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- Balance Dynamics Co.: See—
Kerlin, Jack H., 4,432,253, Cl. 74-573.00R.
- Balchunas, Charles A., to General Electric Company. Electric iron having stacked thermostat assembly with integral overtemperature protection control, 4,433,231, Cl. 219-253.000.
- Baldyga, Joseph W., to Duraline Products Corporation. Boat hoist, 4,432,664, Cl. 405-3.000.
- Ballard, C. Ray: See—
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- Balzer, M. Edmond H. M. Vertical modular construction element and construction method using the same, 4,432,176, Cl. 52-293.000.
- Ban, Itsuki. Remotely controllable illumination apparatus, 4,433,362, Cl. 362-86.000.
- Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Method of making an ion beam sputter-etched ventricular catheter for hydrocephalus shunt, 4,432,853, Cl. 204-192.00E.
- Banks, Clifford G., to Neil and Spencer Limited. Calender ironing machine with adjustable roll pressure, 4,432,149, Cl. 38-55.000.
- Banks, William D.; Bond, Frank G.; and Naylor, Raymond L., to Dennison Manufacturing Company. Power supply circuitry, 4,433,251, Cl. 307-246.000.
- Banner Gelatin Products Corp.: See—
Brown, Jack B.; and Bischoff, Wijnand J., 4,432,768, Cl. 604-200.000.
- Baranczuk, Richard J. Process for preparation of control for use in estrogen receptor test, 4,433,056, Cl. 436-8.000.
- Barnard, John; and Padanyi, Sandor Z. M., to Imperial Chemical Industries PLC. Process of moulding filled curable compositions, 4,432,928, Cl. 264-519.000.
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- Barracough, Paul: See—
Harris, Clifford J.; and Barracough, Paul, 4,432,988, Cl. 424-273.00R.
- Barry, Gerald E.: See—
Henkensiefken, Larry L.; Pettit, Douglas L.; and Barry, Gerald E., 4,432,499, Cl. 241-30.000.
- Barta nee Szalai, Gizella: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitral, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Barten, Ernst H. Rolling mill with conveying means for strip and foil materials, 4,432,221, Cl. 72-148.000.
- Barth, Wayne E.; and Jasys, Vytautas J., to Pfizer Inc. Crystalline benzenesulfonate salts of sultamicillin, 4,432,987, Cl. 424-271.000.
- Baschung, Michael, to Gretag Aktiengesellschaft. Apparatus for the preparation of sections of photographic film for passage through a continuous printer, particularly for processing of photographic print reorders, 4,432,637, Cl. 355-35.000.
- BASF Aktiengesellschaft: See—
Brandstetter, Franz; Hambrecht, Juergen; and Stephan, Rudolf, 4,433,102, Cl. 525-75.000.
- Hoelderich, Wolfgang; Moss, Wolf D.; and Schwarzmatt, Matthias, 4,433,188, Cl. 585-640.000.
- Keppler, Hans G., 4,433,108, Cl. 525-255.000.
- Straub, Ferdinand; Hartmann, Heinrich; Naegle, Paul; and Seib, Karl, 4,433,112, Cl. 525-326.900.
- Bassett, Robert F. Key concealment attachment, 4,432,219, Cl. 70-456.00R.
- Batchelor, Frank R., to Beecham Group P.L.C. Pharmaceutical compositions, 4,432,969, Cl. 424-91.000.
- Batchie, John M. Bomb squad training device, 4,432,731, Cl. 434-11.000.
- Bates, Ronald E. Protective helmet visor, 4,432,100, Cl. 2-424.000.
- Battistella, Guido: See—
Richelli, Angelo; and Battistella, Guido, 4,432,214, Cl. 62-341.000.
- Bauer, Kurt H.; Osterwald, Hermann; Lehmann, Klaus; and Dreher, Dieter, to Rohm GmbH. Coating agent for medicaments and methods for making and using the same, 4,433,076, Cl. 523-342.000.
- Baxter Travenol Laboratories, Inc.: See—
Bellotti, Marc; Laurin, Dean G.; Stauber, Ronald C.; and Taylor, Larry C., 4,432,766, Cl. 604-283.000.
- Estep, Timothy N., 4,432,750, Cl. 604-4.000.
- Hogan, Lawrence R., 4,433,244, Cl. 250-455.100.
- Mittleman, Herbert; and Boland, Gordon P., 4,432,760, Cl. 604-246.000.
- Napp, E. Thomas; Stauber, R. C.; and Lillegard, Thomas R., 4,432,231, Cl. 73-290.00V.
- Pearson, Stephen, 4,432,755, Cl. 604-56.000.
- Bayer Aktiengesellschaft: See—
Findeisen, Kurt, 4,432,910, Cl. 260-545.00R.
- Furstenwerth, Hauke, 4,432,897, Cl. 260-140.000.
- Hombach, Rudolf; Reiff, Helmut; Wenzel, Wolfgang; and Dollhausen, Manfred, 4,433,095, Cl. 524-563.000.
- Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Neuner, Otto, 4,433,138, Cl. 528-388.000.
- Linhart, Karl; Gleinig, Harald; and Boehmke, Gunther, 4,432,899, Cl. 260-157.000.
- Musch, Rudiger; Konter, Wolfgang; and Gobel, Wilhelm, 4,433,106, Cl. 525-215.000.
- Pedain, Josef; Wellner, Wolfgang; Konig, Klaus; and Gruber, Hermann, 4,433,010, Cl. 427-160.000.
- Reinehr, Ulrich; Herberitz, Toni; Jungverdorben, Hermann-Josef; and Burghartz, Hans K., 4,432,923, Cl. 264-206.000.
- Rottmaier, Ludwig; and Merten, Rudolf, 4,433,085, Cl. 524-83.000.
- Rottmaier, Ludwig; and Merten, Rudolf, 4,433,144, Cl. 544-198.000.
- Scholl, Hans-Joachim, 4,433,169, Cl. 564-419.000.
- Bayewitz, Marvin H., to Bethlehem Steel Corporation. Blast furnace control method, 4,432,790, Cl. 75-41.000.
- Baylor College of Medicine: See—
Emery, Jared M.; and Lam, Dominic M., 4,432,751, Cl. 604-49.000.
- BBC Brown, Boveri & Company, Limited: See—
Britsch, Helmut, 4,433,081, Cl. 523-457.000.
- Beamon, Earl T.; and Bouchard, Joanne M. Word game apparatus, 4,432,554, Cl. 273-272.000.
- Beausoleil, Armand S. Dispenser for rolled sheet material, 4,432,482, Cl. 226-181.000.
- Beautz, Joseph A.: See—
Grick, Shelly J.; and Beautz, Joseph A., 4,432,099, Cl. 2-412.000.
- Beaven, Paul A., to International Business Machines Corp. Interactive data retrieval apparatus, 4,433,392, Cl. 364-900.000.
- Becelaere, Robert V., to Ruskin Manufacturing Company. Motor operated fire damper, 4,432,272, Cl. 98-1.000.
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- Becker, Erich W.: See—
Wiesmann, Herbert L.; and Becker, Erich W., 4,432,582, Cl. 297-316.000.
- Beckers, Joseph H. M.; and Sipkema, Rudolf, to Stamicarbon B.V. Process for the preparation of melamine, 4,433,146, Cl. 544-201.000.
- Beckman, John B.; and Blickstein, Martin J., to Abet Group, The. Peristaltic piezoelectric pump with internal load sensor, 4,432,699, Cl. 417-63.000.
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Ferris, Michael J., 4,432,993, Cl. 424-285.000.
- Beecham Group P.L.C.: See—
Batchelor, Frank R., 4,432,969, Cl. 424-91.000.
- Beffa, Fabio: See—
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- Belanger, Inc.: See—
Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Lapham, James M., 4,432,406, Cl. 160-199.000.
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- Belcher, Samuel L.: See—
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- Akers, Roy; Hartman, Charles R.; and Deutch, Keith B., 4,432,540, Cl. 271-8.00A.
- Daboub, Henry A., 4,432,458, Cl. 209-564.000.
- Parker, Robert R.; and Starai, Rudolph, 4,432,618, Cl. 353-25.000.
- Bell Telephone Laboratories, Incorporated: See—
- Kinsbron, Eliezer; and Lynch, William T., 4,432,132, Cl. 29-571.000.
- Kollaritsch, Paul W., 4,433,331, Cl. 340-825.830.
- Levy, Alvin C., 4,432,607, Cl. 350-96.340.
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- Warren, Paul C., 4,433,075, Cl. 523-303.000.
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- Carp, Ralph W.; and Wright, Danny O., 4,433,390, Cl. 364-900.000.
- Lewis, John, 4,433,206, Cl. 174-356.000.
- Wilkinson, John R., 4,433,381, Cl. 364-431.050.
- Bennington, Gerald E.: See—
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- Benson, Gregory R.: See—
- Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,432,922, Cl. 264-119.000.
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- Benz, Roland: See—
- Arendt, Gerhard; Benz, Roland; Engenhardt, Reinhold; and Schmidt, Viktor, 4,432,501, Cl. 242-47.000.
- Bergwerksverband GmbH: See—
- Juntgen, Harald; Knoblauch, Karl; Reichenberger, Jurgen; and Schroter, Hans-Jurgen, 4,432,774, Cl. 55-25.000.
- Schaefer, Nikolaus; Dellmann, Winfried; and Louis, Gerd, 4,432,958, Cl. 423-356.000.
- Berkey Photo, Inc.: See—
- Tarsia, Giuseppe, 4,432,636, Cl. 355-35.000.
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- Berkman Industries, Inc.: See—
- Berkman, Joseph L., 4,432,453, Cl. 206-387.000.
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- Berler, Robert M. Food processor with air whipping capability. 4,432,912, Cl. 261-93.000.
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- Berner, Rolf E. Machine for the continuous molding of polystyrene. 4,432,713, Cl. 425-4.00C.
- Berner, William E.; and Wical, Thomas H., to United States of America, Air Force. Device to measure temperature of an annular elastomeric seal. 4,433,198, Cl. 136-230.000.
- Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., to MPD Technology Corporation. Hydrogen sorbent composition. 4,433,063, Cl. 502-402.000.
- Bernstein, Seymour: See—
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- Berrian, Donald W.; and Ward, Billy W., to Varian Associates, Inc. Pattern data handling system for an electron beam exposure system. 4,433,384, Cl. 364-525.000.
- Berthold, Heinz: See—
- Beutler, Gerhard; Berthold, Heinz; Morsch, Joachim; and Schiene, Karl, 4,432,703, Cl. 417-217.000.
- Besemann, Alfred; and Rehwald, Willi, to E. C. H. Will (GmbH & Co.). Driving unit for the knife holders of cross cutters or the like. 4,432,262, Cl. 83-311.000.
- Best, David W.; and Russell, Jeffrey D., to Rockwell International Corporation. Method and apparatus for testing and verifying the operability of register based state machine apparatus. 4,433,412, Cl. 371-25.000.
- Best, Robert M. Cryptographic decoder for computer programs. 4,433,207, Cl. 178-22.090.
- Bethlehem Steel Corporation: See—
- Bayewitz, Marvin H., 4,432,790, Cl. 75-41.000.
- Hitzrot, Henry W., Jr., 4,432,803, Cl. 106-304.000.
- Rudski, Eugene M.; Jackson, Ronald W.; and Martocci, Anthony P., 4,432,657, Cl. 374-126.000.
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- Beune, Joannes H.; and Marissen, Roelof H., to Wavin B.V. Pipe part with socket provided with longitudinally extending channels. 4,432,395, Cl. 138-109.000.
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- Bevan, John A., to Mallinckrodt, Inc. Radiographic scanning agent. 4,432,963, Cl. 424-1.100.
- Bevans, Terry D.; and Hammer, James L. Vehicle jack. 4,432,531, Cl. 254-100.000.
- Beyer, Gerhard: See—
- Andreassen, Knut A.; Eide, Olav A.; and Beyer, Gerhard, 4,432,859, Cl. 204-296.000.
- Bhate, Suresh K., to Mechanical Technology Incorporated. Free piston heat engine stability control system. 4,433,279, Cl. 322-3.000.
- Bic, Jean-Claude; Brossard, Pierre C.; and Dupontell, Daniel. Modulator-demodulator for four level double amplitude modulation on quadrature carriers. 4,433,310, Cl. 332-9.00R.
- Bieser, Albert H.: See—
- Smith, Dorsey T.; Bieser, Albert H.; and Kintzinger, Warren H., 4,433,337, Cl. 343-765.000.
- Bigam, Eric C., to Pfizer Inc. Bis-esters of methanediol with penicillins and penicillanic acid 1,1-dioxide. 4,432,903, Cl. 260-239.100.
- Bignier Schmid-Laurent: See—
- Wascot, Raymond, 4,432,486, Cl. 228-49.00A.
- Bily, Robert R. Whey-soybean product and process for making the product. 4,432,999, Cl. 426-583.000.
- Bingaman, Barrett P., to Cetec Corporation. Reel and hub lock for tape drives. 4,432,506, Cl. 242-68.300.
- Bird, John M. Industrial metals coated with awaruite-like synthetic nickel/iron alloys. 4,433,033, Cl. 428-682.000.
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- Bischoff, Wijnand J.: See—
- Brown, Jack B.; and Bischoff, Wijnand J., 4,432,768, Cl. 604-200.000.
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- Black, Robert B. Energy conversion system. 4,432,336, Cl. 126-91.00R.
- Blackburn, Neil P.: See—
- Palmer, John P.; and Blackburn, Neil P., 4,432,684, Cl. 411-366.000.
- Blair, G. Richard, to Hughes Aircraft Company. Optical fiber insensitive to temperature variations. 4,432,606, Cl. 350-96.330.
- Blair Industries, Inc.: See—
- Graetz, Herbert; and Unterreiner, Ronald C., 4,432,827, Cl. 156-245.000.
- Bialock, Paul B.: See—
- Schwartz, William C.; and Bialock, Paul B., 4,433,022, Cl. 428-158.000.
- Bland, Gerald F.; and Sullivan, Donald K., to Outboard Marine Corporation. Marine propulsion device including ignition interruption means to assist transmission shifting. 4,432,734, Cl. 440-1.000.
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- Bryan, Frank T., 4,432,587, Cl. 308-6.00C.
- Bley, David B.: See—
- Sarrell, Ivan D.; Bley, David B.; and Tibbets, David W., 4,432,356, Cl. 128-75.000.
- Blicher, Harold. Belt making method and apparatus. 4,432,831, Cl. 156-467.000.
- Blickstein, Martin J.: See—
- Beckman, John B.; and Blickstein, Martin J., 4,432,699, Cl. 417-63.000.
- Bloom, Otis J. Compartmentalized document carrier carton. 4,432,454, Cl. 206-425.000.
- Boak, Maritza G.: See—
- De Leon, Joe R.; and Boak, Maritza G., 4,433,000, Cl. 426-599.000.
- Boart International, Limited: See—
- Hopley, Robert J.; and van der Westhuizen, Wynand J., 4,432,422, Cl. 175-61.000.
- Bobolts, Elroy F.: See—
- Pike, Robert D.; and Bobolts, Elroy F., 4,432,183, Cl. 52-533.000.
- Boehm, Leah: See—
- Susman, Sherman; Delbecq, Charles J.; Volin, Kenneth J.; and Boehm, Leah, 4,432,891, Cl. 252-518.000.
- Boehmke, Gunther: See—
- Linhart, Karl; Gleinig, Harald; and Boehmke, Gunther, 4,432,899, Cl. 260-157.000.
- Boeing Company, The: See—
- Brandon, Dorris R., 4,432,514, Cl. 244-118.500.
- Boelema, Sikke J. A.: See—
- van der Burgt, Maarten J.; Boelema, Sikke J. A.; Schoeber, Willem J. A. H.; and Zuideveld, Pieter L., 4,433,065, Cl. 518-703.000.
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- Bohan, John E., Jr.; and Hinton, Brian J., to Honeywell Inc. Interrupted power hot wire gas ignition control system. 4,432,722, Cl. 431-46.000.
- Bokerman, Gary N.; and Langley, Neal R., to Dow Corning Corporation. Polymerization of polydiorganosiloxane in the presence of filler. 4,433,096, Cl. 524-783.000.
- Boland, Gordon P.: See—
- Mittleman, Herbert; and Boland, Gordon P., 4,432,760, Cl. 604-246.000.

- Bolon, Donald A.; and Gorczyca, Thomas B., to General Electric Company. Coating solution of polyetherimide monomers. 4,433,131, Cl. 528-185.000.
- Bolton, Wilbur M.: See—
- Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., 4,432,340, Cl. 126-390.000.
- Bond, Frank G.: See—
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- Boot, Phillip H., to Hanford Pty., Ltd. Building modules. 4,432,171, Cl. 52-79.100.
- Boots Company, The: See—
- Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shuttler, Stephen W.; and Willis, Robert J., 4,432,994, Cl. 424-300.000.
- Borden Chemical Company (Canada) Limited, The: See—
- Chiu, Shui-Tung, 4,433,120, Cl. 525-501.000.
- Borman, August H.; and Perlick, Mark A., to General Motors Corporation. Hydraulic control for a power transmission. 4,432,255, Cl. 74-869.000.
- Borrows, Paul K.: See—
- Mlot-Fijalkowski, Adolf; and Borrows, Paul K., 4,433,289, Cl. 324-215.000.
- Bott, John A. Vehicle article carrier. 4,432,478, Cl. 224-321.000.
- Bott, Richard E.: See—
- Muller, Max; Lilly, Eugene B.; and Bott, Richard E., 4,432,112, Cl. 15-36.000.
- Bottenberg, William R.: See—
- Jester, Theresa L.; Yerkes, John W.; Gay, Charles F.; and Bottenberg, William R., 4,433,200, Cl. 136-251.000.
- Bottenbruch, Ludwig: See—
- Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Neuner, Otto, 4,433,138, Cl. 528-388.000.
- Bouchard, Emile: See—
- Dumaitre, Bernard; Perrin, Claude; Cornu, Pierre-Jean; and Streichenberger, Gilles, 4,432,984, Cl. 424-267.000.
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- Bouchard, Andre C.; and Craig, Robert F., to GTE Products Corporation. Photoflash lamp including improved ignition means. 4,432,724, Cl. 431-362.000.
- Bouchard, Joanne M.: See—
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- Boutros, Kamal S.; and Fenn, John W., to Allied Corporation. Electrical connector assembly. 4,432,592, Cl. 339-103.00M.
- Boywer, Michael L., to Baker International Corporation. Control pressure actuated downhole hanger apparatus. 4,432,417, Cl. 166-120.000.
- Boy, Jurgen: See—
- Lange, Gerhard; and Boy, Jurgen, 4,433,354, Cl. 361-120.000.
- Boyers, Carl; and Edwards, David J., to United States of America, Air Force. Bomb blast attenuator. 4,432,285, Cl. 109-49.500.
- Boyette, Lewis D. Attachment for safety valves. 4,432,383, Cl. 137-77.000.
- Brader, Kurt: See—
- Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,432,174, Cl. 52-222.000.
- Bradley, John J.: See—
- Lombardo, Ralph M., Jr.; Bradley, John J.; Bruce, Kenneth E.; Conway, John W.; O'Keefe, David B.; and Tarbox, Bruce H., 4,433,376, Cl. 364-200.000.
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- Brannagan, James P.: See—
- Norman, Deumite; Brannagan, James P.; and McLane, Wesley, 4,432,289, Cl. 110-336.000.
- Brantley, Vanston R.; and Miller, Donald R., to United States of America, Energy. Device and method for measuring the coefficient of performance of a heat pump. 4,432,232, Cl. 73-432.00R.
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- Brasseur, Georg; Lehner, Gerhard; Herzog, Peter; Rathmayr, Heinz; and Stipek, Theodor, to Friedmann & Maier Aktiengesellschaft. Control equipment for adjusting the moment of fuel injection and/or amount of fuel supplied by a fuel injection pump, for internal combustion engines. 4,432,320, Cl. 123-357.000.
- Braun, Dieter: See—
- Schmitz, H.-Joachim; Braun, Dieter; Trodler, Dieter; and Cramer, Hugo, 4,432,196, Cl. 57-204.000.
- Braun, Ernst; and Braun, Gert, to Halbach & Braun. Conveyor trough for a scraper chain conveyor. 4,432,448, Cl. 198-735.000.
- Braun, Gert: See—
- Braun, Ernst; and Braun, Gert, 4,432,448, Cl. 198-735.000.
- Braun, Willy, to Dulux Australia Ltd. Solvent recovery process. 4,432,837, Cl. 203-37.000.
- Braunisch, Herbert: See—
- Brass, Holger; Braunisch, Herbert; Disselbeck, Dieter; and Golly, Helmut, 4,432,413, Cl. 165-133.000.
- Brazil, Eugene L. Remotely adjustable control pressure by-pass and shut-off valve. 4,432,390, Cl. 137-625.460.
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- Breslau, Alan J.; and Broad, Bernard. Means for applying topical anesthesia for use with a laryngoscope. 4,432,350, Cl. 128-10.000.
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- Tesch, Gunter, 4,433,018, Cl. 428-89.000.
- Bridges, James R., to Halliburton Company. Pulsed neutron generator tube power control circuit. 4,432,929, Cl. 376-119.000.
- Bridgestone Tire Company Limited: See—
- Ogawa, Masaki; and Ikegami, Mikihiko, 4,433,094, Cl. 524-496.000.
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- Brillantes, Bonifacio B., to Morse Boulger, Inc. Incinerator and hearth construction therefor. 4,432,287, Cl. 110-212.000.
- Brisard, Patrick: See—
- Zeitoun, Paul; and Brisard, Patrick, 4,432,966, Cl. 424-21.000.
- Bristol-Myers Company: See—
- Fleming, James S., Jr.; and Buyniski, Joseph P., 4,432,980, Cl. 424-251.000.
- Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,433,158, Cl. 549-332.000.
- British Aerospace Public Limited Company: See—
- Fellas, Christakis N., 4,433,201, Cl. 136-251.000.
- Young, Robert W., 4,432,512, Cl. 244-3.220.
- British Steel Corporation: See—
- Jones, Alun, 4,432,234, Cl. 73-597.000.
- Britsch, Helmut, to BBC Brown, Boveri & Company, Limited. Electrical insulation body. 4,433,081, Cl. 523-457.000.
- Brittin, Craig E., to General Motors Corporation. Method of inductively heating workpieces to a uniform temperature. 4,433,227, Cl. 219-10.410.
- Broad, Bernard: See—
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- Broderma Lindqvists Verkstad AB: See—
- Johansson, Donald, 4,432,737, Cl. 440-60.000.
- Brogardh, Torgny: See—
- Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,433,238, Cl. 250-227.000.
- Brooks, Peter L.: See—
- Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,432,824, Cl. 156-165.000.
- Brossard, Pierre C.: See—
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- Brown, Gilbert M.: See—
- Hurst, Fred J.; Brown, Gilbert M.; and Posey, Franz A., 4,432,945, Cl. 423-10.000.
- Brown, Jack B.; and Bischoff, Wijnand J., to Banner Gelatin Products Corp. Medicinal fluid applicator. 4,432,768, Cl. 604-200.000.
- Broyles, Harry C.: See—
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- Bruce, Kenneth E.: See—
- Lombardo, Ralph M., Jr.; Bradley, John J.; Bruce, Kenneth E.; Conway, John W.; O'Keefe, David B.; and Tarbox, Bruce H., 4,433,376, Cl. 364-200.000.
- Brucher, Eberhard. Manipulator for charging devices. 4,432,252, Cl. 74-469.000.
- Bruderle, Egon U.; and Wannemacher, Willibald, to Mannesmann Demag AG. Canal building apparatus. 4,432,672, Cl. 405-268.000.
- Brundiek, Horst; and Werner, Ludwig, to Loesche GmbH. Roll mill for milling coal. 4,432,500, Cl. 241-57.000.
- Bruninga, Kenneth J., to L. R. Nelson Corporation. Pop-up sprinkler with independently biased drain valve. 4,432,495, Cl. 239-205.000.
- Brunswick Corporation: See—
- Wrasidlo, Wolfgang J.; and Mysels, Karol J., 4,432,875, Cl. 210-500.200.
- Bryan, Frank T., to Blasius Industries, Inc. Recirculating ball bearing assembly. 4,432,587, Cl. 308-6.00C.
- bso Steuerungstechnik GmbH Industriestrasse: See—
- Beutler, Gerhard; Berthold, Heinz; Morsch, Joachim; and Schiene, Karl, 4,432,703, Cl. 417-217.000.
- Buchanan, Harry C., Jr.: See—
- Longhouse, Richard E.; Cornwell, William D., Jr.; and Buchanan, Harry C., Jr., 4,433,263, Cl. 310-233.000.
- Buchheit, Robert F., to Xerox Corporation. Time averaged amplitude comparison electrometer. 4,433,297, Cl. 324-457.000.
- Buchmann, Rudolf C. Stackable multi-purpose heater with controllable heat action. 4,432,338, Cl. 126-256.000.

- Buckeye Molding Company: See—
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- Buckmaster, Adrian C., to Dowty Mining Equipment Limited. Mine roof support. 4,432,673, Cl. 405-302.000.
- Bugaut, Andree; and Andriillon, Patrick, to L'Oreal. Nitro dyestuffs, a process for their preparation, and use of these dyestuffs in dyeing keratin fibres. 4,432,769, Cl. 8-414.000.
- Buhler, Anton; and Hug, Peter, to Sprecher & Schuh AG. High-voltage circuit breaker. 4,433,220, Cl. 200-144.0AP.
- Bujan, Albert F.: See—
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- Bulova Watch Company, Inc.: See—
Hesselschwerdt, Bernhard, 4,432,654, Cl. 368-282.000.
- Wollman, Jack, 4,432,655, Cl. 368-282.000.
- Burghartz, Hans K.: See—
Reinehr, Ulrich; Herberitz, Toni; Jungverdorben, Hermann-Josef; and Burghartz, Hans K., 4,432,923, Cl. 264-206.000.
- Burlington Industries, Inc.: See—
Schwartz, William C.; and Blalock, Paul B., 4,433,022, Cl. 428-158.000.
- Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, to Xerox Corporation. Nonplanar substrate injection lasers grown in vapor phase epitaxy. 4,433,417, Cl. 372-45.000.
- Burrroughs Corporation: See—
Kay, Nicholas W., 4,433,269, Cl. 313-632.000.
- Potash, Hanan, 4,433,391, Cl. 364-900.000.
- York, Kenneth L.; and Stram, Oscar B., 4,433,389, Cl. 364-900.000.
- Burundy, Inc.: See—
Wright, Howard, 4,432,519, Cl. 248-49.000.
- Busch, Lloyd E.: See—
Myers, George D.; and Busch, Lloyd E., 4,432,864, Cl. 208-120.000.
- Butterworth, Inc.: See—
Pacht, Amos, 4,432,386, Cl. 137-327.000.
- Buyalos, Edward J.; Rowan, Hugh H.; and Young, Steven A., to Allied Corporation. Reactor. 4,432,940, Cl. 422-135.000.
- Buyniski, Joseph P.: See—
Fleming, James S., Jr.; and Buyniski, Joseph P., 4,432,980, Cl. 424-251.000.
- Byars, Larry W., to Tranoco, Inc.; and Dunlop Sports Company, div. Dunlop Tire and Rubber Corp. Golf club. 4,432,550, Cl. 273-169.000.
- Bykov, Anatoly P. Apparatus for measuring deformation. 4,432,239, Cl. 73-800.000.
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Falco, Lucien, 4,432,600, Cl. 350-96.180.
- Cabot Corporation: See—
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- Cacciapuoti, Beniamino, to Moplefan S.p.A. Noiseless high-speed circular loom for producing tubular fabrics consisting of strips, threads and the like made of synthetic or natural materials. 4,432,397, Cl. 139-13.00R.
- Cadars, Patrick, to Valeo. Heat exchanger, in particular for a cooling circuit of a motor vehicle engine. 4,432,410, Cl. 165-32.000.
- Cadre Corporation, The: See—
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- Caflisch, Jerry A., to Pako Corporation. Dryer apparatus for film disc processor. 4,432,629, Cl. 354-299.000.
- Caflisch, Jerry A.: See—
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- Caines, Ronald S., to Dow Chemical Co., The. Method and compressed vermicular expanded graphite apparatus for heat exchanging. 4,432,408, Cl. 165-1.000.
- Callander, Keith A., to Polysar Limited. Process for preparing curable compounds. 4,433,077, Cl. 523-344.000.
- Calvert, James W.: See—
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- Calvin, Douglas J.: See—
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- Campbell, Duncan R. J.; and Rogers, Philip J., to Pilkington P.E. Limited. Infra-red optical systems. 4,432,596, Cl. 350-1.300.
- Campbell, Henry F., to William H. Rorer, Inc. Pyridone compounds. 4,432,979, Cl. 424-250.000.
- Campbell, Thomas K.: See—
Lowell, Francis C.; and Campbell, Thomas K., 4,432,243, Cl. 73-861.310.
- Can-Gun Limited: See—
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Wind, David W., 4,433,335, Cl. 343-463.000.
- Canon Kabushiki Kaisha: See—
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- Sakurada, Nobuaki; Kiuchi, Masayoshi; and Thunoda, Masahiro, 4,432,628, Cl. 354-289.120.
- Shirai, Masanari; and Yanagawa, Hitoshi, 4,432,509, Cl. 242-195.000.
- Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,432,621, Cl. 354-403.000.
- Cantley, Ross H. Method and apparatus for handling a coin holder. 4,432,379, Cl. 133-1.00R.
- Capell, Ronald: See—
Henze, Helmut; and Capell, Ronald, 4,433,009, Cl. 427-97.000.
- Capots, Larry H.: See—
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhle, John, III; and Nolan, Thomas A., Jr., 4,433,286, Cl. 324-61.00R.
- Caprari, Fausto; and Geshner, Robert A., to RCA Corporation. Visual defect inspection of masks. 4,432,641, Cl. 356-237.000.
- Capuano, Terry D., to Russell Burdsall & Ward Corporation. Fastener. 4,432,681, Cl. 411-180.000.
- Caputi, William J., Jr., to Eaton Corporation. Passive ranging system. 4,433,334, Cl. 343-450.000.
- Caputo, William R.; and Nomura, Masami, to Westinghouse Electric Corp. Elevator system. 4,432,439, Cl. 187-29.00R.
- Cardiac Resuscitator Corporation: See—
Angel, James H.; and Aronson, Alfred L., 4,432,375, Cl. 128-705.000.
- Carey, Maurice E., to Fairchild Camera and Instrument Corporation. Digital tester local memory data storage system. 4,433,414, Cl. 371-27.000.
- Carl Freudenberg, Firma: See—
Drucktenhengst, Rolf, 4,432,557, Cl. 277-153.000.
- Lohmar, Ernst; and Kunkel, Hans-Achim, 4,432,580, Cl. 296-39.00A.
- Pletsch, Hubert, 4,432,537, Cl. 267-8.00R.
- Carlson, Albert W. D., to Rivercross Learning Corp. Amusement and educational game. 4,432,733, Cl. 434-339.000.
- Carlsson, Harry, to AB Samefa. Arrangement for measuring and checking motorcycle frames. 4,432,144, Cl. 33-180.0AT.
- Carnes, W. Robert. Signature verification system. 4,433,436, Cl. 382-3.000.
- Caroff, Yves, to Facom. Apparatus for inspecting the geometry of the wheels of a vehicle. 4,432,145, Cl. 33-288.000.
- Carol Cable Company, Inc.: See—
Waluk, Stanley P., 4,432,593, Cl. 339-105.000.
- Carollo, James A.; and Kalinsky, Wayne A., to Rockwell International Corporation. Battery charging system. 4,433,277, Cl. 320-24.000.
- Carp, Ralph W.; and Wright, Danny O., to Bendix Corporation. The Power processing reset system for a microprocessor responding to sudden deregulation of a voltage. 4,433,390, Cl. 364-900.000.
- Carr, Alan R., to United States of America, Commerce. Three-element antenna formed of orthogonal loops mounted on a monopole. 4,433,336, Cl. 343-728.000.
- Carre, Paul: See—
Castagner, Bernard; Carre, Paul; and Moise, Gervais, 4,432,269, Cl. 89-1.816.
- Carrier Corporation: See—
Fraser, Bruce A.; and Holt, Curtis, Jr., 4,432,705, Cl. 417-295.000.
- Carruthers, James D.: See—
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- Cassiere, Gerald D., to Chamberlain Manufacturing Corporation. Adjustable mounting system for patio doors and the like. 4,432,163, Cl. 49-63.000.
- Cassou, Bertrand; Cassou, Maurice; and Cassou, Robert. Apparatus for artificial insemination. 4,432,753, Cl. 604-55.000.
- Cassou, Maurice: See—
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Kuykendall, Charles R.; and Castle, Richard B., 4,432,172, Cl. 52-98.000.
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- Caterpillar Mitsubishi Limited: See—
Yamamoto, Kazuyoshi; and Sato, Tadashi, 4,432,257, Cl. 81-464.000.
- Caterpillar Tractor Co.: See—
Rice, Stuart L., 4,432,812, Cl. 148-36.000.
- Censor Patent-und Versuchs-Anstalt: See—
Mayer, Herbert E., 4,432,635, Cl. 355-30.000.
- Centre National d'Etudes et d'Experimentation de Machinisme Agricole: See—
Lucas, Jean; and Sylla, Lancine, 4,432,342, Cl. 126-418.000.
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Jackson, Alan D.; and Day, Kenneth E., 4,432,389, Cl. 137-469.000.
- Cetec Corporation: See—
Bingaman, Barrett P., 4,432,506, Cl. 242-68.300.
- Cetronio, Antonio, to Selenia Industrie Elettroniche Associate S.p.A. Process for oxidizing semiconducting compounds, especially gallium arsenide. 4,433,006, Cl. 427-39.000.
- Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Sulphones having a 1,5-dimethyl-hexa-1,5-dienylene group. 4,433,171, Cl. 568-33.000.
- Chamberlain Manufacturing Corporation: See—
Cassiere, Gerald D., 4,432,163, Cl. 49-63.000.

- Champion International Corporation: See—
Cote, Raymond A., 4,432,489, Cl. 229-22.000.
- Dutcher, Daniel P., 4,432,488, Cl. 229-21.000.
- Roberts, Harry H., 4,432,490, Cl. 229-22.000.
- Thompson, Kenneth P., 4,432,820, Cl. 156-82.000.
- Champion Spark Plug Company: See—
Nemeth, Joseph, 4,433,092, Cl. 524-414.000.
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- Chandler, Joe D.: See—
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- Chapman, Gerda L. Therapeutic leg support. 4,432,108, Cl. 5-443.000.
- Chattanooga Corporation: See—
Sarrell, Ivan D.; Bley, David B.; and Tibbets, David W., 4,432,356, Cl. 128-75.000.
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Kaufhold, Manfred, 4,433,175, Cl. 568-471.000.
- Chemische Werke Huls AG: See—
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- Chen, Yung J.: See—
McNeill, William H.; and Chen, Yung J., 4,432,614, Cl. 350-386.000.
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Liau, Shung-Chung; Cheng, Wei-Min; and Young, Uen-Long, 4,432,840, Cl. 204-14.00N.
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Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozorov, Aref I.; Morgachev, Ivan I.; Chernik, Jury S.; Kvitkovsky, Konstantin A.; Gusev, Alexei I.; and Terentiev, Nina A., 4,432,584, Cl. 299-25.000.
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Allen, William R., Sr., 4,433,031, Cl. 428-541.000.
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Hubred, Gale L.; and Van Leirsburg, Dean A., 4,432,949, Cl. 423-54.000.
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- Loh, William, 4,432,786, Cl. 71-90.000.
- Streib, Stephen F., 4,433,329, Cl. 340-606.000.
- Wallman, P. Henrik, 4,432,861, Cl. 208-11.00R.
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Mills, Carl R., 4,432,393, Cl. 138-30.000.
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Kamiya, Kunio; Motojima, Kenji; Funabashi, Kiyomi; Chino, Koichi; and Horiuchi, Susumu, 4,432,894, Cl. 252-632.000.
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Raisin, Jean-Pierre; Helffer, Bernard; and Chirouze, Jean L., 4,432,295, Cl. 112-262.300.
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- Chloe Chimie: See—
Bachot, Jean; and Grosbois, Jean, 4,432,860, Cl. 204-296.000.
- Chloff, Gunther: See—
Fehr, Charles; and Chloff, Gunther, 4,433,183, Cl. 568-829.000.
- Choi, Hak-Ki, to Samsung Electronics Co., Ltd. Power supply circuit for a variable electrical source. 4,433,368, Cl. 363-45.000.
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Brode, George L.; and Chow, Sui-Wu, 4,433,119, Cl. 525-442.000.
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Shibata, Akira, 4,432,487, Cl. 228-194.000.
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Novoselac, John; and Churcher, Dale L., 4,432,748, Cl. 494-2.000.
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Back, Gerhard; Boffa, Fabio; and Schutz, Hans-Ulrich, 4,432,898, Cl. 260-145.00A.
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- CII Honeywell Bull: See—
Vallet, Philippe M. A.; and Vinot nee Ricol, Annie M. M., 4,433,327, Cl. 340-347.00D.
- Cincinnati Milacron Inc.: See—
Cunningham, Carole S.; Linser, Charles M.; Resnick, Brian J.; and Tarvin, Ronald L., 4,433,382, Cl. 364-474.000.
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Rose, John B.; and Cinderey, Michael B., 4,433,172, Cl. 568-319.000.
- Cioca, Gheorghe, to Seton Company. Surface active agents based on polypeptides. 4,432,888, Cl. 252-354.000.
- Circle V, Inc.: See—
Vernese, Michael P., 4,432,305, Cl. 119-98.000.
- Clark Equipment Company: See—
Malott, Theodore A., 4,432,251, Cl. 74-337.500.
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- Clark, William D.; Garner, Mark D.; Rhodes, John H., Jr.; and Wilzbach, Bernard L., to International Business Machines Corporation. Recirculating document feed apparatus and method for aligning documents therein. 4,432,541, Cl. 271-251.000.
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Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,433,063, Cl. 502-402.000.
- Clavin, Harold D. Cosmetic tape and method. 4,432,347, Cl. 128-1.00R.
- Clay, Eugene J.: See—
Pechacek, Raymond E.; and Clay, Eugene J., 4,432,128, Cl. 29-429.000.
- Claypool, James L.: See—
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,432,824, Cl. 156-165.000.
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- Clements, Aynon L. Method and apparatus for disposing of animal waste. 4,432,498, Cl. 241-21.000.
- Clements, Harold J., to Modern Precision Engineers and Associates Limited. Air-cushion apparatus. 4,432,429, Cl. 180-127.000.
- Cline, Jack B. Motorcycle jack stand. 4,432,562, Cl. 280-300.000.
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Parkinson, Michael J.; Jury, Anthony W.; Syred, Nicholas; and Owen, Ieuan, 4,432,778, Cl. 55-212.000.
- Cobe Laboratories, Inc.: See—
Lobdell, Donn D.; and Goyne, Thomas E., 4,432,767, Cl. 604-86.000.
- Coca Cola Company: See—
De Leon, Joe R.; and Boak, Maritza G., 4,433,000, Cl. 426-599.000.
- Coffey, James P.: See—
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- Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., to Imperial Chemical Industries PLC. Compositions of melt-processable polymers having improved processability. 4,433,083, Cl. 524-27.000.
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- Coldren, Margaret E. Tack box and saddle rack unit. 4,432,459, Cl. 211-13.000.
- Cole, Billy W.: See—
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- Cole National Corporation: See—
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- Colgate-Palmolive Company: See—
Hayes, Harry, 4,432,471, Cl. 222-136.000.
- Collignon, Gerard: See—
Saint, Jacques; and Collignon, Gerard, 4,433,313, Cl. 333-109.000.
- Combustion Engineering, Inc.: See—
Wentzell, Timothy H.; and Innes, Charles B., Jr., 4,432,271, Cl. 91-527.000.
- Commissariat a l'Energie Atomique: See—
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- Commonwealth of Australia, The: See—
Smith, Ralph N., 4,432,299, Cl. 116-137.00R.

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Vinot, Daniel R., 4,433,375, Cl. 364-200.000.
- Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., to Intertec Associates Inc. Energy saving heating vessel. 4,432,340, Cl. 126-390.000.
- Conarroe, John L., Jr.: See—
Patel, Vipin N.; and Conarroe, John L., Jr., 4,433,342, Cl. 357-2.000.
- Conchemco Incorporated: See—
Schmitt, Larry D., 4,432,191, Cl. 56-11.800.
- Conoco Inc.: See—
Mack, Mark P., 4,433,123, Cl. 526-139.000.
Yang, Kang; and Reedy, James D., 4,433,196, Cl. 585-823.000.
- Consolidated Foods Corporation: See—
Martini, Jeanne M., 4,432,364, Cl. 128-484.000.
- Conway, John W.: See—
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- Conwed Corporation: See—
Huspeni, Paul J., 4,432,109, Cl. 5-478.000.
- Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., to Raychem Corporation. Method for internal pipe protection. 4,432,824, Cl. 156-165.000.
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- Cooper, David G.: See—
Zajic, James E.; and Cooper, David G., 4,432,887, Cl. 252-331.000.
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- Coordes, Heinz; and Oberbach, Manfred, to Didier-Werke AG. Molten iron containing vessel with improved refractory lining. 4,432,536, Cl. 266-280.000.
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- Cordis Corporation: See—
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- Margules, Gary S., 4,432,366, Cl. 128-635.000.
- Mumford, Van E.; Sasmor, Louis; and Schroepel, Edward A., 4,432,360, Cl. 128-419.0PG.
- Cornelius, Edward B.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
- Corning France: See—
Zarzycki, Jerzy W.; Prassas, Michel; and Phalippou, Jean E. H., 4,432,956, Cl. 423-338.000.
- Corning Glass Works: See—
Courbin, Philippe L. P.; and Mazeau, Jean P., 4,433,062, Cl. 501-44.000.
- Fehlner, Francis P.; and Wein, William J., 4,432,852, Cl. 204-181.00F.
- Paisley, Robert J., 4,432,918, Cl. 264-43.000.
- Cornu, Pierre-Jean: See—
Dumaitre, Bernard; Perrin, Claude; Cornu, Pierre-Jean; and Streichenberger, Gilles, 4,432,984, Cl. 424-267.000.
- Cornwell, William D., Jr.: See—
Longhouse, Richard E.; Cornwell, William D., Jr.; and Buchanan, Harry C., Jr., 4,433,263, Cl. 310-233.000.
- Cosper, David R.: See—
Whitfield, Joyce M.; and Cosper, David R., 4,432,834, Cl. 162-158.000.
- Cote, Raymond A., to Champion International Corporation. Pie carton. 4,432,489, Cl. 229-22.000.
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De Schepper, Achille; Coussement, Marc; and Van Peteghem, Antoine, 4,432,951, Cl. 423-89.000.
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- Couturier, Guy D., to United States of America. Air Force. Sobel edge extraction circuit for image processing. 4,433,438, Cl. 382-41.000.
- Cowles, Dean S., to General Instrument Corporation. Keytop levelling mechanism. 4,433,225, Cl. 200-340.000.
- Cox, Gordon F. N.; and Nolte, Kenneth G., to Standard Oil Company (Indiana). Ice island construction. 4,432,669, Cl. 405-217.000.
- Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-[5-(and 4)-Substituted-2-thienyl]-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,432,992, Cl. 424-274.000.
- Craig, Robert F.: See—
Bouchard, Andre C.; and Craig, Robert F., 4,432,724, Cl. 431-362.000.
- Cramer, Hugo: See—
Schmitz, H.-Joachim; Braun, Dieter; Trodler, Dieter; and Cramer, Hugo, 4,432,196, Cl. 57-204.000.
- Croon & Lucke Maschinenfabrik GmbH & Co. KG: See—
Wedler, Klaus, 4,432,503, Cl. 242-47.000.
- Cross, Alan: See—
Carter, George B.; and Cross, Alan, 4,432,819, Cl. 149-45.000.
- Crossman, Richard L., to Goodyear Aerospace Corporation. Electrically actuated aircraft brakes. 4,432,440, Cl. 188-71.200.
- Cudmore, Patrick J. Hydrofoil sailing craft. 4,432,298, Cl. 114-39.000.
- Cunningham, Carole S.; Linser, Charles M.; Resnick, Brian J.; and Tarvin, Ronald L., to Cincinnati Milacron Inc. Apparatus for automatically adjusting the programmed location of a robot arm. 4,433,382, Cl. 364-474.000.
- Currer, John T., to Kearney & Trecker Corporation. Controllable tool feeding apparatus. 4,432,258, Cl. 82-1.200.
- Curtis, Bernard J.: See—
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- Cyclonaire Corporation: See—
Jacobson, Wayne M.; and Quaintance, Roger L., 4,432,676, Cl. 406-39.000.
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- Daboub, Henry A., to Bell & Howell Company. Electronic control system for monitoring and controlling the movement of an envelope through a mail sorting machine. 4,432,458, Cl. 209-564.000.
- Daenen, Robert H. C. M., to Dart Industries Inc. Picture frame arrangement. 4,432,152, Cl. 40-152.100.
- Daggett, Charles W., to Littelfuse, Inc. Clip-together interconnection bus clip for multiple fuse holder arrays. 4,432,594, Cl. 339-258.00F.
- D'Agnolo, Armando, to Officine Savio S.p.A. Device for conveying cops. 4,432,198, Cl. 57-276.000.
- Dahms, Francis A., to Emhart Industries, Inc. Glassware forming apparatus. 4,432,783, Cl. 65-239.000.
- Dai-ichi Kogyo Seiyaku Co., Ltd.: See—
Goto, Sumio; Doi, Takeshi; and Sato, Kazuo, 4,433,017, Cl. 528-45.000.
- Daido-Maruta Finishing Co., Ltd.: See—
Ishikawa, Norio; Murayama, Morio; and Nishijima, Yasumoto, 4,432,920, Cl. 264-49.000.
- Daido Metal Co. Ltd.: See—
Iijima, Yoshio, 4,432,122, Cl. 29-156.50A.
- Daimler-Benz Aktiengesellschaft: See—
Andres, Rudolf; and Ament, Eduard, 4,432,566, Cl. 280-807.000.
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Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,432,613, Cl. 350-358.000.
- Daiwa Can Company, Limited: See—
Morikawa, Yonekichi; Shimizu, Toshio; Yoshida, Eiichi; Kogaya, Tsuyoshi; and Hirayama, Keizo, 4,433,229, Cl. 219-84.000.
- D'Amico, John J., to Monsanto Company. N-Substituted-oxobenzothiazoline derivatives useful as plant growth regulants. 4,432,785, Cl. 71-90.000.
- Danfoss A/S: See—
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Hansen, Christian B.; and Flagstad, Carl O., 4,432,710, Cl. 418-61.00B.
- Kyster, Erik; and Thomsen, Svend E., 4,432,270, Cl. 91-436.000.
- Darbonne, Hubert: See—
Darbonne, Luc; and Darbonne, Hubert, 4,432,148, Cl. 34-58.000.
- Darbonne, Luc; and Darbonne, Hubert. Continuously operating hydro-extractor. 4,432,148, Cl. 34-58.000.
- D'Arcy, James A., to Dejon Corporation. Page manipulation apparatus in apparatus for automatically turning pages. 4,432,154, Cl. 40-531.000.
- Dart Industries Inc.: See—
Daenen, Robert H. C. M., 4,432,152, Cl. 40-152.100.
- Dasher, Preston B.: See—
Price, Elvin C.; and Dasher, Preston B., 4,432,294, Cl. 112-262.300.
- Datapoint Corporation: See—
Palm, Charles S., 4,433,298, Cl. 324-457.000.
- Dauber, Louis S.: See—
Swart, Gerrit S.; Dauber, Louis S.; and O'Connor, Richard P., 4,432,862, Cl. 208-64.000.
- Daumer, Rolf: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Theml, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
- Daussan, Andre: See—
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,432,396, Cl. 138-109.000.
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- David, Constant V. Human propelled buoyant annular float with removable pontoon stabilizer. 4,432,735, Cl. 440-21.000.
- David, Guy A. J., to U.S. Philips Corporation. Arrangement for reducing the noise in a speech signal mixed with noise. 4,433,435, Cl. 381-94.000.
- Davies, Robert B.; and Miller, Ira, to Motorola, Inc. Amplifier with independent quiescent output voltage control. 4,433,302, Cl. 330-257.000.

- Davis, Lewis B., Jr.; and Steber, Charles E., to General Electric Company. Modular catalytic combustion bed support system. 4,432,207, Cl. 60-723.000.
- Davis, Richard C., Jr. Indwelling urethral catheter. 4,432,757, Cl. 604-99.000.
- Davis, Samuel H. Retainer gland for mechanical joint pipe. 4,432,571, Cl. 285-283.000.
- Davis, William M., to William P. Poythress & Company. Method for dilating the smooth muscles of the upper urinary tract. 4,432,977, Cl. 424-248.500.
- Dawe, Garfield A., to Abbott Laboratories. Volumetric drop detector. 4,432,761, Cl. 604-253.000.
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- Day, Kenneth E.: See—
Jackson, Alan D.; and Day, Kenneth E., 4,432,389, Cl. 137-469.000.
- Dean, Frank J., Jr., to Tempmaster Corporation. Sound absorbing arrangement for air handling units. 4,432,434, Cl. 181-225.000.
- Dearborn Chemicals, Ltd.: See—
Greaves, Brian; and Ingham, Paul, 4,432,879, Cl. 210-699.000.
- DeArment, Donald K.: See—
Zekert, Gerhard C.; and DeArment, Donald K., 4,432,275, Cl. 99-625.000.
- de Bruin, Peter, to Cooperative Vereniging "Verenigde Bloemenveilingen Aalsmeer" (V.B.A.) W.A. Receptacle for cut flowers. 4,432,161, Cl. 47-41.00R.
- DeCandia, Giovanni: See—
Shelby, Billy L.; and DeCandia, Giovanni, 4,433,367, Cl. 362-370.000.
- Deere & Company: See—
Hutchison, Wayne R.; and Meylink, John G., 4,432,309, Cl. 123-41.660.
- DeFelsko Corporation: See—
Koch, Frank, 4,433,290, Cl. 324-230.000.
- De Gasperi, Mario M.; Racciu, Antonio; and Nari, Dario, to Tasco S.p.A. Method and apparatus for real time detection of faults in industrial objects. 4,433,385, Cl. 364-554.000.
- de Gracia, Maria R. Chemical reagent indicator for the in vitro diagnosis of pregnancy. 4,433,057, Cl. 436-65.000.
- DeGraw, Joseph I., Jr.; and Sirotak, Francis M. Process for preparing 10-deazaminopterins. 4,433,147, Cl. 544-260.000.
- DeHaan, Dennis A., to Procter & Gamble Company. The Web segmenting apparatus. 4,432,746, Cl. 493-359.000.
- De Haas, Franciscus C. M.: See—
Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., 4,432,738, Cl. 445-34.000.
- Deiner, Hans; and Sandner, Bernhard, to Ciba-Geigy Corporation. Process for finishing textiles with alkoxylated products, and compositions for this. 4,433,027, Cl. 428-260.000.
- de Jaeger, Bogena, to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel. Method and apparatus for detecting the training sequence for a self-adapting equalizer. 4,433,425, Cl. 375-113.000.
- Dejon Corporation: See—
D'Arcy, James A., 4,432,154, Cl. 40-531.000.
- Delbecq, Charles J.: See—
Susman, Sherman; Delbecq, Charles J.; Volin, Kenneth J.; and Boehm, Leah, 4,432,891, Cl. 252-518.000.
- De Leon, Joe R.; and Boak, Maritza G., to Coca Cola Company. Method for preventing separation in fruit juice-containing products. 4,433,000, Cl. 426-599.000.
- Dellmann, Winfried: See—
Schaefer, Nikolaus; Dellmann, Winfried; and Louis, Gerd, 4,432,958, Cl. 423-356.000.
- Delluc, Rene. Hydromechanical massaging device. 4,432,355, Cl. 128-56.000.
- Delphian Corporation: See—
Typpo, Pekka M., 4,432,224, Cl. 73-23.000.
- DeLuca, Raymond F., to Georgia-Pacific Corporation. Severing web plies in multiple roll material dispensers. 4,432,261, Cl. 83-37.000.
- De Marco, Giuliano; and Gemi, Roberto, to Ing. C. Olivetti & C., S.p.A. Device for recording and/or reading binary data on both faces of a flexible magnetic disk. 4,433,352, Cl. 360-105.000.
- Demers, Donald R.; and Allemand, Charly D., to Baird Corporation. Spectrometer. 4,432,644, Cl. 356-316.000.
- Dempster, Philip T. Method and apparatus for measuring gaseous oxygen. 4,432,226, Cl. 73-27.00A.
- Denmark, James; and Shilcock, John. Carriers for containers. 4,432,579, Cl. 294-87.200.
- Dennison Manufacturing Company: See—
Banks, William D.; Bond, Frank G.; and Naylor, Raymond L., 4,433,251, Cl. 307-246.000.
- Denzine, Allen F.; and Thurber, William E. F., Jr., to Resistive Materials Inc. Seal with teflon or rubber. 4,432,883, Cl. 252-12.000.
- DeReggi, Aime S.; and Harris, Gerald R., to United States of America. Health and Human Services. Acoustically transparent hydrophone probe. 4,433,400, Cl. 367-163.000.
- De Schepper, Achille; Coussement, Marc; and Van Peteghem, Antoine, to Metallurgie Hoboken-Overpelt. Process for separating germanium from an aqueous solution. 4,432,951, Cl. 423-89.000.
- De Schepper, Achille; Coussement, Marc; and Van Peteghem, Antoine, to Metallurgie Hoboken-Overpelt. Process for separating germanium from an aqueous solution by means of an alphahydroxyoxime. 4,432,952, Cl. 423-89.000.
- DeSoto, Inc.: See—
Gaske, Joseph E.; and Pennanen, Hannu K., 4,433,014, Cl. 427-380.000.
- Detting, Joseph C.: See—
Eleazar, Antonio E.; Heck, Ronald M.; Detting, Joseph C.; and Lui, Yiu-Kwan, 4,433,191, Cl. 585-671.000.
- Deutch, Keith B.: See—
Akers, Roy; Hartman, Charles R.; and Deutch, Keith B., 4,432,540, Cl. 271-8.00A.
- Deutsch Fastener Corp.: See—
Molina, Jorge W., 4,432,680, Cl. 411-103.000.
- Deutsch, James W., to University of California, The Regents of the. Membrane receptor assay. 4,433,058, Cl. 436-504.000.
- Deutsche Forschungs-und Versuchsanstalt fur Luft- und Raumfahrt E.V.: See—
Rodloff, Rudiger; and Bentlage, Hans, 4,432,646, Cl. 356-350.000.
Schmidt, Dieter; and Engler, Rolf, 4,432,237, Cl. 73-632.000.
- Devitt, Gerald J., to Revere Products Corporation. Fan powered roof venting method and apparatus. 4,432,273, Cl. 98-43.00C.
- Diamond Shamrock Corporation: See—
Kline, George A., 4,432,839, Cl. 204-12.000.
- Diazzi, Mauro. Process of molding and assembling a pair of handles of a plastic bag. 4,432,127, Cl. 29-436.000.
- Dickhuth, Eugene A., to Medtronic, Inc. Biomedical lead with ring electrode and method of making same. 4,432,377, Cl. 128-786.000.
- Didier Engineering GmbH: See—
Hackler, Erich; Flockenhaus, Claus; and Lommerzhelm, Werner, 4,433,066, Cl. 518-706.000.
- Didier-Werke AG: See—
Coordes, Heinz; and Oberbach, Manfred, 4,432,536, Cl. 266-280.000.
- Dierkes, Heribert: See—
Minning, Rudolf; and Dierkes, Heribert, 4,432,123, Cl. 29-157.00A.
- Diesel, Nelson P. Apparatus for affixing marker to fabric. 4,432,301, Cl. 118-315.000.
- Dietz, Henry G. Differential pressure switch with square diaphragm plate supported by the diaphragm. 4,433,219, Cl. 200-83.00R.
- Director-General of Agency of Industrial Science & Technology: See—
Hiratsani, Kazuhisa, 4,433,151, Cl. 546-178.000.
- Discovision Associates: See—
Golding, Scott M., 4,433,423, Cl. 375-30.000.
- Disselbeck, Dieter: See—
Brass, Holger; Braunisch, Herbert; Disselbeck, Dieter; and Golly, Helmut, 4,432,413, Cl. 165-133.000.
- Dittler Brothers, Inc.: See—
Bachman, Gilbert; and Heninger, Byrne, 4,432,153, Cl. 40-324.000.
- Dr. Johannes Heidenhain GmbH: See—
Miller, Walter, 4,433,373, Cl. 364-171.000.
- Dr. Karl Thomae GmbH: See—
Seliger, Hartmut; Rastl, Eva; and Swetly, Peter, 4,433,140, Cl. 536-27.000.
- Dr. Otto Suwelack NACHF. GmbH & Co.: See—
Reimerdes, Ernst H., 4,432,997, Cl. 426-7.000.
- Doi, Motomichi: See—
Nii, Katsutoshi; Okano, Kinpei; Doi, Motomichi; and Kitsuya, Minoru, 4,433,432, Cl. 378-193.000.
- Doi, Takeshi: See—
Goto, Sumio; Doi, Takeshi; and Sato, Kazuo, 4,433,017, Cl. 528-45.000.
- Doleschall, Gabor: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Dolikian, Arman V., to Motorola, Inc. Limiter with dynamic hysteresis. 4,433,256, Cl. 307-358.000.
- Dollhausen, Manfred: See—
Hombach, Rudolf; Reiff, Helmut; Wenzel, Wolfgang; and Dollhausen, Manfred, 4,433,095, Cl. 524-563.000.
- Dominguez, Richard J. G.: See—
Rice, Doris M.; and Dominguez, Richard J. G., 4,433,067, Cl. 521-51.000.
- DoMinh, Thap, to Eastman Kodak Company. Heat erasable photographic element and process comprising silver halide. 4,433,037, Cl. 430-19.000.
- Donaggio, Paolo: See—
Amesso, Claudio; and Donaggio, Paolo, 4,432,177, Cl. 52-309.170.
- Dorigo, Oddino, to Societa' Industriale Bagnolo S.I.B. S.r.l. Mesh-belt conveyor for industrial furnaces. 4,432,450, Cl. 198-832.000.
- Doryokuro Kakunenryo Kaihatsu, Jigyodan: See—
Onuki, Osamu; and Kirisawa, Toyohiko, 4,432,208, Cl. 62-55.500.
- Douglas, Jack. Cradle case. 4,432,521, Cl. 248-176.000.
- Dow Chemical Co., The: See—
Caines, Ronald S., 4,432,408, Cl. 165-1.000.
Evani, Syamalarao, 4,432,881, Cl. 252-8.50A.
Gilpin, Jo Ann, 4,433,155, Cl. 549-205.000.
Harper, Stephen M.; and Stultz, Jeffrey H., 4,432,913, Cl. 261-97.000.
Keith, Earl K., 4,432,936, Cl. 420-590.000.
McLeod, David M., 4,432,651, Cl. 366-336.000.
Page, Judith L.; Haight, Daniel H.; and Peters, James, 4,432,968, Cl. 424-81.000.
Pawloski, Chester E., 4,433,148, Cl. 544-322.000.
- Dow Corning Corporation: See—
Bokerman, Gary N.; and Langley, Neal R., 4,433,096, Cl. 524-783.000.

- Harper, Jack R., 4,433,069, Cl. 521-99.000.
 Dow, Robert L.: See—
 Kennedy, Katherine L.; Proctor, Paul W.; and Dow, Robert L., 4,432,816, Cl. 149-19.300.
 Dowty Mining Equipment Limited: See—
 Buckmaster, Adrian C., 4,432,673, Cl. 405-302.000.
 Doyle, Terrence W.: See—
 Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,433,158, Cl. 549-332.000.
 Draftex Development AG: See—
 Weimar, Erich, 4,432,166, Cl. 49-491.000.
 Dreher, Dieter: See—
 Bauer, Kurt H.; Osterwald, Hermann; Lehmann, Klaus; and Dreher, Dieter, 4,433,076, Cl. 523-342.000.
 Dresser Industries, Inc.: See—
 Moriarty, Keith A.; and Milligan, Lowell R., 4,432,143, Cl. 33-178.00F.
 Nezu, Kenjiro, 4,432,585, Cl. 303-10.000.
 Drozdov, Sergei S. Reversible periodic magnetic focusing system. 4,433,270, Cl. 315-5.350.
 Drucktenhengst, Rolf, to Carl Freudenberg, Firma. Cassette seal. 4,432,557, Cl. 277-153.000.
 Dueker, James E.; Foster, Ronald C.; and Whiteson, Bennett V., to United States of America, Air Force. Radiation protection louver. 4,432,609, Cl. 350-266.000.
 Duffner, Erich, to Gebrüder Junghans GmbH. Projectile fuse responsive to the spinning motion of a projectile. 4,432,283, Cl. 102-244.000.
 Duhamel, Dean C. Home security and garage door operator system. 4,433,274, Cl. 318-283.000.
 Dulux Australia Ltd.: See—
 Braun, Willy, 4,432,837, Cl. 203-37.000.
 Dumaitre, Bernard; Perrin, Claude; Cornu, Pierre-Jean; and Streichenberger, Gilles, to Bouchard, Emile. Anti-hypertensive benzodioxan derivatives. 4,432,984, Cl. 424-267.000.
 Dunkleman, John J.: See—
 Euker, Charles A., Jr.; Wesselhoft, Robert D.; Dunkleman, John J.; Aquino, Dolores C.; and Gouker, Toby R., 4,432,773, Cl. 48-197.00R.
 Dunlop Sports Company, div. Dunlop Tire and Rubber Corp.: See—
 Byars, Larry W., 4,432,550, Cl. 273-169.000.
 Dunn, Charles S., to Owens-Corning Fiberglass Corporation. Method and apparatus for determining the level of slag containing iron or iron compounds in a glass melting furnace. 4,433,420, Cl. 373-39.000.
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 Haber, Stephen B., 4,432,974, Cl. 424-184.000.
 McLain, Stephen J.; and Waller, Francis J., 4,432,904, Cl. 260-330.600.
 Reynolds, Stuart; and Fournier, Louis B., 4,432,882, Cl. 252-8.55R.
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 Bic, Jean-Claude; Brossard, Pierre C.; and Dupont, Daniel, 4,433,310, Cl. 332-9.00R.
 Dupre, Armand, to Societe Dupre. Safety hook or elastic fastening and securing cables of the sandow type. 4,432,121, Cl. 24-343.000.
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 Wiacek, Marian, 4,433,035, Cl. 429-27.000.
 Duraline Products Corporation: See—
 Baldyga, Joseph W., 4,432,664, Cl. 405-3.000.
 Duriron Company, Inc.: See—
 Helfferich, Richard L.; and Shook, William B., 4,432,798, Cl. 106-38.300.
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 Dykes, Norman L.: See—
 Taylor, Albert J.; and Dykes, Norman L., 4,432,821, Cl. 156-89.000.
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 Puhlinger, Josef A., 4,433,013, Cl. 427-337.000.
 Dzyck, Wolfgang; Hoppe, Bernd; Loczenski, Martin; Vogelsberg, Dieter; and Wolf, Fred, to Siemens Aktiengesellschaft. Machine for SZ-twisting by means of a twisting disc and a tubular accumulator. 4,432,199, Cl. 57-294.000.
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 Besemann, Alfred; and Rehwald, Willi, 4,432,262, Cl. 83-311.000.
 E. R. Squibb & Sons, Inc.: See—
 Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,432,971, Cl. 424-177.000.
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 East, Don G.: See—
 Taber, Louis; and East, Don G., 4,433,424, Cl. 375-106.000.
 Eastman Kodak Company: See—
 DoMinh, Thap, 4,433,037, Cl. 430-19.000.
 Hartman, Susan E.; Allen, Michael E.; and Pascoe, William E., 4,433,130, Cl. 528-173.000.
 Harvey, Douglass C., 4,432,625, Cl. 354-275.000.
 Silverman, Robert A.; and Hoyer, Harry A., 4,433,047, Cl. 430-409.000.
 Solberg, John C.; Piggins, Roger H.; and Wilgus, Herbert S., 4,433,048, Cl. 430-434.000.
 Eaton Corporation: See—
 Caputi, William J., Jr., 4,433,334, Cl. 343-450.000.
 Russell, John D., 4,432,431, Cl. 180-248.000.
 Ebauches, Electroniques, S.A.: See—
 Leuthold, Oskar, 4,433,371, Cl. 363-127.000.
 Ebeling, Harold O.: See—
 Honerkamp, Joseph D.; and Ebeling, Harold O., 4,432,779, Cl. 55-233.000.
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 Eble, Monika; and Lang, Gustav, to Hilti Aktiengesellschaft. Device for discharging a plural-component material. 4,432,469, Cl. 222-134.000.
 EBSCO Industries, Inc.: See—
 Gowing, James R., 4,432,156, Cl. 43-42.310.
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 Eckler, Thomas A.: See—
 Manty, Brian A.; Eckler, Thomas A.; and Fujishiro, Shiro, 4,433,005, Cl. 427-38.000.
 Edwards, David J.: See—
 Boyars, Carl; and Edwards, David J., 4,432,285, Cl. 109-49.500.
 Eian, Gilbert L., to Minnesota Mining and Manufacturing Company. Reduced-stress vapor-sorptive garments. 4,433,024, Cl. 428-198.000.
 Eichler, Volker; and Trinks, Hilmar, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Control system for sheet-fed multi-color rotary printing machines. 4,432,280, Cl. 101-230.000.
 Eichrodt, Dieter; and Elsen, Friedhelm, to Siemens Aktiengesellschaft. Integrated logic MOS counter circuit. 4,433,372, Cl. 377-116.000.
 Eide, Olav A.: See—
 Andreassen, Knut A.; Eide, Olav A.; and Beyer, Gerhard, 4,432,859, Cl. 204-296.000.
 Eilerman, Robert G.: See—
 Willis, Brian J.; and Eilerman, Robert G., 4,432,378, Cl. 131-277.000.
 Eisai Co., Ltd.: See—
 Hamamura, Kimio; Akasaka, Kozo; and Yamagishi, Youji, 4,433,159, Cl. 549-411.000.
 Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
 Eisenmann, Siegfried. Hydrostatic gear ring machine. 4,432,712, Cl. 418-171.000.
 Ejiri, Yoshihiro: See—
 Niino, Yasuhiko; and Ejiri, Yoshihiro, 4,432,605, Cl. 350-96.230.
 Eldridge, Charles W., to Paxall, Inc. Trailing edge folder. 4,432,745, Cl. 493-10.000.
 Eleazar, Antonio E.; Heck, Ronald M.; Dettling, Joseph C.; and Lui, Yiu-Kwan, to Engelhard Corporation. Skeletal isomerization of n-alkenes. 4,433,191, Cl. 585-671.000.
 Electric Power Research Institute, Inc.: See—
 Hooper, George D., 4,432,411, Cl. 165-47.000.
 Lockett, John L., 4,432,931, Cl. 376-248.000.
 Ellerstorfer, Herbert. Birdhouse. 4,432,303, Cl. 119-17.000.
 Elliott, Henry H., to General Electric Company. Ion exchange recovery of uranium. 4,432,944, Cl. 423-7.000.
 Elscint, Inc.: See—
 Barnea, Daniel I., 4,433,427, Cl. 378-146.000.
 Elsen, Friedhelm: See—
 Eichrodt, Dieter; and Elsen, Friedhelm, 4,433,372, Cl. 377-116.000.
 Elsner, Bertram F.; and Molison, Robert E., to Elsner Engineering Works, Inc. Roll-wrapping apparatus and method. 4,432,187, Cl. 53-137.000.
 Elsner Engineering Works, Inc.: See—
 Elsner, Bertram F.; and Molison, Robert E., 4,432,187, Cl. 53-137.000.
 Emerson Electric Co.: See—
 Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., 4,433,233, Cl. 219-553.000.
 Kunz, Bernard L., 4,432,492, Cl. 236-92.00B.
 Emery Industries, Inc.: See—
 Zilch, Karl T., 4,433,002, Cl. 426-640.000.
 Emery, Jared M.; and Lam, Dominic M., to Baylor College of Medicine. Monoclonal antibodies against lens epithelial cells and preventing proliferation of remnant lens epithelial cells after extracapsular extraction. 4,432,751, Cl. 604-49.000.
 Emhart Industries, Inc.: See—
 Dahms, Francis A., 4,432,783, Cl. 65-239.000.
 Marcinek, John A., 4,432,530, Cl. 249-142.000.
 Emmerich, Claude L.: See—
 Siff, Elliott J.; and Emmerich, Claude L., 4,432,468, Cl. 222-55.000.
 Emshoff, Horst W.; and Kusebauch, Walter, to Siemens Aktiengesellschaft. Cooling arrangement and method of operating the same. 4,432,878, Cl. 210-662.000.
 Endo, Kiyoshi: See—
 Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,433,127, Cl. 528-17.000.
 Endress u. Hauser GmbH u. Co.: See—
 Luder, Ernst; and Kallfass, Traugott, 4,433,319, Cl. 338-34.000.
 Energy Innovations, Inc.: See—
 Gouridine, Meredith C., 4,433,003, Cl. 427-27.000.

- Engel, Dusan J.: See—
 Symon, Ted; and Engel, Dusan J., 4,433,194, Cl. 585-803.000.
 Engelhard Corporation: See—
 Eleazar, Antonio E.; Heck, Ronald M.; Dettling, Joseph C.; and Lui, Yiu-Kwan, 4,433,191, Cl. 585-671.000.
 Engenhardt, Reinhold: See—
 Arendt, Gerhard; Benz, Roland; Engenhardt, Reinhold; and Schmidt, Viktor, 4,432,501, Cl. 242-47.000.
 Engle, Gary L., to General Electric Company. Automatic noise rejection for use in scanner and the like. 4,433,304, Cl. 330-281.000.
 Engler, Rolf: See—
 Schmidt, Dieter; and Engler, Rolf, 4,432,237, Cl. 73-632.000.
 Enmoto, Kazuhiro: See—
 Hinoda, Yuji; and Enmoto, Kazuhiro, 4,432,844, Cl. 204-54.00R.
 Envirosol Systems International, Ltd.: See—
 Vasishth, Ramesh C.; and Wang, Robert S., 4,432,797, Cl. 106-34.000.
 Eppley, William J.: See—
 Horning, Robert J.; and Eppley, William J., 4,433,036, Cl. 429-114.000.
 Equitz, Russell E., Jr.; and Strong, Bruce K. Phonograph record holding device. 4,432,577, Cl. 294-16.000.
 Erad Inc.: See—
 Sullivan, Peter J., 4,432,308, Cl. 123-1.00A.
 Erdmann, Francis M.: See—
 Jones, Addison B.; and Erdmann, Francis M., 4,432,134, Cl. 29-578.000.
 Erickson, Edward H., to Riker Laboratories, Inc. Tetrazoles bonded to certain polycyclic aromatic systems and anti-allergic use thereof. 4,432,986, Cl. 424-269.000.
 Essery, John M.: See—
 Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,433,158, Cl. 549-332.000.
 Este, Grantley O., to Northern Telecom Limited. Surface relief measuring equipment. 4,433,386, Cl. 364-563.000.
 Estel-Hoesch Werke Aktiengesellschaft: See—
 Hoffmann, Ernst H.; and Arendt, Hans F., 4,432,111, Cl. 8-158.000.
 Estep, Timothy N., to Baxter Travenol Laboratories, Inc. Additive sterol solution and method for preserving normal red cell morphology in whole blood during storage. 4,432,750, Cl. 604-4.000.
 Ethicon, Inc.: See—
 Shalaby, Shalaby W.; Schipper, Edgar S.; and Koelmel, Donald F., 4,433,161, Cl. 560-66.000.
 Euker, Charles A., Jr.; Wesselhoft, Robert D.; Dunkleman, John J.; Aquino, Dolores C.; and Gouker, Toby R. Fluidized bed catalytic coal gasification process. 4,432,773, Cl. 48-197.00R.
 Eustis, Augustus W.: See—
 Eustis, Mary S.; and Eustis, Augustus W., 4,433,377, Cl. 364-200.000.
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 Evani, Syamalalao, to Dow Chemical Company, The. Water-dispersible hydrophobic thickening agent. 4,432,881, Cl. 252-8.50A.
 Evans, Alyce D.; and Hilty, John R., to Testco, Inc. Combustion air bubble chamber method. 4,432,721, Cl. 431-4.000.
 Exner, Reinhard: See—
 Starke, Joachim; Jakubik, Adolf; Girodi, Erich; Strudinger, Manfred; and Exner, Reinhard, 4,432,772, Cl. 48-66.000.
 Exxon Production Research Co.: See—
 Gregory, Edward W.; and Baer, Gregory G., 4,432,420, Cl. 166-355.000.
 Exxon Research and Engineering Co.: See—
 Swart, Gerrit S.; Dauber, Louis S.; and O'Connor, Richard P., 4,432,862, Cl. 208-64.000.
 West, Theodore H.; and Thompson, John A., 4,432,866, Cl. 208-321.000.
 Facom: See—
 Caroff, Yves, 4,432,145, Cl. 33-288.000.
 Fairchild Camera and Instrument Corporation: See—
 Carey, Maurice E., 4,433,414, Cl. 371-27.000.
 Falco, Lucien, to Cableoptic S.A. Method and apparatus for coupling at least two optical fibers by means of a holographic lens. 4,432,600, Cl. 350-96.180.
 Falleroni, Charlene A.: See—
 Neely, James E., Jr.; Lin, Chia-Cheng; Olson, Dean R.; Jacobson, Annette M.; and Falleroni, Charlene A., 4,433,016, Cl. 428-34.000.
 Fantone, Stephen D., to Polaroid Corporation. Method of forming contoured optical layers on glass elements. 4,432,832, Cl. 156-630.000.
 Fantone, Stephen D., to Polaroid Corporation. Method and apparatus for verifying security labels. 4,433,437, Cl. 382-31.000.
 Farris, Charles L.: See—
 Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,432,730, Cl. 433-168.000.
 Farris, John R.; and Tucci, Allan T., to McDonnell Douglas Corporation. Resin impregnation ring. 4,432,302, Cl. 118-410.000.
 Fasang, Patrick P., to Siemens Corporation. Built-in apparatus and method for testing a microprocessor system. 4,433,413, Cl. 371-25.000.
 Fattaleh, John B. Personal health care device. 4,432,729, Cl. 433-118.000.
 Faul, Wolfgang; and Kastening, Bertel, to Kernforschungsanlage Julich GmbH. Apparatus for oxidation or reduction process in water solution with electrochemically active catalyst on a porous carrier. 4,432,872, Cl. 210-205.000.
 Featsent, Wendell P., to General Motors Corporation. Method of terminating a light conductive ribbon. 4,432,129, Cl. 29-447.000.
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 Ostrowski, Carl L.; and White, Bertram, 4,433,210, Cl. 381-53.000.
 Fehler, Henry P. Joinder for compacting and smoothing mortar joints of masonry walls. 4,432,115, Cl. 15-105.500.
 Fehner, Francis P.; and Wein, William J., to Corning Glass Works. Method and apparatus for producing mica film. 4,432,852, Cl. 204-181.00F.
 Fehr, Charles; and Chloff, Gunther, to Firmenich SA. Process for the preparation of (+)-p-mentha-2,8-dien-1-ol. 4,433,183, Cl. 568-829.000.
 Feikema, Roger H.; and Bakker, Harry J. Tricycle recumbent. 4,432,561, Cl. 280-281.01P.
 Feldkammer, Richard, to Windmoller & Holscher. Apparatus for placing packets of tube sections in the stacking magazine of a rotary applicator. 4,432,686, Cl. 414-77.000.
 Fellas, Christakis N., to British Aerospace Public Limited Company. Solar power arrays for spacecraft. 4,433,201, Cl. 136-251.000.
 Feller, Terry L. Adjustable neck-body joint for guitar-like instrument. 4,432,267, Cl. 84-293.000.
 Felten & Guillaume Carlsberg Aktiengesellschaft: See—
 Schmitz, H.-Joachim; Braun, Dieter; Trodler, Dieter; and Cramer, Hugo, 4,432,196, Cl. 57-204.000.
 Fenn, John W.: See—
 Boutros, Kamal S.; and Fenn, John W., 4,432,592, Cl. 339-103.00M.
 Fenton, Donald M.: See—
 Gowdy, Hugh W.; and Fenton, Donald M., 4,432,962, Cl. 423-573.00R.
 Ferag AG: See—
 Stauber, Hans-Ulrich, 4,432,685, Cl. 414-31.000.
 Ferris, Michael J., to Beecham Group Limited. Method of treating obesity hyperglycemia, inflammation and platelet aggregation. 4,432,993, Cl. 424-285.000.
 Fesman, Gerald, to Stauffer Chemical Company. Flame and dripping ember retardant flexible polyurethane foams. 4,433,071, Cl. 521-107.000.
 Fetter, Jozsef: See—
 Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
 Fiat Auto S.p.A.: See—
 Tronville, Pier G., 4,432,564, Cl. 280-689.000.
 Fields, Ellis K., to Standard Oil Company (Indiana). Poly sulfoxides from 1,3,4-thiadiazole-2,5-dithiol. 4,432,847, Cl. 204-158.00R.
 Findeisen, Kurt, to Bayer Aktiengesellschaft. Preparation of pivaloyl cyanide. 4,432,910, Cl. 260-545.00R.
 Finegold, Aaron N. Urethral anesthetic devices. 4,432,758, Cl. 604-104.000.
 Fineo, Carlo: See—
 Withers, L. Andrew, Jr.; Withers, William D.; and Fineo, Carlo, 4,432,526, Cl. 248-542.000.
 Finkenzeller, Johann; and Reinhardt, Juergen, to Siemens Aktiengesellschaft. Diagnostic X-ray installation for radiography and fluoroscopy. 4,433,429, Cl. 378-99.000.
 Firing Circuits, Inc.: See—
 Windebank, Robert W., 4,433,294, Cl. 324-426.000.
 Firmenich SA: See—
 Fehr, Charles; and Chloff, Gunther, 4,433,183, Cl. 568-829.000.
 Fischer, Helmut; Schafer, Jurgen; and Thomas, Gunter, to Original Hanau Heraeus GmbH. Cooled discharge lamp having a fluid cooled diaphragm structure. 4,433,265, Cl. 313-22.000.
 Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Sheet feeding system for printing machines. 4,432,539, Cl. 271-3.100.
 Fischer, Joel E.: See—
 Milonis, Jerry P.; and Fischer, Joel E., 4,432,787, Cl. 71-94.000.
 Fischer, Victor H., to Thermal Systems Limited. Rotary external combustion engine. 4,432,203, Cl. 60-511.000.
 Fisher, Ernest P.: See—
 Welch, William R.; Fisher, Ernest P.; and Yonker, John H., 4,432,416, Cl. 166-117.500.
 Fisons plc: See—
 Robinson, David, 4,432,990, Cl. 424-273.00R.
 Fixel, Irving E. Compression hip screw apparatus. 4,432,358, Cl. 128-92.00B.
 Flagstad, Carl O.: See—
 Hansen, Christian B.; and Flagstad, Carl O., 4,432,710, Cl. 418-61.00B.
 Flanagan, Joseph E.: See—
 Witucki, Edward F.; and Flanagan, Joseph E., 4,432,814, Cl. 149-19.100.
 Fleming, James S., Jr.; and Buyniski, Joseph P., to Bristol-Myers Company. Pharmaceutical compositions. 4,432,980, Cl. 424-251.000.
 Flockenhaus, Claus: See—
 Hackler, Erich; Flockenhaus, Claus; and Lommerzhelm, Werner, 4,433,066, Cl. 518-706.000.
 FMC Corporation: See—
 Orlando, Franklin P., 4,432,190, Cl. 56-1.000.
 Plummer, Ernest L., 4,433,182, Cl. 568-808.000.
 Focus Environmental Systems: See—
 Bennington, James E.; Bennington, Gerald E.; Bernardin, Frederick E., Jr.; Patterson, Donald J.; and Weber, Walter J., Jr., 4,432,344, Cl. 126-438.000.

- Fohlen, George M.: See—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,433,115, Cl. 525-417.000.
- Follows, James S., to Vanguard Plastics Ltd. Cabinet shelf support bracket. 4,432,523, Cl. 248-250.000.
- Folser, Karl: See—
Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischig, Wilfried, 4,432,284, Cl. 104-7.00R.
- Foot, Daniel J. Portal guard. 4,432,162, Cl. 49-55.000.
- Forgach, Lilla: See—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Zajer nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Formosa Plastics Corporation: See—
Liau, Shung-Chung; Cheng, Wei-Min; and Young, Uen-Long, 4,432,840, Cl. 204-14.00N.
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- Forster, Karl-Heinz, to VEB Kombinat Polygraph "Werner Lamberz". Control system for printing machines. 4,433,426, Cl. 377-2.000.
- Foster, Ronald C.: See—
Dueker, James E.; Foster, Ronald C.; and Whiteson, Bennett V., 4,432,609, Cl. 350-266.000.
- Fournier, Louis B.: See—
Raynolds, Stuart; and Fournier, Louis B., 4,432,882, Cl. 252-8.55R.
- Fraioli, Joseph. Gas-fired infrared projection heater. 4,432,727, Cl. 432-227.000.
- Francis, Samuel: See—
Sherman, Benjamin F., Jr.; and Francis, Samuel, 4,432,120, Cl. 24-299.000.
- Frankel, Milton B.; and Witucki, Edward F., to United States of America, Air Force. Azido fluorodinitro amines. 4,432,815, Cl. 149-19.300.
- Frankel, Milton B.; and Witucki, Edward F., to United States of America, Air Force. Propellant containing an azidonitrocarbamate plasticizer. 4,432,817, Cl. 149-19.500.
- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—
Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischig, Wilfried, 4,432,284, Cl. 104-7.00R.
- Fraser, Bruce A.; and Holt, Curtis, Jr., to Carrier Corporation. Refrigeration compressor capacity control means and method. 4,432,705, Cl. 417-295.000.
- Frebault, Jean Claude, to Thomson-CSF. Arrangement of a polychrome cathode-ray tube for operation with a reserved electron gun. 4,433,292, Cl. 324-404.000.
- Fredzell, Georg, to Siemens Aktiengesellschaft. Apparatus for the areal recording of x-ray images. 4,433,430, Cl. 378-108.000.
- Freitag, Dieter: See—
Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Neuner, Otto, 4,433,138, Cl. 528-388.000.
- French State, The: See—
Melchior, Jean F.; and Andre, Thierry M., 4,432,206, Cl. 60-606.000.
- Frenzel, Bernd. Chemiluminescent immunoassays with triphenylmethane dyes activated by H₂O₂ and a chloramine. 4,433,060, Cl. 436-518.000.
- Frey, Robert: See—
Bachmann, Hans; and Frey, Robert, 4,432,399, Cl. 139-370.200.
- Frey, Rudolf; and Litschke, Peer-Ingo, to VFI, Verwertungsgesellschaft fur Industriestruktur mbH. Process for the storage and dumping of waste materials. 4,432,666, Cl. 405-129.000.
- Fried, Krupp Gesellschaft mit beschränkter Haftung: See—
Arens, Egidius; and Patel, Ravin, 4,433,397, Cl. 367-122.000.
- Friedmann & Maier Aktiengesellschaft: See—
Brasseur, Georg; Lehner, Gerhard; Herzog, Peter; Rathmayr, Heinz; and Stipek, Theodor, 4,432,320, Cl. 123-357.000.
- Fritzche, Dodge & Olcott, Inc.: See—
Willis, Brian J.; and Eilerman, Robert G., 4,432,378, Cl. 131-277.000.
- Frungel, Frank. Forward-scatter visibility meter. 4,432,645, Cl. 356-338.000.
- Fuchizawa, Tetsuro: See—
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,433,030, Cl. 428-476.900.
- Fuji Electric Company, Ltd.: See—
Ohmori, Tsuguharu; and Ueno, Sadaumi, 4,432,535, Cl. 266-239.000.
- Tanaka, Akio, 4,432,447, Cl. 194-100.00A.
- Watanabe, Atsuo; Kaneko, Teruo; Tanaka, Takeo; and Saito, Yoshio, 4,432,939, Cl. 422-93.000.
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Ishige, Sadao; Sato, Kozo; and Iwakura, Ken, 4,433,156, Cl. 549-227.000.
- Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,432,854, Cl. 204-206.000.
- Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,433,030, Cl. 428-476.900.
- Fuji Photo Optical Co., Ltd.: See—
Oshiro, Susumu, 4,432,349, Cl. 128-4.000.
- Fujii, Yozo: See—
Nosaka, Isao; Sakaguchi, Hirofumi; Shiozawa, Takao; and Fujii, Yozo, 4,432,633, Cl. 355-8.000.
- Fujinami, Shosaku: See—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,432,290, Cl. 110-346.000.
- Fujirebio Kabushiki Kaisha: See—
Sugiyama, Masami; Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,432,896, Cl. 260-112.50R.
- Fujisash Company: See—
Hinoda, Yuji; and Enmoto, Kazuhiro, 4,432,844, Cl. 204-54.00R.
- Fujishiro, Shiro: See—
Manty, Brian A.; Eckler, Thomas A.; and Fujishiro, Shiro, 4,433,005, Cl. 427-38.000.
- Fujita, Yoshiji: See—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Yutaka; Ishiguro, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,433,160, Cl. 560-56.000.
- Fujitsu Fanuc Ltd.: See—
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,433,275, Cl. 318-578.000.
- Fujitsu Limited: See—
Furuya, Toshikazu, 4,432,133, Cl. 29-571.000.
- Honda, Hideo; Tsuchiya, Chikara; Sano, Yoshiaki; Hanazawa, Toshio; and Handa, Harumi, 4,433,306, Cl. 330-297.000.
- Oritani, Atsushi, 4,433,393, Cl. 365-203.000.
- Fujiwara, Shinji: See—
Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaiku, Hiroumi; and Yazawa, Toshinari, 4,432,851, Cl. 204-181.00R.
- Fukudome, Hiroshi: See—
Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaiku, Hiroumi; and Yazawa, Toshinari, 4,432,851, Cl. 204-181.00R.
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Baba, Kazuo; Kawamata, Shyozo; Fukui, Yoshiharu; Ima, Seichiro; and Miyatake, Tatsuya, 4,433,110, Cl. 525-323.000.
- Fukushima, Yoshio: See—
Kawashima, Ikue; Fukushima, Yoshio; Murano, Tamio; and Suzuki, Toshitatsu, 4,432,622, Cl. 354-408.000.
- Fukuyo, Hiroshi: See—
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,432,788, Cl. 75-3.000.
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Kamiya, Kunio; Motojima, Kenji; Funabashi, Kiyomi; Chino, Koichi; and Horiuchi, Susumu, 4,432,894, Cl. 252-632.000.
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- Funaki, Shinsuke: See—
Akanabe, Yuichi; Ikeda, Hiroaki; Maeda, Masatoshi; and Funaki, Shinsuke, 4,432,598, Cl. 350-6.700.
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Kobayashi, Noriyuki; and Funamoto, Akihiko, 4,433,079, Cl. 523-404.000.
- Funato, Masatomi: See—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,433,039, Cl. 430-58.000.
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- Furstenwerth, Hauke, to Bayer Aktiengesellschaft. Cationic thiadiazolyl triazine dyestuffs. 4,432,897, Cl. 260-140.000.
- Furukawa Electric Co., Ltd., The: See—
Shirasaka, Yusei; Fuse, Kenichi; and Umezu, Haruo, 4,432,807, Cl. 134-2.000.
- Furuno, Hiroshi: See—
Munekata, Katsusuke; Furuno, Hiroshi; and Someno, Noboru, 4,432,652, Cl. 368-69.000.
- Furusawa, Sadaoyoshi: See—
Kawakami, Heijiro; Furusawa, Sadaoyoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123.00R.
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Yamawaki, Maokuni; Suzuki, Shozo; and Furuta, Tadaaki, 4,432,871, Cl. 210-195.100.
- Furuta, Yukio: See—
Iyehara, Sadahiro; Kawashima, Kazumi; Ueda, Minoru; Yamamoto, Keisuke; Hosokawa, Tatsuhiko; and Furuta, Yukio, 4,433,395, Cl. 365-222.000.
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Oishi, Tetsu; Oda, Makoto; and Futaki, Hisao, 4,432,211, Cl. 62-155.000.
- Future Tech, Inc.: See—
Howe, Gary L.; and Koutavas, Samuel G., 4,432,341, Cl. 126-417.000.
- G & L Manufacturing & Develop. Corp.: See—
Lamm, George L., 4,432,472, Cl. 222-174.000.
- G. Siempelkamp GmbH & Co.: See—
Siempelkamp, Dieter; and Gotz, Wolfgang, 4,432,828, Cl. 156-285.000.
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- Gagliani, John: See—
Long, John V.; and Gagliani, John, 4,433,068, Cl. 521-54.000.
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Shell, John W.; and Gale, Robert M., 4,432,964, Cl. 424-14.000.

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- Gane, Timothy L.: See—
Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., 4,433,141, Cl. 544-25.000.
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Weill, Jerome; Garapon, Jacques; and Sillion, Bernard, 4,433,157, Cl. 549-255.000.
- Garlinghouse, Roland E. Closed pressure actuated system for placement bucket. 4,432,578, Cl. 294-69.00R.
- Garner, Mark D.: See—
Clark, William D.; Garner, Mark D.; Rhodes, John H., Jr.; and Wilzbach, Bernard L., 4,432,541, Cl. 271-251.000.
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- Garrick, John R.: See—
Forry, John S.; and Garrick, John R., 4,432,714, Cl. 425-83.100.
- Garvey, Louis P.; and Maye, Robert A., to General Motors Corporation. Lock striker anchor plate assembly. 4,432,575, Cl. 292-341.180.
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- Gaudiana, Russell A.: See—
Rogers, Howard G.; Gaudiana, Russell A.; and Minns, Richard A., 4,433,132, Cl. 528-191.000.
- Gay, Charles F.: See—
Jester, Theresa L.; Yerkes, John W.; Gay, Charles F.; and Bottenberg, William R., 4,433,200, Cl. 136-251.000.
- Gebhard Balluff Fabrik Feinmechanischer: See—
Hermle, Rolf; Kammerer, Heinz; and Langheinrich, Hans, 4,433,309, Cl. 331-65.000.
- Gebroder Jungmans GmbH: See—
Duffner, Erich, 4,432,283, Cl. 102-244.000.
- Gee, Howard J.: See—
Tighe, Brian J.; and Gee, Howard J., 4,433,111, Cl. 525-326.200.
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- Geiger, William J.: See—
Moriarty, Thomas C.; and Geiger, William J., 4,432,850, Cl. 204-181.000.
- Geisinger, Wolfgang. Pallet wrapper. 4,432,185, Cl. 53-138.00R.
- Gemi, Roberto: See—
De Marco, Giuliano; and Gemi, Roberto, 4,433,352, Cl. 360-105.000.
- General Electric Company: See—
Balchunas, Charles A., 4,433,231, Cl. 219-253.000.
- Bolon, Donald A.; and Gorczyca, Thomas B., 4,433,131, Cl. 528-185.000.
- Davis, Lewis B., Jr.; and Steber, Charles E., 4,432,207, Cl. 60-723.000.
- Elliott, Henry H., 4,432,944, Cl. 423-7.000.
- Engle, Gary L., 4,433,304, Cl. 330-281.000.
- Gallivan, Timothy J., 4,432,915, Cl. 264-0.500.
- Giles, Harold F., Jr., 4,433,104, Cl. 525-180.000.
- Greenlee, Paul W., 4,432,135, Cl. 29-598.000.
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- Haaf, William R.; Huebner, James A.; and Katchman, Arthur, 4,433,088, Cl. 524-153.000.
- Howell, Edward K., 4,433,326, Cl. 340-310.00A.
- Roberts, Gerald E.; and Staples, Alfred G., 4,433,316, Cl. 333-189.000.
- Schneider, Harold N.; Simpson, James H.; and Weidman, Raymond F., 4,433,221, Cl. 200-144.00A.
- Vandegraaf, Johannes J., 4,433,315, Cl. 333-174.000.
- Wilkinson, Stanley B., 4,433,353, Cl. 361-80.000.
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Cowles, Dean S., 4,433,225, Cl. 200-340.000.
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Borman, August H.; and Perlick, Mark A., 4,432,255, Cl. 74-869.000.
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- Featsent, Wendell P., 4,432,129, Cl. 29-447.000.
- Garvey, Louis P.; and Maye, Robert A., 4,432,575, Cl. 292-341.180.
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- Klomp, Edward D.; and Stevens, David A., 4,432,312, Cl. 123-188.00A.
- Lindgren, Timothy F., 4,433,280, Cl. 322-89.000.
- Longhouse, Richard E.; Cornwell, William D., Jr.; and Buchanan, Harry C., Jr., 4,433,263, Cl. 310-233.000.
- Widdowson, Richard E., 4,433,321, Cl. 338-42.000.
- Wize, Gary A., 4,432,524, Cl. 248-395.000.
- General Supply (Construction) Co., Ltd.: See—
Pelekis, Emmanouil A., 4,432,314, Cl. 123-238.000.
- Gentex Corporation: See—
Grick, Shelly J.; and Beautz, Joseph A., 4,432,099, Cl. 2-412.000.
- Georg Fischer Aktiengesellschaft: See—
Thalman, Alfred, 4,432,572, Cl. 285-412.000.
- George, Raymond A.: See—
Gjertsen, Robert K.; Wilson, John F.; and George, Raymond A., 4,432,934, Cl. 376-333.000.
- Georgetown University: See—
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhle, John, III; and Nolan, Thomas A., Jr., 4,433,286, Cl. 324-61.00R.
- Georgia-Pacific Corporation: See—
DeLuca, Raymond F., 4,432,261, Cl. 83-37.000.
- Gersbach, John E., to International Business Machines Corporation. Band gap regulator circuit. 4,433,283, Cl. 323-314.000.
- Gesellschaft fur Biotechnologische Forschung: See—
Haars, Annegret; and Huttermann, Aloys, 4,432,921, Cl. 264-109.000.
- Geshner, Robert A.: See—
Caprari, Fausto; and Geshner, Robert A., 4,432,641, Cl. 356-237.000.
- Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., to Gulf South Research Institute. Soft and firm denture liner for a composite denture and method for fabricating. 4,432,730, Cl. 433-168.000.
- Gewerkschaft Eisenhütte Westfalen: See—
Stuckmann, Dieter; and Heitkamp, Herbert, 4,432,665, Cl. 405-143.000.
- Ghim, Duk K. Molten material dispensing apparatus. 4,432,715, Cl. 425-87.000.
- Gibby, William H., Jr., to Occidental Chemical Corporation. Blends of vinyl halide-polyolefin graft copolymers and ABS polymers. 4,433,101, Cl. 525-70.000.
- Gilad, Gad; Gilad, Varda; and Wilchek, Meir, to Yeda Research and Development Co., Ltd. Derivatives of α -difluoromethylornithine useful in analysis. 4,433,051, Cl. 435-7.000.
- Gilad, Varda: See—
Gilad, Gad; Gilad, Varda; and Wilchek, Meir, 4,433,051, Cl. 435-7.000.
- Gilbertson, Thomas A. Oil well pump driving unit. 4,432,706, Cl. 417-399.000.
- Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shuter, Stephen W.; and Willis, Robert J., to Boots Company, The. Pesticide compounds, compositions and methods. 4,432,994, Cl. 424-300.000.
- Giles, Harold F., Jr., to General Electric Company. Polyetherimide-fluorinated polyolefin blends. 4,433,104, Cl. 525-180.000.
- Gilian Instrument Corporation: See—
Lalin, Hill S., 4,432,248, Cl. 73-863.030.
- Gilleo, Margaret P., executrix: See—
Gualtieri, Devlin M.; Tumelty, Paul F.; and Gilleo, Mathias A., deceased, 4,433,034, Cl. 428-693.000.
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Gualtieri, Devlin M.; Tumelty, Paul F.; and Gilleo, Mathias A., deceased, 4,433,034, Cl. 428-693.000.
- Gillette Company, The: See—
Kelly, John F., 4,432,452, Cl. 206-354.000.
- Taylor, John B., 4,432,136, Cl. 30-32.000.
- Gilpin, Jo Ann, to Dow Chemical Company, The. Inhibitors for furfurals. 4,433,155, Cl. 549-205.000.
- Ginisty, Claude; Marteau, Michel; and Mauborgne, Bernard, to Commissariat a l'Energie Atomique. Uranium (VI) recovery process using acid organophosphorus extractant containing two or four alkoxyalkyl or aryloxyalkyl radicals. 4,432,946, Cl. 423-10.000.
- Girodi, Erich: See—
Starke, Joachim; Jakubik, Adolf; Girodi, Erich; Strudinger, Manfred; and Exner, Reinhard, 4,432,772, Cl. 48-66.000.
- Gitman, Grigory M., to Cadre Corporation, The. Centralized ladle heating and drying system. 4,432,726, Cl. 432-9.000.
- Givens, James R., to Hughes Aircraft Company. Compositions for use in heat-generating reactions. 4,432,818, Cl. 149-22.000.
- Gjertsen, Robert K.; Wilson, John F.; and George, Raymond A., to Westinghouse Electric Corp. Displacer rod for use in a mechanical spectral shift reactor. 4,432,934, Cl. 376-333.000.
- Glascoco, Inc.: See—
Skipworth, Walter J., 4,432,278, Cl. 100-53.000.
- Glawischig, Wilfried: See—
Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischig, Wilfried, 4,432,284, Cl. 104-7.00R.
- Glaxo Group Limited: See—
Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., 4,433,141, Cl. 544-25.000.
- Gleinig, Harald: See—
Linhart, Karl; Gleinig, Harald; and Boehmke, Gunther, 4,432,899, Cl. 260-157.000.
- Glennco Trust: See—
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,432,922, Cl. 264-119.000.
- Glienke, Gunter: See—
Klose, Reinhard; and Glienke, Gunter, 4,432,674, Cl. 406-19.000.
- Gobel, Wilhelm: See—
Musch, Rudiger; Konter, Wolfgang; and Gobel, Wilhelm, 4,433,106, Cl. 525-215.000.
- Godin, Pascal, to Societe Industrielle Auer. Gas- or liquid-fired hot water boiler. 4,432,307, Cl. 122-14.000.
- Golding, Scott M., to Discovision Associates. High quality delta modulator. 4,433,423, Cl. 375-30.000.
- Goldman, Ilan. Locking system for safes. 4,432,573, Cl. 292-37.000.
- Goletto, Jean: See—
Pusineri, Christian; and Goletto, Jean, 4,433,072, Cl. 523-105.000.
- Golly, Helmut: See—
Brass, Holger; Braunisch, Herbert; Disselbeck, Dieter; and Golly, Helmut, 4,432,413, Cl. 165-133.000.

- Goodell, Paul D.: See—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,433,063, Cl. 502-402,000.
- Goodyear Aerospace Corporation: See—
Crossman, Richard L., 4,432,440, Cl. 188-71.200.
- Goranson, George G.: See—
Riise, H. Norman; Goranson, George G.; and Karwan, Henry P., 4,432,343, Cl. 126-424,000.
- Goransson, Sture: See—
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,433,238, Cl. 250-227,000.
- Gorczyca, Thomas B.: See—
Bolon, Donald A.; and Gorczyca, Thomas B., 4,433,131, Cl. 528-105,000.
- Gory Associated Industries, Inc.: See—
Pike, Robert D.; and Bobolts, Elroy F., 4,432,183, Cl. 52-533,000.
- Goto, Sumio; Doi, Takeshi; and Sato, Kazuo, to Dai-ichi Kogyo Seiyaku Co., Ltd. Thermally reactive water-soluble blocked urethane prepolymer, 4,433,017, Cl. 528-45,000.
- Goto, Tadahiko: See—
Hattori, Mitsuro; Harad, Koosuke; and Goto, Tadahiko, 4,432,245, Cl. 73-862,320.
- Gotz, Wolfgang: See—
Siempekkamp, Dieter; and Gotz, Wolfgang, 4,432,828, Cl. 156-285,000.
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- Gouge, Howard W. Back washer, 4,432,113, Cl. 15-97,00R.
- Gouker, Toby R.: See—
Euker, Charles A., Jr.; Wesselhoft, Robert D.; Dunkleman, John J.; Aquino, Dolores C.; and Gouker, Toby R., 4,432,773, Cl. 48-197,00R.
- Gourdine, Meredith C., to Energy Innovations, Inc. Electrostatic dynamic coating system, 4,433,003, Cl. 427-27,000.
- Gowan, John G.; and Shillito, Keith R., to United States of America, Air Force. Laser mirror and method of fabrication, 4,433,045, Cl. 430-321,000.
- Gowdy, Hugh W.; and Fenton, Donald M., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams, 4,432,962, Cl. 423-573,00R.
- Gowing, James R., to EBSO Industries, Inc. Fishing lure, 4,432,156, Cl. 43-42,310.
- Gowing, James R., to EBSO Industries, Inc. Fishing lure, 4,432,157, Cl. 43-42,310.
- Goyne, Thomas E.: See—
Lobdell, Donn D.; and Goyne, Thomas E., 4,432,767, Cl. 604-86,000.
- Graber, Joseph V. Vehicle attached carrier, 4,432,479, Cl. 224-322,000.
- Grace Italiana S.p.A.: See—
Tegiacchi, Fabio; Chiruzzi, Mario; Casu, Benito; and Torri, Gian-giacomo, 4,432,801, Cl. 106-92,000.
- Gradin, James H.; and Joseph, John S., to Sundstrand Data Control, Inc. Automatic television antenna control system, 4,433,344, Cl. 358-181,000.
- Graetz, Herbert; and Unterreiner, Ronald C., to Blair Industries, Inc. Method of making cassette holders, 4,432,827, Cl. 156-245,000.
- Grage, Ludwig; Ryseck, Werner; and Michl, Franz, to Siemens Aktiengesellschaft. Adjustment and testing device for a laser ranging system, 4,432,640, Cl. 356-5,000.
- Graham, Henry A., Jr.: See—
Chang, Chi-Deu; and Graham, Henry A., Jr., 4,433,059, Cl. 436-512,000.
- Graham, Ron: See—
Aparicio, Thomas, Jr.; and Graham, Ron, 4,432,256, Cl. 81-57,390.
- Granat, Rodney J., to ACI Australia Limited. Displacement and/or force measuring device and method, 4,432,246, Cl. 73-862,530.
- Granberg, Eloff, to Granberg Pump & Meter Ltd. Garden tool with self-cleaning earth-working elements, 4,432,421, Cl. 172-375,000.
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Granberg, Eloff, 4,432,421, Cl. 172-375,000.
- Granneman, George R.: See—
Nadzan, Alex M.; and Granneman, George R., 4,432,985, Cl. 424-267,000.
- Gratec, Inc.: See—
Aparicio, Thomas, Jr.; and Graham, Ron, 4,432,256, Cl. 81-57,390.
- Greaves, Brian; and Ingham, Paul, to Dearborn Chemicals, Ltd. Treatment of aqueous systems, 4,432,879, Cl. 210-699,000.
- Green, Geoffrey F.; and Humphrey, James C., to United States of America, Navy. Piston sealing arrangement for a cryogenic refrigerator, 4,432,556, Cl. 277-73,000.
- Greenbaum, George. Windbreaker, 4,432,381, Cl. 135-87,000.
- Greenlee, Paul W., to General Electric Company. Method of locking conductors in a dynamoelectric machine rotor, 4,432,135, Cl. 29-598,000.
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- Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., to Georgetown University. Identification of materials using their complex dielectric response, 4,433,286, Cl. 324-61,00R.
- Gregory, Willis H. Method and apparatus for efficiently capturing and distributing heat produced by gas logs, 4,432,337, Cl. 126-121,000.
- Gresch, Heinz: See—
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,432,776, Cl. 55-77,000.
- Gretag Aktiengesellschaft: See—
Baschung, Michael, 4,432,637, Cl. 355-35,000.
- Grether, Paul; Brader, Kurt; and Keller, Bruno, to Sulzer Brothers Limited. Self-supporting insulation element, 4,432,174, Cl. 52-222,000.
- Grick, Shelly J.; and Beautz, Joseph A., to Gentex Corporation. Individually fitted helmet liner, 4,432,099, Cl. 2-412,000.
- Griffin, Brian P.: See—
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,433,083, Cl. 524-27,000.
- Griffith, William M., to Koala Technologies Corporation. Hand controller multiple circuit switch, 4,433,217, Cl. 200-5,00R.
- Groelinger, Howard, to M.J.H. Converters, Inc. Method of treating cellulose diacetate fibers, 4,433,028, Cl. 428-378,000.
- Groeneweg, Joost; and Schluter, Manfred, to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Method of treating agricultural wastes, 4,432,869, Cl. 210-602,000.
- Gronin, Edward A. Apparatus and method for reducing waste in tufting, 4,432,296, Cl. 112-266,200.
- Grosbois, Jean: See—
Bachot, Jean; and Grosbois, Jean, 4,432,860, Cl. 204-296,000.
- Gross, Hansjürgen: See—
Moser, Gottfried; and Gross, Hansjürgen, 4,432,493, Cl. 237-12,30R.
- Gross, James R.; and Bujan, Albert F., to Abbott Laboratories. Connecting device for medical liquid containers, 4,432,759, Cl. 604-411,000.
- Grot, Walther G., to Du Pont de Nemours, E. I., and Company. Process for making liquid composition of perfluorinated ion exchange polymer, and product thereof, 4,433,082, Cl. 524-755,000.
- Grove, Michael M., to Sundstrand Data Control, Inc. Ground proximity warning system with time and altitude based mode switching, 4,433,323, Cl. 340-970,000.
- Gruber, Hermann: See—
Pedain, Josef; Wellner, Wolfgang; König, Klaus; and Gruber, Hermann, 4,433,010, Cl. 427-160,000.
- Grup, Howard W., to General Electric Company. Viewing screen with enhanced contrast, 4,432,608, Cl. 350-128,000.
- Grushkin, Harold. Pressure cuff tire pump device, 4,432,405, Cl. 152-424,000.
- GTE Business Communication Systems Inc.: See—
Khan, Jawed M., 4,433,250, Cl. 307-66,000.
- GTE Laboratories Incorporated: See—
McNeill, William H.; and Chen, Yung J., 4,432,614, Cl. 350-386,000.
- GTE Products Corporation: See—
Bouchard, Andre C., 4,432,723, Cl. 431-359,000.
- Bouchard, Andre C.; and Craig, Robert F., 4,432,724, Cl. 431-362,000.
- Sindlinger, Ronald E., 4,432,725, Cl. 431-362,000.
- Vanderpool, Clarence D.; Scheithauer, Richard A.; and Warming-ton, Richard G., 4,432,950, Cl. 423-61,000.
- Gualtieri, Devlin M.; Tumelty, Paul F.; and Gillo, Mathias A., deceased (by Gillo, Margaret P., executrix), to Allied Corporation. Magnetic bubble layer of thulium-containing garnet, 4,433,034, Cl. 428-693,000.
- Guerin, Michael N.: See—
Ostermeyer, Larry F.; and Guerin, Michael N., 4,433,084, Cl. 524-62,000.
- Guiboro, Marcel. Sewer fluid trap, 4,432,384, Cl. 137-247,110.
- Guillot, Francis. Device to promote the movement of buses by allocation of priority of crossing of an intersection controlled by traffic lights, 4,433,324, Cl. 340-923,000.
- Gulf Research & Development Company: See—
Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., 4,433,197, Cl. 585-823,000.
- Gulf South Research Institute: See—
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,432,730, Cl. 433-168,000.
- Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., to Merck & Co., Inc. Hypocholesterolemic fermentation products and process of preparation, 4,432,996, Cl. 424-311,000.
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- Gusev, Alexei I.: See—
Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozero, Aref I.; Morgachev, Ivan I.; Chernik, Jury S.; Kvitkovsky, Konstantin A.; Gusev, Alexei I.; and Terenteva, Nina A., 4,432,584, Cl. 299-25,000.
- Guy, Andrew: See—
McFarlane, John; and Guy, Andrew, 4,432,332, Cl. 123-587,000.
- Gyarmati, Erno: See—
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- Haars, Annegret; and Huttermann, Aloys, to Gesellschaft für Biotechnologische Forschung. Process for producing a binder for wood materials, 4,432,921, Cl. 264-109,000.
- Haas, David J. Light sensitive validating identification badge system, 4,432,630, Cl. 355-1,000.
- Haber, Stephen B., to Du Pont de Nemours, E. I., and Company. Antiinflammatory and/or analgesic 2,3-diaryl-5-silyl thiophenes, 4,432,974, Cl. 424-184,000.
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- Hackforth GmbH & Co. KG: See—
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- Hackler, Erich; Flockenhaus, Claus; and Lommerzheim, Werner, to Didier Engineering GmbH. Method for the preparation of high-caloric gases, particularly methane, by means of a catalyst fluidized bed, 4,433,066, Cl. 518-706,000.
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Kuwayama, Kenta; Nakagawa, Junzo; Tomii, Keishi; and Hagimori, Kenji, 4,432,937, Cl. 420-513,000.
- Hagiwara, Toshio: See—
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- Hahn & Clay: See—
Pechacek, Raymond E.; and Clay, Eugene J., 4,432,128, Cl. 29-429,000.
- Haidt, Elaine: See—
Haidt, Jonathan D.; and Haidt, Elaine, 4,432,477, Cl. 224-222,000.
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Page, Judith L.; Haigh, Daniel H.; and Peters, James, 4,432,968, Cl. 424-81,000.
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Braun, Ernst; and Braun, Gert, 4,432,448, Cl. 198-735,000.
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Bridges, James R., 4,432,929, Cl. 376-119,000.
- Streich, Steven G., 4,432,419, Cl. 166-188,000.
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- Hamada, Yoshio: See—
Nashiki, Masayuki; and Hamada, Yoshio, 4,433,261, Cl. 310-156,000.
- Hamamatsu Photonics Kabushiki Kaisha: See—
Shimada, Mitsuhiro, 4,433,236, Cl. 250-213,0VT.
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Kondo, Toshiro; and Hamaoka, Kiyohiko, 4,432,428, Cl. 180-73,00D.
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Brandtetter, Franz; Hambrecht, Jürgen; and Stephan, Rudolf, 4,433,102, Cl. 525-75,000.
- Hammer, James L.: See—
Bevans, Terry D.; and Hammer, James L., 4,432,531, Cl. 254-100,000.
- Hanada, Masamichi: See—
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- Hanazawa, Toshio: See—
Honda, Hideo; Tsuchiya, Chikara; Sano, Yoshiaki; Hanazawa, Toshio; and Handa, Harumi, 4,433,306, Cl. 330-297,000.
- Handa, Harumi: See—
Honda, Hideo; Tsuchiya, Chikara; Sano, Yoshiaki; Hanazawa, Toshio; and Handa, Harumi, 4,433,306, Cl. 330-297,000.
- Handte, Reinhard: See—
Knorr, Harald; Handte, Reinhard; Willms, Lothar; and Tammer, Thomas, 4,433,153, Cl. 548-152,000.
- Hanford Pty., Ltd.: See—
Boot, Phillip H., 4,432,171, Cl. 52-79,100.
- Hanno, Kenji: See—
Kawasaki, Yoshinari; and Hanno, Kenji, 4,432,884, Cl. 252-180,000.
- Hansen, Christian B., to Danfoss A/S. Internally shafted planetary piston engine, 4,432,709, Cl. 418-61,00B.
- Hansen, Christian B.; and Flagstad, Carl O., to Danfoss A/S. Rotary type machine with check valves for relieving internal pressures, 4,432,710, Cl. 418-61,00B.
- Hanson, Merlin L.; Swenson, Robert E.; and Schmalzbauer, Arnold R., to Sperry Corporation. Cache/disk subsystem with cache bypass, 4,433,374, Cl. 364-200,000.
- Harad, Koosuke: See—
Hattori, Mitsuro; Harad, Koosuke; and Goto, Tadahiko, 4,432,245, Cl. 73-862,320.
- Harada, Katsuhito: See—
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- Harada, Masahiro: See—
Miyamoto, Akira; Shimizu, Senzo; Yamamiya, Kazuo; and Harada, Masahiro, 4,433,136, Cl. 528-347,000.
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- Harbert, Charles A.: See—
Welch, Willard M.; and Harbert, Charles A., 4,432,978, Cl. 424-249,000.
- Harman, Geoffrey E.; and James, Malcolm J. F., to Rolls-Royce Limited. Temperature sensor, 4,432,658, Cl. 374-138,000.
- Harper, Jack R., to Dow Corning Corporation. Method for preparing flame resistant polysiloxane foams and foams prepared thereby, 4,433,069, Cl. 521-99,000.
- Harper, Stephen M.; and Stultz, Jeffrey H., to Dow Chemical Company, The. Liquid distributing apparatus and method for a liquid-vapor contact column, 4,432,913, Cl. 261-97,000.
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McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,432,902, Cl. 260-239,0HM.
- Harris, Alva F., to Monsanto Company. Heat stabilized polymers, 4,433,086, Cl. 524-112,000.
- Harris, Bernard; and Klein, Howard J., to Cabot Corporation. ESR Hollows molten metal/slag interface detection, 4,433,242, Cl. 250-358,100.
- Harris, Clifford J.; and Barraclough, Paul, to Wellcome Foundation Ltd., The. Anti-thrombotic diazabicyclooctanones, 4,432,988, Cl. 424-273,00R.
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Patel, Vipin N.; and Conarroe, John L., Jr., 4,433,342, Cl. 357-2,000.
- Harris, Gerald R.: See—
DeReggi, Aime' S.; and Harris, Gerald R., 4,433,400, Cl. 367-163,000.
- Harrison & Jones (Brookside) Limited: See—
Sutton, James B., 4,432,110, Cl. 5-481,000.
- Harsanyi, Kalman: See—
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- Hartman, Charles R.: See—
Akers, Roy; Hartman, Charles R.; and Deutch, Keith B., 4,432,540, Cl. 271-8,00A.
- Hartman, Susan E.; Allen, Michael E.; and Pascoe, William E., to Eastman Kodak Company. Cycloalkylsulfonates, polymers and processes relating to same, 4,433,130, Cl. 528-173,000.
- Hartman, Wayne E., to J. I. Case Company. PIO Master shield, 4,432,742, Cl. 464-176,000.
- Hartmann, Heinrich: See—
Straub, Ferdinand; Hartmann, Heinrich; Naegle, Paul; and Seib, Karl, 4,433,112, Cl. 525-326,900.
- Hartmann, Werner, to Kusters, Eduard. Pressure rolling nip line pressure control, 4,432,277, Cl. 100-37,000.
- Harvey, Douglass C., to Eastman Kodak Company. Film and paper assembly for film cartridges, 4,432,625, Cl. 354-275,000.
- Harvey Hubbell Incorporated: See—
Wuertz, Emil S., 4,432,465, Cl. 220-235,000.
- Wuertz, Emil S., 4,433,204, Cl. 174-48,000.
- Hasegawa, Toyofumi: See—
Kawakami, Heijiro; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123,00R.
- Hashimoto, Takashi: See—
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- Hasler, Rolf; Henzi, Beat; Schneider, Ernst; and Ulshoefer, Hermann, to Sandoz Ltd. Rapid dyeing of polyester fibers with a mixture of disperse dyes, 4,432,770, Cl. 8-638,000.
- Hass, Robert H.; and Ward, John W., to Union Oil Company of California. Catalyst and process for oxidizing hydrogen sulfide, 4,432,961, Cl. 423-542,000.
- Hattori, Iwakazu: See—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tsutsumi, Fumio; Takashima, Akio; and Hattori, Iwakazu, 4,433,109, Cl. 525-314,000.
- Hattori, Mitsuro; Harad, Koosuke; and Goto, Tadahiko, to Agency of Industrial Science & Technology. Grinding machine motor with a torque sensor, 4,432,245, Cl. 73-862,320.

- Hauber, Jack R.: See—
Stoffel, James C.; Seachman, Ned J.; Hauber, Jack R.; and Kingsley, William, 4,433,346, Cl. 358-293.000.
- Hauser, Kurt, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Fluid friction clutch. 4,432,444, Cl. 192-58.00B.
- Hawes, David H., to Westvaco Corporation. Discontinuous fiber pretreatment. 4,433,074, Cl. 523-207.000.
- Hawes, David J., to Aviation Electric Ltd. Acceleration limit reset. 4,432,201, Cl. 60-39.161.
- Hayashi, Masahiro: See—
Suzuki, Yukio; Hayashi, Masahiro; and Takuma, Kenzi, 4,432,908, Cl. 260-465.00D.
- Hayashi, Yoshimasa: See—
Ogawa, Atsushi; and Hayashi, Yoshimasa, 4,433,433, Cl. 381-7.000.
- Hayes, Harry, to Colgate-Palmolive Company. Two phase product dispenser. 4,432,471, Cl. 222-136.000.
- Hayes, John M.; and Small, Gerald J., to United States of America, Energy. Detection system for a gas chromatograph. 4,432,225, Cl. 73-23.100.
- Health-Ex Corporation: See—
Scarberry, Walter P.; and Vollman, Charles K., 4,432,826, Cl. 156-244.110.
- Hearn, Eric W.: See—
Chye, Patrick W.; Hearn, Eric W.; Kulkarni, Murlidhar V.; and Markovits, Gary, 4,432,809, Cl. 148-1.500.
- Hebert, Carlton A. Solid fuel burning heating system. 4,432,339, Cl. 126-368.000.
- Heck, Ronald M.: See—
Eleazar, Antonio E.; Heck, Ronald M.; Dettling, Joseph C.; and Lui, Yiu-Kwan, 4,433,191, Cl. 585-671.000.
- Heesch, Max O.: See—
Russo, Vincenzo; and Heesch, Max O., 4,432,583, Cl. 297-330.000.
- Heikkinen, Urho, to Kone Oy. Procedure and apparatus for barking timber. 4,432,403, Cl. 144-342.000.
- Heinecke, Rudolf A. H.; and Stern, Ronald C., to ITT Industries, Inc. Process for the pyrolytic deposition of aluminum from TIBA. 4,433,012, Cl. 427-252.000.
- Heitkamp, Herbert: See—
Stuckmann, Dieter; and Heitkamp, Herbert, 4,432,665, Cl. 405-143.000.
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- Helffer, Bernard: See—
Raisin, Jean-Pierre; Helffer, Bernard; and Chirouze, Jean L., 4,432,295, Cl. 112-262.300.
- Helmer, Wayne A.: See—
Chen, Peter Y. S.; Helmer, Wayne A.; and Rosen, Howard N., 4,432,147, Cl. 34-46.000.
- Heninger, Byrne: See—
Bachman, Gilbert; and Heninger, Byrne, 4,432,153, Cl. 40-324.000.
- Henke, Steven J.: See—
Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Cole, Billy W., 4,432,311, Cl. 123-90.670.
- Henkel Kommanditgesellschaft auf Aktien: See—
Bahn, Michael; Preuss, Wolfgang; Schmid, Rolf; and Wagner, Rudiger, 4,432,905, Cl. 260-397.100.
- Henkensiefken, Larry L.; Pettit, Douglas L.; and Barry, Gerald E., to Owatonna Manufacturing Company, Inc. Portable feed grinder-mixer. 4,432,499, Cl. 241-30.000.
- Henrich, Edmund; and Schlich, Elmar, to Kernforschungszentrum Karlsruhe GmbH; and Nukem GmbH. Process for desorbing fission iodine from nitric acid fuel solution. 4,432,955, Cl. 423-249.000.
- Henze, Helmut; and Capell, Ronald, to Schering Aktiengesellschaft. Method of manufacturing printed circuits. 4,433,009, Cl. 427-97.000.
- Henzi, Beat: See—
Hasler, Rolf; Henzi, Beat; Schnider, Ernst; and Ulshoefer, Hermann, 4,432,770, Cl. 8-638.000.
- Herbertz, Toni: See—
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann-Josef; and Burghartz, Hans K., 4,432,923, Cl. 264-206.000.
- Herion-Werke KG: See—
Ott, Helmut, 4,432,391, Cl. 137-625.640.
- Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, to Siemens Aktiengesellschaft. Method for detecting breakdowns in an electrostatic filter. 4,433,281, Cl. 323-246.000.
- Hermle, Rolf; Kammerer, Heinz; and Langheinrich, Hans, to Gebhard Balluff Fabrik Feinmechanischer. Proximity switch with built-in test circuit. 4,433,309, Cl. 331-65.000.
- Herrington, Daniel R.; and Kuch, Philip L., to Standard Oil Co., The. Thermochemical method for producing hydrogen from hydrogen sulfide. 4,432,960, Cl. 423-539.000.
- Herzog, Peter: See—
Brasseur, Georg; Lehner, Gerhard; Herzog, Peter; Rathmayr, Heinz; and Stipek, Theodor, 4,432,320, Cl. 123-357.000.
- Hesselschwerdt, Bernhard, to Bulova Watch Company, Inc. Wrist watch case and metal bracelet assembly. 4,432,654, Cl. 368-282.000.
- Hettinger, William P., Jr.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
- Myers, George D., deceased; Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., 4,432,863, Cl. 208-113.000.
- Heubusch, Henry P., to Textron Inc. Treatment of stainless steel apparatus used in the manufacture, transport or storage of nitrogen oxides. 4,432,808, Cl. 134-3.000.
- Hewell, Gerald M., to Royston Manufacturing Corporation. Outdoor telephone booth. 4,432,170, Cl. 52-28.000.
- Heytmeijer, Herman R., to U.S. Philips Corporation. Recovery of yttrium and europium from contaminated solutions. 4,432,948, Cl. 423-21.500.
- Hicks, Robert A.: See—
Dyer, Robert E.; Swanson, Scott C.; and Hicks, Robert A., 4,433,387, Cl. 364-900.000.
- Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., to Emerson Electric Co. Silicon carbide heating elements. 4,433,233, Cl. 219-553.000.
- Higashiguti, Teruaki: See—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatoshi, 4,433,039, Cl. 430-58.000.
- High Voltage Engineering Corporation: See—
Albrecht, Leland J.; and Briere, Richard L., 4,432,250, Cl. 73-864.340.
- Higo, Nobumasa: See—
Kataoka, Masami; and Higo, Nobumasa, 4,432,244, Cl. 73-861.770.
- Hilaire, Pierre; Lietaert, Franz; Staroz, Claude; and Schumacher, Walter, to Societe Nobel Bozel. Ferroalloy for the treatment of cast metals and process. 4,432,793, Cl. 75-130.00R.
- Hillwood Corporation: See—
Snyder, Thomas A.; and Leible, Walter T., 4,432,749, Cl. 604-2.000.
- Hilpert, Patrik: See—
Ruf, Hans R.; Quattlander, Rolf; Reichlin, Max; and Hilpert, Patrik, 4,432,380, Cl. 134-104.000.
- Hilti Aktiengesellschaft: See—
Eble, Monika; and Lang, Gusztav, 4,432,469, Cl. 222-134.000.
- Hilty, John R.: See—
Evans, Alyce D.; and Hilty, John R., 4,432,721, Cl. 431-4.000.
- Hinoda, Yuji; and Enmoto, Kazuhiro, to Fujisaku Company. Process for regeneration of electrolyte containing tin salts by reducing the same. 4,432,844, Cl. 204-54.00R.
- Hinton, Brian J.: See—
Bohan, John E., Jr.; and Hinton, Brian J., 4,432,722, Cl. 431-46.000.
- Hioki Denki Kabushiki Kaisha: See—
Sakaguchi, Takehiko, 4,433,339, Cl. 346-78.000.
- Hiraga, Masaharu; and Sakamoto, Seiichi, to Sanden Corporation. Scroll type fluid displacement apparatus with pressure communicating passage between pockets. 4,432,708, Cl. 418-55.000.
- Hirai, Kentaro, to Shionogi & Company, Limited. Bis(carboxamide) derivatives. 4,433,154, Cl. 548-195.000.
- Hirakata, Kaoru: See—
Murakami, Katsuyuki; Hirakata, Kaoru; Ishizaka, Fumio; Shimoda, Shinichi; and Itai, Reiichi, 4,432,856, Cl. 204-237.000.
- Hirata, Hitoshi, to Pioneer Electronic Corporation. PLL Detection circuit. 4,433,308, Cl. 331-17.000.
- Hirata, Yasushi: See—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,433,107, Cl. 525-232.000.
- Hiratake, Susumu: See—
Adachi, Toshio; and Hiratake, Susumu, 4,432,942, Cl. 422-159.000.
- Hiratani, Kazuhisa, to Director-General of Agency of Industrial Science & Technology. Oxy benzoic acid terminated polyether derivatives of 8-hydroxy quinolines. 4,433,151, Cl. 546-178.000.
- Hirayama, Keizo: See—
Morikawa, Yonekichi; Shimizu, Toshio; Yoshida, Eiichi; Kono-gaya, Tsuyoshi; and Hirayama, Keizo, 4,433,229, Cl. 219-84.000.
- Hirayama, Masaru; Anzai, Nobuaki; and Shirouzu, Ryusuke, to Alps Electric Co., Ltd. Variable resistor. 4,433,322, Cl. 338-162.000.
- Histop, Alfred R.; and Rubin, David, to United States of America, Navy. Millimeter wave suspended substrate multiplexer. 4,433,314, Cl. 333-110.000.
- Hitachi Heating Appliances Co., Ltd.: See—
Tachikawa, Hajime; and Ohkawa, Shuji, 4,433,232, Cl. 219-502.000.
- Hitachi Koki Company, Limited: See—
Saito, Takayasu, 4,432,849, Cl. 204-180.00R.
- Hitachi, Ltd.: See—
Akiyama, Nobuyuki; Ohshima, Yoshimasa; and Koizumi, Mitsuyoshi, 4,433,235, Cl. 250-201.000.
- Inoue, Yoichi; Terayama, Takao; Kasai, Susumu; and Tominaga, Tamotsu, 4,432,508, Cl. 242-195.000.
- Kamiya, Kunio; Motojima, Kenji; Funabashi, Kiyomi; Chino, Koichi; and Horiuchi, Susumu, 4,432,894, Cl. 252-632.000.
- Kaneko, Kenji; Okabe, Takahiro; Nagata, Minoru; and Okada, Yutaka, 4,433,258, Cl. 307-456.000.
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- Kuroda, Sigeaki; Arai, Akira; Senu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, 4,432,694, Cl. 415-170.00A.
- Maruyama, Eiichi; Shimada, Toshikazu; Shiraki, Yasuhiro; Katayama, Yoshifumi; Matsubara, Hirokazu; Ishizaka, Akitoashi; Murayama, Yoshimasa; and Shintani, Akira, 4,433,202, Cl. 136-255.000.
- Matsuda, Toshiharu; Kasai, Kenjiro; Kikkawa, Seiichi; Saho, Norihide; and Matsumoto, Kouzo, 4,432,216, Cl. 62-514.00R.
- Miura, Haruo; and Abe, Yoshiaki, 4,432,697, Cl. 416-198.00A.
- Nakamura, Kazumitsu; and Miyazaki, Masaru, 4,433,243, Cl. 250-397.000.

- Nii, Katsutoshi; Okano, Kinpei; Doi, Motomichi; and Kitsuya, Minoru, 4,433,432, Cl. 378-193.000.
- Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sada-yuki, 4,433,228, Cl. 219-10.55R.
- Ogawa, Soichiro, 4,433,272, Cl. 315-290.000.
- Oishi, Tetsu; Oda, Makoto; and Futaki, Hisao, 4,432,211, Cl. 62-155.000.
- Okuyama, Nobutaka; Shimizu, Toshiharu; and Naito, Yoshikazu, 4,433,318, Cl. 335-213.000.
- Shida, Shigeru; Hosaka, Nobuyoshi; Ishikawa, Yuichi; and Nishida, Osamu, 4,433,093, Cl. 524-433.000.
- Tachibana, Keiji; Terasaki, Masatoshi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,432,212, Cl. 62-229.000.
- Torii, Shunichi; Nagashima, Shigeo; and Omoda, Koichiro, 4,433,394, Cl. 365-221.000.
- Hitachi Metals, Ltd.: See—
Kawanishi, Tsuneaki; Mukoh, Akio; Morishita, Hirosada; and Hoshi, Nobuyoshi, 4,433,042, Cl. 430-126.000.
- Yamashita, Keitaro, 4,433,041, Cl. 430-122.000.
- Hitzrot, Henry W., Jr., to Bethlehem Steel Corporation. Iron oxide paint pigment precursor. 4,432,803, Cl. 106-304.000.
- Hizuka, Kenji: See—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,432,842, Cl. 204-41.000.
- Hoary, Mario J., to Institute for Industrial Research and Standards. Vaginal speculum. 4,432,351, Cl. 128-17.000.
- Hodogaya Chemical Company, Ltd.: See—
Nimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, 4,433,040, Cl. 430-109.000.
- Hoechst AG: See—
Brass, Holger; Braunisch, Herbert; Disselbeck, Dieter; and Golly, Helmut, 4,432,413, Cl. 165-133.000.
- Schubert, Hans; and Baessler, Konrad, 4,433,168, Cl. 564-309.000.
- Hoechst Aktiengesellschaft: See—
Knorr, Harald; Handte, Reinhard; Willms, Lothar; and Tammer, Thomas, 4,433,153, Cl. 548-152.000.
- von Werner, Konrad, 4,433,180, Cl. 568-684.000.
- Wieser, Hartmut; and Pfahler, Gerhard, 4,433,145, Cl. 544-198.000.
- Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Preparation of olefins from methanol and/or dimethyl ether. 4,433,188, Cl. 585-640.000.
- Hoerner, Josef. Locking key with memory. 4,432,218, Cl. 70-395.000.
- Hoffmann, Alexander: See—
Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner, 4,433,025, Cl. 428-207.000.
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- Hoffmann-La Roche Inc.: See—
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- Petrzika, Martin; and Schleich, Kuno, 4,432,885, Cl. 252-299.610.
- Tarnowski, Stanley J., 4,432,895, Cl. 260-112.00R.
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- Horning, Robert J.; and Eppley, William J., 4,433,036, Cl. 429-114.000.
- Kitchen, Robert D., 4,433,224, Cl. 200-330.000.
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Kawanishi, Tsuneaki; Mukoh, Akio; Morishita, Hirosada; and Hoshi, Nobuyoshi, 4,433,042, Cl. 430-126.000.
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Pusineri, Christian; and Goletto, Jean, 4,433,072, Cl. 523-105.000.
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Keith, Alec D.; and Hsiao, Charles, 4,432,965, Cl. 424-19.000.
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Haaf, William R.; Huebner, James A.; and Katchman, Arthur, 4,433,088, Cl. 524-153.000.
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Buhler, Anton; and Hug, Peter, 4,433,220, Cl. 200-144.0AP.
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- Hungerford, Gordon P., to Mobil Oil Corporation. Method for improving thickness uniformity of stretch oriented polyacrylonitrile film, 4,432,917, Cl. 264-40.100.
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- Hustig, Charles: See—
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- Huszar, Gabor B. Method for determining the extensibility of selected non-excised tissue of the uterine cervix, ear or skin, 4,432,376, Cl. 128-774.000.
- Hutchinson, Paul; and Serginson, Alan, to Can-Gun Limited. Handle and actuating device for pressurized dispensers, 4,432,474, Cl. 222-402.150.
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Haars, Annegret; and Huttermann, Aloys, 4,432,921, Cl. 264-109.000.
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Tamura, Hideo; and Ibuki, Seiro, 4,432,804, Cl. 106-306.000.
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Libby, Alfred F., 4,432,975, Cl. 424-201.000.
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Breuers, Manfred O., 4,432,124, Cl. 29-235.000.
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Kubo, Yoshimi; Shimizu, Shigeaki; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,432,935, Cl. 419-2.000.
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Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,432,776, Cl. 55-77.000.
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Shimizu, Seiichi; and Iguchi, Kouichi, 4,432,328, Cl. 123-516.000.
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Akanabe, Yuichi; Ikeda, Hiroaki; Maeda, Masatoshi; and Funaki, Shinsuke, 4,432,598, Cl. 350-6.700.
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Ueda, Yutaka; and Ikeda, Isamu, 4,432,197, Cl. 57-261.000.
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Aoyagi, Akira; and Ikeda, Shinichi, 4,433,293, Cl. 324-424.000.
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Ogawa, Masaki; and Ikegami, Mikihiko, 4,433,094, Cl. 524-496.000.
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Itoh, Hiroyuki; Yamanashi, Teruaki; and Imai, Hirosuke, 4,433,098, Cl. 524-811.000.
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Andersen, Phillip J., 4,432,795, Cl. 75-245.000.
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Amesso, Claudio; and Donaggio, Paolo, 4,432,177, Cl. 52-309.170.
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De Marco, Giuliano; and Gemi, Roberto, 4,433,352, Cl. 360-105.000.
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Kubler, Fritz, 4,433,234, Cl. 235-132.00E.
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Greaves, Brian; and Ingham, Paul, 4,432,879, Cl. 210-699.000.
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Zanetta, Hugues; and Richard, Daniel, 4,432,534, Cl. 266-225.000.
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Weill, Jerome; Garapon, Jacques; and Sillion, Bernard, 4,433,157, Cl. 549-255.000.
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Jue, Clifford T., 4,432,830, Cl. 156-384.000.
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Bacon, James L.; and Smith, Gerald L., 4,432,631, Cl. 355-3.0CH.
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Leitl, Franz, 4,432,647, Cl. 356-350.000.
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Russo, Vincenzo; and Heesch, Max O., 4,432,583, Cl. 297-330.000.
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Squires, David R., 4,433,282, Cl. 323-281.000.
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Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., 4,432,340, Cl. 126-390.000.
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Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Yutaka; Ishiguro, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,433,160, Cl. 560-56.000.
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Shida, Shigeru; Hosaka, Nobuyoshi; Ishikawa, Yuichi; and Nishida, Osamu, 4,433,093, Cl. 524-433.000.
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Maruyama, Eiichi; Shimada, Toshikazu; Shiraki, Yasuhiro; Katayama, Yoshifumi; Matsubara, Hirokazu; Ishizaka, Akitoshi; Murayama, Yoshimasa; and Shintani, Akira, 4,433,202, Cl. 136-255.000.
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Murakami, Katsuyuki; Hirakata, Kaoru; Ishizaka, Fumio; Shimoda, Shinichi; and Itai, Reichi, 4,432,856, Cl. 204-237.000.
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Murakami, Katsuyuki; Hirakata, Kaoru; Ishizaka, Fumio; Shimoda, Shinichi; and Itai, Reichi, 4,432,856, Cl. 204-237.000.
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Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,433,012, Cl. 427-252.000.
- ITW Limited: See—
Palmer, John P.; and Blackburn, Neil P., 4,432,684, Cl. 411-366.000.
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Ishige, Sadao; Sato, Kozo; and Iwakura, Ken, 4,433,156, Cl. 549-227.000.
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Saitou, Masao; Iwata, Yasuhiro; and Uchida, Kohachi, 4,432,639, Cl. 355-75.000.
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- J. I. Case Company: See—
Hartman, Wayne E., 4,432,742, Cl. 464-176.000.
- Wirsbinski, James L., 4,432,402, Cl. 144-193.00A.
- Jackson, Alan D.; and Day, Kenneth E., to Cessna Aircraft Company, The. Reseat relief valve, 4,432,389, Cl. 137-469.000.
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Rudski, Eugene M.; Jackson, Ronald W.; and Martocci, Anthony P., 4,432,657, Cl. 374-126.000.
- Jacob, Horst: See—
Posse, Gunther; and Jacob, Horst, 4,432,747, Cl. 494-8.000.
- Jacobs, Hanno: See—
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- James, David R., to James Industries Limited. Equipment for handling invalids and the disabled, 4,432,359, Cl. 128-134.000.
- James, Edward A.: See—
Schnable, George L.; and James, Edward A., 4,433,008, Cl. 427-85.000.
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James, David R., 4,432,359, Cl. 128-134.000.
- James, Malcolm J. F.: See—
Harman, Geoffrey E.; and James, Malcolm J. F., 4,432,658, Cl. 374-138.000.
- Japan Carlit Co., Ltd.: See—
Murakami, Katsuyuki; Hirakata, Kaoru; Ishizaka, Fumio; Shimoda, Shinichi; and Itai, Reichi, 4,432,856, Cl. 204-237.000.
- Japan Synthetic Rubber Co., Ltd.: See—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tsutsumi, Fumio; Takashima, Akio; and Hattori, Iwakazu, 4,433,109, Cl. 525-314.000.
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- Jasinaki, Leon, to Motorola, Inc. Acoustical transducer with a slotted piston suspension, 4,433,214, Cl. 179-115.5ES.
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Barth, Wayne E.; and Jasya, Vytautas J., 4,432,987, Cl. 424-271.000.
- Jayaraman, Viswanath; and Shah, Mahendra R., to Holcroft & Company. Ceramic radiant tube heated aluminum melter and method of melting aluminum, 4,432,791, Cl. 75-65.00R.
- Jeenicke, Edmund: See—
Schenk, Manfred; Klotzner, Winfried; and Jeenicke, Edmund, 4,433,379, Cl. 364-200.000.
- Jenck, Jean, to Rhone-Poulenc Industries. Esters of β , γ -unsaturated carboxylic acids by carbonylation of conjugated dienes, 4,433,164, Cl. 560-207.000.
- Jer Manufacturing, Inc.: See—
Lawrence, Phillip G.; and Russell, Robert L., 4,432,590, Cl. 312-257.0SK.

- Jerome, Norman F.: See—
Sikkenga, David L.; Nevitt, Thomas D.; and Jerome, Norman F., 4,433,190, Cl. 585-660.000.
- Jester, Theresa L.; Yerkes, John W.; Gay, Charles F.; and Bottenberg, William R., to Atlantic Richfield Company. Roll formed pan solar module. 4,433,200, Cl. 136-251.000.
- Joh. Friedrich Behrens AG: See—
Kuck, Manfred, 4,432,483, Cl. 227-8.000.
- Johansson, Donald, to Broderna Lindqvists Verkstader AB. Steering arrangement at inboard-outboard drive unit. 4,432,737, Cl. 440-60.000.
- Johnson, Betty J. Cushioning patellar support device. 4,432,101, Cl. 3-20.000.
- Johnson, David A.: See—
Worley, Ronald W.; and Johnson, David A., 4,433,135, Cl. 528-282.000.
- Johnson Matthey Public Limited Company: See—
Pignon, Thomas E., 4,433,064, Cl. 502-527.000.
- Johnson, Phillip L. M.; and Walden, John R., to Plessey Overseas Limited. Sonar receivers. 4,433,396, Cl. 367-105.000.
- Johnson, Theodore W.: See—
Adams, Ronald W.; and Johnson, Theodore W., 4,432,822, Cl. 156-148.000.
- Johnsson, Bengt D. Feed stuff administration device for minks. 4,432,304, Cl. 119-18.000.
- Joly, Jean: See—
Rietsch, Maurice; and Joly, Jean, 4,432,507, Cl. 242-107.40A.
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- Jones, Alun, to British Steel Corporation. Determination of plastic anisotropy in sheet material. 4,432,234, Cl. 73-597.000.
- Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., to Glaxo Group Limited. Intermediate for use in the preparation of cephalosporin antibiotics. 4,433,141, Cl. 544-25.000.
- Joseph, John S.: See—
Gradin, James H.; and Joseph, John S., 4,433,344, Cl. 358-181.000.
- Joseph, Joseph P.: See—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,432,991, Cl. 424-273.00P.
- Joy Manufacturing Company: See—
Novoselac, John; and Churcher, Dale L., 4,432,748, Cl. 494-2.000.
- Jue, Clifford T., to Intermec Corporation. Label printer having selectable label stock paths. 4,432,830, Cl. 156-384.000.
- Julia, Marc: See—
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,433,171, Cl. 568-33.000.
- Jungverdorben, Hermann-Josef: See—
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann-Josef; and Burghartz, Hans K., 4,432,923, Cl. 264-206.000.
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Schultz, James R.; Smith, Francis E.; and Jurecki, Ralph J., 4,432,169, Cl. 51-424.000.
- Jurinak, Edward L., to Apollo Label Company. Printing press. 4,432,282, Cl. 101-350.000.
- Jury, Anthony W.: See—
Parkinson, Michael J.; Jury, Anthony W.; Syred, Nicholas; and Owen, Ieuan, 4,432,778, Cl. 55-212.000.
- K. E. McConaughay, Inc.: See—
Ostermeyer, Larry F.; and Guerin, Michael N., 4,433,084, Cl. 524-62.000.
- Kabu, Yasunori; Yasunaka, Masayoshi; Morita, Yoshinori; and Motowoka, Masanori, to Mitsui Petrochemical Industries, Ltd. Polymerization process. 4,433,121, Cl. 526-68.000.
- Kabushiki Kaisha Johnan Seisakusho: See—
Ishii, Kinichi, 4,432,165, Cl. 49-351.000.
- Kabushiki Kaisha Kobe Seiko Sho: See—
Kawakami, Heiji; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123.00R.
- Kabushiki Kaisha Okuma Tekkosho: See—
Nashiki, Masayuki; and Hamada, Yoshio, 4,433,261, Cl. 310-156.000.
- Kabushiki Kaisha Suwa Seikosha: See—
Kurosaka, Yoshinori, 4,432,616, Cl. 351-106.000.
- Kabushiki Kaisha Toyota Jidoshokki Seisakusho: See—
Honza, Yatsuhiko; Moriyama, Masuyoshi; and Iwamori, Hidekazu, 4,432,702, Cl. 417-269.000.
- Kadija, Igor V., to Olin Corporation. Method for producing reticulate electrodes for electrolytic cells. 4,432,838, Cl. 204-11.000.
- Kadner, Martin: See—
Ebinger, Horst; Kadner, Martin; and Luthardt, Guenther, 4,432,892, Cl. 252-628.000.
- Kahn, Leonard R. Method and means for modulating waves. 4,433,312, Cl. 332-22.000.
- Kakegawa, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for transmitting energy to a device implanted in a living body. 4,432,363, Cl. 128-419.0PS.
- Kakei, Tsutomu: See—
Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,432,854, Cl. 204-206.000.
- Kalaus, Gyorgy: See—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Zajer nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Kali-Chemie AG: See—
Musall, Reimar; and Wolsing, Wilhelm, 4,432,943, Cl. 422-179.000.
- Kalinsky, Wayne A.: See—
Carollo, James A.; and Kalinsky, Wayne A., 4,433,277, Cl. 320-24.000.
- Kalfass, Traugott: See—
Luder, Ernst; and Kalfass, Traugott, 4,433,319, Cl. 338-34.000.
- Kalowski, Thaddeus J.: See—
Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,433,001, Cl. 426-614.000.
- Kamata, Kazumasa; and Tateyama, Masamitsu, to Mitsubishi Rayon Company Ltd. Impact-resistant methacrylic resin composition. 4,433,103, Cl. 525-81.000.
- Kamitakahara, Atsushi: See—
Itoh, Noboru; Takahashi, Toshiaki; Ogi, Keiji; and Kamitakahara, Atsushi, 4,433,049, Cl. 430-495.000.
- Kamiya, Akihiro: See—
Inoue, Akihiro; and Kamiya, Akihiro, 4,433,271, Cl. 315-63.000.
- Kamiya, Kunio; Motojima, Kenji; Funabashi, Kiyomi; Chino, Koichi; and Horiuchi, Susumu, to Hitachi, Ltd. Process for treatment of detergent-containing radioactive liquid wastes. 4,432,894, Cl. 252-632.000.
- Kammerer, Heinz: See—
Hermle, Rolf; Kammerer, Heinz; and Langheinrich, Hans, 4,433,309, Cl. 331-65.000.
- Kamyr, Inc.: See—
Sherman, Michael I.; and Richter, Johan C. F. C., 4,432,836, Cl. 162-237.000.
- Kanai, Takeo: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigetoshi; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Kaneda, Isami; Sakakibara, Susumu; and Sano, Yasushi, to Victor Company of Japan, Ltd. Reference signal detection circuit in a rotary recording medium reproducing apparatus. 4,433,402, Cl. 369-43.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,433,029, Cl. 428-407.000.
- Tawada, Yoshihisa; Yamamoto, Tetsuro; Ushioda, Minoru; and Saito, Kazuo, 4,433,097, Cl. 524-789.000.
- Kaneko, Junichi: See—
Tachibana, Keiji; Terasaki, Masatoshi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,432,212, Cl. 62-229.000.
- Kaneko, Kenji; Okabe, Takahiro; Nagata, Minoru; and Okada, Yutaka, to Hitachi, Ltd. Complementary Schottky transistor logic circuit. 4,433,258, Cl. 307-456.000.
- Kaneko, Mamoru: See—
Noguchi, Toyota; Kaneko, Mamoru; and Katoh, Hironori, 4,433,311, Cl. 332-11.00D.
- Kaneko, Takashi; Essery, John M.; Schmitz, Henry; and Doyle, Terence W., to Bristol-Myers Company. 3-Hydroxyiminoscirpen-4 β , 15-diol esters useful as antitumor agents. 4,433,158, Cl. 549-332.000.
- Kaneko, Teruo: See—
Watanabe, Atsuo; Kaneko, Teruo; Tanaka, Takeo; and Saito, Yoshio, 4,432,939, Cl. 422-93.000.
- Kanno, Hideyuki, to Tomy Corporation. Toy and associated noise producing mechanism. 4,432,159, Cl. 46-177.000.
- Kano, Naoki: See—
Shimamura, Tadao; and Kano, Naoki, 4,432,959, Cl. 423-365.000.
- Kany, Manfred. Decomposing plant. 4,433,055, Cl. 435-313.000.
- Kapellner, Arnold, to Voest-Alpine Aktiengesellschaft. Bearing to be used for a rotating body. 4,432,588, Cl. 308-234.000.
- Karadsheh, Sam M.; and Radomski, Thomas A., to General Motors Corporation. Multiple phase chopper current limiting. 4,433,370, Cl. 363-124.000.
- Karnewsky, Donald S.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Phosphonamide compounds. 4,432,971, Cl. 424-177.000.
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- Karlsson, Arne V.: See—
Westerstrandh, Bjorn V.; and Karlsson, Arne V., 4,432,346, Cl. 126-445.000.
- Karpati, Egon: See—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Zajer nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Karwan, Henry P.: See—
Riise, H. Norman; Goranson, George G.; and Karwan, Henry P., 4,432,343, Cl. 126-424.000.
- Kasahara, Yasushi: See—
Sugiyama, Masami; Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,432,896, Cl. 260-112.50R.
- Kasai, Kenjiro: See—
Matsuda, Toshiharu; Kasai, Kenjiro; Kikkawa, Seiichi; Saho, Norihide; and Matsumoto, Kouzo, 4,432,216, Cl. 62-514.00R.
- Kasai, Susumu: See—
Inoue, Yoichi; Terayama, Takao; Kasai, Susumu; and Tominaga, Tamotsu, 4,432,508, Cl. 242-195.000.

- Kassan, Peter. Puzzle cube. 4,432,548, Cl. 273-153.00S.
- Kastening, Bertel: See—
Faul, Wolfgang; and Kastening, Bertel, 4,432,872, Cl. 210-205.000.
- Katagiri, Shinjiro: See—
Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
- Katahira, Hiroaki; and Kobayashi, Shigeru, to Nissan Motor Company, Limited. Air-conditioning system of motor vehicle. 4,432,213, Cl. 62-239.000.
- Katakura, Masayuki; Akagiri, Kenzo; and Oukouchi, Motomi, to Sony Corporation. Level detecting circuit. 4,433,254, Cl. 307-350.000.
- Kataoka, Masami; and Higo, Nobumasa, to Nippondenso Co., Ltd. Flow rate transducer. 4,432,244, Cl. 73-861.770.
- Katayama Chemical Works Co., Ltd.: See—
Kawasaki, Yoshinari; and Hanno, Kenji, 4,432,884, Cl. 252-180.000.
- Katayama, Yoshifumi: See—
Maruyama, Eiichi; Shimada, Toshikazu; Shiraki, Yasuhiro; Katayama, Yoshifumi; Matsubara, Hirokazu; Ishizaka, Akitoshi; Murayama, Yoshimasa; and Shintani, Akira, 4,433,202, Cl. 136-255.000.
- Katchman, Arthur: See—
Haaf, William R.; Huebner, James A.; and Katchman, Arthur, 4,433,088, Cl. 524-153.000.
- Kato, Kentaro: See—
Inoue, Kazuo; Matsuda, Minoru; and Kato, Kentaro, 4,432,205, Cl. 60-605.000.
- Kato, Yutaka: See—
Tanaka, Ryohei; Kitamura, Akinobu; Otake, Takaaki; and Kato, Yutaka, 4,433,325, Cl. 340-937.000.
- Katoh, Hironori: See—
Noguchi, Toyota; Kaneko, Mamoru; and Katoh, Hironori, 4,433,311, Cl. 332-11.00D.
- Katz, Edward R. Stabilizer for the contents of furniture drawers during furniture moving and method. 4,432,401, Cl. 141-4.000.
- Kaufhold, Manfred, to Chemische Werke Huels, A.G. Process for the production of pure neohexanol. 4,433,175, Cl. 568-471.000.
- Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, to Glencco Trust. Process for molding a brake lining friction product. 4,432,922, Cl. 264-119.000.
- Kawabata, Tasuke: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigetoshi; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Kawai, Shizuo: See—
Matsuda, Yasushi; and Kawai, Shizuo, 4,432,321, Cl. 123-380.000.
- Kawai, Yoshio; and Kitagawa, Kiyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method and apparatus for measuring interfacial electrokinetic phenomena. 4,433,299, Cl. 324-464.000.
- Kawakami, Heiji; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, to Kabushiki Kaisha Kobe Seiko Sho. Material for steel wool. 4,432,792, Cl. 75-123.00R.
- Kawamata, Shyozo: See—
Baba, Kazuo; Kawamata, Shyozo; Fukui, Yoshiharu; Ima, Seiichi; and Miyatake, Tatsuya, 4,433,110, Cl. 525-323.000.
- Kawamura, Takahide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the idling rotational speed of an internal combustion engine. 4,432,317, Cl. 123-339.000.
- Kawanishi, Tsuneki; Mukoh, Akio; Morishita, Hirotsada; and Hoshi, Nobuyoshi, to Hitachi Metals, Ltd. Electrophotographic developing method using magnetic toners. 4,433,042, Cl. 430-126.000.
- Kawasaki Steel Corporation: See—
Ogata, Hajime; Ichida, Toshio; Tsugawa, Shunichi; and Irie, Toshio, 4,432,845, Cl. 204-56.00R.
- Shimizu, Masuo; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
- Kawasaki, Yoshinari; and Hanno, Kenji, to Katayama Chemical Works Co., Ltd. Scale inhibiting agent. 4,432,884, Cl. 252-180.000.
- Kawashima, Ikuo; Fukushima, Yoshio; Murano, Tamio; and Suzuki, Toshitatsu, to Ricoh Company, Ltd. Focusing-position-detection circuit. 4,432,622, Cl. 354-408.000.
- Kawashima, Kazumi: See—
Iyehara, Sadahiro; Kawashima, Kazumi; Ueda, Minoru; Yamamoto, Keisuke; Hosokawa, Tatsuhiro; and Furuta, Yukio, 4,433,395, Cl. 365-222.000.
- Kay, Ian T.; and Noon, Robert A., to Imperial Chemical Industries PLC. Biologically active heterocyclic compounds. 4,432,784, Cl. 71-88.000.
- Kay, Nicholas W., to Burroughs Corporation. Air fireable ink. 4,433,269, Cl. 313-632.000.
- Kearney & Trecker Corporation: See—
Curren, John T., 4,432,258, Cl. 82-1.200.
- Keefe, Bowie G., to Seagold Industries Corporation. Reverse osmosis apparatus and method incorporating external fluid exchange. 4,432,876, Cl. 210-652.000.
- Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., to Monsanto Company. Inhibition of polyurethane hardening. 4,433,089, Cl. 524-294.000.
- Keith, Alec D.; and Hsiao, Charles, to Key Pharmaceuticals, Inc. Quinidine sustained release dosage formulation. 4,432,965, Cl. 424-19.000.
- Keith, Earl K., to Dow Chemical Company, The. Method for adding insoluble material to a liquid or partially liquid metal. 4,432,936, Cl. 420-590.000.
- Keller, Bruno: See—
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,432,174, Cl. 52-222.000.
- Kellogg, Michael S., to Pfizer Inc. 6-beta-Halopenicillanic acid 1,1-dioxides as beta-lactamase inhibitors. 4,432,970, Cl. 424-114.000.
- Kelly, John F., to Gillette Company, The. Protective razor package. 4,432,452, Cl. 206-354.000.
- Kelvin Lenses Limited: See—
Tighe, Brian J.; and Gee, Howard J., 4,433,111, Cl. 525-326.200.
- Kemanord AB: See—
Andersson, Bengt; and Tanner, Olof, 4,432,825, Cl. 156-307.300.
- Kemmel, Patrice J., to Pfaff Haushaltesmaschinen GmbH. Low thread supply monitor in a sewing machine. 4,432,297, Cl. 112-278.000.
- Kemppainen, Gunnar. Coupling. 4,432,570, Cl. 285-24.000.
- Kendall Company, The: See—
Manshot, James G.; Salvadori, Lawrence A.; and Plekenpol, David D., 4,432,763, Cl. 604-262.000.
- Kendall, James W.: See—
Angelosanto, Donald J.; and Kendall, James W., 4,432,679, Cl. 411-34.000.
- Kennedy, Katherine L.; Proctor, Paul W.; and Dow, Robert L., to United States of America, Navy. Pyrotechnic composition for cutting torch. 4,432,816, Cl. 149-19.300.
- Kenneth C. Schiffler, Inc.: See—
Schiffler, Kenneth C., 4,432,914, Cl. 261-111.000.
- Keppeler, Hans G., to BASF Aktiengesellschaft. Preparation of styrene suspension polymers. 4,433,108, Cl. 525-255.000.
- Kerlin, Jack H., to Balance Dynamics Co. Unbalance compensator. 4,432,253, Cl. 74-573.00R.
- Kernforschungsanlage Julich GmbH: See—
Faul, Wolfgang; and Kastening, Bertel, 4,432,872, Cl. 210-205.000.
- Groeneweg, Joost; and Schluter, Manfred, 4,432,869, Cl. 210-602.000.
- Gupta, Ashok K.; Gyarmati, Erno; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,432,957, Cl. 423-345.000.
- Kernforschungszentrum Karlsruhe GmbH: See—
Henrich, Edmund; and Schlich, Elmar, 4,432,955, Cl. 423-249.000.
- Holbeck, Helmut, 4,432,794, Cl. 75-239.000.
- Kerry, John C.: See—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shuttler, Stephen W.; and Willis, Robert J., 4,432,994, Cl. 424-300.000.
- Kersten, Hilde; Zengel, Hans G.; and Toth, Anton, to Akzo NV. Waterdispersible cationic resins for electrodeposition. 4,433,078, Cl. 523-404.000.
- Key Pharmaceuticals, Inc.: See—
Keith, Alec D.; and Hsiao, Charles, 4,432,965, Cl. 424-19.000.
- Khan, Jawed M., to GTE Business Communication Systems Inc. Power supply control apparatus. 4,433,250, Cl. 307-66.000.
- Kida, Shuji: See—
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,433,046, Cl. 430-385.000.
- Kidde, Inc.: See—
Provencher, Amede R., 4,433,218, Cl. 200-11.00R.
- Kiddie, Inc.: See—
Stern, Russell L., 4,432,691, Cl. 414-735.000.
- Kiernan, Jane A.; and Baker, Pamela K., to American Cyanamid Company. 5-[2-(Ethylamino)-1-hydroxyethyl] anthranilonitrile and the use thereof in meat producing animals. 4,432,995, Cl. 424-304.000.
- Kikawa, Yoshio: See—
Muramatsu, Mutsumi; Sato, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, 4,433,152, Cl. 546-193.000.
- Kikkawa, Seiichi: See—
Matsuda, Toshiharu; Kasai, Kenjiro; Kikkawa, Seiichi; Saho, Norihide; and Matsumoto, Kouzo, 4,432,216, Cl. 62-514.00R.
- Kilham, Peter. Stove construction for achieving complete fuel combustion. 4,432,335, Cl. 126-60.000.
- Kilpatrick, Lester L.: See—
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- Kimberly-Clark Corporation: See—
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- Moore, William J., 4,432,823, Cl. 156-164.000.
- Kimmel, Walter. Roof attached article carrier for vehicles. 4,432,480, Cl. 224-329.000.
- Kimura, Kenji, to Olympus Optical Co., Ltd. Bias control apparatus for a recording system. 4,433,349, Cl. 360-66.000.
- Kimura, Syozo: See—
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- Kinetic Concepts, Inc.: See—
Vrzalik, John H., 4,432,353, Cl. 128-24.00R.
- King, Donald W.: See—
Norvell, Gordon S.; and King, Donald W., 4,432,660, Cl. 403-29.000.
- Kingale, William: See—
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- Kinochita, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage supply for operating a plurality of changing transistors in a manner which reduces minority carrier disruption of adjacent memory cells. 4,433,257, Cl. 307-443.000.
- Kinsbron, Eliezer; and Lynch, William T., to Bell Telephone Laboratories, Incorporated. Formation of sidewall oxide layers by reactive

- oxygen ion etching to define submicron features. 4,432,132, Cl. 29-571.000.
- Kintzinger, Warren H.: See—
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- Kiraly, Arpad: See—
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- Kiraly nee Soos, Gyongyver: See—
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Onuki, Osamu; and Kirisawa, Toyohiko, 4,432,208, Cl. 62-55.500.
- Kiriyama, Takashi: See—
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- Kiss, Gunter H.: to Lignotock Verfahrenstechnik GmbH. Apparatus for moulding three-dimensionally shaped moulded articles from binder-containing web-like non-woven fabrics. 4,432,716, Cl. 425-89.000.
- Kita, Toru, to Nissan Motor Co., Ltd. Karman vortex type flow measuring apparatus. 4,432,241, Cl. 73-861.220.
- Kitagawa, Kiyoshi: See—
Kawai, Yoshio; and Kitagawa, Kiyoshi, 4,433,299, Cl. 324-464.000.
- Kitagawa, Naoto: See—
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- Kitamura, Akinobu: See—
Tanaka, Ryohei; Kitamura, Akinobu; Odake, Takaaki; and Kato, Yutaka, 4,433,325, Cl. 340-937.000.
- Kitchen, Robert D., to Honeywell Inc. Actuator mechanism with enhanced tactile characteristics. 4,433,224, Cl. 200-330.000.
- Kitsuya, Minoru: See—
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- Kiuchi, Masayoshi: See—
Sakurada, Nobuaki; Kiuchi, Masayoshi; and Thunoda, Masahiro, 4,432,628, Cl. 354-289.120.
- Klaschka, Rudolf: See—
Wolf, Franz-Josef; and Klaschka, Rudolf, 4,433,361, Cl. 361-433.000.
- Klein, Albert M. Integrated drill leveling apparatus. 4,432,146, Cl. 33-334.000.
- Klein, Howard J.: See—
Harris, Bernard; and Klein, Howard J., 4,433,242, Cl. 250-358.100.
- Kleinert, Werner L., to Meyer, Carl R. Swimming pool integral structural wall brace system. 4,432,173, Cl. 52-167.700.
- Kline, George A., to Diamond Shamrock Corporation. Method for making metallized foils. 4,432,839, Cl. 204-12.000.
- Klockner-Humboldt-Deutz AG: See—
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- Moser, Gottfried; and Gross, Hansjürgen, 4,432,493, Cl. 237-12.30R.
- Posse, Gunther; and Jacob, Horst, 4,432,747, Cl. 494-8.000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—
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- Klomp, Edward D.; and Stevens, David A., to General Motors Corporation. Engine intake port with variable swirl vanes. 4,432,312, Cl. 123-188.0VA.
- Klose, Reinhard; and Glienke, Gunter, to Stahlwerke Peine-Salzgitter AG. Method and device for analyzing the solid matter content in a hydraulic conveying stream of a carrier liquid with solid particles. 4,432,674, Cl. 406-19.000.
- Klotzner, Winfried: See—
Schenk, Manfred; Klotzner, Winfried; and Jeenicke, Edmund, 4,433,379, Cl. 364-200.000.
- KMS Fusion, Inc.: See—
Teitel, Robert J.; and Solomon, David E., 4,432,933, Cl. 376-152.000.
- Kneller, William A.; and Nicholson, John P., to N-Viro Energy Systems Ltd. Beneficiating kiln dusts utilized in pozzolanic reactions. 4,432,800, Cl. 106-85.000.
- Knifton, John F.: See—
Lin, Jiang-Jen; and Knifton, John F., 4,433,176, Cl. 568-487.000.
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- Knoblauch, Karl: See—
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- Knorr, Harald; Handte, Reinhard; Willms, Lothar; and Tammer, Thomas, to Hoechst Aktiengesellschaft. Process for the manufacture of 2,6-dichlorobenzoxazole and 2,6-dichlorobenzthiazole. 4,433,153, Cl. 548-152.000.
- Knorr, Raymond S.; Chandler, Joe D.; and Tran, Loi N., to Monsanto Company. Stopping/restarting free radical polymerizations. 4,433,122, Cl. 526-83.000.
- Knox, Jack R.: See—
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- Koala Technologies Corporation: See—
Griffith, William M., 4,433,217, Cl. 200-5.00R.
- Koarai, Jiro: See—
Kawakami, Heijiro; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123.00R.
- Kobashi, Mamoru; Tanaka, Shinichiro; and Saji, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device of controlling the idling speed of an engine. 4,432,318, Cl. 123-339.000.
- Kobashi, Rikizo: See—
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- Kobayashi, Hiroshi; Yamada, Hisashi; and Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid crystal display device. 4,432,610, Cl. 350-331.00R.
- Kobayashi, Morimasa: See—
Sarurai, Nobuo; and Kobayashi, Morimasa, 4,432,260, Cl. 83-13.000.
- Kobayashi, Noriyuki; and Funamoto, Akihiko, to Nippon Soda Company Limited. Water-dispersion adhesive for extrusion lamination. 4,433,079, Cl. 523-404.000.
- Kobayashi, Shigeru: See—
Katahira, Hiroaki; and Kobayashi, Shigeru, 4,432,213, Cl. 62-239.000.
- Koch, Frank, to DeFelsko Corporation. Magnetic coating thickness comparator having parallel magnetic rods with nonmagnetic slide indicators. 4,433,290, Cl. 324-230.000.
- Kodaira, Yasuo, to Nihon Kaiheiki Industrial Company, Ltd. Miniaturized push button switch. 4,433,222, Cl. 200-153.00J.
- Kodera, Masao; and Akita, Shigeyuki, to Nippon Soken, Inc. Ultrasonic transducer. 4,433,398, Cl. 367-140.000.
- Koelmel, Donald F.: See—
Shalaby, Shalaby W.; Schipper, Edgar S.; and Koelmel, Donald F., 4,433,161, Cl. 560-66.000.
- Kogan, Boris I.: See—
Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozero, Aref I.; Morgachev, Ivan I.; Chernik, Jury S.; Kvirkovsky, Konstantin A.; Gusev, Alexei I.; and Terentiev, Nina A., 4,432,584, Cl. 299-25.000.
- Kohler, Gisbert; Weiss, Hermann; and Landwehr, Gotz, to Andreas Stihl. Safety device on a power saw. 4,432,139, Cl. 30-381.000.
- Koike, Hidemi: See—
Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
- Koizumi, Hideaki; Taiti, Yosio; Moriya, Kazuo; Harada, Katsuhito; and Sato, Kazuo, to Hitachi, Ltd. Apparatus for atomizing a sample including a slidable pressure maintaining arrangement. 4,432,643, Cl. 356-312.000.
- Koizumi, Mitsuyoshi: See—
Akiyama, Nobuyuki; Ohshima, Yoshimasa; and Koizumi, Mitsuyoshi, 4,433,235, Cl. 250-201.000.
- Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. PCM signal processor. 4,433,415, Cl. 371-37.000.
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Ogawa, Masanobu; and Kojima, Toshitake, 4,433,167, Cl. 562-534.000.
- Kokka Kogyo Kabushiki Kaisha: See—
Kurokawa, Masahito, 4,432,441, Cl. 188-267.000.
- Kokusai Denshin Denwa Kabushiki Kaisha: See—
Niino, Yasuhiko; and Ejiri, Yoshihiro, 4,432,605, Cl. 350-96.230.
- Kolibas, James A., to Nordson Corporation. Electrostatic system analyzer. 4,433,296, Cl. 324-452.000.
- Kollaritsch, Paul W., to Bell Telephone Laboratories, Incorporated. Programmable logic array interconnection matrix. 4,433,331, Cl. 340-825.830.
- Konagaya, Tsuyoshi: See—
Morikawa, Yonekichi; Shimizu, Toshio; Yoshida, Eiichi; Konagaya, Tsuyoshi; and Hirayama, Keizo, 4,433,229, Cl. 219-84.000.
- Kondo, Kaname: See—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, 4,433,152, Cl. 546-193.000.
- Kondo, Toshio; and Hamaoka, Kiyohiko, to Toyo Kogyo Co., Ltd. Mounting mechanism for a differential gear assembly of an automobile. 4,432,428, Cl. 180-73.00D.
- Kondo, Yoshikazu: See—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,432,842, Cl. 204-41.000.
- Kone Oy: See—
Heikinen, Urho, 4,432,403, Cl. 144-342.000.
- Konig, Klaus: See—
Pedain, Josef; Wellner, Wolfgang; Konig, Klaus; and Gruber, Hermann, 4,433,010, Cl. 427-160.000.
- Konishiroku Photo Industry Co., Ltd.: See—
Abe, Takao; and Hohnishi, Satoru, 4,433,050, Cl. 430-542.000.
- Akanabe, Yuichi; Ikeda, Hiroaki; Maeda, Masatoshi; and Funaki, Shinsuke, 4,432,598, Cl. 350-6.700.
- Itoh, Noboru; Takahashi, Toshiaki; Ogi, Keiji; and Kamitakahara, Atsushi, 4,433,049, Cl. 430-495.000.
- Nosaka, Isao; Sakaguchi, Hirofumi; Shiozawa, Takao; and Fujii, Yozo, 4,432,633, Cl. 355-8.000.

- Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,433,046, Cl. 430-385.000.
- Konter, Wolfgang: See—
Musch, Rudiger; Konter, Wolfgang; and Gobel, Wilhelm, 4,433,106, Cl. 525-215.000.
- Koppel, Paul E.; Williams, Joseph J.; and Woebecke, Herman N., to Stone & Webster Engineering Corp. Process for the production of ethane. 4,433,193, Cl. 585-752.000.
- Koppers Company, Inc.: See—
Holter, Samuel N., 4,433,181, Cl. 568-750.000.
- Korpman, Ralf, to Permacel. Radiation cured, high temperature pressure-sensitive adhesive. 4,432,848, Cl. 204-159.170.
- Korsak, Andrew J., to All-Lock Electronics, Inc. Key code. 4,432,142, Cl. 33-174.00F.
- Kottke, Lawrence F.: See—
Anderson, David S.; and Kottke, Lawrence F., 4,432,707, Cl. 417-477.000.
- Koutavas, Samuel G.: See—
Howe, Gary L.; and Koutavas, Samuel G., 4,432,341, Cl. 126-417.000.
- Kovach, Stephen M.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
- Myers, George D.; deceased; Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., 4,432,863, Cl. 208-113.000.
- Kowalchuk, Paul G. Duplicating fence for attachment to a rip saw fence of a table saw. 4,432,263, Cl. 83-438.000.
- Kozlik, Antonin: See—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shuttler, Stephen W.; and Willis, Robert J., 4,432,994, Cl. 424-300.000.
- Krause, Gerhard, to Krause, Gerhard. Optical apparatus for measuring transmission or absorption along a measurement path. 4,432,649, Cl. 356-438.000.
- Krautkramer-Person, Inc.: See—
Renzel, Peter; and Jacobs, Hanno, 4,432,235, Cl. 73-611.000.
- Kretschman, Gerald L.; and Mason, Anthony, to Whirlpool Corporation. Easy service motor mount for an automatic washer. 4,432,528, Cl. 248-603.000.
- Kreutz, Hermann: See—
Gupta, Ashok K.; Gyarmati, Erno; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,432,957, Cl. 423-345.000.
- Kristensen, Steen: See—
Madsen, Rud F.; Nielsen, Werner K.; and Kristensen, Steen, 4,432,806, Cl. 127-48.000.
- Kubler, Fritz, to Ing. Fritz Kubler, Zahlerfabrik GmbH. Mechanical preselection counter. 4,433,234, Cl. 235-132.00E.
- Kubo, Yoshimi; Shimizu, Shigeaki; Suzuki, Tetsuo; and Igarashi, Hitoshi, to Nippon Electric Co., Ltd. Method of producing porous body for solid electrolytic capacitor. 4,432,935, Cl. 419-2.000.
- Kubota, Hidenobu: See—
Iizuka, Masahiko; Kubota, Hidenobu; and Sano, Emiko, 4,433,052, Cl. 435-68.000.
- Kubota Ltd.: See—
Nakamura, Shiro; Nakagawa, Yoshihiro; and Hashimoto, Takashi, 4,433,032, Cl. 428-682.000.
- Tamura, Hideo; and Ibuki, Seiro, 4,432,804, Cl. 106-306.000.
- Kubota, Yosinori, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Torch for cutting, welding or heating. 4,433,358, Cl. 361-260.000.
- Kuch, Philip L.: See—
Herrington, Daniel R.; and Kuch, Philip L., 4,432,960, Cl. 423-539.000.
- Kuck, Manfred, to Joh. Friedrich Behrens AG. Safety release mechanism for fastening devices. 4,432,483, Cl. 227-8.000.
- Kudo, Toshiyuki: See—
Tsuiji, Mahito; Kudo, Toshiyuki; and Itoh, Kazuo, 4,433,409, Cl. 369-170.000.
- Kudo, Yozo: See—
Sawa, Yuji; and Kudo, Yozo, 4,432,457, Cl. 209-557.000.
- Kulkarni, Murlidhar V.: See—
Chye, Patrick W.; Hearn, Eric W.; Kulkarni, Murlidhar V.; and Markovits, Gary, 4,432,809, Cl. 148-1.500.
- Kulprathipanja, Santi, to UOP Inc. Separation of trans- and cis-olefins. 4,433,195, Cl. 585-820.000.
- Kumada, Akira: See—
Murata, Michihiro; and Kumada, Akira, 4,433,320, Cl. 338-35.000.
- Kume, Tsutomu: See—
Ishii, Yoshiaki; Ando, Naoyoshi; Kume, Tsutomu; and Fujinami, Shosaku, 4,432,290, Cl. 110-346.000.
- Kunishige, Fumio: See—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,432,842, Cl. 204-41.000.
- Kunkel, Hans-Achim: See—
Lohmar, Ernst; and Kunkel, Hans-Achim, 4,432,580, Cl. 296-39.00A.
- Kunz, Bernard L., to Emerson Electric Co. Thermostatic expansion valve with remote adjustment. 4,432,492, Cl. 236-92.00B.
- Kupper, Friedrich-Wilhelm; Padberg, Gunter; Reichert, Ulrich; and Trautmann, Walter, to Chemische Werke Huls AG. Production of impact-resistant styrene polymers. 4,433,099, Cl. 525-53.000.
- Kurahashi, Takeo: See—
Niimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, 4,433,040, Cl. 430-109.000.
- Kuraray Co., Ltd.: See—
Narukawa, Hiroshi; Tada, Rentaro; Takeuchi, Yasuhira; and Ohara, Osamu, 4,433,020, Cl. 428-113.000.
- Takayanagi, Motowo; and Murata, Yoshihumi, 4,433,117, Cl. 525-425.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Kawai, Yoshio; and Kitagawa, Kiyoshi, 4,433,299, Cl. 324-464.000.
- Sawa, Yuji; and Kudo, Yozo, 4,432,457, Cl. 209-557.000.
- Kurherr, Waldemar H. Electromagnetic projectile accelerator. 4,432,333, Cl. 124-3.000.
- Kuroda, Hitoshi: See—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,432,842, Cl. 204-41.000.
- Kuroda, Sigeaki; Arai, Akira; Senshu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, to Hitachi, Ltd. Blower. 4,432,694, Cl. 415-170.00A.
- Kurokawa, Akio: See—
Ifuku, Naoyuki; Kurokawa, Akio; Seita, Kenzo; Usami, Kaoru; and Aikawa, Naoyuki, 4,433,133, Cl. 528-232.000.
- Kurokawa, Hiroshi, to Ricoh Co., Ltd. Lens motor drive device in automatic focusing camera. 4,432,620, Cl. 354-402.000.
- Kurokawa, Masahito, to Kokka Kogyo Kabushiki Kaisha. Vibration isolation apparatus. 4,432,441, Cl. 188-267.000.
- Kurosaka, Yoshinori, to Kabushiki Kaisha Suwa Seikosha. Frame for a pair of spectacles. 4,432,616, Cl. 351-106.000.
- Kurosawa, Nobuyuki; and Suda, Kazuaki, to Sony Corporation. Stereo/monaural selecting circuit. 4,433,209, Cl. 381-1.000.
- Kurotaki, Kiyomitsu. Roaster. 4,432,274, Cl. 99-400.000.
- Kurth, Richard R., to Sperry Corporation. Frequency measuring system for alternating frequency signals. 4,433,422, Cl. 375-10.000.
- Kuryla, Alan T.; Penird, Carl W.; and Puhak, Peter G., to North American Philips Consumer Electronics Corp. CRT internal contactor positioning means. 4,433,267, Cl. 313-402.000.
- Kuschmierz, Heinz; and Vogel, Wilhelm, to Robert Bosch GmbH. Fuel injection arrangement. 4,432,228, Cl. 73-119.00A.
- Kusebauch, Walter: See—
Emshoff, Horst W.; and Kusebauch, Walter, 4,432,878, Cl. 210-662.000.
- Kusters, Eduard: See—
Hartmann, Werner, 4,432,277, Cl. 100-37.000.
- Kuwayama, Kenta; Nakagawa, Junzo; Tomii, Keishi; and Hagimori, Kenji, to Toho Aen Kabushiki Kaisha. Zinc alloy for use with electrode. 4,432,937, Cl. 420-513.000.
- Kuykendall, Charles R.; and Castle, Richard B., to Minnesota Mining & Manufacturing Company. Breakaway timber support poles. 4,432,172, Cl. 52-98.000.
- Kvirkovsky, Konstantin A.: See—
Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozero, Aref I.; Morgachev, Ivan I.; Chernik, Jury S.; Kvirkovsky, Konstantin A.; Gusev, Alexei I.; and Terentiev, Nina A., 4,432,584, Cl. 299-25.000.
- Kyster, Erik; and Thomsen, Svend E., to Danfoss A/S. Hydrostatic control device particularly a steering device. 4,432,270, Cl. 91-436.000.
- L. R. Nelson Corporation: See—
Bruninga, Kenneth J., 4,432,495, Cl. 239-205.000.
- Labitt, Bernard H.: See—
Manoogian, David V.; Labitt, Bernard H.; and Wood, Joseph R., 4,433,333, Cl. 343-18.00E.
- LaCerte, Richard F.: See—
Paquette, Elmer G.; Maloney, Michael J.; Swain, Douglas S.; LaCerte, Richard F.; Peters, James B.; and Mast, Robert E., 4,432,223, Cl. 73-7.000.
- Laganis, Deno; and Yodis, John, to Schenectady Chemicals, Inc. Water-borne hermetic varnish. 4,433,080, Cl. 523-414.000.
- L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Kubota, Yosinori, 4,433,358, Cl. 361-260.000.
- Lalin, Hill S., to Gilian Instrument Corporation. Fluid sampling. 4,432,248, Cl. 73-863.030.
- Lam, Dominic M.: See—
Emery, Jared M.; and Lam, Dominic M., 4,432,751, Cl. 604-49.000.
- Lam, Tony Y. K.: See—
Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,432,996, Cl. 424-311.000.
- Lamm, George L., to G & L Manufacturing & Develop. Corp. Sprayer attachment for a floor buffing machine. 4,432,472, Cl. 222-174.000.
- Landry, James E.; and Babb, Richard B. Secondary cooling system for gas compressors. 4,432,209, Cl. 62-62.000.
- Landwehr, Gotz: See—
Kohler, Gisbert; Weiss, Hermann; and Landwehr, Gotz, 4,432,139, Cl. 30-381.000.
- Lang, Gusztav: See—
Eble, Monika; and Lang, Gusztav, 4,432,469, Cl. 222-134.000.
- Lange, Gerhard; and Boy, Jürgen, to Siemens Aktiengesellschaft. Gas-discharge surge arrester. 4,433,354, Cl. 361-120.000.
- Langen, Christianes P.: See—
Langen, Johannes C.; and Langen, Christianes P., 4,432,650, Cl. 366-147.000.
- Langen, Johannes C.; and Langen, Christianes P. Handling device for handling meat portions. 4,432,650, Cl. 366-147.000.

- Langheinrich, Hans: See—
Hermle, Rolf; Kammerer, Heinz; and Langheinrich, Hans, 4,433,309, Cl. 331-65.000.
- Langley, Kenneth R., to Rolls Royce Limited. Centrifugal seal with deformable frustoconical sealing ring. 4,432,555, Cl. 277-25.000.
- Langley, Neal R.: See—
Bokerman, Gary N.; and Langley, Neal R., 4,433,096, Cl. 524-783.000.
- Lapham, James M.: See—
Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Lapham, James M., 4,432,406, Cl. 160-199.000.
- Larco Products, Inc.: See—
Miller, Earl, 4,432,155, Cl. 43-22.000.
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- Lobdell, Donn D.; and Goynne, Thomas E., to Cobe Laboratories, Inc. Tubing injection site guard. 4,432,767, Cl. 604-86.000.
- Lockett, John L., to Electric Power Research Institute, Inc. Inspection system. 4,432,931, Cl. 376-248.000.
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- M.J.H. Converters, Inc.: See—
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- Maki, Melvin C., to 501 Control Data Canada, Ltd. Method of grading radiating transmission lines. 4,432,193, Cl. 57-3.000.
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Bevan, John A., 4,432,963, Cl. 424-1.100.
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Rudski, Eugene M.; Jackson, Ronald W.; and Martocci, Anthony P., 4,432,657, Cl. 374-126.000.
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Leckrone, Michael E.; and Martucci, James P., 4,432,362, Cl. 128-419.0PG.
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- Marwitz, Heinrich; Ullrich, Kurt; and Huhn, Karl, to Wacker Chemie GmbH. Process for coating substrates with aqueous emulsions containing organopolysiloxanes. 4,433,007, Cl. 427-54.100.
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Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, 4,433,124, Cl. 526-277.000.
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- Matsui, Seiji: See—
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- Matsumura, Kaname: See—
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- Matsushita Electric Industrial Co., Ltd.: See—
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- Baba, Sueki; Yoshida, Tomio; Akahira, Nobuo; and Yamashita, Tadaoki, 4,433,403, Cl. 369-48.000.
- Hamabe, Takeshi; and Nakamura, Tatsuya, 4,433,359, Cl. 361-273.000.
- Iyehara, Sadahiro; Kawashima, Kazumi; Ueda, Minoru; Yamamoto, Keisuke; Hosokawa, Tatsuhiro; and Furuta, Yukio, 4,433,395, Cl. 365-222.000.
- Noguchi, Toyota; Kaneko, Mamoru; and Katoh, Hironori, 4,433,311, Cl. 332-11.00D.
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- Matt, Timothy S., to Nordson Corporation. Coating system control having a sensor interface with noise discrimination. 4,433,237, Cl. 250-222.100.
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- Matzen, Max, to Klockner-Humboldt-Deutz Aktiengesellschaft. Mechanical speed regulator for an injection pump. 4,432,704, Cl. 417-294.000.
- Mauborgne, Bernard: See—
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- Maurel, Pierre, to Uranium Pechiney Ugine Kuhlmann. Process for obtaining molybdenum as a useful product from molybdeniferous solutions containing alkali metal carbonate, sulphate, hydroxide or hydrogen carbonate and possibly uranium. 4,432,947, Cl. 423-55.000.
- Maurer, Roger. Installation comprising a plurality of numerically controlled machine tools. 4,433,383, Cl. 364-474.000.
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Wurzer, Ernst, 4,432,718, Cl. 425-466.000.
- Mautz, Karlheinz: See—
Stephan, Michael; Mautz, Karlheinz; and Schwarz, Alois, 4,432,696, Cl. 416-134.00A.
- May, Paul W., Jr.: See—
Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., 4,433,089, Cl. 524-294.000.
- Maye, Robert A.: See—
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- Mayer, Herbert E., to Censor Patent-und Versuchs-Anstalt. Temperature-controlled support for semiconductor wafer. 4,432,635, Cl. 355-30.000.
- Mayland, Harold E. Apparatus for releasably bridging a well. 4,432,418, Cl. 166-133.000.
- Mazeau, Jean P.: See—
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- McAusland, Robert R., to Advanced Technology Laboratories, Inc. Ultrasound scanhead. 4,432,371, Cl. 128-660.000.
- McCalmont, Arnold M.; and Slate, Matthew W., to Technical Communications Corporation. Privacy communication system employing time/frequency transformation. 4,433,211, Cl. 179-1.50S.
- McClung, Thomas E. Fire escape system. 4,432,437, Cl. 182-234.000.
- McDonnell Douglas Corporation: See—
Farris, John R.; and Tucci, Allan T., 4,432,302, Cl. 118-410.000.
- McFarlane, John; and Guy, Andrew, to Sonell Products Limited. Fuel economizer devices. 4,432,332, Cl. 123-587.000.
- McGregor, Harold R. Automatic bag hanger. 4,432,186, Cl. 53-69.000.
- McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., to United States of America, Energy. Method for synthesizing HMX. 4,432,902, Cl. 260-239.0HM.
- McIntire, William R., to United States of America, Energy. Receiver for solar energy collector having improved aperture aspect. 4,432,345, Cl. 126-439.000.
- McKewan, Arthur J., to Microdot Inc. Threaded fastener assembly. 4,432,682, Cl. 411-311.000.
- McLain, Stephan J.; and Waller, Francis J., to Du Pont de Nemours, E. I., and Company. Phosphine azacrown ether compounds. 4,432,904, Cl. 260-330.600.
- McLane, Wesley: See—
Norman, Deumite; Brannagan, James P.; and McLane, Wesley, 4,432,289, Cl. 110-336.000.
- McLeod, David M., to Dow Chemical Company, The. Apparatus for mixing vapor and liquid phases of anhydrous ammonia. 4,432,651, Cl. 366-336.000.
- McMahon, Donald H., to Sperry Corporation. Fiber optic differential sensor. 4,432,599, Cl. 350-96.150.
- McMillan, Charles. Ice tray with lid. 4,432,529, Cl. 249-52.000.
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- Meca: See—
Raisin, Jean-Pierre; Helffer, Bernard; and Chirouze, Jean L., 4,432,295, Cl. 112-262.300.
- Mechanical Enterprises, Inc.: See—
Twyford, Robert H., 4,433,317, Cl. 335-151.000.
- Mechanical Technology Incorporated: See—
Bhate, Suresh K., 4,433,279, Cl. 322-3.000.
- Walsh, Michael M., 4,432,204, Cl. 60-520.000.
- Medi-Tech, Incorporated: See—
Halvorsen, Kenneth G., 4,432,369, Cl. 128-653.000.
- Medtronic, Inc.: See—
Dickhudt, Eugene A., 4,432,377, Cl. 128-786.000.
- Monroe, Paul P., 4,432,372, Cl. 128-675.000.
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- Mehler, Gunter: See—
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- Melchior, Jean F.; and Andre, Thierry M., to French State, The. Super-charged internal combustion engines, in particular diesel engines, and in methods for starting up and regulating the speed of these engines. 4,432,206, Cl. 60-606.000.
- Melin, Kent: See—
Lind, Lars; Melin, Kent; and Sandberg, Lars, 4,432,430, Cl. 180-197.000.
- Melpolder, Frank W.: See—
Gupta, Vijai P.; Melpolder, Frank W.; and Mameniskis, Walter A., 4,433,173, Cl. 568-324.000.
- Menasha Corporation: See—
Swingle, Harold E., Jr., 4,432,467, Cl. 220-334.000.
- Menet, Albert: See—
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,433,171, Cl. 568-33.000.
- Menzmer, David A.: See—
Haddick, David H.; Lyon, George E.; and Menzmer, David A., 4,433,345, Cl. 358-244.000.
- Merck & Co., Inc.: See—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,432,992, Cl. 424-274.000.
- Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,432,996, Cl. 424-311.000.
- Merten, Rudolf: See—
Rottmaier, Ludwig; and Merten, Rudolf, 4,433,085, Cl. 524-83.000.
- Rottmaier, Ludwig; and Merten, Rudolf, 4,433,144, Cl. 544-198.000.
- Messerschmitt-Boelkow-Blohm GmbH: See—
Stephan, Michael; Mautz, Karlheinz; and Schwarz, Alois, 4,432,696, Cl. 416-134.00A.
- Metallurgie Hoboken-Overpelt: See—
De Schepper, Achille; Coussemont, Marc; and Van Peteghem, Antoine, 4,432,951, Cl. 423-89.000.
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- Meyer, Carl R.: See—
Kleinert, Werner L., 4,432,173, Cl. 52-167.700.
- Meyer, Hans R., to Ciba-Geigy Corporation. Cationic fluorescent whitening agents. 4,432,886, Cl. 252-301.270.
- Meyer, Wolfgang H.; and Curtis, Bernard J., to RCA Corporation. Dry developable positive photoresists. 4,433,044, Cl. 430-271.000.
- Meylink, John G.: See—
Hutchison, Wayne R.; and Meylink, John G., 4,432,309, Cl. 123-41.660.
- Michl, Franz: See—
Grage, Ludwig; Ryseck, Werner; and Michl, Franz, 4,432,640, Cl. 356-5.000.
- Microdot Inc.: See—
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- Middy, Gerald W. Solar insolation and concentration by coupled fiber optics. 4,433,199, Cl. 136-246.000.
- Midwec Toroid & Capacitor Corporation: See—
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- Milionis, Jerry P.; and Fischer, Joel E., to American Cyanamid Company. Concentrated emetic herbicidal composition and method for the preparation thereof. 4,432,787, Cl. 71-94.000.
- Miller, Donald R.: See—
Brantley, Vanston R.; and Miller, Donald R., 4,432,232, Cl. 73-432.00R.
- Miller, Earl, to Larco Products, Inc. Fishing rod. 4,432,155, Cl. 43-22.000.
- Miller, Ira: See—
Davies, Robert B.; and Miller, Ira, 4,433,302, Cl. 330-257.000.
- Miller, Kenneth A., to Ireco Chemicals. Detonation cut-off device. 4,432,268, Cl. 86-1.00R.
- Miller, Peter S., to Owens-Illinois, Inc. Splice-in-register control. 4,432,481, Cl. 226-9.000.
- Miller, Walter, to Dr. Johannes Heidenhain GmbH. Apparatus for programming numerically path controlled processing devices. 4,433,373, Cl. 364-171.000.
- Milligan, Lowell R.: See—
Moriarty, Keith A.; and Milligan, Lowell R., 4,432,143, Cl. 33-178.00F.
- Mills, Carl R., to Chicago Fluid Power Corp. Accumulator. 4,432,393, Cl. 138-30.000.
- Ministry of International Trade & Industry: See—
Harata, Kazuaki; Morimoto, Satoshi; and Tsuda, Keishiro, 4,432,802, Cl. 106-163.00R.
- Minnesota Mining and Manufacturing Company: See—
Eian, Gilbert L., 4,433,024, Cl. 428-198.000.
- Kuykendall, Charles R.; and Castle, Richard B., 4,432,172, Cl. 52-98.000.
- Vogelgesang, Peter J., 4,433,351, Cl. 360-76.000.
- Wyatt, Gerald A., 4,433,356, Cl. 361-191.000.
- Minning, Rudolf; and Dierkes, Heribert, to UHDE GmbH. Process for the manufacture of double walled pipe. 4,432,123, Cl. 29-157.00A.
- Minns, Richard A.: See—
Rogers, Howard G.; Gaudiana, Russell A.; and Minns, Richard A., 4,433,132, Cl. 528-191.000.
- Minolta Camera Kabushiki Kaisha: See—
Tabuchi, Kenji, 4,432,634, Cl. 355-14.00D.
- Misawa, Rintaro, to Sunwa Sharyo Manufacturing Company Limited. Stair climbing wheelchair carrier. 4,432,426, Cl. 180-8.00A.
- Mita Industrial Co. Ltd.: See—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,433,039, Cl. 430-58.000.
- Mitsubishi Denki Kabushiki Kaisha: See—
Ohta, Kazutoshi; and Sakakibara, Kunio, 4,433,023, Cl. 428-182.000.
- Mitsubishi Gas Chemical Company Inc.: See—
Miyamoto, Akira; Shimizu, Senzo; Yamamiya, Kazuo; and Harada, Masahiro, 4,433,136, Cl. 528-347.000.
- Mitsubishi Petrochemical Company, Ltd.: See—
Sano, Hironari; and Yui, Hiroshi, 4,433,073, Cl. 523-201.000.
- Mitsubishi Rayon Company Ltd.: See—
Kamata, Kazumasa; and Tateyama, Masamitsu, 4,433,103, Cl. 525-81.000.
- Mitsuboshi Belting Ltd.: See—
Imamura, Junji; and Matsumura, Kaname, 4,432,744, Cl. 474-238.000.
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Kabu, Yasunori; Yasunaka, Masayoshi; Morita, Yoshinori; and Motowaka, Masanori, 4,433,121, Cl. 526-68.000.
- Matsuda, Akira; and Tojyo, Tetsuo, 4,433,105, Cl. 525-211.000.
- Mitsui Toatsu Chemicals, Inc.: See—
Ifuku, Naoyuki; Kurokawa, Akio; Seita, Kenzo; Usami, Kaoru; and Aikawa, Naoyuki, 4,433,133, Cl. 528-232.000.
- Mitsuwa Kogyo Co., Ltd.: See—
Wakimura, Kazuo, 4,432,544, Cl. 273-1.00M.
- Mittleman, Herbert; and Boland, Gordon P., to Baxter Travenol Laboratories, Inc. Administration set including burette with pivotable air valve. 4,432,760, Cl. 604-246.000.
- Miura, Haruo; and Abe, Yoshiaki, to Hitachi, Ltd. Rotor of axial-flow machine. 4,432,697, Cl. 416-198.00A.
- Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, to Mita Industrial Co. Ltd. Trisazo electrophotographic photosensitive material. 4,433,039, Cl. 430-58.000.
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- Miyamoto, Shigenobu: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Miyatake, Tatsuya: See—
Baba, Kazuo; Kawamata, Shyozo; Fukui, Yoshiharu; Ima, Seiichi; and Miyatake, Tatsuya, 4,433,110, Cl. 525-323.000.
- Miyawaki, Yoshinori: See—
Ogawa, Hiroshi; Kimura, Syozi; and Miyawaki, Yoshinori, 4,432,373, Cl. 128-680.000.
- Miyazaki, Masaru: See—
Nakamura, Kazumitsu; and Miyazaki, Masaru, 4,433,243, Cl. 250-397.000.
- Mizoguchi, Allan H.: See—
Christensen, James M.; and Mizoguchi, Allan H., 4,432,361, Cl. 128-419.00F.
- Mizokami, Kazunori, to Olympus Optical Company, Ltd. Apparatus for communicating information relating to taking lens. 4,432,627, Cl. 354-289.100.
- Miot-Fijalkowski, Adolf; and Borrows, Paul K., to Magnaflux Corporation. Method for inspecting steel billets with a dry mixture of magnetic particles and a water soluble carrier solid. 4,433,289, Cl. 324-215.000.
- Mobay Chemical Corporation: See—
Santimauro, John F., 4,432,796, Cl. 106-19.000.
- Mobil Oil Corporation: See—
Chu, Chin-Chiun, 4,433,186, Cl. 585-445.000.
- Hungerford, Gordon P., 4,432,917, Cl. 264-40.100.
- Tabak, Samuel A., 4,433,185, Cl. 585-312.000.
- Young, Lewis B., 4,433,189, Cl. 585-640.000.
- Mochizuki, Masafumi: See—
Saito, Takashi; and Mochizuki, Masafumi, 4,433,405, Cl. 369-77.200.
- Saito, Takashi; Mochizuki, Masafumi; and Arai, Norimasa, 4,433,406, Cl. 369-77.200.
- Modern Precision Engineers and Associates Limited: See—
Clements, Harold J., 4,432,429, Cl. 180-127.000.
- Modulite Corporation: See—
Weber, Franz K., 4,433,363, Cl. 362-86.000.

- Moise, Gervais: See—
Castagner, Bernard; Carre, Paul; and Moise, Gervais, 4,432,269, Cl. 89-1.816.
- Molde, Bradley J., to Standard Textile Company, Inc. Cloth-like material for forming a surgical gown and/or a surgical drape and method of making the same. 4,433,026, Cl. 428-252.000.
- Molina, Jorge W., to Deutsch Fastener Corp. Stressed panel fastener. 4,432,680, Cl. 411-103.000.
- Molison, Robert E.: See—
Elsner, Bertram F.; and Molison, Robert E., 4,432,187, Cl. 53-137.000.
- Monaghan, Richard L.: See—
Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,432,996, Cl. 424-311.000.
- Monk, John T. Straddle carrier. 4,432,690, Cl. 414-460.000.
- Monnier, Charles E.: See—
Lohse, Friedrich; and Monnier, Charles E., 4,433,179, Cl. 568-664.000.
- Monroe, Paul P., to Medtronic, Inc. Two-lead power/signal multiplexed transducer. 4,432,372, Cl. 128-675.000.
- Monsanto Company: See—
Coran, Aubert Y.; and Trivette, Chester D., Jr., 4,433,114, Cl. 525-332.600.
- D'Amico, John J., 4,432,785, Cl. 71-90.000.
- Harris, Alva F., 4,433,086, Cl. 524-112.000.
- Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., 4,433,089, Cl. 524-294.000.
- Knorr, Raymond S.; Chandler, Joe D.; and Tran, Loi N., 4,433,122, Cl. 526-83.000.
- Long, Walter E., 4,433,249, Cl. 307-31.000.
- Santer, J. Owen; and Spitz, George T., 4,433,143, Cl. 544-196.000.
- Singleton, Thomas C., 4,433,165, Cl. 562-519.000.
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- Van Ee'ram, Donald N., 4,433,090, Cl. 524-295.000.
- Monteleone, Jerry: See—
Monteleone, Nick; Monteleone, Jerry; and Monteleone, Lorenzo, 4,432,125, Cl. 29-402.080.
- Monteleone, Lorenzo: See—
Monteleone, Nick; Monteleone, Jerry; and Monteleone, Lorenzo, 4,432,125, Cl. 29-402.080.
- Monteleone, Nick; Monteleone, Jerry; and Monteleone, Lorenzo. Hinge pin removal tool. 4,432,125, Cl. 29-402.080.
- Montres Rolex S.A.: See—
Zaugg, Edmond, 4,433,295, Cl. 324-429.000.
- Moore, Arnold R., to RCA Corporation. Method and apparatus for determining minority carrier diffusion length in semiconductors. 4,433,288, Cl. 324-158.000.
- Moore, Hazel M. Cowboy rodeo contest game. 4,432,553, Cl. 273-244.000.
- Moore, William J., to Kimberly Clark Corporation. Method and apparatus for manufacturing elastic leg disposable diapers. 4,432,823, Cl. 156-164.000.
- Moplefan S.p.A.: See—
Cacciapuoti, Beniamino, 4,432,397, Cl. 139-13.00R.
- Morelli, Luigi: See—
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., 4,433,286, Cl. 324-61.00R.
- Morency, Roger L.; and Olin, Lester D., to United States of America. Navy. Multichannel fiber optics connector. 4,432,603, Cl. 350-96.210.
- Morgachev, Ivan I.: See—
Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozorov, Aref I.; Morgachev, Ivan I.; Chernik, Yuri S.; Kvitkovsky, Konstantin A.; Gusev, Alexei I.; and Terenteva, Nina A., 4,432,584, Cl. 299-25.000.
- Morgan, Albert W.: See—
Keeney, C. Neil; May, Paul W., Jr.; and Morgan, Albert W., 4,433,089, Cl. 524-294.000.
- Morgan, Grover D., to United States of America, Energy. Dual circuit embossed sheet heat transfer panel. 4,432,414, Cl. 165-140.000.
- Mori, Hisakazu: See—
Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, 4,433,124, Cl. 526-277.000.
- Mori, Shio: See—
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,433,139, Cl. 536-17.200.
- Moriarty, Thomas C.; and Geiger, William J., to PPG Industries, Inc. Ungelled polyepoxide-polyoxyalkylenepolyamine resins, aqueous dispersions thereof, and their use in cationic electrodeposition. 4,432,850, Cl. 204-181.00C.
- Moriarty, Keith A.; and Milligan, Lowell R., to Dresser Industries, Inc. Well logging apparatus. 4,432,143, Cl. 33-178.00F.
- Morikawa, Yonekichi; Shimizu, Toshio; Yoshida, Eiichi; Konagaya, Tsuyoshi; and Hirayama, Keizo, to Daiwa Can Company, Limited. Electrode roll for resistance welding. 4,433,229, Cl. 219-84.000.
- Morimoto, Satoshi: See—
Harata, Kazuaki; Morimoto, Satoshi; and Tsuda, Keishiro, 4,432,802, Cl. 106-163.00R.
- Morimoto, Tada: See—
Shimizu, Masato; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
- Morishita, Hirosada: See—
Kawanishi, Tsuneaki; Mukoh, Akio; Morishita, Hirosada; and Hoshi, Nobuyoshi, 4,433,042, Cl. 430-126.000.
- Morita, Akio; and Watanabe, Isamu, to Riken Denshi Co., Ltd. Range switching device for electric meter. 4,433,287, Cl. 324-115.000.
- Morita, Eiichi: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Morita, Yasuyuki; and Oda, Hiroyuki, to Toyo Kogyo Co., Ltd. Ignition arrangement for internal combustion engine. 4,432,315, Cl. 123-310.000.
- Morita, Yoshinori: See—
Kabu, Yasunori; Yasunaka, Masayoshi; Morita, Yoshinori; and Motowoka, Masanori, 4,433,121, Cl. 526-68.000.
- Morita, Yukio: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Moriya, Kazuo: See—
Koizumi, Hideaki; Taiti, Yosio; Moriya, Kazuo; Harada, Katsuhito; and Sato, Kazuo, 4,432,643, Cl. 356-312.000.
- Moriyama, Masuyoshi: See—
Honza, Yatsuhiko; Moriyama, Masuyoshi; and Iwamori, Hidekazu, 4,432,702, Cl. 417-269.000.
- Morris Rod-Weeder Co. Ltd.: See—
Machnee, Cecil B., 4,432,675, Cl. 406-30.000.
- Morris, Stanley. Advertising display apparatus. 4,432,151, Cl. 40-10.00D.
- Morrison-Knudsen Forest Products Company, Inc.: See—
Logan, James D., 4,432,916, Cl. 264-24.000.
- Morsch, Joachim: See—
Beutler, Gerhard; Berthold, Heinz; Morsch, Joachim; and Schiene, Karl, 4,432,703, Cl. 417-217.000.
- Morse Boulder, Inc.: See—
Brillantes, Bonifacio B., 4,432,287, Cl. 110-212.000.
- Moser, Gottfried; and Gross, Hansjurgan, to Klockner-Humboldt-Deutz AG. System for heating the service cabin of a machine. 4,432,493, Cl. 237-12.30R.
- Moses, Donald W.; Hustig, Charles; and Ballard, C. Ray, to Applied Spectrum Technologies, Inc. Telephone line interface circuit. 4,433,212, Cl. 179-2.00C.
- Motojima, Kenji: See—
Kamiya, Kunio; Motojima, Kenji; Funabashi, Kiyomi; Chino, Koichi; and Horiuchi, Susumu, 4,432,894, Cl. 252-632.000.
- Motorola, Inc.: See—
Davies, Robert B.; and Miller, Ira, 4,433,302, Cl. 330-257.000.
- Dolikian, Arman V., 4,433,256, Cl. 307-358.000.
- Jasinski, Leon, 4,433,214, Cl. 179-115.5ES.
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Kabu, Yasunori; Yasunaka, Masayoshi; Morita, Yoshinori; and Motowoka, Masanori, 4,433,121, Cl. 526-68.000.
- Mozer, Forrest S. Method and apparatus for time domain compression and synthesis of audible signals. 4,433,434, Cl. 381-30.000.
- MPD Technology Corporation: See—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,433,063, Cl. 502-402.000.
- Mross, Wolf D.: See—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmatt, Matthias, 4,433,188, Cl. 585-640.000.
- Muhlke, John, III: See—
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., 4,433,286, Cl. 324-61.00R.
- Muise, Herbert D., to Weyerhaeuser Company. Container packaging for cups. 4,432,491, Cl. 229-33.000.
- Muka, Richard S.; and Russo, Carl J., to Varian Associates, Inc. Black-body radiation source for producing constant planar energy flux. 4,433,246, Cl. 250-492.100.
- Mukoh, Akio: See—
Kawanishi, Tsuneaki; Mukoh, Akio; Morishita, Hirosada; and Hoshi, Nobuyoshi, 4,433,042, Cl. 430-126.000.
- Muller, Max; Lilly, Eugene B.; and Bott, Richard E. Machine for cleaning shoe soles. 4,432,112, Cl. 15-36.000.
- Mumford, George V.; and Li, Ernest L., to Owens-Illinois, Inc. Tamper indicating package. 4,432,461, Cl. 215-252.000.
- Mumford, Van E.; Sasmor, Louis; and Schroepfel, Edward A., to Cordis Corporation. Interactive programmer for biomedical implantable devices. 4,432,360, Cl. 128-419.0PG.
- Munekata, Katsuyuki; Furuno, Hiroshi; and Someno, Noboru, to Sony Corporation. Timer apparatus. 4,432,652, Cl. 368-69.000.
- Munzer, Rudolf: See—
Gupta, Ashok K.; Gyarmati, Erno; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,432,957, Cl. 423-345.000.
- Murakami, Katsuyuki; Hirakata, Kaoru; Ishizaka, Fumio; Shimoda, Shinichi; and Itai, Reichi, to Japan Carlit Co., Ltd. The Apparatus for manufacturing chlorine dioxide. 4,432,856, Cl. 204-237.000.
- Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, to Nippon Chemipharm Co., Ltd. Amidinopiperidine derivatives. 4,433,152, Cl. 546-193.000.
- Murano, Tamio: See—
Kawashima, Ikue; Fukushima, Yoshio; Murano, Tamio; and Suzuki, Toshitatsu, 4,432,622, Cl. 354-408.000.
- Murata Kikai Kabushiki Kaisha: See—
Ueda, Yutaka; and Ikeda, Isamu, 4,432,197, Cl. 57-261.000.
- Murata Manufacturing Co., Ltd.: See—
Murata, Michihiro; and Kumada, Akira, 4,433,320, Cl. 338-35.000.

- Nishiyama, Hiroshi; and Nakamura, Takeshi, 4,433,264, Cl. 310-321.000.
- Wakino, Kikuo; and Arakawa, Yoshio, 4,433,360, Cl. 361-305.000.
- Murata, Michihiro; and Kumada, Akira, to Murata Manufacturing Co., Ltd. Dew sensor. 4,433,320, Cl. 338-35.000.
- Murata, Yoshihumi: See—
Takayanagi, Motowo; and Murata, Yoshihumi, 4,433,117, Cl. 525-425.000.
- Murayama, Morio: See—
Ishikawa, Norio; Murayama, Morio; and Nishijima, Yasumoto, 4,432,920, Cl. 264-49.000.
- Murayama, Yoshimasa: See—
Maruyama, Eiichi; Shimada, Toshikazu; Shiraki, Yasuhiro; Katayama, Yoshifumi; Matsubara, Hirokazu; Ishizaka, Akitoshi; Murayama, Yoshimasa; and Shintani, Akira, 4,433,202, Cl. 136-255.000.
- Musall, Reimar; and Wolsing, Wilhelm, to Kali-Chemie AG. Elastic suspension for a monolithic catalyst body in a exhaust gas cleaning device. 4,432,943, Cl. 422-179.000.
- Muscattell, Ralph P. Variable airfoil assembly. 4,432,516, Cl. 244-219.000.
- Musch, Rudiger; Konter, Wolfgang; and Gobel, Wilhelm, to Bayer Aktiengesellschaft. Production of sulphur-modified polychloroprene rubbers. 4,433,106, Cl. 525-215.000.
- Musto, Dominick J.; and Lerner, Harold, to Austin Company, The. Multiple dimension laser gauge. 4,432,648, Cl. 356-387.000.
- Myers, George D.; and Busch, Lloyd E., to Ashland Oil, Inc. Carbo-metallic oil conversion with liquid water containing H₂S. 4,432,864, Cl. 208-120.000.
- Myers, George D., deceased (by Myers, Virginia K., administratrix); Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., to Ashland Oil, Inc. Steam reforming of carbo-metallic oils. 4,432,863, Cl. 208-113.000.
- Myers, Virginia K., administratrix: See—
Myers, George D., deceased; Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., 4,432,863, Cl. 208-113.000.
- Mysels, Karol J.: See—
Wrasidlo, Wolfgang J.; and Mysels, Karol J., 4,432,875, Cl. 210-500.200.
- N-Viro Energy Systems Ltd.: See—
Kneller, William A.; and Nicholson, John P., 4,432,800, Cl. 106-85.000.
- Nabisco Brands, Inc.: See—
Zekert, Gerhard C.; and DeArment, Donald K., 4,432,275, Cl. 99-625.000.
- Nadzan, Alex M.; and Granneman, George R., to Abbott Laboratories. N-alkylated carboxylic acid derivatives as anti-convulsant agents. 4,432,985, Cl. 424-267.000.
- Naegele, Paul: See—
Straub, Ferdinand; Hartmann, Heinrich; Naegele, Paul; and Seib, Karl, 4,433,112, Cl. 525-326.900.
- Nagao, Nobuya: See—
Taguchi, Shinichi; Nagao, Nobuya; and Ogihara, Yutaka, 4,433,255, Cl. 307-353.000.
- Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Signal processing circuit of ultrasonic diagnostic apparatus. 4,432,236, Cl. 73-631.000.
- Nagasawa, Masahiro: See—
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,433,408, Cl. 369-170.000.
- Nagashima, Shigeo: See—
Torii, Shunichi; Nagashima, Shigeo; and Omoda, Koichiro, 4,433,394, Cl. 365-221.000.
- Nagata, Minoru: See—
Kaneko, Kenji; Okabe, Takahiro; Nagata, Minoru; and Okada, Yutaka, 4,433,258, Cl. 307-456.000.
- Naito, Yoshikazu: See—
Okuyama, Nobutaka; Shimizu, Toshiharu; and Naito, Yoshikazu, 4,433,318, Cl. 335-213.000.
- Nakada, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic musical performance device capable of controlling the tempo. 4,432,266, Cl. 84-1.030.
- Nakagawa, Junzo: See—
Kuwayama, Kenta; Nakagawa, Junzo; Tomii, Keishi; and Hagimori, Kenji, 4,432,937, Cl. 420-513.000.
- Nakagawa, Masao: See—
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,433,029, Cl. 428-407.000.
- Nakagawa, Satoshi: See—
Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, 4,433,046, Cl. 430-385.000.
- Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, to Yokogawa Hokushin Electric Corporation. Multiple-color recording apparatus. 4,433,338, Cl. 346-34.000.
- Nakagawa, Yasushi: See—
Suzuki, Ichiro; Nakagawa, Yasushi; and Kitagawa, Naoto, 4,432,565, Cl. 280-779.000.
- Nakagawa, Yoshihiro: See—
Nakamura, Shiro; Nakagawa, Yoshihiro; and Hashimoto, Takashi, 4,433,032, Cl. 428-682.000.
- Nakamichi, Fujio: See—
Shirakuma, Takashi; Nakamichi, Fujio; and Iguchi, Osamu, 4,432,698, Cl. 417-27.000.
- Nakamura, Fujio: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Nakamura, Kazumitsu; and Miyazaki, Masaru, to Hitachi, Ltd. Electron beam exposure apparatus. 4,433,243, Cl. 250-397.000.
- Nakamura, Shiro; Nakagawa, Yoshihiro; and Hashimoto, Takashi, to Kubota Ltd. High chrome work roll. 4,433,032, Cl. 428-682.000.
- Nakamura, Takeshi: See—
Nishiyama, Hiroshi; and Nakamura, Takeshi, 4,433,264, Cl. 310-321.000.
- Nakamura, Tatsuya: See—
Hamabe, Takeshi; and Nakamura, Tatsuya, 4,433,359, Cl. 361-273.000.
- Nakatsugawa, Shigekazu, to Yamasa Shoyu Kabushiki Kaisha. Enhancer of anti-tumor effect. 4,432,348, Cl. 128-1.100.
- Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, to Nippon Kokan Kabushiki Kaisha. Method for manufacturing non-fired iron-bearing pellet. 4,432,788, Cl. 75-3.000.
- Nakayama, Yoshihiko: See—
Tachibana, Keiji; Terasaki, Masatosi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,432,212, Cl. 62-229.000.
- Nalco Chemical Company: See—
Whitfield, Joyce M.; and Cosper, David R., 4,432,834, Cl. 162-158.000.
- Naoumidis, Aristides: See—
Gupta, Ashok K.; Gyarmati, Erno; Kreutz, Hermann; Munzer, Rudolf; Naoumidis, Aristides; and Nickel, Hubertus, 4,432,957, Cl. 423-345.000.
- Napp, E. Thomas; Stauber, R. C.; and Lillegard, Thomas R., to Baxter Travenol Laboratories, Inc. Ultrasonic level detector. 4,432,231, Cl. 73-290.00V.
- Nara, Akio: See—
Tsuchiya, Keiji; Sasaya, Hideaki; and Nara, Akio, 4,432,711, Cl. 418-150.000.
- Nari, Dario: See—
De Gasperi, Mario M.; Racciu, Antonio; and Nari, Dario, 4,433,385, Cl. 364-554.000.
- Narukawa, Hiroshi; Tada, Rentaro; Takeuchi, Yasuhira; and Ohara, Osamu, to Kuraray Co., Ltd. Sheet-like material, heat-insulating material derived therefrom and methods of manufacturing same. 4,433,020, Cl. 428-113.000.
- Nashiki, Masayuki; and Hamada, Yoshio, to Kabushiki Kaisha Okuma Tekkosho. Rotor for permanent magnet type synchronous motors. 4,433,261, Cl. 310-156.000.
- National Starch and Chemical Corp.: See—
Szymanski, Chester D., 4,432,967, Cl. 424-78.000.
- National Steel Corporation: See—
Honeycutt, LeRoy, III, 4,432,846, Cl. 204-129.950.
- Navarre, Robert J. Eaves trough bracket assembly. 4,432,518, Cl. 248-48.200.
- Naylor, Raymond L.: See—
Banks, William D.; Bond, Frank G.; and Naylor, Raymond L., 4,433,251, Cl. 307-246.000.
- NCR Corporation: See—
Oosterbaan, DuWayne D., 4,433,388, Cl. 364-900.000.
- Thomas, Jacob E., 4,433,341, Cl. 346-140.00R.
- Neal, James W.: See—
Loersch, Joseph F.; and Neal, James W., 4,432,220, Cl. 72-53.000.
- Neely, James E., Jr.; Lin, Chia-Cheng; Olson, Dean R.; Jacobson, Annette M.; and Falleroni, Charlene A., to PPG Industries, Inc. Multiple glazed unit bonded with fiber-reinforced silicate cement. 4,433,016, Cl. 428-34.000.
- Neff, Leslie A. Log cutting device having log shifting means. 4,432,449, Cl. 198-777.000.
- Negi, Shigeto: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Neil and Spencer Limited: See—
Banks, Clifford G., 4,432,149, Cl. 38-55.000.
- Nemeth, Joseph, to Champion Spark Plug Company. Green ceramic of lead-free glass, conductive carbon, silicone resin and AlPO₄, useful, after firing, as an electrical resistor. 4,433,092, Cl. 524-414.000.
- Neulinger, Franz: See—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,433,281, Cl. 323-246.000.
- Neuner, Otto: See—
Idel, Karsten; Freitag, Dieter; Bottenbruch, Ludwig; and Neuner, Otto, 4,433,138, Cl. 528-388.000.
- Neusser, Hans J.: See—
Boesi, Ulrich; Neusser, Hans J.; and Schlag, Edward W., 4,433,241, Cl. 250-282.000.
- Neville Chemical Company: See—
Laurito, James J., 4,433,100, Cl. 525-54.420.
- Nevitt, Thomas D.: See—
Sikkenga, David L.; Nevitt, Thomas D.; and Jerome, Norman F., 4,433,190, Cl. 585-660.000.
- New England Nuclear Corporation: See—
Tzodikov, Nathan R., 4,432,877, Cl. 210-656.000.
- Newkirk, Randall A. Receptacle tampering indicator and method therefor. 4,432,462, Cl. 215-365.000.
- Nezuka, Kenjiro, to Dresser Industries, Inc. Emergency brake system. 4,432,585, Cl. 303-10.000.

- Nicholas, William M. Balancing bird, 4,432,158, Cl. 46-131.000.
 Nicholson, John P.: See—
 Kneller, William A.; and Nicholson, John P., 4,432,800, Cl. 106-85.000.
 Nicholson, Margie M.; and Pizzarello, Frank A., to Rockwell International Corporation. Phthalocyanine electrochromic display with improved cycle life, 4,432,612, Cl. 350-357.000.
 Nickel, Hubertus: See—
 Gupta, Ashok K.; Gyarmati, Erno; Kreutz, Hermann; Munzer, Rudolf; Naomidis, Aristides; and Nickel, Hubertus, 4,432,957, Cl. 423-345.000.
 Nielsen, Werner K.: See—
 Madsen, Rud F.; Nielsen, Werner K.; and Kristensen, Steen, 4,432,806, Cl. 127-48.000.
 Nihon Kaiheiki Industrial Company, Ltd.: See—
 Kodaira, Yasuo, 4,433,222, Cl. 200-153.00J.
 Nii, Katsutoshi; Okano, Kinpei; Doi, Motomichi; and Kitsuya, Minoru, to Hitachi, Ltd. X-Ray tube apparatus, 4,433,432, Cl. 378-193.000.
 Niimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, to Hodogaya Chemical Company, Ltd. Electrophotographic toner containing a metal complex dye, 4,433,040, Cl. 430-109.000.
 Niuro, Yasuhiko; and Ejiri, Yoshihiro, to Kokusai Denshin Denwa Kabushiki Kaisha. Optical fiber submarine cable, 4,432,605, Cl. 350-96.230.
 Ninomiya, Ken: See—
 Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
 Nippi, Inc.: See—
 Sawada, Yoshikatu; Shirakawa, Kazuo; and Sugiura, Takeo, 4,433,043, Cl. 430-175.000.
 Nippon Chemiphar Co., Ltd.: See—
 Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, 4,433,152, Cl. 546-193.000.
 Nippon Electric Co., Ltd.: See—
 Kubo, Yoshimi; Shimizu, Shigeaki; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,432,935, Cl. 419-2.000.
 Nippon Gakki Seizo Kabushiki Kaisha: See—
 Nakada, Akira, 4,432,266, Cl. 84-1.030.
 Noro, Masao, 4,433,369, Cl. 363-84.000.
 Oya, Akiyoshi; and Sekiguchi, Tomoaki, 4,432,265, Cl. 84-1.010.
 Yokoyama, Kenji, 4,433,307, Cl. 330-297.000.
 Nippon Kayaku Kabushiki Kaisha: See—
 Ogawa, Masanobu; and Kojima, Toshitake, 4,433,167, Cl. 562-534.000.
 Nippon Kokan Kabushiki Kaisha: See—
 Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,432,788, Cl. 75-3.000.
 Nippon Oil Co., Ltd.: See—
 Itoh, Hiroyuki; Yamashita, Teruaki; and Imai, Hirosuke, 4,433,098, Cl. 524-811.000.
 Nippon Oil & Fats Co., Ltd.: See—
 Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaiku, Hiroumi; and Yazawa, Toshinari, 4,432,851, Cl. 204-181.00R.
 Nippon Soda Company Limited: See—
 Kobayashi, Noriyuki; and Funamoto, Akihiko, 4,433,079, Cl. 523-404.000.
 Nippon Soken, Inc.: See—
 Kodera, Masao; and Akita, Shigeyuki, 4,433,398, Cl. 367-140.000.
 Tsuchiya, Keiji; Sasaya, Hideaki; and Nara, Akio, 4,432,711, Cl. 418-150.000.
 Nippondenso Co., Ltd.: See—
 Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, 4,432,322, Cl. 123-416.000.
 Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
 Kataoka, Masami; and Higo, Nobumasa, 4,432,244, Cl. 73-861.770.
 Matsuda, Yasushi; and Kawai, Shizuo, 4,432,321, Cl. 123-380.000.
 Okano, Reiji; and Usami, Kiyoshi, 4,432,446, Cl. 192-84.00C.
 Nishida, Osamu: See—
 Shida, Shigeru; Hosaka, Nobuyoshi; Ishikawa, Yuichi; and Nishida, Osamu, 4,433,093, Cl. 524-433.000.
 Nishida, Takashi: See—
 Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Yutaka; Ishiguro, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,433,160, Cl. 560-56.000.
 Nishida, Tatehiko: See—
 Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,433,029, Cl. 428-407.000.
 Nishijima, Yasumoto: See—
 Ishikawa, Norio; Murayama, Morio; and Nishijima, Yasumoto, 4,432,920, Cl. 264-49.000.
 Nishikawa, Masaji, to Olympus Optical Company Ltd. Electrophotographic copying process involving simultaneous charging and imaging, 4,433,038, Cl. 430-55.000.
 Nishikawa, Yukiyasu: See—
 Itoh, Kiyoshi; Nishikawa, Yukiyasu; Hoshika, Shuji; and Okamoto, Ikuzo, 4,432,617, Cl. 351-211.000.
 Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, to Hitachi, Ltd. Microwave plasma source, 4,433,228, Cl. 219-10.55R.
 Nishimura, Hiromi; Watari, Yoshie; and Matsubara, Yuusaku, to Matsushita Electric Works Ltd. Drive circuit for a latching relay, 4,433,357, Cl. 361-196.000.
 Nishiyama, Hiroshi; and Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Electrode structure for a zinc oxide thin film, 4,433,264, Cl. 310-321.000.
 Nissan Motor Company, Limited: See—
 Katahira, Hiroaki; and Kobayashi, Shigeru, 4,432,213, Cl. 62-239.000.
 Kita, Toru, 4,432,241, Cl. 73-861.220.
 Ogawa, Naoki, 4,432,433, Cl. 181-204.000.
 Shimizu, Seichi; and Iguchi, Kouichi, 4,432,328, Cl. 123-516.000.
 Ujihara, Shin; and Yoshizawa, Takashi, 4,432,222, Cl. 72-350.000.
 Watanuki, Yoshio, 4,432,167, Cl. 49-502.000.
 Yasuhara, Seishi, 4,432,319, Cl. 123-357.000.
 Yasuhara, Seishi, 4,432,331, Cl. 123-571.000.
 Nitrai, Jozsef: See—
 Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
 Nitzberg, Leonard R. Wheel chair, 4,432,425, Cl. 180-8.00A.
 Noble, Edward E. Lighted handgrip, 4,433,364, Cl. 362-109.000.
 Noetzelmann, David C., Sr., to Midwec Toroid & Capacitor Corporation. Pressurizable telephone load coil assembly, 4,433,208, Cl. 178-46.000.
 Noguchi, Toyota; Kaneko, Mamoru; and Katoh, Hironori, to Matsushita Electric Industrial Co., Ltd. Delta modulation system having reduced quantization noise, 4,433,311, Cl. 332-11.00D.
 Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Three phase power factor controller, 4,433,276, Cl. 318-729.000.
 Nolan, Thomas A., Jr.: See—
 Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhle, John, III; and Nolan, Thomas A., Jr., 4,433,286, Cl. 324-61.00R.
 Nolte, Kenneth G.: See—
 Cox, Gordon F. N.; and Nolte, Kenneth G., 4,432,669, Cl. 405-217.000.
 Nomura, Masami: See—
 Caputo, William R.; and Nomura, Masami, 4,432,439, Cl. 187-29.00R.
 Noon, Robert A.: See—
 Kay, Ian T.; and Noon, Robert A., 4,432,784, Cl. 71-88.000.
 Nordson Corporation: See—
 Kolibas, James A., 4,433,296, Cl. 324-452.000.
 Matt, Timothy S., 4,433,237, Cl. 250-222.100.
 Norman, Deumite; Brannagan, James P.; and McLane, Wesley. Furnace brick tie back assembly, 4,432,289, Cl. 110-336.000.
 Norman, George R. Process for treating used motor oil and synthetic crude oil, 4,432,865, Cl. 208-183.000.
 Normandin, Michel. Physiotherapeutic self-exerciser, 4,432,543, Cl. 272-126.000.
 Noro, Masao, to Nippon Gakki Seizo Kabushiki Kaisha. Power supply circuit for electrical apparatus, 4,433,369, Cl. 363-84.000.
 Norris Industries, Inc.: See—
 Ohannesian, Doru A.; and Walsh, Cyral M., 4,432,568, Cl. 285-3.000.
 North American Philips Consumer Electronics Corp.: See—
 Kuryla, Alan T.; Penird, Carl W.; and Puhak, Peter G., 4,433,267, Cl. 313-402.000.
 Northern Solar Systems, Inc.: See—
 Steele, Donald F., 4,432,409, Cl. 165-8.000.
 Northern Telecom Limited: See—
 Este, Grantley O., 4,433,386, Cl. 364-563.000.
 Isaacs, Robert B., 4,433,216, Cl. 179-178.000.
 Wei, John S. S., 4,432,611, Cl. 350-342.000.
 Northrop Corporation: See—
 Tong, Kay C., 4,432,511, Cl. 244-3.130.
 Norvell, Gordon S.; and King, Donald W., to Litton Systems, Inc. Glass- or ceramic-to-metal seals, 4,432,660, Cl. 403-29.000.
 Nosaka, Isao; Sakaguchi, Hirofumi; Shiozawa, Takao; and Fujii, Yozo, to Konishiroku Photo Industry Co., Ltd. Electrophotographic reproducing apparatus, 4,432,633, Cl. 355-8.000.
 Noto, Akira: See—
 Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,433,139, Cl. 536-17.200.
 Noumi, Ryoichi: See—
 Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaiku, Hiroumi; and Yazawa, Toshinari, 4,432,851, Cl. 204-181.00R.
 Novoselac, John; and Churcher, Dale L., to Joy Manufacturing Company. Centrifuge apparatus and method of operating a centrifuge, 4,432,748, Cl. 494-2.000.
 Novy, Robert A.: See—
 Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,433,001, Cl. 426-614.000.
 Nowogrodzki, Markus, to RCA Corporation. Wheel wear measurement system, 4,432,229, Cl. 73-146.000.
 Nukem GmbH: See—
 Ebinger, Horst; Kadner, Martin; and Luthardt, Guenther, 4,432,892, Cl. 252-628.000.
 Henrich, Edmund; and Schlich, Elmar, 4,432,955, Cl. 423-249.000.
 Nuutila, Antti I.; and Pohjola, Veikko J., to Oy Tampella AB. Method for continuous saccharification of cellulose of plant raw material, 4,432,805, Cl. 127-37.000.

- Oak Industries Inc.: See—
 Larson, Willis A.; and Van Zeeland, Anthony J., 4,433,223, Cl. 200-159.00B.
 Obata, Haruyuki: See—
 Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
 Oberbach, Manfred: See—
 Cordes, Heinz; and Oberbach, Manfred, 4,432,536, Cl. 266-280.000.
 Occidental Chemical Corporation: See—
 Gibby, William H., Jr., 4,433,101, Cl. 525-70.000.
 Ocean Research Equipment, Inc.: See—
 Lowell, Francis C.; and Campbell, Thomas K., 4,432,243, Cl. 73-861.310.
 Ochsner, Arnold. Colored yarn printing apparatus, 4,432,217, Cl. 68-5.00D.
 O'Connor, Richard P.: See—
 Swart, Gerrit S.; Dauber, Louis S.; and O'Connor, Richard P., 4,432,862, Cl. 208-64.000.
 Oda, Hiroyuki: See—
 Morita, Yasuyuki; and Oda, Hiroyuki, 4,432,315, Cl. 123-310.000.
 Oda, Kazutaka: See—
 Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, 4,432,854, Cl. 204-206.000.
 Oda, Makoto: See—
 Oishi, Tetsu; Oda, Makoto; and Futaki, Hisao, 4,432,211, Cl. 62-155.000.
 Odake, Takaaki: See—
 Tanaka, Ryohei; Kitamura, Akinobu; Odake, Takaaki; and Kato, Yutaka, 4,433,325, Cl. 340-937.000.
 Officine Savio S.p.A.: See—
 D'Agnoletto, Armando, 4,432,198, Cl. 57-276.000.
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 Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape cassette, 4,432,510, Cl. 242-200.000.
 Ogawa, Atsushi; and Hayashi, Yoshimasa, to Trio Kabushiki Kaisha. Sampling pulse forming circuit for FM stereo demodulator, 4,433,433, Cl. 381-7.000.
 Ogawa, Hiroshi; Kimura, Syozi; and Miyawaki, Yoshinori, to Omron Tateisi Electronics Company. Electronic blood pressure measuring apparatus, 4,432,373, Cl. 128-680.000.
 Ogawa, Kimio: See—
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 Ogawa, Masaki; and Ikegami, Mikihiko, to Bridgestone Tire Company Limited. Pneumatic tires comprising an improved thread, 4,433,094, Cl. 524-496.000.
 Ogawa, Masaki: See—
 Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,433,107, Cl. 525-232.000.
 Ogawa, Masanobu; and Kojima, Toshitake, to Nippon Kayaku Kabushiki Kaisha. Process for the manufacture of methacrylic or acrylic acid, 4,433,167, Cl. 562-534.000.
 Ogawa, Naoki, to Nissan Motor Company, Ltd. Noise reducing cover for internal combustion engine, 4,432,433, Cl. 181-204.000.
 Ogawa, Soichiro, to Hitachi, Ltd. High-pressure discharge lamp, 4,433,272, Cl. 315-290.000.
 Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, to Shionogi & Co., Ltd. N-Acetyl-β-D-glucosaminidase for determining N-acetyl-β-D-glucosaminidase activity, 4,433,139, Cl. 536-17.200.
 Ogi, Keiji: See—
 Itoh, Noboru; Takahashi, Toshiaki; Ogi, Keiji; and Kamitakahara, Atsushi, 4,433,049, Cl. 430-495.000.
 Ogihara, Yutaka: See—
 Taguchi, Shinichi; Nagao, Nobuya; and Ogihara, Yutaka, 4,433,255, Cl. 307-353.000.
 Ogita, Tamotsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Cold HC emission controlling device for automobile equipped with catalyst type disposal system, 4,432,316, Cl. 123-328.000.
 Ogura, Shigeru: See—
 Shimizu, Masato; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
 Ohannesian, Doru A.; and Walsh, Cyral M., to Norris Industries, Inc. Housing for garbage disposer, 4,432,568, Cl. 285-3.000.
 Ohara, Osamu: See—
 Narukawa, Hiroshi; Tada, Rentaro; Takeuchi, Yasuhira; and Ohara, Osamu, 4,433,020, Cl. 428-113.000.
 Ohori, Harumi: See—
 Andoh, Masamoto; Ohori, Harumi; and Kiriya, Takashi, 4,432,586, Cl. 303-115.000.
 Ohkawa, Shuji: See—
 Tachikawa, Hajime; and Ohkawa, Shuji, 4,433,232, Cl. 219-502.000.
 Ohmori, Tsuguharu; and Ueno, Sadaumi, to Fuji Electric Company, Ltd. Pressure pouring furnace, 4,432,535, Cl. 266-239.000.
 Ohshima, Yoshimasa: See—
 Akiyama, Nobuyuki; Ohshima, Yoshimasa; and Koizumi, Mitsuyoshi, 4,433,235, Cl. 250-201.000.
 Ohta, Kazutoshi; and Sakakibara, Kunio, to Mitsubishi Denki Kabushiki Kaisha. Panel for elevator, 4,433,023, Cl. 428-182.000.
 Ohtake, Yoshichi, to Victor Company of Japan, Limited. Single-lens reflex type viewfinder and method of adjusting the same, 4,432,626, Cl. 354-155.000.
 Ohuchi, Yutaka: See—
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 Oishi, Tetsu; Oda, Makoto; and Futaki, Hisao, to Hitachi, Ltd. Defrosting apparatus, 4,432,211, Cl. 62-155.000.
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 Kaneko, Kenji; Okabe, Takahiro; Nagata, Minoru; and Okada, Yutaka, 4,433,258, Cl. 307-456.000.
 Okada, Kiyomi, to San Energy Co., Ltd. Combustion apparatus for granular solid fuel, 4,432,288, Cl. 110-266.000.
 Okada Kogyo Kabushiki Kaisha: See—
 Okada, Yoshio, 4,432,137, Cl. 30-292.000.
 Okada, Osami: See—
 Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
 Okada, Yoshio, to Okada Kogyo Kabushiki Kaisha. Rotary cutter, 4,432,137, Cl. 30-292.000.
 Okada, Yutaka: See—
 Kaneko, Kenji; Okabe, Takahiro; Nagata, Minoru; and Okada, Yutaka, 4,433,258, Cl. 307-456.000.
 Okamoto, Haruo; and Yamada, Motoyuki, to Shin-Etsu Chemical Co., Ltd. Method for manufacturing fused quartz glass, 4,432,781, Cl. 65-18.200.
 Okamoto, Ikuzo: See—
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 Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Adhesive compositions, 4,433,124, Cl. 526-277.000.
 Okamura, Toshihiko, to Sony Corporation. Electric rotating machine, 4,433,259, Cl. 310-89.000.
 Okano, Kinpei: See—
 Nii, Katsutoshi; Okano, Kinpei; Doi, Motomichi; and Kitsuya, Minoru, 4,433,432, Cl. 378-193.000.
 Okano, Reiji; and Usami, Kiyoshi, to Nippondenso Co., Ltd. Electromagnetic coupling apparatus, 4,432,446, Cl. 192-84.00C.
 O'Keefe, David B.: See—
 Lombardo, Ralph M., Jr.; Bradley, John J.; Bruce, Kenneth E.; Conway, John W.; O'Keefe, David B.; and Tarbox, Bruce H., 4,433,376, Cl. 364-200.000.
 Okudaira, Sadayuki: See—
 Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
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 Okamoto, Takanori; Mori, Hisakazu; and Matsuda, Hideaki, 4,433,124, Cl. 526-277.000.
 Okuyama, Nobutaka; Shimizu, Toshiharu; and Naito, Yoshikazu, to Hitachi, Ltd. Deflection yoke for a picture tube of a projection color television receiver set, 4,433,318, Cl. 335-213.000.
 Olah, George A. Condensation of natural gas or methane into gasoline range hydrocarbons, 4,433,192, Cl. 585-709.000.
 Olin Corporation: See—
 Adams, John O., 4,432,240, Cl. 73-822.000.
 Kadja, Igor V., 4,432,838, Cl. 204-11.000.
 Olin, Lester D.: See—
 Morency, Roger L.; and Olin, Lester D., 4,432,603, Cl. 350-96.210.
 Ollinger, James C.: See—
 Addie, Lee W.; and Ollinger, James C., 4,432,182, Cl. 52-480.000.
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 Neely, James E., Jr.; Lin, Chia-Cheng; Olson, Dean R.; Jacobson, Annette M.; and Falleroni, Charlene A., 4,433,016, Cl. 428-34.000.
 Olympus Optical Co., Ltd.: See—
 Kimura, Kenji, 4,433,349, Cl. 360-66.000.
 Mizokami, Kazunori, 4,432,627, Cl. 354-289.100.
 Nagasaki, Tatsuo, 4,432,236, Cl. 73-631.000.
 Nishikawa, Masaji, 4,433,038, Cl. 430-55.000.
 Yamasaki, Masafumi; and Yoshida, Muneaki, 4,432,623, Cl. 354-412.000.
 Omak Industries, Inc.: See—
 Scott, Lewis A., 4,432,264, Cl. 83-835.000.
 OMI International Corporation: See—
 Tremmel, Robert A., 4,432,843, Cl. 204-51.000.
 Omoda, Koichiro: See—
 Torii, Shunichi; Nagashima, Shigeo; and Omoda, Koichiro, 4,433,394, Cl. 365-221.000.
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 Ogawa, Hiroshi; Kimura, Syozi; and Miyawaki, Yoshinori, 4,432,373, Cl. 128-680.000.
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 Onuki, Osamu; and Kirisawa, Toyohiko, to Doryokuro Kakunenryo Kaihatsu, Jigyodan. Cold trap, 4,432,208, Cl. 62-55.500.
 Ookouchi, Motomi: See—
 Katakura, Masayuki; Akagiri, Kenzo; and Ookouchi, Motomi, 4,433,254, Cl. 307-350.000.
 Oosterbaan, DuWayne D., to NCR Corporation. Longitudinal parity, 4,433,388, Cl. 364-900.000.

- Original Hanau Heraeus GmbH: See—
Fischer, Helmut; Schafer, Jürgen; and Thomas, Gunter, 4,433,265, Cl. 313-22.000.
- Oritani, Atsushi, to Fujitsu Limited. Semiconductor memory device. 4,433,393, Cl. 365-203.000.
- Orlando, Franklin P., to FMC Corporation. Continuous harvester for plants grown in rows. 4,432,190, Cl. 56-1.000.
- Ortho Diagnostic Systems Inc.: See—
Chang, Chi-Deu; and Graham, Henry A., Jr., 4,433,059, Cl. 436-512.000.
- Osana, Hiroshi. Plethysmographic acceleration pulse wave meter. 4,432,374, Cl. 128-694.000.
- Oscarsson, Rolf A. Attachment device for medical fluids bag. 4,432,765, Cl. 604-411.000.
- Oshiro, Susumu, to Fuji Photo Optical Co., Ltd. Articulated tube structure for use in an endoscope. 4,432,349, Cl. 128-4.000.
- Ostermeyer, Larry F.; and Guerin, Michael N., to K. E. McConaughay, Inc. High-float, rapid-setting emulsion. 4,433,084, Cl. 524-62.000.
- Osterwald, Hermann: See—
Bauer, Kurt H.; Osterwald, Hermann; Lehmann, Klaus; and Dreher, Dieter, 4,433,076, Cl. 523-342.000.
- Ostrowski, Carl L.; and White, Bertram, to Federal Screw Works. Integrated circuit phoneme-based speech synthesizer. 4,433,210, Cl. 381-53.000.
- Otis Engineering Corporation: See—
Welch, William R.; Fisher, Ernest P.; and Yonker, John H., 4,432,416, Cl. 166-117.500.
- Otsu, Hiroshi: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Otsuka, Kazutoshi, to Toyo Kogyo Co., Ltd. Exhaust gas recirculation system having electrical control means. 4,432,330, Cl. 123-571.000.
- Otsuki, Hiromi: See—
Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
- Ott, Helmut, to Herion-Werke KG. Impulse valve. 4,432,391, Cl. 137-625.640.
- Otte, Richard F.: See—
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,432,824, Cl. 156-165.000.
- Otto Engineering, Inc.: See—
Sophia, Timothy J., 4,432,470, Cl. 222-135.000.
- Outboard Marine Corporation: See—
Bland, Gerald F.; and Sullivan, Donald K., 4,432,734, Cl. 440-1.000.
- Ovadia, Abraham: See—
Ovadia, Joseph; and Ovadia, Abraham, 4,432,456, Cl. 206-566.000.
- Ovadia, Joseph; and Ovadia, Abraham. Jewelry display and storage apparatus. 4,432,456, Cl. 206-566.000.
- Overholt, Mark. Direct drive dual drum winch. 4,432,532, Cl. 254-291.000.
- Ovren, Christer: See—
Adolfsson, Morgan; Brogradh, Torgny; Goransson, Sture; and Ovren, Christer, 4,433,238, Cl. 250-227.000.
- Owatonna Manufacturing Company, Inc.: See—
Henkensiefken, Larry L.; Pettit, Douglas L.; and Barry, Gerald E., 4,432,499, Cl. 241-30.000.
- Owen, Ieuan: See—
Parkinson, Michael J.; Jury, Anthony W.; Syred, Nicholas; and Owen, Ieuan, 4,432,778, Cl. 55-212.000.
- Owens-Corning Fiberglass Corporation: See—
Dunn, Charles S., 4,433,420, Cl. 373-39.000.
- Propster, Mark A.; Hohman, Charles M.; and Streicher, William L., 4,432,780, Cl. 65-2.000.
- Williamson, Michael, 4,433,419, Cl. 373-37.000.
- Owens-Illinois, Inc.: See—
Miller, Peter S., 4,432,481, Cl. 226-9.000.
- Mumford, George V.; and Li, Ernest L., 4,432,461, Cl. 215-252.000.
- Oy Tampella AB: See—
Nuuttila, Antti I.; and Pohjola, Veikko J., 4,432,805, Cl. 127-37.000.
- Oya, Akiyoshi; and Sekiguchi, Tomoaki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument controlling tone properties by control data signals. 4,432,265, Cl. 84-1.010.
- Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, to Pioneer Electronic Corporation. Amplifier circuit. 4,433,305, Cl. 330-296.000.
- Ozen Corporation: See—
Watanabe, Katsumi, 4,433,404, Cl. 369-66.000.
- Pace, Ron L. Holder and dispenser for bathroom tissue rolls. 4,432,504, Cl. 242-55.200.
- Pacht, Amos, to Butterworth, Inc. Valve assembly for reciprocating plunger pump. 4,432,386, Cl. 137-327.000.
- Padanyi, Sandor Z. M.: See—
Barnard, John; and Padanyi, Sandor Z. M., 4,432,928, Cl. 264-519.000.
- Padberg, Gunter: See—
Kupper, Friedrich-Wilhelm; Padberg, Gunter; Reichert, Ulrich; and Trautmann, Walter, 4,433,099, Cl. 525-53.000.
- Page, Judith L.; Haigh, Daniel H.; and Peters, James, to Dow Chemical Company. The Weight control with fat imbibing polymers. 4,432,968, Cl. 424-81.000.
- Paisley, Robert J., to Corning Glass Works. Methods for fabricating selectively plugged honeycomb structures. 4,432,918, Cl. 264-43.000.
- Pako Corporation: See—
Cafisch, Jerry A., 4,432,629, Cl. 354-299.000.
- Lee, Conrad E.; and Cafisch, Jerry A., 4,432,475, Cl. 222-509.000.
- Paley, Hyman W. Plastic manifold assembly. 4,432,392, Cl. 137-883.000.
- Palm, Charles S., to Datapoint Corporation. Calibrated apparent surface voltage measurement apparatus and method. 4,433,298, Cl. 324-457.000.
- Palmer, Bryan H.: See—
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- Palmer, James L.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
- Palmer, John P.; and Blackburn, Neil P., to ITW Limited. Threaded members. 4,432,684, Cl. 411-366.000.
- Paquette, Elmer G.; Maloney, Michael J.; Swain, Douglas S.; LaCerte, Richard F.; Peters, James B.; and Mast, Robert E., to United States of America. Army. Footwear testing apparatus and method. 4,432,223, Cl. 73-7.000.
- Park-Ohio Industries, Inc.: See—
Wagar, Richard L., 4,433,226, Cl. 219-10.410.
- Parker Chemical Company: See—
Lindert, Andreas, 4,433,015, Cl. 427-388.400.
- Parker, John A.: See—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,433,115, Cl. 525-417.000.
- Parker, Robert R.; and Starai, Rudolph, to Bell & Howell Company. Tray drive and slide change control apparatus for slide projector. 4,432,618, Cl. 353-25.000.
- Parkinson, Michael J.; Jury, Anthony W.; Syred, Nicholas; and Owen, Ieuan, to Coal Industry (Patents) Limited. Fluidic switched fluid cleaning. 4,432,778, Cl. 55-212.000.
- Parramore, Thomas S., to United Kingdom of Great Britain and Northern Ireland. The Secretary of State for Defence in Her Britannic Majesty's Government of the. Water-jet steering mechanisms. 4,432,736, Cl. 440-42.000.
- Paschke, Edward E.: See—
Schwartz, Michael M.; Knox, Jack R.; and Paschke, Edward E., 4,433,118, Cl. 525-437.000.
- Pascoe, William E.: See—
Hartman, Susan E.; Allen, Michael E.; and Pascoe, William E., 4,433,130, Cl. 528-173.000.
- Patel, Ravin: See—
Arens, Egidius; and Patel, Ravin, 4,433,397, Cl. 367-122.000.
- Patel, Vipin N.; and Conarroe, John L., Jr., to Harris Corporation. Amorphous switching device with residual crystallization retardation. 4,433,342, Cl. 357-2.000.
- Patrick, James F. Single wheel golf caddy. 4,432,560, Cl. 280-47.190.
- Patterson, Donald J.: See—
Bennington, James E.; Bennington, Gerald E.; Bernardin, Frederick E., Jr.; Patterson, Donald J.; and Weber, Walter J., Jr., 4,432,344, Cl. 126-438.000.
- Paulik, Frank E.: See—
Singleton, Thomas C.; and Paulik, Frank E., 4,433,166, Cl. 562-519.000.
- Pawloski, Chester E., to Dow Chemical Co., The. Heterocyclic substituted triazol-3-ol compounds. 4,433,148, Cl. 544-322.000.
- Paxall, Inc.: See—
Eldridge, Charles W., 4,432,745, Cl. 493-10.000.
- Paxton, Ronald E.: See—
Larson, Douglas A.; Tacke, Kenneth L.; White, Craig A.; and Paxton, Ronald E., 4,433,011, Cl. 427-231.000.
- Pearson, Richard K.: See—
McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,432,902, Cl. 260-239.0HM.
- Pearson, Stephen, to Baxter Travenol Laboratories, Inc. Sterile coupling. 4,432,755, Cl. 604-56.000.
- Pechacek, Raymond E.; and Clay, Eugene J., to Hahn & Clay. Method and system for installing a layered vessel on location. 4,432,128, Cl. 29-429.000.
- Pedain, Josef; Wellner, Wolfgang; König, Klaus; and Gruber, Hermann, to Bayer Aktiengesellschaft. Process for preparing glass constructions. 4,433,010, Cl. 427-160.000.
- Peer, Herbert R., to Transagra Corporation. Preparation of bacteria cultures tolerant to metal ions. 4,432,998, Cl. 426-43.000.
- Pelekis, Emmanouil A., to General Supply (Construction) Co., Ltd. Internal combustion engine. 4,432,314, Cl. 123-238.000.
- Penird, Carl W.: See—
Kuryla, Alan T.; Penird, Carl W.; and Puhak, Peter G., 4,433,267, Cl. 313-402.000.
- Pennanen, Hannu K.: See—
Gaske, Joseph E.; and Pennanen, Hannu K., 4,433,014, Cl. 427-380.000.
- Perkin-Elmer Corporation, The: See—
Poultney, Sherman K., 4,433,245, Cl. 250-458.100.
- Perkins, William C., to Rockwell International Corporation. Power line communications bypass around delta-wye transformer. 4,433,284, Cl. 323-361.000.
- Perlick, Mark A.: See—
Borman, August H.; and Perlick, Mark A., 4,432,255, Cl. 74-869.000.
- Permacel: See—
Korpmann, Ralf, 4,432,848, Cl. 204-159.170.

- Perrin, Claude: See—
Dumaitre, Bernard; Perrin, Claude; Cornu, Pierre-Jean; and Streichenberger, Gilles, 4,432,984, Cl. 424-267.000.
- Peters, James: See—
Page, Judith L.; Haigh, Daniel H.; and Peters, James, 4,432,968, Cl. 424-81.000.
- Peters, James B.: See—
Paquette, Elmer G.; Maloney, Michael J.; Swain, Douglas S.; LaCerte, Richard F.; Peters, James B.; and Mast, Robert E., 4,432,223, Cl. 73-7.000.
- Petersen, Christian C., to Polaroid Corporation. Camera motor belt drive system. 4,433,273, Cl. 318-135.000.
- Petiot, Jean P., to Automobiles Citroën. Universal joints and a holding clip for such joints. 4,432,740, Cl. 464-146.000.
- Petrillo, Edward W., Jr.: See—
Karnewsky, Donald S.; and Petrillo, Edward W., Jr., 4,432,971, Cl. 424-177.000.
- Karnewsky, Donald S.; and Petrillo, Edward W., Jr., 4,432,972, Cl. 424-177.000.
- Petro-Canada Exploration Inc.: See—
Thompson, Gordon R., 4,433,239, Cl. 250-255.000.
- Petrzlika, Martin; and Schleich, Kuno, to Hoffmann-La Roche Inc. Decalins. 4,432,885, Cl. 252-299.610.
- Pettit, Douglas L.: See—
Henkensiefken, Larry L.; Pettit, Douglas L.; and Barry, Gerald E., 4,432,499, Cl. 241-30.000.
- Pfaff Haushaltmaschinen GmbH: See—
Kimmel, Patrice J., 4,432,297, Cl. 112-278.000.
- Pfahler, Gerhard: See—
Wieber, Hartmut; and Pfahler, Gerhard, 4,433,145, Cl. 544-198.000.
- Pfeifer, Josef, to Ciba-Geigy Corporation. Transparent polyamide from branched chain arylene diamine. 4,433,137, Cl. 528-348.000.
- Pfeiler, Manfred, to Siemens Aktiengesellschaft. Rotating anode x-ray tube. 4,433,431, Cl. 378-157.000.
- Pfizer Inc.: See—
Barth, Wayne E.; and Jasys, Vytautas J., 4,432,987, Cl. 424-271.000.
- Bigham, Eric C., 4,432,903, Cl. 260-239.100.
- Kellogg, Michael S., 4,432,970, Cl. 424-114.000.
- Welch, Willard M.; and Harbert, Charles A., 4,432,978, Cl. 424-249.000.
- Phalippou, Jean E. H.: See—
Zarzycki, Jerzy W.; Prassas, Michel; and Phalippou, Jean E. H., 4,432,956, Cl. 423-338.000.
- Pharmindustrie: See—
Champseix, Alain A.; Le Fur, Gerard R.; and Renault, Christian L. A., 4,433,150, Cl. 546-168.000.
- Philips Medical Systems, Inc.: See—
Abele, Manlio G.; and Marshall, Christopher H., 4,433,380, Cl. 564-414.000.
- Phillips, Martha E.; and Woerner, Leo G. Geodesic dome connector. 4,432,661, Cl. 403-172.000.
- Phillips Petroleum Company: See—
Louthan, Rector P., 4,433,134, Cl. 528-279.000.
- Smith, Sanford N., 4,432,867, Cl. 209-140.000.
- Picart, Francois, to Societe de Recherches Industrielles (S.O.R.I.). Benzoyl- and α -hydroxybenzyl-phenyl-glycosides and application thereof in therapeutics. 4,432,973, Cl. 424-180.000.
- Piccolo, Albert V., Jr. Cutting blade. 4,432,138, Cl. 30-294.000.
- Piesinger, Gregory H. Electrocardiograph receiver. 4,432,367, Cl. 128-639.000.
- Piggin, Roger H.: See—
Solberg, John C.; Piggin, Roger H.; and Wilgus, Herbert S., 4,433,048, Cl. 430-434.000.
- Pignon, Thomas E., to Johnson Matthey Public Limited Company. Method for imparting resistance to axial displacement of convolutions in a convoluted catalyst substrate. 4,433,064, Cl. 502-527.000.
- Pike, Robert D.; and Bobolts, Elroy F., to Gory Associated Industries, Inc. Roofing tile. 4,432,183, Cl. 52-533.000.
- Pilkington P.E. Limited: See—
Campbell, Duncan R. J.; and Rogers, Philip J., 4,432,596, Cl. 350-1.300.
- Pioneer Electronic Corporation: See—
Hirata, Hitoshi, 4,433,308, Cl. 331-17.000.
- Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,433,305, Cl. 330-296.000.
- Sasaki, Katuhiro, 4,433,303, Cl. 330-264.000.
- Pipkorn, Mark G.: See—
Stevenson, Joan M.; and Pipkorn, Mark G., 4,432,624, Cl. 354-238.100.
- Pitcher, Laurence S. Hitching guidance device. 4,432,563, Cl. 280-477.000.
- Pitoiset, Didier, to Valeo. Variable speed drive pulley. 4,432,743, Cl. 474-14.000.
- Pitroda, Pravin G. Shower device. 4,432,105, Cl. 4-597.000.
- Pizzarello, Frank A.: See—
Nicholson, Margie M.; and Pizzarello, Frank A., 4,432,612, Cl. 350-357.000.
- Plekenpol, David D.: See—
Manschot, James G.; Salvadori, Lawrence A.; and Plekenpol, David D., 4,432,763, Cl. 604-262.000.
- Plessey Overseas Limited: See—
Johnson, Phillip L. M.; and Walden, John R., 4,433,396, Cl. 367-105.000.
- Pletsch, Hubert, to Carl Freudenberg, Firma. Hydraulic support. 4,432,537, Cl. 267-8.00R.
- Plummer, Ernest L., to FMC Corporation. Insecticidal 2,2'-bridged[1,1'-biphenyl]-3-ylmethyl esters. 4,433,182, Cl. 568-808.000.
- Pociluyko, Alex, to Scott Paper Company. Cationic dyestuff printing inks. 4,432,900, Cl. 260-160.000.
- Pohjola, Veikko J.: See—
Nuuttila, Antti I.; and Pohjola, Veikko J., 4,432,805, Cl. 127-37.000.
- Polaroid Corporation: See—
Fantone, Stephen D., 4,432,832, Cl. 156-630.000.
- Fantone, Stephen D., 4,433,437, Cl. 382-31.000.
- Manning, Monis J., 4,432,595, Cl. 350-1.100.
- Petersen, Christian C., 4,433,273, Cl. 318-135.000.
- Rogers, Howard G.; Gaudiana, Russell A.; and Minns, Richard A., 4,433,132, Cl. 528-191.000.
- Polos, Constantine D. Toggle bolt assembly. 4,432,683, Cl. 411-340.000.
- Polysar Limited: See—
Callander, Keith A., 4,433,077, Cl. 523-344.000.
- Pomeranz, Mark L. Condom with rheopexic filled deformable chamber. 4,432,357, Cl. 128-79.000.
- Posey, Franz A.: See—
Hurst, Fred J.; Brown, Gilbert M.; and Posey, Franz A., 4,432,945, Cl. 423-10.000.
- Posse, Gunther; and Jacob, Horst, to Klockner-Humboldt-Deutz AG. Centrifugal separator control. 4,432,747, Cl. 494-8.000.
- Postma, Arlin K., to United States of America. Energy. Method for removing particulate matter from a gas stream. 4,432,777, Cl. 55-86.000.
- Potash, Hanan, to Burroughs Corporation. Buffered handshake bus with transmission and response counters for avoiding receiver overflow. 4,433,391, Cl. 364-900.000.
- Poulsen, Peter, to Aktieselskabet Den kongelige Porcelainsfabrik. Paint medium for applying overglaze decoration to porcelain and an overglaze paint on basis of this medium. 4,433,091, Cl. 524-386.000.
- Poultney, Sherman K., to Perkin-Elmer Corporation. The. Fraunhofer line discriminator. 4,433,245, Cl. 250-458.100.
- Poynter, Donald B., to Poynter Products, Inc. Joke cigarette lighter. 4,432,542, Cl. 272-27.00W.
- Poynter Products, Inc.: See—
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- PPG Industries, Inc.: See—
Moriarty, Thomas C.; and Geiger, William J., 4,432,850, Cl. 204-181.00C.
- Neely, James E., Jr.; Lin, Chia-Cheng; Olson, Dean R.; Jacobson, Annette M.; and Falleroni, Charlene A., 4,433,016, Cl. 428-34.000.
- Seymour, Samuel L., 4,432,782, Cl. 65-25.200.
- Prassas, Michel: See—
Zarzycki, Jerzy W.; Prassas, Michel; and Phalippou, Jean E. H., 4,432,956, Cl. 423-338.000.
- Preuss, Wolfgang: See—
Bahn, Michael; Preuss, Wolfgang; Schmid, Rolf; and Wagner, Rudiger, 4,432,905, Cl. 260-397.100.
- Price, Elvin C.; and Dasher, Preston B., to Atlanta Attachment Company. Garment forming method and apparatus. 4,432,294, Cl. 112-262.300.
- Pro-Pattern, Inc.: See—
Zebelean, John, 4,432,549, Cl. 273-167.00H.
- Procter & Gamble Company, The: See—
DeHaan, Dennis A., 4,432,746, Cl. 493-359.000.
- Proctor, Paul W.: See—
Kennedy, Katherine L.; Proctor, Paul W.; and Dow, Robert L., 4,432,816, Cl. 149-19.300.
- Propster, Mark A.; Hohman, Charles M.; and Streicher, William L., to Owens-Corning Fiberglass Corporation. Glass fiber scrap reclamation. 4,432,780, Cl. 65-2.000.
- Protectaire Systems Company: See—
Russell, Frederick E., 4,432,870, Cl. 210-143.000.
- Provencher, Amede R., to Kidde, Inc. Electrical instrument with removable calibrating knob. 4,433,218, Cl. 200-11.00R.
- Pruente, Thomas F.; and Tamargo, Anna, to St. Joseph Mercy Hospital. Portable telephone support. 4,432,522, Cl. 248-215.000.
- Puhak, Peter G.: See—
Kuryla, Alan T.; Penird, Carl W.; and Puhak, Peter G., 4,433,267, Cl. 313-402.000.
- Puhringer, Josef A., to Dynamit Nobel Aktiengesellschaft. Process for imparting hydrophobicity to mineral substrates. 4,433,013, Cl. 427-337.000.
- Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner. Heat reflecting wall or ceiling covering. 4,433,025, Cl. 428-207.000.
- Pusch, Klaus-Werner: See—
Pusch, Gunter; Aisslinger, Dieter E.; Hoffmann, Alexander; and Pusch, Klaus-Werner, 4,433,025, Cl. 428-207.000.
- Pusineri, Christian; and Goletto, Jean, to Hospal-Sodip, S.A. Mixtures of polymers for medical use. 4,433,072, Cl. 523-105.000.
- Quaintance, Roger L.: See—
Jacobson, Wayne M.; and Quaintance, Roger L., 4,432,676, Cl. 406-39.000.
- Quante, Heinrich, to Quante, Heinrich. Production of gypsum hemihydrate with waste heat, aqueous H₂SO₄ and sulfuric acid salts. 4,432,954, Cl. 423-171.000.
- Quattlander, Rolf: See—
Ruf, Hans R.; Quattlander, Rolf; Reichlin, Max; and Hilpert, Patrik, 4,432,380, Cl. 134-104.000.
- Queen's University at Kingston: See—
Stevenson, Joan M.; and Pipkorn, Mark G., 4,432,624, Cl. 354-238.100.

- Racciu, Antonio: See—
De Gasperi, Mario M.; Racciu, Antonio; and Nari, Dario, 4,433,385, Cl. 364-554.000.
- Radomski, Thomas A.: See—
Karadsheh, Sam M.; and Radomski, Thomas A., 4,433,370, Cl. 363-124.000.
- Raisin, Jean-Pierre; Helffer, Bernard; and Chirouze, Jean L., to Institut Textile de France; Agence Nationale de Valorisation de la Recherche (ANVAR); and Meca. Processing method and apparatus for rectangular pieces of fabric. 4,432,295, Cl. 112-262.300.
- Rampe, John F., to Rampe Research. Finishing apparatus with improved discharge door structure. 4,432,168, Cl. 51-163.100.
- Rampe Research: See—
Rampe, John F., 4,432,168, Cl. 51-163.100.
- Rank, Werner, to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft. Foot joint for connecting a movable service tower of an off-shore station to a foundation. 4,432,668, Cl. 405-202.000.
- Rasmussen, Robert. Hydraulic chuck having ring collet. 4,432,559, Cl. 279-4.000.
- Rastl, Eva: See—
Seliger, Hartmut; Rastl, Eva; and Swetly, Peter, 4,433,140, Cl. 536-27.000.
- Rathmayr, Heinz: See—
Brasseur, Georg; Lehner, Gerhard; Herzog, Peter; Rathmayr, Heinz; and Stipek, Theodor, 4,432,320, Cl. 123-357.000.
- Raudat, John L., to Standard-Knapp, Inc. Shifting grid style packer with lane holdback. 4,432,189, Cl. 53-497.000.
- Rawls, H. Ralph: See—
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,432,730, Cl. 433-168.000.
- Rayburn, Joseph W., to Arinc Research Corp. Integrated tube socket assembly. 4,433,285, Cl. 323-364.000.
- Raychem Corporation: See—
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,432,824, Cl. 156-165.000.
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- Raytheon Company: See—
Smith, Irl W., 4,433,418, Cl. 372-95.000.
- RCA Corporation: See—
Caprari, Fausto; and Geshner, Robert A., 4,432,641, Cl. 356-237.000.
- Meyer, Wolfgang H.; and Curtis, Bernard J., 4,433,044, Cl. 430-271.000.
- Moore, Arnold R., 4,433,288, Cl. 324-158.000.
- Nowogrodzki, Markus, 4,432,229, Cl. 73-146.000.
- Riddle, George H. N., 4,433,407, Cl. 369-127.000.
- Schnable, George L.; and James, Edward A., 4,433,008, Cl. 427-85.000.
- Sirji, Bohdan W.; and Lazzery, Angelo G., 4,433,410, Cl. 369-291.000.
- Read, Wayne L.: See—
Westerlund, Robert E.; and Read, Wayne L., 4,432,558, Cl. 277-180.000.
- Redele, Jean E. A., to Scoma Energie. Apparatus for heating fuel injected into a diesel engine. 4,432,329, Cl. 123-557.000.
- Reed, Michael A.: See—
Saphir, Marc E.; and Reed, Michael A., 4,433,328, Cl. 340-555.000.
- Reedy, James D.: See—
Yang, Kang; and Reedy, James D., 4,433,196, Cl. 585-823.000.
- Reeves, Michael K.: See—
Clark, James R.; and Reeves, Michael K., 4,432,404, Cl. 145-2.00R.
- Rehwald, Willi: See—
Besemann, Alfred; and Rehwald, Willi, 4,432,262, Cl. 83-311.000.
- Reichenberger, Jürgen: See—
Juntgen, Harald; Knoblauch, Karl; Reichenberger, Jürgen; and Schroter, Hans-Jürgen, 4,432,774, Cl. 55-25.000.
- Reichert, Ulrich: See—
Kupper, Friedrich-Wilhelm; Padberg, Gunter; Reichert, Ulrich; and Trautmann, Walter, 4,433,099, Cl. 525-53.000.
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Ruf, Hans R.; Quattlander, Rolf; Reichlin, Max; and Hilpert, Patrik, 4,432,380, Cl. 134-104.000.
- Reiff, Helmut: See—
Hombach, Rudolf; Reiff, Helmut; Wenzel, Wolfgang; and Dollhausen, Manfred, 4,433,095, Cl. 524-563.000.
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- Reinehr, Ulrich; Herberich, Toni; Jungverdorben, Hermann-Josef; and Burghartz, Hans K., to Bayer Aktiengesellschaft. Process for the production of dry-spun hollow polyacrylonitrile fibers and filaments. 4,432,923, Cl. 264-206.000.
- Reinhardt, Jürgen: See—
Finkenzeller, Johann; and Reinhardt, Jürgen, 4,433,429, Cl. 378-99.000.
- Reittu, Osmo: See—
Varkia, Esa; and Reittu, Osmo, 4,432,502, Cl. 242-50.000.
- Renault, Christian L. A.: See—
Champseix, Alain A.; Le Fur, Gerard R.; and Renault, Christian L. A., 4,433,150, Cl. 546-168.000.
- Renzel, Peter; and Jacobs, Hanno, to Krautkramer-Branson, Inc. Ultrasonic instrument with time and amplitude gate bar display. 4,432,235, Cl. 73-611.000.
- Research Corporation: See—
Riley, Thomas N.; and Bagley, Jerry, 4,432,983, Cl. 424-265.000.
- Resistive Materials Inc.: See—
Denzine, Allen F.; and Thurber, William E. F., Jr., 4,432,883, Cl. 252-12.000.
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Cunningham, Carole S.; Linser, Charles M.; Resnick, Brian J.; and Tarvin, Ronald L., 4,433,382, Cl. 364-474.000.
- Rest, Jerome. Device for preventing sewage backup in drain lines. 4,432,388, Cl. 137-403.000.
- Restaurant Technology, Inc.: See—
Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., 4,433,001, Cl. 426-614.000.
- Revere Products Corporation: See—
Devitt, Gerald J., 4,432,273, Cl. 98-43.00C.
- Reynolds Metals Company: See—
Swendeman, Jim M., 4,432,279, Cl. 100-171.000.
- Rhodes, John H., Jr.: See—
Clark, William D.; Garner, Mark D.; Rhodes, John H., Jr.; and Wilzbach, Bernard L., 4,432,541, Cl. 271-251.000.
- Rhone-Poulenc Industries: See—
Jenck, Jean, 4,433,164, Cl. 560-207.000.
- Rhone-Poulenc S.A.: See—
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 4,433,171, Cl. 568-33.000.
- Rice, Doris M.; and Dominguez, Richard J. G., to Texaco Inc. Reaction injection molded elastomers prepared from amine terminated polyethers, amine terminated chain extender and aromatic polyisocyanate. 4,433,067, Cl. 521-51.000.
- Rice, Stuart L., to Caterpillar Tractor Co. Drive train gear of lower bainite alloy steel. 4,432,812, Cl. 148-36.000.
- Richard, Daniel: See—
Zanetta, Hugues; and Richard, Daniel, 4,432,534, Cl. 266-225.000.
- Richard S. Talbot and Associates: See—
Talbot, Richard S., 4,432,880, Cl. 210-725.000.
- Richards, Malcolm E., to Mafix, Incorporated. Inflatable ball repair. 4,432,547, Cl. 273-65.00R.
- Richardson, Kenneth R.: See—
Hughes, Lorenzo; and Richardson, Kenneth R., 4,433,053, Cl. 435-141.000.
- Richardson, Michael A., to Marcon International Limited. Insulation of tunnel linings. 4,432,667, Cl. 405-143.000.
- Richelli, Angelo; and Battistella, Guido, to Samifi Babcock Samifi Internationale S.A. Device for insertion and feed of products on the plates in a horizontal plate freezer. 4,432,214, Cl. 62-341.000.
- Richter Gedeon Vegyeszeti Gyar Rt.: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajner nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Richter, Johan C. F. C.: See—
Sherman, Michael I.; and Richter, Johan C. F. C., 4,432,836, Cl. 162-237.000.
- Ricoh Company, Ltd.: See—
Kawashima, Ikue; Fukushima, Yoshio; Murano, Tamio; and Suzuki, Toshitatsu, 4,432,622, Cl. 354-408.000.
- Kurokawa, Hiroshi, 4,432,620, Cl. 354-402.000.
- Yokota, Takashi, 4,432,632, Cl. 355-3.00D.
- Riddle, George H. N., to RCA Corporation. Method and apparatus for recording video signals into a metal substrate. 4,433,407, Cl. 369-127.000.
- Riehl, Fred, to Robert Shaw Controls Company. Electrical ignition probe means and method of making the same. 4,433,266, Cl. 313-135.000.
- Riel, Frank J., to Rohr Industries, Inc. Sound attenuation sandwich panel including barrier material for corrosion control. 4,433,021, Cl. 428-116.000.
- Riessberger, Klaus: See—
Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischig, Wilfried, 4,432,284, Cl. 104-7.00R.
- Rieter Machine Works Limited: See—
Bischofberger, Jurg; and Stalder, Herbert, 4,432,200, Cl. 57-304.000.
- Rietsch, Maurice; and Joly, Jean, to Aciers et Outillage Peugeot. Retractor for a safety strap. 4,432,507, Cl. 242-107.40A.
- Riise, H. Norman; Goranson, George G.; and Karwan, Henry P., to Viking Solar Systems, Incorporated. Solar energy collector system. 4,432,343, Cl. 126-424.000.
- Riken Denshi Co., Ltd.: See—
Morita, Akio; and Watanabe, Isamu, 4,433,287, Cl. 324-115.000.
- Riker Laboratories, Inc.: See—
Erickson, Edward H., 4,432,986, Cl. 424-269.000.
- Riley, Thomas N.; and Bagley, Jerry, to Research Corporation. Conformationally restricted histamine H₂-receptor antagonists containing a tropone ring. 4,432,983, Cl. 424-265.000.
- Rinehart, John R. Method of making a composite foam taxidermy mannikin. 4,432,919, Cl. 264-46.400.
- Rinkewich, Isaac, to M.I.T. Poly-Cart Corp. Storage and transport cart with improved security. 4,432,591, Cl. 312-297.000.
- Ripamonti, Paolo, to ANSALDO S.p.A. Circuit for detecting unbalance of the traction current in a track circuit. 4,432,517, Cl. 246-28.00F.

- Risdon Enterprises, Inc.: See—
Meetze, Murray O., Jr., 4,432,938, Cl. 422-49.000.
- Rivercross Learning Corp.: See—
Carlson, Albert W. D., 4,432,733, Cl. 434-339.000.
- Roag: See—
Ruf, Hans R.; Quattlander, Rolf; Reichlin, Max; and Hilpert, Patrik, 4,432,380, Cl. 134-104.000.
- Robert Bosch GmbH: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Theml, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
- Kuschmierz, Heinz; and Vogel, Wilhelm, 4,432,228, Cl. 73-119.00A.
- Schenk, Manfred; Klotzner, Winfried; and Jeenicke, Edmund, 4,433,379, Cl. 364-200.000.
- Robert Shaw Controls Company: See—
Riehl, Fred, 4,433,266, Cl. 313-135.000.
- Roberts, Gerald E.; and Staples, Alfred G., to General Electric Company. Crystal filter and method for fabrication. 4,433,316, Cl. 333-189.000.
- Roberts, Harry H., to Champion International Corporation. Rear loading single serving pie container and blank for forming same. 4,432,490, Cl. 229-22.000.
- Robinson, David, to Fisons plc. 5-Aminoimidazoles as immunoregulators. 4,432,990, Cl. 424-273.00R.
- Robinson, Richard H., Jr., to Clark Equipment Company. Upright for lift truck. 4,432,438, Cl. 187-9.00E.
- Roca-Nierga, Manuel, to SPICA S.p.A. Device for controlling the angle of advance in a fuel-injection pump of an internal-combustion engine. 4,432,326, Cl. 123-501.000.
- Rockcor, Inc.: See—
Larson, Douglas A.; Tacke, Kenneth L.; White, Craig A.; and Paxton, Ronald E., 4,433,011, Cl. 427-231.000.
- Rockwell International Corporation: See—
Best, David W.; and Russell, Jeffrey D., 4,433,412, Cl. 371-25.000.
- Carollo, James A.; and Kalinsky, Wayne A., 4,433,277, Cl. 320-24.000.
- Jones, Addison B.; and Erdmann, Francis M., 4,432,134, Cl. 29-578.000.
- Nicholson, Margie M.; and Pizzarello, Frank A., 4,432,612, Cl. 350-357.000.
- Perkins, William C., 4,433,284, Cl. 323-361.000.
- Rodloff, Rudiger; and Bentlage, Hans, to Deutsche Forschungs-und Versuchsanstalt für Luft- und Raumfahrt E.V. Angular velocity sensor based on a ring laser. 4,432,646, Cl. 356-350.000.
- Rogers, Howard G.; Gaudiana, Russell A.; and Minns, Richard A., to Polaroid Corporation. Polyesters containing bis(trifluoromethyl)-biphenylene radicals. 4,433,132, Cl. 528-191.000.
- Rogers, Philip J.: See—
Campbell, Duncan R. J.; and Rogers, Philip J., 4,432,596, Cl. 350-1.300.
- Rohm GmbH: See—
Bauer, Kurt H.; Osterwald, Hermann; Lehmann, Klaus; and Dreher, Dieter, 4,433,076, Cl. 523-342.000.
- Rohr Industries, Inc.: See—
Riel, Frank J., 4,433,021, Cl. 428-116.000.
- Rolls-Royce Limited: See—
Harman, Geoffrey E.; and James, Malcolm J. F., 4,432,658, Cl. 374-138.000.
- Langley, Kenneth R., 4,432,555, Cl. 277-25.000.
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- Romeo Maestri & Figli S.p.A.: See—
Maestri, Elio, 4,432,484, Cl. 227-126.000.
- Ronnkvist, Ake E. Composite sucker rod and method of manufacturing same. 4,432,662, Cl. 403-271.000.
- Rooney, Clarence S.: See—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,432,992, Cl. 424-274.000.
- Root, Stephen J., to Steel Heddle Manufacturing Company. Wrap-around adjustable center brace attachment. 4,432,398, Cl. 139-91.000.
- Rosdy, Bela: See—
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajner nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Rose, John B.; and Cinderey, Michael B., to Imperial Chemical Industries PLC. Production of dihydroxy arylphenones. 4,433,172, Cl. 568-319.000.
- Rose, John B.: See—
Cogswell, Frederic N.; Griffin, Brian P.; and Rose, John B., 4,433,083, Cl. 524-27.000.
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Chen, Peter Y. S.; Helmer, Wayne A.; and Rosen, Howard N., 4,432,147, Cl. 34-46.000.
- Rosink, Albert, to Trutzschler GmbH & Co. KG. Sliver coiler. 4,432,118, Cl. 19-159.00R.
- Ross, Gilbert B.; and Stevens, Theodore E. Cultured onyx products and methods therefor. 4,433,070, Cl. 523-171.000.
- Rossa, Dennis J. Portable humane cow lift. 4,432,306, Cl. 119-100.000.
- Rossi & Catelli S.p.A.: See—
Catelli, Camillo, 4,432,276, Cl. 99-453.000.
- Rothaar, Bruce C.: See—
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., 4,433,348, Cl. 360-51.000.
- Rottmaier, Ludwig; and Merten, Rudolf, to Bayer Aktiengesellschaft. Triazolidine-3,5-dione/formaldehyde/amine condensates and compositions thereof. 4,433,085, Cl. 524-83.000.
- Rottmaier, Ludwig; and Merten, Rudolf, to Bayer Aktiengesellschaft. Glycoluril salts and a process for the preparation thereof. 4,433,144, Cl. 544-198.000.
- Rousseau, Jean P. Miniature flashlight. 4,433,365, Cl. 362-189.000.
- Roussel-UCLAF: See—
Zeitoun, Paul; and Brisard, Patrick, 4,432,966, Cl. 424-21.000.
- Rowan, Hugh H.: See—
Buyalos, Edward J.; Rowan, Hugh H.; and Young, Steven A., 4,432,940, Cl. 422-135.000.
- Royston Manufacturing Corporation: See—
Hewell, Gerald M., 4,432,170, Cl. 52-28.000.
- Rubenstein, Edward: See—
Hughes, E. Barrie; Rubenstein, Edward; and Hofstadter, Robert, 4,432,370, Cl. 128-654.000.
- Rubin, David: See—
Hislop, Alfred R.; and Rubin, David, 4,433,314, Cl. 333-110.000.
- Rudski, Eugene M.; Jackson, Ronald W.; and Martocci, Anthony P., to Bethlehem Steel Corporation. Pyrometer method for measuring slab temperature in a reheat furnace. 4,432,657, Cl. 374-126.000.
- Ruf, Hans R.; Quattlander, Rolf; Reichlin, Max; and Hilpert, Patrik, to Roag. Apparatus for removing optical component blanks from a blocking tool. 4,432,380, Cl. 134-104.000.
- Ruprecht, Hermann: See—
Maier, Martin; and Ruprecht, Hermann, 4,432,192, Cl. 56-15.300.
- Ruskin Manufacturing Company: See—
Becelaere, Robert V., 4,432,272, Cl. 98-1.000.
- Russek, Allen S., to Wallant International Trade, Inc. Automatic electrode placement device. 4,432,368, Cl. 128-644.000.
- Russell Burdall & Ward Corporation: See—
Capuano, Terry D., 4,432,681, Cl. 411-180.000.
- Russell, Frederick E., to Protectaire Systems Company. Sludge removal apparatus. 4,432,870, Cl. 210-143.000.
- Russell, Jeffrey D.: See—
Best, David W.; and Russell, Jeffrey D., 4,433,412, Cl. 371-25.000.
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- Russell, Robert L.: See—
Lawrence, Phillip G.; and Russell, Robert L., 4,432,590, Cl. 312-257.05K.
- Russo, Carl J.: See—
Muka, Richard S.; and Russo, Carl J., 4,433,246, Cl. 250-492.100.
- Russo, Vincenzo; and Heesch, Max O., to International Telephone and Telegraph Corporation. Vehicle seat track apparatus. 4,432,583, Cl. 297-330.000.
- Ruti Machinery Works Ltd.: See—
Bachmann, Hans; and Frey, Robert, 4,432,399, Cl. 139-370.200.
- Ryseck, Werner: See—
Grage, Ludwig; Ryseck, Werner; and Michl, Franz, 4,432,640, Cl. 356-5.000.
- S.A.R.L. Commodore International: See—
Baguet, Paul R., 4,432,164, Cl. 49-209.000.
- Sadamasa, Tetsuo; and Ichikawa, Osamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing display device. 4,432,131, Cl. 29-569.00L.
- SAFAMA S. A.: See—
Viemon, Bernard, 4,432,717, Cl. 425-429.000.
- Saho, Norihide: See—
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- Saint, Jacques; and Collignon, Gerard, to Societe d'Etude du Radant. Apparatus for microwave directional coupling between a waveguide and a stripline. 4,433,313, Cl. 333-109.000.
- St. Joseph Mercy Hospital Pontiac: See—
Pruntee, Thomas F.; and Tamargo, Anna, 4,432,522, Cl. 248-215.000.
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- Saito, Takashi; and Mochizuki, Masafumi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus having a mechanism for connecting a lid member to a jacket. 4,433,405, Cl. 369-77.200.
- Saito, Takashi; Mochizuki, Masafumi; and Arai, Norimasa, to Victor Company of Japan, Ltd. Rotary recording medium clamping mechanism. 4,433,406, Cl. 369-77.200.
- Saito, Takayasu, to Hitachi Koki Company, Limited. Method and apparatus for separating macromolecules or particles in a liquid solution. 4,432,849, Cl. 204-180.00R.
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- Saitou, Masao; Iwata, Yasuhiro; and Uchida, Kohachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Reciprocal original carrier locking mechanism. 4,432,639, Cl. 355-75.000.
- Saji, Hideo: See—
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- Sakakibara, Kunio: See—
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- Sakakibara, Mitsuhiro: See—
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- Sakamoto, Koichiro: See—
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- Sakamoto, Seiichi: See—
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- Sakane, Tadashi: See—
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- Sakudo, Noriyuki: See—
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- Sakurada, Nobuaki; Kiuchi, Masayoshi; and Thunoda, Masahiro, to Canon Kabushiki Kaisha. Film transportation display device. 4,432,628, Cl. 354-289.120.
- Sakurai, Masaki: See—
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- Salazar, Paul V. Refractory compositions and method. 4,432,799, Cl. 106-85.000.
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- Salzgeber, Daniel E., to Stanadyne, Inc. Timing control for fuel injection pump. 4,432,327, Cl. 123-502.000.
- Samifi Babcock Samifi Internationale S.A.: See—
Richelli, Angelo; and Battistella, Guido, 4,432,214, Cl. 62-341.000.
- Sample, Frank C. Trolling motor bracket. 4,432,527, Cl. 248-548.000.
- Samsung Electronics Co., Ltd.: See—
Choi, Hak-Ki, 4,433,368, Cl. 363-45.000.
- San Energy Co., Ltd.: See—
Okada, Kiyomi, 4,432,288, Cl. 110-266.000.
- Sanagi, Mamoru: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Sandberg, Lars: See—
Lind, Lars; Melin, Kent; and Sandberg, Lars, 4,432,430, Cl. 180-197.000.
- Sanden Corporation: See—
Hiraga, Masaharu; and Sakamoto, Seiichi, 4,432,708, Cl. 418-55.000.
- Sandner, Bernhard: See—
Deiner, Hans; and Sandner, Bernhard, 4,433,027, Cl. 428-260.000.
- Sandoz, Inc.: See—
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- Sandoz Ltd.: See—
Hasler, Rolf; Henzi, Beat; Schnider, Ernst; and Ulshoefer, Hermann, 4,432,770, Cl. 8-638.000.
- Sanford, Emil: See—
Seats, Peter; Sanford, Emil; and Waxenbaum, Bernard M., 4,432,464, Cl. 220-2.10A.
- Sangamo Weston, Inc.: See—
Dyer, Robert E.; Swanson, Scott C.; and Hicks, Robert A., 4,433,387, Cl. 364-900.000.
- Sano, Emiko: See—
Iizuka, Masahiko; Kubota, Hidenobu; and Sano, Emiko, 4,433,052, Cl. 435-68.000.
- Sano, Hironari; and Yui, Hiroshi, to Mitsubishi Petrochemical Company, Ltd. Olefinic polymer composition containing inorganic filler. 4,433,073, Cl. 523-201.000.
- Sano, Tatsuhiro: See—
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- Sano, Tetsu; Yasuzuka, Takezo; Ishiwata, Hisao; and Simizu, Tatsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a vacuum vessel provided with a radiation-permeable window. 4,433,230, Cl. 219-118.000.
- Sano, Yasushi: See—
Kaneda, Isami; Sakakibara, Susumu; and Sano, Yasushi, 4,433,402, Cl. 369-43.000.
- Sano, Yoshiaki: See—
Honda, Hideo; Tsuchiya, Chikara; Sano, Yoshiaki; Hanazawa, Toshio; and Handa, Harumi, 4,433,306, Cl. 330-297.000.
- Sano, Yumiko: See—
Miyakawa, Nobuhiro; Higashiguti, Teruaki; Sano, Yumiko; and Funato, Masatomi, 4,433,039, Cl. 430-58.000.
- Santamaria Ulecia, Tomas. Device for copying panoramic images. 4,432,140, Cl. 33-20.00C.
- Santen, Sven: See—
Mathisson, Goran; and Santen, Sven, 4,432,789, Cl. 75-35.000.
- Santer, J. Owen; and Spitz, George T., to Monsanto Company. Methylated methylolated melamine composition. 4,433,143, Cl. 544-196.000.
- Santimauro, John F., to Mobay Chemical Corporation. Process for the conditioning of an organic pigment. 4,432,796, Cl. 106-19.000.
- Sanyo Electric Co., Ltd.: See—
Tsuji, Mahito; Kudo, Toshiyuki; and Itoh, Kazuo, 4,433,409, Cl. 369-170.000.
- Saphir, Marc E.; and Reed, Michael A. Motion sensing energy controller. 4,433,328, Cl. 340-555.000.
- Sarrell, Ivan D.; Bley, David B.; and Tibbets, David W., to Chattanooga Corporation. Therapeutic traction apparatus with monitoring circuit means. 4,432,356, Cl. 128-75.000.
- Sarurai, Nobuo; and Kobayashi, Morimasa, to Amada Company, Limited. Method and apparatus for controlling the feeding of a bandsaw blade of horizontal bandsaw machines. 4,432,260, Cl. 83-13.000.
- Sasaki, Jack S. Bathing equipment for the handicapped. 4,432,104, Cl. 4-555.000.
- Sasaki, Katuhiro, to Pioneer Electronic Corporation. Push-pull amplifier circuit with field-effect transistors. 4,433,303, Cl. 330-264.000.
- Sasaya, Hideaki: See—
Tsuchiya, Keiji; Sasaya, Hideaki; and Nara, Akio, 4,432,711, Cl. 418-150.000.
- Sasmor, Louis: See—
Mumford, Van E.; Sasmor, Louis; and Schroepel, Edward A., 4,432,360, Cl. 128-419.0PG.
- Sato, Hitoshi: See—
Kawakami, Heiji; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123.00R.
- Sato, Kazuo: See—
Goto, Sumio; Doi, Takeshi; and Sato, Kazuo, 4,433,017, Cl. 528-45.000.
- Koizumi, Hideaki; Taiti, Yosio; Moriya, Kazuo; Harada, Katsuhito; and Sato, Kazuo, 4,432,643, Cl. 356-312.000.
- Sato, Keishi: See—
Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsushashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,433,305, Cl. 330-296.000.
- Sato, Kozo: See—
Ishige, Sadao; Sato, Kozo; and Iwakura, Ken, 4,433,156, Cl. 549-227.000.
- Sato, Tadashi: See—
Yamamoto, Kazuyoshi; and Sato, Tadashi, 4,432,257, Cl. 81-464.000.
- Satoh, Setsuo: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Satoh, Toshio: See—
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- Sattel, John A., to Spacesaver Corporation. Mobile storage apparatus with cantilevered light fixtures. 4,432,589, Cl. 312-198.000.
- Saverino, Bennett J. Golf practice apparatus. 4,432,552, Cl. 273-183.00A.
- Savoir, Jean-Claude. Support for tablets, capsules, pills or the like. 4,432,455, Cl. 206-531.000.
- Sawa, Yuji; and Kudo, Yozo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Article selection apparatus. 4,432,457, Cl. 209-557.000.
- Sawada, Yoshikatu; Shirakawa, Kazuo; and Sugiura, Takeo, to Toppan Printing Co., Ltd.; and Nippi, Inc. Water based photosensitive composition with hydrolyzate of mammal collagen. 4,433,043, Cl. 430-175.000.
- Sawyer, Edgar W., Jr., to International Telephone and Telegraph Corporation. Combustible coal/water mixtures for fuels and methods of preparing the same. 4,432,771, Cl. 44-51.000.
- Scarberry, Walter P.; and Vollman, Charles K., to Health-Ex Corporation. Coextrusion method and apparatus. 4,432,826, Cl. 156-244.110.
- Schaefer, Nikolaus; Dellmann, Winfried; and Louis, Gerd, to Bergwerksverband GmbH. Method for the selective removal and recovery of ammonia from ammonia- and hydrogen sulfide-containing gas mixtures. 4,432,958, Cl. 423-356.000.
- Schafer, Jurgen: See—
Fischer, Helmut; Schafer, Jurgen; and Thomas, Gunter, 4,433,265, Cl. 313-22.000.
- Scheithauer, Richard A.: See—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Warming-ton, Richard G., 4,432,950, Cl. 423-61.000.
- Schenectady Chemicals, Inc.: See—
Laganis, Deno; and Yodis, John, 4,433,080, Cl. 523-414.000.
- Schenk, Manfred; Klotzner, Winfried; and Jeenicke, Edmund, to Robert Bosch GmbH. Microcomputer system with input/output unit connected to the remainder of the system by a single multibit bus and several sequential data lines. 4,433,379, Cl. 364-200.000.
- Schering Aktiengesellschaft: See—
Annen, Klaus; Laurent, Henry; and Hofmeister, Helmut, 4,432,976, Cl. 424-241.000.
- Henze, Helmut; and Capell, Ronald, 4,433,009, Cl. 427-97.000.

- Schnecker, Werner; and Spanner, Herbert, to Voest-Alpine Aktiengesellschaft. Arrangement at a supporting and guiding structure to be used in a continuous casting plant. 4,432,407, Cl. 164-448.000.
- Schiene, Karl: See—
Beutler, Gerhard; Berthold, Heinz; Morsch, Joachim; and Schiene, Karl, 4,432,703, Cl. 417-217.000.
- Schiffner, Kenneth C., to Kenneth C. Schiffner, Inc. Mass transfer contact apparatus. 4,432,914, Cl. 261-111.000.
- Schipper, Edgar S.: See—
Shalaby, Shalaby W.; Schipper, Edgar S.; and Koelmel, Donald F., 4,433,161, Cl. 560-66.000.
- Schlag, Edward W.: See—
Boesi, Ulrich; Neusser, Hans J.; and Schlag, Edward W., 4,433,241, Cl. 250-282.000.
- Schleich, Kuno: See—
Petrzika, Martin; and Schleich, Kuno, 4,432,885, Cl. 252-299.610.
- Schlich, Elmar: See—
Henrich, Edmund; and Schlich, Elmar, 4,432,955, Cl. 423-249.000.
- Schlumberger Technology Corporation: See—
Seeman, Bronislaw, 4,433,240, Cl. 250-256.000.
- Schluter, Manfred: See—
Groeneweg, Joost; and Schluter, Manfred, 4,432,869, Cl. 210-602.000.
- Schmalzbauer, Arnold R.: See—
Hanson, Merlin L.; Swenson, Robert E.; and Schmalzbauer, Arnold R., 4,433,374, Cl. 364-200.000.
- Schmid, Rolf: See—
Bahn, Michael; Preuss, Wolfgang; Schmid, Rolf; and Wagner, Rudiger, 4,432,905, Cl. 260-397.100.
- Schmidt, Christian E. Tipple. 4,432,688, Cl. 414-358.000.
- Schmidt, Detlef E., to Topper Manufacturing Corporation. Compact collapsible microform viewer. 4,432,619, Cl. 353-119.000.
- Schmidt, Dieter; and Engler, Rolf, to Deutsche Forschungs-und Versuchsanstalt fur Luft-und Raumfahrt e.V. Ultrasonic transducer. 4,432,237, Cl. 73-632.000.
- Schmidt, Viktor: See—
Arendt, Gerhard; Benz, Roland; Engenhardt, Reinhold; and Schmidt, Viktor, 4,432,501, Cl. 242-47.000.
- Schmidt, Walter: See—
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- Schmitt, Helmut; Schurig, Helmut; and Strasser, Bernd. Monopolar filter-press type electrolyzer. 4,432,858, Cl. 204-257.000.
- Schmitt, Larry D., to Conchemco Incorporated. Method and apparatus for controlling blade clutch assembly. 4,432,191, Cl. 56-11.800.
- Schmitz, H.-Joachim; Braun, Dieter; Trodler, Dieter; and Cramer, Hugo, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Telephone cable. 4,432,196, Cl. 57-204.000.
- Schmitz, Henry: See—
Kaneko, Takushii; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,433,158, Cl. 549-332.000.
- Schnable, George L.; and James, Edward A., to RCA Corporation. Doped-oxide diffusion of phosphorus using borophosphosilicate glass. 4,433,008, Cl. 427-85.000.
- Schneider, Harold N.; Simpson, James H.; and Weidman, Raymond F., to General Electric Company. Impedance contact assembly for an electric circuit breaker. 4,433,221, Cl. 200-144.0AP.
- Schnider, Ernst: See—
Hasler, Rolf; Henzi, Beat; Schnider, Ernst; and Ulshoefer, Hermann, 4,432,770, Cl. 8-638.000.
- Schoeber, Willem J. A. H.: See—
van der Burgt, Maarten J.; Boelma, Sikke J. A.; Schoeber, Willem J. A. H.; and Zuidveld, Pieter L., 4,433,065, Cl. 518-703.000.
- Scholl, Hans-Joachim, to Bayer Aktiengesellschaft. Diamines and a process for their preparation. 4,433,169, Cl. 564-419.000.
- Schroepel, Edward A.: See—
Mumford, Van E.; Sasmor, Louis; and Schroepel, Edward A., 4,432,360, Cl. 128-419.0PG.
- Schroter, Hans-Jurgen: See—
Juntgen, Harald; Knoblauch, Karl; Reichenberger, Jurgen; and Schroter, Hans-Jurgen, 4,432,774, Cl. 55-25.000.
- Schubert, Hans; and Baessler, Konrad, to Hoechst AG. Process for the purification of crude 3,4,3',4'-tetraaminodiphenyl. 4,433,168, Cl. 564-309.000.
- Schultz, James R.; Smith, Francis E.; and Jurecki, Ralph J., to Cole National Corporation. Glass ware etching apparatus. 4,432,169, Cl. 51-424.000.
- Schultz, John C., to Houdaille Industries, Inc. Caster shimmy damper including a viscous damping medium. 4,432,116, Cl. 16-35.00D.
- Schultz, John C., to Houdaille Industries, Inc. Viscous damper having rigid plastic structure. 4,432,254, Cl. 74-574.000.
- Schumacher, Walter: See—
Hilaire, Pierre; Lietaert, Franz; Staroz, Claude; and Schumacher, Walter, 4,432,793, Cl. 75-130.00R.
- Schummer, Helmut: See—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,433,281, Cl. 323-246.000.
- Schurig, Helmut: See—
Schmitt, Helmut; Schurig, Helmut; and Strasser, Bernd, 4,432,858, Cl. 204-257.000.
- Schuster, Karl, to Siemens Aktiengesellschaft. High gradient magnetic separation device. 4,432,873, Cl. 210-223.000.
- Schutz, Hans-Ulrich: See—
Back, Gerhard; Beffa, Fabio; and Schutz, Hans-Ulrich, 4,432,898, Cl. 260-145.00A.
- Schwab, Richard E., to Bell Telephone Laboratories, Incorporated. Self-adjusting fiberoptic connector assembly. 4,432,604, Cl. 350-96.210.
- Schwark, O. Jay; and Loomba, Yogendra S., to Allied Corporation. Electrically released seat belt buckle. 4,432,119, Cl. 24-603.000.
- Schwartz, Michael M.; Knox, Jack R.; and Paschke, Edward E., to Standard Oil Company (Indiana). Poly (p- and m-methylenebenzoate) blends with polyarylates. 4,433,118, Cl. 525-437.000.
- Schwartz, William C.; and Blalock, Paul B., to Burlington Industries, Inc. Three-dimensional ceiling board facing. 4,433,022, Cl. 428-158.000.
- Schwarz, Alois: See—
Stephan, Michael; Mautz, Karlheinz; and Schwarz, Alois, 4,432,696, Cl. 416-134.00A.
- Schwarz, Helmut: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Thiel, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
- Schwarzmann, Matthias: See—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,433,188, Cl. 585-640.000.
- Scifres, Donald R.: See—
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,433,417, Cl. 372-45.000.
- Scoma Energie: See—
Redele, Jean E. A., 4,432,329, Cl. 123-557.000.
- Scott, Kenneth G. Floating planter. 4,432,292, Cl. 111-52.000.
- Scott, Lewis A., to Omark Industries, Inc. Circular saw blade. 4,432,264, Cl. 83-835.000.
- Scott Paper Company: See—
Poculuyko, Alex, 4,432,900, Cl. 260-160.000.
- Sculler, Leonard H.: See—
Wall, Alexander C.; and Sculler, Leonard H., 4,432,281, Cl. 101-334.000.
- Seachman, Ned J.: See—
Stoffel, James C.; Seachman, Ned J.; Hauber, Jack R.; and Kingsley, William, 4,433,346, Cl. 358-293.000.
- Seagold Industries Corporation: See—
Keefer, Bowie G., 4,432,876, Cl. 210-652.000.
- Sealright Co., Inc.: See—
MacEwen, George E., 4,432,473, Cl. 222-327.000.
- Seats, Peter; Sanford, Emil; and Waxenbaum, Bernard M., to Thomas Electronics, Inc. Large metal cone cathode ray tubes, and envelopes therefor. 4,432,464, Cl. 220-2.10A.
- Seattle Manufacturing Corporation: See—
Clark, James R.; and Reeves, Michael K., 4,432,404, Cl. 145-2.00R.
- Seeman, Bronislaw, to Schlumberger Technology Corporation. Method and apparatus for measuring gamma rays in a borehole. 4,433,240, Cl. 250-256.000.
- Seib, Karl: See—
Straub, Ferdinand; Hartmann, Heinrich; Naegle, Paul; and Seib, Karl, 4,433,112, Cl. 525-326.900.
- Seiko Instruments & Electronics Ltd.: See—
Shida, Masaharu; and Ueda, Makoto, 4,433,401, Cl. 368-204.000.
- Yokosuka, Koichi, 4,432,476, Cl. 224-164.000.
- Seita, Kenzo: See—
Ifuku, Naoyuki; Kurokawa, Akio; Seita, Kenzo; Usami, Kaoru; and Aikawa, Naoyuki, 4,433,133, Cl. 528-232.000.
- Sekiguchi, Tomoaki: See—
Oya, Akiyoshi; and Sekiguchi, Tomoaki, 4,432,265, Cl. 84-1.010.
- Sekine, Hiroyasu: See—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, 4,433,152, Cl. 546-193.000.
- Selenia Industrie Elettroniche Associate S.p.A.: See—
Cetronio, Antonio, 4,433,006, Cl. 427-39.000.
- Seliger, Hartmut; Rastl, Eva; and Swetly, Peter, to Dr. Karl Thomae GmbH. Tridecadeoxynucleotide, process for preparation thereof, and use thereof. 4,433,140, Cl. 536-27.000.
- Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Expandable thermoplastic polymer beads with method of producing same. 4,433,029, Cl. 428-407.000.
- Senshu, Takao: See—
Kuroda, Sigeki; Arai, Akira; Senshu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, 4,432,694, Cl. 415-170.00A.
- Sequin, Hector. Machine tool clamp. 4,432,538, Cl. 269-92.000.
- Serginson, Alan: See—
Hutchinson, Paul; and Serginson, Alan, 4,432,474, Cl. 222-402.150.
- Seton Company: See—
Cioca, Gheorghe, 4,432,888, Cl. 252-354.000.
- Seymour, Samuel L., to PPG Industries, Inc. Support for hot glass sheets of non-rectangular outline prior to bending. 4,432,782, Cl. 65-25.200.
- Shah, Mahendra R.: See—
Jayaraman, Viswanath; and Shah, Mahendra R., 4,432,791, Cl. 75-65.00R.
- Shah, Rajni C.: See—
Huibers, Derk T. A.; Chao, James C.; and Shah, Rajni C., 4,433,184, Cl. 568-863.000.

- Shaines, Alfred: See—
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,432,922, Cl. 264-119.000.
- Shalaby, Shalaby W.; Schipper, Edgar S.; and Koemel, Donald F., to Ethicon, Inc. Methyl p-(ω -acetoxylalkoxy) benzoate and method of preparation. 4,433,161, Cl. 560-66.000.
- Shelby, Billy L.; and DeCandia, Giovanni, to International Telephone and Telegraph Corporation. Luminaire mounting structure. 4,433,367, Cl. 362-370.000.
- Shell, John W.; and Gale, Robert M., to ALZA Corporation. Topical composition containing steroid in two forms released independently from polymeric carrier. 4,432,964, Cl. 424-14.000.
- Shell, Melvin E. Apparatus and method for handling cargo using flexible support straps. 4,432,689, Cl. 414-416.000.
- Shell Oil Company: See—
van der Burgt, Maarten J.; Boelema, Sikke J. A.; Schoeber, Willem J. A. H.; and Zuidveld, Pieter L., 4,433,065, Cl. 518-703.000.
- Westra, Simon; and Hogervorst, Johannes R., 4,432,671, Cl. 405-226.000.
- Shelton, Gerald L.: See—
Hierholzer, Frank J., Jr.; Ancona, John A.; and Shelton, Gerald L., 4,433,233, Cl. 219-553.000.
- Sherman, Benjamin F., Jr.; and Francis, Samuel. Cap retaining device. 4,432,120, Cl. 24-299.000.
- Sherman, Michael I.; and Richter, Johan C. F. C., to Kamy, Inc. Vessel false bottoming. 4,432,836, Cl. 162-237.000.
- Shibata, Akira, to Chugai Denki Kogyo Kabushiki Kaisha. Method of overlaying stainless steel material for decorative articles and ornaments with a precious metal alloy. 4,432,487, Cl. 228-194.000.
- Shida, Masaharu; and Ueda, Makoto, to Seiko Instruments & Electronics Ltd. Electronic timepiece having a stepping motor and driving circuit compensated for power source variations. 4,433,401, Cl. 368-204.000.
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- Okamoto, Haruo; and Yamada, Motoyuki, 4,432,781, Cl. 65-18.200.
- Shintani, Akira: See—
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- Shionogi & Company, Limited: See—
Hirai, Kentaro, 4,433,154, Cl. 548-195.000.
- Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,433,139, Cl. 536-17.200.
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Nosaka, Isao; Sakaguchi, Hirofumi; Shiozawa, Takao; and Fujii, Yozo, 4,432,633, Cl. 355-8.000.
- Shirai, Masanari; and Yanagawa, Hitoshi, to Canon Kabushiki Kaisha. Apparatus for feeding film. 4,432,509, Cl. 242-195.000.
- Shirakawa, Kazuo: See—
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- Shiraki, Yasuhiro: See—
Maruyama, Eiichi; Shimada, Toshikazu; Shiraki, Yasuhiro; Katayama, Yoshifumi; Matsubara, Hirokazu; Ishizaka, Akitoshi; Murayama, Yoshimasa; and Shintani, Akira, 4,433,202, Cl. 136-255.000.
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- Shirasaka, Yusei; Fuse, Kenichi; and Umez, Haruo, to Furukawa Electric Co., Ltd. The Method of exfoliating coating of coated optical fiber. 4,432,807, Cl. 134-2.000.
- Shirley, Dewey D. Underground irrigator. 4,432,291, Cl. 111-7.100.
- Shirouzu, Ryusuke: See—
Hirayama, Masaru; Anzai, Nobuaki; and Shirouzu, Ryusuke, 4,433,322, Cl. 338-162.000.
- Shook, William B.: See—
Helferich, Richard L.; and Shook, William B., 4,432,798, Cl. 106-38.300.
- Shutler, Stephen W.: See—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shutler, Stephen W.; and Willis, Robert J., 4,432,994, Cl. 424-300.000.
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Dzyck, Wolfgang; Hoppe, Bernd; Loczenski, Martin; Vogelsberg, Dieter; and Wolf, Fred, 4,432,199, Cl. 57-294.000.
- Eichrodt, Dieter; and Elsen, Friedhelm, 4,433,372, Cl. 377-116.000.
- Emshoff, Horst W.; and Kusebauch, Walter, 4,432,878, Cl. 210-662.000.
- Finkenzeller, Johann; and Reinhardt, Juergen, 4,433,429, Cl. 378-99.000.
- Fredzell, Georg, 4,433,430, Cl. 378-108.000.
- Furjanic, Ivan, 4,433,330, Cl. 340-750.000.
- Gefroerer, Stanislaus; and Vollmeyer, Werner, 4,433,411, Cl. 370-80.000.
- Grage, Ludger; Ryseck, Werner; and Michl, Franz, 4,432,640, Cl. 356-5.000.
- Haendle, Joerg; and Alexandrescu, Mircea, 4,433,428, Cl. 378-95.000.
- Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,433,281, Cl. 323-246.000.
- Lange, Gerhard; and Boy, Jurgen, 4,433,354, Cl. 361-120.000.
- Pfeiler, Manfred, 4,433,431, Cl. 378-157.000.
- Schuster, Karl, 4,432,873, Cl. 210-223.000.
- Siemens Corporation: See—
Fasang, Patrick P., 4,433,413, Cl. 371-25.000.
- Siempelkamp, Dieter; and Gotz, Wolfgang, to G. Siempelkamp GmbH & Co. Method of an apparatus for mounting a foil on a plate. 4,432,828, Cl. 156-285.000.
- Siff, Elliott J.; and Emmerich, Claude L. Intravenous delivery system. 4,432,468, Cl. 222-55.000.
- Sikkenga, David L.; Nevitt, Thomas D.; and Jerome, Norman F., to Standard Oil Company (Indiana). Process to convert linear alkanes. 4,433,190, Cl. 585-660.000.
- Sillion, Bernard: See—
Weill, Jerome; Garapon, Jacques; and Sillion, Bernard, 4,433,157, Cl. 549-255.000.
- Silverman, Robert A.; and Hoyer, Harry A., to Eastman Kodak Company. Photographic elements containing direct-positive emulsions and processes for their use. 4,433,047, Cl. 430-409.000.
- Simig, Gyula: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Simizu, Tatsuo: See—
Sano, Tetsu; Yasuzuka, Takezou; Ishiwata, Hisao; and Simizu, Tatsuo, 4,433,230, Cl. 219-118.000.
- Simon, Hans. Strain relief assembly. 4,432,520, Cl. 248-56.000.
- Simpson, James H.: See—
Schneider, Harold N.; Simpson, James H.; and Weidman, Raymond F., 4,433,221, Cl. 200-144.0AP.
- Sims, Don G. Rotating disc gate valve. 4,432,387, Cl. 137-329.020.
- Sincerbox, Glenn T.: See—
Bjorklund, Gary C.; and Sincerbox, Glenn T., 4,432,597, Cl. 350-3.700.
- Sindlinger, Ronald E., to GTE Products Corporation. Subminiature flashlamp mount design. 4,432,725, Cl. 431-362.000.
- Singer Company, The: See—
Weisbord, Leon E.; and Wessbecher, Francis W., 4,433,260, Cl. 310-156.000.
- Singh, Baldev: See—
Leshner, George Y.; Singh, Baldev; and Laskowski, Stanley C., 4,432,981, Cl. 424-251.000.
- Singleton, Thomas C., to Monsanto Company. Process for stabilizing carbonylation catalyst in soluble form. 4,433,165, Cl. 562-519.000.

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- Sipkema, Rudolf: See—
Beckers, Joseph H. M.; and Sipkema, Rudolf, 4,433,146, Cl. 544-201.000.
- Sirotnak, Francis M.: See—
DeGraw, Joseph I., Jr.; and Sirotnak, Francis M., 4,433,147, Cl. 544-260.000.
- Siryj, Bohdan W.; and Lazzery, Angelo G., to RCA Corporation. Protective cartridge for optical discs. 4,433,410, Cl. 369-291.000.
- Skarky, Floyd E. Dental tray. 4,432,728, Cl. 433-37.000.
- SKF Kugellagerfabriken GmbH: See—
Winkler, Ottmar, 4,432,741, Cl. 464-145.000.
- SKF Steel Engineering: See—
Mathisson, Goran; and Santen, Sven, 4,432,789, Cl. 75-35.000.
- Skipworth, Walter J., to Glassco, Inc. Can crushing apparatus. 4,432,278, Cl. 100-53.000.
- Slate, Matthew W.: See—
McCalmont, Arnold M.; and Slate, Matthew W., 4,433,211, Cl. 179-1.50S.
- Small, Gerald J.: See—
Hayes, John M.; and Small, Gerald J., 4,432,225, Cl. 73-23.100.
- Smith, Dorsey T.; Bieser, Albert H.; and Kintzinger, Warren H., to Tracor BEI, Inc. Passive stabilization conversion unit. 4,433,337, Cl. 343-765.000.
- Smith, Francis E.: See—
Schultz, James R.; Smith, Francis E.; and Jurecki, Ralph J., 4,432,169, Cl. 51-424.000.
- Smith, Gerald L.: See—
Bacon, James L.; and Smith, Gerald L., 4,432,631, Cl. 355-3.0CH.
- Smith, Irl W., to Raytheon Company. Off-axis astigmatic unstable laser resonator. 4,433,418, Cl. 372-95.000.
- Smith, Peter J.: See—
Levey, George; and Smith, Peter J., 4,432,249, Cl. 73-863.830.
- Smith, Ralph N., to Commonwealth of Australia, The. Impulse noise generator. 4,432,299, Cl. 116-137.00R.
- Smith, Rodney I. Post-tensioned concrete slab. 4,432,175, Cl. 52-224.000.
- Smith, Roger D.: See—
Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., 4,432,720, Cl. 425-534.000.
- Smith, Ronald A., to Arro-Mac Manufacturing Inc. Clamp assembly for self-rimming sinks or basins. 4,432,106, Cl. 4-633.000.
- Smith, Sanford N., to Phillips Petroleum Company. Method and apparatus for separating particulate materials from fibrous materials. 4,432,867, Cl. 209-140.000.
- Smith, Thomas W.: See—
Badesha, Santokh S.; Smith, Thomas W.; and Loutfy, Rafik O., 4,432,841, Cl. 204-14.00N.
- Smith, William E., to United States of America, Air Force. Corrutherm expansion fixture. 4,432,485, Cl. 228-44.10R.
- Smythe, Hugh A.: See—
Clark, Robert F.; and Smythe, Hugh A., 4,432,107, Cl. 5-436.000.
- Snyder, Thomas A.; and Leible, Walter T., to Hillwood Corporation. Self-contained swab unit. 4,432,749, Cl. 604-2.000.
- Societa' Industriale Bagnolo S.I.B. S.r.l.: See—
Dorigo, Oddino, 4,432,450, Cl. 198-832.000.
- Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel: See—
de Jaeger, Bogena, 4,433,425, Cl. 375-113.000.
- Societe de Materials Annexed de Dialyse S.M.A.D.: See—
Lopez, Georges, 4,432,764, Cl. 604-283.000.
- Societe de Recherches Industrielles (S.O.R.I.): See—
Picart, Francois, 4,432,973, Cl. 424-180.000.
- Societe d'Etude du Radant: See—
Saint, Jacques; and Collignon, Gerard, 4,433,313, Cl. 333-109.000.
- Societe d'Etudes, de Realisations et d'Applications Techniques (S.E.R.-A.T.): See—
Castagner, Bernard; Carre, Paul; and Moise, Gervais, 4,432,269, Cl. 89-1.816.
- Societe Dupre: See—
Dupre, Armand, 4,432,121, Cl. 24-343.000.
- Societe Industrielle Auer: See—
Godin, Pascal, 4,432,307, Cl. 122-14.000.
- Societe Nobel Bozel: See—
Hilaire, Pierre; Lietaert, Franz; Staroz, Claude; and Schumacher, Walter, 4,432,793, Cl. 75-130.00R.
- Solberg, John C.; Piggins, Roger H.; and Wilgus, Herbert S., to Eastman Kodak Company. Radiation-sensitive silver bromide emulsions, photographic elements, and processes for their use. 4,433,048, Cl. 430-434.000.
- Solomon, David E.: See—
Teitel, Robert J.; and Solomon, David E., 4,432,933, Cl. 376-152.000.
- Someno, Noboru: See—
Munekata, Katsusuke; Furuno, Hiroshi; and Someno, Noboru, 4,432,652, Cl. 368-69.000.
- Sommer Co.: See—
Sommer, Gordon M., 4,432,443, Cl. 192-12.00R.
- Sommer, Gordon M., to Sommer Co. Clutch and brake and improved universal coupling. 4,432,443, Cl. 192-12.00R.
- Sonell Products Limited: See—
McFarlane, John; and Guy, Andrew, 4,432,332, Cl. 123-587.000.
- Sony Corporation: See—
Katakura, Masayuki; Akagiri, Kenzo; and Ookouchi, Motomi, 4,433,254, Cl. 307-350.000.
- Kurosawa, Nobuyuki; and Suda, Kazuaki, 4,433,209, Cl. 381-1.000.
- Munekata, Katsusuke; Furuno, Hiroshi; and Someno, Noboru, 4,432,652, Cl. 368-69.000.
- Okamura, Toshihiko, 4,433,259, Cl. 310-89.000.
- Sopha, Timothy J., to Otto Engineering, Inc. Multicomponent liquid mixing and dispensing assembly. 4,432,470, Cl. 222-135.000.
- Soundstream, Inc.: See—
Stockham, Thomas G., Jr.; and Rothaar, Bruce C., 4,433,348, Cl. 360-51.000.
- Spacesaver Corporation: See—
Sattel, John A., 4,432,589, Cl. 312-198.000.
- Spanner, Herbert: See—
Scheurecker, Werner; and Spanner, Herbert, 4,432,407, Cl. 164-448.000.
- Spaulding, Lawrence D.: See—
Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Cole, Billy W., 4,432,311, Cl. 123-90.670.
- Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,432,925, Cl. 264-235.000.
- Spencer, Homer K., to Sandoz, Inc. α -Aryl-1H-imidazole-1-ethanols. 4,432,989, Cl. 424-273.00R.
- Spencer, Peter. Apparatus for the distillation and thermal cracking of a crude oil feedstock and a reactor for use therein. 4,432,941, Cl. 422-140.000.
- Sperry Corporation: See—
Hanson, Merlin L.; Swenson, Robert E.; and Schmalzbauer, Arnold R., 4,433,374, Cl. 364-200.000.
- Kurth, Richard R., 4,433,422, Cl. 375-10.000.
- McMahon, Donald H., 4,432,599, Cl. 350-96.150.
- SPICA S.p.A.: See—
Roca-Nierga, Manuel, 4,432,326, Cl. 123-501.000.
- Spindelfabrik Suessen, Schurr, Stahlecker & Grill GmbH: See—
Stahlecker, Gerd, 4,432,195, Cl. 57-87.000.
- Spitz, George T.: See—
Santer, J. Owen; and Spitz, George T., 4,433,143, Cl. 544-196.000.
- Spivack, John D., to Ciba-Geigy Corporation. Alkylated 2,2'-biphenylene phosphonates and stabilized compositions. 4,433,087, Cl. 524-117.000.
- Sprecher & Schuh AG: See—
Buhler, Anton; and Hug, Peter, 4,433,220, Cl. 200-144.0AP.
- Squires, David R., to Intersil. Monolithic voltage divider. 4,433,282, Cl. 323-281.000.
- Stahlecker, Gerd, to Spindelfabrik Suessen, Schurr, Stahlecker & Grill GmbH. Device for interrupting the feed of a roving to drawing frames. 4,432,195, Cl. 57-87.000.
- Stahler, John A.; and Yamaguchi, Takashi. Method and apparatus for calibrating pumps. 4,432,230, Cl. 73-168.000.
- Stahlwerke Peine-Salzgitter AG: See—
Klose, Reinhard; and Glienke, Gunter, 4,432,674, Cl. 406-19.000.
- Stalder, Herbert: See—
Bischofberger, Jurg; and Stalder, Herbert, 4,432,200, Cl. 57-304.000.
- Stamcarbon B.V.: See—
Beckers, Joseph H. M.; and Sipkema, Rudolf, 4,433,146, Cl. 544-201.000.
- Stanadyne, Inc.: See—
Salzgeber, Daniel E., 4,432,327, Cl. 123-502.000.
- Standard-Knapp, Inc.: See—
Raudat, John L., 4,432,189, Cl. 53-497.000.
- Standard Microsystems Corporation: See—
Zapisek, John M., 4,433,253, Cl. 307-297.000.
- Standard Oil Co., The: See—
Herrington, Daniel R.; and Kuch, Philip L., 4,432,960, Cl. 423-539.000.
- Standard Oil Company (Indiana): See—
Cox, Gordon F. N.; and Nolte, Kenneth G., 4,432,669, Cl. 405-217.000.
- Fields, Ellis K., 4,432,847, Cl. 204-158.00R.
- Hagen, Gary P., 4,433,174, Cl. 568-459.000.
- Holtzberg, Matthew W.; Henke, Steven J.; Spaulding, Lawrence D.; and Cole, Billy W., 4,432,311, Cl. 123-90.670.
- Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,432,925, Cl. 264-235.000.
- Schwartz, Michael M.; Knox, Jack R.; and Paschke, Edward E., 4,433,118, Cl. 525-437.000.
- Sikkenga, David L.; Nevitt, Thomas D.; and Jerome, Norman F., 4,433,190, Cl. 585-660.000.
- Standard Textile Company, Inc.: See—
Molde, Bradley J., 4,433,026, Cl. 428-252.000.
- Stanier, Colin S., to Imperial Chemical Industries PLC. Cladding cathodes of electrolytic cell with diaphragm or membrane. 4,432,857, Cl. 204-253.000.
- Staples, Alfred G.: See—
Roberts, Gerald E.; and Staples, Alfred G., 4,433,316, Cl. 333-189.000.
- Star Packaging Corporation: See—
Andrews, Harold D., 4,432,188, Cl. 53-436.000.
- Starai, Rudolph: See—
Parker, Robert R.; and Starai, Rudolph, 4,432,618, Cl. 353-25.000.
- Starke, Joachim; Jakubik, Adolf; Girodi, Erich; Strudinger, Manfred; and Exner, Reinhard, to Veb Gaskombinat Schwarze Pumpe. Slag breaker of pressure-type coal gasifier. 4,432,772, Cl. 48-66.000.

- Staroz, Claude: See—
Hilaire, Pierre; Lietaert, Franz; Staroz, Claude; and Schumacher, Walter, 4,432,793, Cl. 75-130.00R.
- Stauber, Hans-Ulrich, to Ferag AG. Apparatus for forming stacks from continuously arriving flat products, especially printed products, particularly those arriving in a lapped or imbricated stream. 4,432,685, Cl. 414-31.000.
- Stauber, R. C.: See—
Napp, E. Thomas; Stauber, R. C.; and Lillegard, Thomas R., 4,432,231, Cl. 73-290.00V.
- Stauber, Ronald C.: See—
Bellotti, Marc; Laurin, Dean G.; Stauber, Ronald C.; and Taylor, Larry C., 4,432,766, Cl. 604-283.000.
- Stauffer Chemical Company: See—
Fesman, Gerald, 4,433,071, Cl. 521-107.000.
- Wong, Rayman Y., 4,432,909, Cl. 260-501.110.
- Steber, Charles E.: See—
Davis, Lewis B., Jr.; and Steber, Charles E., 4,432,207, Cl. 60-723.000.
- Steel Heddle Manufacturing Company: See—
Root, Stephen J., 4,432,398, Cl. 139-91.000.
- Steel Research Incorporated: See—
Taft, Buckie A., 4,432,178, Cl. 52-334.000.
- Steele, Donald F., to Northern Solar Systems, Inc. Rotary heat regenerator wheel and method of manufacture thereof. 4,432,409, Cl. 165-8.000.
- Stephan, Michael; Mautz, Karlheinz; and Schwarz, Alois, to Messerschmitt-Boelkow-Blohm GmbH. Rotor structure for a rotary wing aircraft. 4,432,696, Cl. 416-134.00A.
- Stephan, Rudolf: See—
Brandstetter, Franz; Hambrecht, Juergen; and Stephan, Rudolf, 4,433,102, Cl. 525-75.000.
- Sterling Drug Inc.: See—
Leshner, George Y.; Singh, Baldev; and Laskowski, Stanley C., 4,432,981, Cl. 424-251.000.
- Stern, Ronald C.: See—
Heinecke, Rudolf A. H.; and Stern, Ronald C., 4,433,012, Cl. 427-252.000.
- Sterner, Russell L., to Kiddie, Inc. Pipe manipulator. 4,432,691, Cl. 414-735.000.
- Stevens, David A.: See—
Klomp, Edward D.; and Stevens, David A., 4,432,312, Cl. 123-188.00A.
- Stevens, Theodore E.: See—
Ross, Gilbert B.; and Stevens, Theodore E., 4,433,070, Cl. 523-171.000.
- Stevenson, Joan M.; and Pipkorn, Mark G., to Queen's University at Kingston. Delay timer for a camera. 4,432,624, Cl. 354-238.100.
- Stiebelheller, Johann; and Machner, Peter, to Vereinigte Edelstahlwerke Aktiengesellschaft. Method of making seamless tubing. 4,432,811, Cl. 148-2.000.
- Stipek, Theodor: See—
Brasseur, Georg; Lehner, Gerhard; Herzog, Peter; Rathmayr, Heinz; and Stipek, Theodor, 4,432,320, Cl. 123-357.000.
- Stockburger, Hermann; and Winderlich, Hans-Georg. Authorization card. 4,432,567, Cl. 283-83.000.
- Stockham, Thomas G., Jr.; and Rothaer, Bruce C., to Soundstream, Inc. Apparatus and method for requiring proper synchronization of a digital data flow. 4,433,348, Cl. 360-51.000.
- Stoffel, James C.; Seachman, Ned J.; Hauber, Jack R.; and Kingsley, William, to Xerox Corporation. Raster input scanner. 4,433,346, Cl. 358-293.000.
- Stokes, Arnold T.: See—
Betts, Robert E.; Williams, Nathan P.; and Stokes, Arnold T., 4,432,202, Cl. 60-221.000.
- Stone & Webster Engineering Corp.: See—
Koppel, Paul E.; Williams, Joseph J.; and Woebecke, Herman N., 4,433,193, Cl. 585-752.000.
- Stoneleigh Trust, The: See—
Massa, Frank, 4,433,399, Cl. 367-157.000.
- Stram, Oscar B.: See—
York, Kenneth L.; and Stram, Oscar B., 4,433,389, Cl. 364-900.000.
- Strasser, Bernd: See—
Schmitt, Helmut; Schurig, Helmut; and Strasser, Bernd, 4,432,858, Cl. 204-257.000.
- Straub, Ferdinand; Hartmann, Heinrich; Naegle, Paul; and Seib, Karl, to BASF Aktiengesellschaft. Preparation of a polyvinylpyrrolidone by heat treatment of an aqueous solution of a conventional polyvinylpyrrolidone. 4,433,112, Cl. 525-326.900.
- Streib, Stephen F., to Chevron Research Company. Ultrasensitive apparatus and method for detecting change in fluid flow during the occurrence of a transient condition. 4,433,329, Cl. 340-606.000.
- Streich, Steven G., to Halliburton Company. Retrievable plug. 4,432,419, Cl. 166-188.000.
- Streichenberger, Gilles: See—
Dumaitre, Bernard; Perrin, Claude; Cornu, Pierre-Jean; and Streichenberger, Gilles, 4,432,984, Cl. 424-267.000.
- Streicher, William L.: See—
Propster, Mark A.; Hohman, Charles M.; and Streicher, William L., 4,432,780, Cl. 65-2.000.
- Streifer, William: See—
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,433,417, Cl. 372-45.000.
- Strong, Bruce K.: See—
Equitz, Russell E., Jr.; and Strong, Bruce K., 4,432,577, Cl. 294-16.000.
- Strudinger, Manfred: See—
Starke, Joachim; Jakubik, Adolf; Girodi, Erich; Strudinger, Manfred; and Exner, Reinhard, 4,432,772, Cl. 48-66.000.
- Stuckmann, Dieter; and Heitkamp, Herbert, to Gewerkschaft Eisenhütte Westfalen. Tunnel driving apparatus. 4,432,665, Cl. 405-143.000.
- Stultz, Jeffrey H.: See—
Harper, Stephen M.; and Stultz, Jeffrey H., 4,432,913, Cl. 261-97.000.
- Suda, Kazuaki: See—
Kurosawa, Nobuyuki; and Suda, Kazuaki, 4,433,209, Cl. 381-1.000.
- Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: See—
Hauser, Kurt, 4,432,444, Cl. 192-58.00B.
- Sueyoshi, Susumu: See—
Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,433,305, Cl. 330-296.000.
- Sugahara, Sadanobu, to Yoshida Kogyo K. K. Method of and apparatus for manufacturing slide fastener coupling elements. 4,432,126, Cl. 29-410.000.
- Sugise, Ryoji: See—
Hamamoto, Toshikazu; and Sugise, Ryoji, 4,433,162, Cl. 560-156.000.
- Sugiura, Takeo: See—
Sawada, Yoshikazu; Shirakawa, Kazuo; and Sugiura, Takeo, 4,433,043, Cl. 430-175.000.
- Sugiyama, Hiroyuki; Yoshihara, Kenji; Yusa, Yasuhiro; Abe, Ryojo; and Sakurai, Masaki, to Victor Company of Japan, Ltd. Apparatus for automatically reproducing signals in accordance with a mode of the recorded signals. 4,433,347, Cl. 358-342.000.
- Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, to Matsumoto Seiyaku Kogyo Kabushiki Kaisha. Room temperature curable silicone compositions. 4,433,127, Cl. 528-17.000.
- Sugiyama, Masami; Kasahara, Yasushi; and Ashihara, Yoshihiro, to Fujirebio Kabushiki Kaisha. Derivatives of hippuryl-L-phenylalanine. 4,432,896, Cl. 260-112.50R.
- Suiter, Glen H. Adjustable transom brackets and compact self-storing boat ladder. 4,432,436, Cl. 182-97.000.
- Sullivan, Donald K.: See—
Bland, Gerald F.; and Sullivan, Donald K., 4,432,734, Cl. 440-1.000.
- Sullivan, Peter J., to Erad Inc. Fuel for combustion engines. 4,432,308, Cl. 123-1.00A.
- Sulzer Brothers Limited: See—
Grether, Paul; Brader, Kurt; and Keller, Bruno, 4,432,174, Cl. 52-222.000.
- Sumitomo Chemical Company, Limited: See—
Baba, Kazuo; Kawamata, Shyozo; Fukui, Yoshiharu; Ima, Seiichi; and Miyatake, Tatsuya, 4,433,110, Cl. 525-323.000.
- Suzuki, Yukio; Hayashi, Masahiro; and Takuma, Kenji, 4,432,908, Cl. 260-465.00D.
- Sumitomo Metal Industries, Ltd.: See—
Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaike, Hiroumi; and Yawata, Toshinari, 4,432,851, Cl. 204-181.00R.
- Summers, John E. Compressive cable connector. 4,433,205, Cl. 174-84.00C.
- Sundstrand Data Control, Inc.: See—
Gradin, James H.; and Joseph, John S., 4,433,344, Cl. 358-181.000.
- Grove, Michael M., 4,433,323, Cl. 340-970.000.
- Lukes, Henry J., 4,433,301, Cl. 330-109.000.
- Sunwa Sharyo Manufacturing Company Limited: See—
Misawa, Rintaro, 4,432,426, Cl. 180-8.00A.
- Susman, Sherman; Delbecq, Charles J.; Volin, Kenneth J.; and Boehm, Leah, to United States of America. Energy. Glass capable of ionic conduction and method of preparation. 4,432,891, Cl. 252-518.000.
- Sutter Biomedical Inc.: See—
Christensen, James M.; and Mizoguchi, Allan H., 4,432,361, Cl. 128-419.00F.
- Sutton, James B., to Harrison & Jones (Brookside) Limited. Cushioning structure. 4,432,110, Cl. 5-481.000.
- Suzuki, Ichiro; Nakagawa, Yasushi; and Kitagawa, Naoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering assembly supporting device of a motor vehicle. 4,432,565, Cl. 280-779.000.
- Suzuki, Keizo: See—
Nishimatsu, Shigeru; Suzuki, Keizo; Sakudo, Noriyuki; Ninomiya, Ken; Koike, Hidemi; Okada, Osami; Katagiri, Shinjiro; and Okudaira, Sadayuki, 4,433,228, Cl. 219-10.55R.
- Suzuki, Shozo: See—
Yamawaki, Maokuni; Suzuki, Shozo; and Furuta, Tadaaki, 4,432,871, Cl. 210-195.100.
- Suzuki, Takao: See—
Shimizu, Masuto; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
- Suzuki, Tetsuo: See—
Kubo, Yoshimi; Shimizu, Shigeaki; Suzuki, Tetsuo; and Igarashi, Hitoshi, 4,432,935, Cl. 419-2.000.
- Suzuki, Toshitatsu: See—
Kawashima, Ikue; Fukushima, Yoshio; Murano, Tamio; and Suzuki, Toshitatsu, 4,432,622, Cl. 354-408.000.
- Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Auto-focus built-in camera. 4,432,621, Cl. 354-403.000.
- Suzuki, Yukio; Hayashi, Masahiro; and Takuma, Kenji, to Sumitomo Chemical Company, Limited. Crystal of enantiomer pair of phenylacetic acid ester derivative and process for obtaining a mixture of stereoisomers of the derivative. 4,432,908, Cl. 260-465.00D.

- Swain, Douglas S.: See—
Paquette, Elmer G.; Maloney, Michael J.; Swain, Douglas S.; LaCerte, Richard F.; Peters, James B.; and Mast, Robert E., 4,432,223, Cl. 73-7.000.
- Swanson, Scott C.: See—
Dyer, Robert E.; Swanson, Scott C.; and Hicks, Robert A., 4,433,387, Cl. 364-900.000.
- Swart, Gerrit S.; Dauber, Louis S.; and O'Connor, Richard P., to Exxon Research and Engineering Co. Reforming and isomerization process. 4,432,862, Cl. 208-64.000.
- Swendeman, Jim M., to Reynolds Metals Company. Can flattener. 4,432,279, Cl. 100-171.000.
- Swenson, Robert E.: See—
Hanson, Merlin L.; Swenson, Robert E.; and Schmalzbauer, Arnold R., 4,433,374, Cl. 364-200.000.
- Swetly, Peter: See—
Seliger, Hartmut; Rastl, Eva; and Swetly, Peter, 4,433,140, Cl. 536-27.000.
- Swift, Harold E.: See—
Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., 4,433,197, Cl. 585-823.000.
- Swingle, Harold E., Jr., to Menasha Corporation. Reinforced lid construction for security containers or the like. 4,432,467, Cl. 220-334.000.
- Swonger, Russell A. Stretcher frame for an artist's canvas. 4,432,150, Cl. 38-102.500.
- Sylla, Lanceline: See—
Lucas, Jean; and Sylla, Lanceline, 4,432,342, Cl. 126-418.000.
- Symon, Ted; and Engel, Dusan J., to UOP Inc. Purification of cyclohexane. 4,433,194, Cl. 585-803.000.
- Syred, Nicholas: See—
Parkinson, Michael J.; Jury, Anthony W.; Syred, Nicholas; and Owen, Ieuan, 4,432,778, Cl. 55-212.000.
- Szabo, Lajos: See—
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajner nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajner nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, to Richter Gedeon Vegyeszeti Gyar Rt. Polycyclic compounds substituted on the A-ring, pharmaceutical compositions containing them, and methods of treating psoriasis with them. 4,432,982, Cl. 424-256.000.
- Szporny, Laszlo: See—
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajner nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Szymanski, Chester D., to National Starch and Chemical Corp. Contraceptive composition. 4,432,967, Cl. 424-78.000.
- Tabak, Samuel A., to Mobil Oil Corporation. Two stage system for catalytic conversion of olefins with distillate and gasoline modes. 4,433,185, Cl. 585-312.000.
- Taber, Louis; and East, Don G., to International Business Machines Corporation. Multichannel common clock. 4,433,424, Cl. 375-106.000.
- Tabuchi, Kenji, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus. 4,432,634, Cl. 355-14.00D.
- Tachibana, Keiji; Terasaki, Masatoshi; Nakayama, Yoshihiko; and Kaneko, Junichi, to Hitachi, Ltd. Hermetic turbo-refrigerator apparatus. 4,432,212, Cl. 62-229.000.
- Tachikawa, Hajime; and Ohkawa, Shuji, to Hitachi Heating Appliances Co., Ltd. Heating apparatus. 4,433,232, Cl. 219-502.000.
- Tacke, Kenneth L.: See—
Larson, Douglas A.; Tacke, Kenneth L.; White, Craig A.; and Paxton, Ronald E., 4,433,011, Cl. 427-231.000.
- Tada, Rentaro: See—
Narukawa, Hiroshi; Tada, Rentaro; Takeuchi, Yasuhira; and Ohara, Osamu, 4,433,020, Cl. 428-113.000.
- Taft, Buckie A., to Steel Research Incorporated. Composite steel and concrete floor construction. 4,432,178, Cl. 52-334.000.
- Tagata, Nobuo: See—
Takeuchi, Yasumasa; Sakakibara, Mutsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,433,107, Cl. 525-232.000.
- Taguchi, Shinichiro; Nagao, Nobuya; and Oghara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal sampling gate circuit. 4,433,255, Cl. 307-353.000.
- Taisho Pharmaceutical Company, Ltd.: See—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Yutaka; Ishiguro, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,433,160, Cl. 560-56.000.
- Taiti, Yosio: See—
Koizumi, Hideaki; Taiti, Yosio; Moriya, Kazuo; Harada, Katsuhito; and Sato, Kazuo, 4,432,643, Cl. 356-312.000.
- Tajima, Osamu: See—
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,432,788, Cl. 75-3.000.
- Takagi, Kunihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrical insulator with water-repellent oil-bleeding insulation bands. 4,433,203, Cl. 174-30.000.
- Takahashi, Hiroyuki: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Takahashi, Kouzou: See—
Ichinohe, Shoji; Takahashi, Kouzou; and Tanaka, Yasuharu, 4,433,125, Cl. 526-279.000.
- Takahashi, Masahiro; Hagiwara, Toshio; Kakei, Tsutomu; and Oda, Kazutaka, to Fuji Photo Film Co., Ltd. Web conveying method and apparatus. 4,432,854, Cl. 204-206.000.
- Takahashi, Mineo: See—
Kuroda, Sigeaki; Arai, Akira; Senshu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, 4,432,694, Cl. 415-170.00A.
- Takahashi, Toshiaki: See—
Itoh, Noboru; Takahashi, Toshiaki; Ogi, Keiji; and Kamitakahara, Atsushi, 4,433,049, Cl. 430-495.000.
- Takaoka, Yukihisa: See—
Sugiyama, Iwakichi; Endo, Kiyoshi; and Takaoka, Yukihisa, 4,433,127, Cl. 528-17.000.
- Takashima, Akio: See—
Takeuchi, Yasumasa; Sakakibara, Mutsuhiko; Tsutsumi, Fumio; Takashima, Akio; and Hattori, Iwakazu, 4,433,109, Cl. 525-314.000.
- Takasu, Yasuhito: See—
Inoue, Shingo; Iwata, Toshiharu; and Takasu, Yasuhito, 4,432,322, Cl. 123-416.000.
- Takata, Isao: See—
Chibata, Ichiro; Tosa, Tetsuya; and Takata, Isao, 4,433,054, Cl. 435-178.000.
- Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, to Eisai Co., Ltd. Process for the preparation of 7-(2-amino-2-phenylacetamido) cephem derivatives. 4,433,142, Cl. 544-26.000.
- Takayanagi, Motowo; and Murata, Yoshihumi, to Kuraray Co., Ltd. Copolyesteramide and production of the same. 4,433,117, Cl. 525-425.000.
- Takeda, Hiroshi: See—
Umehara, Kenji; Takeda, Hiroshi; and Tomidokoro, Susumu, 4,432,924, Cl. 264-210.800.
- Takeno, Shozo; and Sakamoto, Koichiro, to Tokyo Electric Co. Load cell having thin film strain gauges. 4,432,247, Cl. 73-862.670.
- Takeuchi, Yasuhira: See—
Narukawa, Hiroshi; Tada, Rentaro; Takeuchi, Yasuhira; and Ohara, Osamu, 4,433,020, Cl. 428-113.000.
- Takeuchi, Yasumasa; Sakakibara, Mutsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, to Bridgestone Tire Co., Ltd. Polyisoprene rubber compositions. 4,433,107, Cl. 525-232.000.
- Takeuchi, Yasumasa; Sakakibara, Mutsuhiko; Tsutsumi, Fumio; Takashima, Akio; and Hattori, Iwakazu, to Japan Synthetic Rubber Co., Ltd. Styrene-butadiene block copolymer. 4,433,109, Cl. 525-314.000.
- Takuma, Kenji: See—
Suzuki, Yukio; Hayashi, Masahiro; and Takuma, Kenji, 4,432,908, Cl. 260-465.00D.
- Talbot, Richard S., to Richard S. Talbot and Associates. Process for the removal of heavy metals from aqueous solution. 4,432,880, Cl. 210-725.000.
- Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Photographic support. 4,433,030, Cl. 428-476.900.
- Tamamura, Hideo: See—
Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,432,621, Cl. 354-403.000.
- Tamargo, Anna: See—
Prunete, Thomas F.; and Tamargo, Anna, 4,432,522, Cl. 248-215.000.
- Tammer, Thomas: See—
Knorr, Harald; Handte, Reinhard; Willms, Lothar; and Tammer, Thomas, 4,433,153, Cl. 548-152.000.
- Tamura, Hideo; and Ibuki, Seiro, to Kubota Ltd. Process for producing a mixture of tobermorite and ettringite. 4,432,804, Cl. 106-306.000.
- Tamura, Sadao: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Tanabe Seiyaku Co., Ltd.: See—
Chibata, Ichiro; Tosa, Tetsuya; and Takata, Isao, 4,433,107, Cl. 435-178.000.
- Tanahashi, Toshio: See—
Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
- Tanaka, Akio, to Fuji Electric Co., Ltd. Coin detecting device for a coin sorting machine. 4,432,447, Cl. 194-100.00A.
- Tanaka, Katsumasa: See—
Kawakami, Heiji; Furusawa, Sadayoshi; Hasegawa, Toyofumi; Sato, Hitoshi; Tanaka, Katsumasa; and Koarai, Jiro, 4,432,792, Cl. 75-123.00R.
- Tanaka, Ryohei; Kitamura, Akinobu; Otake, Takaaki; and Kato, Yutaka, to Omron Tateisi Electronics Co. Optical vehicle detection system. 4,433,325, Cl. 340-937.000.
- Tanaka, Shinichiro: See—
Kobashi, Mamoru; Tanaka, Shinichiro; and Saji, Hideo, 4,432,318, Cl. 123-339.000.
- Tanaka, Takeo: See—
Watanabe, Atsuo; Kaneko, Teruo; Tanaka, Takeo; and Saito, Yoshio, 4,432,939, Cl. 422-93.000.
- Tanaka, Yasuharu: See—
Ichinohe, Shoji; Takahashi, Kouzou; and Tanaka, Yasuharu, 4,433,125, Cl. 526-279.000.

- Tanaka, Yasuhide: See—
Takayanagi, Keizo; Tanaka, Yasuhide; Kawabata, Tasuke; Nakamura, Fujio; Morita, Yukio; Negi, Shigeto; Kanai, Takeo; and Morita, Eiichi, 4,433,142, Cl. 544-26.000.
- Tanner, Olof: See—
Andersson, Bengt; and Tanner, Olof, 4,432,825, Cl. 156-307.300.
- Tarbox, Bruce H.: See—
Lombardo, Ralph M., Jr.; Bradley, John J.; Bruce, Kenneth E.; Conway, John W.; O'Keefe, David B.; and Tarbox, Bruce H., 4,433,376, Cl. 364-200.000.
- Tarnowski, Stanley J., to Hoffmann-La Roche Inc. Monomeric interferons, 4,432,895, Cl. 260-112.00R.
- Tarsia, Giuseppe, to Berkey Photo, Inc. Illumination apparatus, 4,432,636, Cl. 355-35.000.
- Tarsia, Giuseppe, to Berkey Photo, Inc. Alignment structure, 4,432,638, Cl. 355-63.000.
- Tarvin, Ronald L.: See—
Cunningham, Carol S.; Linser, Charles M.; Resnick, Brian J.; and Tarvin, Ronald L., 4,433,382, Cl. 364-474.000.
- Tasco S.p.A.: See—
De Gasperi, Mario M.; Racciu, Antonio; and Nari, Dario, 4,433,385, Cl. 364-554.000.
- Tassler, Milford C.: See—
Hsu, Oscar H. H.; and Tassler, Milford C., 4,433,126, Cl. 527-105.000.
- Tate, Takao: See—
Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
- Tateyama, Masamitsu: See—
Kamata, Kazumasa; and Tateyama, Masamitsu, 4,433,103, Cl. 525-81.000.
- Tawada, Yoshihisa; Yamamoto, Tetsuro; Ushioda, Minoru; and Saito, Kazuo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin talc-embedded composition and method of manufacturing same, 4,433,097, Cl. 524-789.000.
- Taylor, Albert J.; and Dykes, Norman L., to United States of America, Energy. Composition and method for brazing graphite to graphite, 4,432,821, Cl. 156-89.000.
- Taylor, John B., to Gillette Company, The. Razor and handle coupling means, 4,432,136, Cl. 30-32.000.
- Taylor, Larry C.: See—
Bellotti, Marc; Laurin, Dean G.; Stauber, Ronald C.; and Taylor, Larry C., 4,432,766, Cl. 604-283.000.
- Te Ka De Felten & Guillaume Fermeledeanlagen GmbH: See—
Albers, Raymond; and Widder, Hans G., 4,433,213, Cl. 179-18.0FA.
- Mannschke, Lothar, 4,432,601, Cl. 350-96.190.
- Technical Communications Corporation: See—
McCalmont, Arnold M.; and Slate, Matthew W., 4,433,211, Cl. 179-1.50S.
- Tegiacchi, Fabio; Chiruzzi, Mario; Casu, Benito; and Torri, Gian-giacomo, to Grace Italiana S.p.A. Process for controlled degradation of liquid glucose syrups and cement additive products therefrom, 4,432,801, Cl. 106-92.000.
- Teitel, Robert J.; and Solomon, David E., to KMS Fusion, Inc. Process for the fabrication of thermonuclear fuel pellets and the product thereof, 4,432,933, Cl. 376-152.000.
- Tempmaster Corporation: See—
Dean, Frank J., Jr., 4,432,434, Cl. 181-225.000.
- Tendo, Atsushi: See—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; Tendo, Atsushi; Kikawa, Yoshio; and Kondo, Kaname, 4,433,152, Cl. 546-193.000.
- Terasaki, Masatoshi: See—
Tachibana, Keiji; Terasaki, Masatoshi; Nakayama, Yoshihiko; and Kaneko, Junichi, 4,432,212, Cl. 62-229.000.
- Terayama, Takao: See—
Inoue, Yoichi; Terayama, Takao; Kasai, Susumu; and Tominaga, Tamotsu, 4,432,508, Cl. 242-195.000.
- Terentieva, Nina A.: See—
Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozero, Aref I.; Morgachev, Ivan I.; Chernik, Yuri S.; Kvitkovsky, Konstantin A.; Gusev, Alexei I.; and Terentieva, Nina A., 4,432,584, Cl. 299-25.000.
- Tesch, Gunter, to Breveteam S.A. Method of manufacturing of textile flat structure and textile web manufactured thereby, 4,433,018, Cl. 428-89.000.
- Teske, Lothar. Cooling device, 4,432,412, Cl. 165-93.000.
- Testco, Inc.: See—
Evans, Alyce D.; and Hilty, John R., 4,432,721, Cl. 431-4.000.
- Texaco Inc.: See—
Lin, Jiang-Jen; and Knifton, John F., 4,433,176, Cl. 568-487.000.
Lin, Jiang-Jen; and Knifton, John F., 4,433,177, Cl. 568-487.000.
Lin, Jiang-Jen; and Knifton, John F., 4,433,178, Cl. 568-487.000.
Rice, Doris M.; and Dominguez, Richard J. G., 4,433,067, Cl. 521-51.000.
- Zimmerman, Robert L.; and Yeakey, Ernest L., 4,433,170, Cl. 564-508.000.
- Textron Inc.: See—
Heubusch, Henry P., 4,432,808, Cl. 134-3.000.
- Thalmann, Alfred, to Georg Fischer Aktiengesellschaft. Flange connection, 4,432,572, Cl. 285-412.000.
- Theeuwes, Felix: See—
Urquhart, John; and Theeuwes, Felix, 4,432,754, Cl. 604-56.000.
Urquhart, John; and Theeuwes, Felix, 4,432,756, Cl. 604-80.000.
- Themi, Thomas: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Themi, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
- Thermal Systems Limited: See—
Fischer, Victor H., 4,432,203, Cl. 60-511.000.
- Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischnig, Wilfried, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning machine, 4,432,284, Cl. 104-7.00R.
- Thomas Electronics, Inc.: See—
Seats, Peter; Sanford, Emil; and Waxenbaum, Bernard M., 4,432,464, Cl. 220-2.10A.
- Thomas, Gunter: See—
Fischer, Helmut; Schafer, Jurgen; and Thomas, Gunter, 4,433,265, Cl. 313-22.000.
- Thomas, Jacob E., to NCR Corporation. Ink level control for ink jet printer, 4,433,341, Cl. 346-140.00R.
- Thompson, Gordon R., to Petro-Canada Exploration Inc. Method and apparatus for on-line monitoring of bitumen content in tar sand, 4,433,239, Cl. 250-255.000.
- Thompson, John A.: See—
West, Theodore H.; and Thompson, John A., 4,432,866, Cl. 208-321.000.
- Thompson, Kenneth P., to Champion International Corporation. Process for production of polyester-polyolefin film laminates, 4,432,820, Cl. 156-82.000.
- Thompson, William L.; and Willey, Michael S., to Babcock & Wilcox Company, The. Tunable notch filter for reducing vibration sensitivity for vortex shedding flowmeter generator, 4,432,242, Cl. 73-861.220.
- Thomsen, Svend E.: See—
Kyster, Erik; and Thomsen, Svend E., 4,432,270, Cl. 91-436.000.
- Thomson-CSF: See—
Frebault, Jean Claude, 4,433,292, Cl. 324-404.000.
- Thunoda, Masahiro: See—
Sakurada, Nobuaki; Kiuchi, Masayoshi; and Thunoda, Masahiro, 4,432,628, Cl. 354-289.120.
- Thurber, William E. F., Jr.: See—
Denzine, Allen F.; and Thurber, William E. F., Jr., 4,432,883, Cl. 252-12.000.
- Tibbets, David W.: See—
Sarrell, Ivan D.; Bley, David B.; and Tibbets, David W., 4,432,356, Cl. 128-75.000.
- Tighe, Brian J.; and Gee, Howard J., to Kelvin Lenses Limited. Fluorine-containing hydrogel-forming polymeric materials, 4,433,111, Cl. 525-326.200.
- TII Corporation: See—
Wortman, Donald W., 4,433,215, Cl. 179-170.0NC.
- Ting-Ching, Wu. Wrist watch, 4,432,653, Cl. 368-250.000.
- Toho Aen Kabushiki Kaisha: See—
Kuwayama, Kenta; Nakagawa, Junzo; Tomii, Keishi; and Hagimori, Kenji, 4,432,937, Cl. 420-513.000.
- Tojyo, Tetsuo: See—
Matsuda, Akira; and Tojyo, Tetsuo, 4,433,105, Cl. 525-211.000.
- Tokico, Ltd.: See—
Shirakuma, Takashi; Nakamichi, Fujio; and Iguchi, Osamu, 4,432,698, Cl. 417-27.000.
- Tokura, Isao: See—
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiro, 4,432,613, Cl. 350-358.000.
- Tokyo Electric Co.: See—
Takeno, Shozo; and Sakamoto, Koichiro, 4,432,247, Cl. 73-862.670.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Aoyagi, Akira; and Ikeda, Shinichi, 4,433,293, Cl. 324-424.000.
Arisato, Junichi, 4,433,268, Cl. 313-440.000.
Inoue, Akihiro; and Kamiya, Akihiro, 4,433,271, Cl. 315-63.000.
Kakegawa, Makoto, 4,432,363, Cl. 128-419.0PS.
Kinoshita, Hiroyuki, 4,433,257, Cl. 307-443.000.
Kobayashi, Hiroshi; Yamada, Hisashi; and Uchida, Yukimasa, 4,432,610, Cl. 350-331.00R.
Kojima, Tadashi, 4,433,415, Cl. 371-37.000.
Kojima, Tadashi, 4,433,416, Cl. 371-37.000.
Mashita, Masao; Yasuda, Nobuaki; Ishibashi, Tomoyuki, deceased; and Ishibashi, Satoshi, legal representative, 4,433,340, Cl. 346-135.100.
Sadamasu, Tetsuo; and Ichikawa, Osamu, 4,432,131, Cl. 29-569.00L.
Saitou, Masao; Iwata, Yasuhiro; and Uchida, Kohachi, 4,432,639, Cl. 355-75.000.
Sano, Tetsu; Yasuzuka, Takezou; Ishiwata, Hisao; and Simizu, Tatsuo, 4,433,230, Cl. 219-118.000.
Taguchi, Shinichi; Nagao, Nobuya; and Ogihara, Yutaka, 4,433,255, Cl. 307-353.000.
Takagi, Kunihiko, 4,433,203, Cl. 174-30.000.
Yonezawa, Toshio; and Aoyama, Masaharu, 4,433,004, Cl. 427-38.000.
Yoshida, Shoichi, 4,432,215, Cl. 62-324.600.
- Tolles, Walter E. Nephelometer, 4,432,642, Cl. 356-246.000.
- Tollner, Earnest W., to University of Georgia, The. Apparatus for simulating soil mechanical impedance on root growth potential, 4,432,233, Cl. 73-432.0SD.
- Tomidokoro, Susumu: See—
Umehara, Kenji; Takeda, Hiroshi; and Tomidokoro, Susumu, 4,432,924, Cl. 264-210.800.

- Tomihira, Shigeru: See—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,433,107, Cl. 525-232.000.
- Tomii, Keishi: See—
Kuwayama, Kenta; Nakagawa, Junzo; Tomii, Keishi; and Hagimori, Kenji, 4,432,937, Cl. 420-513.000.
- Tominaga, Tamotsu: See—
Inoue, Yoichi; Terayama, Takao; Kasai, Susumu; and Tominaga, Tamotsu, 4,432,508, Cl. 242-195.000.
- Tomy Corporation: See—
Kanno, Hideyuki, 4,432,159, Cl. 46-177.000.
- Tong, Kay C., to Northrop Corporation. Beam-riding guidance using two overlapping reticle discs, 4,432,511, Cl. 244-3.130.
- Toppan Printing Co., Ltd.: See—
Sawada, Yoshiaki; Shirakawa, Kazuo; and Sugiura, Takeo, 4,433,043, Cl. 430-175.000.
- Topper Manufacturing Corporation: See—
Schmidt, Detlef E., 4,432,619, Cl. 353-119.000.
- Toray Industries, Incorporated: See—
Iizuka, Masahiko; Kubota, Hidenobu; and Sano, Emiko, 4,433,052, Cl. 435-68.000.
- Torii, Shunichi; Nagashima, Shigeo; and Omoda, Koichiro, to Hitachi, Ltd. First-in first-out storage and processing unit making use thereof, 4,433,394, Cl. 365-221.000.
- Torri, Giangiacomo: See—
Tegiacchi, Fabio; Chiruzzi, Mario; Casu, Benito; and Torri, Gian-giacomo, 4,432,801, Cl. 106-92.000.
- Tosa, Tetsuya: See—
Chibata, Ichiro; Tosa, Tetsuya; and Takata, Isao, 4,433,054, Cl. 435-178.000.
- Toth, Anton: See—
Kersten, Hilde; Zengel, Hans G.; and Toth, Anton, 4,433,078, Cl. 523-404.000.
- Toyo Contact Lens Co., Ltd.: See—
Ichinohe, Shoji; Takahashi, Kouzou; and Tanaka, Yasuharu, 4,433,125, Cl. 526-279.000.
- Toyo Kogyo Co., Ltd.: See—
Kondo, Toshiro; and Hamaoka, Kiyohiko, 4,432,428, Cl. 180-73.00D.
- Morita, Yasuyuki; and Oda, Hiroyuki, 4,432,315, Cl. 123-310.000.
- Otsuka, Kazutoshi, 4,432,330, Cl. 123-571.000.
- Toyo Kohan Co., Ltd.: See—
Inui, Tsuneo; Kuroda, Hitoshi; Hizuka, Kenji; Kunishige, Fumio; and Kondo, Yoshikazu, 4,432,842, Cl. 204-41.000.
- Toyo Seikan Kaisha, Ltd.: See—
Ito, Kazuo, 4,432,496, Cl. 239-327.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Ishikawa, Norikatsu; Obata, Haruyuki; Tate, Takao; Tanahashi, Toshio; and Otsuki, Hiromi, 4,432,324, Cl. 123-438.000.
Kawamura, Takahide, 4,432,317, Cl. 123-339.000.
Kobashi, Mamoru; Tanaka, Shinichi; and Saji, Hideo, 4,432,318, Cl. 123-339.000.
Ogita, Tamotsu, 4,432,316, Cl. 123-328.000.
Saito, Takao, 4,432,210, Cl. 62-126.000.
Suzuki, Ichiro; Nakagawa, Yasushi; and Kitagawa, Naoto, 4,432,565, Cl. 280-779.000.
- Tracor BEI, Inc.: See—
Smith, Dorsey T.; Bieser, Albert H.; and Kintzinger, Warren H., 4,433,337, Cl. 343-765.000.
- Tran, Loi N.: See—
Knorr, Raymond S.; Chandler, Joe D.; and Tran, Loi N., 4,433,122, Cl. 526-83.000.
- Trane Company, The: See—
Hackbart, Reuben J., 4,432,693, Cl. 415-88.000.
- Tranoco, Inc.: See—
Byars, Larry W., 4,432,550, Cl. 273-169.000.
- Transagra Corporation: See—
Peer, Herbert R., 4,432,998, Cl. 426-43.000.
- Trautmann, Walter: See—
Kupper, Friedrich-Wilhelm; Padberg, Gunter; Reichert, Ulrich; and Trautmann, Walter, 4,433,099, Cl. 525-53.000.
- Tremmel, Robert A., to OMI International Corporation. Trivalent chromium electroplating baths and processes using thiazole addition agents, 4,432,843, Cl. 204-51.000.
- Trinks, Hilmar: See—
Eichler, Volker; and Trinks, Hilmar, 4,432,280, Cl. 101-230.000.
- Trio Kabushiki Kaisha: See—
Ogawa, Atsushi; and Hayashi, Yoshimasa, 4,433,433, Cl. 381-7.000.
- Trivedi, Harish S.: See—
Jones, William R.; Trivedi, Harish S.; and Gane, Timothy L., 4,433,141, Cl. 544-25.000.
- Trivette, Chester D., Jr.: See—
Coran, Aubert Y.; and Trivette, Chester D., Jr., 4,433,114, Cl. 525-32.600.
- Trodler, Dieter: See—
Schmitz, H.-Joachim; Braun, Dieter; Trodler, Dieter; and Cramer, Hugo, 4,432,196, Cl. 57-204.000.
- Tronville, Pier G., to Fiat Auto S.p.A. Rear suspension assembly for motor vehicles, 4,432,564, Cl. 280-689.000.
- Trutzschler GmbH & Co. KG: See—
Rosink, Albert, 4,432,118, Cl. 19-159.00R.
- TRW, Inc.: See—
Margolin, Mark, 4,432,602, Cl. 350-96.200.
Matlock, Wallace M., 4,432,313, Cl. 123-193.00P.
- Tsuchiya, Chikara: See—
Honda, Hideo; Tsuchiya, Chikara; Sano, Yoshiaki; Hanazawa, Toshio; and Handa, Harumi, 4,433,306, Cl. 330-297.000.
- Tsuchiya, Keiji; Sasaya, Hideaki; and Nara, Akio, to Nippon Soken, Inc. Vane pump with cylinder profile defined by cycloid curves, 4,432,711, Cl. 418-150.000.
- Tsuda, Keishiro: See—
Harata, Kazuki; Morimoto, Satoshi; and Tsuda, Keishiro, 4,432,802, Cl. 106-163.00R.
- Tsugawa, Shunichi: See—
Ogata, Hajime; Ichida, Toshio; Tsugawa, Shunichi; and Irie, Toshio, 4,432,845, Cl. 204-56.00R.
- Tsuji, Mahito; Kudo, Toshiyuki; and Itoh, Kazuo, to Sanyo Electric Co., Ltd. Pick-up assembly for video disc player, 4,433,409, Cl. 369-170.000.
- Tsukamoto, Masaaki: See—
Shimizu, Masuto; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
- Tsuruta, Masahiko, to Victor Company of Japan, Ltd. Tracking error detection system in a magnetic reproducing apparatus, 4,433,350, Cl. 360-70.000.
- Tsutsumi, Fumio: See—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiro; Tsutsumi, Fumio; Takashima, Akio; and Hattori, Iwakazu, 4,433,109, Cl. 525-314.000.
- Tucci, Allan T.: See—
Farris, John R.; and Tucci, Allan T., 4,432,302, Cl. 118-410.000.
- Tuckey, Charles H., to Walbro Corporation. Fuel pump armature shaft bearing, 4,432,659, Cl. 384-300.000.
- Tumelty, Paul F.: See—
Gualtieri, Devlin M.; Tumelty, Paul F.; and Gilleo, Mathias A., deceased, 4,433,034, Cl. 428-693.000.
- Turner, Norman L., to Varian Associates, Inc. Beam sharing method and apparatus for ion implantation, 4,433,247, Cl. 250-492.200.
- Tuzzalino, Costenzio A.: See—
Lasak, John L.; and Tuzzalino, Costenzio A., 4,432,663, Cl. 403-275.000.
- Tward, Emanuel, to Tward 2001 Limited. Capacitive pressure transducer, 4,432,238, Cl. 73-724.000.
- Tward 2001 Limited: See—
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- Twynford, Robert H., to Mechanical Enterprises, Inc. Controlled floating contactor switch, 4,433,317, Cl. 335-151.000.
- Typpo, Pekka M., to Delphian Corporation. Hydrogen sulfide measuring systems and the like, 4,432,224, Cl. 73-23.000.
- Tzodikov, Nathan R., to New England Nuclear Corporation. Organo-mercurial materials, 4,432,877, Cl. 210-656.000.
- UBE Industries, Ltd.: See—
Hamamoto, Toshikazu; and Sugise, Ryoji, 4,433,162, Cl. 560-156.000.
- Uchida, Kohachi: See—
Saitou, Masao; Iwata, Yasuhiro; and Uchida, Kohachi, 4,432,639, Cl. 355-75.000.
- Uchida, Yukimasa: See—
Kobayashi, Hiroshi; Yamada, Hisashi; and Uchida, Yukimasa, 4,432,610, Cl. 350-331.00R.
- Ueda, Makoto: See—
Shida, Masaharu; and Ueda, Makoto, 4,433,401, Cl. 368-204.000.
- Ueda, Minoru: See—
Iyehara, Sadahiro; Kawashima, Kazumi; Ueda, Minoru; Yamamoto, Keisuke; Hosokawa, Tatsuhiko; and Furuta, Yukio, 4,433,395, Cl. 365-222.000.
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- Ueda, Shinjiro: See—
Kuroda, Sigeaki; Arai, Akira; Senshu, Takao; Ueda, Shinjiro; Hanada, Masamichi; and Takahashi, Mineo, 4,432,694, Cl. 415-170.00A.
- Ueda, Yutaka; and Ikeda, Isamu, to Murata Kikai Kabushiki Kaisha. Method for preventing abnormal splicing in winder, 4,432,197, Cl. 57-261.000.
- Uemura, Morito; Kishi, Kenichi; Nakagawa, Satoshi; and Kida, Shuji, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material, 4,433,046, Cl. 430-385.000.
- Ueno, Sadaumi: See—
Ohmori, Tsuguharu; and Ueno, Sadaumi, 4,432,535, Cl. 266-239.000.
- UHDE GmbH: See—
Minning, Rudolf; and Dierkes, Heribert, 4,432,123, Cl. 29-157.00A.
- Ujihara, Shin; and Yoshizawa, Takashi, to Nissan Motor Company, Limited. Stretch drawing apparatus, 4,432,222, Cl. 72-350.000.
- Ulrich, Kurt: See—
Marwitz, Heinrich; Ulrich, Kurt; and Huhn, Karl, 4,433,007, Cl. 427-54.100.
- Ulshoefer, Hermann: See—
Hasler, Rolf; Henzi, Beat; Schneider, Ernst; and Ulshoefer, Hermann, 4,432,770, Cl. 8-638.000.
- Umeda, Hiroyuki: See—
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,432,510, Cl. 242-200.000.
- Umehara, Kenji; Takeda, Hiroshi; and Tomidokoro, Susumu, to Lion Corporation. Process for producing an electrically conductive monofilament, 4,432,924, Cl. 264-210.800.

- Umezu, Haruo: See—
Shirasaka, Yusei; Fuse, Kenichi; and Umezu, Haruo, 4,432,807, Cl. 134-2.000.
- Union Carbide Corporation: See—
Brode, George L.; and Chow, Sui-Wu, 4,433,119, Cl. 525-442.000.
Brode, George L.; and Chow, Sui-Wu, 4,433,129, Cl. 528-154.000.
- Union Oil Company of California: See—
Gowdy, Hugh W.; and Fenton, Donald M., 4,432,962, Cl. 423-573.00R.
- Hass, Robert H.; and Ward, John W., 4,432,961, Cl. 423-542.000.
Young, Dean A., 4,433,187, Cl. 585-466.000.
- Unisearch Limited: See—
Garnett, John L.; Long, Mervyn A.; and Levot, Ronald G., 4,432,889, Cl. 502-5.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: See—
Paramore, Thomas S., 4,432,736, Cl. 440-42.000.
- United States of America
Agriculture: See—
Chen, Peter Y. S.; Helmer, Wayne A.; and Rosen, Howard N., 4,432,147, Cl. 34-46.000.
- Air Force: See—
Bermer, William E.; and Wical, Thomas H., 4,433,198, Cl. 136-230.000.
Boyers, Carl; and Edwards, David J., 4,432,285, Cl. 109-49.500.
Couturier, Guy D., 4,433,438, Cl. 382-41.000.
Ducker, James E.; Foster, Ronald C.; and Whiteson, Bennett V., 4,432,609, Cl. 350-266.000.
Frankel, Milton B.; and Witucki, Edward F., 4,432,815, Cl. 149-19.300.
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Gowan, John G.; and Shillito, Keith R., 4,433,045, Cl. 430-321.000.
Smith, William E., 4,432,485, Cl. 228-44.10R.
Witucki, Edward F.; and Flanagan, Joseph E., 4,432,814, Cl. 149-19.100.
- Army: See—
Betts, Robert E.; Williams, Nathan P.; and Stokes, Arnold T., 4,432,202, Cl. 60-221.000.
Manoogian, David V.; Labitt, Bernard H.; and Wood, Joseph R., 4,433,333, Cl. 343-18.00E.
Paquette, Elmer G.; Maloney, Michael J.; Swain, Douglas S.; LaCerte, Richard F.; Peters, James B.; and Mast, Robert E., 4,432,223, Cl. 73-7.000.
- Commerce: See—
Carr, Alan R., 4,433,336, Cl. 343-728.000.
- Energy: See—
Brantley, Vanston R.; and Miller, Donald R., 4,432,232, Cl. 73-432.00R.
Hayes, John M.; and Small, Gerald J., 4,432,225, Cl. 73-23.100.
Hurst, Fred J.; Brown, Gilbert M.; and Posey, Franz A., 4,432,945, Cl. 423-10.000.
Lee, Lien-Mow; and Kilpatrick, Lester L., 4,432,893, Cl. 252-631.000.
McGuire, Raymond R.; Coon, Clifford L.; Harrar, Jackson E.; and Pearson, Richard K., 4,432,902, Cl. 260-239.0HM.
McIntire, William R., 4,432,345, Cl. 126-439.000.
Morgan, Grover D., 4,432,414, Cl. 165-140.000.
Postma, Arlin K., 4,432,777, Cl. 55-86.000.
Susman, Sherman; Delbecq, Charles J.; Volin, Kenneth J.; and Boehm, Leah, 4,432,891, Cl. 252-518.000.
Taylor, Albert J.; and Dykes, Norman L., 4,432,821, Cl. 156-89.000.
Witte, Arvel B., 4,432,286, Cl. 110-193.000.
- Health and Human Services: See—
DeReggi, Aime' S.; and Harris, Gerald R., 4,433,400, Cl. 367-163.000.
- National Aeronautics and Space Administration: See—
Banks, Bruce A., 4,432,853, Cl. 204-192.00E.
Nola, Frank J., 4,433,276, Cl. 318-729.000.
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,433,115, Cl. 525-417.000.
- Navy: See—
Green, Geoffrey F.; and Humphrey, James C., 4,432,556, Cl. 277-73.000.
Hislop, Alfred R.; and Rubin, David, 4,433,314, Cl. 333-110.000.
Kennedy, Katherine L.; Proctor, Paul W.; and Dow, Robert L., 4,432,816, Cl. 149-19.300.
Morency, Roger L.; and Olin, Lester D., 4,432,603, Cl. 350-96.210.
Yariv, Amnon; and Winsor, Harry V., 4,433,291, Cl. 324-244.000.
- U.S. Philips Corporation: See—
David, Guy A. J., 4,433,435, Cl. 381-94.000.
Heytmeijer, Herman R., 4,432,948, Cl. 423-21.500.
Sicignano, Albert; Werkhoven, Christiaan J.; and van der Weg, Werner F., 4,432,810, Cl. 148-1.500.
Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., 4,432,738, Cl. 445-34.000.
- United Technologies Corporation: See—
Loersch, Joseph F.; and Neal, James W., 4,432,220, Cl. 72-53.000.
Manty, Brian A.; Eckler, Thomas A.; and Fujishiro, Shiro, 4,433,005, Cl. 427-38.000.
- University of California, The Regents of the: See—
Deutsch, James W., 4,433,058, Cl. 436-504.000.
- Lindow, Steven E., 4,432,160, Cl. 47-2.000.
- University of Georgia, The: See—
Tollner, Earnest W., 4,432,233, Cl. 73-432.0SD.
- Unterreiner, Ronald C.: See—
Graetz, Herbert; and Unterreiner, Ronald C., 4,432,827, Cl. 156-245.000.
- UOP Inc.: See—
Kulprathipanja, Santi, 4,433,195, Cl. 585-820.000.
Symon, Ted; and Engel, Dusan J., 4,433,194, Cl. 585-803.000.
- Uranium Pechiney Ugine Kuhlmann: See—
Maurel, Pierre, 4,432,947, Cl. 423-55.000.
- Urquhart, John; and Theeuwes, Felix, to Alza Corporation. Apparatus for parenteral infusion of fluid containing beneficial agent, 4,432,754, Cl. 604-56.000.
- Urquhart, John; and Theeuwes, Felix, to Alza Corporation. Parenteral controlled therapy, 4,432,756, Cl. 604-80.000.
- Usami, Kaoru: See—
Ifuku, Naoyuki; Kurokawa, Akio; Seita, Kenzo; Usami, Kaoru; and Aikawa, Naoyuki, 4,433,133, Cl. 528-232.000.
- Usami, Kiyoshi: See—
Okano, Reijiro; and Usami, Kiyoshi, 4,432,446, Cl. 192-84.00C.
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Tawada, Yoshihisa; Yamamoto, Tetsuro; Ushioda, Minoru; and Saito, Kazuo, 4,433,097, Cl. 524-789.000.
- Vaisala Oy: See—
Varkia, Esa; and Reittu, Osmo, 4,432,502, Cl. 242-50.000.
- Valeo: See—
Cadars, Patrick, 4,432,410, Cl. 165-32.000.
Pitoiset, Didier, 4,432,743, Cl. 474-14.000.
- Vallet, Philippe M. A.; and Vinot nee Ricol, Annie M. M., to CII Honeywell Bull. Apparatus for converting numeral representing data coding formats received or derived by a central processing unit, 4,433,327, Cl. 340-347.0DD.
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Jarvineva, Elias A., 4,432,515, Cl. 244-123.000.
- Vandegraaf, Johannes J., to General Electric Company. Tunable coupling network, 4,433,315, Cl. 333-174.000.
- van der Burg, Maarten J.; Boelema, Sikke J. A.; Schoeber, Willem J. A. H.; and Zuidveld, Pieter L., to Shell Oil Company. Process for the preparation of hydrocarbons from carbon-containing material, 4,433,065, Cl. 518-703.000.
- van der Lely, Cornelis. Agricultural tractors and other vehicles, 4,432,427, Cl. 180-24.000.
- Vanderpool, Charles C. Non-lethal cock fighting system, 4,432,545, Cl. 273-1.0GC.
- Vanderpool, Clarence D.; Scheithauer, Richard A.; and Warmington, Richard G., to GTE Products Corporation. Recovery of refractory metal values from scrap cemented carbide, 4,432,950, Cl. 423-61.000.
- van der Weg, Werner F.: See—
Sicignano, Albert; Werkhoven, Christiaan J.; and van der Weg, Werner F., 4,432,810, Cl. 148-1.500.
- van der Westhuizen, Wynand J.: See—
Hopley, Robert J.; and van der Westhuizen, Wynand J., 4,432,422, Cl. 175-61.000.
- Van Eenam, Donald N., to Monsanto Company. Viscosity modifiers for acrylamide polymer, 4,433,090, Cl. 524-295.000.
- Vanguard Plastics Ltd.: See—
Follows, James S., 4,432,523, Cl. 248-250.000.
- Van Leirsburg, Dean A.: See—
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,432,949, Cl. 423-54.000.
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,432,953, Cl. 423-140.000.
- Van Peteghem, Antoine: See—
De Schepper, Achille; Coussemont, Marc; and Van Peteghem, Antoine, 4,432,951, Cl. 423-89.000.
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- Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., to U.S. Philips Corporation. Camera tube and method of manufacturing same, 4,432,738, Cl. 445-34.000.
- van Tilburg, Jan, deceased; by van Tilburg, Yolande Eve, administrator; and by van Tilburg, Roland H., heir. Method and apparatus for imparting two-way properties to flexible webs, 4,432,926, Cl. 264-282.000.
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- van Tilburg, Roland H., heir: See—
van Tilburg, Jan, deceased; van Tilburg, Yolande Eve, administrator; and van Tilburg, Roland H., heir, 4,432,926, Cl. 264-282.000.
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van Tilburg, Jan, deceased; and van Tilburg, Yolande E., administrator, 4,432,927, Cl. 264-282.000.
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van Tilburg, Jan, deceased; van Tilburg, Yolande Eve, administrator; and van Tilburg, Roland H., heir, 4,432,926, Cl. 264-282.000.
- Van Zeeland, Anthony J.: See—
Larson, Willis A.; and Van Zeeland, Anthony J., 4,433,223, Cl. 200-159.00B.
- Varian Associates, Inc.: See—
Berrian, Donald W.; and Ward, Billy W., 4,433,384, Cl. 364-525.000.
Muka, Richard S.; and Russo, Carl J., 4,433,246, Cl. 250-492.100.
Turner, Norman L., 4,433,247, Cl. 250-492.200.

- Varker, Alan E.: See—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,433,063, Cl. 502-402.000.
- Varkia, Esa; and Reittu, Osmo, to Vaisala Oy. Bobbin apparatus for use in radiosondes, 4,432,502, Cl. 242-50.000.
- Varlet, Marc F. Latch assembly, 4,432,574, Cl. 292-91.000.
- Varma, Indra K.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Phosphorus-containing imide resins, 4,433,115, Cl. 525-417.000.
- Vartanov, Stepan K.; Isupov, Rudolf G.; Malko, Vladimir R.; Mark, Eino A.; Kogan, Boris I.; Belozero, Aref I.; Morgachev, Ivan I.; Chernik, Jury S.; Kvitkovsky, Konstantin A.; Gusev, Alexei I.; and Terentieva, Nina A., to Leningradskoe Nauchno-Proizvodstvennoe Obiedinenie Zemleroinogo Mashinostroenia. Trenching machine for cutting preferably frozen ground, 4,432,584, Cl. 299-25.000.
- Vasishth, Ramesh C.; and Wang, Robert S., to Envirosol Systems International, Ltd. Water based thickened stain, 4,432,797, Cl. 106-34.000.
- Veb Gaskombinat Schwarze Pumpe: See—
Starke, Joachim; Jakubik, Adolf; Girodi, Erich; Strudinger, Manfred; and Exner, Reinhard, 4,432,772, Cl. 48-66.000.
- VEB Kombinat Polygraph "Werner Lamberz": See—
Forster, Karl-Heinz, 4,433,426, Cl. 377-2.000.
- Veb Kombinat Polygraph "Werner Lamberz" Leipzig: See—
Eichler, Volker; and Trinks, Hilmar, 4,432,280, Cl. 101-230.000.
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Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Theml, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
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Stiebelhener, Johann; and Machner, Peter, 4,432,811, Cl. 148-2.000.
- Verhaeg, John: See—
Chew, Ivan; and Verhaeg, John, 4,433,355, Cl. 361-172.000.
- Vernese, Michael P., to Circle V, Inc. Adjustable livestock chute, 4,432,305, Cl. 119-98.000.
- Verschoor, Wouter: See—
MacDonald, Leslie R.; and Verschoor, Wouter, 4,432,463, Cl. 217-12.00R.
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Frey, Rudolf; and Litschke, Peer-Ingo, 4,432,666, Cl. 405-129.000.
- Victor Company of Japan, Ltd.: See—
Kaneda, Isami; Sakakibara, Susumu; and Sano, Yasushi, 4,433,402, Cl. 369-43.000.
- Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,432,510, Cl. 242-200.000.
- Ohtake, Yoshichi, 4,432,626, Cl. 354-155.000.
- Saito, Takashi; and Mochizuki, Masafumi, 4,433,405, Cl. 369-77.200.
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- Tsuruta, Masahiko, 4,433,350, Cl. 360-70.000.
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- Viking Solar Systems, Incorporated: See—
Riise, H. Norman; Goranson, George G.; and Karwan, Henry P., 4,432,343, Cl. 126-424.000.
- Villamarin, Arturo A.: See—
Woodruff, Keith; and Villamarin, Arturo A., 4,432,102, Cl. 4-228.000.
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- Vinot nee Ricol, Annie M. M.: See—
Vallet, Philippe M. A.; and Vinot nee Ricol, Annie M. M., 4,433,327, Cl. 340-347.0DD.
- Virgilio, Gustav: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Theml, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
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Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Voest-Alpine Aktiengesellschaft: See—
Kapellner, Arnold, 4,432,588, Cl. 308-234.000.
Scheurecker, Werner; and Spanner, Herbert, 4,432,407, Cl. 164-448.000.
- Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., to Gulf Research & Development Company. Removing boron trifluoride from coordination compound contaminants in organic liquids, 4,433,197, Cl. 585-823.000.
- Vogel, Wilhelm: See—
Kuschmierz, Heinz; and Vogel, Wilhelm, 4,432,228, Cl. 73-119.00A.
- Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. System for reducing phase error in multitrack magnetic recording, 4,433,351, Cl. 360-76.000.
- Vogelsang, Klaus, to Voith Turbo GmbH & Co. KG. Hydrodynamic torque-transfer unit, especially a hydrodynamic brake, 4,432,442, Cl. 188-290.000.
- Vogelsberg, Dieter: See—
Dzyck, Wolfgang; Hoppe, Bernd; Loczenski, Martin; Vogelsberg, Dieter; and Wolf, Fred, 4,432,199, Cl. 57-294.000.
- Voith Turbo GmbH & Co. KG: See—
Vogelsang, Klaus, 4,432,442, Cl. 188-290.000.
- Voitsekhovskiy, Bogdan V.; and Voitsekhovskiy, Mikhail B., to Institut Gidrodinamiki Imeni M.A. Lavrentieva. Wind motor, 4,432,695, Cl. 416-17.000.
- Voitsekhovskiy, Mikhail B.: See—
Voitsekhovskiy, Bogdan V.; and Voitsekhovskiy, Mikhail B., 4,432,695, Cl. 416-17.000.
- Volin, Kenneth J.: See—
Susman, Sherman; Delbecq, Charles J.; Volin, Kenneth J.; and Boehm, Leah, 4,432,891, Cl. 252-518.000.
- Vollman, Charles K.: See—
Scarberry, Walter P.; and Vollman, Charles K., 4,432,826, Cl. 156-244.110.
- Vollmeyer, Werner: See—
Gefroerer, Stanislaus; and Vollmeyer, Werner, 4,433,411, Cl. 370-80.000.
- von Gutfeld, Robert J.: See—
Romankiw, Lubomir T.; and von Gutfeld, Robert J., 4,432,855, Cl. 204-207.000.
- von Werner, Konrad, to Hoechst Aktiengesellschaft. Process for the preparation of 2-alkenyl 1,1,2-trifluoro-2-halogenoethyl ethers, 4,433,180, Cl. 568-684.000.
- Vrzalik, John H., to Kinetic Concepts, Inc. Kinetic treatment platform, 4,432,353, Cl. 128-24.00R.
- Wacker Chemie GmbH: See—
Marwitz, Heinrich; Ullrich, Kurt; and Huhn, Karl, 4,433,007, Cl. 427-54.100.
- Wada, Satomi, to Aisan Kogyo Kabushiki Kaisha. Variable venturi carburetor, 4,432,911, Cl. 261-44.00C.
- Wade, Charles E. Pool light mounting structure, 4,433,366, Cl. 362-267.000.
- Wagar, Richard L., to Park-Ohio Industries, Inc. Method and apparatus for induction heating of an elongated workpiece, 4,433,226, Cl. 219-10.410.
- Wagner, Rudiger: See—
Bahn, Michael; Preuss, Wolfgang; Schmid, Rolf; and Wagner, Rudiger, 4,432,905, Cl. 260-397.100.
- Wakimura, Kazuo, to Mitsuwa Kogyo Co., Ltd. Fishing toy, 4,432,544, Cl. 273-1.00M.
- Wakino, Kikuo; and Arakawa, Yoshio, to Murata Manufacturing Co., Ltd. Tubular ceramic capacitor, 4,433,360, Cl. 361-305.000.
- Walbro Corporation: See—
Tuckey, Charles H., 4,432,659, Cl. 384-300.000.
- Walden, John R.: See—
Johnson, Phillip L. M.; and Walden, John R., 4,433,396, Cl. 367-105.000.
- Walker, Robert G., to Industria Products, Inc. Coil insertion method and apparatus using non-parallel blade gaps, 4,432,400, Cl. 140-92.100.
- Wall, Alexander C.; and Sculler, Leonard H., to M & R Seal Press Co., Inc. Self-inking stamping device, 4,432,281, Cl. 101-334.000.
- Wallant International Trade, Inc.: See—
Russek, Allen S., 4,432,368, Cl. 128-644.000.
- Waller, Francis E., to Waller, Leonard J. E. Parallel cylinder internal combustion engine, 4,432,310, Cl. 123-58.0AB.
- Waller, Francis J.: See—
McLain, Stephan J.; and Waller, Francis J., 4,432,904, Cl. 260-330.600.
- Waller, Leonard J. E.: See—
Waller, Francis E., 4,432,310, Cl. 123-58.0AB.
- Wallman, P. Henrik, to Chevron Research Company. Feed mixing chute and packed bed for pyrolyzing hydrocarbonaceous solids, 4,432,861, Cl. 208-11.00R.
- Walsh, Cyril M.: See—
Ohannesian, Doru A.; and Walsh, Cyril M., 4,432,568, Cl. 285-3.000.
- Walsh, Michael M., to Mechanical Technology Incorporated. Linear hydraulic drive system for a Stirling engine, 4,432,204, Cl. 60-520.000.
- Walter, Jurgen, to Hackforth GmbH & Co. KG. Spring steel liquid-damped shaft coupling, 4,432,739, Cl. 464-24.000.
- Waluk, Stanley P., to Carol Cable Company, Inc. Electrical lamp socket holder, 4,432,593, Cl. 339-105.000.
- Wang, Robert S.: See—
Vasishth, Ramesh C.; and Wang, Robert S., 4,432,797, Cl. 106-34.000.
- Wannemacher, Willibald: See—
Bruderle, Egon U.; and Wannemacher, Willibald, 4,432,672, Cl. 405-268.000.
- Ward, Billy W.: See—
Berrian, Donald W.; and Ward, Billy W., 4,433,384, Cl. 364-525.000.
- Ward, John W.: See—
Hass, Robert H.; and Ward, John W., 4,432,961, Cl. 423-542.000.
- Waris, Tapio; and Lindroos, Sven-Eric E., to A. Ahlstrom Osakeyhtio. Method and an apparatus for the feeding of a fibre suspension onto the wire of a web former, 4,432,835, Cl. 162-212.000.
- Warmington, Richard G.: See—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Warmington, Richard G., 4,432,950, Cl. 423-61.000.

- Warren, Paul C., to Bell Telephone Laboratories, Incorporated. Quality control procedure for determining particle concentration in polymers. 4,433,075, Cl. 523-303.000.
- Wartian, George, to Wartian Lock Co. Door latch. 4,432,576, Cl. 292-357.000.
- Wartian Lock Co.: See—
Wartian, George, 4,432,576, Cl. 292-357.000.
- Wascat, Raymond, to Bignier Schmid-Laurent. Device for bringing into register the circular end section of a cylindrical element with the circular section of a cylinder bottom, with a view to assembly thereof by welding. 4,432,486, Cl. 228-49.00A.
- Wason, Thomas D., to Cain Encoder Co. Apparatus for remotely determining the position of rotating objects. 4,433,332, Cl. 340-870.370.
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- Watanabe, Isamu: See—
Morita, Akio; and Watanabe, Isamu, 4,433,287, Cl. 324-115.000.
- Watanabe, Katsumi, to Ozen Corporation. Variety playing sound reproducing device. 4,433,404, Cl. 369-66.000.
- Watanuki, Yoshio, to Nissan Motor Company, Limited. Corner cover for a window. 4,432,167, Cl. 49-502.000.
- Watarai, Yoshie: See—
Nishimura, Hiromi; Watarai, Yoshie; and Matsubara, Yuusaku, 4,433,357, Cl. 361-196.000.
- Wavin B.V.: See—
Beune, Joannes H.; and Marissen, Roelof H., 4,432,395, Cl. 138-109.000.
- Waxenbaum, Bernard M.: See—
Seats, Peter; Sanford, Emil; and Waxenbaum, Bernard M., 4,432,464, Cl. 220-2.10A.
- Weaver, Richard L. Silo unloading apparatus. 4,432,687, Cl. 414-307.000.
- Weber, Franz K., to Modulite Corporation. Audio light chandelier. 4,433,363, Cl. 362-86.000.
- Weber, Giuseppe: See—
Cohen, Noel; and Weber, Giuseppe, 4,432,906, Cl. 260-410.90R.
- Weber, Walter J., Jr.: See—
Bennington, James E.; Bennington, Gerald E.; Bernardin, Frederick E., Jr.; Patterson, Donald J.; and Weber, Walter J., Jr., 4,432,344, Cl. 126-438.000.
- Wedler, Klaus, to Croon & Lucke Maschinenfabrik GmbH & Co. KG. Machine for producing yarn loops. 4,432,503, Cl. 242-47.000.
- Wei, John S. S., to Northern Telecom Limited. Photoconductor control of electro-optically variable display cell. 4,432,611, Cl. 350-342.000.
- Weichel, Bernhard: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Thiel, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.
- Weidman, Raymond F.: See—
Schneider, Harold N.; Simpson, James H.; and Weidman, Raymond F., 4,433,221, Cl. 200-144.0AP.
- Weill, Jerome; Garapon, Jacques; and Sillion, Bernard, to Institut Français du Pétrole. Process for manufacturing anhydrides of alkenyl dicarboxylic acids. 4,433,157, Cl. 549-255.000.
- Weimar, Erich, to Drahtex Development AG. Trimming or sealing strips. 4,432,166, Cl. 49-491.000.
- Weimer, Ralph E.; Kalowski, Thaddeus J.; and Novy, Robert A., to Restaurant Technology, Inc. Method for preparing scrambled eggs. 4,433,001, Cl. 426-614.000.
- Wein, William J.: See—
Fehlner, Francis P.; and Wein, William J., 4,432,852, Cl. 204-181.00F.
- Weisbord, Leon E.; and Wessbecher, Francis W., to Singer Company. The Hysteresis synchronous motor utilizing polarized rotor. 4,433,260, Cl. 310-156.000.
- Weiss, Hermann: See—
Kohler, Gisbert; Weiss, Hermann; and Landwehr, Gotz, 4,432,139, Cl. 30-381.000.
- Welch, Willard M.; and Harbert, Charles A., to Pfizer Inc. Hexahydro-trans-pyrindole. 4,432,978, Cl. 424-249.000.
- Welch, William R.; Fisher, Ernest P.; and Yonker, John H., to Otis Engineering Corporation. Well flow control apparatus. 4,432,416, Cl. 166-117.500.
- Wellcome Foundation Ltd., The: See—
Harris, Clifford J.; and Barracough, Paul, 4,432,988, Cl. 424-273.00R.
- Wellner, Wolfgang: See—
Pedain, Josef; Wellner, Wolfgang; König, Klaus; and Gruber, Hermann, 4,433,010, Cl. 427-160.000.
- Wentworth, Robert J.: See—
Belanger, James A.; Wentworth, Robert J.; Calvin, Douglas J.; and Lapham, James M., 4,432,406, Cl. 160-199.000.
- Wentzell, Timothy H.; and Innes, Charles B., Jr., to Combustion Engineering, Inc. Locomotion unit for a tool support adapted for progression through passageways. 4,432,271, Cl. 91-527.000.
- Wenzel, Wolfgang: See—
Hombach, Rudolf; Reiff, Helmut; Wenzel, Wolfgang; and Dollhausen, Manfred, 4,433,095, Cl. 524-563.000.
- Werkhoven, Christian J.: See—
Sicignano, Albert; Werkhoven, Christian J.; and van der Weg, Werner F., 4,432,810, Cl. 148-1.500.
- Werner, Ludwig: See—
Brundiek, Horst; and Werner, Ludwig, 4,432,500, Cl. 241-57.000.
- Werth, Carl H., Jr., to Werth Engineering, Inc. Remote controlled tool arm adjustment. 4,432,259, Cl. 82-2.00E.
- Werth Engineering, Inc.: See—
Werth, Carl H., Jr., 4,432,259, Cl. 82-2.00E.
- Wessbecher, Francis W.: See—
Weisbord, Leon E.; and Wessbecher, Francis W., 4,433,260, Cl. 310-156.000.
- Wesselhoft, Robert D.: See—
Euker, Charles A., Jr.; Wesselhoft, Robert D.; Dunkleman, John J.; Aquino, Dolores C.; and Gouker, Toby R., 4,432,773, Cl. 48-197.00R.
- West, Theodore H.; and Thompson, John A., to Exxon Research and Engineering Co. Membrane separation process. 4,432,866, Cl. 208-321.000.
- Westerlund, Robert E.; and Read, Wayne L. Concrete pumping swivel coupling apparatus with seal. 4,432,558, Cl. 277-180.000.
- Western Digital: See—
Leger, Geary L., 4,433,378, Cl. 364-200.000.
- Western Electric Company, Inc.: See—
Lasak, John L.; and Tuzzalino, Costenzio A., 4,432,663, Cl. 403-275.000.
- Westerstrandh, Bjorn V.; and Karlsson, Arne V. Solar collector. 4,432,346, Cl. 126-445.000.
- Westfalia Separator AG: See—
Icking, Friedrich, 4,432,700, Cl. 417-121.000.
- Westinghouse Electric Corp.: See—
Caputo, William R.; and Nomura, Masami, 4,432,439, Cl. 187-29.00R.
- Gjertsen, Robert K.; Wilson, John F.; and George, Raymond A., 4,432,934, Cl. 376-333.000.
- Impink, Albert J., Jr., 4,432,930, Cl. 376-215.000.
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- Westvaco Corporation: See—
Hawes, David H., 4,433,074, Cl. 523-207.000.
- Weyerhaeuser Company: See—
Muise, Herbert D., 4,432,491, Cl. 229-33.000.
- Whirlpool Corporation: See—
Kretschman, Gerald L.; and Mason, Anthony, 4,432,528, Cl. 248-603.000.
- White, Albert O.: See—
Lyons, William C.; and White, Albert O., 4,432,423, Cl. 175-75.000.
- White, Bertram: See—
Ostrowski, Carl L.; and White, Bertram, 4,433,210, Cl. 381-53.000.
- White Consolidated Industries, Inc.: See—
Arendash, Joseph M., 4,432,293, Cl. 112-231.000.
- White, Craig A.: See—
Larson, Douglas A.; Tacke, Kenneth L.; White, Craig A.; and Paxton, Ronald E., 4,433,011, Cl. 427-231.000.
- White, Lawrence J.: See—
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,432,824, Cl. 156-165.000.
- Whitson, Bennett V.: See—
Ducker, James E.; Foster, Ronald C.; and Whitson, Bennett V., 4,432,609, Cl. 350-266.000.
- Whitfield, Joyce M.; and Cosper, David R., to Nalco Chemical Company. Additive for felted cellulose fibers. 4,432,834, Cl. 162-158.000.
- Wiacek, Marian, to Duracell Inc. Catalytic cathode composition for air-depolarized cell and method of preparation. 4,433,035, Cl. 429-27.000.
- Wiatt, James G.; Calvert, James W.; Belcher, Samuel L.; and Smith, Roger D., to Cincinnati Milacron Inc. Apparatus for high rate production of biaxially oriented thermoplastic articles. 4,432,720, Cl. 425-534.000.
- Wical, Thomas H.: See—
Bernier, William E.; and Wical, Thomas H., 4,433,198, Cl. 136-230.000.
- Wick, Gerhard, to Akzo NV. Embedding mass based upon fast-reacting polyurethane casting resin. 4,433,128, Cl. 528-53.000.
- Widder, Hans G.: See—
Albers, Raymond; and Widder, Hans G., 4,433,213, Cl. 179-18.0FA.
- Widdowson, Richard E., to General Motors Corporation. Pressure transducer. 4,433,321, Cl. 338-42.000.
- Wieder, Irwin; and Wollenberg, Robert H., to Analytical Radiation Corporation. Diamine acid fluorescent chelates. 4,432,907, Cl. 260-429.200.
- Wiesmann, Herbert L.; and Becker, Erich W., to Wilkhahn-Wilkening & Hahne GmbH & Company. Chair with means for adjusting the inclination of the backrest. 4,432,582, Cl. 297-316.000.
- Wietecha, Robert L., to Air-Mo Hydraulics, Inc. Flexible hose chuck. 4,432,569, Cl. 285-18.000.
- Wieber, Hartmut; and Pfahler, Gerhard, to Hoechst Aktiengesellschaft. Triazine stabilizers. 4,433,145, Cl. 544-198.000.
- Wilchek, Meir: See—
Gilad, Gad; Gilad, Varda; and Wilchek, Meir, 4,433,051, Cl. 435-7.000.
- Wilfert, Thomas: See—
Auracher, Gerd; Clement, Albrecht; Daumer, Rolf; Schwarz, Helmut; Thiel, Thomas; Venzke, Wilfried; Virgilio, Gustav; Weichel, Bernhard; and Wilfert, Thomas, 4,432,325, Cl. 123-491.000.

- Wilgus, Herbert S.: See—
Solberg, John C.; Piggan, Roger H.; and Wilgus, Herbert S., 4,433,048, Cl. 430-434.000.
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Wiesmann, Herbert L.; and Becker, Erich W., 4,432,582, Cl. 297-316.000.
- Wilkinson, John R., to Bendix Corporation. The. Control system for an internal combustion engine. 4,433,381, Cl. 364-431.050.
- Wilkinson, Stanley B., to General Electric Company. Positive sequence undervoltage distance relay. 4,433,353, Cl. 361-80.000.
- Willey, Michael S.: See—
Thompson, William L.; and Willey, Michael S., 4,432,242, Cl. 73-861.220.
- William H. Rorer, Inc.: See—
Campbell, Henry F., 4,432,979, Cl. 424-250.000.
- William P. Poythress & Company: See—
Davis, William M., 4,432,977, Cl. 424-248.500.
- Williams, Griffith E. Process for producing extremely low gas and residual contents in metal powders. 4,432,813, Cl. 148-125.000.
- Williams, Haydn W. R.: See—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,432,992, Cl. 424-274.000.
- Williams, Joseph J.: See—
Koppel, Paul E.; Williams, Joseph J.; and Woebecke, Herman N., 4,433,193, Cl. 585-752.000.
- Williams, Nathan P.: See—
Betts, Robert E.; Williams, Nathan P.; and Stokes, Arnold T., 4,432,202, Cl. 60-221.000.
- Williamson, Michael, to Owens-Corning Fiberglass Corporation. Electrode purge sleeve for glass melting furnaces. 4,433,419, Cl. 373-37.000.
- Willis, Brian J.; and Eilerman, Robert G., to Fritzsche, Dodge & Olcott, Inc. Substituted cyclohexane derivatives. 4,432,378, Cl. 131-277.000.
- Willis, Robert J.: See—
Giles, David P.; Kerry, John C.; Kozlik, Antonin; Palmer, Bryan H.; Shuttler, Stephen W.; and Willis, Robert J., 4,432,994, Cl. 424-300.000.
- Willms, Lothar: See—
Knorr, Harald; Handte, Reinhard; Willms, Lothar; and Tammer, Thomas, 4,433,153, Cl. 548-152.000.
- Wilson, James E.: See—
Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., 4,432,340, Cl. 126-390.000.
- Wilson, John F.: See—
Gjertsen, Robert K.; Wilson, John F.; and George, Raymond A., 4,432,934, Cl. 376-333.000.
- Wiltzbach, Bernard L.: See—
Clark, William D.; Garner, Mark D.; Rhodes, John H., Jr.; and Wiltzbach, Bernard L., 4,432,541, Cl. 271-251.000.
- Wind, David W., to Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of Her Majesty's Canadian Government. Locating device. 4,433,335, Cl. 343-463.000.
- Windebank, Robert W., to Firing Circuits, Inc. Method and apparatus for testing a battery. 4,433,294, Cl. 324-426.000.
- Winderlich, Hans-Georg: See—
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,432,567, Cl. 283-83.000.
- Windmoller & Holscher: See—
Feldkammer, Richard, 4,432,686, Cl. 414-77.000.
- Windsor, Harry M., to Automotive Products Limited. Clutch control systems. 4,432,445, Cl. 192-0.076.
- Winkel, Richard D. Cervical traction kit. 4,432,352, Cl. 128-17.000.
- Winkler, Heinrich: See—
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,433,281, Cl. 323-246.000.
- Winkler, Ottmar, to SKF Kugellagerfabriken GmbH. Joint means for transmitting a moment of rotation in both directions. 4,432,741, Cl. 464-145.000.
- Winsor, Harry V.: See—
Yariv, Amnon; and Winsor, Harry V., 4,433,291, Cl. 324-244.000.
- Wirsbinski, James L., to J. I. Case Company. Self-elevating wood splitter. 4,432,402, Cl. 144-193.00A.
- Withers, L. Andrew, Jr.; Withers, William D.; and Fineo, Carlo, to Withers, L. Andrew, Jr. Support block assembly. 4,432,526, Cl. 248-542.000.
- Withers, William D.: See—
Withers, L. Andrew, Jr.; Withers, William D.; and Fineo, Carlo, 4,432,526, Cl. 248-542.000.
- Witte, Arvel B., to United States of America, Energy. Combustion pinhole camera system. 4,432,286, Cl. 110-193.000.
- Witucki, Edward F.; and Flanagan, Joseph E., to United States of America, Air Force. Azido esters. 4,432,814, Cl. 149-19.100.
- Witucki, Edward F.: See—
Frankel, Milton B.; and Witucki, Edward F., 4,432,815, Cl. 149-19.300.
- Frankel, Milton B.; and Witucki, Edward F., 4,432,817, Cl. 149-19.500.
- Wize, Gary A., to General Motors Corporation. Three point seat adjuster. 4,432,524, Cl. 248-395.000.
- Woebecke, Herman N.: See—
Koppel, Paul E.; Williams, Joseph J.; and Woebecke, Herman N., 4,433,193, Cl. 585-752.000.
- Woerner, Leo G.: See—
Phillips, Martha E.; and Woerner, Leo G., 4,432,661, Cl. 403-172.000.
- Wolf, Franz-Josef; and Klaschka, Rudolf. Cover with electrically insulated current conduction. 4,433,361, Cl. 361-433.000.
- Wolf, Fred: See—
Dzyck, Wolfgang; Hoppe, Bernd; Loczenski, Martin; Vogelsberg, Dieter; and Wolf, Fred, 4,432,199, Cl. 57-294.000.
- Wolf, Jerrold M. Tent stake. 4,432,382, Cl. 135-118.000.
- Wollenberg, Robert H.: See—
Wieder, Irwin; and Wollenberg, Robert H., 4,432,907, Cl. 260-429.200.
- Wollman, Jack, to Bulova Watch Company, Inc. Integrated watch case and bracelet assembly. 4,432,655, Cl. 368-282.000.
- Wolsing, Wilhelm: See—
Musall, Reimar; and Wolsing, Wilhelm, 4,432,943, Cl. 422-179.000.
- Won, Vann Y. Method and apparatus for separating a substance from a liquid. 4,432,775, Cl. 55-41.000.
- Wong, Rayman Y., to Stauffer Chemical Company. Amine oxanilic acid salts as herbicide extenders. 4,432,909, Cl. 260-501.110.
- Wood, Joseph R.: See—
Manoogian, David V.; Labitt, Bernard H.; and Wood, Joseph R., 4,433,333, Cl. 343-18.00E.
- Woodford Manufacturing Company: See—
Breneman, Warren R., 4,432,692, Cl. 414-749.000.
- Wooding: See—
Wooding, Patrick J., 4,433,421, Cl. 373-79.000.
- Wooding, Patrick J., to Wooding. Controlled atmosphere melting of molten slag charge. 4,433,421, Cl. 373-79.000.
- Woodruff, Keith; and Villamarin, Arturo A., to American Cyanamid Co. Dispensing package for automatically releasing a controlled amount of an additive solution into a water tank and bowl. 4,432,102, Cl. 4-228.000.
- Woodward, Fred E.; and Hudson, Alice. Ionomers as antistatic agents. 4,433,113, Cl. 525-327.500.
- Worley, Ronald W.; and Johnson, David A., to Akzona Incorporated. Method for the prevention of hydrolysis of polyesterification catalysts. 4,433,135, Cl. 528-282.000.
- Wortman, Donald W., to TII Corporation. Solid state hybrid circuits. 4,433,215, Cl. 179-170.0NC.
- Woste, Ludwig, to Lexel Corporation. Nozzle for forming a free jet stream of a liquid, and its method of manufacture. 4,432,497, Cl. 239-589.000.
- Wrasidlo, Wolfgang J.; and Mysels, Karol J., to Brunswick Corporation. Semi-permeable membranes and processes for making the same. 4,432,875, Cl. 210-500.200.
- Wright, Danny O.: See—
Carp, Ralph W.; and Wright, Danny O., 4,433,390, Cl. 364-900.000.
- Wright, Felix W., to A.P.V. Company Limited. The. Plate heat exchanger. 4,432,415, Cl. 165-166.000.
- Wright, Howard, to Burundy, Inc. Means for mounting cables and the like. 4,432,519, Cl. 248-49.000.
- Wuertz, Emil S., to Harvey Hubbell Incorporated. Fire rated closure plug. 4,432,465, Cl. 220-235.000.
- Wuertz, Emil S., to Harvey Hubbell Incorporated. Junction box for poke-thru floor fittings. 4,433,204, Cl. 174-48.000.
- Wurzer, Ernst, to Mauser-Werke GmbH. Extrusion head. 4,432,718, Cl. 425-466.000.
- Wyatt, Gerald A., to Minnesota Mining and Manufacturing Company. Control circuit for transformer relay. 4,433,356, Cl. 361-191.000.
- Xerox Corporation: See—
Badesha, Santokh S.; Smith, Thomas W.; and Loutfy, Rafik O., 4,432,841, Cl. 204-14.00N.
- Buchheit, Robert F., 4,433,297, Cl. 324-457.000.
- Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,433,417, Cl. 372-45.000.
- Stoffel, James C.; Seachman, Ned J.; Hauber, Jack R.; and Kingsley, William, 4,433,346, Cl. 358-293.000.
- Yaji, Motoyasu: See—
Shimizu, Masuto; Morimoto, Tadashi; Yaji, Motoyasu; Tsukamoto, Masaaki; Suzuki, Takao; and Ogura, Shigeru, 4,432,533, Cl. 266-44.000.
- Yale Security Products Ltd.: See—
Chew, Ivan; and Verhaeg, John, 4,433,355, Cl. 361-172.000.
- Yamada, Hisashi: See—
Kobayashi, Hiroshi; Yamada, Hisashi; and Uchida, Yukimasa, 4,432,610, Cl. 350-331.00R.
- Yamada, Mitsuhiro: See—
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiro, 4,432,613, Cl. 350-358.000.
- Yamada, Motoyuki: See—
Okamoto, Haruo; and Yamada, Motoyuki, 4,432,781, Cl. 65-18.200.
- Yamaga, Hiroyoshi: See—
Nimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, 4,433,040, Cl. 430-109.000.
- Yamagishi, Youji: See—
Hamamura, Kimio; Akasaka, Kozo; and Yamagishi, Youji, 4,433,159, Cl. 549-411.000.
- Yamaguchi, Takashi: See—
Stahler, John A.; and Yamaguchi, Takashi, 4,432,230, Cl. 73-168.000.
- Yamamiya, Kazuo: See—
Miyamoto, Akira; Shimizu, Senzo; Yamamiya, Kazuo; and Harada, Masahiro, 4,433,136, Cl. 528-347.000.
- Yamamoto, Kazuyoshi; and Sato, Tadashi, to Caterpillar Mitsubishi Limited. Shoe bolt securing and removing apparatus. 4,432,257, Cl. 81-464.000.

- Yamamoto, Keisuke: See—
Iyehara, Sadahiro; Kawashima, Kazumi; Ueda, Minoru; Yamamoto, Keisuke; Hosokawa, Tatsuhiro; and Furuta, Yukio, 4,433,395, Cl. 365-222.000.
- Yamamoto, Tetsuro: See—
Tawada, Yoshihisa; Yamamoto, Tetsuro; Ushioda, Minoru; and Saito, Kazuo, 4,433,097, Cl. 524-789.000.
- Yamanashi, Teruaki: See—
Itoh, Hiroyuki; Yamanashi, Teruaki; and Imai, Hirosuke, 4,433,098, Cl. 524-811.000.
- Yamasa Shoyu Kabushiki Kaisha: See—
Nakatsugawa, Shigekazu, 4,432,348, Cl. 128-1.100.
- Yamasaki, Masafumi; and Yoshida, Muneaki, to Olympus Optical Co., Ltd. Automatic exposure control camera, 4,432,623, Cl. 354-412.000.
- Yamashita, Keitaro, to Hitachi Metals, Ltd. Recording method, 4,433,041, Cl. 430-122.000.
- Yamashita, Tadaoki: See—
Baba, Sueki; Yoshida, Tomio; Akahira, Nobuo; and Yamashita, Tadaoki, 4,433,403, Cl. 369-48.000.
- Yamawaki, Maokuni; Suzuki, Shozo; and Furuta, Tadaaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Immune adsorbent, adsorbing device and blood purifying apparatus, 4,432,871, Cl. 210-195.100.
- Yamazaki, Etsuo: See—
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,433,275, Cl. 318-578.000.
- Yamazoe, Hiroshi: See—
Azuma, Koichi; Nagasawa, Masahiro; Yamazoe, Hiroshi; and Aoki, Masaki, 4,433,408, Cl. 369-170.000.
- Yanagawa, Hitoshi: See—
Shirai, Masanari; and Yanagawa, Hitoshi, 4,432,509, Cl. 242-195.000.
- Yang, Kang; and Reedy, James D., to Conoco Inc. Color precursor removal from detergent range alkyl benzenes, 4,433,196, Cl. 585-823.000.
- Yano, Kunihiro. Method for predicting properties of a chemical compound, 4,432,732, Cl. 434-298.000.
- Yariv, Amnon; and Winsor, Harry V., to United States of America, Navy. Optical fiber for magnetostriuctive responsive detection of magnetic fields, 4,433,291, Cl. 324-244.000.
- Yasuda, Nobuaki: See—
Mashita, Masao; Yasuda, Nobuaki; Ishibashi, Tomoyuki, deceased; and Ishibashi, Satoshi, legal representative, 4,433,340, Cl. 346-135.100.
- Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel injection control system for a fuel injection pump, 4,432,319, Cl. 123-357.000.
- Yasuhara, Seishi, to Nissan Motor Company, Limited. Engine control system, 4,432,331, Cl. 123-571.000.
- Yasunaka, Masayoshi: See—
Kabu, Yasunori; Yasunaka, Masayoshi; Morita, Yoshinori; and Motowoka, Masanori, 4,433,121, Cl. 526-68.000.
- Yasuzuka, Takezou: See—
Sano, Tetsu; Yasuzuka, Takezou; Ishiwata, Hisao; and Simizu, Tatsu, 4,433,230, Cl. 219-118.000.
- Yatsuhashi, Kiyomi: See—
Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,433,305, Cl. 330-296.000.
- Yazawa, Toshinari: See—
Matsuo, Sachio; Sakane, Tadashi; Noumi, Ryoichi; Fujiwara, Shinji; Fukudome, Hiroshi; Kobashi, Rikizo; Izaiku, Hiroumi; and Yazawa, Toshinari, 4,432,851, Cl. 204-181.00R.
- Yeakey, Ernest L.: See—
Zimmerman, Robert L.; and Yeakey, Ernest L., 4,433,170, Cl. 564-508.000.
- Yeda Research and Development Co., Ltd.: See—
Gilad, Gad; Gilad, Varda; and Wilchek, Meir, 4,433,051, Cl. 435-7.000.
- Yerkes, John W.: See—
Jester, Theresa L.; Yerkes, John W.; Gay, Charles F.; and Bottenberg, William R., 4,433,200, Cl. 136-251.000.
- Yodis, John: See—
Laganis, Deno; and Yodis, John, 4,433,080, Cl. 523-414.000.
- Yokogawa Hokushin Electric Corporation: See—
Nakagawa, Shuichi; Tamura, Sadao; Satoh, Setsuo; Sanagi, Mamoru; Otsu, Hiroshi; Miyamoto, Shigenobu; and Takahashi, Hiroyuki, 4,433,338, Cl. 346-34.000.
- Yokosuka, Koichi, to Seiko Instruments & Electronics Ltd. Band attachment assembly for attaching a watchband to a watchcase, 4,432,476, Cl. 224-164.000.
- Yokota, Takashi, to Ricoh Company, Ltd. Apparatus for holding a recording member in the form of an endless belt in a recording system using same, 4,432,632, Cl. 355-3.0DD.
- Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Power supply changeover type power amplifier, 4,433,307, Cl. 330-297.000.
- Yonezawa, Toshio; and Aoyama, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device and a method for manufacturing the same, 4,433,004, Cl. 427-38.000.
- Yonker, John H.: See—
Welch, William R.; Fisher, Ernest P.; and Yonker, John H., 4,432,416, Cl. 166-117.500.
- York, Kenneth L.; and Stram, Oscar B., to Burroughs Corporation. Memory address translation system for accessing memory locations via job names, 4,433,389, Cl. 364-900.000.
- Yoshida, Eiichi: See—
Morikawa, Yonekichi; Shimizu, Toshio; Yoshida, Eiichi; Kona-gaya, Tsuyoshi; and Hirayama, Keizo, 4,433,229, Cl. 219-84.000.
- Yoshida Kogyo K. K.: See—
Sugahara, Sadaobu, 4,432,126, Cl. 29-410.000.
- Yoshida, Muneaki: See—
Yamasaki, Masafumi; and Yoshida, Muneaki, 4,432,623, Cl. 354-412.000.
- Yoshida, Shoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure differential automatic transfer type three-way valves, 4,432,215, Cl. 62-324.600.
- Yoshida, Tomio: See—
Baba, Sueki; Yoshida, Tomio; Akahira, Nobuo; and Yamashita, Tadaoki, 4,433,403, Cl. 369-48.000.
- Yoshihara, Kenji: See—
Sugiyama, Hiroyuki; Yoshihara, Kenji; Yusa, Yasuhiro; Abe, Ryozi; and Sakurai, Masaki, 4,433,347, Cl. 358-342.000.
- Yoshikawa, Kensei: See—
Amano, Takehiro; Yoshikawa, Kensei; Sano, Tatsuhiko; Ohuchi, Yutaka; Ishiguro, Michihiro; Shiono, Manzo; Fujita, Yoshiji; and Nishida, Takashi, 4,433,160, Cl. 560-56.000.
- Yoshikoshi, Hideyuki: See—
Nakayama, Michio; Tajima, Osamu; Matsui, Seiji; Yoshikoshi, Hideyuki; and Fukuyo, Hiroshi, 4,432,788, Cl. 75-3.000.
- Yoshioka, Mitsuru: See—
Ogawa, Yasunao; Noto, Akira; Mori, Sachio; and Yoshioka, Mitsuru, 4,433,139, Cl. 536-17.200.
- Yoshizawa, Takashi: See—
Ujihara, Shin; and Yoshizawa, Takashi, 4,432,222, Cl. 72-350.000.
- Yost, Paul E. Gas-proof fastening system for a non-rigid airship, 4,432,513, Cl. 244-99.000.
- Young, Dean A., to Union Oil Company of California. Process for selectively producing para-xylene, 4,433,187, Cl. 585-466.000.
- Young, Lewis B., to Mobil Oil Corporation. Catalytic conversion of methanol to light olefins, 4,433,189, Cl. 585-640.000.
- Young, Robert W., to British Aerospace Public Limited Company. Jet propulsion efflux outlets, 4,432,512, Cl. 244-3.220.
- Young, Steven A.: See—
Buyalos, Edward J.; Rowan, Hugh H.; and Young, Steven A., 4,432,940, Cl. 422-135.000.
- Young, Uen-Long: See—
Liau, Shung-Chung; Cheng, Wei-Min; and Young, Uen-Long, 4,432,840, Cl. 204-14.00N.
- Yui, Hiroshi: See—
Sano, Hironari; and Yui, Hiroshi, 4,433,073, Cl. 523-201.000.
- Yumino, Masamichi: See—
Ozawa, Akio; Sueyoshi, Susumu; Sato, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,433,305, Cl. 330-296.000.
- Yusa, Yasuhiro: See—
Sugiyama, Hiroyuki; Yoshihara, Kenji; Yusa, Yasuhiro; Abe, Ryozi; and Sakurai, Masaki, 4,433,347, Cl. 358-342.000.
- Yuta, Kenji: See—
Niimura, Isao; Imagome, Hiroshi; Yamaga, Hiroyoshi; Akuzawa, Noboru; Yuta, Kenji; and Kurahashi, Takeo, 4,433,040, Cl. 430-109.000.
- Zajer nee Balazs, Mari: See—
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Zajer nee Balazs, Mari; Forgach, Lilla; Karpati, Egon; Kiraly, Arpad; Kiraly nee Soos, Gyongyver; Szporny, Laszlo; and Rosdy, Bela, 4,432,982, Cl. 424-256.000.
- Zajic, James E.; and Cooper, David G. De-emulsification agents of microbiological origin, 4,432,887, Cl. 252-331.000.
- Zandona, Oliver J.: See—
Beck, H. Wayne; Carruthers, James D.; Cornelius, Edward B.; Hettinger, William P., Jr.; Kovach, Stephen M.; Palmer, James L.; and Zandona, Oliver J., 4,432,890, Cl. 502-62.000.
- Myers, George D., deceased; Hettinger, William P., Jr.; Kovach, Stephen M.; and Zandona, Oliver J., 4,432,863, Cl. 208-113.000.
- Zanetta, Hugues; and Richard, Daniel, to Institut de Recherches de la Siderurgie Francaise. Oxygen lance for steel converter, 4,432,534, Cl. 266-225.000.
- Zapisek, John M., to Standard Microsystems Corporation. Three-phase regulated high-voltage charge pump, 4,433,253, Cl. 307-297.000.
- Zarzycki, Jerzy W.; Frassas, Michel; and Phalippou, Jean E. H., to Corning France. Preparation of monolithic silica aerogels, the aerogels thus obtained and their use for the preparation of silica glass articles and of heat-insulating materials, 4,432,956, Cl. 423-338.000.
- Zauer, Karoly: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Visky nee Gombos, Zsuzsanna; and Barta nee Szalai, Gizella, 4,432,901, Cl. 260-239.00A.
- Zaugg, Edmond, to Montres Rolex S.A. Process and apparatus for determining the state of charge of a battery, 4,433,295, Cl. 324-429.000.
- Zebelean, John, to Pro-Pattern, Inc. Metal golf driver, 4,432,549, Cl. 273-167.00H.
- Zeitoun, Paul; and Brisard, Patrick, to Roussel-UCLAF. Compressed tablets for disintegration in the colon comprising an active ingredient containing nucleus coated with a first layer containing microcrystalline cellulose which is coated with an enteric organic polymer coating, 4,432,966, Cl. 424-21.000.
- Zekert, Gerhard C.; and DeArment, Donald K., to Nabisco Brands, Inc. Nut blanching apparatus, 4,432,275, Cl. 99-625.000.
- Zengel, Hans G.: See—
Kersten, Hilde; Zengel, Hans G.; and Toth, Anton, 4,433,078, Cl. 523-404.000.

- Zeppelzauer, Wolfgang: See—
Theurer, Josef; Folser, Karl; Riessberger, Klaus; Zeppelzauer, Wolfgang; and Glawischig, Wilfried, 4,432,284, Cl. 104-7.00R.
- Zilch, Karl T., to Emery Industries, Inc. Process for raisin production, 4,433,002, Cl. 426-640.000.
- Zimmerman, Robert L.; and Yeakey, Ernest L., to Texaco Inc. Novel bis(aminoethyl)ether derivatives useful as polyurethane catalysts, 4,433,170, Cl. 564-508.000.
- Zoecon Corporation: See—
Lee, Shy-Fuh, 4,433,149, Cl. 546-21.000.
- Zuideveld, Pieter L.: See—
van der Burgt, Maarten J.; Boelema, Sikke J. A.; Schoeber, Willem J. A. H.; and Zuideveld, Pieter L., 4,433,065, Cl. 518-703.000.
- 501 Control Data Canada, Ltd.: See—
Maki, Melvin C., 4,432,193, Cl. 57-3.000.
- 501 Hellige GmbH: See—
Leist, Helmut, 4,432,365, Cl. 128-635.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF FEBRUARY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Hoebel, Peter, to Siemens Aktiengesellschaft. Apparatus for the detection and processing of electric signals. Re. 31,524, Cl. 307-149.000. Siemens Aktiengesellschaft: See—
Hoebel, Peter, Re. 31,524, Cl. 307-149.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bio-Energy Systems, Inc.: See—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,349,070, Cl. 165-173.000.
Coe Manufacturing Co.: See—
Kerr, James R., B1 3,671,726, Cl. 364-563.000.
Fuentes, Jose C.; and Marin, Ramon X., to Guanox y Fertilizantes de Mexico, S.A. Process for reducing the biuret content in urea. B1 3,903,158, 2-21-84, Cl. 564-073.000.
General Electric Company: See—
Wambach, Allen D., B1 4,123,415, Cl. 524-451.000.
Guanox y Fertilizantes de Mexico, S.A.: See—
Fuentes, Jose C.; and Marin, Ramon X., B1 3,903,158, Cl. 564-073.000.
Kerr, James R., to Coe Manufacturing Co. Electro-optical apparatus for precise on-line measurement of the thickness of moving strip material. B1 3,671,726, 2-21-84, Cl. 364-563.000.
Krulick, Steven E.: See—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,349,070, Cl. 165-173.000.
Leonard, Ronald W.: See—
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,349,070, Cl. 165-173.000.
Marin, Ramon X.: See—
Fuentes, Jose C.; and Marin, Ramon X., B1 3,903,158, Cl. 564-073.000.
Wambach, Allen D., to General Electric Company. Reinforced thermoplastic polyester compositions having improved resistance to heat deflection. B1 4,123,415, 2-21-84, Cl. 524-451.000.
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., to Bio-Energy Systems, Inc. Tube mat heat exchanger. B1 4,349,070, 2-21-84, Cl. 165-173.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: See—
Larkin, Mark E., 272,725, Cl. D9-435.000.
Tanner, John C., II, 272,762, Cl. D24-58.000.
ACE Orthopedic Manufacturing, Inc.: See—
Dohogne, Charles L., 272,764, Cl. D24-33.000.
AGFA-Gevaert AG: See—
Schlagheck, Norbert; and Rabold, Lutz, 272,744, Cl. D16-34.000.
Aktiebolaget Wicanders Korkfabriker: See—
Nemeth, Josef, 272,767, Cl. D25-80.000.
Allen, Steven R. Combined slide hammer nail puller and building wrecking tool. 272,712, 2-21-84, Cl. D8-89.000.
American Drew Division of Sperry and Hutchinson Furniture, Inc.: See—
Aulbert, Harold V.; and Horton, Charles M., 272,698, Cl. D6-154.000.
American Home Products Corporation: See—
Baker, Robert, 272,723, Cl. D9-377.000.
AMP Incorporated: See—
Cosmos, Pete; and McCleerey, Earl W., 272,733, Cl. D13-24.000.
Antonick, Milton J.; and Thorwaldsen, Stanley E., to Thor Power Tool Company. Paving breaker. 272,710, 2-21-84, Cl. D8-67.000.
Atherton, Henry. Power tool for laminate trimming and edge finishing. 272,709, 2-21-84, Cl. D8-67.000.
Atlas Copco Aktiebolag: See—
Gidlund, Per A. L.; and Wedlin, Per G., 272,708, Cl. D8-61.000.
Aulbert, Harold V.; and Horton, Charles M., to American Drew Division of Sperry and Hutchinson Furniture, Inc. Dresser or the like. 272,698, 2-21-84, Cl. D6-154.000.
Avantgarde S.p.A.: See—
Stocchi, Gabriele, 272,679, Cl. D4-25.000.
Stocchi, Gabriele, 272,680, Cl. D4-25.000.
Stocchi, Gabriele, 272,681, Cl. D4-25.000.
Stocchi, Gabriele, 272,682, Cl. D4-25.000.
Stocchi, Gabriele, 272,683, Cl. D4-25.000.
Stocchi, Gabriele, 272,684, Cl. D4-25.000.
Stocchi, Gabriele, 272,685, Cl. D4-25.000.
Stocchi, Gabriele, 272,686, Cl. D4-25.000.
Stocchi, Gabriele, 272,687, Cl. D4-25.000.
Stocchi, Gabriele, 272,688, Cl. D4-25.000.
Stocchi, Gabriele, 272,689, Cl. D4-25.000.
Stocchi, Gabriele, 272,690, Cl. D4-25.000.
Stocchi, Gabriele, 272,691, Cl. D4-25.000.
Bailey, Wilbur J., to Stanley Works, The. Child safety latch. 272,715, 2-21-84, Cl. D8-331.000.
Baker, Robert, to American Home Products Corporation. Bottle or the like. 272,723, 2-21-84, Cl. D9-377.000.
Balaban, David B.: See—
Bienwald, Wolfgang F.; and Balaban, David B., 272,734, Cl. D13-32.000.
Baldwin Piano & Organ Company: See—
Kimble, Thomas E., 272,746, Cl. D17-6.000.
Ball Corporation: See—
Haag, John H., Sr., 272,768, Cl. D34-38.000.
Beirise, Jean M.: See—
Coons, John C.; Beirise, Jean M.; Riley, Richard E.; Gray, James M.; and Stow, Mark L., 272,737, Cl. D14-68.000.
Benjamin & Medwin, Inc.: See—
Miller, David W., 272,703, Cl. D7-43.000.
Best, Melvin H. M., to Teradata Corporation. Console for data processing equipment. 272,738, 2-21-84, Cl. D14-102.000.
Bidegain, Pierre, to Bidegain S.A. Shoe sole. 272,675, 2-21-84, Cl. D2-320.000.
Bidegain S.A.: See—
Bidegain, Pierre, 272,675, Cl. D2-320.000.
Bienwald, Wolfgang F.; and Balaban, David B., to Leviton Manufacturing Company, Inc. Switch. 272,734, 2-21-84, Cl. D13-32.000.
Boudreaux, Mark D., to CPG Products Corp. Toy space vehicle. 272,752, 2-21-84, Cl. D21-87.000.
Bove, Steven C.; and Garelick, Herbert J. Walking cane. 272,677, 2-21-84, Cl. D3-9.000.
Brackmann, Rogers F., to H.H.B., Inc. Aerial toy. 272,751, 2-21-84, Cl. D21-86.000.
Brewer, John H. Golf grip aid. 272,754, 2-21-84, Cl. D21-234.000.

LIST OF DESIGN PATENTEES

PI 51

Bridgestone Tire Company Limited: See—
Osawa, Tooru; and Kojima, Hiroshi, 272,730, Cl. D12-147.000.
Buis, Richard D.: See—
Moore, Brian E.; and Buis, Richard D., 272,732, Cl. D13-13.000.
Carlson Dolls Co.: See—
Carlson, Lowell J., 272,753, Cl. D21-153.000.
Carlson, Lowell J., to Carlson Dolls Co. Hand puppet. 272,753, 2-21-84, Cl. D21-153.000.
Claman, Mike T. Chair. 272,693, 2-21-84, Cl. D6-57.000.
Claman, Mike T. Rocking chair. 272,694, 2-21-84, Cl. D6-57.000.
Claman, Mike T. Sofa. 272,695, 2-21-84, Cl. D6-57.000.
Cline, Carl R., II: See—
Mailer, Werner H.; and Cline, Carl R., II, 272,741, Cl. D14-111.000.
Coffman, Quentin H. Dental hygiene device. 272,763, 2-21-84, Cl. D24-15.000.
Coons, John C.; Beirise, Jean M.; Riley, Richard E.; Gray, James M.; and Stow, Mark L., to Masco Corporation of Indiana. Radio. 272,737, 2-21-84, Cl. D14-68.000.
Cosmos, Pete; and McCleerey, Earl W., to AMP Incorporated. 180° Cable strain relief and cover for an electrical connector. 272,733, 2-21-84, Cl. D13-24.000.
CPG Products Corp.: See—
Boudreaux, Mark D., 272,752, Cl. D21-87.000.
Goldberg, Dale I., 272,678, Cl. D3-73.000.
Designs for Vision, Inc.: See—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, 272,745, Cl. D16-130.000.
Dohogne, Charles L., to ACE Orthopedic Manufacturing, Inc. Orthopedic pin. 272,764, 2-21-84, Cl. D24-33.000.
Doyel, John S. Photograph display. 272,701, 2-21-84, Cl. D6-234.000.
Drag Specialties, Inc.: See—
Stahel, Alwin J., 272,729, Cl. D12-126.000.
Drucker, Fred F.: See—
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, 272,705, Cl. D7-77.000.
Endress + Hauser, Inc.: See—
Moore, Brian E.; and Buis, Richard D., 272,732, Cl. D13-13.000.
Evans, Arthur, to Mohawk Industries, Inc. Stove grille. 272,755, 2-21-84, Cl. D23-128.000.
Faide, Christian, to S.A.R.L. Wichard. Safety hook. 272,717, 2-21-84, Cl. D8-367.000.
Fasco Controls Corporation: See—
Muench, Rudolph E., 272,716, Cl. D8-356.000.
Fee, Robert W.; and Robbins, Richard J., to Rival Manufacturing Co. Air cleaner or the like. 272,757, 2-21-84, Cl. D23-149.000.
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, to Designs for Vision, Inc. Adjustable optical coupler device. 272,745, 2-21-84, Cl. D16-130.000.
Firth, David G., to Firth design group inc. Motorcycle fairing. 272,731, 2-21-84, Cl. D12-182.000.
Firth design group inc.: See—
Firth, David G., 272,731, Cl. D12-182.000.
Frick, William G., Jr. Telephone mount indicia display. 272,735, 2-21-84, Cl. D14-59.000.
Frost, George H.: See—
Hayes, Robert R.; and Frost, George H., 272,713, Cl. D8-90.000.
Garelick, Herbert J.: See—
Bove, Steven C.; and Garelick, Herbert J., 272,677, Cl. D3-9.000.
Garner, Walter H. Half round hardie. 272,706, 2-21-84, Cl. D8-46.000.
General Electric Company: See—
Mailer, Werner H.; and Cline, Carl R., II, 272,741, Cl. D14-111.000.
Gidlund, Per A. L.; and Wedlin, Per G., to Atlas Copco Aktiebolag. Pneumatic riveting hammer. 272,708, 2-21-84, Cl. D8-61.000.
Glass, Henry: See—
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, 272,705, Cl. D7-77.000.
Godfrey, Danny. Modular storage rack for bottles or the like. 272,699, 2-21-84, Cl. D6-188.000.
Goldberg, Dale I., to CPG Products Corp. Carrying case for dolls. 272,678, 2-21-84, Cl. D3-73.000.
Gotham Chicago Corporation: See—
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, 272,705, Cl. D7-77.000.
Gottsegen, Marten; Drucker, Fred F.; and Glass, Henry, to Gotham Chicago Corporation. Portable cooler. 272,705, 2-21-84, Cl. D7-77.000.
Gray, James M.: See—
Coons, John C.; Beirise, Jean M.; Riley, Richard E.; Gray, James M.; and Stow, Mark L., 272,737, Cl. D14-68.000.
Grey, Alan P. Bottle. 272,721, 2-21-84, Cl. D9-349.000.
Griset, Norman. Woodworking straight edge. 272,711, 2-21-84, Cl. D8-71.000.
GTE Automatic Electric Labs Inc.: See—
Kaczko, John E., 272,736, Cl. D14-66.000.
Guerrero, Nathan J. Corner bracket for use on a scaffold, or similar article. 272,766, 2-21-84, Cl. D25-68.000.
H.H.B., Inc.: See—
Brackmann, Rogers F., 272,751, Cl. D21-86.000.
Haag, John H., Sr., to Ball Corporation. Pallet or the like. 272,768, 2-21-84, Cl. D34-38.000.
Haakenson, David. Jar or the like. 272,722, 2-21-84, Cl. D9-352.000.
Hallgren, Leif, to Hallgrens Industri AB. Child's security seat for vehicles. 272,692, 2-21-84, Cl. D6-9.000.
Hallgrens Industri AB: See—
Hallgren, Leif, 272,692, Cl. D6-9.000.
Hayes, Robert R.; and Frost, George H., to Oatey Co. Hand plane. 272,713, 2-21-84, Cl. D8-90.000.
Horton, Charles M.: See—
Aulbert, Harold V.; and Horton, Charles M., 272,698, Cl. D6-154.000.
Hoshino, Daiji, to Komatsu Zenoah Co. Attachment for snow shovel. 272,742, 2-21-84, Cl. D15-11.000.
IDL Mfg. & Sales Corp.: See—
Smith, Lawrence D., 272,704, Cl. D7-50.000.
Irish, Sally G. Rug. 272,700, 2-21-84, Cl. D6-211.000.
Kaczko, John E., to GTE Automatic Electric Labs Inc. Pushbutton dial for a telephone set or the like. 272,736, 2-21-84, Cl. D14-66.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 272,726, 2-21-84, Cl. D11-155.000.
Kaneko, Toshiro. Box for cultivating vegetables or the like. 272,727, 2-21-84, Cl. D11-155.000.
Killy, Earl J., to Manville Service Corporation. Carrier case blank. 272,724, 2-21-84, Cl. D9-433.000.
Kimble, Thomas E., to Baldwin Piano & Organ Company. Organ. 272,746, 2-21-84, Cl. D17-6.000.
Kingsley, John M., Jr. Spring clip for frameless picture mounting. 272,702, 2-21-84, Cl. D6-246.000.
Kirk, Velma R. Pocket insert for a notebook. 272,748, 2-21-84, Cl. D19-33.000.
Knox, David J. Clamp for plating barrel. 272,743, 2-21-84, Cl. D15-144.000.
Knudson, Giltner J. Strain relief cable fastener. 272,718, 2-21-84, Cl. D8-387.000.
Kojima, Hiroshi: See—
Osawa, Tooru; and Kojima, Hiroshi, 272,730, Cl. D12-147.000.
Komatsu Zenoah Co.: See—
Hoshino, Daiji, 272,742, Cl. D15-11.000.
Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,758, 2-21-84, Cl. D23-166.000.
Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,759, 2-21-84, Cl. D23-166.000.
Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,760, 2-21-84, Cl. D23-166.000.
Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,761, 2-21-84, Cl. D23-166.000.
Kverneland A/S: See—
Skjaeveland, Magne, 272,719, Cl. D8-394.000.
Skjaeveland, Magne, 272,720, Cl. D8-394.000.
Larkin, Mark E., to Abbott Laboratories. Pull tab tear cap for medical liquid container. 272,725, 2-21-84, Cl. D9-435.000.
LeGrand, C. William. Combined sliding screen door pull with screen guard therefor. 272,714, 2-21-84, Cl. D8-301.000.
Lepczynski, Richard: See—
Feinbloom, Richard E.; Lepczynski, Richard; and Oleksy, Waldyslaw, 272,745, Cl. D16-130.000.
Leviton Manufacturing Company, Inc.: See—
Bienwald, Wolfgang F.; and Balaban, David B., 272,734, Cl. D13-32.000.
Luntz, Richard. Writing instrument or similar article. 272,750, 2-21-84, Cl. D19-45.000.
MacDonald, Arch J. Combined flashlight and umbrella. 272,676, 2-21-84, Cl. D3-5.000.
Mailer, Werner H.; and Cline, Carl R., II, to General Electric Company. Data printer. 272,741, 2-21-84, Cl. D14-111.000.
Manville Service Corporation: See—
Killy, Earl J., 272,724, Cl. D9-433.000.
Masco Corporation of Indiana: See—
Coons, John C.; Beirise, Jean M.; Riley, Richard E.; Gray, James M.; and Stow, Mark L., 272,737, Cl. D14-68.000.
McCleerey, Earl W.: See—
Cosmos, Pete; and McCleerey, Earl W., 272,733, Cl. D13-24.000.
Miller, David W., to Benjamin & Medwin, Inc. Food mold. 272,703, 2-21-84, Cl. D7-43.000.
Mobex Corporation: See—
Rehberg, Thomas R.; and Moroney, John W., 272,756, Cl. D23-128.000.
Modern Home Products Corp.: See—
Koziol, Walter, 272,758, Cl. D23-166.000.
Koziol, Walter, 272,759, Cl. D23-166.000.
Koziol, Walter, 272,760, Cl. D23-166.000.
Koziol, Walter, 272,761, Cl. D23-166.000.
Mohawk Industries, Inc.: See—
Evans, Arthur, 272,755, Cl. D23-128.000.
Moore, Brian E.; and Buis, Richard D., to Endress + Hauser, Inc. Explosion proof enclosure for electrical apparatus or similar article. 272,732, 2-21-84, Cl. D13-13.000.
Moroney, John W.: See—
Rehberg, Thomas R.; and Moroney, John W., 272,756, Cl. D23-128.000.
Muench, Rudolph E., to Fasco Controls Corporation. Cord lock. 272,716, 2-21-84, Cl. D8-356.000.
Nemeth, Josef, to Aktiebolaget Wicanders Korkfabriker. Panel for floors, walls, or the like. 272,767, 2-21-84, Cl. D25-80.000.
Nussbaum, Ernest. Demountable stringed musical instrument. 272,747, 2-21-84, Cl. D17-14.000.
Oatey Co.: See—
Hayes, Robert R.; and Frost, George H., 272,713, Cl. D8-90.000.
Office, Gerald S., Jr., to Ponderosa, Inc. Restaurant building. 272,765, 2-21-84, Cl. D25-25.000.
Ohts, Yoshihisa, to Sharp Corporation. Word processor. 272,739, 2-21-84, Cl. D14-106.000.

CLASSIFICATION OF PATENTS

188	4,432,419	4,432,860	CLASS 239	177 CC	4,432,494	0.5	4,432,915	66	4,433,250	CLASS 338	34	4,433,319
355	4,432,420	CLASS 206	216	4,432,451	205	4,432,495	24	4,432,916	149	Re.31,524	35	4,433,320
375	4,432,421	CLASS 172	354	4,432,452	327	4,432,496	40.1	4,432,917	269	4,433,252	42	4,433,321
30	4,433,203	CLASS 174	387	4,432,453	589	4,432,497	43	4,432,918	297	4,433,253	162	4,433,322
48	4,433,204	CLASS 175	425	4,432,454	21	4,432,498	46.4	4,432,919	350	4,433,254	103 M	4,432,592
84 C	4,433,205	CLASS 176	531	4,432,455	57	4,432,499	49	4,432,920	353	4,433,255	105	4,432,593
356	4,433,206	CLASS 177	566	4,432,456	210.8	4,432,500	109	4,432,921	358	4,433,256	258 F	4,432,594
61	4,432,422	CLASS 178	11 R	4,432,457	235	4,432,501	119	4,432,922	443	4,433,257	310 A	4,433,326
75	4,432,423	CLASS 179	64	4,432,458	282	4,432,502	234	4,432,923	456	4,433,258	347 DD	4,433,327
22.09	4,433,207	CLASS 180	113	4,432,459	519	4,432,503	6 C	4,432,924	234	4,433,259	555	4,433,328
46	4,433,208	CLASS 181	120	4,432,460	519	4,432,504	89	4,432,925	234	4,433,260	555	4,433,329
1.5 S	4,433,211	CLASS 182	183	4,432,461	519	4,432,505	156	4,432,926	234	4,433,261	606	4,433,330
2 C	4,433,212	CLASS 183	321	4,432,462	519	4,432,506	156	4,432,927	234	4,433,262	750	4,433,331
18 FA	4,433,213	CLASS 184	564	4,432,463	519	4,432,507	214	4,432,928	234	4,433,263	825.83	4,433,332
115.5 ES	4,433,214	CLASS 185	140	4,432,464	519	4,432,508	214	4,432,929	234	4,433,264	870.37	4,433,333
170 NC	4,433,215	CLASS 186	172.5	4,432,465	519	4,432,509	214	4,432,930	234	4,433,265	923	4,433,334
178	4,433,216	CLASS 187	564	4,432,466	519	4,432,510	214	4,432,931	234	4,433,266	937	4,433,335
6.48	4,432,424	CLASS 188	143	4,432,467	519	4,432,511	214	4,432,932	234	4,433,267	970	4,433,336
8 A	4,432,425	CLASS 189	195.1	4,432,468	519	4,432,512	214	4,432,933	234	4,433,268	18 E	4,433,337
24	4,432,426	CLASS 190	205	4,432,469	519	4,432,513	214	4,432,934	234	4,433,269	450	4,433,338
73 D	4,432,427	CLASS 191	223	4,432,470	519	4,432,514	214	4,432,935	234	4,433,270	463	4,433,339
127	4,432,428	CLASS 192	242.4	4,432,471	519	4,432,515	214	4,432,936	234	4,433,271	463	4,433,340
197	4,432,429	CLASS 193	500.2	4,432,472	519	4,432,516	214	4,432,937	234	4,433,272	463	4,433,341
248	4,432,430	CLASS 194	602	4,432,473	519	4,432,517	214	4,432,938	234	4,433,273	463	4,433,342
287	4,432,431	CLASS 195	652	4,432,474	519	4,432,518	214	4,432,939	234	4,433,274	463	4,433,343
204	4,432,432	CLASS 196	656	4,432,475	519	4,432,519	214	4,432,940	234	4,433,275	463	4,433,344
225	4,432,433	CLASS 197	662	4,432,476	519	4,432,520	214	4,432,941	234	4,433,276	463	4,433,345
82	4,432,434	CLASS 198	699	4,432,477	519	4,432,521	214	4,432,942	234	4,433,277	463	4,433,346
97	4,432,435	CLASS 199	725	4,432,478	519	4,432,522	214	4,432,943	234	4,433,278	463	4,433,347
234	4,432,436	CLASS 200	13	4,432,479	519	4,432,523	214	4,432,944	234	4,433,279	463	4,433,348
9 E	4,432,437	CLASS 201	50	4,432,480	519	4,432,524	214	4,432,945	234	4,433,280	463	4,433,349
29 R	4,432,438	CLASS 202	252	4,432,481	519	4,432,525	214	4,432,946	234	4,433,281	463	4,433,350
71.2	4,432,439	CLASS 203	365	4,432,482	519	4,432,526	214	4,432,947	234	4,433,282	463	4,433,351
267	4,432,440	CLASS 204	12 R	4,432,483	519	4,432,527	214	4,432,948	234	4,433,283	463	4,433,352
290	4,432,441	CLASS 205	10.41	4,432,484	519	4,432,528	214	4,432,949	234	4,433,284	463	4,433,353
0.076	4,432,442	CLASS 206	84	4,432,485	519	4,432,529	214	4,432,950	234	4,433,285	463	4,433,354
12 R	4,432,443	CLASS 207	118	4,432,486	519	4,432,530	214	4,432,951	234	4,433,286	463	4,433,355
58 B	4,432,444	CLASS 208	253	4,432,487	519	4,432,531	214	4,432,952	234	4,433,287	463	4,433,356
84 C	4,432,445	CLASS 209	502	4,432,488	519	4,432,532	214	4,432,953	234	4,433,288	463	4,433,357
100 A	4,432,446	CLASS 210	553	4,432,489	519	4,432,533	214	4,432,954	234	4,433,289	463	4,433,358
735	4,432,447	CLASS 211	55	4,432,490	519	4,432,534	214	4,432,955	234	4,433,290	463	4,433,359
777	4,432,448	CLASS 212	134	4,432,491	519	4,432,535	214	4,432,956	234	4,433,291	463	4,433,360
832	4,432,449	CLASS 213	135	4,432,492	519	4,432,536	214	4,432,957	234	4,433,292	463	4,433,361
37	4,432,450	CLASS 214	136	4,432,493	519	4,432,537	214	4,432,958	234	4,433,293	463	4,433,362
11	4,432,451	CLASS 215	174	4,432,494	519	4,432,538	214	4,432,959	234	4,433,294	463	4,433,363
14 N	4,432,452	CLASS 216	327	4,432,495	519	4,432,539	214	4,432,960	234	4,433,295	463	4,433,364
41	4,432,453	CLASS 217	402.15	4,432,496	519	4,432,540	214	4,432,961	234	4,433,296	463	4,433,365
54 R	4,432,454	CLASS 218	509	4,432,497	519	4,432,541	214	4,432,962	234	4,433,297	463	4,433,366
56 R	4,432,455	CLASS 219	164	4,432,498	519	4,432,542	214	4,432,963	234	4,433,298	463	4,433,367
129.95	4,432,456	CLASS 220	222	4,432,499	519	4,432,543	214	4,432,964	234	4,433,299	463	4,433,368
159.17	4,432,457	CLASS 221	321	4,432,500	519	4,432,544	214	4,432,965	234	4,433,300	463	4,433,369
180 R	4,432,458	CLASS 222	322	4,432,501	519	4,432,545	214	4,432,966	234	4,433,301	463	4,433,370
181 C	4,432,459	CLASS 223	323	4,432,502	519	4,432,546	214	4,432,967	234	4,433,302	463	4,433,371
181 F	4,432,460	CLASS 224	324	4,432,503	519	4,432,547	214	4,432,968	234	4,433,303	463	4,433,372
192 E	4,432,461	CLASS 225	325	4,432,504	519	4,432,548	214	4,432,969	234	4,433,304	463	4,433,373
206	4,432,462	CLASS 226	326	4,432,505	519	4,432,549	214	4,432,970	234	4,433,305	463	4,433,374
207	4,432,463	CLASS 227	327	4,432,506	519	4,432,550	214	4,432,971	234	4,433,306	463	4,433,375
237	4,432,464	CLASS 228	328	4,432,507	519	4,432,551	214	4,432,972	234	4,433,307	463	4,433,376
253	4,432,465	CLASS 229	329	4,432,508	519	4,432,552	214	4,432,973	234	4,433,308	463	4,433,377
257	4,432,466	CLASS 230	330	4,432,509	519	4,432,553	214	4,432,974	234	4,433,309	463	4,433,378
296	4,432,467	CLASS 231	331	4,432,510	519	4,432,554	214	4,432,975	234	4,433,310	463	4,433,379

CLASSIFICATION OF PATENTS

CLASS 358			195	4,433,418			CLASS 417			614	4,433,001			4,432,742			232			4,433,133							
181	4,433,344		CLASS 373			27	4,432,698			640	4,433,002			CLASS 474			279			4,433,134							
244	4,433,345		37	4,433,419			63	4,432,699			CLASS 427			14	4,432,743			282			4,433,135						
293	4,433,346		39	4,433,420			121	4,432,700			27	4,433,003			238	4,432,744			347			4,433,136					
342	4,433,347		79	4,433,421			217	4,432,701			38	4,433,004			CLASS 493			388			4,433,137						
CLASS 360			CLASS 374			269	4,432,702			4,433,005			CLASS 494			CLASS 536			17.2			4,433,139					
51	4,433,348		102	4,432,656			294	4,432,703			39	4,433,006			10	4,432,745			27			4,433,140					
66	4,433,349		126	4,432,657			295	4,432,704			54.1	4,433,007			359	4,432,746											
70	4,433,350		138	4,432,658			399	4,432,705			85	4,433,008			CLASS 494												
76	4,433,351		CLASS 375			477	4,432,707			97	4,433,009			2	4,432,748			CLASS 544									
105	4,433,352		CLASS 376			10	4,433,422			160	4,433,010			8	4,432,747			25			4,433,141						
CLASS 361			30	4,433,423			55	4,432,708			231	4,433,011			CLASS 501			26			4,433,142						
80	4,433,353		106	4,433,424			61 B	4,432,709			252	4,433,012			44	4,433,062			196			4,433,143					
120	4,433,354		113	4,433,425			CLASS 376			150	4,432,711			CLASS 502			198			4,433,144							
172	4,433,355		CLASS 377			119	4,432,929			171	4,432,712			CLASS 503			201			4,433,145							
191	4,433,356		CLASS 378			152	4,432,933			CLASS 419			CLASS 428			5	4,432,889			260			4,433,147				
196	4,433,357		116	4,433,372			49	4,432,938			2	4,432,935			62	4,432,890			322			4,433,148					
260	4,433,358		95	4,433,428			93	4,432,939			CLASS 420			110	4,433,019			CLASS 518			21			4,433,149			
273	4,433,359		99	4,433,429			135	4,432,940			513	4,432,937			703	4,433,065			168			4,433,150					
305	4,433,360		97	4,433,430			140	4,432,941			590	4,432,936			706	4,433,066			178			4,433,151					
433	4,433,361		108	4,433,431			159	4,432,942			CLASS 422			182	4,433,023			CLASS 521			193			4,433,152			
CLASS 362			179	4,433,432			179	4,432,943			CLASS 423			198	4,433,024			CLASS 522									
86	4,433,362		CLASS 381			7	4,432,944			207	4,432,938			51	4,433,067			CLASS 548			152			4,433,153			
109	4,433,363		1	4,433,209			10	4,432,945			252	4,433,025			54	4,433,068			CLASS 549			195			4,433,154		
189	4,433,364		7	4,433,210			21.5	4,432,946			260	4,433,026			99	4,433,069			205			4,433,155					
267	4,433,365		30	4,433,434			54	4,432,948			378	4,433,027			107	4,433,071			227			4,433,156					
370	4,433,366		53	4,433,210			55	4,432,949			407	4,433,028			105	4,433,072			255			4,433,157					
CLASS 363			94	4,433,435			61	4,432,950			476.9	4,433,029			201	4,433,073			332			4,433,158					
45	4,433,368		140	4,432,951			89	4,432,951			541	4,433,031			207	4,433,074			411			4,433,159					
84	4,433,369		171	4,433,209			140	4,432,952			682	4,433,033			303	4,433,075			56			4,433,160					
124	4,433,370		1	4,433,210			171	4,432,953			693	4,433,034			342	4,433,076			66			4,433,161					
127	4,433,371		7	4,433,210			171	4,432,954			CLASS 429			344	4,433,077			156			4,433,162						
CLASS 364			30	4,433,434			171	4,432,955			27	4,433,035			404	4,433,078			204			4,433,163					
171	4,433,373		53	4,433,210			249	4,432,956			114	4,433,036			417	4,433,081			207			4,433,164					
200	4,433,374		94	4,433,435			338	4,432,957			CLASS 430			454	4,433,082			519			4,433,165						
CLASS 365			140	4,432,958			356	4,432,958			19	4,433,037			27	4,433,083			534			4,433,166					
431.05	4,433,377		140	4,432,959			365	4,432,959			55	4,433,038			83	4,433,085			703			B1 3,903,158					
474	4,433,379		3	4,433,436			365	4,432,960			58	4,433,039			112	4,433,086			419			4,433,168					
525	4,433,381		31	4,433,437			539	4,432,961			109	4,433,040			153	4,433,088			508			4,433,169					
554	4,433,382		41	4,433,438			542	4,432,962			122	4,433,041			294	4,433,089			588			4,433,170					
563	4,433,383		300	4,432,659			573 R	4,432,962			126	4,433,042			295	4,433,090			33			4,433,171					
900	B1 33,671,726		29	4,432,660			CLASS 424			134	4,433,043			386	4,433,091			319			4,433,172						
CLASS 366			172	4,432,661			1.1	4,432,963			134	4,433,044			414	4,433,092			324			4,433,173					
431.05	4,433,384		271	4,432,662			14	4,432,964			4	4,432,721			433	4,433,093			459			4,433,174					
554	4,433,385		275	4,432,663			19	4,432,965			359	4,432,722			496	4,433,094			471			4,433,175					
563	4,433,386		3	4,432,664			21	4,432,966			362	4,432,723			563	4,433,095			487			4,433,176					
CLASS 367			129	4,432,665			78	4,432,967			362	4,432,724			575	4,433,096			664			4,433,177					
203	4,433,393		143	4,432,666			81	4,432,968			CLASS 432			811	4,433,098			684			4,433,178						
221	4,433,394		202	4,432,667			91	4,432,969			9	4,432,726			53	4,433,099			684			4,433,179					
222	4,433,395		217	4,432,668			114	4,432,970			227	4,432,727			54.42	4,433,100			750			4,433,180					
CLASS 368			224	4,432,670			177	4,432,971			CLASS 433			75	4,433,102			808			4,433,181						
147	4,432,650		226	4,432,671			180	4,432,972			37	4,432,728			77	4,433,103			829			4,433,182					
336	4,432,651		268	4,432,672			184	4,432,973			118	4,432,729			81	4,433,104			863			4,433,183					
CLASS 369			302	4,432,673			201	4,432,975			168	4,432,730			81	4,433,105			863			4,433,184					
105	4,433,396		CLASS 406			241	4,432,976			CLASS 434			81	4,433,106			CLASS 525			664			4,433,185				
122	4,433,397		19	4,432,674			248.5	4,432,977			37	4,432,731			180	4,433,107			664			4,433,186					
140	4,433,398		30	4,432,675			249	4,432,978			118	4,432,732			211	4,433,108			664			4,433,187					
157	4,433,399		39	4,432,676			250	4,432,979			168	4,432,733			215	4,433,109			664			4,433,188					
163	4,433,400		CLASS 408			251	4,432,980			CLASS 435			232	4,433,110			CLASS 526			664			4,433,189				
CLASS 368			203.5	4,432,677			256	4,432,981			11	4,432,734			255	4,433,111			664			4,433,190					
69	4,432,652		CLASS 410			265	4,432,982			298	4,432,735			314	4,433,112			664			4,433,191						
204	4,433,401		151	4,432,678			267	4,432,983			339	4,432,736			323	4,433,113			664			4,433,192					
250	4,432,653		CLASS 411			269	4,432,984			CLASS 436			326.2	4,433,114			CLASS 527			664			4,433,193				
282	4,432,654		34	4,432,679			271	4,432,985			7	4,433,051			326.9	4,433,115			664			4,433,194					
CLASS 369			103	4,432,680			273 P	4,432,986			68	4,433,052			327.5	4,433,116			664			4,433,195					
43	4,433,402		180	4,432,681			273 R	4,432,987			141	4,433,053			332.6	4,433,117			664			4,433,196					
48	4,433,403		311	4,432,682			274	4,432,988			178	4,433,054			417	4,433,118			664			4,433,197					
66	4,433,404		340	4,432,683			285	4,432,989			313	4,433,055			425	4,433,119			664			4,433,198					
77.2	4,433,405		366	4,432,684			300	4,432,990			CLASS 437			442	4,433,120			664			4,433,199						
127	4,433,406		CLASS 414			304	4,432,991			CLASS 438			501	4,433,121			664			4,433,200							
170	4,433,407		31	4,432,685			304	4,432,992			8	4,433,056			501	4,433,122			664			4,433,201					
291	4,433,408		77	4,432,686			311	4,432,993			65	4,433,057			501	4,433,123			664			4,433,202					
CLASS 370			307	4,432,687			CLASS 425			504	4,433,058			512	4,433,059			664			4,433,203						
80	4,433,411		358	4,432,688			4 C	4,432,713			518	4,433,060			542	4,433,061			664			4,433,204					
CLASS 371			416	4,432,689			83.1	4,432,714			CLASS 440			277	4,433,062			664			4,433,205						
25	4,433,412		460	4,432,690			87	4,432,715			21	4,432,734			279	4,433,063			664			4,433,206					
27	4,433,413		735	4,432,691			89	4,432,716			1	4,432,735			105	4,433,064			664			4,433,207					
37	4,433,414		749	4,432,692			429	4,432,717			42	4,432,736			CLASS 445			664			4,433,208						
CLASS 372			CLASS 415			466	4,432,718			CLASS 446			CLASS 446			CLASS 446			664			4,433,209					
45	4,433,416		88	4,432,693			526	4,432,719			34	4,432,738			17	4,433,127			664			4,433,210					
CLASS 373			170 A	4,432,694			534	4,432,720			CLASS 447			45	4,433,128			664			4,433,211						
CLASS 374			CLASS 416			7	4,432,997			CLASS 448			53	4,433,129			664			4,433,212							
CLASS 375			17	4,432,695			43	4,432,998			CLASS 449			154	4,433,130			664			4,433,213						
CLASS 376			134 A	4,432,696			583	4,432,999			24	4,432,739			173	4,433,131			664			4,433,214					
CLASS																											

[illegible]

CLASSIFICATION OF PLANTS

P.—	69	5,193	88	5,194			
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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

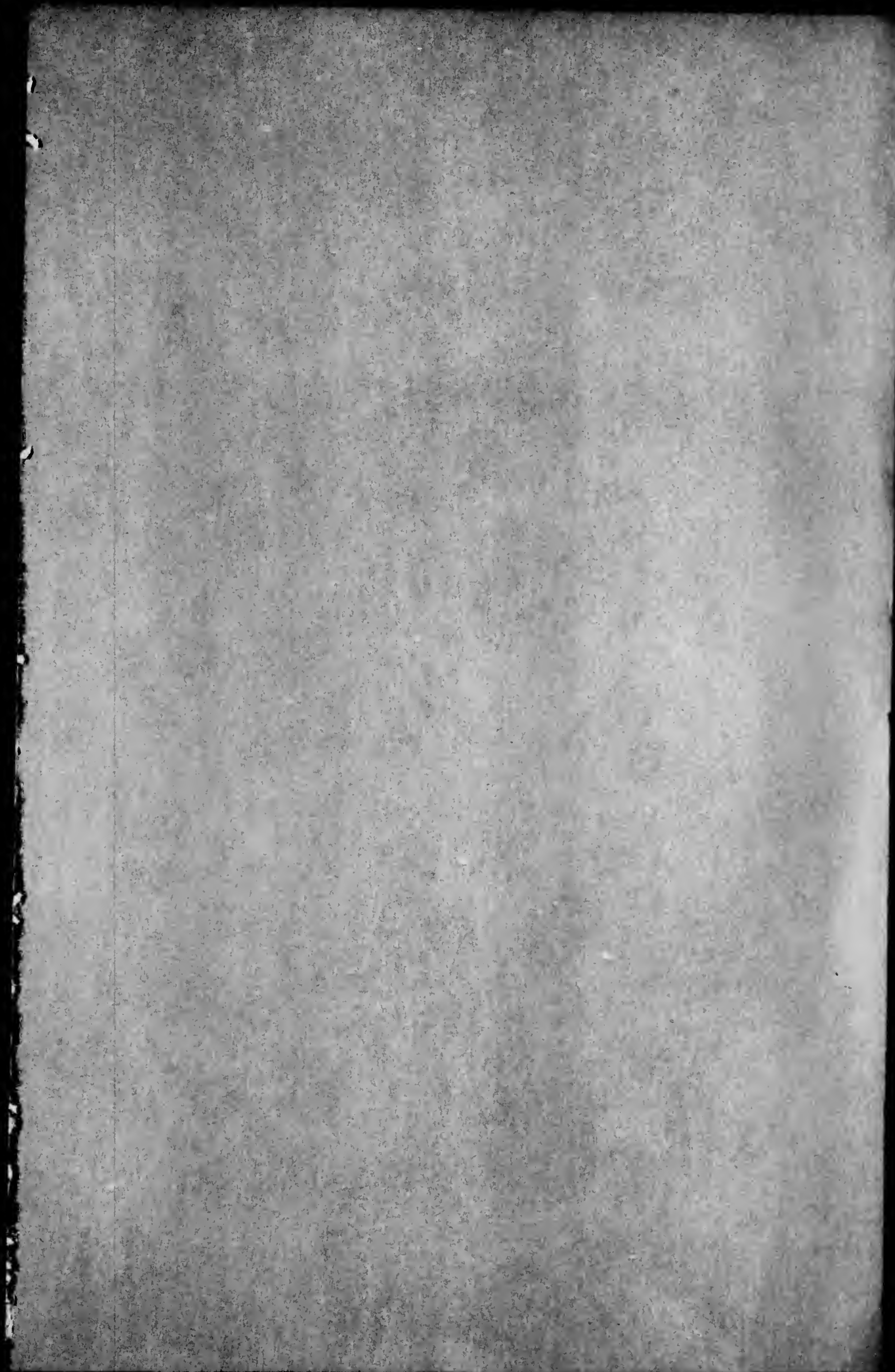
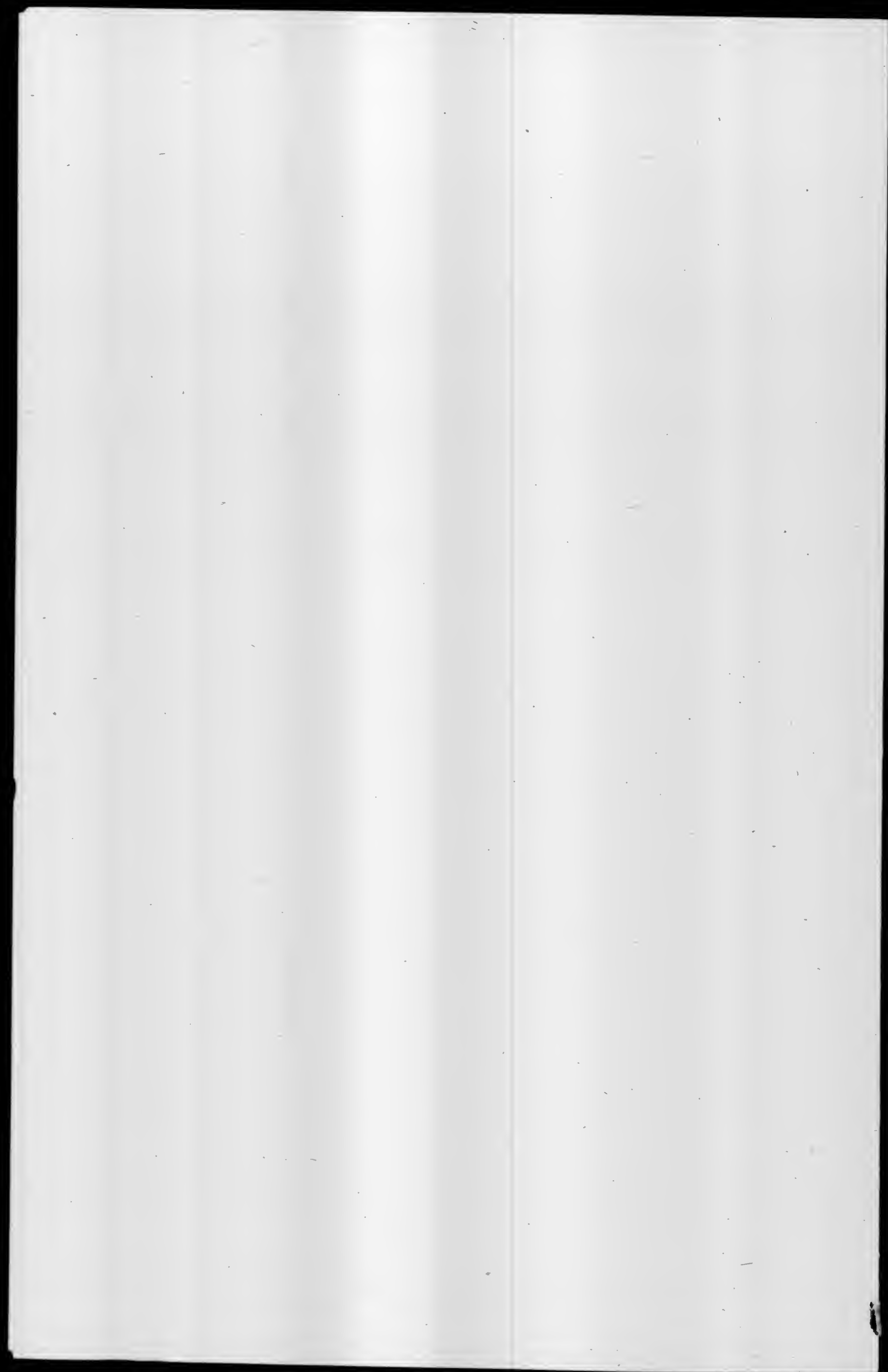
(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,432,202	4,432,949	4,432,505	4,432,443	4,432,762	4,432,394
4 :	4,432,291	4,432,953	4,432,506	4,432,485	4,432,766	4,432,527
	4,432,367	4,432,961	4,432,511	4,432,516	4,432,799	4,432,719
	4,432,547	4,432,962	4,432,549	4,432,529	4,432,812	4,432,730
	4,432,578	4,432,964	4,432,562	4,432,560	4,432,826	4,432,339
	4,432,729	4,432,975	4,432,577	4,432,561	4,432,827	4,432,822
	4,432,818	4,432,999	4,432,612	4,432,707	4,432,834	4,432,285
	4,432,977	4,433,061	4,432,680	4,432,965	4,432,847	4,432,556
	4,433,302	4,433,068	4,432,754	4,433,005	4,432,870	4,432,661
5 :	4,433,424	4,433,070	4,432,786	4,433,113	4,432,891	4,432,688
	4,432,156	4,433,147	4,432,809	4,433,122	4,432,932	4,432,771
6 :	4,432,157	4,433,187	4,432,824	4,433,214	4,432,985	4,432,816
	4,432,134	4,433,192	4,432,875	4,433,250	4,433,001	4,433,285
	4,432,141	4,433,199	4,432,909	4,433,342	4,433,011	4,433,400
	4,432,142	4,433,200	4,433,021	4,432,153	4,433,014	4,432,243
	4,432,160	4,433,217	4,433,149	4,432,170	4,433,118	4,432,550
	4,432,190	4,433,282	4,433,329	4,432,188	4,433,126	4,432,298
	4,432,226	4,433,291	4,433,344	4,432,233	4,433,174	4,432,381
	4,432,238	4,433,300	4,433,366	4,432,294	4,433,190	4,432,409
	4,432,286	4,433,304	4,433,378	4,432,356	4,433,194	4,432,452
	4,432,302	4,433,314	4,433,388	4,432,401	4,433,195	4,432,472
	4,432,352	4,433,328	4,433,417	4,432,408	4,433,223	4,432,530
	4,432,361	4,433,343	4,433,423	4,432,490	4,433,224	4,432,593
	4,432,369	4,433,345	4,433,434	4,432,526	4,433,244	4,432,595
	4,432,370	4,433,363	4,432,158	4,432,526	4,433,256	4,432,599
	4,432,382	4,433,391	4,432,418	4,432,607	4,433,289	4,432,614
	4,432,390	8 : 4,432,494	4,432,541	4,432,699	4,433,364	4,432,715
	4,432,392	4,432,538	4,432,692	4,432,726	4,432,387	4,432,723
	4,432,482	4,432,563	4,432,767	4,432,108	4,432,362	4,432,724
	4,432,491	4,432,631	4,433,336	4,432,105	4,432,400	4,432,745
	4,432,498	9 : 4,432,271	4,432,189	4,432,125	4,432,451	4,432,765
	4,432,521	4,432,327	4,432,220	4,432,147	4,433,084	4,432,832
	4,432,553	4,432,353	4,432,261	4,432,163	4,433,280	4,432,877
	4,432,568	4,432,468	4,432,376	4,432,230	4,433,415	4,432,922
	4,432,597	4,432,554	4,432,783	4,432,231	4,432,225	4,433,086
	4,432,606	4,432,603	4,432,829	4,432,282	4,432,456	4,433,104
	4,432,619	4,432,912	4,433,231	4,432,345	4,432,677	4,433,132
	4,432,660	4,432,914	4,433,326	4,432,388	4,432,998	4,433,143
	4,432,679	4,432,970	4,433,436	4,432,393	4,433,277	4,433,193
	4,432,706	4,432,978	4,432,882	4,432,470	4,433,412	4,433,211
	4,432,735	4,432,987	4,432,904	4,432,492	4,432,112	4,433,218
	4,432,756	4,433,058	4,432,974	4,432,495	4,432,191	4,433,242
	4,432,768	4,433,204	4,432,155	4,432,525	4,432,272	4,433,246
	4,432,775	4,433,245	4,432,180	4,432,594	4,432,305	4,433,247
	4,432,797	4,433,294	4,432,183	4,432,602	4,432,389	4,433,251
01 :	4,432,814	4,433,276	4,432,217	4,432,618	4,432,449	4,433,273
06 :	4,432,815	4,432,154	4,432,281	4,432,663	4,433,540	4,433,333
	4,432,817	4,432,224	4,432,310	4,432,683	4,433,056	4,433,376
	4,432,861	4,432,343	4,432,357	4,432,750	4,432,863	4,433,377
	4,432,902	4,432,347	4,432,358	4,432,755	4,432,864	4,433,384
	4,432,907	4,432,421	4,432,360	4,432,759	4,432,890	4,433,399
	4,432,931	4,432,454	4,432,366	4,432,760	4,432,209	4,433,418
	4,432,944	4,432,462	4,432,383	4,432,761	4,432,289	4,433,422

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

26 :	4,433,437	4,432,609	4,432,219	37 :	4,432,337	4,432,459	4,432,887
	4,432,119	4,432,785	4,432,254		4,432,399	4,432,657	4,432,913
	4,432,130	4,433,089	4,432,273		4,432,489	4,432,687	4,432,929
	4,432,173	4,433,090	4,432,287		4,432,820	4,432,691	4,432,936
	4,432,251	4,433,233	4,432,340		4,432,846	4,432,713	4,433,000
	4,432,253	4,433,249	4,432,364		4,432,903	4,432,714	4,433,067
	4,432,255	4,432,676	4,432,368		4,432,915	4,432,721	4,433,165
	4,432,259	4,433,208	4,432,405		4,433,022	4,432,725	4,433,166
	4,432,312	4,432,752	4,432,435		4,433,135	4,432,749	4,433,170
	4,432,323	4,432,644	4,432,453		4,433,205	4,432,758	4,433,176
	4,432,344	4,432,669	4,432,456		4,433,332	4,432,782	4,433,177
	4,432,406	4,432,102	4,432,477	39 :	4,432,129	4,432,790	4,433,178
	4,432,432	4,432,132	4,432,545		4,432,168	4,432,803	4,433,284
	4,432,438	4,432,146	4,432,548		4,432,169	4,432,850	4,433,298
	4,432,478	4,432,151	4,432,551		4,432,242	4,432,880	4,433,337
	4,432,522	4,432,229	4,432,552		4,432,267	4,432,888	4,433,377
	4,432,524	4,432,248	4,432,571		4,432,278	4,432,900	4,433,413
	4,432,528	4,432,311	4,432,587		4,432,293	4,432,930	4,433,481
	4,432,575	4,432,354	4,432,608		4,432,313	4,432,934	4,433,504
	4,432,576	4,432,378	4,432,625		4,432,431	4,432,950	4,433,581
	4,432,583	4,432,439	4,432,630		4,432,440	4,432,979	4,433,611
	4,432,590	4,432,464	4,432,636		4,432,461	4,432,992	4,433,642
	4,432,651	4,432,604	4,432,638		4,432,466	4,433,008	4,433,657
	4,432,659	4,432,641	4,432,655		4,432,481	4,433,016	4,433,687
	4,432,664	4,432,648	4,432,705		4,432,532	4,433,036	4,433,713
	4,432,682	4,432,787	4,432,727		4,432,542	4,433,082	4,433,720
	4,432,791	4,432,796	4,432,731		4,432,678	4,433,100	4,433,746
	4,432,843	4,432,848	4,432,733		4,432,681	4,433,173	4,433,780
	4,432,881	4,432,862	4,432,808		4,432,720	4,433,181	4,433,795
	4,432,933	4,432,895	4,432,810		4,432,746	4,433,197	4,433,800
	4,432,968	4,432,906	4,432,836		4,432,780	4,433,221	4,433,839
	4,433,015	4,432,925	4,432,841		4,432,795	4,433,266	4,433,893
	4,433,069	4,432,948	4,432,852		4,432,798	4,433,353	4,433,900
	4,433,092	4,432,967	4,432,855		4,432,800	4,433,389	4,433,916
	4,433,096	4,432,971	4,432,868	44 :	4,432,839	4,433,435	4,433,931
	4,433,148	4,432,972	4,432,917		4,432,853	4,433,454	4,433,937
	4,433,155	4,432,989	4,432,918	45 :	4,432,865	4,433,496	4,433,990
	4,433,210	4,432,995	4,432,980		4,432,883	4,433,550	4,434,004
	4,433,274	4,432,996	4,432,981		4,432,960	4,433,567	4,434,019
	4,433,370	4,433,003	4,432,991		4,432,963	4,433,593	4,434,030
	4,433,381	4,433,031	4,433,028		4,433,002	4,433,607	4,434,044
27 :	4,432,109	4,433,034	4,433,033		4,433,026	4,433,638	4,434,058
	4,432,172	4,433,059	4,433,037		4,433,114	4,433,674	4,434,072
	4,432,186	4,433,063	4,433,047		4,433,198	4,433,713	4,434,086
	4,432,334	4,433,071	4,433,048	46 :	4,432,513	4,433,751	4,434,100
	4,432,341	4,433,075	4,433,080	47 :	4,432,113	4,433,789	4,434,114
	4,432,377	4,433,101	4,433,087		4,432,135	4,433,827	4,434,128
	4,432,475	4,433,116	4,433,088		4,432,232	4,433,865	4,434,142
	4,432,488	4,433,119	4,433,130		4,432,240	4,433,903	4,434,156
	4,432,499	4,433,129	4,433,131		4,432,425	4,433,941	4,434,170
	4,432,559	4,433,161	4,433,158		4,432,821	4,433,979	4,434,184
	4,432,569	4,433,184	4,433,182		4,432,838	4,434,017	4,434,198
	4,432,629	4,433,185	4,433,206		4,432,945	4,434,055	4,434,212
	4,432,662	4,433,186	4,433,215		4,433,262	4,434,093	4,434,226
	4,432,722	4,433,189	4,433,219	40 :	4,433,367	4,434,131	4,434,240
	4,432,986	4,433,191	4,433,227		4,433,419	4,434,169	4,434,254
	4,433,024	4,433,260	4,433,248		4,433,518	4,434,207	4,434,268
	4,433,212	4,433,269	4,433,253		4,433,617	4,434,245	4,434,282
	4,433,351	4,433,288	4,433,267		4,433,716	4,434,283	4,434,296
	4,433,356	4,433,331	4,433,279		4,433,815	4,434,321	4,434,300
	4,433,374	4,433,407	4,433,290	41 :	4,433,914	4,434,359	4,434,314
28 :	4,432,690	4,433,410	4,433,297		4,434,013	4,434,397	4,434,328
	4,432,983	4,433,413	4,433,312		4,434,112	4,434,435	4,434,342
29 :	4,432,300	4,433,421	4,433,334	42 :	4,434,211	4,434,473	4,434,356
	4,432,301	4,433,423	4,433,341		4,434,310	4,434,511	4,434,370
	4,432,414	4,432,423	4,433,346		4,434,409	4,434,549	4,434,384
	4,432,434	4,432,438	4,433,380		4,434,508	4,434,586	4,434,398
	4,432,473	4,432,473	4,433,414		4,434,607	4,434,625	4,434,412
	4,432,546	4,432,207	4,439,070		4,434,706	4,434,663	4,434,426
					4,434,805	4,434,701	4,434,440
					4,434,904	4,434,739	4,434,454
					4,435,003	4,434,777	4,434,468
					4,435,102	4,434,815	4,434,482
					4,435,201	4,434,853	4,434,496
					4,435,300	4,434,891	4,434,510
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					4,436,000	4,435,157	4,434,608
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					4,440,900	4,437,019	4,435,293
					4,441,000	4,437,057	4,435,307
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					4,441,200	4,437,133	4,435,335
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					4,441,600	4,437,285	4,435,391
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					4,441,800	4,437,361	4,435,419
					4,441,900	4,437,399	4,435,433
					4,442,000	4,437,437	4,435,447
					4,442,100	4,437,475	4,435,461
					4,442,200	4,437,513	4,435,475
					4,442,300	4,437,551	4,435,489
					4,442,400	4,437,589	4,435,503
					4,442,500	4,437,627	4,435,517
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					4,442,700	4,437,703	4,435,545
					4,442,800	4	



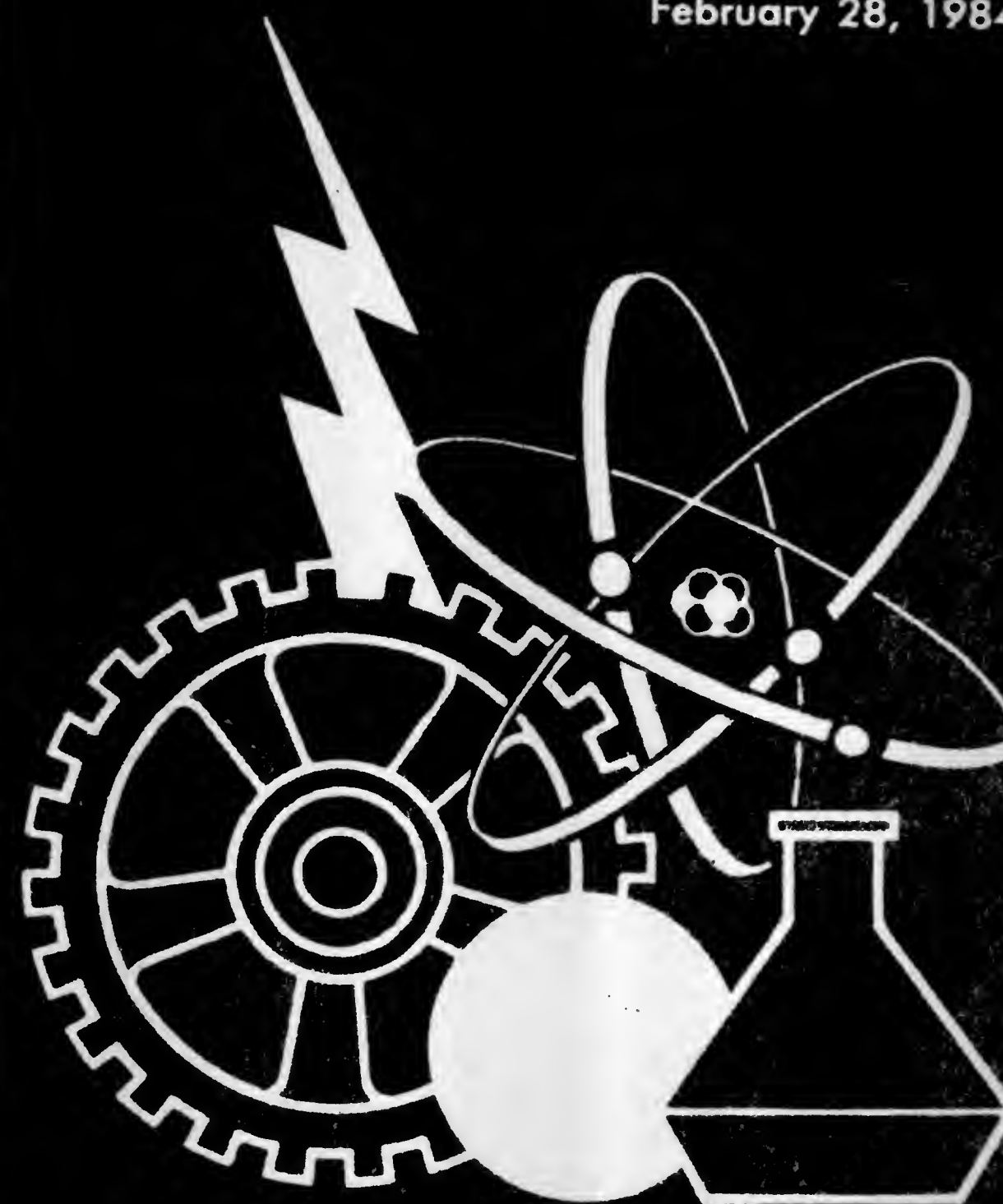
Vol. 1039 Number 4

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 28, 1984



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS



Route to:

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U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, Commissioner

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1039 OG 150
Board of Appeals Decisions	1039 OG 150
Reissue Applications Filed	1039 OG 150
Requests for Reexaminations Filed	1039 OG 150
Notice of Availability for Licensing	1039 OG 151
PTO Status	1039 OG 152
Patent Certificates of Correction	1039 OG 153
Disclaimers	1039 OG 153
Reference Collections of U.S. Patents Available for Public Use in	
Patent Depository Libraries	1039 OG 154
Condition of Patent Applications	1039 OG 155
Reexaminations	1375
Reissue Patents Granted (31,525)	1377
Plant Patents Granted (5,195)	1379
Patents Granted	
General and Mechanical (4,433,439)	1381
Chemical (4,433,975)	1565
Electrical (4,434,318)	1657
Design Patents Granted (272,769)	1723
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 40
Classification of	
Patents (Including Reissues and Reexaminations) :	PI 43
Designs and Plants	PI 45
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Designs and Plants	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
 THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
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 GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at \$1.00 each; PLANT PATENTS in color, \$8.00 each; copies of TRADEMARKS at \$1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	\$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents
and Trademarks.

Jan. 30, 1984.

Board of Appeals Decisions Rendered in the Month of Jan. 1984

Affirmed	219
Affirmed in Part	24
Reversed	75
Total	318

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,859,527, Re. S.N. 558,394, Filed Dec. 5, 1983, Cl. 250/327.2, APPARATUS AND METHOD FOR PRODUCING IMAGES CORRESPONDING TO PATTERNS OF HIGH ENERGY RADIATION, George W. Luckey, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.*, Attorney or Agent: John D. Husser, et al., Ex. Gp.: 256

4,158,431, Re. S.N. 533,838, Filed Sept. 19, 1983, Cl. 235/304.1, SELF-TEST FEATURE FOR APPLIANCES FOR ELECTRONIC SYSTEMS OPERATED BY MICROPROCESSOR, Michael G. van Bavel, et al., Owner of Record: *Texas Instruments Inc., Dallas, Tex.*, Attorney or Agent: John G. Graham, Ex. Gp.: 236

4,305,027, Re. S.N. 558,689, Filed Dec. 6, 1983, Cl. 318/4, MULTIPLE WINDINGS ELECTRICAL MACHINES, John T. R. Wilson, Owner of Record: *Inventor*, Attorney or Agent: Robert A. Green, et al., Ex. Gp.: 212

4,307,143, Re. S.N. 563,713, Filed Dec. 20, 1983, Cl. 252/91, MICROFIBER OIL AND WATER WIPE, Gary H. Meitner, Owner of Record: *Kimberly-Clark Corp., Neenah, Wis.*, Attorney or Agent: William D. Herrick, et al., Ex. Gp.: 166

4,308,400, Re. S.N. 564,552, Filed Dec. 22, 1983, Cl. 568/336, SENSITIZERS FOR PHOTOPOLYMERIZATION, Louis Felder, (Deceased), et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.*, Attorney or Agent: V. M. Creedon, et al., Ex. Gp.: 215

4,314,728, Re. S.N. 560,326, Filed Dec. 12, 1983, Cl. 297/300, CHAIR CONTROL, Frederick S. Falks, Owner of Record: *Steelcase, Inc., Grand Rapids, Mich.*, Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 355

4,315,770, Re. S.N. 565,342, Filed Dec. 27, 1983, Cl. 75/0.5BC, DISPERSION STRENGTHENED METALS, Anil V. Nadkarni, Owner of Record: *SCM Corp., Cleveland, Ohio*, Attorney or Agent: Robert A. Sturges, Ex. Gp.: 111

4,361,509, Re. S.N. 563,795, Filed Dec. 21, 1983, Cl. 260/112.B, ULTRAPURIFICATION OF FACTOR VIII USING MONOCLONAL ANTIBODIES, Theodore S. Zimmerman, et al., Owner of Record: *Scripps Clinic and Research Foundation, La Jolla, Calif.*, Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 143

4,366,524, Re. S.N. 563,790, Filed Dec. 21, 1983, Cl. 361/154, ELECTROMECHANICAL TRANSDUCER CONTROLLING DEVICE, Hiroshi Kuroiwa, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan*, Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 212

4,388,290, Re. S.N. 562,054, Filed Dec. 16, 1983, Cl. 423/468, PURIFYING THIONYL CHLORIDE WITH AICI₃ CATALYST, Gerhard Jonas, Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 113

4,405,290, Re. S.N. 562,793, Filed Dec. 19, 1983, Cl. 417/282, PNEUMATIC SUPPLY SYSTEM HAVING VARIABLE GEOMETRY COMPRESSOR, George C. Rannenberg, Owner of Record: *United Technologies Corp., Hartford, Conn.*, Attorney or Agent: John Swiatocha, et al., Ex. Gp.: 343

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 236,535, Reexam. No. 90/000,492, Requested: Jan. 23, 1984, Cl. D26/28, VEHICLE LIGHT, Harold H. Larsen, et al., Owner of Record: *Bates Industries, Inc., Long Beach, Calif.*, Attorney or Agent: Fuliwider, Paton, et al., Ex. Gp.: 291, Requester: Herbert C. Brinkman, Cincinnati, Ohio

FEBRUARY 28, 1984

U.S. PATENT AND TRADEMARK OFFICE

1039 OG 151

4,092,181, Reexam. No. 90/000,494, Requested: Jan. 30, 1984, Cl. 148/12.7A, METHOD OF IMPARTING A FINE GRAIN STRUCTURE TO ALUMINUM ALLOYS HAVING PRECIPITATING CONSTITUENTS, Neil E. Paton, et al., Owner of Record: *Rockwell International Corp., Thousand Oaks, Calif.*, Attorney or Agent: Craig O. Malin, Ex. Gp.: 111, Requester: Rockwell International Corp., Thousand Oaks, Calif.

4,283,495, Reexam. No. 90/000,491, Requested: Jan. 23, 1984, Cl. 435/240, ROLLER BOTTLE, Robert W. Lynn, Owner of Record: *Becton Dickinson Co., Rutherford, N.J.*, Attorney or Agent: R. J. Rodrick, Ex. Gp.: 170, Requester: James W. Badie, New York, N.Y.

4,293,140, Reexam. No. 90/000,493, Requested: Jan. 25, 1984, Cl. 280/154, AUTOMOBILE SPLASH GUARD AND ATTACHMENT MEANS THEREFORE, Ted A. Bell, et al., Owner of Record: *Pretty Products, Inc., Coshocton, Ohio*, Attorney or Agent: Robert E. Stebens, Ex. Gp.: 310, Requester: Powerflow, Inc., Buffalo, N.Y.

4,404,158, Reexam. No. 90/000,488, Requested: Jan. 19, 1984, Cl. 264/263, METHOD OF MAKING A BUILDING PANEL, Ralph C. Robinson, Owner of Record: *Olympian Stone Co., Redmond, Wash.*, Attorney or Agent: James R. Uhler, Ex. Gp.: 140, Requester: William M. Hynes, San Francisco, Calif.

U.S. GOVERNMENT-OWNED INVENTIONS Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION, Patent Licensing.

Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-245,464 (4,416,881). INSECT REPELLENTS EMPLOYING CYCLOHEXANE-CARBONYL MORPHOLINE COMPOUNDS.
SN 6-294,096 (4,416,069). ENHANCEMENT OF COLOR QUALITY OF LUMBER DURING DRYING.
SN 6-367,638 (4,415,350). AUXIN COMPOSITIONS OF PHENYL THIOESTERS OF INDOLE-3-ALKANOIC ACIDS AND THEIR USE AS AUXIN GROWTH REGULATORS.
SN 6-367,639 (4,411,684). AUXIN COMPOSITIONS OF N-PHENYL AND N-CHLORO PHENYL INDOLYL-3-ALKYLENE AMIDES AND THEIR USE AS AUXIN GROWTH REGULATORS.
SN 6-409,268 (4,414,084). PROCESS FOR CONVERSION OF CELLULOSE TO AMINO ACIDS BY

RADIOFREQUENCY PLASMA OF NITROGEN AND HYDROGEN.

SN 6-464,530 (4,413,997). DICARBAMOYL-SULFONATE TANNING AGENT.
SN 6-496,518. OVA HARVESTING SYSTEM.
SN 6-507,192. CONTROL OF INSECTS.
SN 6-530,829. TRANSPORT CARRIAGE.
SN 6-532,411. FOREST FIRE RATE OF SPREAD TIMER AND METHOD.
SN 6-539,027. ADJUSTABLE SHEAVE WHEEL.
SN 6-543,730. PROCESS AND COMPOSITIONS FOR PRESERVING FRESH HIDES AND SKINS.

DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6-250,840 (4,415,807). CROSS-SLICE DATA ACQUISITION SYSTEM FOR PET SCANNER.
SN 6-271,271 (4,416,662). ROLLER INFUSION APPARATUS.
SN 6-315,271 (4,414,108). APPARATUS AND METHOD FOR CONTINUOUS COUNTERCURRENT EXTRACTION AND PARTICLE SEPARATION.
SN 6-325,730 (4,413,985). HYDROCEPHALIC ANTENATAL VENT FOR INTRAUTERINE TREATMENT (HAVIT).
SN 6-338,537 (4,416,871). INHIBITION BY PEPTIDES OF TOLERANCE TO AND PHYSICAL DEPENDENCE ON MORPHINE.
SN 6-389,118 (4,412,066). POLYMER BOUND DYES PREPARED BY DIAZO COUPLING REACTIONS WITH POLY(ORGANOPHOSPHAZENES).
SN 6-402,353 (4,416,761). MULTI SLAB GEL CASTING ELECTROPHORESIS APPARATUS.
SN 6-537,572. STIMULATION OF ENZYMATIC LIGATION OF DNA BY HIGH CONCENTRATIONS OF NONSPECIFIC POLYMERS.

DEPARTMENT OF THE AIR FORCE

SN 6-263,629 (4,407,705). PRODUCTION OF NEGATIVE IONS OF HYDROGEN.
SN 6-404,725. A RECHARGEABLE SECONDARY BATTERY HAVING AN ALUMINUM SALT ELECTROLYTE.
SN 6-515,834. BLIND-MATING, POSITIONALLY ADJUSTABLE ELECTRICAL CONNECTION DEVICE.
SN 6-532,862. MOUNTING DEVICE.
SN 6-533,331. ELECTRONIC NERVE AGENT DETECTOR.
SN 6-534,996. HEAT MANAGEMENT SYSTEM FOR AIRCRAFT.
SN 6-536,142. DIFFUSE INCANDESCENT RUNWAY MARKER LIGHT APPARATUS FOR OVERT/COVERT OPERATION.
SN 6-538,872. MEANS FOR ALIGNING ELEVATION BEAM PATTERN ALONG AN ISODOP IN SYNTHETIC APERTURE MAPPING RADAR.

DEPARTMENT OF THE ARMY

SN 6-538,633. ALIGNMENT TRANSFER AND VERIFICATION SCHEME FOR A PORTABLE LAND NAVIGATION SYSTEM.
SN 6-539,201. LINER-PROPELLANT BOND TESTS.
SN 6-544,144. PROTECTIVE MASK FOR AIRBORNE TOXIC SUBSTANCES.
SN 6-544,770. METHOD OF PRETREATING CARBON BLACK POWDER TO IMPROVE CATHODE PERFORMANCE AND LITHIUM SULFURYL CHLORIDE CELL INCLUDING THE PRETREATED CARBON BLACK POWDER.

Status of PTO Services

The following is an update of the status of PTO services for January 1984:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts: Patents	22	34	Problems were encountered in conversion to the new computer system.
Trademarks	30	40	
Patent/Trademark Copies: Window Coupons	5	94% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		Nov. 18, 1983	
Certified Copies: Trademark Registrations	30	10	
Applications-As-Filed	20	99% within 15 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library: Filing Drawings	21	16	
Filing Reg. Certificates	3	2	
Assignments: Patents	25	21	
Trademarks	25	19	
Avg. Days from Issue Fee Payment to Issue Date	90-100	90	
Patent Official Gazette: In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	Avg. 3 days late	Problems being resolved.
Trademark Copies Available	Issue Date	On schedule	
Trademark Official Gazette: In Bookstore	Issue Date	Avg. 2 days late	Problems occurred in first 3 issues of Jan.; have been resolved.
Mailed	Issue Date	Avg. 2 days late	
Trademark Regs. Mailed	Issue Date	Avg. 4 days late	Due to new printing contractor start-up

* Includes mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- File History Orders** — On Jan. 30, 1984, an order drop off procedure was established at the Contact Representative Branch (Record Room) order desk for added convenience to customers. The procedure allows file requesters to simply fill out the request form (PTO-271) and place it in the specially marked box. The file or its location can be obtained by presenting the retained pink copy of the request form. Customers may choose to use the drop off box if they do not wish to wait while the Record Room clerks verify the location of the file through the use of computer terminals.
- Patent Search Room** — The new chairs ordered last summer have finally arrived and have been placed in the Search Room. Additionally, our photocopier vendor has agreed to replace all photocopiers with new ones. This replacement process has begun.

REMINDER

- Patent and Trademark Copy Orders** — It should be noted that in order to obtain copies of U.S. patents or trademark registrations through the Center, customers are required to:

1. Fill out two look-up slips for each number.
2. Have both slips date stamped at the Attorney's Window drop box.
3. Leave one copy at the Window for processing and keep one copy.
4. If the copy is not supplied in 3 days, bring the retained date stamped look-up slip to the Center.

The Public Service Center was not intended to be an initial ordering point for services, but will attempt to provide a service when the service has not been provided through established ordering and follow-up procedures.

Questions should be directed to:

Public Service Center
U.S. Patent and Trademark Office
CP3-2C24
Washington, D.C. 20231
(703) 557-5168

Feb. 6, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 28, 1984

Re. 31,375	4,392,051	4,408,582	4,415,478
Re. 31,381	4,392,463	4,409,098	4,415,840
Re. 31,442	4,393,293	4,409,310	4,415,977
3,798,276	4,394,403	4,409,648	4,415,986
3,941,698	4,394,545	4,409,674	4,416,010
4,168,440	4,394,937	4,410,000	4,416,152
4,215,199	4,396,303	4,411,009	4,416,697
4,280,497	4,396,895	4,411,029	4,416,854
4,303,711	4,397,779	4,411,059	4,416,949
4,310,590	4,398,652	4,411,146	4,417,077
4,311,811	4,398,671	4,411,219	4,417,570
4,320,751	4,399,155	4,411,782	4,417,667
4,330,764	4,399,279	4,412,759	4,418,065
4,342,991	4,400,339	4,413,068	4,418,560
4,357,280	4,401,614	4,413,073	4,418,644
4,374,224	4,401,637	4,413,187	4,418,706
4,374,465	4,401,794	4,413,631	4,419,138
4,376,657	4,402,082	4,413,816	4,419,449
4,378,540	4,403,351	4,414,161	4,420,690
4,381,089	4,404,000	4,414,735	4,421,160
4,381,201	4,404,627	4,414,863	4,421,186
4,384,437	4,405,030	4,414,884	4,421,463
4,385,832	4,405,238	4,414,958	4,422,660
4,386,119	4,406,833	4,415,115	4,422,739
4,388,090	4,407,214	4,415,244	
4,389,927	4,407,427	4,415,455	

Disclaimers

4,021,224.—*Ferenc M. Pallos*, Walnut Creek; *Mervin E. Brokke*, Moraga and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated May 3, 1977. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,137,070.—*Ferenc M. Pallos*, Walnut Creek; *Mervin E. Brokke*, Moraga and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated Jan. 30, 1979. Disclaimer filed Dec. 16, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,192,442.—*Lehyman J. Bastian*, Media, Pa., and *Richard D. Kley*, New Castle, Del. ROLL SHEET DIS-

PENSER. Patent dated Mar. 11, 1980. Disclaimer filed Jan. 3, 1984, by the assignee, *Scott Paper Co.*

Hereby enters this disclaimer to claims 3-6 of said patent.

4,242,214.—*Clifford L. Lambert, Jr.*, Georgetown, Tex. ANTIFREEZE COMPOSITION CONTAINING A CORROSION INHIBITOR COMBINATION. Patent dated Dec. 30, 1980. Disclaimer filed Dec. 30, 1983, by the assignee, *Texaco Development Corp.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

4,258,250.—*Stephen R. Schmidt*, Chicago, Ill. JAM DETECTOR. Patent dated Mar. 24, 1981. Disclaimer filed Jan. 9, 1984, by the assignee, *Copar Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,269,618.—*Ferenc M. Pallos*, Walnut Creek; *Mervin E. Brokke*, Moraga and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated May 26, 1981. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,276,078.—*Ferenc M. Pallos*, Walnut Creek; *Mervin E. Brokke*, Moraga and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated June 30, 1981. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

4,345,627.—*Antonio M. Cassia*, Milan, Italy SOAP DISPENSING SYSTEM. Patent dated Aug. 24, 1982. Disclaimer filed Aug. 3, 1983, by the assignee, *Steiner Corp.*

Hereby enters this disclaimer to claims 1-33 of said patent.

4,392,884.—*Ferenc M. Pallos*, Walnut Creek; *Mervin E. Brokke*, Moraga, and *Duane R. Arneklev*, Sunnyvale, Calif. HERBICIDE COMPOSITIONS. Patent dated July 12, 1983. Disclaimer filed Dec. 15, 1983, by the assignee, *Stauffer Chemical Co.*

The term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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table following, the collections are organized in patent number sequence.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7815
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
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Ohio	Cincinnati & Hamilton County, Public Library of Cleveland Public Library	(513) 369-6936
	Columbus: Ohio State University Libraries	(216) 623-2870
	Toledo/Lucas County Public Library	(614) 422-6286
Oklahoma	Stillwater: Oklahoma State University Library	(419) 255-7055 Ext. 212
Pennsylvania	Cambridge Springs: Alliance College Library	(405) 624-6546
	Philadelphia: Franklin Institute Library	(814) 398-2098
	Pittsburgh: Carnegie Library of Pittsburgh	(215) 448-1321**
	University Park: Pattee Library, Pennsylvania State University	(412) 622-3138
Rhode Island	Providence Public Library	(814) 865-4861
South Carolina	Charleston: Medical University of South Carolina	(401) 521-7722 Ext. 226
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	Houston: The Fondren Library, Rice University	(214) 749-4176
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(206) 543-0740
	Milwaukee Public Library	(608) 262-6845
		(414) 278-3043

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director	5-20-82
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director	7-16-73
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director	9-15-82
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director	7-26-82
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director	1-16-76
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	1-03-82
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director	6-01-81
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director	7-06-81
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-17-82
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	9-30-80
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director	1-14-71
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	6-04-81
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director	6-18-82
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-04-76
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director	5-26-81
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director	3-20-81
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents Numbers 3,302,213 to 3,307,199, inclusive

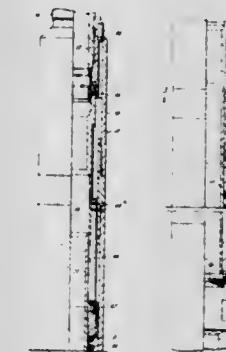
Plant Patents Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

FEBRUARY 28, 1984

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,161,219 (169th)
PISTON ACTUATED WELL SAFETY VALVE
 Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.
 Reexamination Request No. 90/000,273, Oct. 12, 1982.
 Reexamination Certificate for Patent No. 4,161,219, issued Jul. 17, 1979, Ser. No. 881,484, Feb. 27, 1978.
 Int. Cl.³ E21B 43/12
 U.S. Cl. 166—324



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended:

Claims 2-5, dependent on amended claims, are determined to be patentable.

1. In a well tubing safety valve for controlling the fluid flow through a well conduit and including a tubular housing having an axial bore therethrough and a valve closure member moving between open and closed positions for controlling the fluid flow through the bore, a longitudinally tubular member telescopically movable in the housing coaxially with the bore for controlling the movement of the valve closure member, means for biasing the tubular member in a first direction for causing the valve closure member to move to the closed position, the improvement in means for moving the tubular member in a second direction for opening the valve closure member comprising,

at least one piston telescopically movable within and having its longitudinal axis within the wall of the housing and outside of the tubular member and offset from the bore and said valve closure member, said piston contacting said tubu-

lar member, one side of the piston being in communication with hydraulic fluid extending to the well surface for actuating said member in the second direction to open said valve closure member, the second side of the piston being exposed to fluid pressure in the valve housing tending to move the piston in the first direction, and said piston having a diameter smaller than the diameter of the bore and a cross-sectional width less than the thickness of the housing whereby the piston has a small cross-sectional area for reducing the hydrostatic force of the hydraulic fluid acting on the one side of the piston whereby the valve may be used at greater depths in the well.

B1 4,219,333 (170th)
CARBONATED CLEANING SOLUTION
 Robert D. Harris, Sacramento, Calif., assignor to Harris Research Inc., Sacramento, Calif.
 Reexamination Request No. 90/000,272, Oct. 19, 1982.
 Reexamination Certificate for Patent No. 4,219,333, issued Aug. 26, 1980, Ser. No. 922,441, Jul. 3, 1978.
 Int. Cl.³ B08B 3/00; C11D 3/00
 U.S. Cl. 8—137

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-3, 10, 12, 14, and 15, having been finally determined to be unpatentable, are cancelled.

Claims 4-9, 11, 13, and 16-18 are patentable as amended:

New claims 19 and 20 are added and determined to be patentable.

19. An effervescent, carbonated aqueous cleaning composition consisting essentially of 0.1 to 5.0 percent by weight of one or more nonionic and anionic surfactants, 0 to 1.0 percent by weight of one or more alkaline builder salts, 0 to 5.0 percent by weight of a volatile organic solvent wherein said aqueous cleaning composition is contained in a pressure vessel maintained at a gauge pressure of 1 to 10 atmospheres and wherein said aqueous cleaning composition has been uniformly carbonated by introducing gaseous carbon dioxide into said composition by means of agitation in said pressure vessel under said gauge pressure and thereafter maintaining said gauge pressure to retain said uniform carbonation.

REISSUES

FEBRUARY 28, 1984

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,525

ADAPTABLE RESILIENT MOTOR MOUNTING

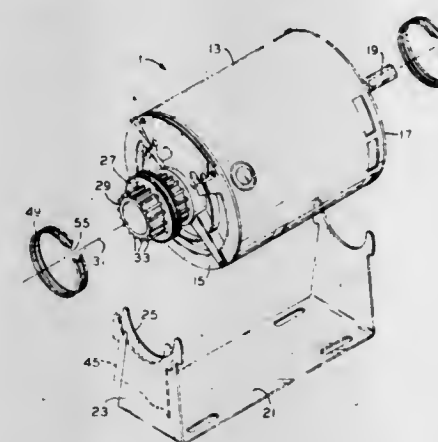
John H. Boyd, Jr., DeKalb, Ill., and Don C. Nelson, Jr., Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Original No. 4,116,410, dated Sep. 26, 1978, Ser. No. 800,418, May 25, 1977. Application for reissue Sep. 18, 1980, Ser. No. 188,526

Int. Cl.³ F16M 13/00

U.S. Cl. 248—581

21 Claims



1. The method of supporting a motor having cradle engageable rings each mounted on a hub at opposite ends thereof in the arms of a selected one of a plurality of different size cradle bases comprising the steps of:

sliding at least one of the cradle engaging rings, *having a deviation from a circular configuration generally mating with respect to its associated motor hub and being substantially less in axial dimension than the associated motor hub, axially along the associated motor hub until the separation between the rings is appropriate for positioning the motor adjacent the selected base with the rings in registry with corresponding base arms;*

engaging the base arms with the corresponding rings; and securing the rings to the base.

Re. 31,526

COATED CEMENTED CARBIDE BODY AND METHOD OF MAKING SUCH A BODY

Ulf K. H. Smith, Huddinge; Jan N. Lindstrom, Norsborg, both of Sweden, and Harold Mantle, Hauterive, Switzerland, assignors to Santrade Ltd., Lucerne, Switzerland

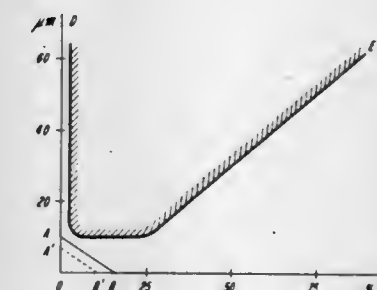
Original No. 4,180,400, dated Dec. 25, 1979, Ser. No. 913,035, Jun. 6, 1978. Application for reissue Dec. 16, 1981, Ser. No. 331,314

Claims priority, application Sweden, Jun. 9, 1977, 7706706

Int. Cl.³ B22F 5/00

U.S. Cl. 75—235

28 Claims



1. Sintered cemented carbide body containing at least one metal carbide and a binder metal, on which body there is applied at least one thin, wear resistant surface layer consisting essentially of aluminum oxide, characterized in that at least 85% of the aluminum oxide consists of the kappa form, the remainder if any, which mainly constitutes the alpha form, being formed as surface portions or spots having a size of at the most 10 μm [, the size and the occurrence of the surface portions being so adjusted that they lie within the area AOB in FIG. 1 of the attached drawing] .

PLANT PATENTS

GRANTED FEBRUARY 28, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,195

LEUCOTHOE PLANT-ZEBLID VARIETY

Alex J. Zebchazy, Perry, Ohio, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 23, 1980, Ser. No. 161,870

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—54

1 Claim

1. A new and distinct variety of Leucothoe, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

- (a) a dense, compact, and symmetrical habit of growth which is much more attractive and compact than the *Leucothoe fontanesiana* parent,
- (b) striking scarlet coloration of the new growth during the growing season, which is virtually never found in either parent,
- (c) highly unique winter coloration which ranges from a greenish bronze to scarlet, making the new variety an outstanding source of color in the landscape throughout the year,
- (d) outstanding tolerance to shade, making the variety an important addition to that small group of plants that do well in diminished sunlight,
- (e) substantial absence of dead branches, which are commonly found with *Leucothoe fontanesiana*, and
- (f) increased tolerance to cold when compared to *Leucothoe axillaris*, as is evidenced by the fact that the variety when established has survived temperatures of -15° F. with little to no damage, whereas *Leucothoe axillaris* is listed as hardy to 0° F.

5,196

LILY NAMED FRESCO

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,200

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct Oriental hybrid lily cultivar substantially as herein shown and described, characterized by its medium pink outwardly facing flowers, the petals of which have a prominent narrow yellow-orange stripe along the midrib and numerous maroon spots; and the petal tips are slightly recurved, the flowers are borne on short stiff outwardly pro-

jecting pedicels and are long lasting whether on the plant or as a cut flower, and the foliage is dark glossy green and relatively abundant.

5,197

LILY NAMED FREEDOM

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Sep. 23, 1982, Ser. No. 422,202

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of Oriental Hybrid lily plant substantially as herein shown and described, characterized by its large, white, downwardly and outwardly facing saucer-shaped flowers borne on strong, stiff, outwardly projecting pedicels, by petals that are lightly covered with maroon and white spots and have their outer one third portions recurved, by the glossy green and relatively disease-free foliage, and by the long lasting quality of the blooms whether on the plant or as cut flowers.

5,198

CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Rd., Encinitas, Calif. 92024

Filed Sep. 30, 1982, Ser. No. 431,834

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—73

1 Claim

1. A new and distinct cultivar of carnation plant named Big Red substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, and strong and straight stems; superior resistance to soil-borne diseases such as *Fusarium oxysporium* and *Fusarium roseum* and other root-rots such as damping off, water molds, and the like; large serrated flowers which open fully without bursting the calyx and causing "splits"; a distinctive and attractive red flower color which does not fade and has no white streaks; and good heat tolerance which is superior to that of the parent lines and the so-called "Sim".

PATENTS

GRANTED FEB. 28, 1984

ERRATA

For CLASS	See PATENT NO.
052-169	4,433,720
435-007	4,433,956
433-105	4,433,957
433-199	4,433,958
433-201	4,433,959
433-215	4,433,960
434-274	4,433,961
445-006	4,433,962
474-080	4,433,963
474-152	4,433,964
474-201	4,433,965
502-022	4,434,079
502-152	4,434,080
502-154	4,434,081
502-164	4,434,082
502-154	4,434,083
381-104	4,434,325

PATENTS

GRANTED FEBRUARY 28, 1984

GENERAL AND MECHANICAL

4,433,439

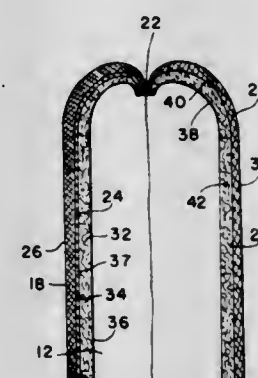
HEAT RESISTANT PROTECTIVE HAND COVERING
Kenneth R. Sidman, Wayland, and Irving J. Arons, Peabody, all of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C. and Richard P. Tschirch, Westwood

Filed Jun. 30, 1982, Ser. No. 393,581

Int. Cl.³ A41D 19/00

U.S. Cl. 2—161 R

11 Claims



1. A heat-resistant protective glove comprising:
a first shell section generally defining the palm side of said glove and having inner and outer surfaces, said first shell section comprising a twill weave fabric of a temperature-resistant aromatic polyamide fiber;
a second shell section generally defining the backside of said glove and having inner and outer surfaces, said second shell section comprising a knitted fabric of a temperature-resistant aromatic polyamide fiber, said first and second shell sections being secured to one another so as to provide an opening for insertion of a wearer's hand;
a first liner section secured to said first shell section and having first and second surfaces, said first surface of said first liner section facing and generally overlying said inner surface of said first shell section, said first liner section comprising a felt fabric of a temperature-resistant aromatic polyamide fiber having a flame resistant, elastomeric coating on said first liner surface; and
a second liner section secured to said second shell section and having first and second surfaces, said first surface of said second liner section facing and generally overlying said inner surface of said second shell section, said second liner section comprising a felt fabric of a temperature-resistant aromatic polyamide fiber.

4,433,440

PROSTHESIS FORMED BY INNER AND OUTER INFLATABLE CONTAINERS

I. Kelman Cohen, 5104 Cary St. Rd., Richmond, Va. 23226

Filed Feb. 26, 1979, Ser. No. 15,436

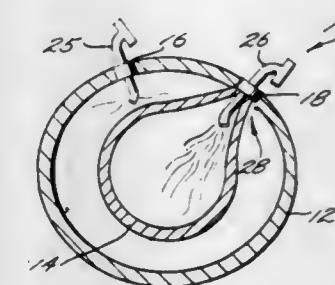
Int. Cl.³ A61F 1/24; A41C 3/10

U.S. Cl. 3—36

6 Claims

1. A breast prosthesis comprising
an outer inflatable container of flexible biological implant material;
an inner inflatable container of flexible biological implant material, substantially concentric with said outer container;
a valve associated with each container and for admitting fluid to the container with which it is associated, and for sealing the fluid within the container after filling thereof;
removable fluid-filling means for penetrating said valves and providing the introduction of fluid therethrough; and
wherein both valves are self-sealing and wherein said re-

movable fluid-filling means comprises a single tubular member penetrating both self-sealing valves at the same time, and means mounting said tubular member for move-



ment from a position penetrating both self-sealing valves to a position penetrating only the self-sealing valve of said outer container, to a position penetrating neither valve.

4,433,441

WATER CLOSET-ODOR NEUTRALIZER

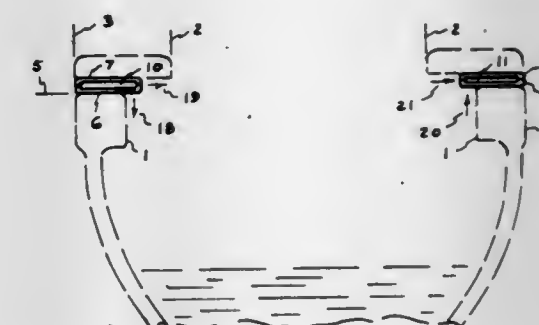
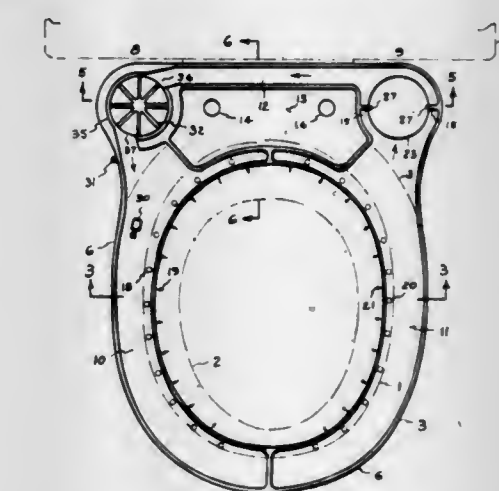
Warren C. Schroeder, Gellett Suite C-603 2400 Virginia Ave. NW., Washington, D.C. 20037

Filed Dec. 30, 1981, Ser. No. 335,846

Int. Cl.³ E03D 9/04; A47K 13/00

U.S. Cl. 4—213

6 Claims



1. In combination with a toilet unit having a water closet bowl, a seat pivotally connected thereto, a water closet tank having a cover therefor and a discharge conduit means including a trap communicating with said water closet bowl at one end and adapted for connection to a sewage pipe at the opposite end, a chemically aided water closet odor neutralizing device comprising an air chamber means mounted on top of the water closet bowl rim positioned between said seat and said bowl, said air chamber means having a pressure cavity on one end of said water closet bowl and having a plurality of holes

spaced around the interior thereof to discharge a blanket of air across the upper portion of said water closet bowl opening, a suction cavity on the other side of said water closet bowl opening opposite said pressure cavity and having a plurality of holes spaced around the interior thereof receiving the blanket of air discharged from the for pressure cavity, said blanket of air passing through said suction cavity, said suction cavity means whereby the air passing through passes through a chemically saturated filter, said filter having means to supply it with liquid chemicals from a canister attached thereto, means providing a suction chamber whereby said air is passed through said chamber by way of port means and into a motorized fan having a housing therefor, said motorized fan directing the air by way of second port means back into said pressure cavity for recirculating the blanket of air across said bowl opening for recycling; electric switch means within said pressure cavity for activating said fan and motor therefor.

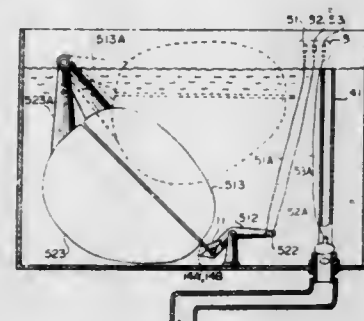
4,433,442

TOILET SEAT AND COVER OPERATING DEVICE

Shu L. Liou, 2 Fl., No. 33, La. 52, Szu Wei Rd., Taipei, Taiwan
Continuation-in-part of Ser. No. 192,182, Sep. 30, 1980,
abandoned. This application Apr. 12, 1982, Ser. No. 367,253
Int. Cl.³ A47K 13/10

U.S. Cl. 4-251

13 Claims



1. A toilet seat/cover operating device, comprising:
 - (a) a float member capable of floating on water and installed in a flushing tank for a toilet bowl, said float member being capable of moving up and down in the flushing tank;
 - (b) connecting means for operatively connecting said float member to the seat/cover of the toilet bowl so as to raise and lower the toilet seat/cover in association with the upward and downward movements of said float member;
 - (c) holding means for latching said float member when said float member moves down to a lowermost position and holding it submerged when said flushing tank is filled with water; and
 - (d) releasing means for causing said holding means to release said float member from being latched to enable said float member to buoy up through the water in the flushing tank.

4,433,443

SELF-CONTAINED FLOW THROUGH SEWAGE WASTE DISPOSAL SYSTEM

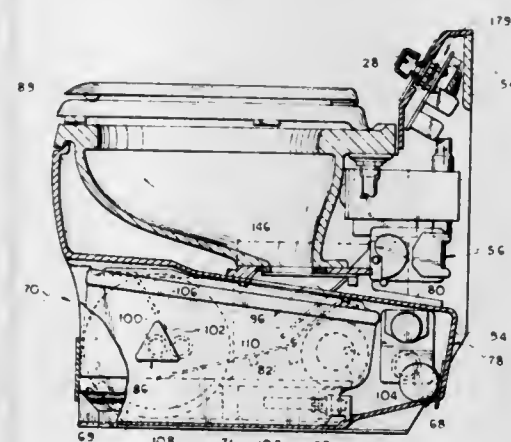
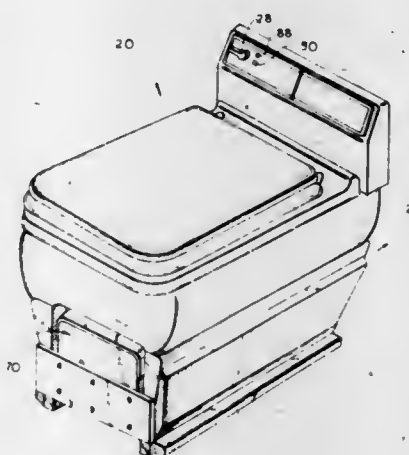
Kenneth J. DeGraw, Montvale; Brian Wilcockson, Wayne; Earl W. Nickerson, Ocean City; William R. Bocchini, Wyckoff; Armen Bogossian, Teaneck, and Steve Proios, Northvale, all of N.J., assignors to American Standard Inc., New York, N.Y.
Filed Nov. 12, 1981, Ser. No. 320,599
Int. Cl.³ E03D 5/019

U.S. Cl. 4-317

12 Claims

1. A self-contained sewage disposal system comprising: a housing structure, a toilet bowl adapted to receive human waste and fluid for diluting the waste, transporting the waste and rinsing the bowl, a removable filter cassette in the housing in communication with the toilet bowl, means for flushing the bowl and dumping the contents into the filter cassette and for subsequent refilling of the bowl, filter means in the cassette for separating the particles of solid material from the fluid received from the bowl, storage means in the cassette to store the solid material in a compact manner for subsequent disposal

upon removal of the cassette, pump means including interconnected conduits in the housing to transport fluid directly from an external source to fill the bowl after a flush, to transport and recirculate filtered fluid through the system for further waste



4,433,444

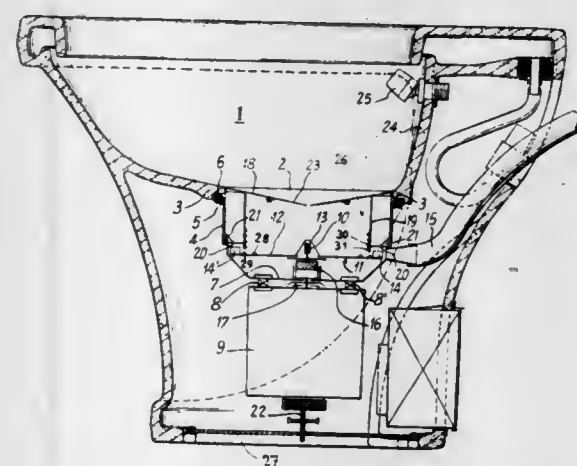
TOILET WITH MECHANICAL DRAINAGE COMPRISING A DRAINING CHAMBER ACCESSIBLE AND DISMOUNTABLE FROM INSIDE THE TOILET BOWL

Claude Ragot, Place du 11 Novembre, 56500 - Locminé, France
Filed Apr. 29, 1982, Ser. No. 373,140

Claims priority, application France, May 8, 1981, 81 09212
Int. Cl.³ E03D 9/10

U.S. Cl. 4-319

9 Claims



1. A toilet of the type comprising a bowl supplied with water

and of which the bottom part communicates via a passage with a lower chamber provided with means for crushing and draining faeces towards a downstream draining conduit, wherein the crushing and draining means is removably fastened within said lower chamber and said passage is so shaped and dimensioned so that the crushing and draining means can be removed from the lower chamber through said passage, thus giving access to said crushing and draining means from bottom of the bowl and permitting removing and re-assembling of said crushing and draining means through the bowl.

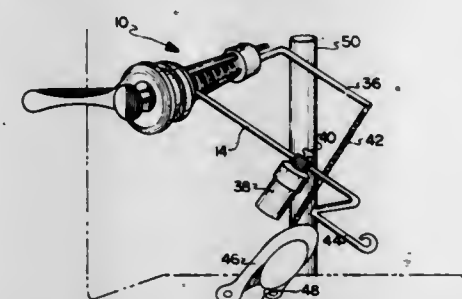
4,433,445

DUAL FLUSH TOILET MECHANISM

George R. Morris, 3760 N. Vista, NW., and John A. Frient, 3785 N. Vista, NW., both of Uniontown, Ohio 44685
Filed Oct. 1, 1981, Ser. No. 307,373
Int. Cl.³ E03D 3/12

U.S. Cl. 4-325

11 Claims



1. A half-flush mechanism for a commode, comprising: an angled half-flush rod having first and second legs extending from an apex; a float attached to said first leg of said angled rod which leg is located within the commode tank; a flush handle external of said tank, through which is slidably mounted said second leg of said angled rod; a push button located at the end of said second leg; a compression spring applying a force to said angled rod at its apex; a mechanism housing surrounding said spring and at least a portion of said second leg of said angled rod; a stationary mount which prevents operation of said half-flush mechanism during operation of said flush handle; a housing end piece which fits over said mechanism housing; a flush lever attached to said housing end piece; and means for securing said mechanism to the commode tank wall.

4,433,446

FLUSH VALVE ATTACHMENT SYSTEM

Ronald N. Grimstad, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 27, 1983, Ser. No. 461,437

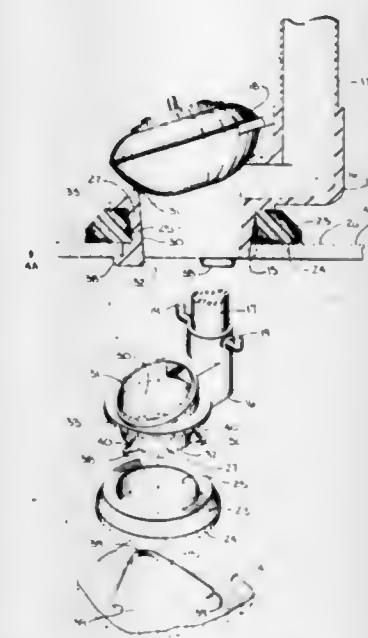
Int. Cl.³ E03D 1/34

U.S. Cl. 4-378

9 Claims

1. A flush valve attachment system for connecting a flush valve to a wall of a toilet tank, comprising: a non-circular outlet formed in the wall of the tank; a resilient seal bearing against an interior side of the wall, the seal surrounding the outlet and having a central bore aligned therewith; a flush valve having a housing that extends through the seal bore and outlet, said housing having a radially outwardly extending flange inward of the seal to trap the seal against the wall and a radially outwardly extending projection on the exterior side of the wall; and

said housing being rotatable between a first position in which the projection can pass through the outlet, and a



second position where the projection can catch on the exterior side of the wall.

4,433,447

PLAY PEN

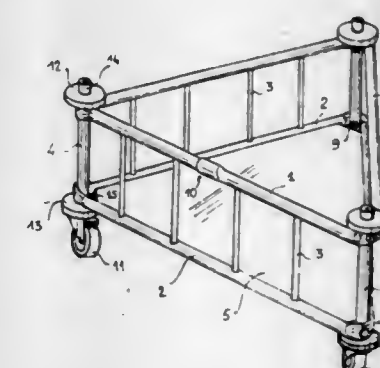
Marcel Mathou, 12630, Gages, France

Filed May 3, 1982, Ser. No. 374,024

Claims priority, application France, May 6, 1981, 81 09041
Int. Cl.³ E03D 11/10

U.S. Cl. 5-93 R

9 Claims



1. A play pen including a peripheric frame formed of corner posts and side-members extending between said corner posts, wheels mounted at the bottom of said frame, and hollow flexible elements connecting said side-members to said posts, each of said connecting elements having end portions fitted on adjacent side-members and a medium portion secured to one of said posts by securing means flattening said medium portion against said post.

4,433,448

POWER PIPE THREAD CLEANER

Martin E. True, Houston, Tex., assignor to Weatherford/Lamb, Inc., Houston, Tex.

Filed Sep. 16, 1982, Ser. No. 419,119

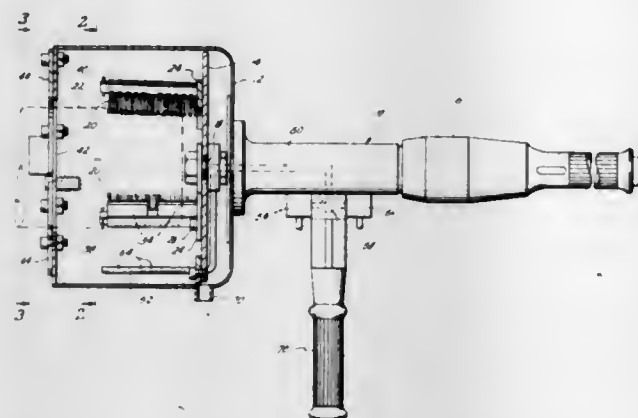
Int. Cl.³ B08B 9/02

U.S. Cl. 15-88

8 Claims

1. A cleaner for cleaning the threads on the ends of a tubular member comprising, a housing, a rotatable disc in the housing, power means connected to the disc for rotating said disc, a plurality of cleaning brushes, a plurality of brush adjusting arms, each of which supports a

cleaning brush, pivotally connected to the disc, a releasable connection between the adjusting arms and the disc whereby the arms may be rotated on the disc for moving the brushes for coacting with different sized members, said housing having an opening at one end and a flange about said opening,



4,433,449

CHIMNEY CLEANER

Amon E. Rainey, 19765 SW. Hazelhurst, West Linn, Oreg. 97068

Filed Aug. 16, 1982, Ser. No. 408,530

Int. Cl.³ F23J 3/00

U.S. Cl. 15—243

5 Claims



1. A chimney cleaner comprising
 - (a) a link chain having top and bottom ends and arranged to hang down in a chimney,
 - (b) the adjacent links of said chain having flattened lateral engaging portions whereby to produce a rotative drive connection from one link to the next,
 - (c) lateral fingers secured on said link chain arranged upon rotation of said link chain to knock off substance which has collected on the inner surface of the chimney,
 - (d) each of said lateral fingers comprising a stiff piece of wire connected to spaced links of said chain and extending laterally in opposite directions,
 - (e) a weight on the bottom end of said link chain arranged to hold the latter substantially plumb in a chimney,
 - (f) and a spindle on the top end of said link chain arranged for connection to a drive mechanism for rotating said link chain and lateral fingers.

4,433,450

SECONDARY BAG ADJUSTMENT

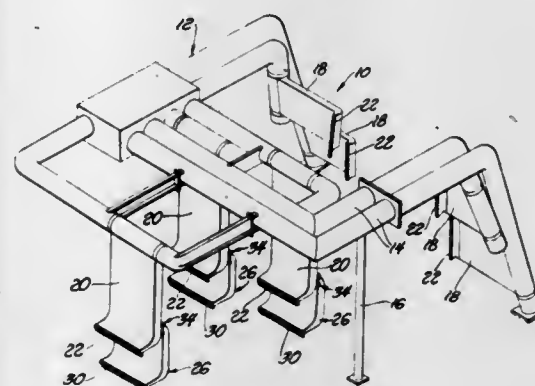
Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455, and David R. Day, 4334 Ocean Dr., Apt. 203, Corpus Christi, Tex. 78412

Filed May 17, 1982, Ser. No. 378,957

Int. Cl.³ F26B 19/00

U.S. Cl. 15—316 R

8 Claims



1. An apparatus (10) for stripping fluid from the surface of an object, said apparatus (10) comprising: a flexible inflatable primary bag (20) including a primary bag inlet and a nozzle end (22) and a bag opening (24) disposed therebetween; a plenum (14) having a chamber therein and a plenum opening there-through, said primary bag inlet being releasably mounted about said plenum opening for allowing the flow of air from said plenum (14) to said primary bag (20); a flexible inflatable secondary bag (26) having an elongated secondary bag inlet (28) secured about said bag opening (24) for hinging movement and a nozzle end (30) for allowing the flow of air therethrough; and characterized by hinging control means (34) for controlling the hinging action of said secondary bag (26) with respect to said primary bag (20).

4,433,451

DEVICE FOR CLEANING SURFACES

Sebastiano Parisi, Rome, Italy, assignor to NOVUM - Novita in Elettrodomestica Srl, Trieste, Italy

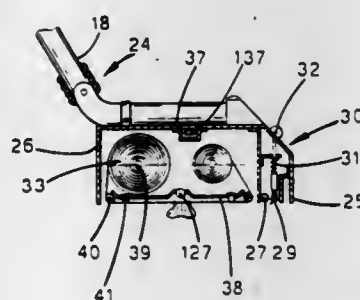
Filed Jan. 2, 1981, Ser. No. 222,261

Claims priority, application Italy, Jan. 14, 1980, 83306 A/80

Int. Cl.³ A47L 11/30

U.S. Cl. 15—321

8 Claims



1. A device for cleaning surfaces comprising a cleaning head having a front and back composed of means to suck up material from said surfaces, means to moisten said surfaces, means to brush said surfaces, and means to absorb dust and wipe clean said surfaces positioned between said moistening means and said surfaces and interacting with said moistening means; a basic unit composed of a suction fan, steam generator and means to control said suction and moistening means and means interconnecting said cleaning head and basic unit.

4,433,452

SELF RETAINED PLASTIC CABLE GUIDE AND DOOR STOP

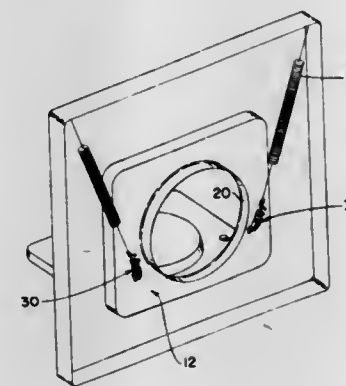
Francis G. Frano, 1925 Brookside La., Hoffman Estates, Ill. 60194

Filed Dec. 28, 1981, Ser. No. 334,625

Int. Cl.³ B65D 55/00; E05F 5/02

U.S. Cl. 16—2

14 Claims



1. The combination of a cable-like member and a one-piece cable guide and door stop which is mounted in an aperture of a workpiece, said cable-like member having an enlarged end on one end thereof with a force inducing means reacting to place a tensile stress on said member through said enlarged end and having means on its other end for connecting to a movable member, said one-piece cable guide and door stop comprising enlarged apertured head means, channel means integral with said head means which extends coaxially therefrom and angularly relative thereto, said one-piece cable guide and door stop having means for engaging said workpiece on a surface opposite the surface engaged by said head means, said head means and said channel means having a generally inverted U-shaped cross section and having an opening through adjacent edges thereof to permit entry of said cable-like member, said channel means being slotted at a point diametrically opposite said adjacent edges to provide a resilient shouldered tab spaced from said head means for engaging said workpiece, and means located on said channel means for cooperation with said enlarged end to at least temporarily overcome said tensile stress in said cable-like member.

4,433,453

SHOULDER SKINNING DEVICE

Lyndon R. Leining, and Kent L. Simonson, both of Austin, Minn., assignors to Geo. A. Hormel & Company, Austin, Minn.

Filed Apr. 21, 1982, Ser. No. 370,569

Int. Cl.³ A22B 5/16

U.S. Cl. 17—21

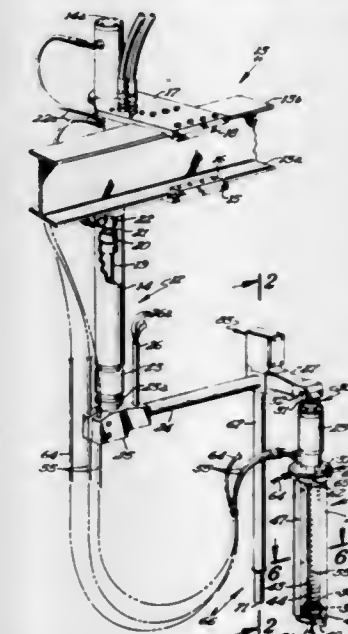
8 Claims

1. A skinning apparatus for removing skin from the shoulder area of a hog carcass, comprising:
 - a skinning device including a generally vertically oriented housing having a hollow interior,
 - an elongate vertically oriented toothed roller revolvably mounted therein said housing for revolving movement relative thereto,
 - an elongate generally vertically oriented skinning blade having a cutting edge, means mounting said blade on said housing to position the cutting edge of the blade closely adjacent the toothed roller, said blade and toothed roller each having a length dimension corresponding generally to the length dimension of the shoulder area of a hog whereby said toothed roller will grip the skin of the hog carcass and pull the same against the cutting edge of the blade to remove the skin from the shoulder of the hog carcass in a single pass,
 - power means secured to said housing at the upper end thereof and being operable for selectively revolving said

toothed roller in a clockwise and counterclockwise direction,

a suspension device including a stationary support, an elongate vertically disposed suspension member, second power means connected with said stationary support, means connecting said second power means with the upper end of said suspension member to permit rotation of the suspension member about its longitudinal axis and vertical translation of the suspension member relative to said support,

an elongate horizontal member secured to said suspension member at the lower end thereof and being movable



therewith, means interconnecting said horizontal member with said first-mentioned power means to permit angular tilting of the skinning device housing about a horizontal axis and rotation of the housing about its longitudinal axis, and an elongate vertically disposed control handle mechanism secured to said horizontal member and depending therefrom and being spaced from said housing, said control handle mechanism including elongate fixed and movable members, said movable member being vertically shiftable to actuate said second-mentioned power means and being revolvable in either direction to actuate said first-mentioned power means.

4,433,454

SAW TYPE GIN STAND WITH SEED REMOVAL TUBE

Joe E. Salmon, Birmingham; Fleetwood E. Strother, and James R. Crawford, both of Prattville, Ala., assignors to Allied Products Corporation, Chicago, Ill.

Continuation of Ser. No. 68,101, Aug. 20, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,091

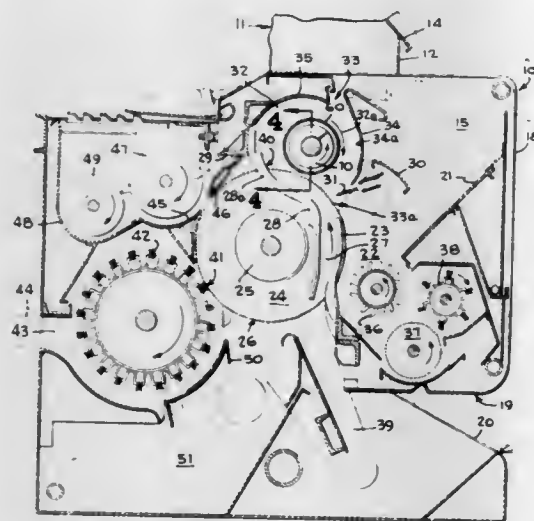
Int. Cl.³ D01B 1/08

U.S. Cl. 19—55 R

14 Claims

1. A saw type cotton gin and auxiliary seed discharge means designed to have high capacity through continuous removal of ginned seed axially from the interior portion of the seed roll during ginning concurrently with gravity discharge of ginned seeds from the seed roll periphery, comprising a gin stand casing having ginning ribs and hulling ribs therein spaced from the ginning ribs and a saw cylinder having saws rotating about a saw cylinder axis and extending through said ribs, means defining a roll box located generally above the intervening zone between the ginning and hulling ribs having an entrance at the top of said intervening zone to receive seed cotton carried through the hulling ribs and upwardly into the roll box to join cotton in the seed roll and be presented to ginning points between said ginning ribs, the saws including toothed edge portions extending into the roll box and said seed roll being rotated thereby about an axis paralleling the saw cylinder axis, a gravity seed discharge from the roll box through

said intervening zone, a rotatable perforated seed removal tube located in the roll box at the interior portion of the seed roll near the axis of rotation of the seed roll paralleling said axis and spanning the width of the roll box and gin stand casing, the tube having many perforations through the tube wall thereof sized to pass ginned seeds therethrough into its interior while preventing passage of unginned seeds, means for continuously rotating said seed removal tube about its axis in direction corresponding to the direction of seed roll rotation and at a surface speed significantly exceeding the speed imparted to the immediately confronting seed roll portions by the saws, said tube including a plurality of shallow protrusions extending outwardly from the outer surface of the tube immediately



adjacent trailing edge portions only of a predetermined portion of the perforations therein to enhance imparting of rotation to the seed roll from the tube, screw conveyor means within said tube spanning its length and means for rotating the screw conveyor means to convey the ginned seeds passing into the tube through its perforations outwardly through end portions of the tube to external seed receiving means whereby a significant proportion of ginned seeds are removed from the interior of the seed roll greatly diminishing the proportion of ginned seed gravity discharge through said intervening zone and thereby significantly diminishing counterflow resistance to transport of unginned seeds upwardly through said zone and into the roll box.

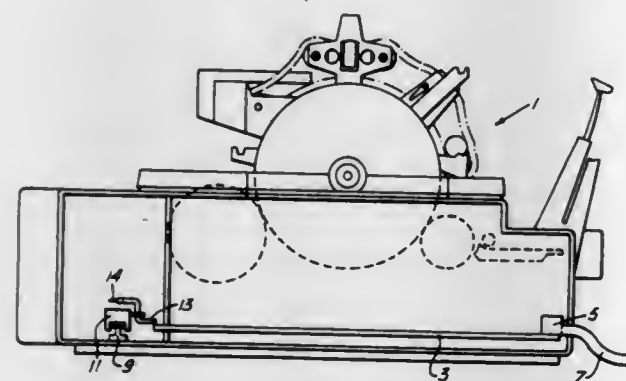
4,433,455

CLEANING WASTE FROM BENEATH MACHINERY
George E. Griffiths, 19 Yew Tree Ave., Northwram; Halifax,
West Yorkshire, England

Filed Nov. 20, 1981, Ser. No. 323,229
Claims priority, application United Kingdom, Nov. 27, 1980,
8038151

Int. Cl.³ D01G 15/82
U.S. Cl. 19—107

4 Claims



1. Apparatus for removing waste from below machinery, the apparatus comprising one or more receiving members substantially covering the area beneath the machinery, suction means extending across the full width of the receiving members adja-

cent to one end thereof, guide means positioned adjacent to the other end of the receiving members and extending the full width thereof, a traveller mounted for movement along the guide means and carrying at least one nozzle directed towards the receiving members, means for reciprocating the traveller along the guide means and means for supplying compressed air to the or each nozzle during such movement.

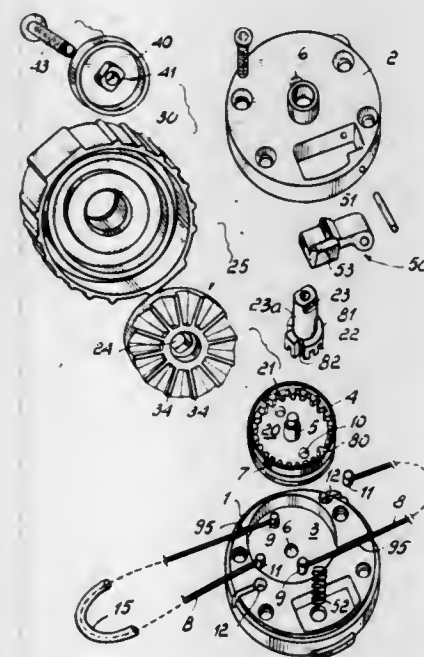
4,433,456

CLOSURE DEVICE PARTICULARLY FOR SKI BOOTS
Giorgio Baggio, S. Martino di Lupari, Italy, assignor to Nordica
S.p.A., Montebelluna, Italy

Filed Jan. 18, 1982, Ser. No. 340,549
Claims priority, application Italy, Jan. 28, 1981, 19383 A/81
Int. Cl.³ A43C 11/00

U.S. Cl. 24—68 SK

6 Claims



1. A closure device particularly for ski boots, comprising a box-like body fixable to a boot portion, a spool rotatably arranged within said box-like body, at least one cable having one end secured to said spool for being wound thereon and unwound therefrom, said at least one cable engaging another boot portion outwardly of said box-like body for selectively tightening and loosening said another boot portion with respect to said boot portion, a knob externally of said box-like body and rotatable with respect thereto for operation of said spool, ratchet means for locking said spool upon rotation of said knob in one direction and releasing said spool upon rotation of said knob in an opposite direction, said ratchet means comprising a ratchet member having a ratchet serration and a sleeve portion rigid therewith and coaxial with said knob, and a pawl selectively engageable with, and disengageable from, said ratchet serration, wherein said ratchet member is axially undisplaceable with respect to said spool but rotatively connected therewith and has a thread formation on said sleeve portion, and wherein said knob has a threading matching with said thread formation on said sleeve portion and a projection for operation of said pawl, said knob being threadable on said sleeve portion into a position rigid with said ratchet member for rotation of said spool in a cable winding direction, and unthreadable on said sleeve portion into a position in which said projection disengages said pawl from said ratchet serration and said knob is rigid with said ratchet member for rotation of said knob in said opposite direction to cause unwinding of said at least one cable from said spool.

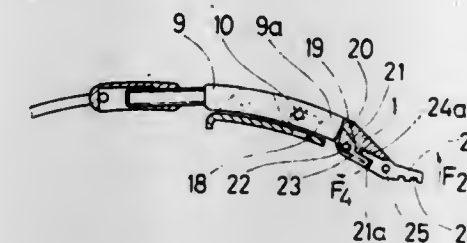
4,433,457

BUCKLE, NOTABLY FOR SKI BOOTS
Edward L. Chalmers, II, and David C. Everest, III, both of
Boulder, Colo., assignors to Lange International S.A., Fri-
bourg, Switzerland

Filed May 4, 1982, Ser. No. 374,650
Int. Cl.³ A43C 11/00

U.S. Cl. 24—68 SK

11 Claims



1. A device for closing two opposed closure flaps of a sports footwear, notably a ski boot, which comprises:
a fastening element adapted to be secured to one of the closure flaps,
a coupling member for interconnecting said two flaps, means for connecting said coupling member with said fastening element,
a latch lever pivotally connected at one end to a support adapted to be secured to the other of said closure flaps, means pivotally connecting said coupling member with said latch lever, said coupling member having an integral extension which extends beyond the pivotal connection of said coupling member with said latch lever substantially in co-planar relation and within the thickness of said latch lever when said latch lever is pivoted to its closed position adjacent said other flap,
cooperating means on said extension and said latch lever for locking said extension and latch lever in closed position, and
means for releasing said locking means.

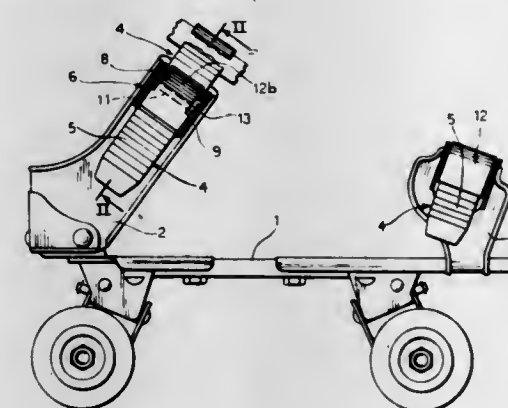
4,433,458

QUICK-FASTENER FOR ROLLER SKATES
Icaro Olivieri, Montebelluna, Italy, assignor to Icaro Olivieri &
C. S.p.A., Montebelluna, Italy

Filed Jun. 11, 1981, Ser. No. 272,724
Int. Cl.³ A44B 11/00

U.S. Cl. 24—191

6 Claims



1. A quick fastener for a roller skate comprising:
a band adapted to be affixed to the roller skate;
said band being provided on one face with transverse saw-teeth;
a substantially U-shaped rigid support member adapted to be affixed to one side of the roller skate in operative relationship relative to the band; and
a spring pawl being outwardly exposed and operatively affixed to the substantially U-shaped support and including an active end biased toward the substantially U-shaped

support for engaging the transverse saw-teeth of said band;
said spring pawl further including a knurled part displaceable relative to said active part and being manually engageable for displacing said active part away from said substantially U-shaped support;
wherein when said band is disposed between the substantially U-shaped support and the spring pawl said active end automatically engages the transverse saw-teeth and said band is lockingly engaged relative to said U-shaped support and upon manually biasing said active end of said spring pawl away from said substantially U-shaped support said active end disengages from said band to permit the release of said band from said substantially U-shaped support.

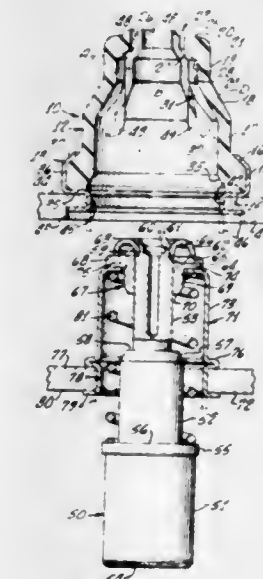
4,433,459

HIGH STRENGTH PUSH TYPE FASTENER
Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener
Corp., El Segundo, Calif.

Filed May 24, 1982, Ser. No. 381,553
Int. Cl.³ F16B 19/00; A44B 17/00

U.S. Cl. 24—613

18 Claims



1. A fastener comprising:
a housing member attached to a first workpiece,
a plunger reciprocative relative to said housing member, said plunger including a first shoulder means at one end thereof and a second shoulder means inwardly of said one end,
a receptacle means, said receptacle means including a plastic member having a base portion, and a plurality of integral leaf springs projecting in one direction from said base portion,
and a metal member for securing said plastic member to a second workpiece,
said leaf springs having outer end portions engaged by said first shoulder means of said plunger,
resilient means biasing said plunger in a direction such that said first shoulder means is held in engagement with said end portions of said leaf springs,
said leaf springs including abutments extending outwardly from said end portions thereof, said first shoulder means including a portion radially outwardly of said abutments for providing a mechanical lock to resist outward deflection of said leaf springs,
and a release member on said plunger intermediate said first and second shoulder means,
said release member being movable by said second shoulder means upon movement of said plunger in opposition to said resilient means for prying apart said leaf springs for releasing said first shoulder means from said end portions of said leaf springs.

4,433,460

APPARATUS FOR SPREADING AND GUIDING A WEB OF TEXTILE FABRIC

Mitsuru Kuroda, 16, Momoyama Mizuno Sakon Higashimachi, Fushimi-ku, Japan

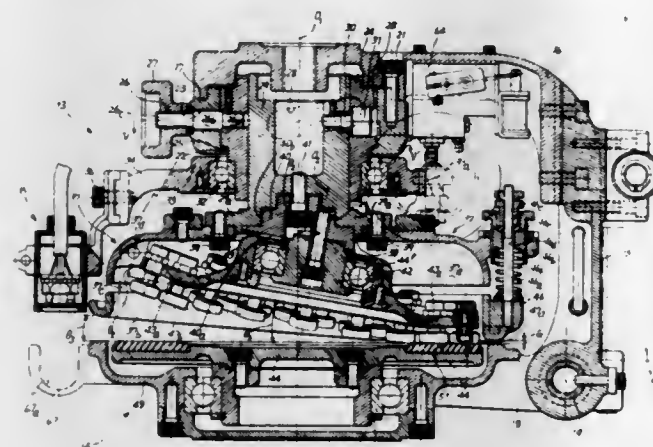
Filed Apr. 20, 1981, Ser. No. 255,748

Claims priority, application Japan, Apr. 23, 1980, 55-54761

Int. Cl.³ D06C 3/06

U.S. Cl. 26—75

10 Claims



1. A device for use on one edge of an apparatus for spreading and guiding a web of textile fabric and the like flexible material, comprising: a first rotary member having a surface; first supporting means for supporting said first member rotatably about a first axis; a second rotary member provided at the periphery thereof with a plurality of pushing members and means for resiliently projecting said pushing members from the surface of said periphery; second supporting means for supporting said second rotary member rotatably about a second axis tilted a predetermined angle relative to said first axis and in generally opposed relation to said surface of said first rotary member, thereby to hold a selvage of said web between said first and second rotary members, with said pushing members successively coming to engage the selvage of said web on said surface of said first rotary member at a nipping point and disengaging therefrom at a releasing point as said first and second rotary members are rotated by friction with said web being fed; means for detecting displacement of said web from a predetermined direction; and means operable in response to said detecting means for turning said second supporting means about said first axis and simultaneously displacing said second supporting means axially of said first axis, thereby to nutate said second rotary member about said first axis and simultaneously move said second rotary member axially of said first axis relative to said first rotary member so as to change said nipping point while keeping said releasing point substantially unchanged.

4,433,461

METHOD OF MANUFACTURING AN ACOUSTIC SPHERICAL LENS

Isao Ishikawa, Hino; Hiroshi Kanda, Tokorozawa, and Toshio Kondo, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 145,146, Apr. 30, 1980, Pat. No. 4,384,231.

This application Dec. 8, 1982, Ser. No. 448,035

Claims priority, application Japan, May 11, 1979, 54-57096; Jan. 25, 1979, 54-79209

Int. Cl.³ H01L 41/22

U.S. Cl. 29—25.35

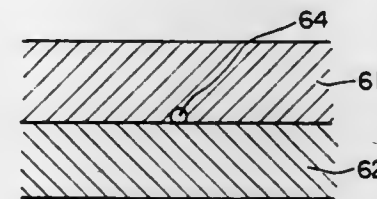
6 Claims

1. A method of manufacturing an acoustic spherical lens including a solid acoustic energy propagating member having a transducer means on one side of said propagating member, comprising the steps of:

(a) stacking onto one another a first member made of a solid acoustic energy propagating medium and a second mem-

ber made of a material, the melting point of which is equal to or greater than that of said first member;

(b) heating the stacked structure to a temperature near a melting point of said first member so as to form a bubble in a contact interface between said first member and said second member said bubble having a concave spherical surface in said first member,



(c) polishing said stacked structure from the second member side so that the concave spherical surface of said first member is exposed, and

(d) providing a piezoelectric transducer on an end face of said first member opposite to said concave spherical surface of said first member.

4,433,462

APPARATUS FOR MANIPULATING SNAP RINGS

Stratton, Thomas A., 1600 N. Mirror, Amarillo, Tex. 79107

Filed Nov. 16, 1981, Ser. No. 322,024

Int. Cl.³ B23P 19/04

U.S. Cl. 29—229

3 Claims



1. A transmission tool comprising a rigid straight handle firmly attached substantially at right angles to a rigid straight shaft, and a blade assembly, said blade assembly being a rigid flat plate which is firmly attached to the end of the shaft distant from the handle and comprises a tooth next to a blade end, which blade end extends from a straight rear blade edge to a front blade edge, said front blade edge having a recess, said plate assembly also comprising a flat right side blade face and a flat left side blade face, said recess having an outwardly concave handle end and an outwardly concave peripheral portion adjacent said tooth and a central recess face position.

4,433,463

MULTIPURPOSE PRYING TOOL

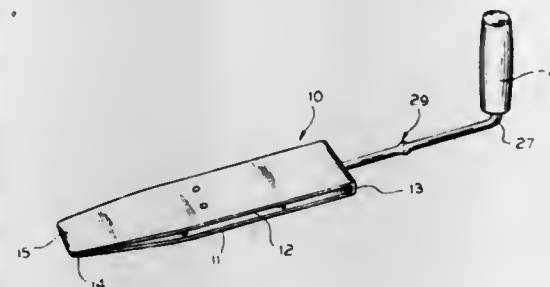
Alvin J. DuVal, Waukesha, Wis., assignor to William Diedrich, Waukesha, Wis., a part interest

Filed Sep. 13, 1982, Ser. No. 417,714

Int. Cl.³ B23P 19/04

U.S. Cl. 29—239

8 Claims



1. A tool for prying objects apart, comprising: a strip of resilient flexible material formed as a wedge comprised of a rear portion corresponding to the thick end of the wedge and two flexible jaw portions forming the sides of the wedge and extending longitudinally and integrally from said rear portion and converging continuously from said rear portion so the free ends contact to form the thin edge of the wedge,

a shaft passing slidably and rotationally through said rear portion for extending between said rear portion for extending between said jaw portions and an eccentric element rotatable with the shaft between said jaw portions, said eccentric element having a rotational position where it exerts no force on said sides for allowing the free ends of said jaws to contact under the influence of the resilience of said sides for facilitating insertion of the thin end of the wedge between objects that are to be parted by applying a driving force to the thick end of the wedge and said eccentric element being rotatable by means of said shaft to other positions wherein it forces said jaw portions to separate to cause parting of the objects.

4,433,464

APPARATUS FOR RECLAIMING NAILED BOARDS FROM A BOARD ROAD

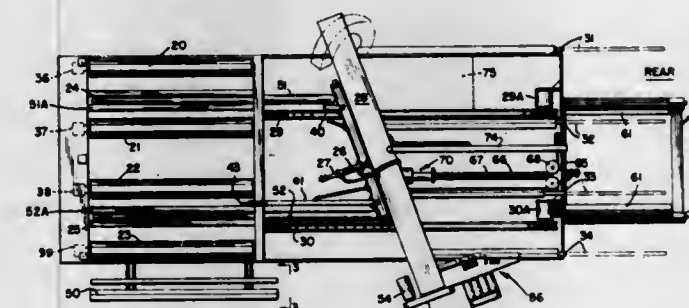
Francis A. Hebert, Schriever, La., assignor to South Louisiana Contractors, Lafayette, La.

Filed Aug. 28, 1981, Ser. No. 297,102

Int. Cl.³ B23P 19/04

U.S. Cl. 29—252

7 Claims



1. A machine for reclaiming boards from a board road the boards of which have nails extending from one side thereof and which must be bent flush with the board and the boards stacked in bundles 5 boards wide and 10 board layers high for reuse comprising

(a) a mobile hydraulically self-propelled steerable vehicular frame,

(b) a first set of board receiving rolls mounted on the leading end of said vehicular frame with their axes along the major axis of the machine adapted to receive the boards

with their major axes transversely of the machine on said rolls with the nails extending upwardly,

(c) pivoted dog pushers co-extensive with said board receiving rolls one set of dogs to each side of the centerline of the vehicular frame for moving and maintaining transverse alignment of the boards edgewise with their major axis normal to the vehicular frame on said board receiving rolls for moving said boards rearwardly,

(d) means carried by said vehicular frame for maintaining a single vertical layer of boards,

(e) endless chain drive means positioned to engage and move said boards edgewise rearwardly from said board receiving rolls through the machine,

(f) a rotary nail bending roll positioned at an angle less than 90° across the major axes of the machine with its rotary axis extending across at least four boards simultaneously,

(g) reciprocating rod transfer means positioned to receive a group of edgewise boards from said drive means for moving boards rearwardly of the machine,

(h) and board stacking means rearwardly of said reciprocating rod transfer means positioned to receive boards from said transfer means and to stack boards having their nails bent flat in bundle groups for reuse.

4,433,465

PROCESS FOR MANUFACTURING UNIVERSAL JOINT

Koji Nakano, Sagami-hara, and Kenji Katanaga, Yokohama, both of Japan, assignors to Aida Engineering, Ltd., Sagami-hara, Japan

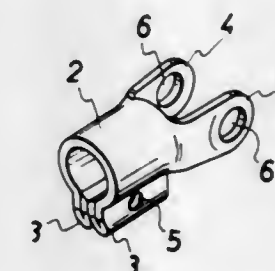
Filed Feb. 26, 1982, Ser. No. 352,873

Claims priority, application Japan, May 27, 1981, 56-80580

Int. Cl.³ B23P 17/00, 11/00; F16D 3/00

U.S. Cl. 29—415

6 Claims



1. A process for manufacturing a universal joint, comprising: punching a blank out of a metal sheet material, the blank having a hub member portion, edge member portions on the opposite ends of the hub member portion, and a pair of prong portions projecting from one of the side edges of the hub member portion;

pressing the free edges of said edge member portions to form slanted surfaces on the ends thereof and to increase the width of the blank from the original punched out size;

bending said edge member portions against said hub member portion with said slanted surfaces facing away from the surface of said hub member portion;

bending said hub member portion into a cylinder with the edge member portions abutting each other and projecting from the cylinder and with said slanted surfaces substantially aligned with the inner surface of the cylinder;

boring holes in said prong member portions to receive a pin for a cross-arm; and

securing the edge member portions together.

4,433,466

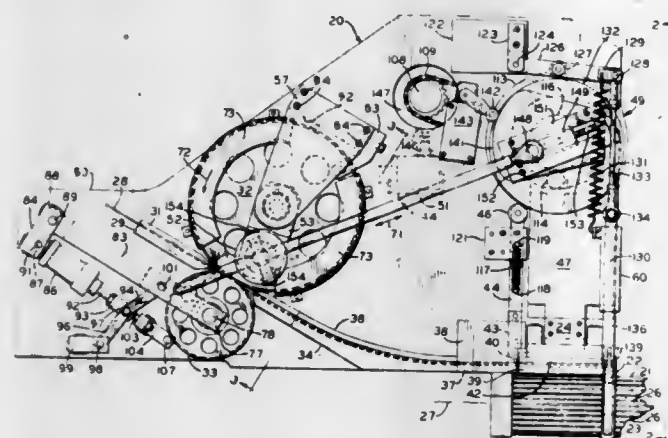
APPARATUS FOR MAKING AND USING SLOT CLOSURE WEDGES AT A COIL INJECTION STATION Fredrick Koenig, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 180,892, Aug. 25, 1980, abandoned, which is a division of Ser. No. 964,076, Nov. 27, 1978, Pat. No. 4,233,729. This application May 21, 1982, Ser. No. 380,798

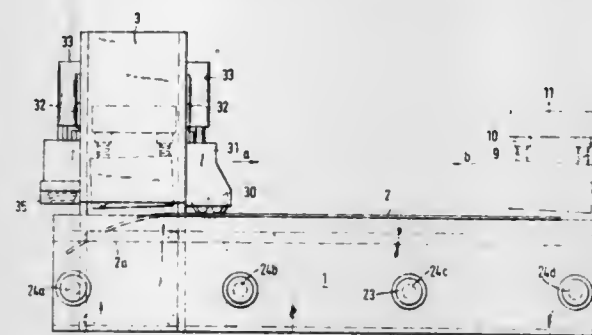
Int. Cl.³ B23Q 41/02; H02K 15/10

U.S. Cl. 29—564.6

1 Claim



mounted on said shears frame in spaced relation to said movable blade thereon, said cutting tool has a cutting edge rotatable about an axis, means on said shears frame for lifting and



lowering said cutting tool relative to said support table and shearing table, and said cutting edge of said cutting tool is arranged to cut along a line parallel to the cutting edge of said movable blade.

4,433,468

METHOD FOR MAKING SEMICONDUCTOR DEVICE HAVING IMPROVED THERMAL STRESS CHARACTERISTICS

Ikuo Kawamata, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

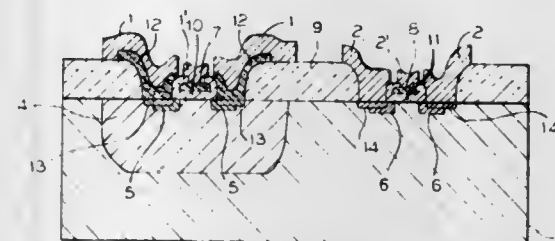
Filed Mar. 20, 1981, Ser. No. 245,982

Claims priority, application Japan, Mar. 26, 1980, 55-38368

Int. Cl.³ H01L 21/22, 21/265, 21/28

U.S. Cl. 29—571

13 Claims



1. In multifunction stator wedge making and inserting and stator winding injecting apparatus having means for moving a strip of wedge material adjacent to a wedge material severing means, magazine means for receiving wedges severed from the strip of wedge material, and means for moving severed wedges into the magazine means, the improvement wherein: said means for moving a strip of wedge material comprises pinch wheel means for feeding wedge material to said severing means and for pinching wedge material and for permanently reducing the thickness of the wedge material at preselected locations, and thereby deforming the wedge material into a predetermined configuration; said apparatus includes a mechanism for controlling the operation of the pinch wheel means; said apparatus further includes means for continuously restraining the pinch wheel means from movement; wherein the pinch wheel means includes two wheels with one wheel supported at a fixed location, and the other wheel movable to different locations; and wherein the mechanism for controlling the operation of the pinch wheel means includes a toggle linkage interconnected with said other wheel and operable for determining the position of said other wheel relative to said one wheel.

4,433,467

GATE SHEARS, SAW AND MILLING TOOL ON COMMON CARRIAGE

Georg Frick, Riemgrabenallee; Harro Reiff, Schloss, and Alois Kirsch, Riemgrabenallee, all of Fed. Rep. of Germany, assignors to Karl Mengele & Söhne, Gunzburg, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,968

Int. Cl.³ B23Q 41/00

U.S. Cl. 29—565

6 Claims

1. Cutting machine for cutting sheet metal plates and the like comprising an elongated support table (1) having a pair of opposite spaced elongated sides, a shears frame (3) extending outwardly from and along one of the elongated sides of said support table, gate shears including a fixed blade (7a) and a movable blade (7b) each extending in the elongated direction of said support table with said support table having a length in the elongated direction thereof which is a multiple of the length of said movable blade, said movable blade is mounted on said shears frame, means for moving said shears frame back and forth along said support table, a shearing table (5) extending along said elongated side of said support table along which said shears frame is movable, said fixed blade is attached to one of said shearing table and said support table, and a cutting tool is

1. A method of manufacturing a semiconductor device comprising the steps of providing a semiconductor layer with a main surface, forming a first semiconductor region making a PN junction with said semiconductor layer, said PN junction reaching said main surface, forming an insulating layer having a hole for exposing at least a part of said first semiconductor region on said main surface, introducing impurities having the same conductivity type as said first semiconductor region in said semiconductor layer through said hole of said insulating layer to form a second semiconductor region having a depth which is shallower than the depth of said first semiconductor region, said second semiconductor region making contact with said first semiconductor region, and forming a metal-semiconductor alloy layer electrically connected to said second semiconductor region.

4,433,469

METHOD OF FORMING A SELF ALIGNED ALUMINUM POLYCRYSTALLINE SILICON LINE

Alvin M. Goodman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 164,345, Jun. 30, 1980, Pat. No. 4,380,773.

This application Feb. 15, 1983, Ser. No. 466,593

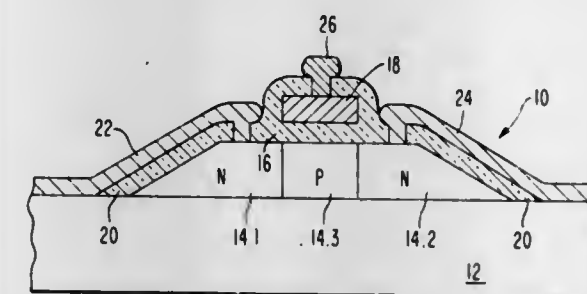
Int. Cl.³ H01L 21/285

U.S. Cl. 29—571

9 Claims

1. In a process for forming a semiconductor device having a pair of active regions of a first conductivity type formed within a body of semiconductor material of a second conductivity

type at the surface of the body, the body of semiconductor material having a channel region of the second conductivity type formed therein at the surface thereof and separating the active regions, the device having a gate member aligned with the channel region and separated from the semiconductor body by a layer of insulating material and contact means in



ohmic contact with each of the active regions and the gate member respectively, an improved process for forming the gate member comprising the steps of:

heating the body to a temperature ranging between about 650° C. and 700° C.; and

flowing SiH₄ and N₂O across the semiconductor body while maintaining a given ratio of N₂O to SiH₄.

4,433,470

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE UTILIZING SELECTIVE ETCHING AND DIFFUSION

Shuichi Kameyama, Yokohama; Koichi Kanzaki, Kawasaki, and Yoshitaka Sasaki, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 14, 1982, Ser. No. 378,480

Claims priority, application Japan, May 19, 1981, 56-75185; May 19, 1981, 56-75186; May 19, 1981, 56-75188

Int. Cl.³ H01L 21/225, 21/302

U.S. Cl. 29—577 C

9 Claims

1. A method for manufacturing a semiconductor device comprising the steps of:

(i) forming, in a surface layer or inside a semiconductor layer of first conductivity type, a first impurity region of second conductivity type, and thereafter forming a second impurity region of first conductivity type within said first impurity region or in part of said semiconductor layer on said first impurity region;

(ii) etching part of said semiconductor layer excluding part thereof on at least said second impurity region to at least a depth of said first impurity region to form a semiconductor region, said semiconductor region including said first and second impurity regions and having a projecting shape with vertical or substantially vertical side surfaces, thus defining an etched part;

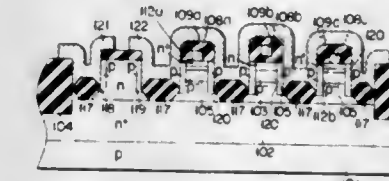
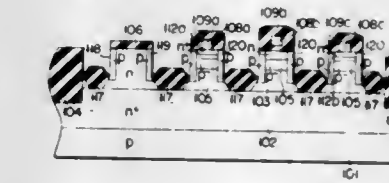
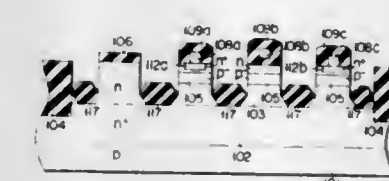
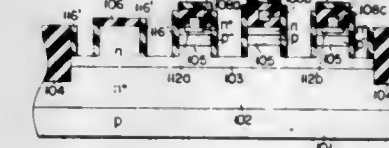
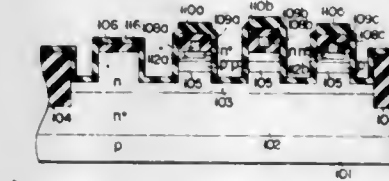
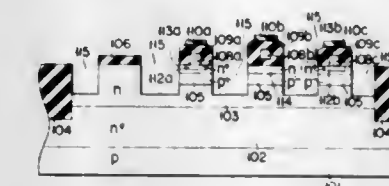
(iii) selectively forming an insulating film on a bottom surface of the etched part; and

(iv) forming an electrode on said semiconductor region, said electrode being connected to said first impurity region through the side surfaces of said semiconductor region; wherein

step (i) for forming said second impurity region comprises depositing, on part of said semiconductor layer on said first impurity region, a conductive pattern containing an impurity of first conductivity type to serve as an impurity diffusion source for said second impurity region and an electrode for said second impurity region; and

step (ii) for etching the part of said semiconductor layer

excluding the part on at least said second impurity region comprises etching the first mentioned part using said



conductive pattern or an insulating film formed by the insulating treatment of the conductive pattern as a mask.

4,433,471

METHOD FOR THE FORMATION OF HIGH DENSITY MEMORY CELLS USING ION IMPLANTATION TECHNIQUES

Wen-Chuang Ko, San Jose, and Robert L. Berry, Cupertino, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jan. 18, 1982, Ser. No. 340,395

Int. Cl.³ H01L 21/74

U.S. Cl. 29—578

9 Claims

1. The method of forming a semiconductor structure comprising:

forming a buried interconnect layer of a first conductivity type over a selected region of a substrate of a second conductivity type, said second conductivity type being opposite said first conductivity type;

forming an epitaxial layer of said first conductivity type on said substrate such that a portion of said epitaxial layer overlies said buried interconnect layer;

forming a thin first oxide layer on the top surface of said epitaxial layer;

forming a nitride layer on said thin first oxide layer;

forming grooves in portions of the epitaxial layer so as to form exposed recessed islands of semiconductor material;

implanting a selected impurity into the exposed surface of said grooves thereby to form regions of said same conductivity type as said substrate but of higher impurity concentration than in said substrate to prevent leakage currents in the to-be-formed structure;

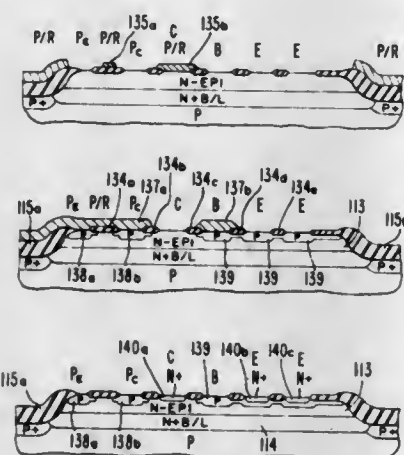
oxidizing the silicon exposed by said grooves to form in said grooves second layers of thermally-grown silicon oxide to a selected thickness, said second layers of said thermally-grown silicon oxide directly contacting regions of said buried contact layer;

removing selected portions of said nitride layer to expose regions of said thin first oxide layer covering portions of said island of semiconductor material in which further impurities of said first conductivity type are not to be added;

oxidizing said wafer to form a relatively thick third oxide in those portions of semiconductor material covered by said regions of said thin first oxide layer exposed by the removal of portions of said nitride layer;

removing all of the remainder of said nitride layer from said device;

forming a base exclusion mask over said structure to prevent the implantation of impurities in the underlying semiconductor material covered by said base exclusion mask, said

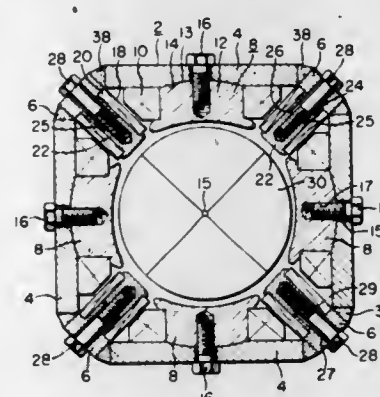


4,433,472
METHOD FOR MANUFACTURING A DYNAMOELECTRIC MACHINE
 Tetsuji Andoh, Amagasaki; Shigeji Takagi, Nishinomiya, and Takeshi Sakamoto, Minoo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 23, 1981, Ser. No. 246,407
 Claims priority, application Japan, Mar. 24, 1980, 55-39128[U]

U.S. Cl. 29—596

Int. Cl.³ H02K 15/02

5 Claims



1. A method of constructing a dynamoelectric machine comprising, fabricating a tubular frame stator structure made of a magnetic material and having four major sides of equal width and each disposed at an equal distance from a longitudinal axis of the frame, machining the interior surfaces of the four sides in a same single machining operation to machine a concave recess in each inner surface of each side with each concave recess having the surfaces thereof spaced equal radii from the longitudinal axis of the frame so that surfaces of concave recesses are disposed coaxial on a common circle about the longitudinal axis, providing four magnetic polepieces each having a convex mounting surface complementary to each concave recess, and mounting in a fixed position each polepiece disposed in a respective concave recess with the complementary convex mounting surface thereon disposed in a corresponding concave recess.

4,433,473
PROCESS FOR MANUFACTURING A FLYWHEEL MAGNETO

Carlo Benedetti, Pisa, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

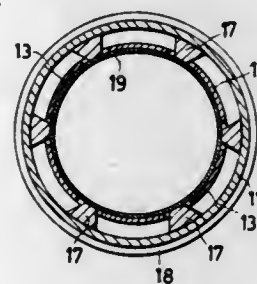
Filed Jul. 15, 1981, Ser. No. 283,463

Claims priority, application Italy, Jul. 22, 1980, 23614 A/80

Int. Cl.³ H02K 15/02

U.S. Cl. 29—598

6 Claims



1. A method of manufacturing a flywheel magneto of the radial flux type comprising forming a preassembled unit having an outer annular ring of a ferromagnetic material, a predetermined number of magnets positioned on the inner surface of the ring and a like number of pole pieces positioned on the inner surface of the magnets by permanently deforming an inner annular ring to retain the magnets and pole pieces in position against the outer annular ring, said permanent defor-

base exclusion mask covering at least the contact region to the buried interconnect layer and the base of the to-be-formed lateral transistor;

ion implanting an impurity of said second conductivity type to form the emitter and collector of a lateral transistor and the base and base contact of a vertical transistor in those portions of said island of semiconductor material not covered by said base exclusion mask;

removing the base exclusion mask and forming a second exclusion mask of a selected material thereby to prevent the further implantation of impurities in the emitter and collector of said lateral transistor and the base contact of said vertical transistor;

ion implanting additional regions of first conductivity type in the regions covered by the thin first oxide and not covered by the second exclusion mask or said relatively thick third oxide, thereby to form the contact region to said buried interconnect layer and the emitters of a vertical transistor;

removing the second exclusion mask from said structure; and

etching the wafer for a sufficient time to remove the thin first oxide over the surface of the wafer but so as not to damage said second and third oxide, thereby to open selected contact areas to the active regions of said device.

mation being effected by exerting axial force to the ring thereby causing radial expansion thereof; and subsequently casting the flywheel body onto the pre-assembled unit.

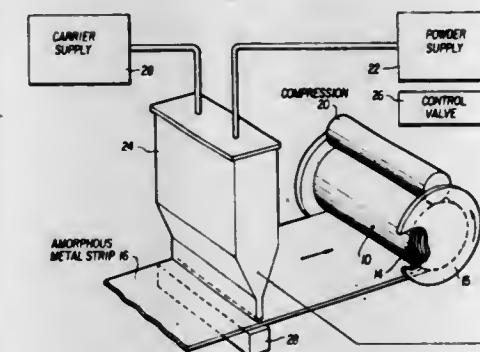
4,433,474
AMORPHOUS MAGNETIC CORE AND PROCESS FOR MANUFACTURING TO IMPROVE EFFICIENCY
 Naim Hemmat, Mendham, N.J., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 8, 1981, Ser. No. 309,808

Int. Cl.³ H01F 7/06

U.S. Cl. 29—605

9 Claims

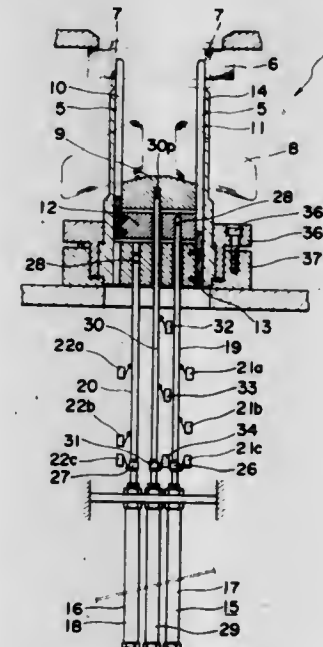


1. In a method for winding magnetic cores for electromagnetic devices including the step of winding a strip of magnetic material in layers to form the core, the improvement comprising the step of filling interstitial gaps between successive layers of said magnetic material with a filler of magnetically permeable powder.

4,433,475
COIL INSERTION APPARATUS
 Tadashi Kubota, Katano; Tokuhito Hamane, Hirakata, and Masaaki Tasai, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
 Filed Nov. 16, 1981, Ser. No. 321,928
 Claims priority, application Japan, Nov. 21, 1980, 55-164973
 Int. Cl.³ H02K 15/06

U.S. Cl. 29—736

5 Claims



1. A coil insertion apparatus comprising:
 a plurality of blade members arranged in an annular configuration and spaced at predetermined intervals for guiding a coil into slots in a core of a stator for a rotary electrical machine, the plurality of blade members being divided into a plurality of groups of blade members;
 a coil pusher within said annular configuration and vertically reciprocable in the axial direction of said blade members for

inserting coil into the slots under pressure by utilizing said blade members as guides;
 separate blade holders, one for each group of blade members, and to which the blade members of the respective groups are attached, said blade holders being movable in the axial direction of said blade members independently of each other;
 an independent driving means for each of said plurality of blade holders and for said coil pusher, said blade holders and coil pusher being movable by said driving means through a distance for carrying coils to be inserted completely through the core; and
 control means operatively associated with said driving means and responsive to movement of said blade holders and said coil pusher to any one of a plurality of predetermined operative positions during the movement thereof and for controlling the operation of the corresponding driving means for carrying out a predetermined sequence of operations of the corresponding blade holder or coil pusher.

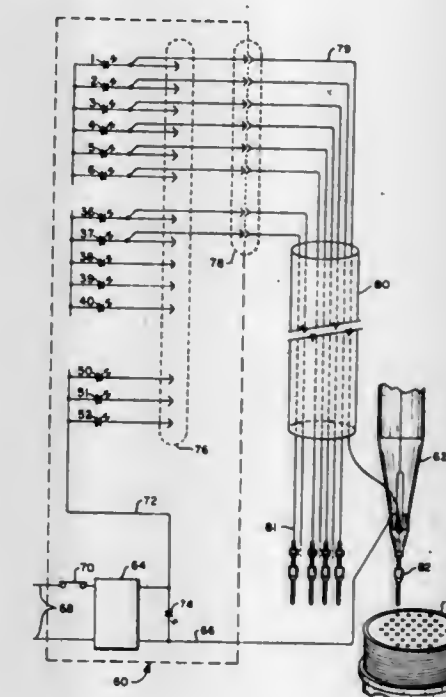
4,433,476
PIN INSERTION TOOL
 Timothy F. Bailey, Springfield, and Dennis S. Brunelle, South Hadley, both of Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 1, 1982, Ser. No. 364,347

Int. Cl.³ H01R 43/00

U.S. Cl. 29—752

12 Claims



1. In apparatus for fabricating a cable, a press for inserting an element attached to the end of a conductor of the cable into a cable connector comprising:

- (a) a base;
- (b) a column mounted on a substantially perpendicular to the base;
- (c) a two-axis position guide for supporting the cable connector on the base so as to prevent the cable connector from rotating, the two-axis position guide located on the base adjacent the column;
- (d) means for holding an element attached to the end of a conductor of the cable having a stationary jaw member with a recessed region to accommodate a conductor and having a movable jaw member supported by the stationary jaw member with a recessed region to accommodate a conductor;
- (e) means slidably engaged on the column for supporting the holding means;
- (f) means for restraining the motion of the slidably engaged support means substantially perpendicular to the two-axis position guide; and

(g) means for moving the slidably engaged support means through a limited distance along the column.

4,433,477

KEYING BLOCK EXTRACTING TOOL

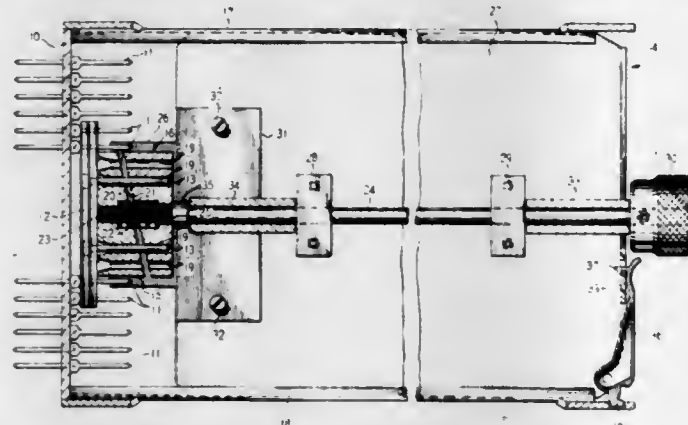
James D. Karga, Reynoldsburg, and Harold E. McCullough, Blacklick, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,585

Int. Cl.³ H05K 3/32, 13/04; H01R 43/00

U.S. Cl. 29—764

13 Claims



1. A pin seizing mechanism comprising: a pair of vise blocks having coaxial holes dimensioned to admit said pin through both said vise blocks, said vise blocks having opposing parallel faces lying at an angle less than 90 degrees from the longitudinal axes of said holes; and means for forcing said faces together to cause movement of one of said blocks with respect to the other of said blocks across said face of said other of said blocks to move said holes from a common axis to grip said pin when admitted through both said vise blocks.

4,433,478

METHOD OF AND APPARATUS FOR ATTACHING BOTTOM STOPS TO A SLIDE FASTENER CHAIN

Yoshio Oyama, Asahi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

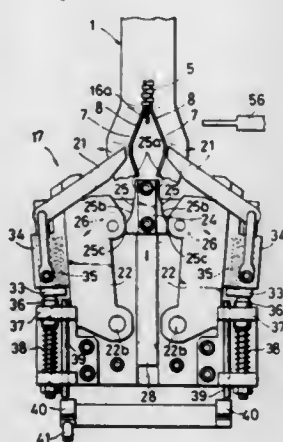
Filed Mar. 23, 1982, Ser. No. 360,932

Claims priority, application Japan, Mar. 24, 1981, 56-42625

Int. Cl.³ A41H 37/06; B21D 53/50, 53/52; A44B 19/00

U.S. Cl. 29—767

10 Claims



1. An apparatus for attaching bottom stops to a slide fastener chain including a pair of continuous stringers, each stringer having successive spaced groups of coupling elements mounted on a continuous stringer tape along a beaded edge thereof and interengaged with opposed complementary groups of coupling elements on the other stringer tape, the fastener chain having successive spaced pairs of opposed blank tape portions between the successive pairs of coupling element

groups, each of the bottom stops having two pairs of gripping legs at opposite sides, said apparatus comprising:

- (a) a frame having a guide table for supporting thereon the fastener chain;
- (b) means for moving the fastener chain longitudinally along a path over said guide table in a predetermined direction;
- (c) means for sensing the arrival of one of the successive spaced pairs of coupling element groups to terminate the movement of the fastener chain;
- (d) means responsive to said arrival for spreading apart one of the successive pairs of opposed blank tape portions;
- (e) means for placing and retaining one bottom stop at a fixed point between the spaced pair of opposed blank tape portions;
- (f) said spreading means being responsive to said setting of said one bottom stop for releasing the spread pair of opposed blank tape portions to thereby allow the same to come toward each other until the opposed beaded tape edges respectively threaded through a space between each pair of the gripping legs of said one bottom stop retained at said fixed point;
- (g) said moving means being responsive to said threading for further moving the fastener chain along the path in said predetermined direction until leading endmost coupling elements of said one pair of coupling element groups reach said one bottom stop retained at said fixed point;
- (h) said spreading means being responsive to said reaching for compressing the opposed beaded tape edges against said one bottom stop on opposite sides; and
- (i) said placing and retaining means being responsive to said compressing for clinching each pair of gripping legs of said one bottom stop about the compressed beaded tape edge of a respective one of the stringers.

4,433,479

METHOD OF MAKING A WIRE HARNESS

Yoshitsugu Suzuki, Mishima; Syogo Iizuka, Cotenba; Shigeo Kajiyama, Shizuoka; Kenji Usui, Gotenba, and Masahiro Kobayashi, Susono, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

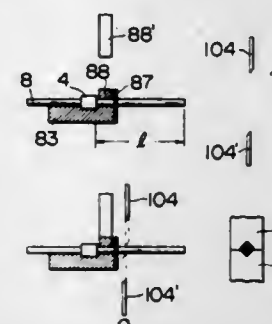
Division of Ser. No. 80,682, Oct. 1, 1979. This application Jan. 8, 1981, Ser. No. 223,234

Claims priority, application Japan, Sep. 29, 1978, 53-120280; Nov. 20, 1978, 53-142212; Nov. 20, 1978, 53-142213

Int. Cl.³ H01R 43/00

U.S. Cl. 29—825

11 Claims



1. A method of manufacturing a wire harness comprising the steps of:

- (a) arranging a plurality of wiring blocks at predetermined spacing therebetween, each wiring block carrying a bridge adapted to hold a plurality of covered wires thereon at their end portions extending from the bridge by equal amounts;
- (b) engaging one free end portion of a covered wire on one wiring block of said plurality of wiring blocks;
- (c) extending said covered wire above a second wiring block of said plurality of wiring blocks;
- (d) engaging the covered wire on said second wiring block to cut said wire at a predetermined position beyond the engaged portion thereof, said engaging and extending steps (b), (c), (d) including a feeding of said wire in a

- direction perpendicular to a plane of the harness and, step (d) further including a cutting of said wire at the site of said second wiring block independently of the presence of a second wire contiguous to said covered wire;
- (e) repeating the steps of (a) to (d) whereby a plurality of covered wires is laid out between intended wiring blocks; and
- (f) fastening each covered wire to the related bridge wherein said bridge has a nipping means disposed nearby and each step of (b) and (d) includes a step of nipping said wire by said nipping means.

4,433,480

METHOD OF INSTALLING CERAMIC FIBER BLOCKS

Takeo Kato, Aichi, Japan, assignor to Isolite Babcock Refractories Co., Ltd., Hoi, Japan

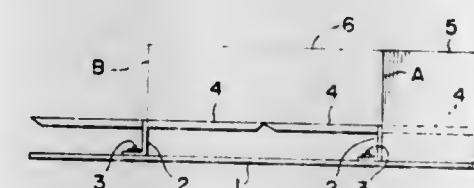
Filed Aug. 18, 1981, Ser. No. 293,935

Claims priority, application Japan, Aug. 19, 1980, 55-113670

Int. Cl.³ B23P 11/00

U.S. Cl. 29—432

4 Claims



1. A method of installing ceramic fiber blocks on a furnace casing, which comprises providing support members each having an L-shaped cross-section, one leg of said L-shaped member having a hole therein for receiving a fastener for securing said support member to said casing, the other leg of said L-shaped member carrying two supporting bars extending in opposite directions; attaching a first supporting member to said casing by securing said one leg thereof to said casing; piercing one end surface of a ceramic fiber block with one of said supporting bars extending from said supporting member in a cantilevered pattern in spaced apart relationship to said casing; inserting said supporting bar into said ceramic fiber block until said one end surface thereof reaches said supporting member, whereby said block is temporarily supported on said casing; piercing the opposite end surface of said block from said one end surface with a supporting bar projecting from a second supporting member in a cantilevered pattern which is not attached to said casing; inserting said supporting bar of said second supporting member into said block to bring said second supporting member into contact with said opposite end surface of said block in a properly adjusted position; and then attaching said second supporting member to said casing by using a fastener inserted through said hole in said one leg of said support member, whereby said block is secured to said casing.

4,433,481

METHOD OF MOUNTING MEDICAL ELECTRODE ASSEMBLY

Roman Szpur, 2685 Culver Ave., Dayton, Ohio 45429

Division of Ser. No. 150,207, May 15, 1980, Pat. No. 4,327,737.

This application Mar. 18, 1982, Ser. No. 359,219

Int. Cl.³ H01R 43/02

U.S. Cl. 29—878

10 Claims



1. A method of producing a medical electrode assembly comprising the steps of die-cutting a sheet of flexible material carried by a flexible carrier sheet of air-impervious material to form a retaining pad releasably attached to the carrier sheet by

pressure-sensitive adhesive, cutting an opening within the carrier sheet while the retaining pad is attached to the carrier sheet and in covering relation to the opening, securing electrical conducting means to the retaining pad with the electrical conducting means projecting through the opening, forming a flexible bottom cover sheet of air-impervious material, providing at least one of the sheets with an inner coating of plastics material, and securing edge portions of the carrier sheet and the bottom cover sheet together by applying heat and pressure to the edge portions for melting the coating of plastics material to seal the carrier sheet to the bottom cover sheet in only an area outwardly of the retaining pad and completely around the retaining pad to form an enclosed air-tight chamber for the electrical conducting means.

4,433,482

METHOD OF MAKING AN ELECTRICAL CONTACT

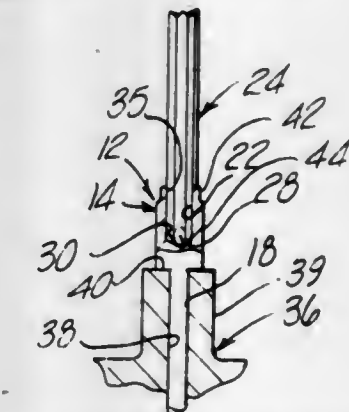
Leroy W. Fairbairn, Sidney, and Clifford R. Waldron, Niver-ville, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 84,959, Nov. 15, 1979, abandoned. This application Nov. 24, 1981, Ser. No. 324,714

Int. Cl.³ H01R 43/04

U.S. Cl. 29—882

8 Claims



1. A method of forming a medial collar portion on an electrical contact, the steps of the method comprising: providing a holder (12) having first and second generally cylindrical end portions (18, 14), the second end portion (14) formed with an axially inwardly extending passage (22); providing a plurality of axial wires (24); inserting the wires into the passage so that each wire has its like forward end extending beyond the one end of the holder for mating; providing in spaced relation a pair of movable dies (36, 46), each die (36, 46) having an opening (38, 48) sized to receive, respectively, the end portions (18, 14) of the holder, positioning the first end portion (18) into opening (38), positioning the second end portion into the opening (48), and swaging the holder by movement of die (46) from the forward end of the passage along the entire length of the passage in an axial direction so that an outer wall portion of the holder is squeezed radially outwardly to form the retention collar medially of the holder end portions and so that an inner wall portion of the holder defining the axial passage is pushed radially inwardly to secure the wires within the passage.

4,433,483

RAZOR ASSEMBLY

Wayne P. Lazarus, Fernleigh Rd., Fernleigh via Ballina, New South Wales, Australia

Filed May 7, 1982, Ser. No. 376,037

Claims priority, application Australia, May 8, 1981, PE 8764; Aug. 14, 1981, PF 0234

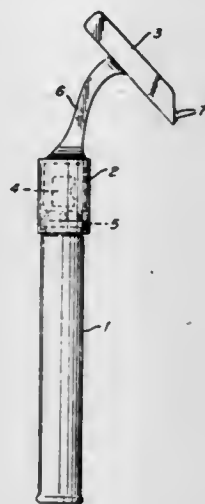
Int. Cl.³ B26B 21/44

U.S. Cl. 30—41

4 Claims

1. A disposable razor assembly, which comprises a handle

portion comprising an elongate aerosol canister containing shaving foam and having a foam release valve at one end thereof; and a head portion comprising a cap removably at-



tached to the handle portion and enclosing the valve, and a razor head mounted on the cap; the arrangement being such that the cap must be removed to allow foam to be dispensed.

4,433,484

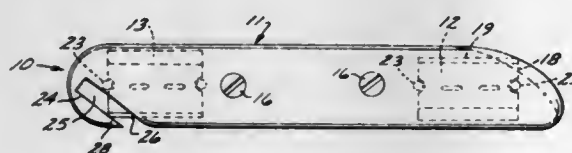
CABLE STRIPPER

Gerald L. Antidel, 1009 Stanley Ave. #5, and Robert J. Picard, 1009 Stanley Ave. #4, both of Long Beach, Calif. 90804
Filed Sep. 28, 1981, Ser. No. 305,971

Int. Cl.³ B21F 13/00

U.S. Cl. 30—90.4

2 Claims



1. In combination with first and second convention single edge razor blades, a hand tool in which said first and second blades are so mounted that an outer plastic sheath on an electrical cable may be engaged and slit by a single longitudinal movement of the tool relative to said cable to expose portions of a plurality electric conductors situated within said sheath that have plastic coatings extending therearound that may be sequentially removed by longitudinally slitting said coatings with said hand tool, said tool including:

- a pair of elongate rigid members that have first and second end portions, said pair of rigid members disposed side by side with said first and second razor blades situated in cutting positions between said first and second end portions, said first end portions defining a downwardly and rearwardly extending hook that is separated from the balance of said pair of members by a transverse space that is spanned by said first razor blade, said hook serving to engage an end of said sheath and force said first blade into slitting engagement with said sheath as said tool is moved longitudinally away from said end, and said second end portions defining a longitudinal groove therebetween into which said second razor blade extends to slit said plastic coatings on said electrical conductors as each of said conductors is moved longitudinally through said groove; and
- means for removably supporting said first and second elongate rigid members side by side with said first and second razor blades situated therebetween.

4,433,485 MEASUREMENT OF THE DIMENSIONS OF FOOTWEAR LASTS

Jenő Keszei, László Varga, and Jenő Donáth, all of Budapest, Hungary, assignors to Műbör és Cipőipari Bór, Budapest, Hungary

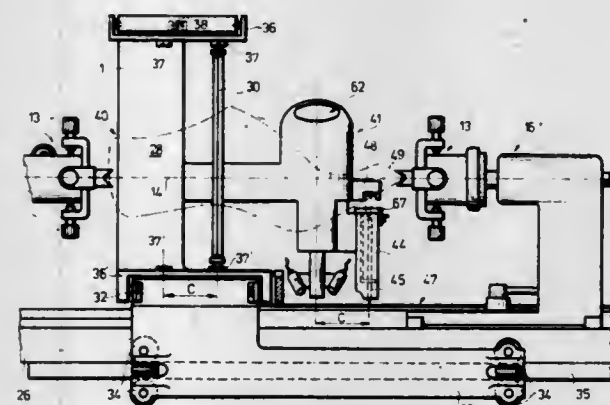
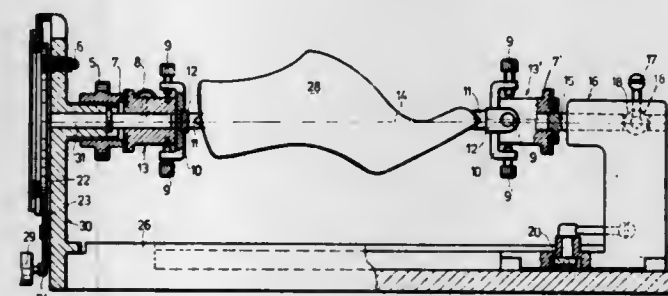
Continuation of Ser. No. 295,238, Aug. 21, 1981, abandoned, which is a continuation of Ser. No. 123,421, Feb. 21, 1980, abandoned, which is a continuation of Ser. No. 973,082, Dec. 26, 1978, abandoned, which is a continuation of Ser. No. 793,790, May 5, 1977, abandoned. This application Sep. 27, 1982, Ser. No. 423,947

Claims priority, application Hungary, May 14, 1976, BOP 1614

Int. Cl.³ G01B 5/20; A43D 1/00

U.S. Cl. 33—3 R

8 Claims



5. An apparatus for examining the dimensions of a shoe last, comprising means for clamping a last both at the heel and at the tip comprising holding tips which are independently adjustable horizontally and vertically to enable the last to be axially displaced, a stationary writing table, means for adjusting the position of the last in the axial direction in a plane parallel to the plane of the writing table, means for obtaining a 90° angular displacement of the last whereby the vertical position may also be brought into a plane parallel with the plane of the writing table, and copying means freely movable into the plane of the writing table and comprising an exchangeable feeler for sensing the position of the last, a writing mechanism for recording the sensed position and a projection for viewing the writing table.

4,433,486

MEASURING INSTRUMENT FOR COMPRESSIBLE OBJECTS

James A. Muehlenbein, Villa Park, Ill., assignor to Novel Products, Inc., Addison, Ill.

Filed May 3, 1982, Ser. No. 373,843

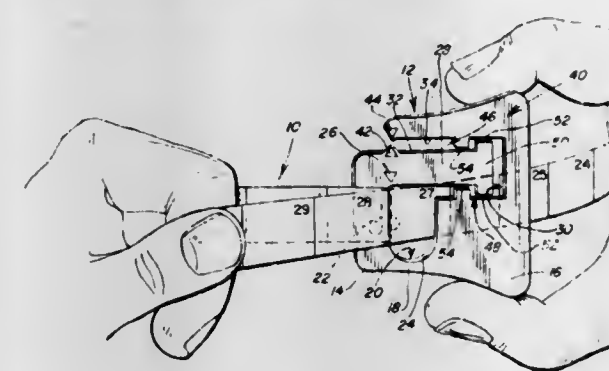
Int. Cl.³ G01B 3/10; G01L 5/06

U.S. Cl. 33—137 R

14 Claims

1. An instrument of measuring the girth of compressible articles under uniform tension, said instrument comprising:
a flexible tape for extension about an article and having graduations along its length; and
a one-piece tension reading member comprising first and

second sections, said first section being fixedly secured with said flexible tape;
said tension reading member having a flexible, bendable hinge portion interconnecting said first and second sections and permitting relative movement of said first and second sections, each to the other;



whereby the indication of the tension applied to the article by the flexible tape is determinable from the relative position of the first and second sections with said tape and attached first section drawn in one direction and said second section drawn oppositely to said one direction.

4,433,487

KEY READING SYSTEM

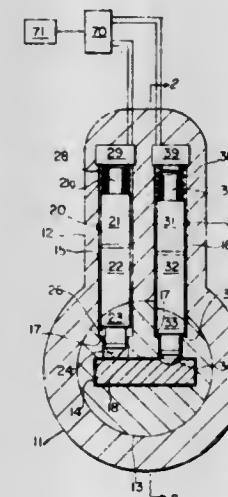
Manfred W. Roland, Mountain View, Calif., assignor to All-Lock Electronics, Inc., North Brunswick, N.J.

Filed Feb. 26, 1982, Ser. No. 352,548

Int. Cl.³ E05B 35/04; G01B 7/28

U.S. Cl. 33—174 F

6 Claims



1. An apparatus for reading a key comprising:
a housing having a key opening, a key slot extending from said key opening longitudinally into the housing for receiving a key which essentially mates with the cross section of the key slot, the key slot cross section having at least one operative side which faces a side of the key which is generally flat and has reading positions thereon, at least one pin cavity formed in the housing and intersecting the operative side of the key slot,
a reading pin mounted in the pin cavity and movable therein in a direction essentially perpendicular to said operative side of the key slot and intersecting said operative side of the key slot, means for resiliently biasing the pin to a position whereat the pin enters the key slot and is engaged by a key inserted into the key slot,
said pin having a magnetic portion,
an electronic sensor device in said housing, which device is energized to a first energy level when a magnet is placed into a certain close position relative thereto, and to a second energy level when the magnet is placed at farther position relative thereto, said electronic sensor device mounted in the housing in the vicinity of the magnetic

portion of the pin, such that when one of a high surface or low surface on a key is located at a reading position of the pin, the pin is moved against the resilient bias to position said magnetic portion at said close position to place the electronic sensor device at its first energy level, and wherein when the other of the high or low surface of the key is at the reading position of that pin, the pin is moved against the resilient bias such that the magnetic portion thereof is located at said farther position to place the electronic sensor device at said second energy level.

4,433,488

DEVICE FOR SETTING THE CUTTING EDGE OF A TOOL FITTED IN A TOOL-HOLDER EXTERNALLY OF A MACHINE TOOL, OR FOR MEASURING THE SETTING OF SAID EDGE

Richard Baumgartner, Rosenheim, Fed. Rep. of Germany, assignor to Index-Werke Komm.-Ges. Hahn & Tessky, Rosenheim, Fed. Rep. of Germany

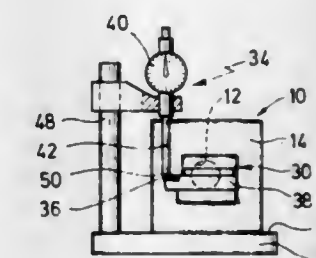
Filed Mar. 8, 1982, Ser. No. 355,497

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112417

Int. Cl.³ G01B 5/00; B27G 23/00

U.S. Cl. 33—185 R

10 Claims



1. A gauge for a cutting tool having a cutting edge and carried by a tool holder, said gauge comprising a gauge body; retaining means on said gauge for securing a tool holder to the gauge body; said retaining means locating a tool cutting edge in a predetermined setting plane for such cutting edge; said gauge body having parallel first and second sides and a third side located at a predetermined distance from the setting plane; said predetermined distance being equal to the distance between the first and second sides.

4,433,489

VEHICLE ALIGNMENT APPARATUS AND METHODS

William A. Boyce, Huntington Beach, Calif., assignor to Macaster Controls, Inc., Huntington Beach, Calif.

Filed Jan. 5, 1982, Ser. No. 337,252

Int. Cl.³ G01B 5/255; 3/56; 3/00

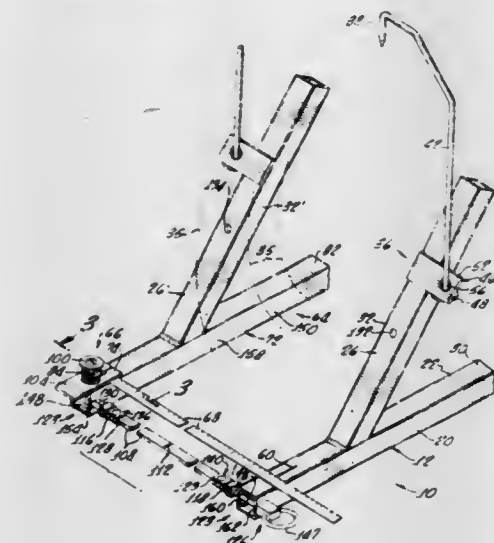
U.S. Cl. 33—203.18

15 Claims

1. Wheel alignment measuring apparatus adapted to facilitate manual alignment measurements relative to the conventional front and rear sets of tires of an automobile, truck or trailer vehicle through the use of a pair of conventional tape measures by one person while the tires are carrying the weight of the vehicle, said apparatus comprising:

- a pair of elastic bands, adapted to stretch across the width of the vehicle, each band having its center marked, and having connection means at each free end thereof disposed equidistant from the center mark;
- a pair of frames adapted to be disposed respectively on opposite sides of the vehicle loosely adjacent the outer circular side wall peripheries of the exposed tires in a chosen set;
- each of said frames including an elongated cross bar having coplanar surfaces disposed in spatial relationship to engage different locations on the circular side wall periphery of either of said exposed tires in the chosen set;
- each of said frames also including means for detachable

hanging the frame on either of said exposed tires in loose proximity to the side wall thereof; said cross bars of both frames including means for detachably securing near opposite ends thereof, and at corresponding locations parallel or even with said coplanar surfaces of the cross bars as measured transversely of the cross bars, the connection means at the free ends of the pair of elastic bands;



at least one of said frames having hold-down means for detachably capturing the free ends of a pair of conventional tape measures near opposite ends of the cross bar at corresponding positions equally spaced from or even with said coplanar surfaces of the cross bar as measured transversely of the cross bar.

4,433,490

FLEXIBLE SURVEYOR'S MARKER

Charles E. Black, P.O. Box 791, Richmond, Ky. 40475

Filed Apr. 23, 1982, Ser. No. 371,432

Int. Cl.³ G01C 15/02, 15/06

U.S. Cl. 33—293

12 Claims



1. A surveyor's marker comprising an elongated strip of relatively stiff, flexible, foldable material which includes a body portion containing a crease which extends the length thereof along a longitudinal centerline, and a pair of tabs attached to one end of said body portion along a transverse fold line, said tabs defining nail holes through the center thereof and being slidable one across the other to a position wherein said nail holes register with one another, said body portion being tiltable out of a plane

containing said tabs toward a direction perpendicular to said tabs as said tabs are slid across one another to a position wherein said nail holes are registered with one another.

4,433,491

AZIMUTH DETERMINATION FOR VECTOR SENSOR TOOLS

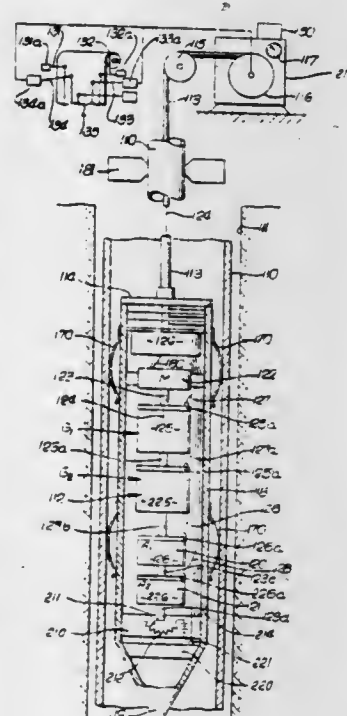
Paul W. Ott, Pasadena; Harold J. Engebretson, Yorba Linda; Philip M. LaHue, West Lake Village, and Brett H. Van Steenwyk, San Marino, all of Calif., assignors to Applied Technologies Associates, San Marino, Calif.

Filed Feb. 24, 1982, Ser. No. 351,744

Int. Cl.³ G01C 19/38

U.S. Cl. 33—302

32 Claims



15. In borehole survey apparatus wherein angular rate sensor means and acceleration sensor means are suspended and effectively rotated in a borehole, the angular rate sensor means having amplitude output GA and rotation related phase output GP, and the acceleration sensor means having amplitude output AA and rotation related phase output AP, there also being means supplying a signal value Ω , proportional to earth's angular rate of rotation, the improvement which comprises

(a) first means for combining AA, AP, GA, GP and Ω , to derive a value ψ for borehole azimuth at the level of said sensor means in the borehole.

4,433,492

HAIR DRYER INSERT TO MAINTAIN HAIR POSITION

Ralph Santa Lucia, 948 Rose Ave., Venice, Calif. 90291

Continuation-in-part of Ser. No. 139,834, Apr. 14, 1980,

abandoned. This application Apr. 3, 1981, Ser. No. 250,571

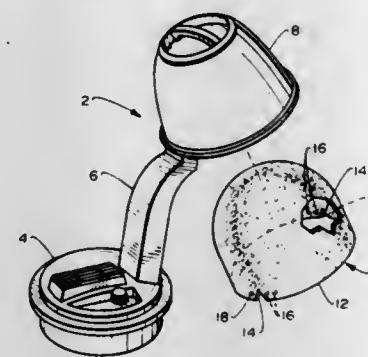
Int. Cl.³ A45D 20/24

U.S. Cl. 34—99

16 Claims

1. A fluid diffusion member for use with heated fluids, comprising: a non-planar conformable member of open-pore, lightweight material, being shaped and adapted for cooperative association with a source of heated fluid, and having a thickness sufficient to satisfactorily diffuse the heated fluid emanating from said source, said diffusion member being spaced from

the object to be heated and wherein said heat source is a hooded hair dryer and said fluid diffusion member is congru-



ently shaped to the configuration of the interior of the hood of said hooded hair dryer.

4,433,493

HIGH TEMPERATURE RESISTANT FABRICS

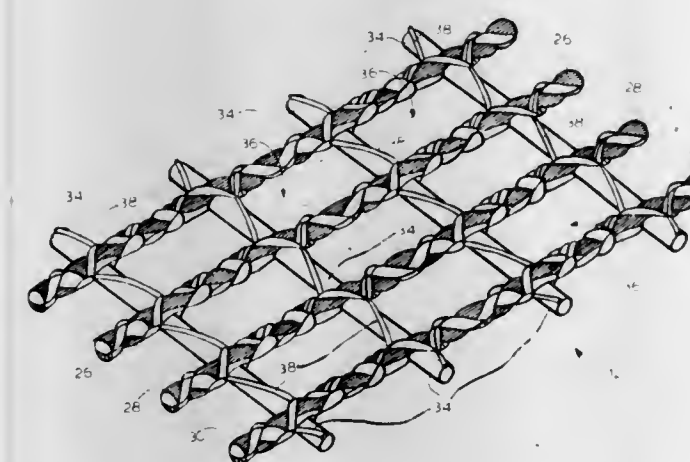
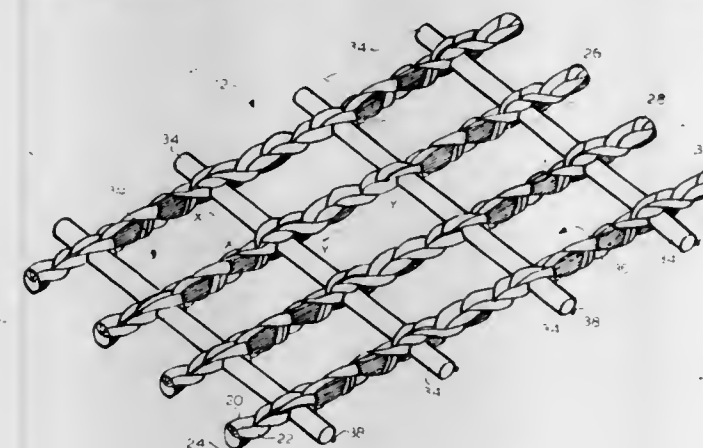
William H. Poisson, Lincoln, Mass., assignor to Albany International Corp., Albany, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,417

Int. Cl.³ B32B 5/08

U.S. Cl. 34—116

5 Claims



1. A fabric which comprises an open mesh of:

(a) at least three warpwise elements in each of an array of parallel warp knitted chains extending in the machine-direction, said chains being evenly spaced from each other in intervals of from 2 to 12 per inch of fabric, said elements comprising:

- (i) a first chain stitch yarn;
- (ii) a second chain stitch yarn with periodic underlaps connecting adjacent chains;
- (iii) a first reinforcing lay-in yarn having a linear density of from about 400 to about 1000 denier; and optionally
- (iv) a second reinforcing lay-in yarn having said linear density;

provided that when the yarn (iv) is not present then the linear density of yarn (iii) is doubled; and

(b) a plurality of cross machine-direction yarn components, evenly spaced from each other in intervals of from 2 to 12 per inch of fabric and positioned between the warpwise elements (i), (ii) and (iii).

5. In a method of drying a textile fabric by supporting the fabric on a conveyor belting and conveying the supported fabric through a drying oven, the improvement which comprises: employing as the conveyor belt an endless fabric, which comprises: an open mesh of:

(a) at least three warpwise elements in each of an array of parallel warp knitted chains extending in the machine-direction, said chains being evenly spaced from each other in intervals of from 2 to 12 per inch of fabric, said elements comprising:

- (i) a first chain-stitch yarn;
- (ii) a second chain-stitch yarn with periodic underlaps connecting adjacent chains;
- (iii) a first reinforcing lay-in yarn having a linear density of from about 400 to about 1000 denier; and optionally
- (iv) a second reinforcing lay-in yarn having said linear density; provided that when the yarn (iv) is not present then the linear density of yarn (iii) is doubled; and
- (b) a plurality of cross-machine direction yarn components evenly spaced from each other in intervals of from 2 to 12 per inch of fabric and positioned between the warpwise elements.

4,433,494

ARTICLE OF CLOTHING OR ACCESSORY INTENDED TO ADAPT ITSELF CLOSELY TO A PART OF THE HUMAN BODY AND A PROCESS FOR ADAPTING THIS ARTICLE OR ACCESSORY TO THIS PART OF THE HUMAN BODY

Guy Courvoisier, and Simon Arie, both of Geneva, Switzerland, assignors to Lange International S.A., Fribourg, Switzerland PCT No. PCT/CH79/00047, § 371 Date Dec. 6, 1979, § 102(e) Date Dec. 4, 1979, PCT Pub. No. WO79/00886, PCT Pub. Date Nov. 1, 1979

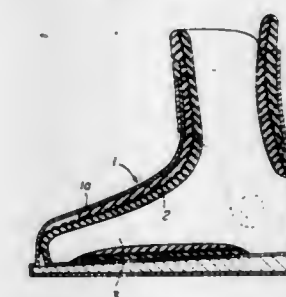
PCT Filed Mar. 29, 1979, Ser. No. 177,765

Claims priority, application Switzerland, Apr. 6, 1978, 3695/78

Int. Cl.³ A43B 5/04; A42B 3/00

U.S. Cl. 36—119

7 Claims



7. A ski boot comprising:

a shell of inextensible material and including a sole and an upper connected to said sole; a sock adapted to receive the foot of a wearer and comprising a thermoformable foam adapted to line the interior of said shell and dimensioned so that said foam is placed

under reciprocal pressure between opposing portions of said shell and said foot; and
a resistance heater embedded in said sock and energizable to heat said foam to a thermoforming temperature tolerable by the wearer for a period sufficient to cause said foam to flow until the stresses resulting from the reciprocal pressures are eliminated.

4,433,495

DIGGER WITH SUPPORTING BASE PIVOTABLE ON TRANSVERSIBLE MEMBER

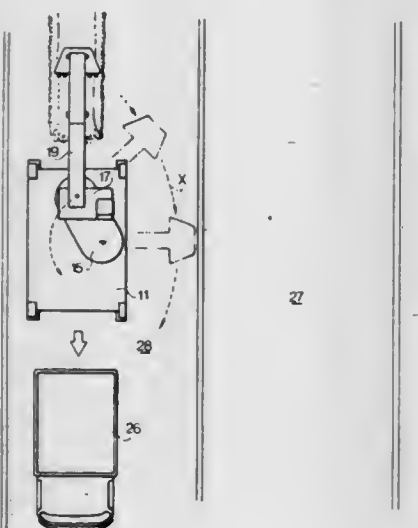
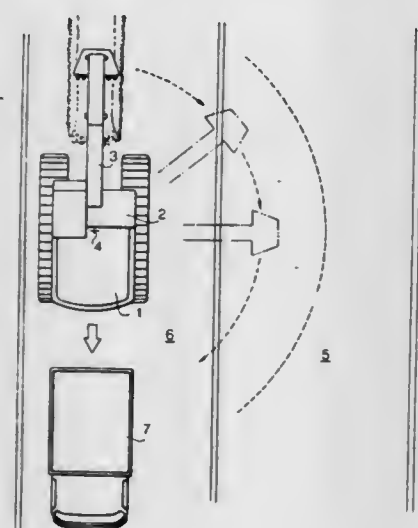
Mitsuhiro Kishi, 1320 Mizuhohochi, Ashikaga-shi, Tochigi-Pref. 326-03, Japan

Filed Jan. 27, 1982, Ser. No. 342,998

Claims priority, application Japan, Jan. 31, 1981, 56-13114; Jan. 31, 1981, 56-13115; Jan. 31, 1981, 56-13116; Jan. 31, 1981, 56-13117; Jan. 31, 1981, 56-13113; Mar. 20, 1981, 56-41288

Int. Cl.³ E02F 5/02

U.S. Cl. 37-103

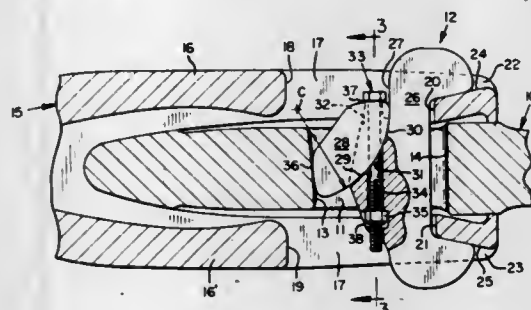


1. A digger comprising:
a carrier having a stage thereon and supporting wheels and trestles,
a transversible member angularly movably mounted on said stage,
a supporting base angularly movably mounted on said transversible member,
a digging-up mechanism including a bucket crane operatively supported on said supporting base, and
means on said transversible member for rotating said digging-up mechanism about a first axis thereof in response to angular movement of said transversible member about a second axis thereof.

LOCKING DEVICE FOR EXCAVATING EQUIPMENT Larren F. Jones, Beaverton, and Jeffrey P. Earll, Portland, both of Oreg., assignors to ESCO Corporation, Portland, Oreg. Filed Mar. 14, 1983, Ser. No. 475,186 Int. Cl.³ E02F 9/28

U.S. Cl. 37-141 R

8 Claims



1. A locking device for securing a slip-over forwardly projecting adapter to an excavator lip comprising a C-clamp member straddling said lip while extending through vertically aligned openings in said adapter and lip, and a wedge member also extending through said aligned openings and forwardly of said clamp member, said clamp member having a forward facing wall confronting said wedge member and having a forwardly projecting arcuate surface, said wedge member having a rearwardly facing wall having an arcuate contour for sliding on said C-clamp member arcuate surface, a bolt means extending through said arcuate surfaces and releasably interconnecting said members whereby tightening of said bolt means causes said wedge member arcuate contour to slide on said C-clamp member arcuate surface to bear against said lip opening to lock said adapter on said lip.

4,433,497

IRON AND IRONING BOARD SUPPORT

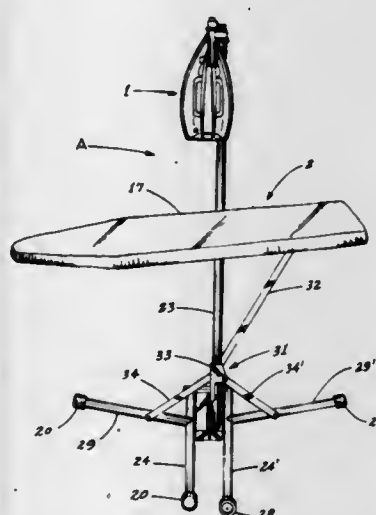
Edwin E. Foster, Wilbur A. Foster, and Thomas E. Foster, all of Austin, Tex., assignors to Majik-Ironers, Inc., Austin, Tex.

Filed Jan. 4, 1982, Ser. No. 336,847

Int. Cl.³ D06F 71/00

U.S. Cl. 38-107

12 Claims



1. Compact, collapsible ironing apparatus comprising a base (20) providing supportive disposition upon a supporting surface for carrying an ironing board (17) and for supporting a hand iron (1) above the ironing surface of said ironing board, said base comprising a first upright member (23) extending upwardly therefrom and means (36) pivotally securing said ironing board to the upper end of said first upright member for swingable movement upon a pivot axis between storage and use positions, and a second upright member (21) extending upwardly from said base, an iron support linkage (15, 16) swingably interconnected at one end to the upper end of said second upright member and extendable to positions over said

ironing surface, and iron securement means (9) pivotally interconnecting the other end of said support linkage with said iron for permitting movement of said iron between first and second orientations, respectively, in and out of contact with said ironing surface, said base comprising folding support members (32, 34, 34') movable between storage and use positions conjointly with swinging movement of said ironing board between its respective storage and use positions, said folding support members of said base comprising leg members (29, 29') swingably affixed for movement between respective raised positions for storage and extended positions for use, said extended positions providing increased area of contact of said base with said supporting surface, said leg members being affixed at opposite sides of said base and when in respective extended positions projecting in opposite directions from said base.

4,433,498

HANGTAG WITH A LINK SERVING AS A FASTENING DEVICE

Hans Bienz, Horn, Switzerland, assignor to Stoffel Seals Corporation, Tuckahoe, N.Y.

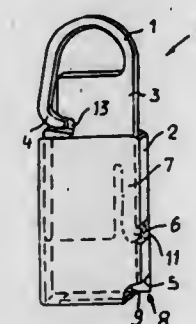
Filed May 7, 1982, Ser. No. 376,045

Claims priority, application Switzerland, May 20, 1981, 3282/81

Int. Cl.³ G09F 3/00

U.S. Cl. 40-2 R

12 Claims



1. A hangtag for use as a fastening device comprising a generally flat housing having front and back portions and first and second ends, a slide means selectively receivable within said housing, said slide means having first and second end portions, a resilient loop member extending from said first end portion of said slide means, said loop member having a free end which is selectively receivable within said housing when said slide means is inserted into said first end of said housing, a first opening through said housing spaced from said first end thereof, locking means carried by said slide means and having a latching portion, a second opening being located between said first end of said housing and said first opening, said latching portion of said locking means being at least partially and selectively receivable within said first and second openings when said slide means is inserted into said housing, said free end of said loop means being retained within said housing when said latching portion of said locking means is received within said first opening and being in nonengaging relationship with said housing when said latching portion of said locking means is received within said second opening.

4,433,499

COPY HOLDER WITH MOTOR DRIVEN LINE GUIDE Jerry L. Sharber, Toledo, and Ronald E. McNeal, Wapakoneta, both of Ohio, assignors to Sheller Globe, Toledo, Ohio

Continuation of Ser. No. 206,867, Nov. 14, 1980, abandoned.
This application Jun. 29, 1983, Ser. No. 509,588

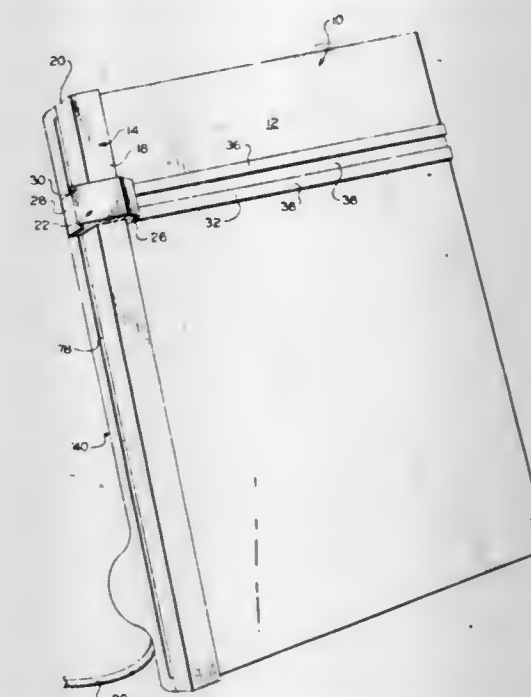
Int. Cl.³ B41J 11/64

U.S. Cl. 40-356

6 Claims

1. A copy holder comprising: a face plate defining a generally planar front copy support surface, said face plate provided with a track means extending longitudinally along one marginal edge thereof; a line guide adapted to extend across the

copy support surface in a generally perpendicular direction relative to said track means, said line guide having one end positioned adjacent said track means and having an unsupported opposite end; holder means attached to the one end of said line guide and slidably coupled to said track means for permitting longitudinal movements of said holder means and said line guide across the copy support surface while maintaining said line guide in generally perpendicular relationship with



said track means; electronic drive means coupled to said holder means for effecting longitudinal movement of said holder means and said line guide across the copy support surface; an elongate housing containing said electronic drive means; and a longitudinally extending channel on the rear surface of said face plate adjacent to and generally parallel with said track means, said channel receiving and retaining said elongate housing.

4,433,500
GUN GLOVE

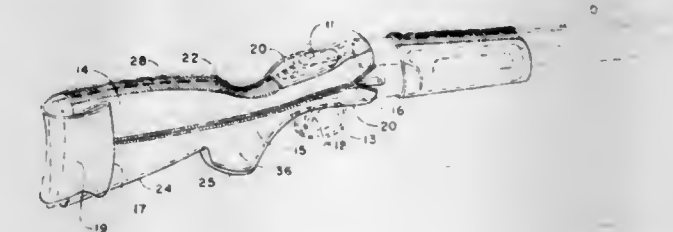
Raymond A. Kunevicius, 6115 Elmwood Ave., Independence, Ohio 44131

Filed Jan. 25, 1982, Ser. No. 342,378

Int. Cl.³ F41C 27/00

U.S. Cl. 42-1 N

9 Claims



1. A cover for a long gun having a stock with a comb and a bottom portion, said cover consisting of a flexible, abrasion-resistant material having a first elastic portion covering said comb, a second elastic portion covering said bottom portion, first fastening means, second fastening means, and at least one opening in said cover, said opening being provided with elastic.

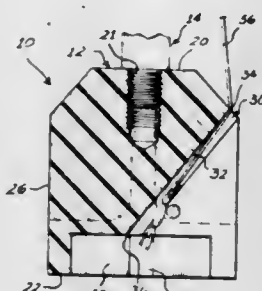
4,433,501

FISHING LURE RETRIEVING DEVICE

Gary G. Maxwell, 980 E. Dillman, Bloomington, Ind. 47401
 Filed Dec. 23, 1981, Ser. No. 333,650
 Int. Cl.³ A01K 97/00

U.S. Cl. 43—17.2

3 Claims



1. A retrieving device adapted to free a snagged fishing lure connected to a fishing line, said retrieving device comprising a generally cylindrical body having an upper end surface and a lower end surface, an elongated rod connected rigidly to said body at its upper end surface, said body including a side wall extending to said lower end surface and defining an open cavity in the lower end surface, said body having a longitudinal slot extending through said side wall to the center of the body within said cavity, and shiftable spring tensioned means carried by said body and spanning said slot at a location spaced inwardly from the side wall and adjacent said cavity for retaining said fishing line within said slot generally centered within said cavity, said rod being connected at one end at the center of said body upper end surface, said slot increasing in depth from top to bottom and defined in part by an end wall tapering inwardly from the outer periphery of said body adjacent its said upper end surface to said center of the body within said cavity under said rod one end, whereby said body may be guided by said rod along the fishing line to said lure with the lure fitting into the cavity for subsequent movement with the body.

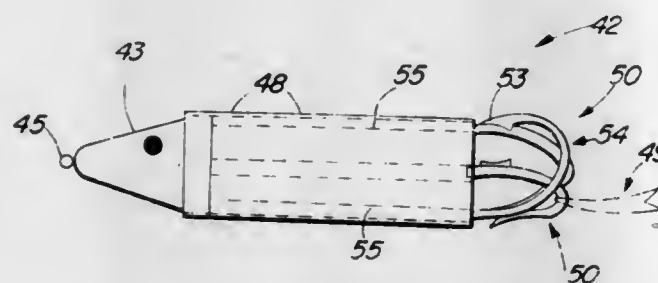
4,433,502

GEOMETRIC WEEDLESS FISHHOOK ASSEMBLY

Edward J. Steeve, 7122 N. Odell, Chicago, Ill. 60631
 Continuation-in-part of Ser. No. 245,101, Mar. 18, 1981. This application Jul. 15, 1981, Ser. No. 283,504
 The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
 Int. Cl.³ A01K 83/02, 85/00

U.S. Cl. 43—43.2

26 Claims



15. A weedless fishhook assembly comprising:
 a. a mounting stem having a forward and rear portion,
 b. fastening means securely fastened to said mounting stem for the attachment of a fishing line,
 c. three fishhooks, each having a point, a bend and a shank portion, with said three fishhooks symmetrically positioned around the central longitudinal axis of the fishhook assembly whereby in an unactivated-rest-position, said shank portion of each of said fishhooks extend from said rear portion of said mounting stem at an acute angle to a

central longitudinal axis of the fishhook assembly which also passes through the centerline of the forward and rear portions of said mounting stem, and where said point of each of said fishhooks is closely nested to an adjacent fishhook in such a manner that each said adjacent fishhook has only one point of a said fishhook nested close to it, and the points of said fishhooks are located on the outside of said fishhook assembly, and

d. resilient means cooperating between each of said fishhooks and said mounting stem for moving said point of each said fishhook away from the closely-nested, unactivated-rest-position to an activated-open-position whereby the points of said fishhooks are exposed for snagging fish.

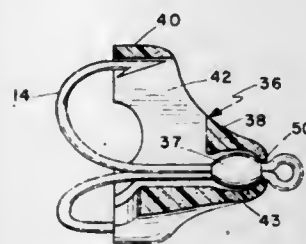
4,433,503

FISH HOOK APPARATUS WITH COVERING BODY PORTION

George H. Schleif, 1450 Chestnut Ave., Carlsbad, Calif. 92088
 Filed Aug. 10, 1981, Ser. No. 291,801
 Int. Cl.³ A01K 83/00, 85/00

U.S. Cl. 43—42.1

9 Claims



1. A hook apparatus for being pulled through the water comprising:
 an integral and substantially rigid fish hook having an eye and a hook portion on a shank,
 a body for being mounted on said fish hook and covering the pointed end of said hook when the body is in a normal position,
 said body comprising a lure shaped housing of resilient material slidably mounted on said shank of said fish hook and having an opening in the side thereof for said hook portion to pass therethrough when said body is moved from said normal position to a second position,
 said shank having an enlarged portion formed integrally thereon adjacent said eye, which enlarged portion forms a bob,
 the upper end of said body having a resiliently expandable hole being formed by a relatively thin continuous annular upper end body wall through which said shank passes, with the diameter of said hole being smaller than the diameter of said bob and the diameter of said eye,
 said body being in the normal position on said fish hook when said upper end hole fits between said eye and said bob, and said upper end hole being movable over said bob for moving said body to said second position and exposing said hook portion upon said body being bit or contacted forcefully by a fish when the hook apparatus is being moved through the water.

4,433,504

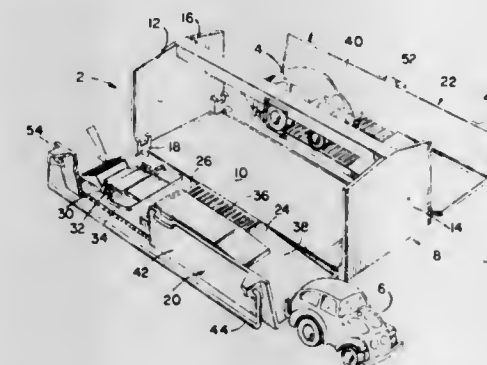
CONTAINER AND START APPARATUS FOR TOY CARS

Masumi Terui, Matsudoshi, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
 Filed May 24, 1982, Ser. No. 381,364
 Claims priority, application Japan, May 27, 1981, 56-75762[U]

Int. Cl.³ A63H 33/00

U.S. Cl. 46—11

17 Claims



1. A combination storage container and launching apparatus for self propelled miniature vehicles comprising:

a base member capable of supporting a miniature vehicle for storage;

at least one wall member movably connected to the base member from a first storage position wherein at least a portion of the wall member is traverse to the base member to a second launching position, wherein that portion of the wall member is approximately parallel to the base member;

means on the wall member for supporting and restraining a miniature vehicle, capable of self propulsion, in a stationary position, when the wall member is positioned approximately parallel to the base member, and
 means on the wall member for releasing the miniature vehicle to permit propulsion of the vehicle.

4,433,505

SWINGING PLUG DOOR

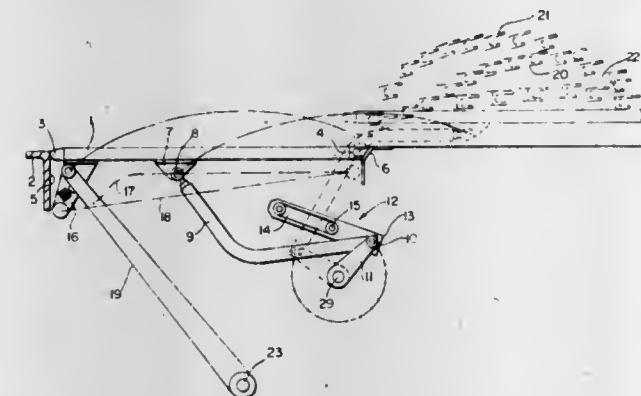
George C. Viner, Chippenham, England, assignor to Westinghouse Brake and Signal Co., Ltd., Chippenham, England
 Filed Aug. 25, 1981, Ser. No. 296,163

Claims priority, application United Kingdom, Sep. 4, 1980, 8028629

Int. Cl.³ E05C 7/06

U.S. Cl. 49—110

10 Claims



1. A swinging plug door comprising a plug door pivotally attached to one end of a swinging lever which is pivotally attached at its other end to a rotatable driving crank and, intermediate said ends has a sliding fulcrum mechanism in which the fulcrum axis of the lever is slidable along a path lying in a direction generally between the crank and the door such that, in operation, rotation of the crank causes the lever to swing about its fulcrum axis and to slide relative thereto to

carry the door through a flattened arc between open and closed positions.

4,433,506

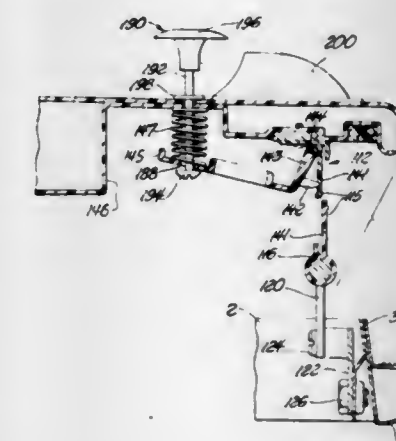
COMBINED VENT AND ESCAPE HATCH

Donald L. Manning, Orchard Lake, Mich., assignor to Transpec, Inc., Troy, Mich.

Filed May 12, 1982, Ser. No. 377,514
 Int. Cl.³ E05B 65/10

U.S. Cl. 49—141

8 Claims



1. In combination with a vehicle roof having an opening and an upwardly movable hinged lid therefor, means normally limiting upward movement of the lid to a tilted position accommodating use of the opening to vent the vehicle, said means comprising a lever pivotally connected at one end to the lid for upward movement of its other end toward the underside of the lid, a bracket comprising two parts normally extending in parallel side-by-side relation to each other adjacent one side of said opening, one of said parts being fixed to the lid, and a link pivotally securing the other of said bracket parts to the vehicle roof, each of said parts having an aperture normally aligned with the aperture in the other, said lever having a projection normally engaging the aperture in each said part but movable out of engagement therewith in response to pivotal movement of said lever other end toward the lid, said lever other end having a laterally extending portion for transmitting sufficient manual upward force to the lid to effect separation of said bracket parts following disengagement of said projection from said apertures, an opening formed through the lid and handle means extending through said lid opening and operatively connected to said lever whereby said lever may be actuated both internally and externally of the vehicle roof, a knob integrally formed on said handle means and disposed exteriorly of said lid.

4,433,507

STRUCTURE FOR PREVENTING VERTICAL MOVEMENT OF A SLIDING DOOR

Takayo Chikaraishi, Kawasaki, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 22, 1981, Ser. No. 286,183

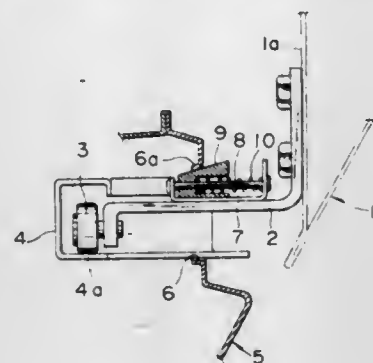
Claims priority, application Japan, Jul. 26, 1980, 55-102662
 Int. Cl.³ E05D 15/10

U.S. Cl. 49—213

10 Claims

1. A structure for preventing a sliding door having inner and outer panels from moving vertically, said door being connected to a vehicle body, comprising:
 a guide rail affixed to the vehicle body, said guide rail being inwardly curved at a front end portion thereof;
 a bracket affixed to the inner panel of the sliding door;
 a roller attached to the bracket, said roller engaging the guide rail to enable the door to slide therealong between opening and closing positions; and
 a locking element having a tapered surface sloping in a lateral direction of the vehicle body, said locking element being

attached to the bracket to enable the tapered surface thereof to engage a fixed portion of the vehicle body when the



sliding door is closed to thereby prevent the sliding door from moving vertically.

4,433,508

AUTOMOBILE WINDOW REGULATOR

Giuseppe Carletta, Carde, Italy, assignor to Eugenio Murtas, Turin, Italy

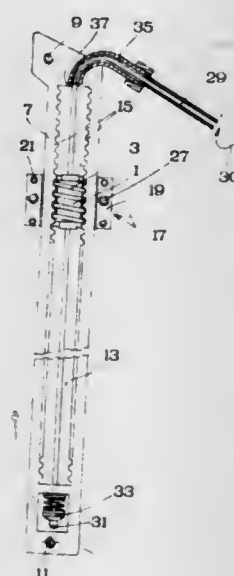
Filed Apr. 1, 1982, Ser. No. 364,324

Claims priority, application Italy, Apr. 3, 1981, 67471 A/81

Int. Cl.³ E05F 11/38

U.S. Cl. 49—348

7 Claims



1. An automobile window regulator comprising: a cylindrical roller having on its outer surface a screw thread the axis of which coincides with that of the roller, and having an axial bore extending coaxially of the longitudinal axis of said roller; an upright rigid guide member secured to an automobile door and having inner screw thread means extending almost over its entire length for engagement with said screw thread on said outer surface of said cylindrical roller; a movable pad formed of a pair of shells joined with their open sides along a central longitudinal plane coincident with a longitudinal central axis of said guide member, said movable pad embracing said guide member and being movable axially thereof and firmly secured to an automobile window glass and containing a recess for accommodating therein said cylindrical roller, said cylindrical roller being rotatable in said recess but not movable axially of said pad, said guide member and said cylindrical roller meshing with said inner screw thread means of said guide member being accommodated between said pair of shells of said movable pad; a flexible metal control cable having one end connected to a rotary actuating device and an opposite end to rotary mounting means provided below said inner screw thread means in said guide member within a lower end thereof, said flexible metal control cable being covered with a protective sheath extending from said rotary actuating device to an upper end of said inner screw thread means in said guide member; said bore in said cylindrical roller having a cross-sectional shape adapted

to prevent rotation of said flexible metal control cable in said cylindrical roller in the entire portion of said flexible metal control cable corresponding to said inner screw thread means in said guide member, said cylindrical roller being provided with an axial slot of the same shape to receive said flexible metal control cable for axially slidable but not rotary movement therein; said rotary mounting means in said lower end of said guide member below said inner screw thread means thereof being rotatable but not shiftable in its height to keep said opposite end of said flexible metal control cable rotatably in place.

4,433,509

WINDOW REGULATOR

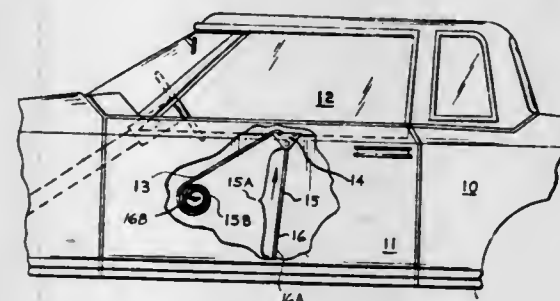
Earl E. Seppala, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1982, Ser. No. 446,228

Int. Cl.³ E05F 11/48

U.S. Cl. 49—352

5 Claims



1. A rotary input type regulator adapted to move a closure between opened and closed positions comprising a rigid track having a first end parallel to the direction of movement of the closure and a second end formed in a spiral configuration; a polymeric tape situated within the track and having a first end attached to the closure and a second end positioned within the portion of the track formed in a spiral configuration; a power transmission arm having one end rotatably mounted in the center of the spiral configuration; a drive block connected to both the second end of the polymeric tape and slideably connected to the power transmission arm and the track so as to move the second end of the tape within the end of the track formed in a spiral configuration with rotation of the power transmission arm; and a rotary input means attached to the rotatably mounted end of the power transmission arm.

4,433,510

METHOD FOR CONTROLLING THICKNESS OF WAFER-LIKE WORK PIECES UNDER LAPPING AND A LAPPING MACHINE THEREFOR

Kiyoo Katagiri, and Mitsuo Honda, both of Niigata, Japan, assignors to Shin-Etsu Engineering Co., Ltd., Tokyo and Naoetsu Electronics Co., Ltd., Niigata, both of, Japan

Filed Apr. 2, 1982, Ser. No. 364,799

Claims priority, application Japan, Apr. 10, 1981, 56-53865

Int. Cl.³ B24B 49/04

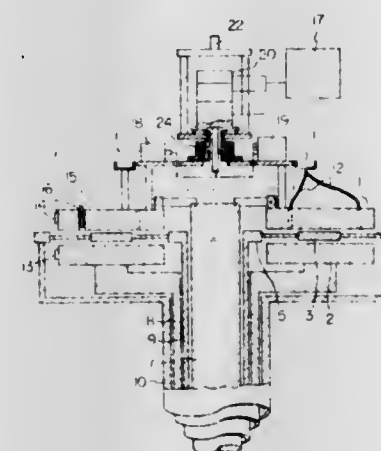
U.S. Cl. 51—165 R

2 Claims

2. A lapping machine for lapping wafer-like work pieces provided with a device for the in-machine measurement of the thickness of the work pieces under lapping which comprises:

- (a) an upper surface plate having a substantially horizontal lapping surface;
- (b) a lower surface plate rotatable relative to the upper surface plate and having a lapping surface substantially parallel with the lapping surface of the upper surface plate to hold the work pieces under lapping with the upper surface plate therebetween;
- (c) a positioning means for generating a signal intermittently

at regular intervals corresponding to one revolution of the lower surface plate relative to the upper surface plate; (d) a sensor means for generating a signal corresponding to the width of the gap between the lapping surfaces of the upper and lower surface plates holding the work pieces therebetween; and



(e) a means for converting the signal generated in the sensor means into a value of the width of the gap between the lapping surfaces at each moment when a signal is generated in the positioning means.

4,433,511

MOBILE ABRASIVE BLASTING SURFACE TREATING APPARATUS

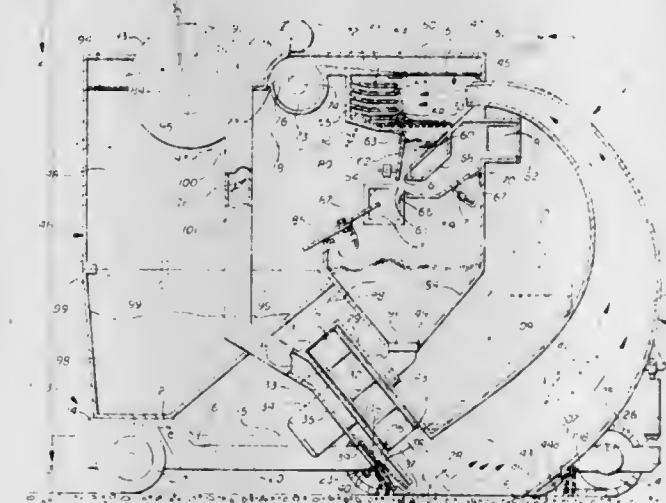
Jon M. Swain, 3114 Cedar Knoll, Kingwood, Tex. 77339

Filed May 18, 1981, Ser. No. 264,297

Int. Cl.³ B24C 3/06, 9/00

U.S. Cl. 51—424

21 Claims



1. An apparatus for treating surfaces by abrasive blasting comprising a movable housing open at the bottom and including supporting means for movement over a surface to be treated, a reservoir for abrasive particles, a wheel positioned in said housing, in communication with said reservoir, having a plurality of blades operable upon rotation to throw said abrasive particles at high velocity means for rotating said wheel at high speed, a portion of said housing supporting said wheel at an angle to said surface whereby rotation of said wheel throws abrasive particles at high velocity at an angle to said surface, said housing having a return passage for said abrasive particles and particulate debris broken from said surface by impingement of said particles thereon extending to convey said particles and broken material toward said reservoir, at least one horizontally oriented, downwardly inclined tray positioned in linear alignment with the end of said return passage and laterally spaced from said reservoir to receive abrasive particles and particulate debris from said return

passage and positioned to overflow laterally into said reservoir, said tray being effective to collect said abrasive particles and to absorb their kinetic energy to prevent excessive rebounding of particles and permitting said particles subsequently to continue on to said reservoir, and separator means for separating particulate debris from said abrasive particles overflowing from said tray prior to returning the same to said reservoir.

4,433,512

REINFORCED GUTTER HANGER SUPPORTING BAR

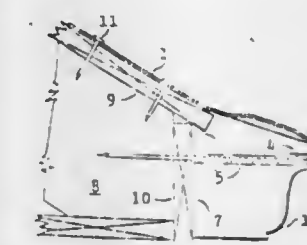
Harry E. Schoener, 161 Island Pkwy., Island Park, N.Y. 11558

Filed Mar. 24, 1982, Ser. No. 361,445

Int. Cl.³ E04D 13/06

U.S. Cl. 52—11

3 Claims



1. In a gutter hanging system including a tube extending between the front and rear walls of a gutter and a spike having a head thereon; said spike passing through the front wall of the gutter, through said tube and said rear wall and into the fascia of a building to support said gutter thereon; and a metal strap having an opening adjacent the first end thereof which end is located adjacent the front wall of said gutter, said spike passing through said opening, said strap extending toward the roof of said building and having its second end secured to said roof; the improvement wherein the first end of said strap is located between the head of said spike and the outside of the front wall of said gutter and wherein said strap is bent at an angle of approximately 180° at a point near said opening but on the side of said opening away from said first end so that a portion of said strap after the bend overlies the head of said spike to lock the same in place.

4,433,513

STORAGE AND SHIPPING UNIT

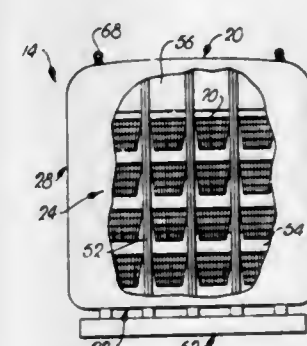
William A. Latimer, 2523 Meadow La., Topeka, Kans. 66614

Filed Aug. 13, 1982, Ser. No. 408,023

Int. Cl.³ A47B 5/00

U.S. Cl. 52—36

10 Claims



1. For shipping and storage of goods, a transportable, walk-in container having top, bottom and upstanding walls; an access door in one of said walls; a series of parallel rows of elongated, spaced apart, parallel uprights in said container,

said rows being equally spaced, presenting a number of walk-through passages therebetween; a stack of spaced, superimposed receptacles in each passage respectively, each receptacle being adapted to receive a quantity of said goods; releasable means attaching the receptacles to proximal up-rights, said container having a rear section and a front section; an upper and a lower support in the container; and a number of fasteners extending through the top wall, the supports and the bottom wall for holding the sections in abutting relationship, the uprights spanning the distance between the supports, each fastener having an upright in surrounding relationship thereto.

4,433,514

CEILING SYSTEM FOR SMALL BUILDINGS

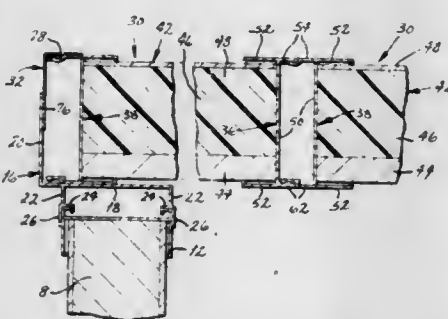
J. Gordon Henges, Jr., St. Louis County, and Steve W. Schulte, St. Charles, both of Mo., assignors to J Henges Enterprises, Inc., Earth City, Mo.

Filed May 19, 1982, Ser. No. 379,628

Int. Cl.³ E04C 1/10

U.S. Cl. 52—94

11 Claims



1. In a building having spaced apart side walls and spaced apart end walls that are joined to the side walls at corners, an improved ceiling system for closing the top of the building, said ceiling system comprising: ceiling caps fitted over the upper ends of at least the side walls, with each cap having a horizontal section and a vertical section that projects upwardly from the horizontal section, the vertical sections being presented outwardly from their respective horizontal sections so that the horizontal sections are located closest to the space between the side walls; and a plurality of rectangular ceiling panels, each extending from the ceiling cap on one side wall to the ceiling cap on the other side wall so as to bridge the space between the side walls, each panel having a first connecting section along one of its sides, a second connecting section along its other side and a filler member between the first and second connecting sections, each panel at one of its ends resting on the horizontal section of the ceiling cap for one side wall and at its other end resting on the horizontal section of the ceiling cap for the other side wall, whereby the vertical sections of the ceiling caps at least in part obscure the ends of the ceiling panels, the ceiling panels being arranged such that as to adjacent panels the first connecting section of the one panel is adjacent to the second connecting section of the other panel, the first and second connecting sections on adjacent panels being snapped together and positively interlocked such that the adjacent panels where they are interlocked cannot be displaced upwardly or downwardly with respect to each other.

4,433,515 REMOTELY OPERABLE LATCH AND LOCKING PIN FOR A MULTI-SECTION BOOM INCLUDING A MANUAL FLY SECTION

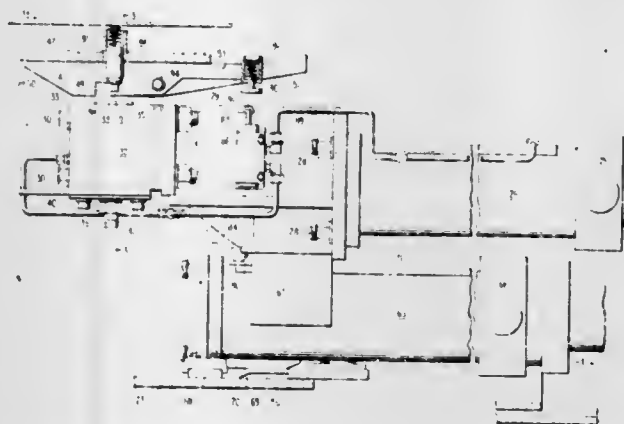
William R. Mentzer, Shady Grove, and Vincent Bernabe, Jr., Newville, both of Pa., assignors to Kidde, Inc., Saddle Brook, N.J.

Filed Nov. 4, 1981, Ser. No. 318,039

Int. Cl.³ B66C 23/06

U.S. Cl. 52—115

12 Claims



1. In a telescoping boom which includes a base section and a manual fly section, a first extension and retraction power means connected between the base section and one telescoping section of the boom and extending into the interior of the manual fly section, a first latching element on said first power means, a second latching element on the manual fly section adapted to engage automatically with the first latching element responsive to extension or retraction of the manual fly section relative to the first power means, a second extension and retraction power means connected between two telescoping sections of the boom, a locking pin for the manual fly section on the telescoping section which immediately surrounds the manual fly section, the manual fly section having a coacting receiver for the locking pin with which the locking pin engages automatically responsive to relative movement between the manual fly section and the telescoping section immediately surrounding it, and remote power means for selectively disengaging the latching element on the first power means from the second latching element while the locking pin is engaged with said receiver and vice-versa, said remote power means including a pressure fluid circuit forming a safety interlock between the first latching element and locking pin assuring that one will be engaged while the other is disengaged in the use of the manual fly section, said first latching element comprising an element yieldingly biased toward engagement with the second latching element and said locking pin being yieldingly biased toward engagement with said receiver, said pressure fluid circuit including means to cause selective disengagement of the first latching element and locking pin from the second latching element and said receiver respectively, and spaced actuator elements on said second extension and retraction power means, and a check valve forming part of the fluid circuit having an actuator in the path of movement of the spaced actuator elements and controlling the disengagement of said first latching element from the second latching element.

4,433,516

WALL PANEL ALIGNMENT SYSTEM

Siegfried Fricker, Wurmbergerstrasse 30-34, 7135 Wiernsheim, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,723

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032930

Int. Cl.³ E04D 15/00

U.S. Cl. 52—126.3

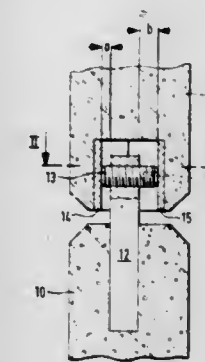
5 Claims

1. A system for the alignment of the surfaces of two adjacent wall panels in a common plane, with freedom for relative displacement of the panels in said alignment plane, the system

being particularly suited for use in conjunction with concrete wall panels which are mounted on the face of a building, the wall panel alignment system comprising in combination:

an alignment mortise in the end face of a first one of the two wall panels, the mortise being in the form of a recess, having two opposing longitudinal walls which are parallel to the alignment plane;

an alignment stake which is fixedly attached to the second wall panel, having an end portion extending a distance into the mortise recess in such a way that it is surrounded by the latter without touching its walls; and



an alignment member which is attached to the mortise-surrounded end portion of the alignment stake, in an orientation which is transverse to the parallel walls of the mortise recess; and wherein

the alignment member fits between the parallel walls of the mortise recess with minimal displacement clearance at two opposing contact points; and

the alignment member is attached to the alignment stake in such a way that the portion of its contact points with the walls of the mortise recess in relation to the alignment stake is adjustable in a direction which is transverse to the alignment plane.

4,433,517

WINDOW ASSEMBLY

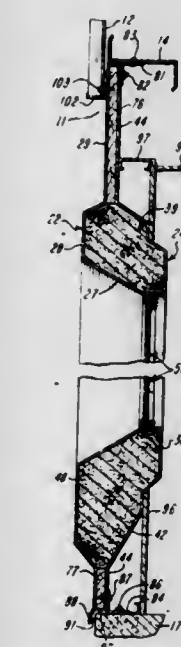
Franklin Moore, Jr., 902 McBurney Dr., Lebanon, Ohio 45036

Filed Jan. 11, 1982, Ser. No. 338,423

Int. Cl.³ E06B 3/20

U.S. Cl. 52—204

11 Claims



1. A window assembly adapted for mounting within an opening in a wall panel of a building, comprising an inner shell of molded rigid plastics material, an outer shell of molded rigid plastics material and mating with said inner shell, said inner and outer shells disposed in opposing relation and having means defining a window opening, means for securing a trans-

parent window panel within said window opening, said inner and outer shells including corresponding generally rectangular frame-like trim portions surrounding said window panel, said inner and outer shells further including corresponding substantially flat and parallel spaced opposing border portions extending around said trim portions, substantially rigid spacer means disposed between said opposing border portions of said inner and outer shells, said trim portions being contoured and projecting outwardly from the planes of the corresponding said border portions in opposite directions to define a cavity therebetween, insulation means disposed within said cavity between said opposing trim portions of said inner and outer shells, and means connecting said inner and outer shells with said spacer means confined between said border portions.

4,433,518

WALL STRUCTURE OPENING OF MASONRY AND PRE-CAST FACADE

Steven G. Rice, R.R. 2, Catlettsburg, Ky. 41129

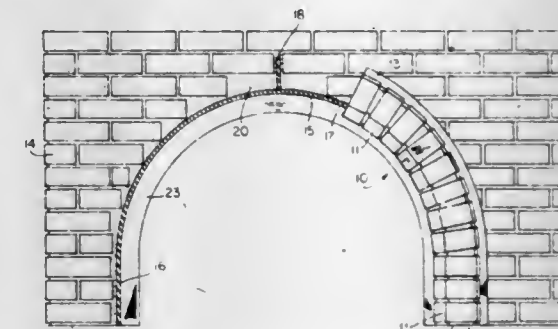
Continuation-in-part of Ser. No. 123,813, Jan. 10, 1980,

abandoned. This application Jul. 17, 1981, Ser. No. 284,481

Int. Cl.³ E06B 1/04

U.S. Cl. 52—211

6 Claims



1. Wall structure consisting essentially of masonry and in part defining an opening wherein the portion of solid elements of masonry generally forming the opening need not be individually configured and disposed to necessarily provide an esthetic alignment of end pieces thereof as is requisite in conventional masonry structure; the wall structure comprising:

a vertically disposed cast plate generally conforming to the vertical extent at such opening and having at least a first portion overlying such opening to thereby cover said portion of solid elements;

a second cast plate integral with and extending co-extensively and transversely from the vertically disposed plate; the second plate generally conforming to said opening and closely underlying and covering the underside of said portion of solid elements;

a mortar, or the like fill between said second plate and said portion of solid elements to thereby provide a unitary wall structure including said masonry and the facade means comprising said cast plates; and

means integral with at least one of the plate structures and secured to said masonry;

whereby incorporation of the facade means into the wall structure allows for masonry construction of said opening but without said conventional requisite configuration and alignment of masonry end pieces to thereby expedite overall construction.

4,433,519

SIMULATED LOG CONSTRUCTION ELEMENT

Thomas A. Jenkins, Box 502, Bismarck, N. Dak. 58502

Filed May 26, 1981, Ser. No. 266,668

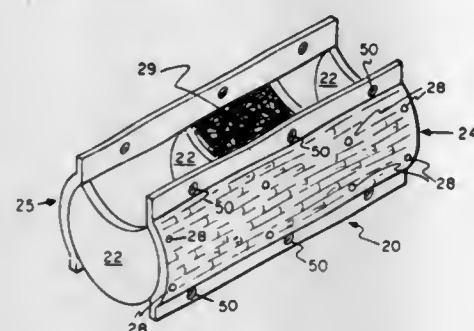
Int. Cl.³ E04B 1/10, 1/74; E04C 1/10

U.S. Cl. 52—233

13 Claims

1. A construction unit comprising:
a plurality of prefabricated modular construction elements

positioned adjacent one another in stacked parallel relation, each construction element comprising:
a plurality of longitudinally spaced supports, each support having a top, a bottom, a first convex curved side, and a second side opposite the first side, the tops of the supports of one modular construction element being located to be adjacent the bottoms of the supports of a modular construction element stacked above;
rigid sheath means at least partially enclosing and attached to the supports to form an at least partially circular and generally rigid hollow cylinder capable of independently bearing structural weight;
upper flange means integral with and extending upward from the sheath means along generally the entire length of the cylinder; and



lower flange means integral with and extending downward from the sheath means along generally the entire length of the cylinder, the lower flange means being positioned to engage in overlapping relationship to the upper flange means of an adjacent parallel modular construction element; and
means for fixedly connecting the upper flange means of one modular construction element with the lower flange means of an adjacent modular construction element stacked above so that the supports of the stacked elements are aligned in stacked relation to provide vertical strength and the sheath means of the stacked elements are attached together to form a rigid wall.

4,433,520

BUILDING WALL CONSTRUCTION

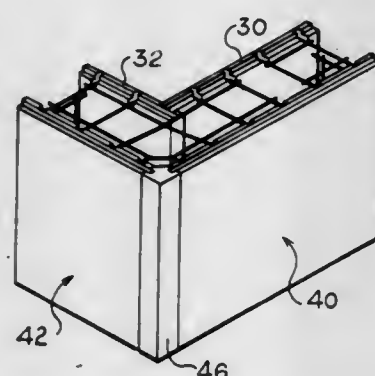
Jack Maschhoff, 328 W. Harrison, Royal Oak, Mich. 48067

Filed Dec. 15, 1980, Ser. No. 216,527

Int. Cl.³ E04B 2/32

U.S. Cl. 52—275

9 Claims



1. A corner construction for a self-supporting building structure module for a building wall construction utilizing spaced outside and inside panels maintained in spaced relation by rigid spacer means spanning the space between the panels, said corner construction being assembled and retained in assembly without adhesives or cement and which comprises:

(a) one or more pairs of outside panels disposed with vertical edges in spaced relation and in planes at a predetermined

corner angle and having tongue projections on the spaced edges,
(b) one or more pairs of inside panels disposed in planes at the same predetermined corner angle as the outside panels,
(c) one or more L-shaped substantially rigid spacer frames having legs disposed relative to each other at said corner angle and having portions to interfit with and tie together horizontal edges of said pairs of inside and outside panels to maintain said panels at said corner angle and in spaced relation, and
(d) a first corner interlock post unconnected to an independent of said rigid spacer means having opposed grooves to receive respectively said tongues on said outside panels and dimensioned laterally to be driven endwise into the space between said spaced vertical edges of said outside panels to rigidify the corner module.

4,433,521

BUILDING COMPONENT, METHOD OF CONSTRUCTION AND WALL FORMED THEREBY

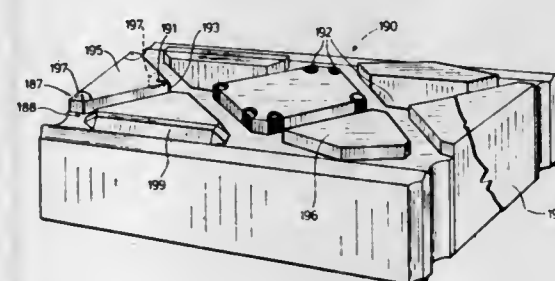
Rodney J. P. Dietrich, 51 Trailridge Cres., Pent #3, West Hill, Ontario, Canada

Filed May 30, 1980, Ser. No. 154,927

Int. Cl.³ E04C 1/16, 1/40, 2/26

U.S. Cl. 52—302

1 Claim



1. A building component comprising:
a body portion defining top and bottom surfaces, interior and exterior wall surfaces, and end surfaces adapted for abutting engagement in rows of a wall to formed with multiple building components;
at least one vertical opening formed in said body, said opening including insulating material which protrudes by a predetermined amount from at least one of said top and bottom surfaces of said body and is adapted to engage the opposing surface of the overlying or underlying components;

fluid bonding material containment ridges formed on the top and bottom surfaces;

fluid bonding material flow canals defined by said containment ridges and the borders of said protruding insulating;

at least one vertical core which, when multiple building components are assembled to form a wall in a designed overlapping manner, will align with vertical cores in underlying and overlying components to define a vertical path throughout the height of the wall;

said vertical path communicating with said canals and being adapted to receive fluid bonding material;

whereby fluid bonding material may be introduced into said vertical path into communication with said canals to fill said canals with a desired volume of bonding material at the interface between the adjoining rows of building components in a wall;

wherein said vertical opening and insulation material therein define a vertical air relief passageway open to the border of the protruding insulation adjacent one of the canals;

wherein said vertical opening, insulation material located therein, and the vertical passageway are adapted, respectively, to align with the vertical openings, insulation material, and vertical passageways in underlying and overlying components to form, respectively, vertical continuous

vertical openings, insulation material, and vertical passageways; and
screen means disposed between said one canal and the vertical passageway to substantially prevent flow of fluid bonding material into the vertical passageway from said one canal.

4,433,522

BLAST AND FRAGMENT-RESISTANT PROTECTIVE WALL STRUCTURE

Yaakov Yerushalmi, Petach Tikva, Israel, assignor to Koor Metals Ltd., Bat-Vam, Israel

Filed Apr. 3, 1981, Ser. No. 250,578

Claims priority, application Israel, Apr. 13, 1980, 59817

Int. Cl.³ E04B 2/32, 2/86

U.S. Cl. 52—426

10 Claims



1. A protective wall structure having a high resistance to blast and fragments, characterized in that it includes:
two spaced groups of panels of rigid metal sheets, the sheets of each group having ends in interlocking relationship with the ends of the adjacent sheets of the respective group and defining therewith each of the two opposite faces of the wall structure, the interlocking ends of one group of face panels being non-aligned with the interlocking ends of the other groups of face panels;
a plurality of diagonal panels of rigid metal sheets extending diagonally between the face panels and having ends in interlocking relationship with each of the interlocking ends of the face panels;
and a filling material filling the space between the face panels and embedding the diagonal panels therein.

4,433,523

BLOCK OR BRICK FOR THE CONSTRUCTION OF A TWO-SHELL TILE STOVE

Horst Miedaner, Guetratweg 10, and Herbert Spirk, Kuehbergstr. 31, both of A-5020 Salzburg, Austria

PCT No. PCT/AT80/00037, § 371 Date Sep. 17, 1981, § 102(e)

Date Sep. 17, 1981, PCT Pub. No. WO81/02192, PCT Pub.

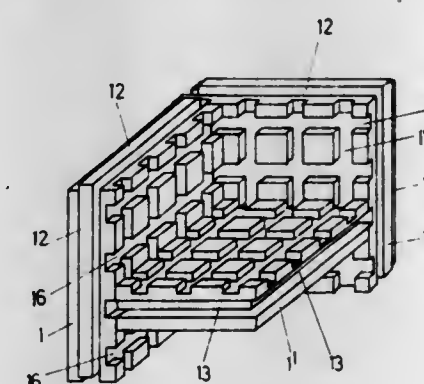
Date Aug. 6, 1981

PCT Filed Dec. 30, 1980, Ser. No. 306,612

Int. Cl.³ E04C 1/10

U.S. Cl. 52—592

7 Claims



1. A refractory block for the construction of an internal shell structure of a two-shell tile stove having an external shell of tiles, said block comprising a generally rectangular paral-

leliped body of refractory material formed with a longitudinal center rib on each of two faces adapted to contact adjacent blocks, a corresponding longitudinal groove on each of the opposite faces of said block, at least one first lateral groove arranged on a first side face, at least one second lateral groove intersecting each first lateral groove at a right angle, each of said lateral grooves being identical to said longitudinal groove, and the marginal distance of the respective first and second lateral grooves corresponding to the marginal distance of said longitudinal groove, and a second side face which is closed, planar and free from discontinuities.

4,433,524

METHOD AND APPARATUS FOR SLIP-CONNECTOR STRUCTURAL JOINT

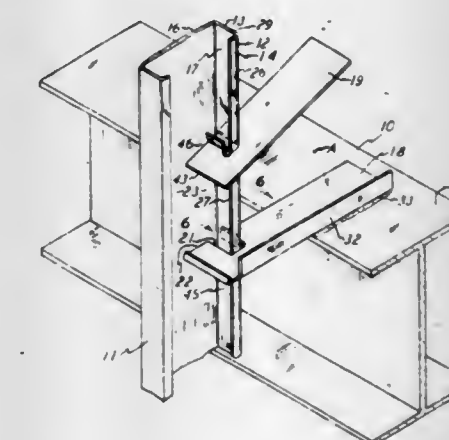
John S. Matson, Racine, Wis., assignor to Nostam, Inc., Racine, Wis.

Filed Jun. 19, 1981, Ser. No. 275,295

Int. Cl.³ E04B 1/18

U.S. Cl. 52—665

5 Claims



1. A slip-connector for a structural joint between a steel beam and a C-shaped steel stud having a channel-shaped side portion, comprising a first steel plate having an opening in the edge thereof receiving the stud side portion to restrict lateral movement of the stud while allowing longitudinal movement of the stud, said first plate having a portion projecting from the stud and onto the beam and with the projecting portion connected to the beam, a second steel plate having an opening in the edge thereof receiving the stud side portion and being offset with said first plate opening for further restricting lateral movement of the stud and with said second plate being connected to said first plate.

4,433,525

METHOD AND A DEVICE FOR EXTENDING THE DECK OF A BRIDGE OR SIMILAR STRUCTURES, WITH DECK SEGMENTS, USING A CABLE STAYED BEAM

Pierre Richard, Neuilly sur Seine, France, assignor to Bouygues, Clamart, France

Filed Nov. 23, 1981, Ser. No. 324,016

Claims priority, application France, Nov. 25, 1980, 80 24985

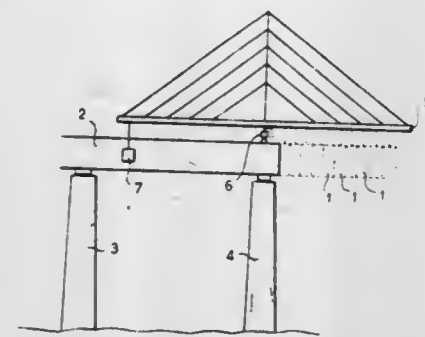
Int. Cl.³ E04G 21/00; E01D 21/04

U.S. Cl. 52—741

8 Claims

1. A method of positioning deck segments in the extension of a portion of a deck of a bridge or similar structure using a cable stayed beam resting on a rear support and on a hinged front support, which comprises a first phase during which the overhanging segments are suspended from said beam and the part of the beam which is in front of the front support is maintained substantially steady, and which comprises a second phase, during which the segments are joined to said portion by producing a prestress in the segments and in said portion, and the weight of the segments is progressively transferred to said

portion substantially simultaneously with the application of the prestress, which is obtained by progressively allowing the said



rear part of the beam to swing around the front support during said second phase.

4,433,526

PACKAGING MACHINE

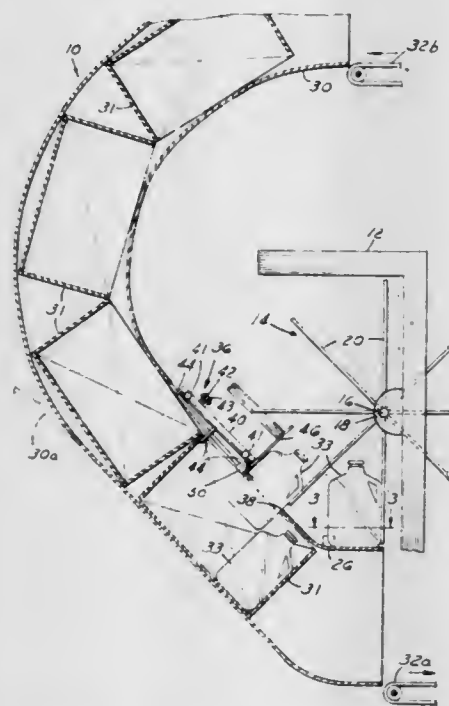
Keith W. Nord, Stillwater, Minn., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 8, 1981, Ser. No. 252,092

Int. Cl.³ B65B 5/08, 21/14

U.S. Cl. 53—244

6 Claims



1. A case loading machine comprising a frame, a spider mechanism rotatably mounted on a shaft having the ends thereof supported on said frame and including radially extending shelves for transporting in a circular path containers to be loaded into cases with each shelf carrying one or more containers, a guide plate secured to said frame adjacent a predetermined circumferential portion of the circular path swept-out by said shelves wherein said guide plate supports said containers being transported by said shelves, a chute having an elongated passage for conveying cases past said guide plate, an opening formed through a wall of said chute adjacent said guide plate for communication with the open tops of the cases, a stop mechanism including means rotatably mounted on said frame, said shaft means having a predetermined number of fingers extending radially therefrom in different radial directions and longitudinally spaced along the length of said chute, wherein certain ones of said fingers extend into the path of movement of said cases for alternately engaging said cases and thereby controlling the movement of the cases past said opening, means for rotating said shaft means such that said case are controlled by said fingers to advance in repeated movements each equal to the distance of the width of one row of containers, and electrical means for coordinating the movements of

the stop mechanism and the spider mechanism whereby successive layers of one or more containers are fed from the respective shelves of the spider mechanism as such respective shelves pass by said opening into the space of the next available row within the respective cases as said stop mechanism permits each case to drop under the force of gravity the distance of one container row width.

4,433,527

HEAT SEALING FILM CUT-OFF DEVICE

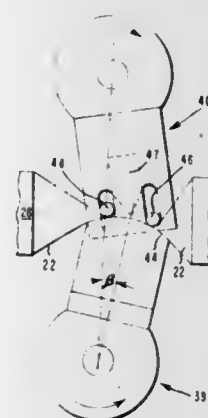
Harold E. Ramsey, Wilmington, and Edward E. Fischer, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 19, 1981, Ser. No. 294,364

Int. Cl.³ B65B 9/12; B30B 5/02

U.S. Cl. 53—548

10 Claims



1. A heat seal and cut-off device for packaging articles in tubular thermoplastic comprising:

(a) an anvil assembly rotatable about a first rotational axis and having a resilient anvil surface spaced apart from the first rotational axis;

(b) a knife and clamping assembly rotatable about a second rotational axis parallel with the first rotational axis and having

(i) a knife with a knife edge and heating means therein fixedly mounted on the assembly parallel with the rotational axis, the knife being directed away from the second rotational axis with the knife edge spaced a minimum distance from the first rotational axis which is less than the distance of the resilient anvil surface from the first rotational axis;

(ii) a pair of clamping bars individually mounted on the assembly, one on either side of and parallel with the knife edge, means for mounting said clamping bars for independent movement, and biasing means against each clamping bar for independently urging each of the bars, in extended position out of contact with the anvil surface, a distance from the second rotational axis which is more than the distance of the knife edge from the second rotational axis and, independently urging each of the bars, in a position in contact with the anvil surface, against the resilient anvil surface whereby, when said knife and clamping assembly and said anvil assembly are rotated in one rotational direction so as to move synchronously, each of the clamping bars contact the anvil surface before the knife edge contacts the anvil surface.

4,433,528

METAL DETECTOR APPARATUS

Carl E. Bohman, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 30, 1982, Ser. No. 413,113

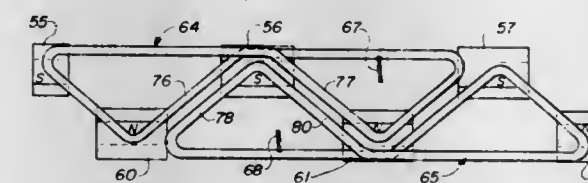
Int. Cl.³ A01D 75/18

U.S. Cl. 56—10.2

6 Claims

1. In a metal detector for protecting rotatable machine elements in harvesting machines, having means for generating a

magnetic field comprising flux lines in a material flow path, the flux lines of said field being in a series of regions, the lines of adjacent regions being other than parallel to each other, said generating means comprising two sets of magnet members, one set of said magnet members having a first polarity and being in a first row, another set of said magnet members of the opposite polarity being in a second row, said rows being generally transverse to the material flow path and said magnet members of said first row being in staggered relationship with the magnet members of the second row, sensing means in which an electrical signal is induced when the magnetic field is altered



by the presence of metallic material, and a signal processor to initiate a control sequence to limit damage to the said elements when the presence of undesirable material is detected, the improvement comprising,

said sensing means comprising a coil having a plurality of windings, said windings having at least two generally equal portions, and means for mounting said coil such that one of said portions extends from the vicinity of a first magnet member in said one set to the vicinity of a second magnet in said another set, and the second of said portions extends from the vicinity of said first magnet to the vicinity of a third magnet in said another set.

4,433,529

TORSION SPRING COUPLED DRIVE MECHANISM FOR RECIPROCATING DEVICE HAVING HAZARD WARNING MEANS

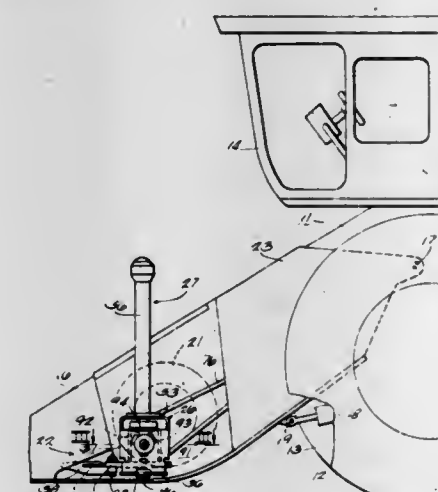
Warren E. Herwig, Wind Lake; Tony L. Kaminski, Greendale, and Paul T. Shupert, Milwaukee, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 430,015

Int. Cl.³ A01D 35/02, 75/20

U.S. Cl. 56—10.2

17 Claims



1. An apparatus having a reciprocable operating member, drive means for reciprocating said operating member, torsion spring means operatively connected to said drive means and to said operating member end having a neutral position with minimum energy stored therein when said operating member is at the midpoint of its reciprocation and being loaded to store energy therein when said operating member is actuated in either direction away from said midpoint, and means for providing an alarm when said drive means is shut off while energy is still stored in said torsion spring means.

4,433,530

INTERLOCK MECHANISM PREVENTING ENGINE STARTING WHEN A MOWER IS IN POWER DRIVE

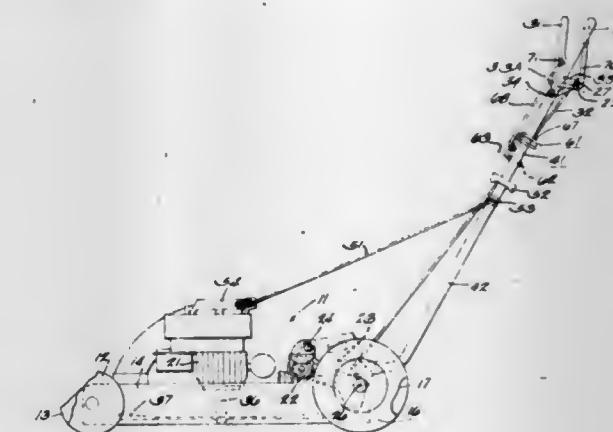
Daniel W. Schaefer, Port Washington, Wis., assignor to Simplicity Manufacturing, Inc., Port Washington, Wis.

Filed Sep. 23, 1982, Ser. No. 422,152

Int. Cl.³ A01D 69/08, 53/08

U.S. Cl. 56—11.8

9 Claims



1. In a wheeled vehicle having at least one drive wheel, an internal combustion engine with a pull type starting mechanism and a drive train connecting the engine to the drive wheel including a clutch device having drive establishing and drive disestablishing conditions, the combination comprising:

a manually operated pull cable connected at one of its ends to said starting mechanism and having a hand grip on its other end, said hand grip being in a predetermined position when said pull cable is not being operated, a control for said clutch device by which the vehicle operator selectively causes said clutch device to be in its drive establishing and drive disestablishing conditions, a blocking member mounted on said vehicle near said pull cable grip shiftable between a release position in which manual gripping and pulling of said grip is unhindered by said blocking member and a blocking position in which manual gripping and pulling of said grip is hindered by said blocking member, and means causing said blocking member to occupy its release position when said clutch device is in its drive disestablishing condition and to occupy its blocking position when said clutch device is in its drive establishing condition.

4,433,531

FORAGE HARVESTER CORN SNAPPING HEADER

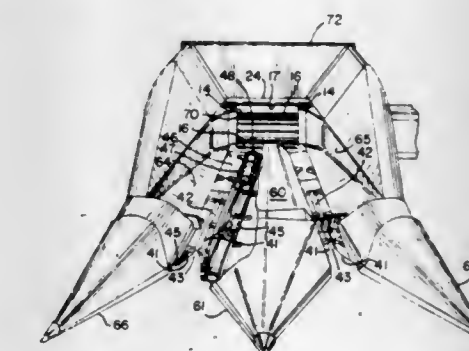
Elmer M. Kesi, Downers Grove; Thomas J. Scarnato, Barrington, and Peter Sammarco, Downers Grove, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 64,146

Int. Cl.³ A01D 45/02

U.S. Cl. 56—106

4 Claims

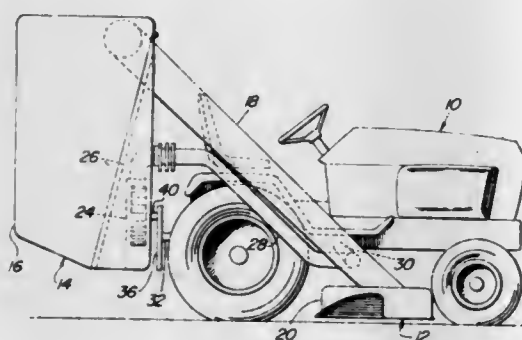


1. A forage harvester having a mobile frame, a crop infeed housing having a crop inlet and a plurality of transversely extending crop infeed rolls therein and a corn snapping

header for harvesting ears of corn from rows of standing stalks attached to said mobile frame forwardly of said housing inlet, said corn snapping unit comprising a header frame assembly, left and right corn snapping units attached to said header frame assembly and extending downwardly forwardly, each of said snapping units having a crop passage defined by a pair of parallel disposed snapping plates and including a pair of cooperative counterrotating snapping rolls disposed in longitudinal parallel relationship respectively adjacent said crop passage beneath said snapping plates for pulling standing corn stalks downwardly through said snapping plates to remove the ears therefrom, the transverse spacing between forward stalk entry ends of said crop passages being greater than the width of said forage harvester crop inlet, a central divider structure disposed between the snapping units, left and right outer divider structures attached respectively to the outer sides of said snapping units, said outer divider structures extending rearwardly and partially across the rear of said header to define a single rear outlet having a width equal to or narrower than said forage harvester crop inlet and in transverse registry therewith, said central and outer divider structures defining rearward continuations of said crop passages, and gathering means disposed alongside said crop passages and extending to rear ends adjacent said feed rolls, said snapping unit being characterized in that the snapping unit passages and snapping rolls are disposed at an angle to the path of travel of the forage harvester and converge toward said single rear outlet.

4,433,532
LAWN MOWER BAGGING SYSTEM INCLUDING AIR ASSIST
Myron L. McCunn, Orion, Ill., assignor to Deere & Company, Moline, Ill.

Filed Jul. 29, 1982, Ser. No. 403,176
Int. Cl.³ A01D 35/22
U.S. Cl. 56—320.2



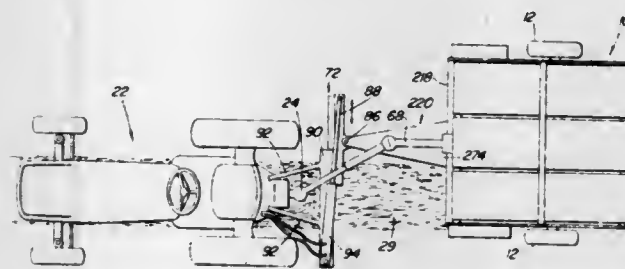
1. In combination with a bagging lawn mower including a mower blade housing defining a discharge opening, an enclosed receptacle, and a material-conveying conduit having opposite ends respectively connected for receiving material from the discharge opening and depositing material into an upper portion of the receptacle, an air assist system comprising: a blower means having an inlet and an outlet; said inlet being connected to a lower area of the receptacle; screen means mounted in said receptacle for preventing material from being ingested by said blower means; and an air duct having one end connected in air-receiving relationship to said outlet and having another end communicating with said conduit at a location downstream from said discharge opening, with said last-mentioned end being in the form of a nozzle oriented to direct a stream of relatively high velocity air in the direction of said receptacle whereby an area of low pressure is caused for inducing air from the blade housing.

4,433,533
CYLINDRICAL BALER WITH AUTOMATIC STEERING SYSTEM

Angel Giani, Gray-la-Ville, France, assignor to Deere & Company, Moline, Ill.

Filed Mar. 25, 1982, Ser. No. 361,948
Claims priority, application European Pat. Off., Mar. 25, 1981, 81400477

Int. Cl.³ A01D 39/00
U.S. Cl. 56—341 17 Claims



1. In a baler comprising a main frame, a chamber in said frame for the formation of a cylindrical bale from a crop, an opening leading into the said chamber, and a pickup for transferring the crop from a windrow to this opening, the improvement comprising detecting means for detecting the nonuniformity of the diameter of a bale in said chamber, and steering means disposed in front of said pickup responsive to said detecting means for causing said frame to be laterally displaced relative to said windrow to maintain a uniform diameter of the bale during formation.

4,433,534
APPARATUS FOR SPLICING SPUN YARNS
Hiroshi Mima, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Aug. 26, 1981, Ser. No. 296,448
Claims priority, application Japan, Aug. 26, 1980, 55-118078
Int. Cl.³ D01H 15/00

5 Claims U.S. Cl. 57—22 7 Claims



1. A pneumatic yarn splicing apparatus for spun yarns which includes yarn-cutting devices, yarn end control nozzles and a yarn-splicing member arranged between the control nozzles and is located at a position deviating from an ordinary yarn path of an automatic winder, characterized in that a cylindrical yarn-splicing hole for insertion of a yarn end on the bobbin side and a yarn end on the package side is formed through the yarn-splicing member, a yarn-inserting slit is formed on the yarn-splicing hole along the longitudinal direction thereof, and a flat jet nozzle intersecting the lengthwise direction of the yarn-splicing hole at a right angle and having a section of which width is smaller than $\frac{1}{4}$ of the diameter of the yarn-splicing hole and of which length is larger than said width is tangentially opened on the yarn splicing hole.

4,433,535
GLASS FIBRE YARNS AND OTHER GOODS, AND METHOD OF MANUFACTURE
Louis D. Darrichard, Conde sur Noireau, and Jacques Plaisant, Flers, both of France, assignors to Valeo, Paris, France

Filed Dec. 29, 1981, Ser. No. 335,328
Claims priority, application France, Dec. 31, 1980, 80 27913
Int. Cl.³ D02G 3/18, 3/12

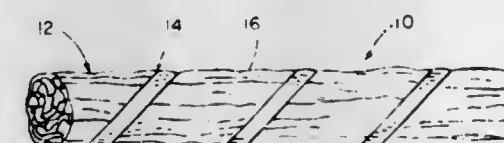
U.S. Cl. 57—229 13 Claims
1. A textile yarn, comprising a mixture of short glass fibres

and short support fibres which are carded and then spun, the diameter of said glass fibres being from about 4 microns to about 20 microns, and the fineness of the support fibres being from about 1.4 decitex to about 15 decitex.

4,433,536
SPIRAL WRAPPED SYNTHETIC TWINE AND METHOD OF MANUFACTURING SAME

John B. O'Neil, Summerville, S.C., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 23, 1981, Ser. No. 304,718
Int. Cl.³ D02G 3/06, 3/36, 3/40, 3/44
U.S. Cl. 57—233 33 Claims



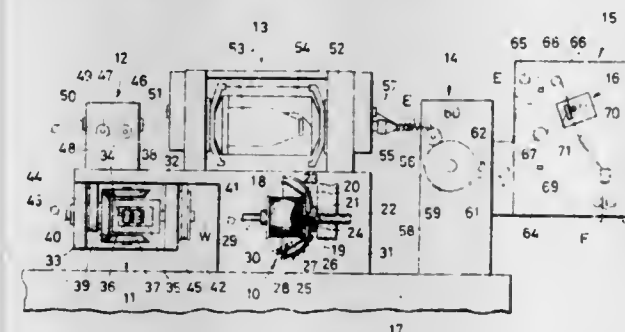
1. A tying twine comprising:
at least one longitudinally extending oriented synthetic ribbon which has zero twist and has been slit fibrillated to provide a substantially ordered net-like structure having fine fibril stems connected by finer fibril branches; and
a synthetic binder in thin band form spirally wound around and adhered to said at least one synthetic ribbon to form longitudinally spaced spirals.

13. A method of making a tying twine comprising of steps:
providing at least one longitudinally extending synthetic ribbon;
orienting said at least one synthetic ribbon along the longitudinal length thereof;
slit fibrillating said at least one synthetic ribbon to provide a substantially ordered net-like structure having fine fibril stems connected by finer fibril branches; and
thereafter spirally wrapping and adhering a synthetic binder in thin band form around said at least one synthetic ribbon which has zero twist and has been oriented and fibrillated to form a twine bound by longitudinally spaced spirals.

4,433,537
METHOD OF MANUFACTURING A ROW OF CONTINUOUS COUPLING ELEMENTS FOR SLIDE FASTENERS

Fumiaki Yokoi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,290
Claims priority, application Japan, May 22, 1981, 56-77560
Int. Cl.³ D01H 13/26, 13/32; B29C 17/02; B29D 5/00
U.S. Cl. 57—264 2 Claims

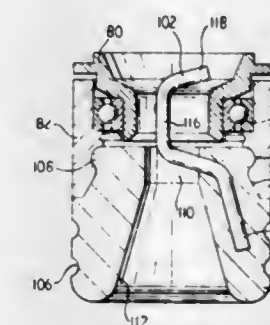


1. A method of manufacturing a row of continuous coupling elements of thermoplastic filamentary material, comprising the steps of:
(a) forming the thermoplastic filamentary material into the row of continuous coupling elements;

(b) measuring a dimension of one of the continuous coupling elements as formed;
(c) comparing the measured dimension with a reference value to detect a dimensional error, if any, of the measured one of the continuous coupling elements; and
(d) adjustably controlling the tensioning of the thermoplastic filamentary material prior to the latter's being formed into the row of continuous coupling elements on the basis of said dimensional error so as to remove the dimensional error from subsequently formed coupling elements.

4,433,538
TEXTILE SPINNING MACHINES
John F. Graham, 33 Dudley Dr., Hyndland, Glasgow, Scotland
Filed Apr. 13, 1981, Ser. No. 253,397

Claims priority, application United Kingdom, Apr. 17, 1980, 8012722; Apr. 17, 1980, 8012723
Int. Cl.³ D01H 7/92, 13/10, 5/28
U.S. Cl. 57—328 10 Claims

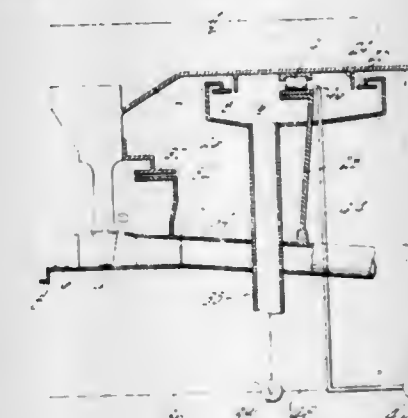


1. In a textile spinning machine a tension reliever comprising a drive wharf mounted for rotation about its own axis and a capstan device itself comprising a hollow body and a capstan element for a yarn, said capstan element being carried by said hollow body, said capstan device being releasably connected with said wharf in a manner such that it is supported for rotation with said wharf to cause rotation of said capstan element but can be completely and readily removed from said wharf for the purpose of threading-up the yarn through said capstan device and into engagement with said capstan element.

4,433,539
MEANS FOR CONTROLLING AIR SCAVENGE PRESSURE IN THE BEARING COMPARTMENT OF GAS TURBINES

James R. Norris, Bolton, and Harrison R. Picard, Granby, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 13, 1982, Ser. No. 377,746
Int. Cl.³ F02C 7/06
U.S. Cl. 60—39.08 5 Claims



1. In a gas turbine having a rotor and a compressor discharge passage for compressor discharge air:
a bearing for the rotor;
a compartment surrounding the bearing;

seals cooperating with the compartment to prevent leakage of oil from said compartment;
means for supplying compressor discharge air from said passage to said seals exteriorly of the compartments;
a vent duct for the compartment;
a restrictive valve in said duct by which to vary the discharge of air from said compartment; and
means responsive to rotor speed for actuating said restrictive valve.

4,433,540

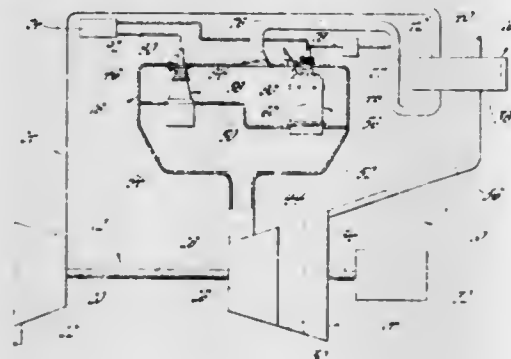
LOW EMISSION COMBUSTOR

Walter Cornelius, Troy; Thomas P. Kosek, East Detroit, and Edward D. Klomp, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1982, Ser. No. 385,811

Int. Cl.³ F02C 7/105, 7/228

U.S. Cl. 60—39,511



1. In a gas turbine engine having a compressor, a turbine, a regenerator, and means for circulating turbine exhaust and compressor discharge through said regenerator whereby said compressor discharge is regeneratively heated to a temperature proportional to turbine exhaust temperature, the combination comprising, an inlet plenum maintained at compressor discharge pressure by said regenerated compressor discharge, a catalytic combustion chamber open to said inlet plenum and having a catalyst therein exposed to flow therethrough, said catalyst being operative at temperatures above a minimum temperature to sustain an ultra lean air/fuel ratio combustion reaction within said catalytic combustion chamber, a diffusion flame combustion chamber open to said inlet plenum, means defining a common exhaust plenum between each of said catalytic combustion and said diffusion flame combustion chambers and said turbine so that parallel flow paths are established whereby products of combustion developed in one of said catalytic combustion and said diffusion flame combustion chambers are diluted and cooled by regenerated compressor discharge flowing through the other, and fuel supply means operative in a first mode during engine start-up to meter fuel only to said diffusion flame combustion chamber and to effect ignition therein until said regenerated compressor discharge achieves a temperature corresponding to a temperature of said catalyst above said minimum temperature and thereafter in a second mode to meter fuel to only said catalytic combustion chamber for catalyst sustained combustion therein.

4,433,541

SECONDARY AIR INTRODUCING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Katsuhisa Amano, Tokyo; Tadashi Kumagai, Tsurugashima; Akio Masaki, Oi; Shinichi Shimada, Kamifukuoka; Takeshi Suzuki, Asaka, and Shoichi Ohtaka, Oi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,831

Claims priority, application Japan, Jun. 24, 1981, 56-92402[U]

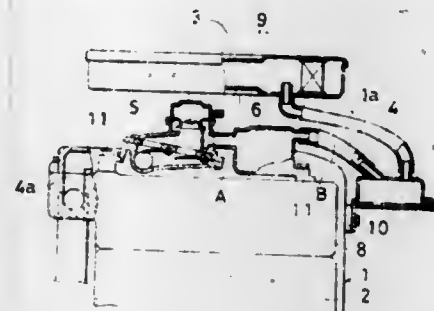
Int. Cl.³ F01N 3/30

U.S. Cl. 60—293

3 Claims

1. A secondary air introducing apparatus for an internal combustion engine, said engine including an engine body, an

intake manifold, and an air cleaner provided on an upstream end portion of the intake manifold, said apparatus comprising a secondary air introducing passage connected between said air cleaner and said exhaust manifold, a check valve in said passage arranged to operate in response to pulsation pressure in



5 Claims

said exhaust manifold to supply clean secondary air thereto, a first expansion chamber interposed in said passage on an upstream side of said check valve, and a second expansion chamber interposed in said passage on an upstream side of said first chamber, at least said check valve and said first chamber being fixedly mounted on said intake manifold.

4,433,542

HEAT-SHIELDING STRUCTURE

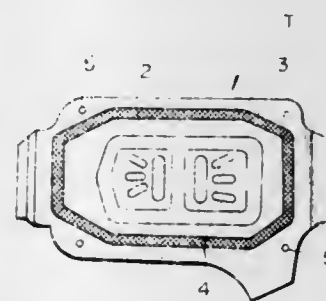
Atsuo Shimura, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 22, 1982, Ser. No. 401,018

Int. Cl.³ B60K 13/04

U.S. Cl. 60—299

4 Claims



1. A heat-shielding plate to be placed on a surface of automotive exhaust means, said heat-shielding plate having a fitting portion to be fixed to a portion of said exhaust means by bolt means, a heat-shielding plate body for covering said portion of said exhaust means, and a mesh portion disposed between said fitting portion and said heat-shielding plate body.

4,433,543

POWER-OPERATED BOOSTERS

Alfred W. Thomas, Koblenz, and Helmut Heibel, Moschheim, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Apr. 23, 1981, Ser. No. 256,778

Claims priority, application United Kingdom, Apr. 23, 1980, 8013427; Jan. 21, 1981, 8101762

Int. Cl.³ B60T 13/00

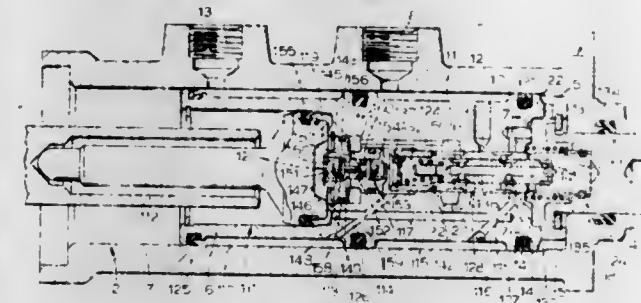
U.S. Cl. 60—547.1

19 Claims

1. A pedal-operated booster for a vehicle braking system, comprising a housing, means defining a bore in said housing, an inlet port for connection to a fluid pressure source, an exhaust port for connection to a reservoir for fluid, an input piston to which an input force is applied, an output member through which an output force acts, a boost piston for augmenting said output force working in said bore, means defining a boost chamber in said housing behind said boost piston, said boost piston being advanced in said bore in response to fluid pressure from said source pressurising said boost chamber, and control

valve means operative to control a supply of fluid from said source to said booster, said control valve means controlling pressurisation of said boost chamber in response to relative movement of said input piston and said boost piston, operation of said booster being in two stages, in a first stage, following small initial movement of said input piston in a brake-applying direction, said control valve means is operative to control said supply of fluid from said source to said booster to cause said output member to move through a limited distance independently of said input piston, and in a second stage, following further movement of said input piston in a brake-applying direction said control valve means is operative to control pressurisation of said boost chamber to cause continued movement of said output member in proportion to said further

of air and for directing said air to a second predetermined location;
means for collecting radiant solar energy in the form of thermal energy and for communicating said thermal energy with the second air passage means, thereby heating said air moving in the second plurality of air passage means;
first power means communicating with the first predetermined location for extracting energy from the first source of air, and
second power means communicating with the second predetermined location for extracting energy from the second source of air and also for extracting further energy from the first source of air.



4,433,545

THERMAL POWER PLANTS AND HEAT EXCHANGERS FOR USE THEREWITH

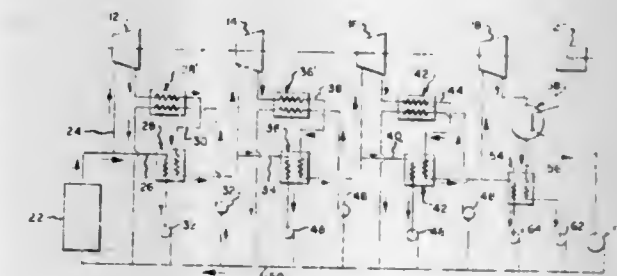
Yan P. Chang, 181 Sherbrooke Ave., Williamsville, N.Y. 14221

Filed Jul. 19, 1982, Ser. No. 399,463

Int. Cl.³ F01K 7/34

U.S. Cl. 60—678

14 Claims



movement of said input piston, and said control valve means comprises relatively movable parts, said relatively movable parts including a control bore within said boost piston and a valve mechanism housed in said control bore, said valve mechanism having at least two valve parts, one of said valve parts being movable relative to said input piston, and having a pressure-responsive face, operation of said control valve means being dependent on pressure in said braking system, whereby in said first stage, said control valve means includes means whereby said braking system is pressurised to a threshold level by movement of said output member through an appropriate distance, and fluid pressure from said source is applied to said pressure-responsive face to move said one valve part relative to said input piston to place said boost chamber in communication with said inlet port.

4,433,544

WIND AND SOLAR POWERED TURBINE

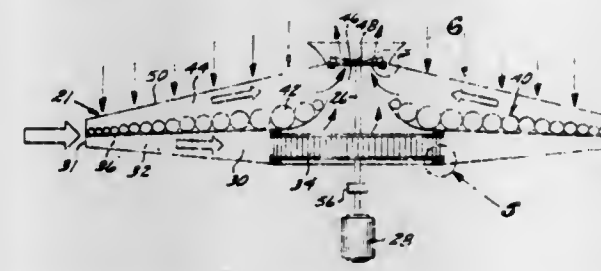
Ivan D. Wells, Hesperia; Jin L. Koh, Loma Linda, and Marvin Holmes, Monrovia, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,602

Int. Cl.³ F03G 7/02, 7/04, F01B 21/04; F01K 25/00

U.S. Cl. 60—641.12

20 Claims



1. A combination wind and solar powered generating station to produce energy comprising:
a first plurality of radial air passage means adapted for receiving ambient wind, for providing a first source of air and for directing said air to a first predetermined location;
a second plurality of radial air passage means also adapted for receiving ambient wind for providing a second source

1. A thermal power plant for reducing exhaust heat and increasing thermal efficiency, comprising:
a source of working fluid;
a plurality of interconnected sequentially arranged fluid motor stages;
a supply conduit for supplying working fluid from said source to the inlet of the first of said stages;
a conduit from the outlet of the first of said stages for supplying working fluid to the second of said stages;
additional conduits from the outlet of the second of said stages and from the outlets of each subsequent downstream stage for separately supplying working fluid to the inlet of the next successive downstream stage;
a plurality of heat exchangers located between said stages for separately extracting heat from the inlet of the immediate upstream stage and separately applying the same to the inlet of the next successive downstream stage; and
each heat exchanger having at least a pair of inlets and at least a pair of outlets with one of said inlets and one of said outlets being in common fluid communication and in fluid communication, respectively, with the outlet of the immediate upstream stage and with the inlet of the next successive downstream stage, with the other of said inlets being in fluid communication with the inlet of the immediate upstream stage.

4,433,546

HEATER UNIT FOR HEATING WATER TO BE SUPPLIED TO A BOILER AND A WATER HEATER

Bernard Andrieux, Boulogne, France, assignor to Societe Anonyme dite: Delas-Weir, Levallois-Perret, France

Filed Feb. 5, 1982, Ser. No. 346,332

Claims priority, application France, Feb. 6, 1981, 81 02382

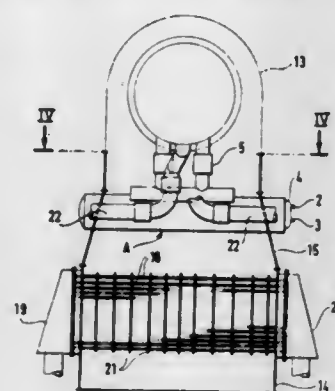
Int. Cl.³ F01K 9/00

U.S. Cl. 60—691

6 Claims

1. A heater unit for heating water which is supplied to a steam-generating boiler of an electric energy production installation, said installation including an alternator driven by a

turbine having at least one low-pressure body connected by a housing to a steam condenser situated under said low-pressure body, said heater unit comprising a nest of tubes located inside said housing and being supplied with water coming from an extraction circuit for the condenser and the outer surface of the tubes being supplied with steam drawn off from the low-pressure body, the nest of tubes being substantially horizontal and perpendicular to the axis of the turbine, the cross-section of said nest of tubes of said heater unit being narrow and elongate with the elongate being disposed substantially vertically, the nest of tubes being enclosed in a casing which both channels



the steam around the nest of tubes and receives the steam bleed-off pipes, and wherein the cross-section of said casing has, in the connection region of the bleed-off steam supply pipes, one of its sides which, going up from the bottom slopes progressively away, going from the corresponding one of the two substantially vertical sides of said narrow elongate cross-section of said nest of tubes and, beyond said region, a cross-section which, while leaving a space for steam to pass, follows the profile of the contour of the cross-section of the nest of tubes, and means for supplying steam from above said casing via said pipes.

4,433,547

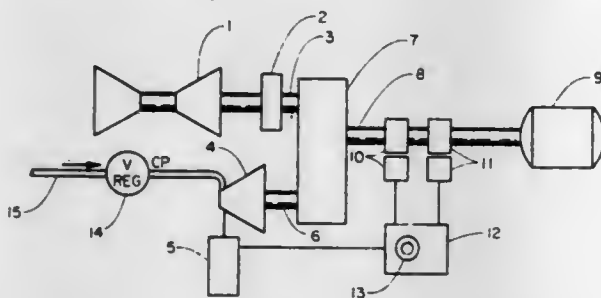
TORQUE LEVELLER

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115
Filed Jul. 30, 1982, Ser. No. 403,923

Int. Cl.³ F01B 21/04

U.S. Cl. 60-711

19 Claims



1. An engine governor machine for governing two or more engines, all of which are coupled to a single common power output shaft, said governor comprising:
torque regulator means for regulating the torque output of at least one of said engines;
means for sensing the torque in said common final power output shaft;
means for sensing the speed of said common final power output shaft;
control means responsive to said torque sensor means and to said speed sensor means and operative upon said torque regulator means so that the torque in said common final output shaft is essentially steady as between successive cycles and is adequate to maintain the speed of said common final output shaft essentially constant.

4,433,548

COMBINATION INTERNAL COMBUSTION AND STEAM ENGINE

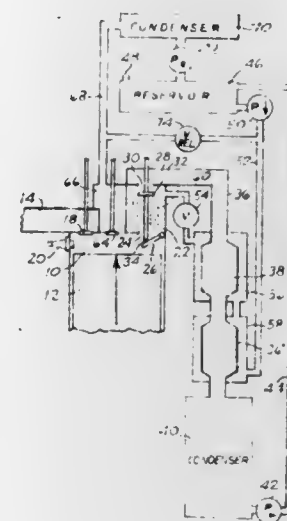
Olof A. Hallstrom, Jr., 1920 Hallstrom Rd., Tillamook, Oreg. 97141

Continuation of Ser. No. 227,967, Jan. 23, 1981, abandoned. This application May 27, 1982, Ser. No. 382,702

Int. Cl.³ F01K 27/00

U.S. Cl. 60-712

11 Claims



1. A combination internal combustion and steam engine, comprising:

- a housing having therein at least one hollow cylinder containing a piston reciprocative therein,
- means for introducing combustible fuel into the cylinder to provide a combustible fuel power stroke for the piston,
- an exhaust passageway for exhausting hot gases of combustion from the cylinder after the combustible fuel power stroke,
- a steam generating chamber in the housing communicating at one location with the cylinder and at another location with the exhaust passageway, whereby hot gases of combustion in the cylinder are caused to pass through and heat the surfaces of the steam generating chamber on their way to the exhaust passageway,
- a source of water communicating with the steam generating chamber for supplying water to said chamber for conversion into steam by transfer of heat to the water from the hot surfaces of the chamber,
- an exhaust valve between the steam generating chamber and exhaust passageway operable to open communication between the steam generating chamber and the exhaust passageway for exhausting hot gases of combustion from the cylinder and to close said communication during generation of steam in the chamber,
- a steam inlet valve between the steam generating chamber and cylinder operable when the exhaust valve is open to open communication between the steam generating chamber and the cylinder for exhausting hot gases of combustion from the cylinder through the chamber to the exhaust passageway, and operable when the exhaust valve is closed to open communication between the steam generating chamber and cylinder for introducing steam from the chamber to the cylinder to provide a steam power stroke for the piston, and
- a valve-controlled steam exhaust passageway communicating with the cylinder independently of the steam generating chamber for exhausting the cylinder of steam after the steam power stroke.

4,433,549

AIR FUEL ENGINE

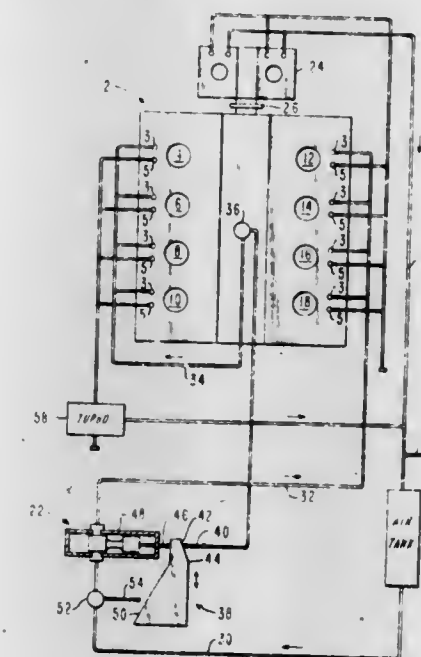
Anthony T. Zappia, 12374 Brouptca Rd., Carmel, Ind. 46030
Division of Ser. No. 151,137, May 19, 1980, Pat. No. 4,380,904.

This application Aug. 11, 1982, Ser. No. 407,269

Int. Cl.³ F01B 29/04

U.S. Cl. 60-712

10 Claims



1. An engine comprising in combination:
a plurality of gas-fired cylinders;
a plurality of compressed-fluid activated cylinders;
a carburetor means;
means for regulating gas supplied to said gasoline-fired cylinders;
means for regulating compressed fluid supplied to said compressed fluid activated cylinders; and
valving means for supplying compressed fluid to said compressed fluid activated cylinders, said valve being activated only after a predetermined quantity of gas is being supplied to said gasoline fired cylinders.

4,433,550

FREE PISTON DISPLACER CONTROL MEANS

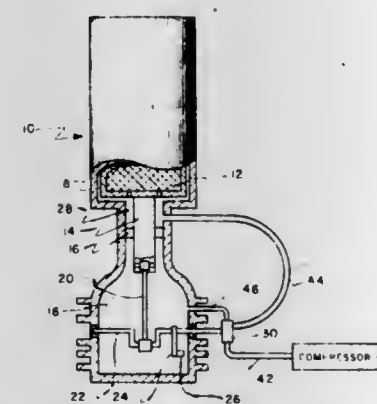
Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 28, 1982, Ser. No. 372,787

Int. Cl.³ F25B 9/00

U.S. Cl. 62-6

5 Claims



1. A free piston displacer control means comprising:
a split cycle cooler enclosed in a housing having a regenerator-displacer in a cold end working fluid volume with a pneumatic piston attached to the displacer and extending through a passageway into an ambient end pneumatic volume of said housing wherein a friction seal between said pneumatic piston and said passageway forms an effective frictional seal

between said working fluid volume and said pneumatic volume in which alternating pressure waves of working fluid are applied to said split cycle cooler through feed line means from a remote compressor to cause piston displacer reciprocal movement within said housing; and
free piston displacer drive means comprised of a rotary crankshaft connected to said pneumatic piston and with at least one energy restoring means thereon comprised of a flywheel having a mass of material thereon used as a braking means to counteract the motion of the reciprocating pneumatic piston at the top dead center and the bottom dead center of the strokes to selectively reciprocate said free piston displacer and wherein said rotary crankshaft drives a directional flow control valve for regulating the pressure waves of said working fluid in said feed line means wherein the combined regulated alternating pressure waves and said energy restoring means provide flat top dead center and flat bottom dead center displacer waveforms for better cooler efficiency.

4,433,551

METHOD AND APPARATUS FOR DERIVING MECHANICAL ENERGY FROM A HEAT SOURCE

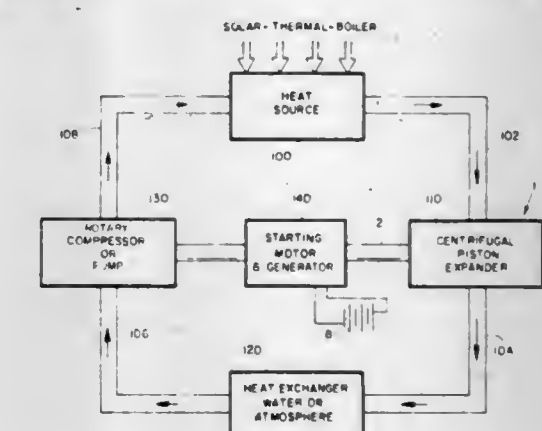
Edwin W. Dibrell, San Antonio, Tex., assignor to Centrifugal Piston Expander, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 436,412, Oct. 25, 1982, Ser. No. 436,852, Oct. 25, 1982, and Ser. No. 451,606, Dec. 20, 1982. This application Jan. 24, 1983, Ser. No. 460,605

Int. Cl.³ F25B 9/00

U.S. Cl. 62-87

9 Claims



1. The method of extracting mechanical energy from a heat source comprising the steps of:

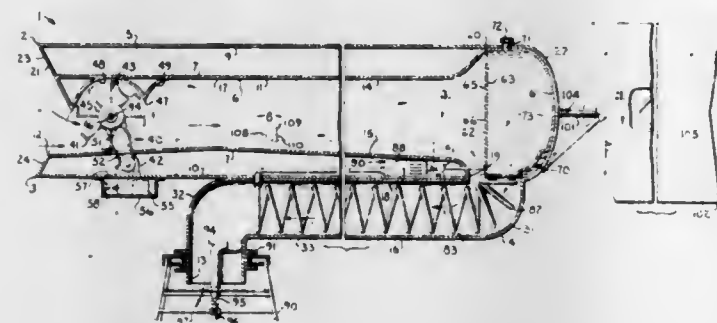
- Circulating a charge of a phase convertible, pressured gas in a closed cycle from the heat source to a centrifugal piston expander having a power output shaft, to a series connected heat exchanger and compressor, and then back to the heat source; said rotary expander having a plurality of cylinders co-rotatably mounted on the power output shaft and respectively containing pistons movable solely by gas pressure from a position remote from the axis of rotation of the cylinders to a position proximate to said axis and movable from said proximate position to said remote position solely by centrifugal force;
- Rotating the power output shaft by a starting motor;
- Introducing a charge of heated gas in the radially outer ends of said cylinders when said pistons are positioned by centrifugal force in said axially remote positions, thereby driving said pistons inwardly to expand the gas and exerting a reaction torque on the cylinders to drive the power output shaft;
- Discharging the expanded gas into said series connected heat exchanger and compressor to cool and pressurize same prior to introduction into said heat source; and
- Driving said compressor by said power output shaft of said rotary expander.

4,433,552

APPARATUS AND METHOD FOR RECOVERING ATMOSPHERIC MOISTURERaymond H. Smith, Rte. 2-5AAA, Larned, Kans. 67550
Filed May 20, 1982, Ser. No. 380,419Int. Cl.³ F25D 17/06

U.S. Cl. 62—93

23 Claims



1. An apparatus for recovering atmospheric moisture, which comprises:

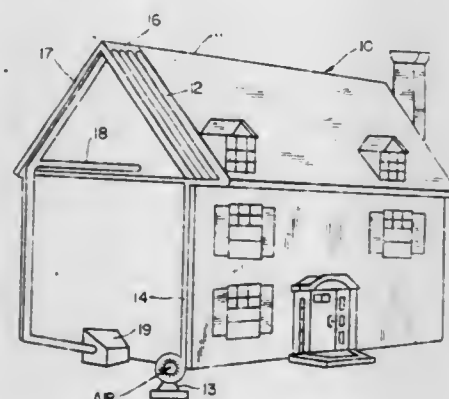
- (a) a housing having an atmospheric duct for receiving wind and passing an airstream therethrough;
- (b) a turbine mounted on said housing in said atmospheric duct;
- (c) an electrical generator driven by said turbine;
- (d) refrigeration means operably connected to said electrical generator and including an evaporator positioned in said atmospheric duct for condensing moisture in said airstream;
- (e) collection means for collecting said condensed moisture; and
- (f) a coolant canister positioned in said atmospheric duct and including an endothermic material therein for cooling and causing said airstream to become more dense.

4,433,553

PROCESS FOR THE REFRIGERATION OF AN ENCLOSUREClayton D. Callihan, Baton Rouge, La., assignor to Louisiana State University Board of Supervisors, Baton Rouge, La.
Division of Ser. No. 232,535, Feb. 9, 1981, Pat. No. 4,380,458.
This application Sep. 29, 1982, Ser. No. 427,705Int. Cl.³ F25D 17/06

U.S. Cl. 62—94

7 Claims



1. A process for the refrigeration of an enclosure, which comprises contacting a stream of air with a desiccant characterized as solid methyl cellulose wherein from about 0.6 to about 1.8 of the available hydroxyl groups of the anhydro-glucose units constituting the basic cellulose entity have been replaced by methyl, or methyl and other hydroxy alkyl or carboxy alkyl groups containing from 2 to about 4 carbon atoms where at least one-half of the substituting groups are methyl, to dehumidify and warm said stream of air, cooling said stream of air by heat exchange with a cooler non-reactive material,

humidifying said cooled stream of air to refrigerate same, and then injecting said refrigerated air into said enclosure.

4,433,554

PROCESS FOR PRODUCING COLD AND/OR HEAT BY USE OF AN ABSORPTION CYCLE WITH CARBON DIOXIDE AS WORKING FLUID

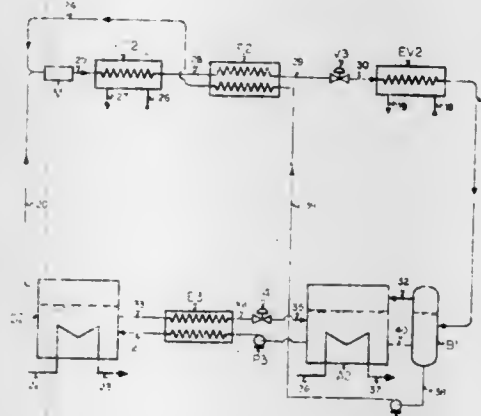
Alexandre Rojey, Garches, and Jacques Cheron, Laffite, both of France, assignors to Institut Francais du Petrole, Rueil-Mal-maison, France

Filed Jul. 16, 1982, Ser. No. 399,158

Int. Cl.³ F25B 15/00

U.S. Cl. 62—112

9 Claims



1. A process for producing cold and/or heat, making use of an absorption cycle, characterized by the steps of:

- (a) subjecting a solution (L1) of carbon dioxide in a liquid phase comprising a solvent for carbon dioxide to heating, under at least partial carbon dioxide desorption conditions, so as to form a gaseous phase (G1) of carbon dioxide and a desorbed liquid phase (S1), and separating the phase (G1) from the phase (S1),
- (b) admixing the gaseous phase (G1) with a liquid phase (S2) comprising a solvent for carbon dioxide and removing the heat evolved, so as to dissolve at least a portion of the gaseous phase (G1) into the solvent liquid phase (S2) and to obtain a solution (L2) of carbon dioxide in the solvent liquid phase (S2),
- (c) decreasing the pressure of solution (L2) and subjecting said solution to heating, under conditions of at least partial desorption of carbon dioxide, so as to form a gaseous phase (G2) of carbon dioxide and a desorbed liquid phase (S3), and separating the phase (G2) from the phase (S3),
- (d) decreasing the pressure of the desorbed liquid phase (S1) substantially to the pressure level of phase (G2) and admixing the phase (S1) with the phase (G2) while removing the evolved heat, so as to obtain a solution (L3) of the phase (G2) in the phase (S1),
- (e) increasing the pressure level of solution (L3) substantially to the pressure level of solution (L1) and then feeding back at least a portion of solution (L3), after recompression, to step (a) so as to reconstitute at least a portion of solution (L1), and
- (f) increasing the pressure level of the desorbed liquid phase (S3) substantially to the pressure level of the gaseous phase (G1) and then feeding back at least a portion of the liquid phase (S3), after recompression, to step (b) so as to reconstitute at least a portion of the liquid phase (S2).

4,433,555

DEFROSTER FOR A REFRIGERATOR

Niels P. Thorsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

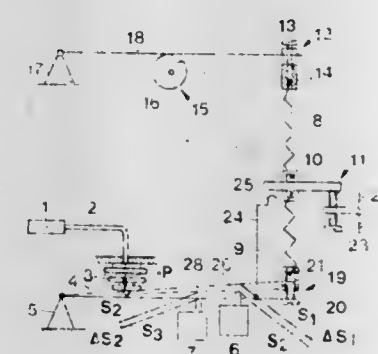
Continuation of Ser. No. 270,094, Jun. 3, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 447,180

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 30227135

Int. Cl.³ F25D 21/06

U.S. Cl. 62—154

2 Claims



1. Refrigeration apparatus comprising, a compressor motor, an evaporator temperature monitoring sensor, defrosting heating means, actuator means responsive to the temperature of said sensor having first and second displacement ranges with first and second limiting positions corresponding to predetermined lower and upper temperatures, first and second switch means sequentially operated by said actuator means at said lower and upper temperatures, said first switch means being in series with said motor and being cyclically operable within said first displacement range, said second switch means operated by said actuator means at said upper limiting position, counter means having a counting input connected to said first switch means and a reset input connected to said second switch means, interrupter switch means in series with said first switch means and said motor, said counter means being operable to open said interrupter switch means to stop said motor and activate said defrosting heating means after the occurrence of a predetermined count on said counting input, and said counter means being resettable upon said reset input thereof being activated by said second switch means to close said interrupter switch means to start said motor and deactivate said defrosting heating means.

4,433,556

PIPE FREEZING DEVICE

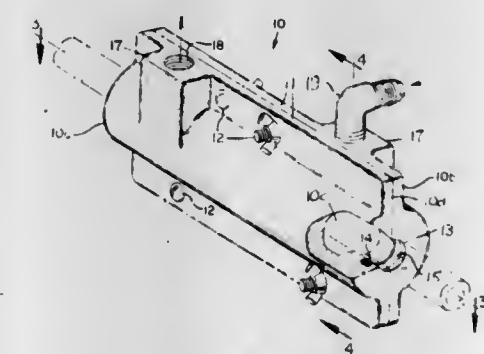
Welby D. Brady, Portland, Oreg., assignor to Temp-Control Corporation, Portland, Oreg.

Filed Oct. 19, 1981, Ser. No. 312,523

Int. Cl.³ F25D 3/00; F16L 55/10

U.S. Cl. 62—293

1 Claim



1. A device for freezing water in a length of pipe comprising a tubular housing having a pair of sections forming a tubular inner compartment of a cross dimension larger than the

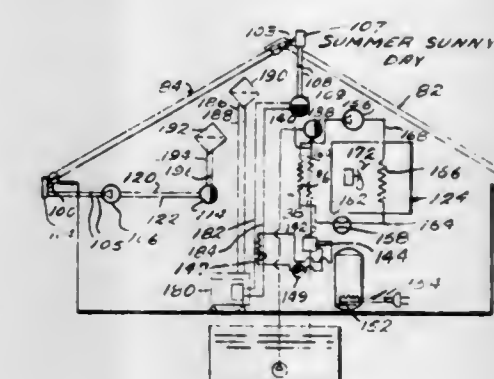
outer diameter of a pipe and at least 10 centimeters in length to form a path for a freezing material, said housing sections being of symmetrical construction, said housing sections having opposite flanges arranged to be abutted together, bolt fastening means in said flanges for releasably securing said housing sections together for installing and removing them laterally on a pipe, end walls on said housing sections having an opening arranged to fit around a pipe on which said housing is mounted, seal means in said openings to provide a sealing engagement with a pipe, an inlet for a freezing material extending into one side of said housing adjacent one end of the latter, and an outlet for gas from the freezing material extending from said housing on the same side of said housing adjacent the other end of the latter providing free circulation of freezing material around the pipe for at least said 10 centimeters to efficiently form an ice plug in the pipe, said inlet being in one section and said outlet being in the other section, said inlet and outlet extending through a portion of said flanges, said bolt fastening means having selected spacing through said flanges providing only one possible clamped position of said symmetrical housing sections so that said inlet and outlet will always be disposed at opposite ends and on the same side.

4,433,557

MULTIPLE FLUID MEDIUM SYSTEMRoy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018
Division of Ser. No. 32,639, Apr. 23, 1979, Pat. No. 4,301,862, which is a continuation-in-part of Ser. No. 6,240, Jan. 24, 1979, Pat. No. 4,316,436, which is a continuation of Ser. No. 774,501, Mar. 4, 1977, abandoned. This application Dec. 4, 1980, Ser. No. 212,751Int. Cl.³ F25B 13/00

U.S. Cl. 62—324.1

5 Claims



1. A multiple fluid medium solar energy system for a building comprising solar panel means for mounting exteriorly of the building having passage means for directing a flow of air there-through and means for enabling (1) environmentally available solar energy to heat the flowing air and (2) the flowing air to give up heat to the environment when solar energy is not available and temperature conditions are favorable therefor, interior room air temperature conditioning means for mounting interiorly of said building including return air inlet means for receiving room air to be temperature conditioned, room air outlet means for discharging a supply of temperature conditioned air and blower means for effecting a flow of room air from said return air inlet means to said room air outlet means, first heat exchanger means including first flow path means for the air flowing from said return air inlet means to said

room air outlet means, second flow path means in heat exchange relation to said first flow path means and third and fourth flow path means in heat exchange relation with one another,

second heat exchanger means having fifth flow path means selectively connected in series with said first flow path means and disconnected therefrom and sixth and seventh flow path means in heat exchange relation to said fifth flow path means,

means defining a temperature storage water circuit including insulated water storage tank means, pump means for pumping water from said storage tank means and water return means for directing water into said storage tank means, and means for directing water from said pump means to said water return means alternatively (1) through said second flow path means or (2) said sixth flow path means,

heat pump means defining a closed refrigerant flow circuit through said third flow path means and said seventh flow path means and including means for alternatively (1) compressing the refrigerant from said third flow path means into said seventh flow path means and expanding the refrigerant from said seventh flow path means into said third flow path means or (2) compressing the refrigerant from said seventh flow path means into said third flow path means and expanding the refrigerant from said third flow path means into said seventh flow path means, and

means defining (1) an environmental air circuit through said solar panel passage means including environmental air inlet means, environmental air outlet means and blower means for causing a flow of air from said environmental air inlet means through said solar panel passage means into said environmental air outlet means and alternatively (2) a closed air circuit through said solar panel passage means, said fourth flow path means and said blower means, said environmental air circuit defining means including hot air clothes dryer means between said solar panel passage means and said environmental air outlet means.

4,433,558

PARALLEL CONTACT DISTILLATIVE FREEZING PROCESS FOR SEPARATING VOLATILE MIXTURES AND APPARATUSES FOR USE THEREIN

Chen-Yen Cheng, and Sing-Wang Cheng, both of 9605 La Playa St., NE, Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 296,130, Aug. 25, 1981, Pat. No. 4,378,984, Ser. No. 181,002, Aug. 22, 1980, abandoned, and Ser. No. 930,312, Aug. 2, 1978, Pat. No. 4,218,893. This application Oct. 1, 1981, Ser. No. 307,507

Int. Cl.³ B01D 9/04

U.S. Cl. 62-537

20 Claims



1. A crystallization separation process for separating a multi-component mixture that is at least partly in a liquid state and has two key volatile components, denoted respectively as A-component, that volatile non-crystallizing component present in the greatest amount, and B-component, the volatile crystallizing component, into a B-enriched portion and a B-lean portion through formation of a B-enriched solid mass,

Wherein the two key components form a binary system whose constant pressure phase diagram taken at a three

phase (B-enriched solid, liquid and vapor) pressure has a two phase (B-enriched solid and vapor) region covering a substantial concentration range above the three phase (B-enriched solid, liquid and vapor) temperature and a two phase (B-enriched solid and liquid) region below the three phase (B-enriched solid, liquid and vapor) temperature, that comprises a first step of forming a first vapor mixture and a first condensed mass that comprises a mother liquor and a solid phase mass enriched in a B-component by concurrently vaporizing the volatile components from the mixture in a first zone under a first temperature and a first pressure that are respectively lower than the triple-point temperature and the triple point pressure of the pure B-component, wherein the improvement comprises providing parallel contact operation by:

(1) conducting the first step in a processing zone that has a first position and second position, introducing feed at the first position and discharging the first condensed mass at the second position;

(2) transferring both the first vapor and the first condensed mass in the direction from the first position toward the second position, allowing the first vapor to interact with the first condensed mass while they are both transferred in the same direction; the pressure gradient from the first position to the second position being maintained by the flow of the first vapor.

13. A distillative freezing system for separating a multi-component mixture that is at least partly in a liquid state and has two key volatile components, denoted respectively as A-component, that volatile non-crystallizing component present in the greatest amount, and B-component, the volatile crystallizing component, into a B-enriched portion and a B-lean portion through formation of a B-enriched solid mass, wherein the two key components form a binary system whose constant pressure phase diagram taken at a three phase (B-enriched solid, liquid and vapor) pressure has a two phase (B-enriched solid and vapor) region covering a substantial concentration range above the three phase (B-enriched solid, liquid and vapor) temperature and a two phase (B-enriched solid and liquid) region below the three phase (B-enriched solid, liquid and vapor) temperature, that comprises means for providing parallel contact operation including, a distillative freezing zone, a condensing zone, a product melting zone, and a pressure isolating feeder connecting the product melting zone to the distillative freezing zone, wherein the distillative freezing zone has a first position and a second position and includes at least one conveying means conveying from the first position to the second position and a means for introducing feed at the first position, so that, as the feed is concurrently vaporized and solidified to form a first vapor and a first condensed mass that includes a mother liquor and a solid phase mass, both the first vapor and the first condensed mass are transferred in the direction from the first position toward the second position, allowing the first vapor to interact with the first condensed mass continually as they are both transferred in the same direction; the first condensed mass being discharged from the distillative freezing zone at the second position and introduced to the product melting zone through the pressure isolating feeder, and the pressure gradient from the first position to the second position being maintained by the flow of the first vapor.

4,433,559

ICE MAKING APPARATUS

Joseph R. Spinner, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Prospect Heights, Ill.

Continuation of Ser. No. 187,133, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 867,892, Jan. 9, 1978, abandoned. This application Jul. 28, 1982, Ser. No. 402,586

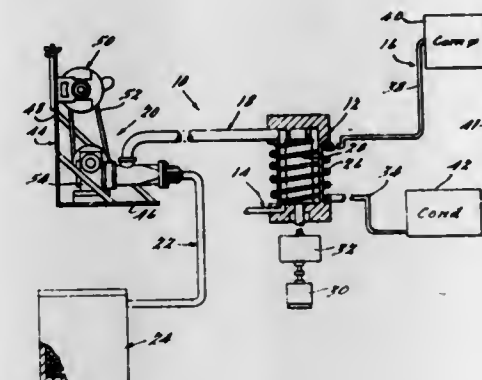
Int. Cl.³ F25C 5/14

U.S. Cl. 62-354

17 Claims

1. In combination in apparatus for producing discrete ice cubes,

a flake ice making mechanism having an outlet portion through which flake ice is supplied, said mechanism including a freezer chamber and a rotatable ice auger, an extruder device having an extruder body defining a circular extruder chamber having a wall having a frusto conical section and an inlet which opens into said wall, ice conduit means for communicating flaked ice from said flake ice outlet to said inlet of said extruder body, an ice extruding auger rotatably disposed interiorly of said chamber having a root and a frusto conical helical ice advancing flight thereon of substantially the same diameter and length as the corresponding chamber section,



the root of said auger and said wall section providing an annular space of progressively decreasing radial extent in which flake ice passing therethrough is dewatered and compressed into a relatively solid ice mass and is forced outwardly through said outlet,

said inlet being arranged at generally right angles to the longitudinal axis of said chamber and having the center line thereof offset laterally from the rotational axis of said auger, and said outlet extending parallel to said rotational axis and positioned at the smaller end of said wall section.

4,433,560

PRESSER FOOT FOR A KNITTING MACHINE

Max W. Betts, Coventry, England, assignor to Courtaulds Limited, London, England

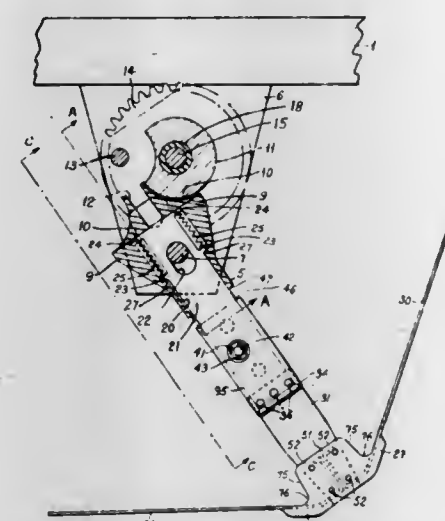
Continuation of Ser. No. 167,206, Jul. 9, 1980. This application Aug. 6, 1982, Ser. No. 406,120

Claims priority, application United Kingdom, Jul. 13, 1979, 7924463

Int. Cl.³ D04B 7/04

U.S. Cl. 66-64

8 Claims



1. In a presser foot device for a flat V-bed knitting machine with independently operable needles, the device comprising a presser foot carriage adapted for movement along the needle beds of the machine in synchronism with needle operation, and a support element extending, when the device is fitted to the machine, down towards the gap between the walls of the needle beds and resiliently mounted in relation to said carriage

for up-and-down movement, the improvement comprising (a) presser means fixedly mounted on said support element, said means having, in operation, leading and trailing ends and being capable of operating over a region extending from in front of the commencement of the rise of the needles for knitting to the area of needle cross-over, (b) a continuous stitch guide surface provided on said means in the neighbourhood of each bed wall and arranged, in the operative position of said presser means, to extend downwardly and rearwardly, and then generally rearwardly, to push down and hold down stitches near said wall, and (c) a resilient presser foot also fixedly mounted on said support element to extend rearwardly from said presser means beneath the needle tent at a height, in the region of the trailing end of said presser means, above said stitch guide surfaces thereof.

4,433,561

GAUGE CHANGING APPARATUS

Reinhardt Vitols, Tollerton; Steven Walkinshaw, Loughborough; John E. Baker, Birstall; Hywel R. Davies, Buntingford, and Adrian M. Woodward, Bulwell, all of England, assignors to Corah Limited, Leicester, England

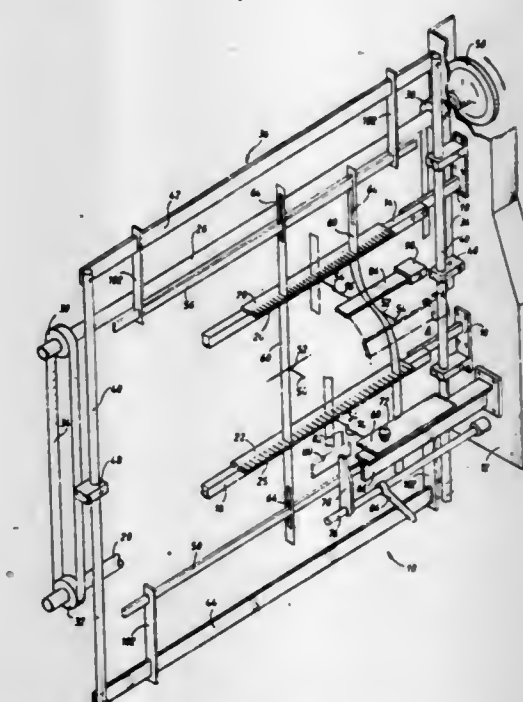
Filed Jul. 31, 1981, Ser. No. 288,942

Claims priority, application United Kingdom, Aug. 2, 1980, 8025309

Int. Cl.³ D04B 9/40

U.S. Cl. 66-148

16 Claims



1. An apparatus for transferring knitted fabric from needles spaced in accordance with a first pattern to needles spaced in accordance with a second pattern, comprising a base; carrier means mounted on said base and movable in a first path on said base; a plurality of substantially parallel elongate points attached to said carrier means so as to be movable both laterally of said path and with said frame means between a first position wherein said points are spaced in accordance with said first pattern and a second position wherein said points are spaced in accordance with said second pattern; and guide means on said carrier means and said base for guiding movement of said points towards and away from one another laterally of said path to alter the spacing of said points as said points are moved along said path by said frame means from one of said first and second positions to the other.

4,433,562

STEERING SHAFT LOCKING DEVICE

Takaoki Tsuchiya, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

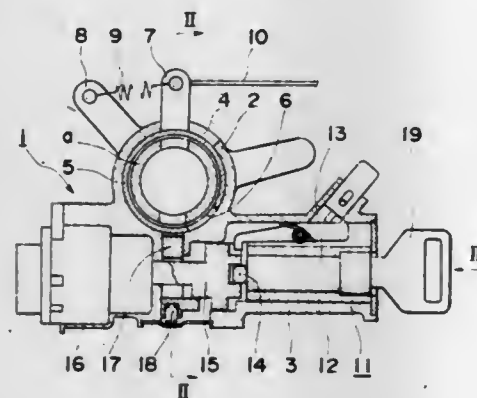
Filed Mar. 10, 1982, Ser. No. 356,645

Claims priority, application Japan, Mar. 12, 1981, 56-34499[U]

Int. Cl.³ B60R 25/02

U.S. Cl. 70—186

4 Claims



1. A steering shaft locking device including a sleeve in which a steering shaft is rotatably accommodated, and a housing so that a lock member may be projectable for its engagement with said steering shaft in response to rotation of a rotary member of a cylinder lock with an axis of said sleeve intersecting with that of said housing, said steering shaft locking device comprising:

a rotary ring formed with a boss portion, which is rotatably provided in said sleeve so as to enclose an outer circumference of said steering shaft at a position of projection of said lock member into and of its retraction from said sleeve;

said boss portion being projected out of said sleeve;

a spring for urging said rotary ring in the direction towards a regular angular position for unlocking said steering shaft;

said boss portion and said spring being mounted on said rotary ring; and

a wire connected, at one end thereof, with said boss portion and connected, at the other end, either with a seat whose top face is caused to selectively move downwards and upwards when a driver takes said seat and leaves said seat, respectively or with a door, etc. arranged to be opened and closed.

4,433,563

LOCK DECODER

Glenn E. Wilson, 24 Spring St., Endicott, N.Y. 13760

Filed Apr. 7, 1982, Ser. No. 366,355

Int. Cl.³ E05B 17/00

U.S. Cl. 70—446

13 Claims

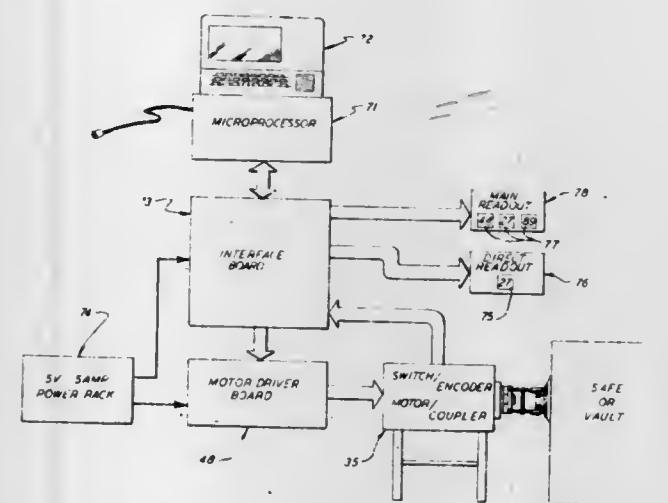
1. Apparatus for determining the opening combination of a lock of the type having a dial containing a number of equally spaced integers thereabout, a plurality of tumblers that are placed in alignment when an opening combination is set into the lock, a driver operatively connected to the tumblers that is able to move through a lock opening sequence when the tumblers are aligned to withdraw the lock bolt, the apparatus including

a rotor means for engaging both the dial and the driver of the lock for turning the dial in either direction so that a combination can be set into the lock and for moving the driver through an opening sequence,

programmable means for controlling the rotor means for moving the dial through an ordered sequence of combinations and to move the driver through the opening sequence after each combination is set into the lock,

sensing means connected to the rotor means for detecting the instantaneous position of the dial and sending a coded

signal to the programmable means indicative of the dial position, readout means connected to the programmable means for sequentially recording each combination that is set into the lock, and



inhibiting means for holding the combination recorded in the readout means when the lock bolt is withdrawn by said driver.

4,433,564

SCROLL MANUFACTURING TOOL

Eiji Fukushima, Fujimi; Seiichi Fukuhara, Gunma, and Masaharu Hiraga, Honjo, all of Japan, assignors to Sanden Corporation, Gunma, Japan

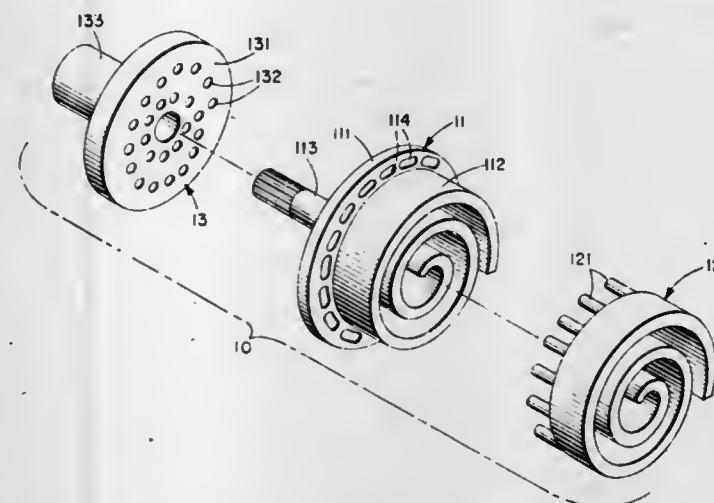
Filed May 20, 1982, Ser. No. 380,141

Claims priority, application Japan, May 20, 1981, 56-76138

Int. Cl.³ B21C 47/00

U.S. Cl. 72—146

4 Claims



1. A manufacturing tool for finishing a preformed scroll for use in a scroll type fluid displacement apparatus comprising:

(a) a working member having an end plate, a first involute element extending from one end surface of said end plate, and a plurality of arc shaped holes along an outer side wall of said first involute element;

(b) a second involute element rotatably coupled to said working member and interfitting with said first involute element in a disposition to define a radial gap between the first and second involute elements, and a plurality of pins projecting axially from an axial end of said second involute element and penetrating through said arc shaped holes, said pins being rotatably movable within said arc shaped holes; and

(c) a rotatable member having a plurality of holes extending in the axial direction, said pins having axial end portions extending into said holes in said rotatable member to

couple said rotatable member to said second involute member and to transmit the rotation of said rotatable member to said second involute element to effect relative rotation between said first and second involute elements to adjust said radial gap between an inner side wall of said first involute element and an outer side wall of said second involute element and thereby position said last-mentioned side walls into contact with said preformed scroll positioned in said radial gap to deform said scroll to finished dimensions.

4,433,565

METHOD OF AND APPARATUS FOR THE MANUFACTURING OF METAL PROFILE MEMBERS, ESPECIALLY STEEL PROFILE MEMBERS

Hans Preller, Cologne, Fed. Rep. of Germany, assignor to Theodor Wuppermann GmbH, Leverkusen, Fed. Rep. of Germany

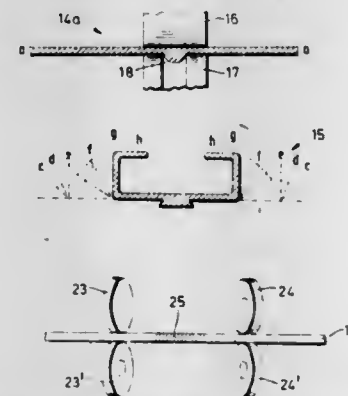
Continuation of Ser. No. 24,834, Mar. 28, 1979, abandoned. This application May 11, 1981, Ser. No. 262,660

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813636

Int. Cl.³ B21D 47/01, 37/16

U.S. Cl. 72—177

24 Claims



1. A method for manufacturing steel profile members of open or closed construction from a continuous steel band of uniform wall thickness, wherein at least one predetermined portion of each of said profile members has a cross-sectional thickness greater than said wall thickness of said band, said method comprising:

(a) providing a source of a continuous steel band of uniform wall thickness over its entire cross-sectional width;

(b) continuously feeding without interruption said steel band along a predetermined path;

(c) continuously heating at least one predetermined portion of the cross-sectional width of said steel band, said at least one heated predetermined portion being intermediate opposite longitudinal edges of said steel band with other portions extending from opposite sides of said heated predetermined portion towards the edges of said steel band;

(d) hot-shaping and deforming at least a cross-sectional part of said heated at least one portion of the cross-sectional width of said steel band at at least one location along said path by engaging only a segment of at least one of said other portions of said band at opposite sides of said heated predetermined portion with a conveying means and conveying said at least one other portion of said band transverse to the feed direction of said band along said path a predetermined distance towards said heated portion to continuously direct flow of steel in said heated portion transverse to the feed direction of said band along said path and increase the volume of steel and reshape and increase the wall thickness of said heated portion while the wall thickness of the remainder of said cross-sectional width of said steel band remains unchanged and at its original wall thickness; and

(e) continuously bending by cold-shaping at least one of said other portions of said cross-sectional width of said steel band at at least one other location along said path while

the thickness of said at least one other portion remains unchanged and at its original thickness.

4,433,566

CLOSE COUPLED REVERSING ROUGHER AND FINISHING TRAIN AND METHOD OF ROLLING

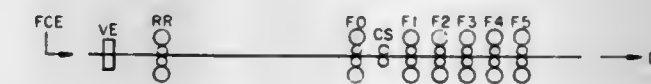
George W. Tippins, and Vladimir B. Ginzburg, both of Pittsburgh, Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed Sep. 29, 1981, Ser. No. 306,892

Int. Cl.³ B21B 1/32, 1/02

U.S. Cl. 72—229

3 Claims



1. A method of rolling slabs to strip thicknesses on the order of 500-1000 PIW on a hot strip mill including at least one roughing reversing mill for forming a transfer bar, an F0 mill stand and a finishing train having a plurality of mill stands for reducing the transfer bar to strip comprising:

A. spacing said reversing mill from the F0 mill stand by a distance greater than the length of the transfer bar on the downstream pass immediately prior to the penultimate pass through said at least one rougher but less than the distance of the final pass through said at least one rougher,

B. reducing said slab to a free transfer bar on a reversing rougher in a first pass directed downstream;

C. further reducing said free transfer bar through said reversing rougher in a second pass directed upstream; and

D. passing said transfer bar directly and uninterruptedly from said reversing rougher through said reversing mill in a third reducing pass reducing said transfer bar to a thickness of on the order of 3 inches and in a downstream direction while speed matching it in close coupled relationship to said F0 stand and said finishing train, without coiling said bar.

4,433,567

METHOD FOR WORKING HOLES

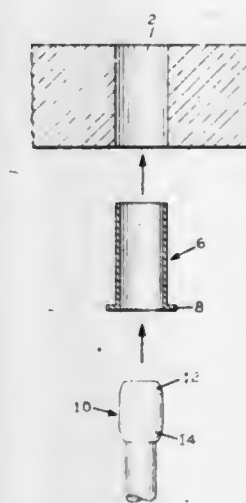
Albert R. Mead, Setauket, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,842

Int. Cl.³ B21D 41/02

U.S. Cl. 72—342

9 Claims



1. A method for forming and working a hole through a workpiece comprising the steps of: forming a hole of fixed diameter through the workpiece; inserting through such hole a circular reusable sleeve of memory metal having a preset memory O.D. slightly less than the diameter of such hole to be worked and having a uniform wall thickness;

inserting into the I.D. of said circular reusable sleeve a mandrel having an O.D. slightly larger than the I.D. of said reusable sleeve, the combined O.D. of said mandrel and wall thickness of said reusable sleeve is expanded equaling the diameter to which said hole is to be worked; forcing said mandrel through said reusable sleeve to expand said reusable sleeve and work said workpiece around said hole;
removing said mandrel from said reusable sleeve;
leaving said expanded reusable sleeve in said hole until said reusable sleeve contracts to said preset memory O.D.; and removing said contracted reusable sleeve from said worked hole.

4,433,568

PRECISION CLOSED-DIE FORGING METHOD

Kazuyoshi Kondo, Hamamatsu, Japan, assignor to Kabushiki Kaisha Wako, Iwata, Japan

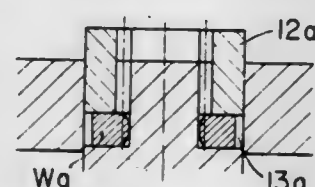
Filed May 12, 1981, Ser. No. 262,957

Claims priority, application Japan, May 21, 1980, 55-66401

Int. Cl.³ B21D 22/00

U.S. Cl. 72—356

15 Claims



1. A closed-die forging method which comprises:
 - (a) placing a workpiece within a set of closed dies;
 - (b) forcing one of the dies against the opposed die to cause lateral flowing or spreading of the workpiece in a first direction, the workpiece being now restrained from spreading in other directions;
 - (c) setting the workpiece free of the restraint from spreading in a second direction, different from the first direction, approximately when the spreading of the workpiece in the first direction slows down; and
 - (d) again forcing one of the dies against the opposed die to cause spreading of the workpiece in both first and second directions, until the workpiece completes spreading in the first direction.

4,433,569

CRIMPING TONGS

Joseph Santinelli, Valmondois, France, assignor to Mars Alcatel, Paris, France

Filed Feb. 5, 1982, Ser. No. 346,230

Claims priority, application France, Feb. 11, 1981, 81 02650

Int. Cl.³ B21D 9/08

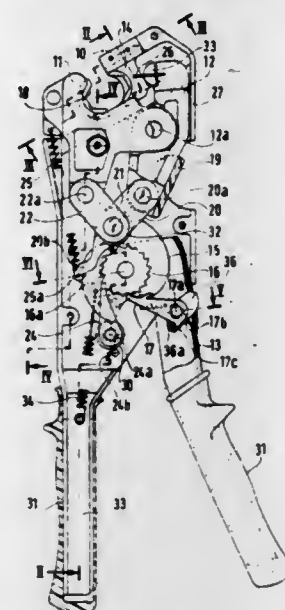
U.S. Cl. 72—410

6 Claims

1. A compression tool for crimping a sleeve onto a cable, the tool having a body with a stationary handle fixed thereto, a movable handle connected to the body for movement toward and away from the stationary handle, a pair of jaws mounted on the body, one jaw being movable toward and away from the other, a pair of hinged links situated at an angle and forming a toggle joint connecting said jaws, the toggle joint being operable to move said one jaw toward the other when the angle between the links is increased, a cam provided with a ratchet, the cam being rotatably mounted on said body for operating said toggle joint, a spring-biased advance catch connected to the movable handle and contacting the ratchet for rotating said cam when the movable handle is moved toward the stationary handle, and a spring-biased retainer catch connected to the body and contacting the ratchet for holding the cam when the movable handle is moved away from the stationary handle, wherein the improvement comprises:

a spring attached to the body and toggle joint and acting on

the toggle joint to increase the angle between the links for urging the one jaw toward the other jaw and a trigger connected to the toggle joint such that pressure on the trigger will decrease the angle between the links



against the force of the spring to move the one jaw away from the other to permit insertion of a sleeve for crimping between the jaws, subsequent release of the trigger allowing the force of the spring to hold the sleeve in crimping position between the jaws.

4,433,570

MECHANICAL SHOCK MACHINE

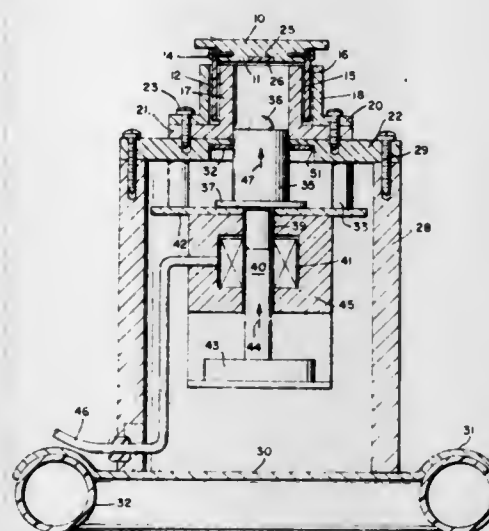
Jack M. Brown, Costa Mesa, and Terrance S. Miller, El Toro, both of Calif., assignors to B & W Engineering Corporation, Costa Mesa, Calif.

Filed Dec. 24, 1981, Ser. No. 334,283

Int. Cl.³ G01N 3/30

U.S. Cl. 73—12

4 Claims



1. A mechanical shock generating machine comprising:
 - (a) a platen for mounting thereon a component to be shock tested;
 - (b) a skirt secured to said platen and depending therefrom;
 - (c) a viscous fluid surrounding said skirt for permitting said platen to move in a vertical direction under the influence of a mechanical impact and for dampening ringing of said platen under the influence of said impact;
 - (d) a shock pad mounted on the lower surface of said platen for receiving said impact, said shock pad consisting of a yieldable material;
 - (e) a metal bullet having a rounded nose;
 - (f) means for accelerating said bullet upwards toward said shock pad and in free flight for causing said bullet nose to

impact said shock pad, thereby to lift said platen against the viscous action of the fluid; and
(g) means for stopping the flight of said bullet after it has delivered the mechanical impact to said shock pad.

4,433,571

NON-CONTACTING GAGE TIP PAD

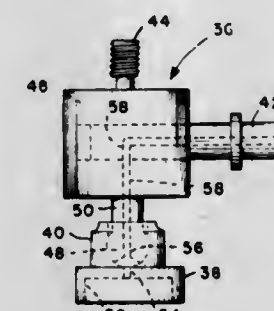
Ralph K. Snow, Jr., Medford Lakes, N.J., assignor to Schaevitz Engineering, Pennsauken, N.J.

Filed Dec. 8, 1980, Ser. No. 213,943

Int. Cl.³ G01B 13/06

U.S. Cl. 73—37.5

5 Claims



1. A non-contacting gage tip for a gage head comprising: a cylindrical air-bearing sensing pad having sharp edges with a recess formed with sharp edges therein and including a porous material, said porous material filling said recess, swivel mounting means for attaching said air-bearing sensing pad to a gage head, and air fitting means mounted on said swivel mounting means for receiving a source of air wherein the sharp edges contribute to the operation of the air-bearing sensing pad in accepting small, imperfect, perturbations in the surface under measurement without spilling or loss of air and an associated change in the air gap.

4,433,572

ENGINE OPERATION RELATED EVENT TIMING SYSTEM

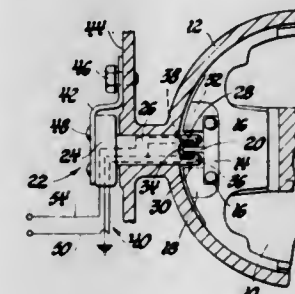
Arthur R. Sundeen, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 9, 1982, Ser. No. 396,814

Int. Cl.³ G01M 15/00

U.S. Cl. 73—116

3 Claims U.S. Cl. 73—155



1. In an internal combustion engine including a piston which cyclically reciprocates between top and bottom dead center positions in synchronism with the speed of the engine, apparatus comprising:

means for sensing passage of the piston through a reference position at time T_1 as the piston moves toward one of the dead center positions and at time T_4 as the piston moves away from the dead center position thereby defining a time interval C between times T_1 and T_4 , means for sensing the engine velocity W_o substantially at time T_1 and W_f substantially at time T_4 ; and means for determining the duration of an interval DC between time T_1 and the time T_{dc} at which the piston passes

through the dead center position by simultaneously solving the motion expressions:

$$\phi_{dc} = (1/2)A_v(DC)^2 + W_o(DC)$$

and

$$2\phi_{dc} = (1/2)A_v(C)^2 + W_o(C)$$

where A_v is the average engine acceleration between times T_1 and T_4 and ϕ_{dc} is the distance between the dead center position and the reference piston position, thereby yielding

$$DC = -\frac{W_o}{A_v} + \left[\left(\frac{W_o}{A_v} \right)^2 + \left(\frac{W_o}{A_v} \right) (C) + \frac{(C)^2}{2} \right]^{1/2}$$

where the quantity

$$\left(\frac{W_o}{A_v} \right)$$

is determinable solely as a function of times T_1 and T_4 , and engine velocities W_o and W_f , substantially according to the expression:

$$\frac{W_o}{A_v} = \frac{W_o(C)}{(W_f - W_o)}$$

whereby the distance ϕ_{dc} may be unknown, and the determination of time interval DC is substantially insensitive to variations in the distance ϕ_{dc} due to part tolerances during engine assembly or during subsequent engine operation.

4,433,573

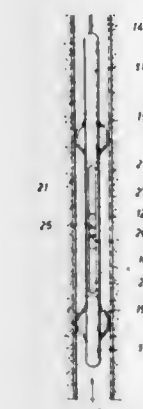
METHOD AND APPARATUS FOR DETERMINING THE FLOW CHARACTERISTICS OF A FLUID IN A WELL

Jean-Pierre Hulin, Saint-Maur, France, assignor to Schlumberger Technical Corporation, Houston, Tex.

Filed Jun. 23, 1982, Ser. No. 391,276

Int. Cl.³ E21B 47/00

9 Claims



1. A method for determining the flowrate of a fluid flowing in a well, comprising the steps of:

lowering in the well a logging sonde comprising at least one vortex street generating obstacle and a transducer responsive to pressure variations due to the generation of vortices, the transducer producing, for each depth in the well, a detection signal the useful component of which has a frequency f and an amplitude A ,

deriving from the detection signal a first signal indicative of frequency f ,
 deriving from the detection signal a second signal indicative of the reduced amplitude A_r , defined as the ratio A/f^2 , and
 forming from the first and second signals an indication of the flowrate in accordance with a first predetermined relationship expressing the frequency f as a function of the flowrate and of the bubble rate of the fluid at the respective depth, the first relationship including a linear dependency of the frequency f upon the flowrate, and a second predetermined relationship expressing the reduced amplitude A_r as a function of the bubble rate and of the flowrate.

4,433,574

FLOWMETER

Anthony P. Williams, and Ralph G. Carter, both of Hampshire, England, assignors to Brandhurst Company Limited, Bucks, England

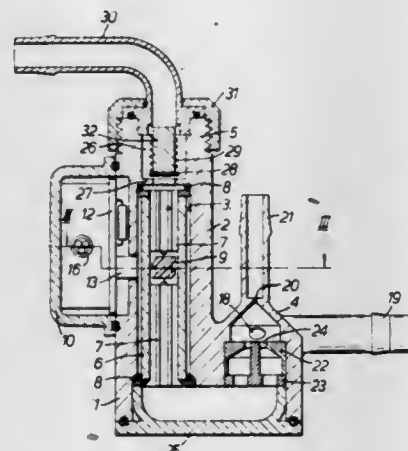
Filed Jun. 30, 1982, Ser. No. 393,607

Claims priority, application United Kingdom, Jul. 6, 1981, 8120846

Int. Cl.³ G01F 15/08

U.S. Cl. 73—200

13 Claims



1. A liquid flow measuring device comprising a transducer having a substantially vertical bore with upper and lower ends, a vane rotor received in said bore and rotatable by the liquid flowing through the bore, and a light source and a photosensitive element mounted at opposite sides of the bore, a light path between said light source and said photosensitive element being interrupted intermittently by the rotor vanes when the rotor is rotated, means defining a separation chamber for separating gas and vapour from the liquid flow, said chamber having an inlet, an outlet for separated gas and vapour positioned above said inlet, and an outlet for liquid positioned below said gas and vapour outlet, and a passageway connecting said liquid outlet to said lower end of the transducer bore whereby the liquid flows upwardly through the transducer after leaving the separation chamber.

4,433,575

FLOW SPLITTING DEVICE FOR FLUID FLOW METER

Ralph E. Rutherford, 16428 Englewood, Los Gatos, Calif. 95030

Filed May 19, 1981, Ser. No. 265,339

Int. Cl.³ G01F 1/46, 5/00

U.S. Cl. 73—202

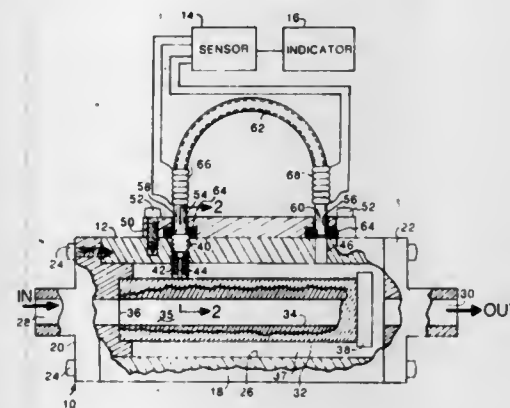
10 Claims

1. In a flow meter of the type having splitter means for splitting off a sample of a fluid flow stream to be monitored, sensing means for sensing the flow of fluid in the split stream, and means for indicating the output of the sensing means, an improved splitter means comprising:

housing means forming an internal cavity having an inlet and an outlet;

porous baffle means disposed within said cavity so as to divide said cavity into a first chamber communicating

with said inlet and a second chamber communicating with said outlet;
 plug means disposed at least partially within said second chamber and engaging a wall of said baffle means, said plug means having an opening therein forming a passageway for fluid passing through a predetermined area of said porous baffle means defined by said opening;



sensing tube means having one end communicating with said plug means to receive fluids passing through said passageway, and an opposite end communicating with said second chamber, whereby fluids flowing into said inlet pass into said first chamber, through said baffle means into said second chamber, and thence out through said outlet with a predetermined portion of the fluid flowing through said baffle means passing through said tube means prior to passing into said second chamber.

4,433,576

MASS AIRFLOW SENSOR

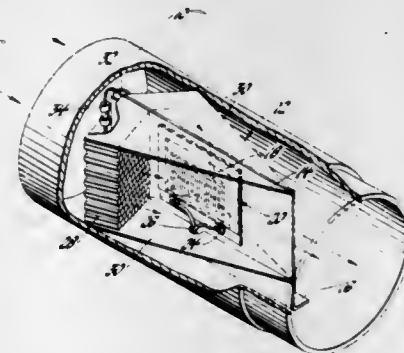
Kelvin Shih, Brighton; Kurt A. Pochert, Hartland, both of Mich., and James M. Dunford, Cupertino, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 20, 1982, Ser. No. 419,937

Int. Cl.³ G01F 1/68

U.S. Cl. 73—204

8 Claims



1. In a flow meter, a mass airflow sensor having a sensor resistor controlled to a determined temperature by a heating current, the improvement comprising:

a film resistor element including a dielectric film, and a metal film sensor resistor supported on the dielectric film, the dielectric film having mounting regions spaced from the metal film, the metal film having a substantial change of resistivity with temperature,

support means for engaging the film resistor element at the said mounting regions with the sensor resistor spaced from the support means for thermal isolation from the support means whereby the resistor element has small thermal mass, and

means for converging the flow of an airstream toward the film resistor element to obtain a consistent airflow at the resistor element and a positive cooling effect by the airstream.

4,433,577

APPARATUS FOR METERING LIQUID FLOW

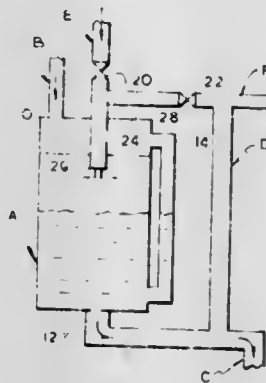
Boris Khurgin, 14 David Marcus St., Haifa, Israel; Shlomo Rosinek, 149 Levi Eshkol St., Kiron, Israel, and Isaac Rinkewich, 53 David Hamelech Blvd., Tel-Aviv, Israel 64237

Filed Jun. 4, 1981, Ser. No. 270,226

Int. Cl.³ G01F 23/00; A01J 7/00

U.S. Cl. 73—290 V

9 Claims



8. For use with a source of liquid, apparatus for measuring the flow of the liquid comprising an inlet tube connected to the source; a enclosed container, said container comprising an inlet port operably connected to said inlet tube such that liquid is supplied to said container; an orifice situated to permit liquid to drain from said container; an outlet tube operably connected to said orifice; means operably connecting said container, at a point above the liquid therein, and said outlet tube, for equalizing the pressure therebetween; and means for sensing the level of liquid in said container and for generating a signal representative of the instantaneous rate of liquid flow through said container in accordance with said sensed level, said sensing means comprising ultrasonic detection means.

4,433,578

WHEEL CLAMPING NUT WITH FREELY ROTATING INSERT

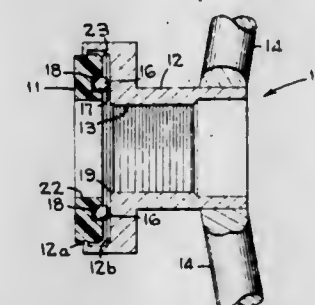
Ronald L. Hill, Conway, Ark., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 100,620, Dec. 5, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,105

Int. Cl.³ G01M 1/06

U.S. Cl. 73—487

3 Claims



1. In a dynamic wheel balancer having a driven threaded wheel-mounting shaft carrying thereon a wheel backing plate for engaging and driving a wheel mounted on said shaft at high speed in a balancing operation a wheel holding member carried by said shaft and a clamping nut having threaded engagement with said shaft to clamp the wheel between the wheel backing plate and said wheel holding member the improvement comprising,

said nut having a threaded bore merging at one end into an outwardly radially extending annular face terminating in an axial projection with an inwardly projecting retaining lip,

an annular resilient insert having a bore for said shaft and having a smaller diameter portion extending axially outwardly from said lip terminating in an outer radial face for

engagement with said wheel holding member on said shaft, and further having a larger diameter portion inwardly of said lip terminating in an inner radial face in spaced relation to said nut radial face, thereby to loosely retain said insert in association with said nut, said inner radial face having an annular raceway formed therein and having a nonresilient backing plate in the bottom of said raceway; and, bearing members in said raceway engaging said nonresilient plate and said nut radial face thereby to space said insert from said nut radial face and permit substantially free rotation of said nut in clamping a wheel on said shaft while said insert frictionally engages said wheel holding member to be substantially stationary with respect thereto, thereby firmly clamping said wheel for balancing while precluding unthreading torque forces on said nut.

4,433,579

PRESSURE INDICATOR

Walter Horn, Idar-Oberstein, Fed. Rep. of Germany, assignor to Fissler Gesellschaft mit beschränkter Haftung, Idar-Oberstein, Fed. Rep. of Germany

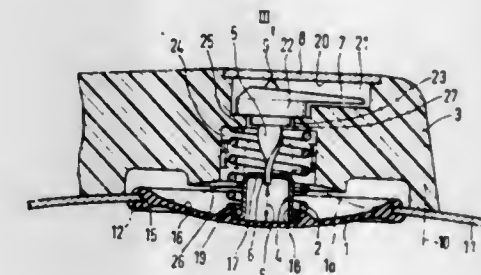
Filed Feb. 24, 1982, Ser. No. 352,037

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1981, 3108017

Int. Cl.³ G01L 7/08

U.S. Cl. 73—715

12 Claims



1. A pressure indicator on a steam pressure cooker or similar container having a container opening, said pressure indicator comprising:

a twist-giver nut provided with a recess;
 a twist spindle extending through said nut recess;
 said twist spindle having a cross section corresponding to said nut recess;

one of said twist-giver nut and twist spindle defining a driving member, and the other one of said twist-giver nut and twist spindle defining a rotating member, said rotating member being rotated by axial movement of said driving member;

a membrane of elastic material being secured adjacent to the container opening with said membrane being stretched to close the container opening;

a casing disposed on the container above the container opening, said casing being provided with an open space for receiving said rotating member, said open space facing downwardly towards an outer surface of said membrane, and said open space extending upwardly to a removable window zone of said casing;

first means for securing said driving member against rotation on said outer surface of said membrane so that said driving member moves together with said membrane to provide said axial movement;

said rotating member being provided with a pointer and a cam at one end thereof spaced from said driving member; second means for rotatively mounting said rotating member in said open space of said casing with said pointer disposed adjacent to said window zone; and

said cam being disposed against an inner surface of said window zone to prevent axial movement of said rotating member;

whereby when internal pressure within the container acts

against said membrane, said membrane is raised together with said driving member to rotate said rotating member together with said pointer proportionally to the internal pressure.

4,433,580

PRESSURE TRANSDUCER

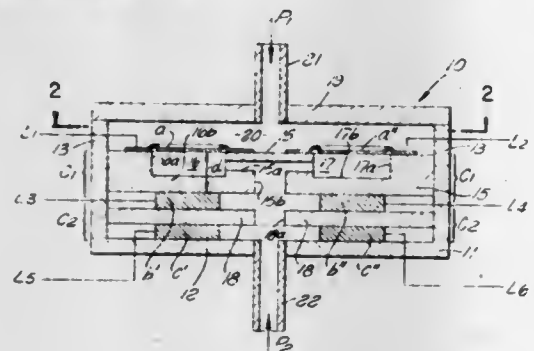
Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,760

Int. Cl.³ G01L 9/12

U.S. Cl. 73—718

12 Claims



1. A capacitive type pressure sensing transducer comprising:
 - (a) a first transducer body element formed of dielectric material and with two like recesses on a first planar surface thereof;
 - (b) a second transducer body element formed of dielectric material and positioned in parallel relationship with said first body element adjacent the second planar face of said first element;
 - (c) a first pair of like electrically conductive flat capacitor plates located between said first and second body elements and aligned with the recesses on the first planar face of said first body element;
 - (d) a second pair of like electrically conductive flat capacitor plates aligned with said first pair of capacitor plates and spaced therefrom by the second transducer body element, said first and second pairs of capacitor plates forming two plate type capacitors of like fixed electrical capacitive value; and
 - (e) a pair of like electrically conductive pressure sensitive elements spanning the recesses on the first planar face of said first body element and sealed at their respective peripheries to said body element to form two like pressure chambers, said pair of pressure sensitive elements and said first pair of capacitor plates with the intervening pressure chambers and dielectric material of said first body element forming two plate type capacitors of like variable electrical capacitive value, the application of an external pressure force to said pressure sensitive elements causing deflection thereof and a change in the spacing distance between said pressure sensitive elements and said capacitor plates thereby varying the electrical capacitive value of said variable value capacitors in direct relationship to the applied pressure force value.

4,433,581

OFFSHORE PLATFORM STRUCTURAL ASSESSMENT SYSTEM

David R. Scott, 44064 N. 28th St., Lancaster, Calif. 93534, and Thomas S. Rhoades, 420 Buckeye Dr., Colorado Springs, Colo. 80919

Division of Ser. No. 265,031, May 18, 1981, which is a continuation-in-part of Ser. No. 86,772, Oct. 22, 1979, Pat. No. 4,287,511. This application Dec. 23, 1981, Ser. No. 333,746

Int. Cl.³ G01M 5/00

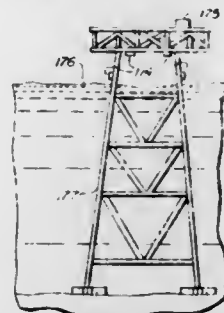
U.S. Cl. 73—786

1 Claim

1. A system for collecting and interpreting data reflecting the effect of at least a selected one of a plurality of forces on an

offshore platform structure, said system comprising, in combination:

- (a) at least one structural moment detector carried by said structure for generating output signals in response to said plurality of forces acting on said structure;



- (b) means for processing said output signals to modify the information content thereof, including rejecting components of said signals which reflect the effects of extraneous forces other than said selected one;
- (c) means for manipulating said processed signals to provide secondary signals responsive to the condition of said structure as a result of the application of said selected force.

4,433,582

DAMPING DEVICE FOR USE WITH ACOUSTIC INFORMATION GENERATION MACHINES

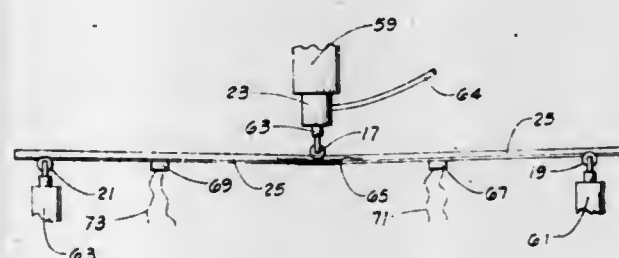
Michael W. Joosten, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 26, 1981, Ser. No. 267,109

Int. Cl.³ B32B 15/04; G01N 3/20, 29/04

U.S. Cl. 73—788

2 Claims



1. An improved testing device for stressing a test member producing acoustic information from the test member relating to changes occurring in the test member due to the stressing of the test member, of the type having at least one stress for contacting the test member and applying a stress thereto, the improvement comprising:

a metal isolation piece comprising a shape-memory alloy (an alloy having the capacity to regain its shape upon heating after deformation) disposed along the stress member so that acoustic emissions transmitted through said stress member must encounter said metal isolation piece, said metal isolation piece having resistance to deformation, wherein said metal isolation piece is disposed for contacting the test member and applying a stress thereto, wherein said metal isolation piece comprises a roller mounted on the end of the stress member, wherein said metal isolation piece consist essentially of an austenitic phase of said shape-memory alloy, and wherein said testing device further includes at least two other stress members disposed for contacting the test member and opposing the stress applied by at least one stress member so that a binding force can be applied to the test member; each of at least two other stress members having mounted on the end thereof a roller for contacting the test member, said roller consisting essentially of an austenitic phase of a shape-memory alloy.

4,433,583

FLOW METER

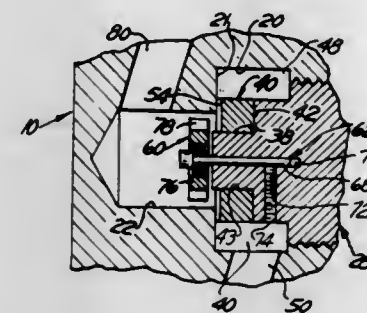
William H. Kirk, 3112 Starr Rd., Royal Oak, Mich. 48073

Filed Jun. 21, 1982, Ser. No. 390,698

Int. Cl.³ G01F 1/06

U.S. Cl. 73—861.33

11 Claims



1. A flow meter comprising a body, a first chamber in said body, a fluid inlet in communication with said first chamber, a second chamber in said body, a fluid outlet in communication with said second chamber, a rotor member disposed in said second chamber, at least one orifice for flowing fluid from said first chamber into said second chamber, said orifice being a channel having an inlet in said first chamber and an outlet in said second chamber, said channel being arranged to provide a swirling motion to the fluid flow from said first chamber to said second chamber, said rotor being disposed such as to be acted upon by the fluid in swirling motion for causing said rotor to rotate at a velocity proportional to the fluid flow rate through said orifice, a toothed wheel formed integrally with said rotor, a light source, means for projecting a light beam from said light source upon the periphery of said toothed wheel whereby said light beam is periodically reflected from said toothed wheel, a photosensitive element and means for transmitting said periodically reflected light beam to said photosensitive element, said photosensitive element providing at its output a signal of a frequency proportional to the velocity of rotation of said toothed wheel.

4,433,584

TOTAL PRESSURE PROBE

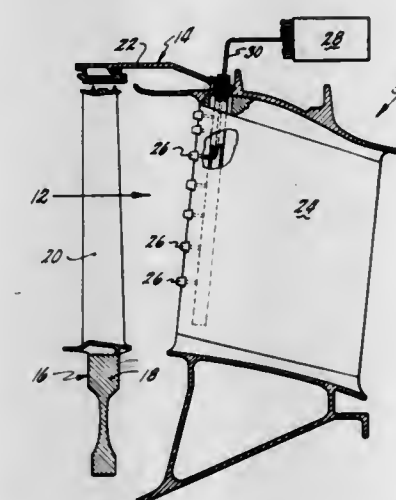
Joseph M. Kokoszka, Enfield, and Rocco M. Tommasini, West Hartford, both of Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,258

Int. Cl.³ G01F 1/46

U.S. Cl. 73—861.66

16 Claims



1. A method of sensing total pressure in a duct bounding a flow path for a working medium fluid utilizing a pressure probe having a flow alignment passageway extending to the interior of the probe and a sensor portion comprising the steps of:

diverting a portion of the flow from the working medium flow path to the pressure probe;
converting the total pressure of the diverted flow in the alignment passageway to a static pressure and to a velocity pressure, wherein the velocity pressure results from flow along streamlines parallel to the alignment passageway;
ducting all the flow from the alignment passageway into a plenum;
impacting substantially all of the diverted portion of the flow against a sensor portion having a wall bounding the plenum to convert substantially all of the velocity pressure of the flow into static pressure in the wall region of the plenum;
sensing the static pressure of the flow in the wall region of the plenum; and
ducting all of the diverted flow away from the plenum.

4,433,585

DEVICE FOR MEASUREMENT OF THE TORSIONAL ANGULAR DEVIATION OF A LOADED ROTATING OR STATIC SHAFT

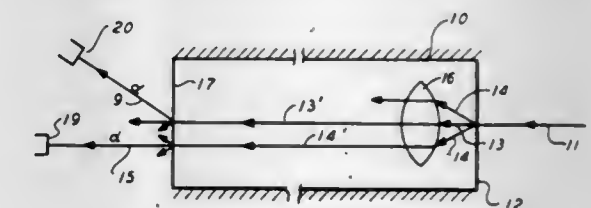
Joshua L. Levine, Ossining, N.Y., assignor to North American Phillips Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 333,072

Int. Cl.³ G01L 3/08

U.S. Cl. 73—862.34

8 Claims



1. Apparatus for measuring torsional angular deviation of a member subject to torsional forces comprising first and second diffraction means mounted in spaced apart relationship to said member, a source of light, light from said source being diffracted into a first plurality of zeroth and higher order beams by said first diffraction means, the zeroth and at least one higher order beam of said first plurality of order beams being further diffracted by said second diffraction means into a second plurality of order beams, the relative positions of at least two of the order beams of said second plurality of order beams providing a measure of the torsional angular deviation of said member.

4,433,586

ELECTRONIC CABLE LOAD GAUGE

Hakan Öhrnell, and Leif Näslund, both of Karlstad, Sweden, assignors to Handelsbolaget Öhrnell-Teknik, Karlstad, Sweden

Filed Mar. 29, 1982, Ser. No. 362,753

Claims priority, application Sweden, Apr. 7, 1981, 8102217

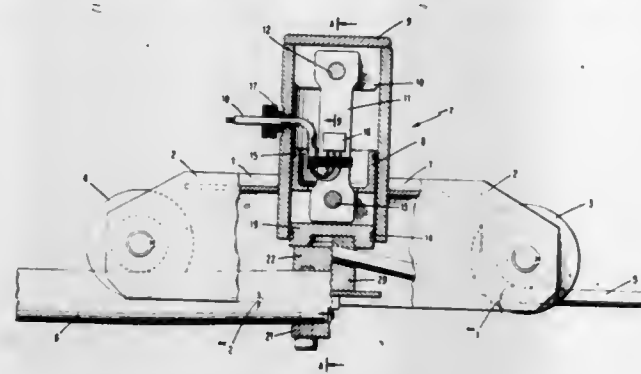
Int. Cl.³ G01L 5/10

U.S. Cl. 73—862.48

1 Claim

1. An electronic cable load gauge for measuring the tension on a stretched cable or wire and generating an electric signal corresponding to the load effecting the cable; which gauge comprises a frame portion with two cable bearing members at opposite ends of the frame for engagement with the tensioned cable at one side thereof and a central portion between said bearing members engaging the opposite side of the cable to form a breaking point in which a force is generated generally transversely to the cable and corresponding to the tension load in the same, characterized in that the force detecting member comprises a measuring bar, which is arranged generally transversely to the cable, one end of which is connected to the frame portion and the other end is connected to a movable

portion which is displaceable generally transversely to the cable, said movable portion being provided with clamping means for attachment of said cable, whereby said measuring bar will be subjected to tensile stress corresponding to the tension load in the cable, the movable portion which is dis-



placeable generally transversely to the cable comprises a piston which is slidable in a cylinder-formed part of the frame portion, and the measuring bar is made in the form of a piston rod which in one end is rotatably attached to the piston and in the other end to the frame portion.

4,433,587

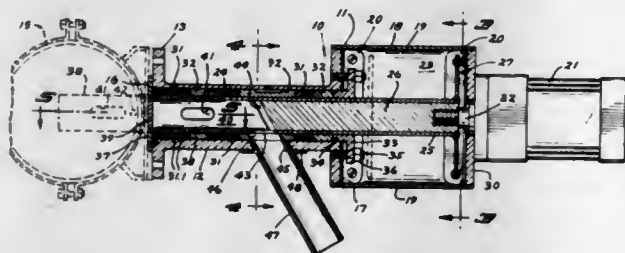
SAMPLER FOR FLOWING PRESSURIZED DRY MATERIAL

Norton W. Risdal, Dallas, Tex., assignor to Gustafson, Inc., Dallas, Tex.

Filed Jan. 17, 1983, Ser. No. 458,478
Int. Cl.³ G01N 1/20

U.S. Cl. 73-863.54

20 Claims



1. Apparatus for collecting samples of dry material flowing under fluid pressure in a flow duct, comprising an elongate housing with front and rear ends and a longitudinally reciprocable sample tube in the housing and extending at a significant oblique angle from horizontal, the sample tube having an upper sample collecting end to project obliquely upwardly and out of the front end of the housing and into the flow duct to which the housing may be connected, and the sample tube being retractable into the housing from the flow duct, drive means on the housing and connected with the sample tube to rapidly project and retract the tube, the housing having a bottom side with an outlet port there-through and spaced from the front end of the housing, and an elongate seal in the housing and embracing the slidable sample tube between the front end of the housing and the outlet port,

the sample tube having a sample receiving port through one side of the sample collecting end thereof to be opened as the sample collecting end projects out of the housing, and to be sealingly closed as the collecting end is retracted into the housing and seal, the sample tube also having a lower side with a discharge port therein, alternately to be opened into the outlet port of the housing when the sample tube is retracted and to be sealed closed by the seal of the housing when the tube is projected, the sample tube being continuously open and unobstructed between the receiving and discharge ports, the elongate seal spanning across both the receiving port and discharge port during retraction of the sample tube to prevent the receiving and

discharge ports from being simultaneously open, and the sample tube having a sealing obstruction transversely thereacross adjacent the discharge port.

4,433,588

CLUTCH MECHANISM

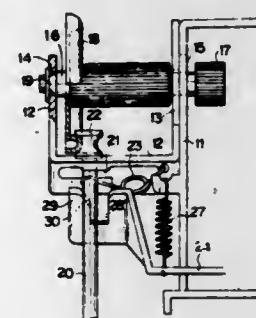
Tadaaki Watanabe, and Yoshio Tanaka, both of Saitama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,922

Claims priority, application Japan, Jul. 28, 1980, 55-105597[U]; Jul. 28, 1980, 55-105596[U]; Aug. 1, 1980, 55-108283[U]; Aug. 4, 1980, 55-109813[U]; Aug. 8, 1980, 55-111722[U]

Int. Cl.³ H03J 5/12; G05G 1/02; F16H 55/18
U.S. Cl. 74-10.33

6 Claims



1. In a pushbutton-operated tuner having a frame, pushbutton means for effecting preset tuning of said tuner, a tuning shaft for effecting manual turning of said tuner and a clutch mechanism for disconnecting said tuning shaft when said pushbutton means is actuated for effecting preset tuning of said tuner, the improvement which comprises: said clutch mechanism comprises a clutch shaft, said clutch shaft having a tapered portion adjacent to the outer end thereof; a substantially U-shaped support member having an inner leg located adjacent to and mounted on said frame, said inner leg of said support member having a substantially V-shaped bearing hole therethrough, said support member having an outer leg located opposite to said inner leg and having an axially tapered circular bearing hole therethrough, said clutch shaft being supported by said support member with said tapered portion of said clutch shaft being fitted in said circular bearing hole and the inner end portion of said clutch shaft extending through said V-shaped bearing hole; a clutch gear mounted on said inner end of said clutch shaft; a clutch disk mounted on said clutch shaft close to the outer end thereof, said tuning shaft being disposed close to said clutch disk and being supported for movement between a first position in which it engages said clutch disk and a second position in which it is disengaged from said clutch disk; a spring member urging said tuning shaft toward said first position; a kick arm member movable in response to operation of said pushbutton means; and a disengaging member responsive to the movement of said kick arm member and coupled to move said tuning shaft to said second position.

4,433,589

GEAR REDUCTION ARRANGEMENT FOR VARIABLE SPEED POWER DRIVEN TOOL

Peter C. Chaconas, Glyndon, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 14, 1981, Ser. No. 292,437

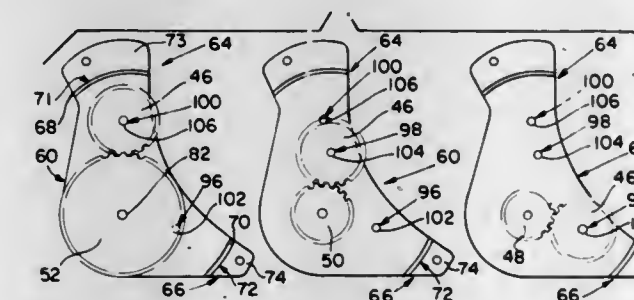
Int. Cl.³ F16H 35/06, 1/12, 55/17
U.S. Cl. 74-325

5 Claims

1. A gear reduction arrangement for a power driven tool, comprising:

- a frame having a main body portion and a frame cover detachably mounted to the main body portion;
- a gear case cover detachably mounted to the main body

- portion intermediate the main body portion and the frame cover;
- a driven gear of a first predetermined diameter rotatably positioned with respect to the frame;
 - pinion gear means rotatably positioned with respect to the frame and comprising one of a plurality of pinion gears and a pinion gear shaft, said pinion gears having different diameters;
 - an idler gear of a second predetermined diameter and having an idler gear mounting shaft;
 - means for supporting the idler gear and the pinion gear means between the frame main body portion and the gear case cover so that the idler gear is placed in meshing interengagement with the driven gear and the pinion gear means, without requiring changing the predetermined



diameters of either the driven gear or the idler gear and without requiring changing the position of either the driven gear or the pinion gear means with respect to the frame, over a range of diameters of said plurality of pinion gears; and

- the means for supporting the idler gear and the pinion gear means including aligned pinion gear mounting apertures in the gear case cover and the frame main body portion for receiving the pinion gear shaft, and further including a plurality of discrete aligned idler gear mounting apertures in the gear case cover and the frame main body portion for receiving the idler gear mounting shaft, each one of the plurality of aligned idler gear mounting apertures corresponding to said one of the plurality of the pinion gears.

4,433,590

ANTI-BACKLASH NUT ASSEMBLY

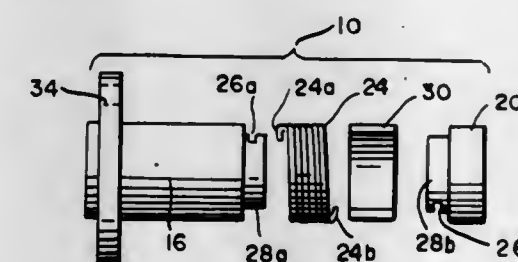
Harold P. Benoit, Leonard J. LaPasso, and Ian McBain, all of Rockford, Ill., assignors to Motion Control, Inc. and Rockford Ball Screw Co., both of Rockford, Ill.

Filed Aug. 28, 1981, Ser. No. 297,222

Int. Cl.³ F16H 55/18

U.S. Cl. 74-409

23 Claims



1. An anti-backlash nut assembly for longitudinal movement along a screw which has an external thread thereon, in response to relative rotational movement between the nut assembly and screw, comprising:

- a first nut part having an internal thread complementary to the external thread of said screw;
- a second nut part also having an internal thread complementary to the external thread of said screw; and
- torsion means interconnected between said first and second nut parts for rotatably biasing said nut parts together to

eliminate backlash and improve the positional accuracy of the nut assembly along the screw.

4,433,591

REMOTE CONTROL SYSTEM

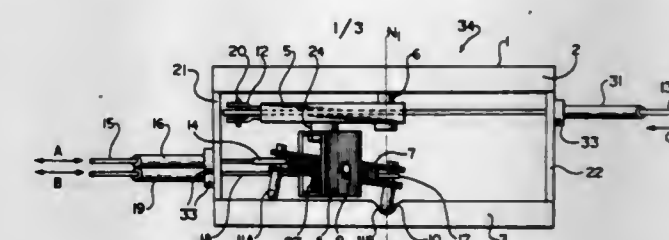
Edward A. Green, Mantua, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 16, 1981, Ser. No. 321,366

Int. Cl.³ G05G 11/00, 5/06

U.S. Cl. 74-479

18 Claims



1. An improved control system for controlling at least one device remotely from either first or second operating station controls of the type comprising:

- a frame;
- a first body member having one end rotatably mounted on the frame and adapted to rotate in a plane with respect to the frame and having means disposed between the rotatable mounting and the opposite end thereof connecting the first body member to the device to be controlled;
- a second body member rotatably mounted on the first body member between a first end and a second end thereof in such a manner that the second body member is able to rotate in a plane that is substantially parallel to the plane of rotation of the first body member, said second body member having means disposed between the first end thereof and the rotatable mounting between the first and second body members connecting the second body member to the first operating station control and having means disposed between the second end thereof and the rotatable mounting between the first and second body members connecting the second body member to the second operating station control; wherein the improvement is characterized by said system having:

means disposed on the frame and on the second body member at the point at which the second body member is connected to the first operating station control for fixedly securing the second body member against movement with respect to the frame when the first operating station control is in a neutral position and the second operating station is moved from a neutral position;

means disposed on the frame and on the second body member between the second end thereof and the rotatable mounting between the first and second body member for moveably securing the second body member to the frame when the second operating station control is in the neutral position and the first operating station control is moved from the neutral position;

said securement means moveably securing the second body member end to the frame in such a manner that movement of the first operating station control from the neutral position is able to disengage the means fixedly securing the second body member against movement with respect to the frame while maintaining the moveable securement between the second body member and the frame so as to prevent control of the device by the second operating station control and cause the second body member to rotate about the point of moveable securement between the second body member and the frame and as a result of such rotation cause the first body member to rotate about the rotatable mounting between the first body member and the frame in a direction opposite to the direction of rotation of the second body member and control the de-

vice by movement of the means connecting the device to the first body member while permitting the point of moveable securement between the frame and the second body member to move with respect to the frame for a distance sufficient to account for the movement of the second body member caused by the rotation of the first body member; and said securement means fixedly securing the second body member against movement with respect to the frame in such a manner that movement of the second operating control from the neutral position is able to disengage the means moveably securing the second body member to the frame while maintaining the fixed securement between the second body member and the frame so as to prevent control of the device by the first operating station control and cause the first and second body members to rotate together in the same direction about the axis of rotation of the rotatable mounting between the first body member and the frame and control the device by movement of the means connecting the device to the first body member.

4,433,592

BALANCER FOR USE IN CENTRIFUGAL ROTARY MACHINE

Hisao Tatsumi, and Michiaki Ito, both of Nagoya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

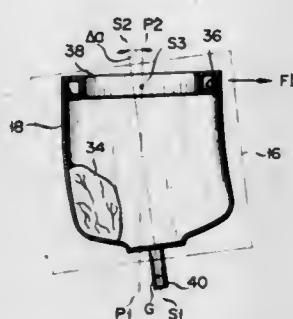
Filed Aug. 24, 1982, Ser. No. 411,005

Claims priority, application Japan, Aug. 26, 1981, 56-133628

Int. Cl.³ F16F 15/22; D06F 37/24

U.S. Cl. 74—573 F

9 Claims



1. A balancer used in a centrifugal rotary machine for reducing the vibration of support means for supporting a cylindrical rotary tub, which occurs due to the existence of an unbalanced load in the rotary tub, comprising:

- an annular casing having an annular receiving chamber therein and attached to the rotary tub coaxially;
- a low-viscous operating liquid circumferentially and flowably sealed in the annular receiving chamber and, as the rotary tub rotates, flowing to the side opposite to that on which the unbalanced load of the rotary tub is located to absorb the unbalance of the rotary tub; and
- a plurality of spherical weights circumferentially movable disposed in the annular receiving chamber and, as the rotary tub rotates, moved to the side opposite to that on which the unbalanced load of the rotary tub is located to absorb the unbalance of the rotary tub, each spherical weight being formed of an elastic material containing powdered lead oxide.

4,433,593
GEAR-TEETH PROTECTOR IN CHANGE-SPEED GEARING UNITS

Kazuhiro Ikemoto; Nobuaki Katayama; Yukio Terakura, all of Toyota, and Kan Sasaki, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

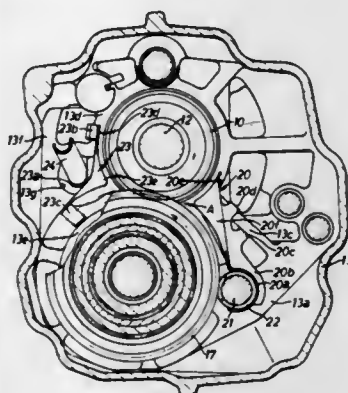
Filed Apr. 15, 1981, Ser. No. 254,266

Claims priority, application Japan, Sep. 20, 1980, 55-117921[U]

Int. Cl.³ F16H 57/02

U.S. Cl. 74—606 R

3 Claims



1. In a transmission having a housing, an upright wall within said housing, upper and lower change-speed gears arranged in a common vertical plane adjacent to and parallel to the plane of said upright wall and having teeth in meshing engagement with each other, and an oil transfer trough fixed to said upright wall and extending in an axial direction in said housing, a gear-teeth protector comprising first and second shroud plates arranged at both sides of said change-speed gears and forming a pair of side walls enclosing the meshing engagement portion between said two change-speed gears to prevent metallic alien particles being trapped between said change-speed gears, said first shroud plate having a pair of lugs resiliently engaged with said upright wall to prevent rotation of said first shroud plate and a collar member secured to its lower end and pressedly mounted within an axial bore in said upright wall to fasten said first shroud plate in place, and said second shroud plate being secured in place to an intermediate portion of said oil transfer trough and having a pair of lugs resiliently engaged with said upright wall to prevent rotation of said second shroud plate.

4,433,594

VARIABLE PULLEY TRANSMISSION

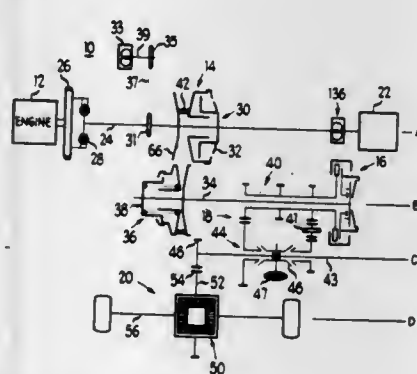
Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 24, 1981, Ser. No. 257,283

Int. Cl.³ F16H 37/00, 37/08

U.S. Cl. 74—689

21 Claims



1. A transmission mechanism comprising an input shaft, a continuously variable drive system having an input pulley, an output pulley, and a belt means extending between said pulleys to transfer power, each of said input and output pulleys having an axially fixed sheave and an axially movable sheave, means

connecting said fixed sheave of the input pulley to said input shaft, a second shaft, means connecting said fixed sheave of the output pulley to said second shaft, a slippable, fluid-actuated, fluid cooled, starting clutch mounted on said second shaft, a sleeve concentric with, and rotatable with respect to, said second shaft, said sleeve being connected to said clutch, a third shaft, means for providing a driving connection between said second and third shafts including a forward-reverse gear selection means having a forward driving gear and a reverse driving gear connected to said sleeve, and final drive means drivingly connected to said third shaft, said starting clutch, when engaged, connecting the second shaft to said forward-reverse gear selection means, whereby said belt can continuously rotate said pulleys.

4,433,595

PRECISION ROTOR INDEXING DEVICE

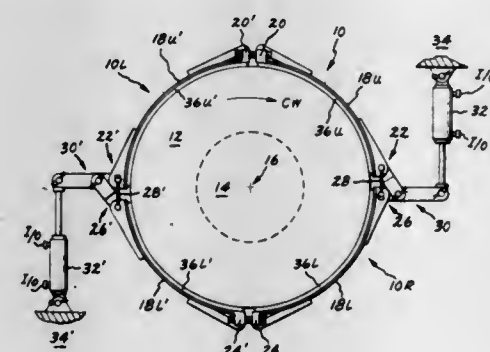
Hugh E. Rosa, Schenectady, and Allen A. Slaterpryce, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,030

Int. Cl.³ B23Q 17/00

U.S. Cl. 74—813 L

9 Claims



1. Apparatus for indexing a rotor member of the type having a cylindrical surface, comprising:

- a metallic circular band fittable to encircle said cylindrical surface;
- first and second discontinuities spaced 180 degrees apart in said circular band;
- first and second attachment points at extremities of said circular band at said first discontinuity;
- third and fourth attachment points at extremities of said circular band at said second discontinuity;
- a first self-locking compound linkage assembly joining said first and second attachment points;
- a second self-locking compound linkage assembly joining said third and fourth attachment points;
- said first self-locking compound linkage assembly including first means for locking said circular band to said rotor member in response to a first force applied in a first tangential direction to said first self-locking compound linkage assembly and for releasing said circular band in response to a second force applied thereto in a second tangential direction;
- said second self-locking compound linkage assembly including second means for locking said circular band to said rotor member in response to said first force applied in said first tangential direction to said second self-locking compound linkage assembly and for releasing said circular band in response to said second force applied thereto in said second tangential direction;
- a first linear actuator effective to apply a selected one of said first and second forces to said first self-locking compound linkage assembly;
- a second linear actuator effective to apply a same one of said first and second forces to said second self-locking compound linkage assembly whereby said cylindrical surface receives substantially equal tangential forces spaced 180 degrees apart for imparting pure rotating moment to said rotor member; each said self-locking compound linkage

4,433,596

WABBLER PLATE ENGINE MECHANISMS

Joseph Scalzo, 26, Florence Ave., Kew, Melbourne, Victoria 3101 Australia

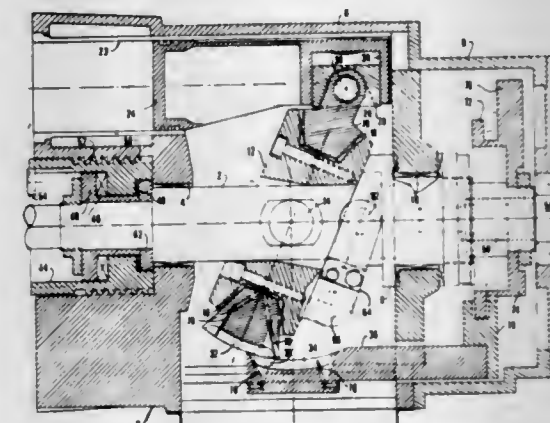
Filed Mar. 13, 1981, Ser. No. 243,411

Claims priority, application United Kingdom, Mar. 11, 1980, 8008264

Int. Cl.³ F16H 35/08, 1/28, 23/00; F01B 3/00

U.S. Cl. 74—839

13 Claims



1. A wabblor plate engine mechanism comprising a crankcase having a crankshaft rotatable therein, the crankshaft being slidably coupled to an output shaft; a wabblor carrier obliquely mounted on the crankshaft and coupled by a flexible linkage to a connection fixed axially in relation to the crankcase, the linkage causing alteration of the angle between the crankshaft axis and the wabblor carrier, and thereby the stroke of the mechanism as the crankshaft is shifted relative to the output shaft; and a wabblor plate rotatably mounted on the carrier; a plurality of cylinders arranged around the crankshaft with pistons reciprocally moveable therein along axes substantially parallel to the rotational axis of the crankshaft; the wabblor plate having arms extending radially therefrom to bearings coupling each arm to a piston, each bearing permitting lateral movement of the respective arm relative to the axis of the piston; a stabilizer mechanism operating between the wabblor plate and the crankcase comprising ball races formed in juxtaposed curved surfaces of the wabblor plate and a ball race carrier on the crankcase, and a ball confined at the intersection of the ball races; and means comprising a screw threaded member mating with a corresponding thread in the crankcase around the crankshaft axis and coupled to the crankshaft and operable to shift the crankshaft axially and thereby the rotational axis of the wabblor plate, the crankshaft being connected to the ball race carrier on the crankcase such that the center of the carrier is always perpendicularly aligned with the rotational axis of the wabblor plate, the effective lengths of the ball races of the stabilizer being variable to accommodate such alteration of the angle between the crankshaft axis and the wabblor carrier.

4,433,597

COMBINED BOTTLE CAP OPENER

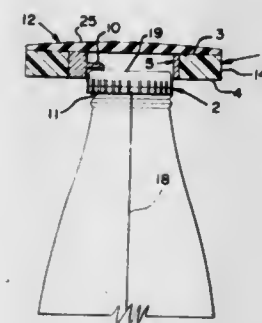
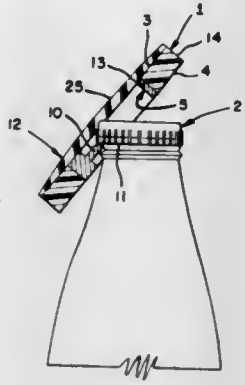
David A. Rowland, P.O. Box 2823, So. San Francisco, Calif. 94080

Filed Jan. 15, 1982, Ser. No. 339,766

Int. Cl.³ B67B 7/44, 7/16, 7/18

U.S. Cl. 81-3.1 R

10 Claims



1. A palm of the hand operable bottle cap removing device for removing standard crown bottle caps which have a top wall and downwardly extending sidewalls tapering outwardly from a bottle which is formed with an annular outwardly extending neck ring comprising:

- a rigid base member dimensioned to surround said tapered bottle cap and having top and bottom walls;
- an opening generally formed in the center of said base having sidewalls with at least three circumferentially spaced points on said sidewall dimensioned to receive the top portion of said tapered cap therethrough and adapted for frictional registration with the outer tapered sidewalls of said cap for twisting off said cap upon rotation of said base member;
- a tang member protruding axially inwardly from a wall of said opening and inset in from said bottom wall and adapted for engagement with the bottom edge of said bottle cap for pry-off removal of said cap; while said sidewalls of said opening in said device engage said outwardly tapering cap sidewalls which provide the fulcrum for said device; and
- a top member connected to said top wall of said base member covering said opening and said top wall of said base member providing a relatively large uninterrupted surface for use in carrying a logo or commercial message.

4,433,598

RING JOINT MACHINING TOOL

Jack T. Murray, San Jose, Calif., assignor to United Centrifugal Pumps, San Jose, Calif.

Filed Mar. 15, 1982, Ser. No. 357,987

Int. Cl.³ B23B 5/16

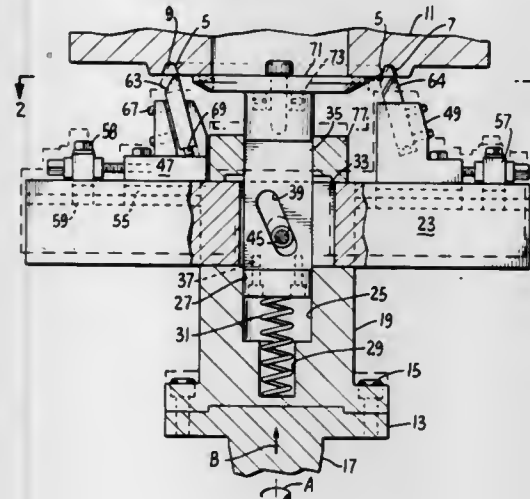
U.S. Cl. 82-2 E

6 Claims

1. A ring joint machining tool for machining the sides of a ring joint in a fixed workpiece comprising in combination:

- a body member mounted for rotation at right angles to a workpiece,

- a tool block mounted in sliding relationship in said tool block at a right angle to the axis of rotation,
- a pair of tool holders on said tool block one mounted on each side of said body member, each holder having a cutting tool therein,
- a cam body having an angling slot mounted for sliding axial movement in said body member,
- a cam follower mounted on said tool block and extending into the slot of the cam body,



- a stop plate mounted between said tool holders attached to said cam body,
- means for biasing said cam body toward a workpiece,
- means for rotating said body member and moving said body member toward a workpiece whereby,
- said stop plate engages said workpiece moving said stop plate relative to said body member as said body member moves toward the workpiece, pushing on said cam body causing said tool block to move in a radial direction.

4,433,599

APPARATUS FOR FORMING AND STACKING SECTIONS SEVERED FROM A WEB OF TUBULAR FILM

Friedhelm Mundus, and Fritz Achelpohl, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

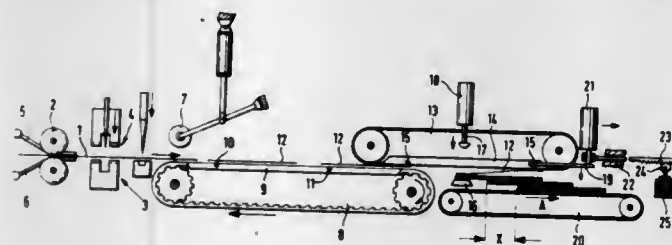
Filed Oct. 21, 1981, Ser. No. 313,624

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980; 3040021

U.S. Cl. 83-87

Int. Cl.³ B31B 1/98

4 Claims



1. Apparatus for forming stacks from sections severed from a web of tubular film or a web of material or weld-separated bag or sack workpieces, comprising transverse means for severing sections from the intermittently advanced web of material and means for clamping each severed section, a suction belt conveyor which receives the severed sections and said belts are provided with suction holes at a spacing larger than the length of the sections, and a pressure roller which can be moved towards and raised off the receiving end of the suction belt conveyor in sequence with the release of the clamping means and the pressing-on motion is so synchronised with the passage of the suction holes that the trailing portion of each section is suction-attracted by the suction holes, characterised in that the suction belt conveyor which conveys with its upper

run has its end portion partially covered by a second suction belt conveyor which takes over the sections and conveys same with its lower run and the belts are likewise provided with suction holes at a spacing corresponding to the spacing of the suction holes of the first suction belt conveyor for suction-attracting the leading portions of the sections supplied by the first suction belt conveyor, and an intermittently driven stacking belt conveyor is provided under the second suction belt conveyor, on which the sections are deposited by means for withdrawing same from the second belt conveyor.

4,433,600

WORKPIECE LOCATING DEVICE FOR A CORNER SHEAR MACHINE

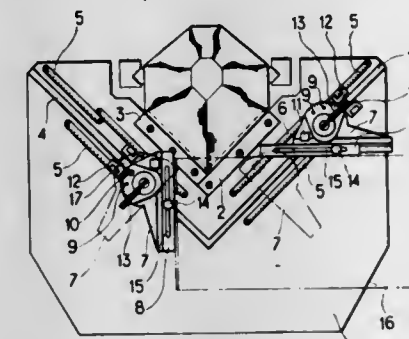
Chihiro Ikeda, Tatsukuchi, Japan, assignor to Takeda Machinery Works Company, Ltd., Ishikawa, Japan

Filed Jun. 7, 1982, Ser. No. 386,079

Int. Cl.³ B26D 7/01

U.S. Cl. 83-468

6 Claims



1. A workpiece locating device for a corner shear machine by which a V-shaped notch is sheared in a predetermined position at a corner or on one side of a workpiece in the form of a square or rectangular sheet material, wherein the device comprises a pair of grooves formed in parallel to the cutting edges of the dies fixedly secured onto a table and extending at a right angle relative to one another, said grooves extending symmetrically relative to the dies, a pair of corner shearing scales fixedly mounted on the table in the vicinity of the grooves and in parallel to the latter, said corner shearing scales including a number of calibrated lines extending at a right angle relative to the cutting edges of the dies and being arranged symmetrically relative to the dies, pairs of side shearing scales fixedly mounted on the table in the vicinity of the grooves and in parallel to the latter, said side shearing scales including a number of calibrated lines extending at a right angle relative to the cutting edges of the dies and being arranged symmetrically relative to the dies, and a pair of rotary stoppers mounted slidably along the grooves.

4,433,601

ORCHESTRAL ACCOMPANIMENT TECHNIQUES

George R. Hall, Sherman Oaks; Robert J. Hall, Chatsworth, and Jack C. Cookerly, Saugus, all of Calif., assignors to Norlin Industries, Inc., White Plains, N.Y.

Continuation of Ser. No. 3,584, Jan. 15, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,161

Int. Cl.³ G10F 1/00

U.S. Cl. 84-1.03

52 Claims

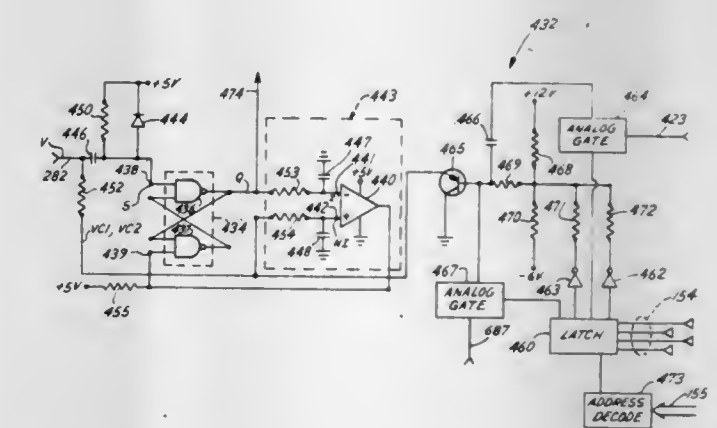
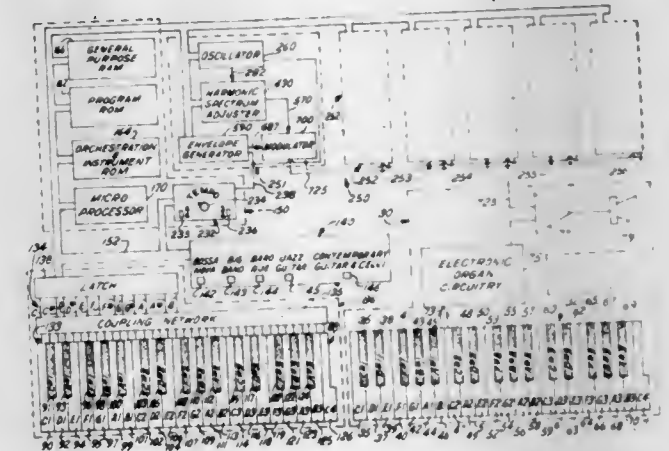
1. Electronic musical apparatus for enabling a performer to control the production of at least first and second musical accompaniments including notes having an instrumentation pattern, said apparatus comprising in combination:

- memory means for storing a first plurality of music signals defining at least in part the first musical accompaniment and a second plurality of music signals defining at least in part the second musical accompaniment;
- selection means operative during the performance for generating a first selection signal in response to selection of the first musical accompaniment by the performer and for

generating a second selection signal in response to selection of the second musical accompaniment by the performer;

harmony selection means for enabling the performer to select at least one harmony from a plurality of different harmonies;

processing means responsive to the generating of the first selection signal and one harmony for generating a first set of parameter signals based at least in part on the first plurality of music signals, said first set of said parameter signals defining a first segment of music including a plurality of pitched accompaniment notes arranged in the one



harmony and having a first instrumentation pattern and for modifying the first set of parameter signals during the performance in response to the generating of the second selection signal and one harmony in order to generate a second set of parameter signals based at least in part on the second plurality of music signals, said second set of parameter signals defining a second segment of music having a second instrumentation pattern different from the first instrumentation pattern; and

output means for converting the parameter signals to sound, whereby a performer of limited skill or musical knowledge can play a musically-variable accompaniment to a melody written in any one of a variety of musical keys.

4,433,602

KEYBOARD MUSICAL INSTRUMENT

Paul de Vries, 38 W. 10th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 95,558, Nov. 19, 1979, Pat. No. 4,314,494. This application Feb. 5, 1982, Ser. No. 346,026

The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.

Int. Cl.³ G10H 3/00

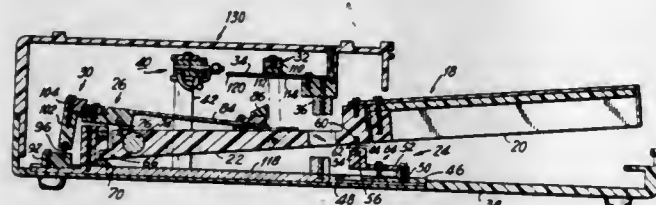
U.S. Cl. 84-1.06

10 Claims

1. A keyboard musical instrument comprising:

- supporting means;
- a plurality of sound producing elements, each attached to the supporting structure;

a plurality of actions, each being associated with an element; each action including
 a key having a head and a tail,
 a hammer assembly including a hammer mounted on the key tail,
 an escapement,
 and flexible and resilient key hinge means for connecting the key to the supporting structure;



said hammer assembly connected to the tail of the key by hinge and biasing means and when at rest in contact with the escapement and initially restrained thereby, whereby when the key head is depressed the key tail rotates about the key hinge causing the hammer assembly to overcome the resistance of the escapement so that the hammer strikes the element at a specific point causing it to vibrate and produce sound.

4,433,603

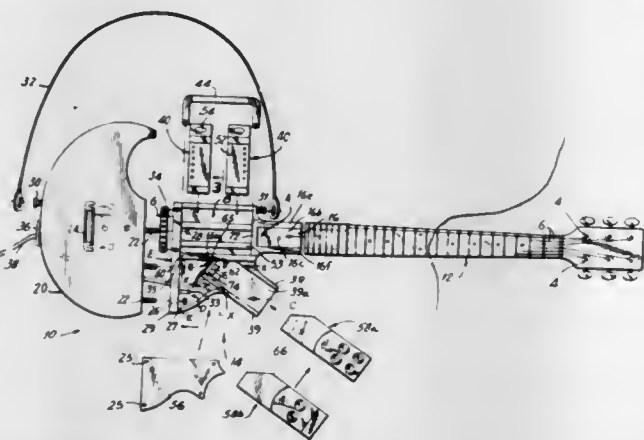
COMPONENT MUSICAL INSTRUMENT

Roger Siminoff, 112 Privada Luisita, Los Gatos, Calif. 95030
 Continuation of Ser. No. 146,682, May 5, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,449

Int. Cl.³ G10H 3/00

U.S. Cl. 84—1.16

12 Claims



1. A stringed musical instrument definable by the musician by assembly of tone producing playing strings and at least one each of the following types of discrete, interchangeable components, without need for hand tools to accomplish said assembly, said types comprising:

a. elongated neck section means for mounting at one end thereof a plurality of tuning means for tensioning each of said plurality of playing strings, said neck section means having first neck attachment means for enabling demountable attachment at another end thereof to main center section means, and defining an elongated fingerboard playing region between said ends thereof;

b. end body section means for demountably attaching said strings at ends thereof opposite said tuning means at a common string mounting and demounting location and having first end body attachment means for enabling demountable attachment thereof to said main center section means;

c. said main center section means comprising an elongated central body portion disposable between said elongated neck section means and said end body section means and defining second neck attachment means for demountably engaging said first neck attachment means at a first end region thereof and defining second end body attachment means for demountably engaging said first end body attachment means at a second end region thereof, said body

portion defining a recessed longitudinal region lying between said first and second end regions thereof and directly below said strings, said region extending to and along an edge of said body portion between said first and second end regions, said body portion providing contact means in said recessed longitudinal region for attachment and electrical connection with at least one plug-in inductive pickup module means, said body portion further defining a chamber at an edge location generally opposite to said recessed region, for receiving electrical control module means, said body portion providing electrical connection means with said control module means when in said chamber, said connection means including circuit paths to said electrical contact means;

d. at least one plug-in inductive pickup module means for plug-in attachment to and removal from said body portion and having electrical contacts for engaging said electrical contact means and having inductive pickup transducer means aligned adjacently below said strings when said pickup module means is attached to said body portion, and
 e. at least one plug-in electrical control module means for attachment to said body portion in said chamber and for thereby connecting to a said attached pickup module means, said control module means for controlling electrical signals generated by said pickup module means, whereby said pickup module means may readily be removed and replaced by the musician independently of removing and replacing said control module and without demounting of said strings.

4,433,604

FREQUENCY DOMAIN DIGITAL ENCODING TECHNIQUE FOR MUSICAL SIGNALS

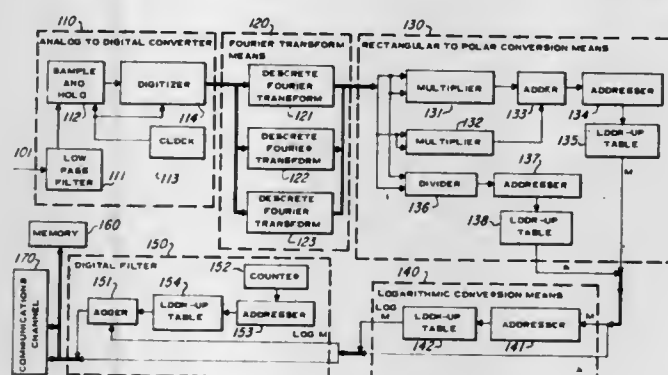
Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 22, 1981, Ser. No. 304,470

Int. Cl.³ G10H 1/02

U.S. Cl. 84—1.19

40 Claims



1. An apparatus for communicating musical signals comprising:

analog to digital conversion means for receiving an analog signal representing a musical signal and converting the analog signal into a corresponding plurality of first digital data words, each of the first digital data words representing the amplitude of the audio signal at a corresponding one of a plurality of sampling intervals;

Fourier transform means connected to the analog to digital conversion means for converting successive selected sets of successive first digital data words into corresponding sets of a plurality of second digital data words, each of the second digital data words representing a complex number discrete Fourier transform coefficient of a corresponding frequency of at least one set of frequencies, each set of frequencies including a primary frequency and only frequencies octavely related thereto and excluding harmonics which are not octavely related to said primary frequency;

communication means connected to the Fourier transform

means for transmission of digital data words applied thereto;

inverse Fourier transform means connected to the communication means for converting sets of digital data words transmitted by the communication means into successive sets of third digital data words, each third digital data word representing the amplitude of an analog signal at a corresponding one of a plurality of sampling intervals; and digital to analog conversion means converted to the inverse Fourier transform means for converting the plurality of third digital data words into a corresponding analog signal.

29. An apparatus for decoding digital data words representing musical signals comprising:

receiving means for receiving first digital data words representing complex number discrete Fourier transform coefficients for at least one set of frequencies, said at least one set of frequencies including a primary frequency and only frequencies octavely related thereto and excluding harmonics which are not octavely related to said primary frequency;

inverse Fourier transform means connected to the receiving means for converting successive selected sets of said first digital data words into corresponding sets of second digital data words, each second digital data word representing the amplitude of an analog signal at a corresponding one of a plurality of sampling intervals; and

digital to analog conversion means connected to the inverse Fourier transform means for converting the sets of second digital data words into a corresponding analog signal.

4,433,605

FIXTURE FOR STRING RETAINER OF THE STRINGS

Kazuhiro Matsui, Toyooka, Japan, assignor to Hoshino Gakki Co., Ltd., Nagoya, Japan

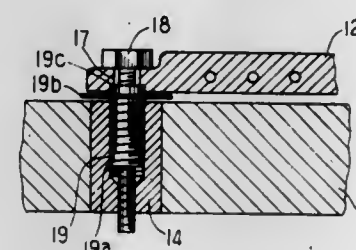
Filed Mar. 30, 1982, Ser. No. 363,606

Claims priority, application Japan, Aug. 5, 1981, 56-116425[U]

Int. Cl.³ G10D 3/12

U.S. Cl. 84—299

4 Claims



1. A fixture apparatus for fixing a string retainer to the body of a musical instrument and for adjusting the height of the string retainer, said device comprising:

(a) an embedded nut fixed to said body, said embedded nut having a large-diameter female thread on the upper portion and a small-diameter female thread on the lower portion;

(b) a fixing bolt having a male thread corresponding to said small-diameter female thread, inserted into a fixing hole in said string retainer, wherein a head portion of said bolt contacts the upper surface of a fringe of said fixing hole; and

(c) an adjusting bolt having a male thread corresponding to said large-diameter female thread and having an inserting through hole in the center thereof, wherein the upper surface of said adjusting bolt contacts with the lower surface of the fringe of said fixing hole, said adjusting bolt being screwed into said embedded nut, and wherein said string retainer is positioned to keep the lower surface of the fringe of said fixing hole in contact with the upper surface of said adjusting bolt, and said fixing bolt is screwed into said embedded nut, passing through said

inserting through hole of said adjusting bolt, whereby said string retainer is held between said fixing bolt and said adjusting bolt and fixed to the body of said musical instrument.

4,433,606

TANDEM ROCKET LAUNCHER

Allen C. Hagelberg, Diamond Bar, and Clark E. Allardt, Claremont, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

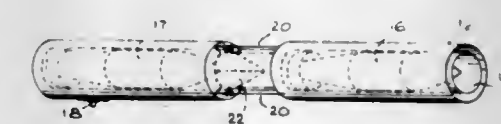
Division of Ser. No. 133,756, Mar. 25, 1980, Pat. No. 4,342,252.

This application Sep. 4, 1981, Ser. No. 299,362

Int. Cl.³ F41F 3/06; F42C 15/06

U.S. Cl. 89—1.812

4 Claims



1. In a tandem rocket launcher means for positioning plural axially aligned rockets having exhaust means interspersed along a tube for exhausting rocket gases from a first rocket before they impinge a second rocket behind the first, the improvement comprising:

a conical exhaust gas deflector adjacent the gas exhausting means effective to prevent launched rocket exhaust gas flow from said first rocket toward said second rocket by directing said gases out of said exhaust means interspersed along said tube, said gas deflector being bifurcated with each half rotatable toward the interspersed means about axes positioned external to the base of the conical deflector for symmetrically dispersing said exhaust gas flow, thereby providing for even back pressure on said first rocket.

4,433,607

SWITCH FOR VERY LARGE DC CURRENTS

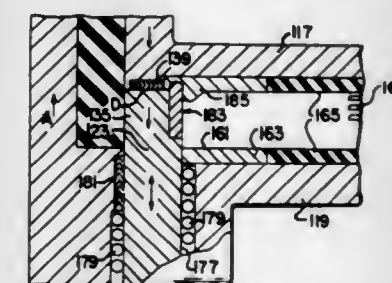
George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 6, 1981, Ser. No. 309,290

Int. Cl.³ F41F 1/02; H02K 41/02

U.S. Cl. 89—8

24 Claims



3. A projectile launching assembly comprising:

a first pair of generally parallel electrically conductive rails mounted in spaced parallel relationship in a common plane with a gap therebetween;

means for generating a DC current connected to one end of said first rails;

a switch comprising:

an elongated armature, and

means for mounting said elongated armature for rectilinear movement in said common plane from a first position in which the armature bridges said gap and is in electrical contact with both of said first pair of rails to conduct between said first pair of rails a current applied to the first pair of rails at one end thereof, and a second position in which electrical contact between at least one of said first

pair of rails and said armature is broken to interrupt the flow of current through the armature and to inject into the gap, for travel along the first pair of rails toward the second ends thereof, an arc created as contact between said armature and one of said first pair of rails is broken, wherein the other rail defines a recess in which said armature is mounted with said armature in electrical contact with at least one wall of said recess;

a second set of parallel launcher rails with a first end of each rail of said second set connected to one of the rails of said first set;

a projectile placed between and in sliding contact with each of said second pair of rails, said projectile being accelerated toward and ejected from the second ends of said second set of rails when said armature is moved to interrupt the flow of current therethrough; and

wherein said armature is provided on a free end, which makes and breaks contact with said one rail, with an arc horn, and wherein resilient electrical contacts are provided between said one rail of said first pair of rails and said free end of the armature, which break electrical contact between said one rail and said free end of the armature progressively along said free end from a point remote from the arc horn toward the arc horn.

4,433,608

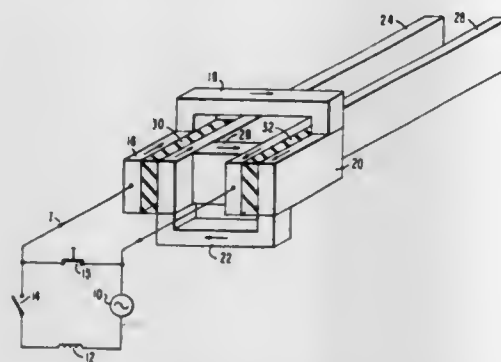
ELECTROMAGNETIC PROJECTILE LAUNCHER WITH AN AUGMENTED BREECH

Daniel W. Deis, Churchill Borough; Ian R. McNab, Murrysville, both of Pa., and Joseph L. Smith, Jr., Concord, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,154
Int. Cl.³ F41F 1/02; H02K 41/02

U.S. Cl. 89—8

17 Claims



1. An electromagnetic projectile launching system comprising:

- a first conductor;
- a second conductor disposed generally parallel to said first conductor;

means for propelling a projectile from a breech end of said first and second conductors to a muzzle end thereof and for conducting current therebetween;

- a third conductor disposed generally parallel and adjacent to the breech end of said second conductor and being electrically connected to said first conductor adjacent said breech end thereof;

- a fourth conductor disposed generally parallel and adjacent to the breech end of said first conductor and being electrically connected to said third conductor at an end opposite said third conductor's connection to said first conductor;
- a source of current electrically connected to the breech end of said fourth conductor and to the breech end of said second conductor;

circuit breaking means electrically connected in parallel with said current source, whereby the current required for launching the projectile is rapidly commutated to said fourth and second conductors and is at a lower value than required utilizing a single pair of conductors to achieve the same amount of force on a projectile; and

each of said third and fourth conductors having a length

which is less than the distance traveled by said means for propelling while current in said first and second conductors is increasing.

4,433,609

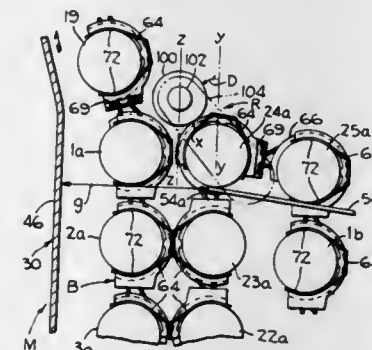
SUSPENDED LOOP AMMUNITION MAGAZINE

Larry N. Darnall, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,802
Int. Cl.³ F41D 10/14

U.S. Cl. 89—34

4 Claims



1. An ammunition magazine for suspended loop stowage of ammunition rounds connected by an articulated belt, said magazine comprising a relatively deep box having side walls and a front wall, generally horizontal, continuous side rails along an upper portion of said box side walls for slidably suspending the end rounds of each loop, and roller means for applying a resilient downward and rearward restraining force on a round supported on the forward end portions of said rails against forward sliding motion of said round along the rails until pulled upwardly and forwardly off said rails and away from said roller means.

4,433,610

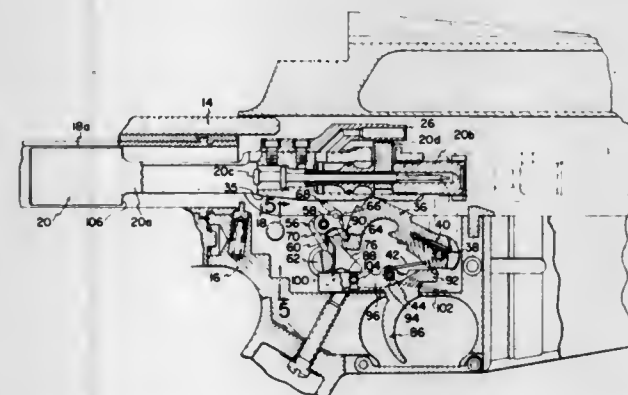
OPEN BOLT FIRING MECHANISM FOR AUTOMATIC FIREARM

Henry J. Tatro, Westfield, Mass., assignor to Colt Industries Operating Corp., West Hartford, Conn.

Filed Aug. 6, 1981, Ser. No. 290,724
Int. Cl.³ F41D 11/02

U.S. Cl. 89—148

8 Claims



1. In an automatic firearm having a receiver, an open bolt firing mechanism of the type having a bolt assembly mounted in the receiver for longitudinal reciprocating movement between rearward recoil and forward battery positions, a sear abutment on the bolt assembly, a hammer, having a sear abutment, mounted in the receiver for pivoting movement between retracted and fired positions and urged to the retracted position by the bolt assembly during its movement between the battery and recoil positions, an automatic sear, having a searing surface to engage the sear abutment on the hammer, mounted in the receiver for downward and upward pivoting movement

and for retaining the hammer in a cocked position intermediate the retracted and fired positions and releasing the hammer from the cocked position thereof as the bolt assembly moves into the battery position and a trigger mounted in the receiver for pivoting movement between extended and depressed positions for releasing the bolt assembly from a cocked position intermediate the retracted and battery positions, the improvement in the open bolt firing mechanism comprising:

a searing surface on the hammer to engage the sear abutment on the bolt assembly for stopping forward movement of the bolt assembly from the recoil position such that the bolt assembly assumes its cocked position and for maintaining the bolt assembly in its cocked position; and

the automatic sear being operatively connected to the hammer when the bolt assembly is resting in its cocked position such that downward pivoting of the automatic sear produces movement of the hammer toward the retracted position and ultimately disengagement of the sear abutment of the bolt assembly and the searing surface on the hammer, whereby the bolt assembly may move forwardly into the battery position, the searing surface on the automatic sear engaging the sear abutment on the hammer subsequent to the disengagement of the sear abutment of the bolt assembly and the searing surface on the hammer.

4,433,611

GAS PISTON OPERATED AUTOMATIC HAND WEAPON

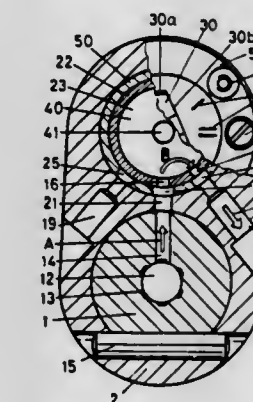
Jürgen Baumann, Lottstetten, Fed. Rep. of Germany, assignor to SIG Schweizerische Industrie-Gesellschaft, Nuhausen am Rheinfell, Switzerland

Filed Dec. 8, 1981, Ser. No. 328,670

Claims priority, application Switzerland, Dec. 30, 1980, 9647/80

Int. Cl.³ F41D 5/08

16 Claims



1. An automatic hand weapon comprising:

- (a) a barrel having a longitudinal barrel bore for guiding a projectile;
- (b) a gas cylinder tube mounted on said barrel and having a work chamber;
- (c) inlet channel means for introducing propellant gas from said barrel bore to the work chamber;
- (d) outlet channel means comprising separate first and second outlet channels for discharging propellant gas from the work chamber into the ambient atmosphere;
- (e) an insert sleeve rotatably supported within said cylinder tube and defining said work chamber; said insert sleeve having

- (1) first and second circumferentially spaced ports of unlike diameters;
- (2) a first angular position in which said second port forms part of said inlet channel means and said first port is in registry with said first outlet channel for connecting said first outlet channel with said work chamber;
- (3) a second angular position in which said first port forms part of said inlet channel means and said second port is in registry with said second outlet channel for connecting said second outlet channel with said work chamber;

(f) setting means for arbitrarily moving said insert sleeve into one of said angular positions; and

(g) a gas piston slidably received in said insert sleeve for executing work strokes from a position of rest for operating breechblock components of the weapon; said piston maintaining communication between said work chamber and the ambient atmosphere through said outlet channel means during at least one part of each work stroke; said gas piston having

(1) an end face exposed to the gas pressure in said work chamber, whereby a force is imparted to said piston for executing the work strokes;

(2) a lateral face being in a sliding engagement with a wall of said insert sleeve; and

(3) a piston bore provided through said piston and having a first opening in said lateral face and a second opening in said end face; in said position of rest of said piston said first opening being in registry with said inlet channel means whereby said piston bore maintains communication between said inlet channel means and said work chamber in said position of rest.

4,433,612

SAFETY CONTROL DEVICE FOR PROTECTING HYDRAULICALLY HELD LOADS AGAINST UNCONTROLLED PRESSURE OVERLOADING

Harry Spielvogel, Dusseldorf, and Heinz Schedler, Heidesheim, both of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

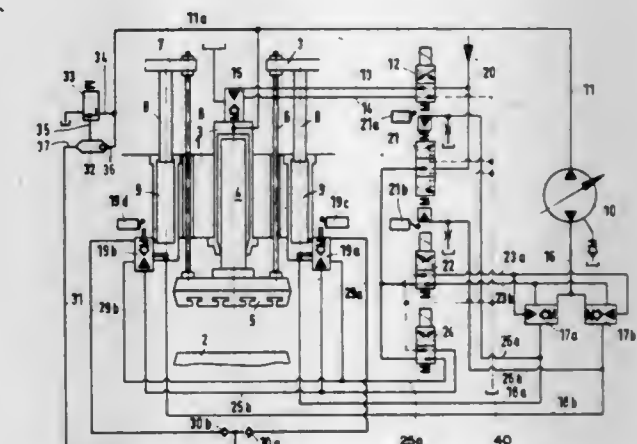
Filed Feb. 26, 1981, Ser. No. 238,438

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008130

Int. Cl.³ B30B 9/32; F15B 11/16, 13/06

U.S. Cl. 91—514

12 Claims



1. In a hydraulic system comprising at least one working cylinder for applying to a load a working force in a first direction, at least one further cylinder arranged to apply to said load a retraction force in a direction opposite to the first direction, and respective hydraulic pressure fluid supply conduits communicating with said at least one working cylinder and with said at least one further cylinder for selectively operating said cylinders for applying to the load the said working force or the said retraction force, the improvement in a safety system comprising:

a pressure relief valve having a fluid flow inlet communicating with the hydraulic fluid supply side of said at least one working cylinder, and a control pressure inlet communicating with a source of control pressure which opens said valve against a predetermined pressure setting to permit pressure-relieving fluid flow therethrough in response to a control pressure exceeding said predetermined pressure setting of said relief valve;

non-return valve means having a first inlet operably connected to said further-cylinder by a first conduit means, a second inlet operably connected by a second conduit

means to the fluid supply conduit of the working cylinder, and an outlet connected to said control pressure inlet of said relief valve, so that said relief valve opens in response to control pressure which is the greater or the respective pressures at said first and second inlets and terminates operation of the working cylinder when the pressure in said further cylinder, applied through said first conduit means and said first inlet and said outlet, exceeds said predetermined pressure setting.

4,433,613

POWER-STEERING SYSTEM FOR MOTOR VEHICLES
Reinhold Abt, Stuttgart; Walter Blum, Bedburg, and Jaromir Bordovsky, Berglen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

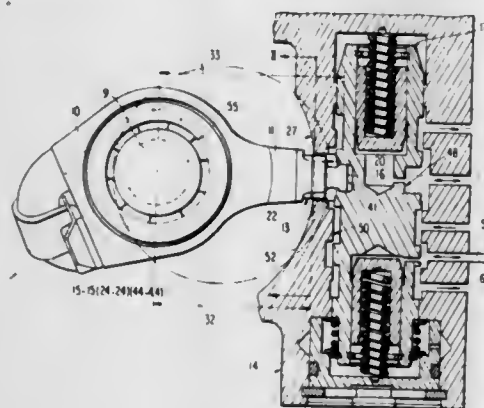
Filed Nov. 30, 1981, Ser. No. 325,867

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045113

Int. Cl.³ F15B 9/10, 13/16

U.S. Cl. 91—358 R

14 Claims



1. A power steering system for motor vehicles, the system including a working piston means, a steering nut means rotatably and axially non-displaceably mounted in said working piston means, a steering worm means connected to and rotated by the steering nut means, a cylinder housing means for accommodating the working piston means, a control arm means provided on the steering nut means, a spool valve means actuated by said control arm means for adjusting a working pressure of the power steering system, a radial opening in the cylinder housing means for accommodating the control arm means, a radial recess means in the spool valve means for accommodating the control arm means, wherein means are provided for one of lowering and shutting off the working pressure of the power steering system in two end stroke positions of the working piston means such means including first follower means provided on the control arm means and second follower means provided on a portion of the cylinder housing means, the first follower means having a zero motion with respect to a longitudinal center axis of the working piston means and the second follower means having a zero motion with respect to a longitudinal center axis of the cylinder housing means, and the first and second follower means are arranged such that a mutual engagement of the respective follower means results in actuation of the spool valve means.

4,433,614

VACUUM BOOSTER DEVICE

Hiroo Takeuchi, Asashina; Nobuaki Hachiro, and Yoshihisa Miyazaki, both of Ueda, all of Japan, assignors to Nissan Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Jun. 3, 1981, Ser. No. 269,985

Claims priority, application Japan, Sep. 18, 1980, 55-129633

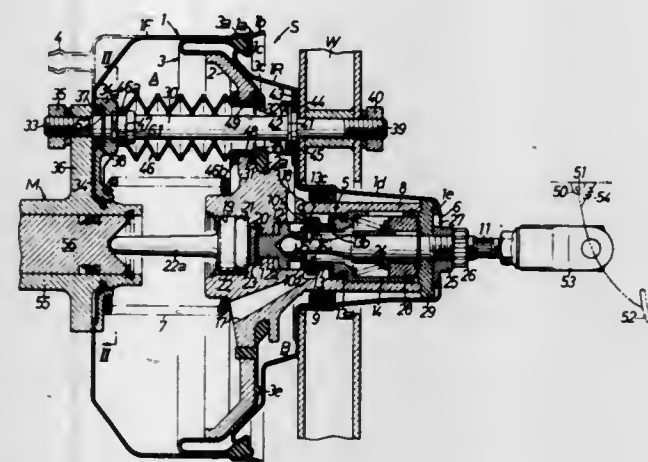
Int. Cl.³ F15B 9/10

U.S. Cl. 91—376 R

1 Claim

1. In a vacuum booster device comprising a booster shell, a booster piston axially slidably accommodated in said booster

shell, first and second working chambers defined in said booster shell separately from each other by said booster piston, said first working chamber being held in communication with a vacuum source, said second working chamber being selectively placed in communication with said first working chamber or the atmosphere through a control valve means, an input rod arranged in said booster piston for forward and rearward movement and connected to said control valve means so as to produce a pressure difference between both of said first and second working chambers effective to cause said booster piston to follow the forward movement of said input rod, tie rod means extending through said booster piston for connection of front and rear walls of said booster shell, sealing means arranged between said tie rod means and said booster piston to allow the operation of said piston, and a return spring compressed in said first working chamber for biasing said booster piston in its retracting direction,



the improvement which comprises a spring retainer plate supporting the fixed end of said return spring, said spring retainer plate being abutted against the front wall of said booster shell and having a pair of bosses integrally projected at its both ends, each of said bosses being provided at its inner end with an intercepted round concave hole; said tie rod means including at least two tie rods having integral mounting bolts formed at ends thereof so as to project outwardly of said booster shell, said tie rods each having an intercepted round flange disposed thereon, said spring retainer plate being fixed to said front wall by the two tie rods penetrating through said bosses thereby preventing relative rotation of the spring retainer plate with respect to the front wall of the booster shell, the intercepted round flange of each of the tie rods being fitted in the intercepted round concave hole formed on each of the bosses thereby holding each tie rod in a rotation-proof manner.

4,433,615

BLOCKING AND THERMAL RELIEF VALVE

Ralph L. Vick, Granada Hills, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 22, 1981, Ser. No. 313,896

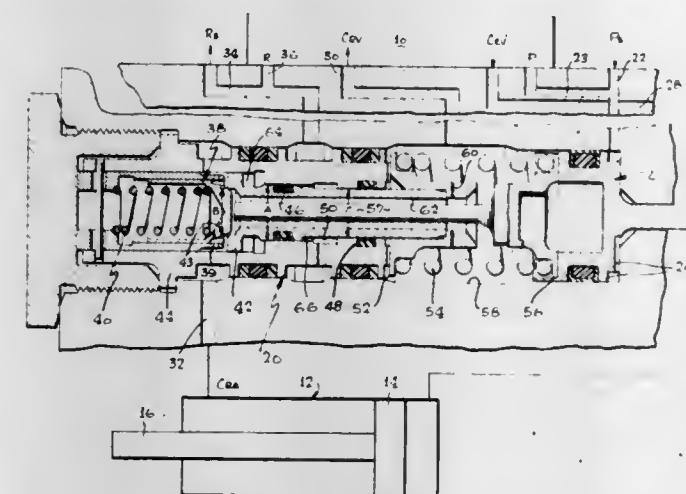
Int. Cl.³ F15B 13/042

U.S. Cl. 91—420

6 Claims

1. In a system for controlling the raising and lowering of an aircraft spoiler control surface including a hydraulic cylinder and piston connected to said spoiler to cause said spoiler to be raised when said piston is in extended position and lowered when said piston is in retracted position, a source of hydraulic fluid under high supply pressure and a servo valve for directing said hydraulic fluid to one side or the other of said piston; a blocking and relief valve connected between the retract side of said cylinder and said servo valve comprising a housing having an internal chamber, a first piston movable in said housing having a working area exposed to said high

pressure source, and means in said chamber defining large, intermediate and smaller diameter bores; a seat member movable axially within said chamber including a second piston in said large diameter bore and intermediate and smaller diameter sections in said intermediate and smaller diameter bores, respectively, a valve seat on said second piston and an axially directed interior passage, said piston and said large diameter bore functioning as a damping means; a hollow poppet valve member in said housing and resilient means urging said poppet valve member against said seat; a lock member in said housing communicating with said seat member and said poppet member and port means communicating said lock chamber with the interior of said poppet member; a controlled pressure chamber in said housing communicating with said axially directed interior passage; a first spring retainer movable with said first piston, a second spring retainer operably connected with said seat member,



and a spring positioned in said controlled pressure chamber between said second spring retainer and said first spring retainer, said first spring retainer including means movable therewith capable of forcing said poppet member away from said valve seat;

such that when the pressure in said controlled pressure chamber is at a low value said supply pressure moves said first piston and said first spring retainer to open said poppet member; when the pressure in said lock chamber is at a low value said poppet member is caused to open as a result of higher pressure in said controlled pressure chamber; when said supply pressure is at a low value and the pressure in said lock chamber is at a normal working value, said poppet is held against said seat; and when said lock chamber pressure reaches a predetermined pressure above a normal supply pressure value, said predetermined pressure acting on an operating area of said seat member overcomes the force of said spring and forces said seat member away from said poppet.

4,433,616

PISTON ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

Herbert J. Hauser, Jr., Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 6, 1981, Ser. No. 280,395

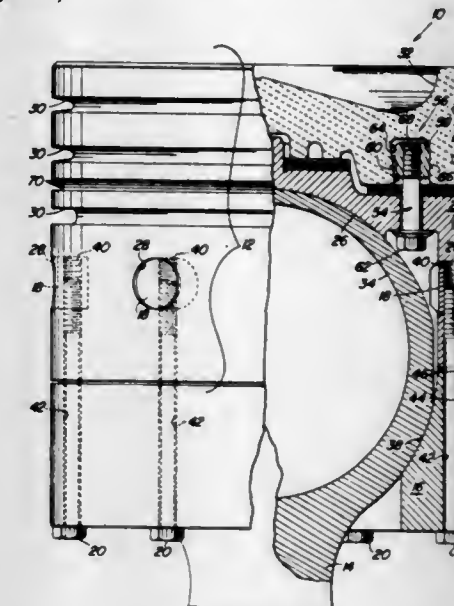
Int. Cl.³ F16J 1/14

U.S. Cl. 92—190

11 Claims

1. A piston assembly for an internal combustion engine having a rotatable crankshaft, said piston assembly comprising: (a) a piston body having a concave configured cavity formed in one end and having a plurality of recesses formed in its outer circumference which communicate with said concave configured cavity; (b) a connecting rod attached at one end to said crankshaft

and having a second spherical end matable in said concave configured cavity of said piston body; (c) a hollow annular skirt having an arcuately shaped inner surface engageable with said spherical end of said connecting rod;



(d) a plurality of retainers positioned in said recesses of said piston body; and (e) attaching means for joining said skirt to said piston body, said attaching means including a plurality of fasteners passing through said skirt and into said retainers.

4,433,617

APPARATUS FOR PREPARING AND DISPENSING BEVERAGES

Jan Magnusson, Mariestad, Sweden, assignor to Jede-Automater Magnusson AB, Mariestad, Sweden

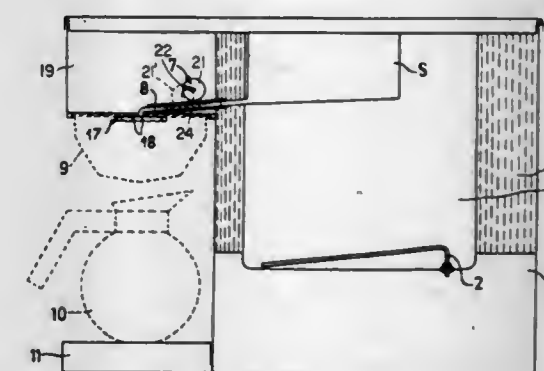
Filed Jan. 26, 1981, Ser. No. 228,467

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 8002412[U]

Int. Cl.³ A47J 31/00, 31/04

U.S. Cl. 99—305

5 Claims



1. Apparatus for preparing and dispensing beverages having a preferably block-like housing and therein a tank for hot water and means for tapping water, characterized in that said tank is arranged as a main tank in which there is provided an affiliated tank for hot water, said means for tapping water comprising a tap connected into the main tank, and a special pipe connected into the bottom of said affiliated tank, said special pipe having a manual shut-off device to control tapping said affiliated tank, said housing having an upper protrusion at one side of said housing, said special pipe being within said upper protrusion to discharge water centrally and downwardly from said upper protrusion, and means below said protrusion to mount a filter funnel to receive the discharged water, and below said filter funnel mounting means, a lower protrusion at the same side of the housing respectively for mounting a receptacle.

4,433,618

APPARATUS FOR CONTINUOUSLY MANUFACTURING FIBROUS HIGH PROTEIN FOODS

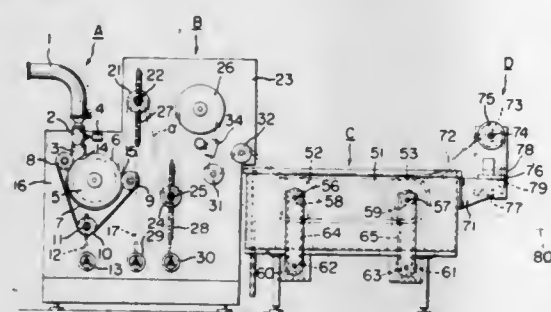
Tadashi Izutsu, Tokorozawa; Masanobu Koutake, Sakado; Yasunobu Hiraoka, Iruma; Shin-ichi Takafuji, Kodaira; Tamotsu Yamada, Yamanashi; Seiji Kurosawa, Yamanashi, and Tetsuo Satoh, Yamanashi, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Nov. 4, 1981, Ser. No. 318,246

Claims priority, application Japan, Nov. 13, 1980, 55-159785
Int. Cl.³ A23C 3/04, 9/00

U.S. Cl. 99—455

7 Claims



1. An apparatus for continuously manufacturing a high protein food of fibrous form, comprising:

a raw material supplying device comprising a pipe adapted to be connected to a supply of milk curds, a nozzle connected for receiving curds from said pipe and having an outlet for discharging the curds in the form of a continuous rope, a first driven roller disposed adjacent to the outlet of said nozzle, said first roller having a circular groove in the periphery thereof, said groove being movable past the outlet of said nozzle and being adapted to receive the rope from said nozzle and transport it away from said nozzle, an endless belt having a first reach disposed adjacent to and opposed to the periphery of said first roller and adapted to move therewith whereby to maintain the rope within said groove, the end of said first reach of said belt adjacent to said nozzle defining with said first roller an inlet for receiving the rope from said nozzle and the opposite end of said upper reach of said belt defining with said first roller an outlet for discharging the rope having an controlled cross-sectional size from said raw material supplying device;

an extension device for receiving the rope from said outlet of said raw material supplying device and for drawing the rope to extend the length thereof and thereby reduce the cross-sectional size thereof, said extension device comprising guide roller means for guiding the rope and driven roller means for moving the rope at a speed faster than the peripheral speed of said first roller of said raw material supplying device whereby to stretch the rope;

a cooling device connected for receiving the rope after it has passed through said extension device, said cooling device including a cooling tank adapted to contain a coolant, and means for feeding the rope through said cooling tank whereby to cool the rope; and

a cutter device for receiving the rope from said cooling device and including a cutter for cutting the rope into fixed lengths.

4,433,619

METHOD FOR UNPLUGGING CYLINDRICAL BALER

Henry D. Anstey, Gerald F. Meiers, and Richard W. Koning, all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 308,223, Oct. 5, 1981, Pat. No. 4,391,187. This application Aug. 6, 1982, Ser. No. 405,966
Int. Cl.³ B30B 5/06; A01D 39/00

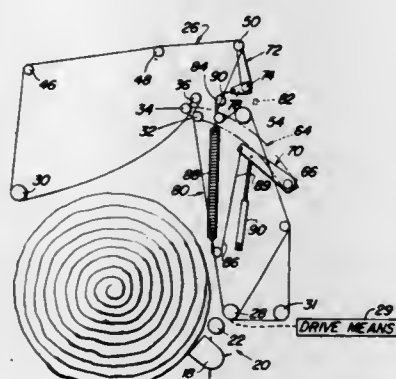
U.S. Cl. 100—40

6 Claims

4. A method for unplugging an expandable bale forming

chamber of a cylindrical baler of a slug of crop material fed into an inlet of the chamber comprising the steps of:

- (a) disengaging a drive means for a plurality of belts defining said chamber,
- (b) enlarging said chamber around a partially formed bale in said chamber,



- (c) tensioning said belts and causing said belts to rotatably engage said bale; and
- (d) reengaging said drive means for feeding said slug into said chamber and wrapping said slug around said bale.

4,433,620

HYDROPNEUMATIC CONTROL SYSTEM FOR A WHEELED, SELF-PROPELLED BOLSTER FOR THE TRANSPORTATION OF A DIE ASSEMBLY INTO AND OUT OF A PRESS

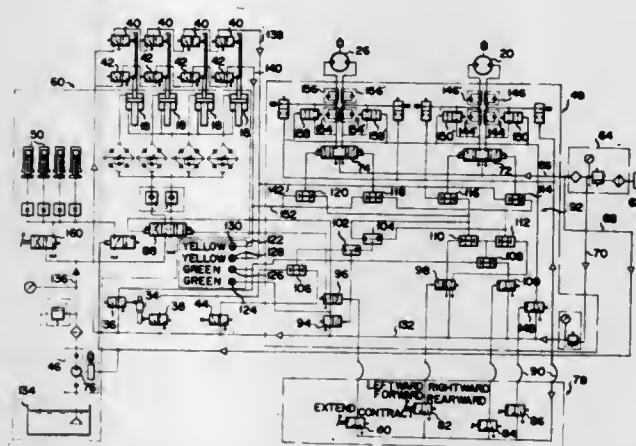
Hiroshi Kiyosawa, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 22, 1982, Ser. No. 436,069

Claims priority, application Japan, Oct. 30, 1981, 56-172783
Int. Cl.³ B30B 15/02, 15/06, 15/30

U.S. Cl. 100—43

9 Claims



1. A hydropneumatic control system for a bolster capable of travelling along a first track into and out of a press and along a second track right-angularly crossing the first track, the bolster being of the type including a body having first and second sets of wheels for travelling along the first and second tracks respectively, either of the first and second sets of wheels being mounted to the bolster body via hydraulic lift jack means for up-and-down movement into and out of engagement with the tracks, and a positioning pin normally held in a raised position on the bolster body and moved down to a depressed position at the intersection of the first and second tracks in order to position the bolster thereon, the hydropneumatic control system comprising:

- (a) a source of air under pressure;
- (b) a first pneumatic motor coupled in driving relationship to at least some of the first set of wheels for moving the bolster back and forth along the first track;
- (c) a second pneumatic motor coupled in driving relation-

ship to at least some of the second set of wheels for moving the bolster back and forth along the second track;

- (d) first and second pilot-operated selector valves for controlling communication between the pressurized air source and the first pneumatic motor and between the pressurized air source and the second pneumatic motor, respectively;
- (e) a source of hydraulic fluid under pressure;
- (f) a third pilot-operated selector valve for controlling communication between the pressurized hydraulic fluid source and the hydraulic lift jack means;
- (g) control valve means actuated manually for producing pneumatic signals for pilot-operating the first, second and third selector valves;
- (h) sensor means actuated automatically for producing pneumatic signals indicative of whether the bolster lies in position in the press nor not, whether the hydraulic lift jack means are extended or contracted, and whether the positioning pin is in the raised or depressed position;
- (i) signal processing means responsive to the pneumatic output signals of the control valve means and the sensor means for allowing the output signals of the control valve means to actuate the first, second and third selector valves only when the control valve means are operated properly; and
- (j) indicator means for indicating the operating conditions of the bolster in response to at least the pneumatic output signals of the sensor means.

4,433,621

APPARATUS FOR BRANDING MEAT OR MEAT PRODUCTS

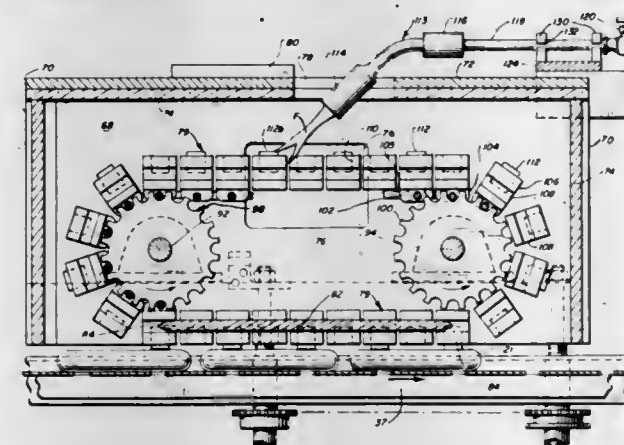
Richard Van Wyk, Darien, and James Eisenberg, Highland Park, both of Ill., assignors to Vienna Sausage Manufacturing Company, Chicago, Ill.

Filed Dec. 4, 1981, Ser. No. 327,284

Int. Cl.³ B41F 17/20; A22C 17/10

U.S. Cl. 101—11

13 Claims



1. An apparatus for affixing a brand on the surface of a plurality of meat products comprising:

- (a) a first conveyor means having a surface portion for supporting and moving a plurality of relatively spaced meat products through a branding zone;
- (b) a second conveyor means disposed in the branding zone and having a portion thereof in substantially opposed overlying relation to the surface portion of said first conveyor means, said second conveyor means including a plurality of relatively spaced branding elements mounted thereon, each of said branding elements being removably accommodated in a socket-like support means, thereby causing said branding elements to travel through the branding zone while in spaced substantially parallel relation to the product-supporting surface portion of said first conveyor means and causing said branding elements to continuously contact the product for the period of time the product travels through the branding zone;
- (c) means for heating said branding elements to branding

temperatures prior to same contacting the meat products in said branding zone;

- (d) means for coordinately driving said first and second conveyor means.

4,433,622

PRINTING STATION FOR AXIAL LEAD HANDLING SYSTEM

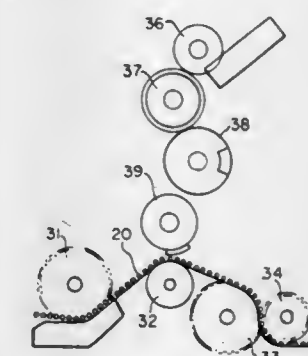
Gary W. Anderson, Transfer, and Dennis G. Stake, Greenville, both of Pa., assignors to GTI Corporation, San Diego, Calif.

Filed Sep. 30, 1982, Ser. No. 430,664

Int. Cl.³ B41F 17/22

U.S. Cl. 101—40

12 Claims



1. An apparatus for printing upon the body of axial lead components arranged upon a component tape, the tape having equally spaced openings for receiving sprocket teeth and equally spaced component receiving openings, there being tabs associated with said component openings extending from the tape defining slots being narrowed at the end away from the tape which slots may be spread by bending the tape comprising a horizontal base, a print station fixed above the base having at least an offset wheel rotating on a horizontal axis for rolling over the surface of the components to be printed to transfer indicia thereto, a bending roll mounted on an axle substantially parallel to the horizontal base, said roll having a circumferential groove therein so that the loaded component tape can be drawn over the bending roll without interference with the components, the diameter of the bending roll being sufficiently small to bend the tape enough to spread slots in the tabs thereof and to present only one component to the offset wheel of the print station at a time, an entry guide for slidably holding the loaded tape below the top of the bending roll, an exit guide for slidably holding the loaded tape below the top of the bending roll and having a sprocket wheel for engaging the sprocket openings in the tape and pulling the tape over the bending roll.

4,433,623

APPARATUS FOR AND METHOD OF APPLYING A PATTERN UPON A SUBSTRATE

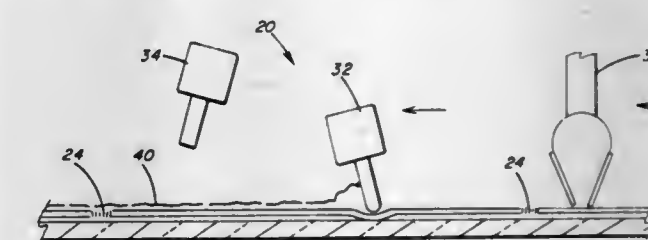
Kenneth A. Beckim, Oshawa, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 30, 1981, Ser. No. 326,097

Int. Cl.³ B41L 41/00; B41F 35/00

U.S. Cl. 101—123

4 Claims



1. A method of applying a pattern upon a substrate comprising the steps of:

practicing a printing cycle including the steps of:
 supporting a substrate in a printing position;
 positioning a first major surface of a screen member in facing relation to the substrate in the printing position, the screen member having imperforated edge segments about an intermediate at least partially perforated segment, the intermediate perforated segment corresponding to the pattern;
 providing a pattern-forming medium on the second and opposite major surface of the screen member;
 moving portions of the pattern-forming medium from the second and opposite major surface of the screen member through the perforated segment toward the substrate to form a pattern thereon, wherein residual pattern-forming medium remains in at least localized areas of the perforated segment of the screen member;
 spacing the screen member away from the printing position after the practice of said moving step;
 removing the substrate having the pattern thereon from the printing position; and
 repeating the printing cycle; and
 after a selected printing cycle, practicing the following steps:

advancing a suction applying member across the second and opposite major surface of the screen member over an imperforated edge segment, the intermediate perforated segment and the other imperforated edge segment while the screen member is in the spaced position; and controlling the magnitude of suction of the suction applying member so as to be minimal as the suction applying member advances over the imperforated edge segments to avoid damage thereto and to be greater by a magnitude sufficient to remove the residual pattern-forming medium through the perforated areas as the suction applying member advances over the intermediate perforated segment.

4,433,624

PRINTING APPARATUS

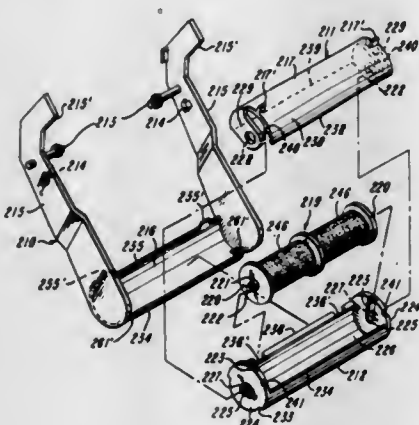
John D. Mistyurik, Tipp City, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 17, 1982, Ser. No. 349,497

Int. Cl.³ B41F 1/08

U.S. Cl. 101—314

5 Claims



1. Printing apparatus, comprising: a print head having printing members, means for movably mounting the print head between initial and printing positions, an inking mechanism including a pivotally mounted carrier, an ink roller rotatably mounted by the carrier, and spring means for urging the carrier to an initial position in which the ink roller is in the path of movement of the print head, the print head being effective to move the carrier against the urging of the spring means as the print head moves from its initial position to the printing position to move the ink roller in one direction into inking relationship with the printing members, and means for returning the carrier to its initial position and to move the print head in the opposite direction in the event the spring means fails to return

the carrier to its initial position during return of the print head to its initial position.

4,433,625

BLOW MOLDED DYNAMITE TUBE

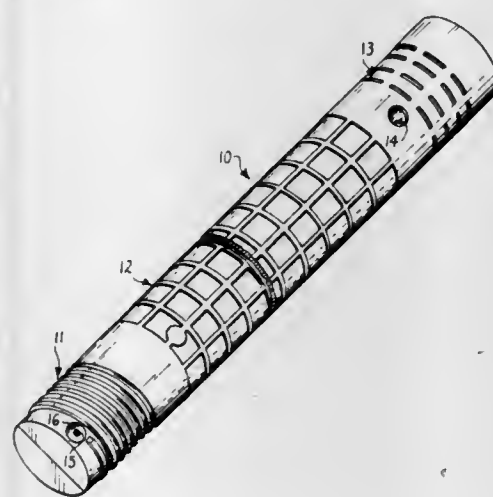
Bobby L. Brown, Johnson County, Kans., assignor to Mar-Kay Plastics, Inc., Kansas City, Mo.

Filed Jan. 11, 1982, Ser. No. 338,638

Int. Cl.³ F42D 3/00

U.S. Cl. 102—331

4 Claims



1. In a molded plastic dynamite tube having a cylindrical side wall, the upper portion thereof being an open end and the lower portion thereof being a closed end, the improvement comprising:

- a dimpled recess in said tube adjacent the lower closed end thereof, and
- a vent hole defined by said recess providing fluid communication between the inside of said tube and the outside of said tube.

4,433,626

UNDERWATER MISSILE FOR USE AGAINST SUBMERGED SUBMARINES

Sven Landström, Fjällgatan 16, Stockholm, Sweden S-116 45

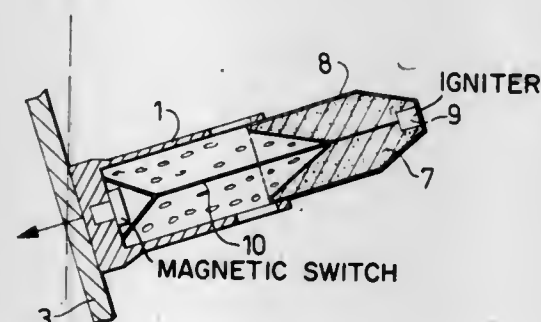
Filed Oct. 13, 1981, Ser. No. 310,999

Claims priority, application United Kingdom, Oct. 13, 1980, 8032962

Int. Cl.³ F42B 21/00

U.S. Cl. 102—390

9 Claims



1. An underwater missile for use against submerged submarines, the missile comprising a missile housing having at a foremost end portion thereof, which is intended to contact a submerged submarine, a magnetic contact surface provided by two magnets located adjacent to each other in reversed magnetic polarity relation creating a field of magnetic leakage, and a magnetically operated switching means located adjacent to the magnetic leakage field from the magnets and arranged to be operated when the leakage field is increased because of a metallic object located within the magnetic field of the mag-

nets, the operation of the switching means being arranged to trigger an explosive charge within the missile.

4,433,627

PLASTIC CONVEYOR TROLLEY WITH BEARINGS

David J. Forshee, Oxford, Mich., assignor to Formall Syn-Trac Systems, Inc., Madison Heights, Mich.

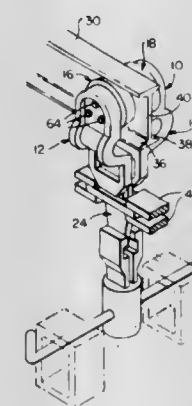
Filed Jul. 29, 1981, Ser. No. 287,884

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.³ B61B 3/00

U.S. Cl. 104—95

8 Claims



1. In an improved trolley assembly for operation in an I-beam monorail conveyor system, said trolley assembly being provided with a pair of detachably connected spaced apart unitary integrally formed molded plastic trolley arms, a unitary integrally formed molded plastic stub axle easily removably attached to each said trolley arm upon and adjacent the inward face of an upper portion of said arm, a unitary integrally formed molded plastic trolley wheel rotatably mounted on each said stub axle and retained by said stub axle on the inward side of said trolley arm, removable fastening means extending through said trolley arm upper portion from its outer side and into the body portion of said stub axle fixedly securing said stub axle to said upper portion inward face against rotation, wherein the improvement comprises

- each said stub axle having a body portion, the perimetric surface of which is notched with a plurality of axially parallel radially spaced apart longitudinally extending recesses,
- a cylindrical plastic roller bearing disposed and rotatable in each said recess,
- each said wheel being rotatably supported on said bearings and retained by said stub axle on the inward side of said trolley arm upper portion.

4,433,628

APPARATUS FOR PREVENTING RUNAWAY OF CARRIERS IN POWER AND FREE CONVEYOR

Takao Wakabayashi, Shinsenri-Minamimachi, Japan, assignor to 501 Nakanishi Metals Works Co., Ltd., Osaka, Japan

Filed Feb. 9, 1982, Ser. No. 347,241

Int. Cl.³ B61H 9/04; B61B 10/02; B66B 5/16

U.S. Cl. 104—172 S

7 Claims

1. An apparatus for preventing runaway of carriers in a power-and-free conveyor including a power rail having a drive chain, a free rail disposed below the power rail at a predetermined distance therefrom, the carriers movably supported by the free rail and having engagement portions, and a plurality of pusher dogs attached to the drive chain and engageable with the engagement portions of the carriers, the conveyor having a rising gradient section and a falling gradient section, the runaway preventing apparatus comprising a runaway preventing stopper provided on each of the carriers and rotatable about a longitudinal midportion of the stopper in an approximately vertical plane in parallel with the direction of advance of the conveyor, a restraining member engageable with one end of the stopper below the center of the rotation for

usually preventing the other end of the stopper from turning forward to hold the stopper in an approximately vertical position, a plurality of runaway preventing contact members arranged in each of the rising and falling gradient sections in the path of movement of the other end of the stopper at a specified spacing in the direction of advance to come into contact with the other end, and biasing means biasing the stopper at all times



to forwardly turn the other end of the stopper and having a biasing force which is greater than the force acting to rearwardly turn the other end when the other end strikes against the runaway preventing contact member at a usual speed of advance of the carrier and which is smaller than the force acting to rearwardly turn the other end of the stopper upon the other end striking against the contact member when the carrier runs away in the falling gradient section.

4,433,629

RAILWAY TRUCK BEARING MOUNTING ASSEMBLY

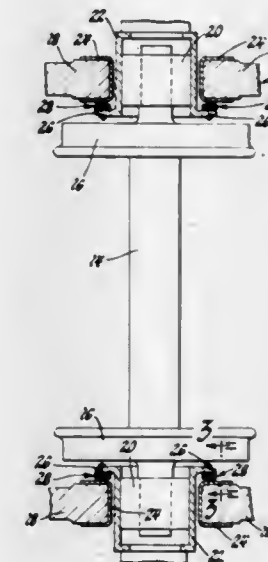
Roy W. Roush, Jr., Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1981, Ser. No. 328,941

Int. Cl.³ B61F 5/30

U.S. Cl. 105—222

2 Claims



1. In a locomotive truck or the like of the type having a truck frame and an axle having the ends thereof supported rotatably on the truck frame by bearings, an assembly for mounting the bearings to the truck frame, comprising:
 a pair of bearing housings, each containing a respective one of the bearings of the axle,
 means freely slidably mounting each bearing housing to the truck frame to allow unrestricted lateral movement of the axle and bearing housings as a unit relative to the truck frame between predetermined limits,
 each bearing housing including at least one stop member in

confronting relation to a respective stop member on the truck frame and laterally spaced therefrom by a predetermined amount within said predetermined limits, the stop member of one bearing housing moving laterally toward the respective stop member of the truck frame as the bearing housings and axle move as a unit laterally in one direction, the stop member of the other bearing housing moving laterally toward the respective stop member of the truck frame as the axle and other bearing housing move as a unit laterally in the other direction, and lateral thrust load absorption means associated with each bearing housing including an elastomer pad mounted to one of the respective stop members and a contact plate secured thereto in confronting relation to the other respective stop member and spaced therefrom to allow lateral movement of the axle and bearing housing freely within said predetermined limits, lateral movement of the axle and bearing housings as a unit in one direction beyond one predetermined limit compressing the elastomer pad and contact plate between the respective stop members of one bearing housing and truck frame to absorb the lateral thrust load, lateral movement of the bearing housings and axle as a unit in the other direction beyond the other predetermined limit compressing the elastomer pad and contact plate between the respective stop members of the other bearing housing and truck frame to absorb the lateral thrust load, thereby preventing uncushioned contact between bearing housing and truck frame due to the lateral movement of the bearing housings and axle in either direction.

4,433,630

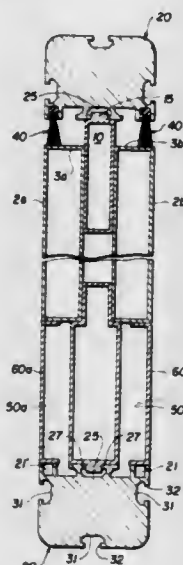
DESK AND PANEL STRUCTURES HAVING BRISTLE-COVERED ACCESS TO THE INTERIORS THEREOF

Robert Laborie, 7, rue Mariotte, 75017 Paris, France
Filed Jan. 15, 1982, Ser. No. 339,564

Int. Cl.³ H02G 3/28; A47B 35/00

U.S. Cl. 108—50

12 Claims



1. A panel providing access to concealed wiring comprising:
 - a. a rectangular panel frame formed by interconnecting an elongated upper horizontal frame member assembly, two elongated vertical frame member assemblies and a lower elongated horizontal frame member assembly;
 - b. an interior sidewall formed by the opposing inwardly facing sides of said elongated upper and lower horizontal frame member assemblies and of said vertical frame member assemblies;
 - c. two parallel and spaced-apart rectangular face sheets interconnected along the periphery thereof by panel face attaching members situated between said panel face sheets and extending out from the edges thereof;
 - d. first brush strip retaining channels on the inwardly facing sides of the upper, lower and vertical frame member assemblies;

- blies; said first brush strip retaining channels extending lengthwise along said inwardly facing sides proximate one edge of the interior sidewall;
- e. second brush strip retaining channels on the inwardly facing sides of the upper, lower and vertical frame member assemblies; said second brush strip retaining channels extending lengthwise along said inwardly facing sides proximate the other edge of the interior sidewall;
- f. a panel face attaching member retaining channel securing the panel face attaching members extending beyond the edges of the upper, lower and vertical frame member assemblies, said panel face attaching member retaining channel extending lengthwise on the inwardly facing sides of the upper, lower and vertical frame member assemblies, substantially parallel to and intermediate the first and second brush strip retaining channels; and
- g. brush strips, comprised of a brush retaining back and brush material, secured within at least one of the first and second brush strip retaining channels of at least one frame member assembly, with the brush material extending out from the channel to the opposing edge of the rectangular face sheets to form a means for accessing wiring concealed by said brushes.

4,433,631

METHOD AND APPARATUS FOR PRODUCING A USEFUL STREAM OF HOT GAS FROM A FLUIDIZED BED COMBUSTOR WHILE CONTROLLING THE BED'S TEMPERATURE

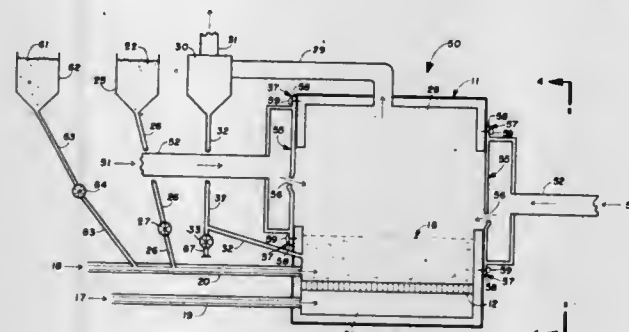
Bruce C. Lindahl, Minneapolis, Minn., assignor to FluidDyne Engineering Corporation, Minneapolis, Minn.

Filed May 18, 1981, Ser. No. 264,438

Int. Cl.³ F23G 5/00

U.S. Cl. 110—245

7 Claims



1. A method of producing a useful stream of hot gas from a fluidized bed combustor while controlling the temperature of the bed comprising:

- (1) creating and maintaining a fluidized bed within a combustion chamber, said fluidized bed comprising a turbulent suspension of particulate matter from which particulate matter is thrown into the freeboard region above the bed at a temperature substantially equal to the temperature of the bed;
- (2) introducing fuel into the fluidized bed and combusting substantially completely said fuel in said bed;
- (3) capturing and feeding back into the bed particulate matter blown out of the combustion chamber; and
- (4) introducing cooling gas, which has a temperature relatively lower than bed temperature and at which the cooling gas quenches combustion in the freeboard region, substantially horizontally into the freeboard region and into contact with particulate matter thrown into the freeboard region and lowering the temperature of the particulate matter while raising the temperature of the cooling gas before the particulate matter recycles by falling back into the bed or by being captured and fed into the bed after blowing out of the combustion chamber.

4,433,632

TRANSFERRING SUCCESSIVE WORKPIECES TO AND FROM A WORK STATION

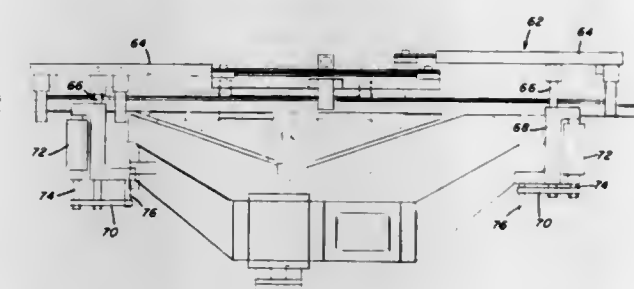
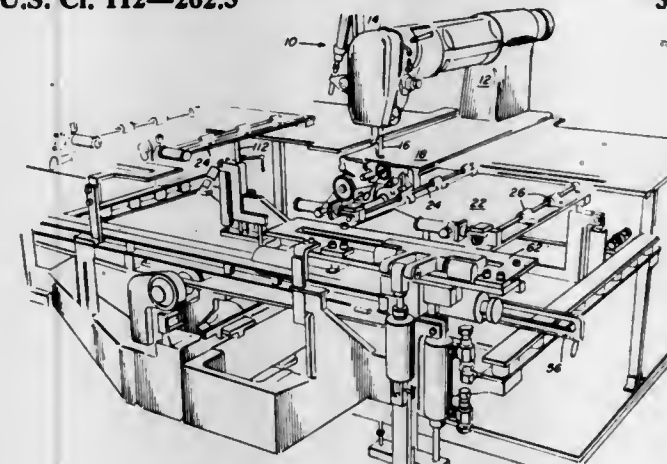
Michael M. Becka, Nashua, and George Bennett, Milford, both of N.H., assignors to International Shoe Machine Corporation, Nashua, N.H.

Filed Oct. 28, 1981, Ser. No. 316,017

Int. Cl.³ D05B 97/00, 21/00, 1/00

U.S. Cl. 112—262.3

3 Claims



1. A machine for performing a prescribed pattern of work on successive workpieces comprising: a work station that includes an operating mechanism having an operating instrumentality actuable to perform the work; a plurality of workpiece assemblies, each formed of a workpiece mount having a workpiece detachably secured thereto; shifting means so constructed as to be actuable to shift a workpiece assembly in a prone plane in a prescribed path past the work station while the operating instrumentality is actuated to enable the operating instrumentality to perform a pattern of work on the workpiece of the workpiece assembly that corresponds to said prescribed path; and workpiece assembly handling means for presenting to and withdrawing from the work station successive workpiece assemblies to enable the pattern of work to be performed on the successive workpieces while they are at the work station, characterized in that the workpiece assembly handling means comprises: a first and a second workpiece assembly elevating mechanism located on each side of the work station, each work elevating mechanism having releasable retaining means for releasably retaining a workpiece assembly thereon; elevating means associated with each elevating mechanism for moving each elevating mechanism heightwise between a lower position and an upper position; and an attaching arrangement for releasably attaching each workpiece assembly to the shifting means while the workpiece assembly is retained on its associated elevating mechanism with the associated elevating mechanism in its lower position; whereby a first workpiece assembly and a second workpiece assembly are respectively retained on the first and the second elevating mechanisms while the elevating mechanisms are in their upper positions; the first elevating mechanism is then lowered to its lower position with the shifting means in position to be located proximate to the lowered position of the first workpiece assembly; the first workpiece assembly is then released from the first elevating mechanism and is attached to the shifting means; the shifting means is then caused to move the first workpiece assembly to the work

station and then move the first workpiece assembly through said prescribed path while the operating instrumentality is actuated; the operating instrumentality is then deactivated and the shifting means is caused to return the first workpiece assembly proximate to the first elevating mechanism in its lowered position; the first workpiece assembly is then unattached from the shifting means and is again retained on the first elevating mechanism; the first elevating mechanism is then returned by its elevating means to its upper position where the first workpiece assembly is released therefrom and a third workpiece assembly may be retained thereon; and, after the first elevating mechanism has commenced its rise to its upper position, the second elevating mechanism, the second workpiece assembly, the shifting means, and the operating instrumentality are caused to repeat the steps and the relative movements referred to above with respect to the first elevating mechanism and the first workpiece assembly.

3. For use with a machine for performing a prescribed pattern of work on successive workpieces, the machine comprising: a work station that includes an operating instrumentality actuable to perform the work on a plurality of workpiece assemblies that are each formed of a workpiece mount having a workpiece detachably secured thereto; and shifting means so constructed as to be actuable to shift a workpiece assembly in a prone plane in a prescribed path past the work station while the operating instrumentality is actuated to perform a pattern of work on the workpiece that corresponds to said prescribed path; a method of presenting to and withdrawing from the work station successive workpiece assemblies to enable the pattern of work to be performed on successive workpieces while they are at the work station comprising: providing a first and a second workpiece assembly elevating mechanism located on each side of the work station, each elevating mechanism being movable between a lower position and an upper position; retaining a first workpiece assembly and a second workpiece assembly respectively on the first and the second elevating mechanisms while the elevating mechanisms are in their upper positions; lowering the first elevating mechanism to its lower position with the shifting means in position to be located proximate to the lowered position of the first workpiece assembly; then releasing the first workpiece assembly from the first elevating mechanism and attaching the first workpiece assembly to the shifting means; then causing the shifting means to move the first workpiece assembly to the work station and then move the first workpiece assembly through said prescribed path while the operating instrumentality is actuated; then deactivating the operating instrumentality and causing the shifting means to return the first workpiece assembly proximate to the first elevating mechanism in its lowered position; then unattaching the first workpiece assembly from the shifting means and again retaining the first workpiece assembly on the first elevating mechanism; then returning the first elevating mechanism to its upper position, releasing the first workpiece assembly from the first elevating mechanism and retaining a third workpiece assembly on the first elevating mechanism; and, after the first elevating mechanism has commenced to return to its upper position, causing the second elevating mechanism, the second workpiece assembly, the shifting means, and the operating instrumentality to repeat the steps and the relative movements referred to above with respect to the first elevating mechanism and the first workpiece assembly.

4,433,633

CONTROLLED GAS GENERATOR SYSTEM

Don W. Caudy, Sunbury; Donald J. Hackman; John R. Myers, both of Columbus, all of Ohio, and Robert T. Hoffman, Kailua, Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1982, Ser. No. 368,933

Int. Cl.³ B63C 7/10

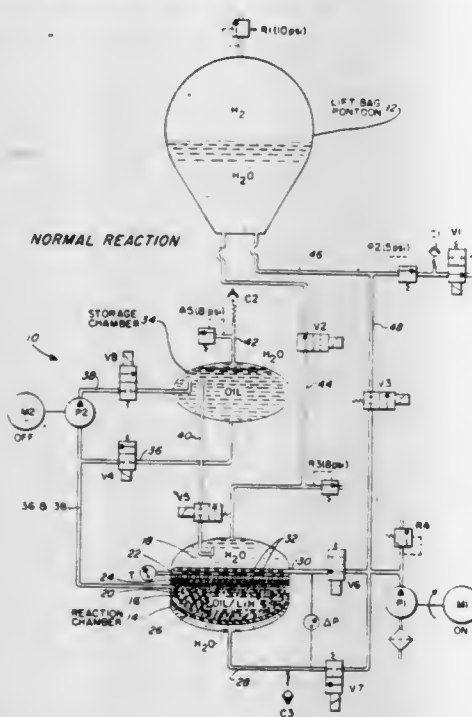
U.S. Cl. 114—54

19 Claims

1. A gas generator comprising: a reaction chamber having top and bottom ends;

a perforated member mounted transversely across the entire reaction chamber for containing a reactant material between the perforated member and one end of the reaction chamber;

the reaction chamber being adapted to contain liquids which have dissimilar specific gravities, one of the liquids being reactive with the reactant and another of the liquids being nonreactive with the reactant, the reactive and nonreactive liquids having a mutual interface;



means connected to the reaction chamber for selectively moving the interface of the liquids above or below the perforated member;

a resilient diaphragm mounted transversely across the reaction chamber; and

a line connected into the reaction chamber for introducing fluid on one side of the diaphragm so as to reduce the volume between the diaphragm and the perforated member.

4,433,634

TRACKED, AMPHIBIOUS VEHICLE WITH TRACK SECUREMENT AND GUIDE MEANS

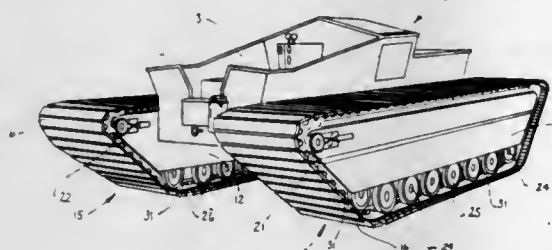
John B. Coast, Baton Rouge, La., assignor to Coast Machinery, Inc., Baton Rouge, La.

Filed Feb. 5, 1982, Ser. No. 346,018

Int. Cl.³ B63C 35/34

U.S. Cl. 114—270

12 Claims



11. A tracked, amphibious vehicle, comprising:
 - a. at least two spaced, elongated pontoons disposed at least generally parallel to one another;
 - b. a platform structure supported by the pontoons;
 - c. driving means for propelling the vehicle associated with said platform;
 - d. a series of longitudinally spaced bogie wheels supporting said vehicle mounted at the bottom area of each one of said pontoons on opposite sides of the longitudinal centerline of each one of said pontoons;
 - e. a movable, continuous, endless, chainless belt for each

pontoon, each belt encircling its pontoon in tracking engagement with its bogie wheels;

f. a plurality of longitudinally spaced, ground engaging, transverse cleats extending across said endless belt and covering the bottom of the associated pontoon;

g. a series of longitudinally spaced, inwardly extending drive lug means attached to the assembly of the cleats and belt; and

h. sprocket means, mounted at least at one end of each one of said pontoons and connected to said driving means, for driving its respective endless track in engagement with said drive lug means.

4,433,635

SINGLE FLUKE ANCHOR

Soroku Takahashi, Tokyo, Japan, assignor to Kyuroku Corporation, Tokyo, Japan

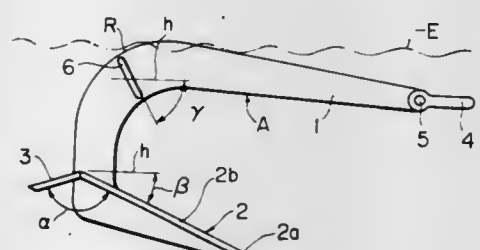
Continuation of Ser. No. 208,336, Nov. 19, 1980, abandoned.

This application Oct. 25, 1982, Ser. No. 436,648

Int. Cl.³ B63B 21/32

U.S. Cl. 114—301

6 Claims



1. A single fluke anchor for ships, structures built on or in the water, buoys, fishing nets, and the like comprising:
 - a generally J-shaped defining a vertical plane with the straight portion extending frontally and horizontally and with the curved portion located below the straight portion;
 - a fluke formed integral to said shank at the free end of the curved portion and extending laterally therefrom, said fluke having a forward and downward inclination;
 - a generally flat stabilizer located behind said fluke and formed integral with said fluke, said stabilizer having a rearward and downward inclination and extending laterally beyond both sides of said fluke; and
 - a generally planar trigger integrally formed on each side of said shank at the end of the curved portion connected to the straight portion, each said trigger extending slightly laterally beyond the respective sides of said fluke and having a width narrower than the corresponding width of the curved portion from which each said trigger extends.

4,433,636

DUAL WARNING PARKING AID

Ronald A. Crouch, 779 S. Willow Glenn Dr., Tipp City, Ohio 45371

Filed Feb. 5, 1982, Ser. No. 346,396

Int. Cl.³ G01C 5/00

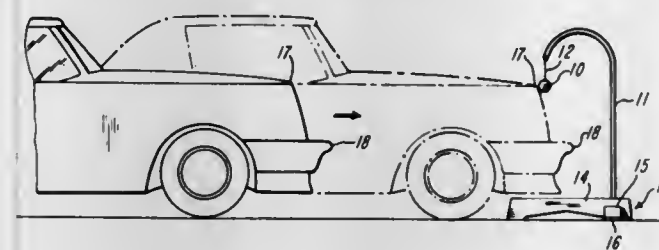
U.S. Cl. 116—28 R

8 Claims

1. A vehicle activated dual (warning sequential) visual indicator vehicle parking aid comprising a floor-mounted base means, a first readily deflectable parking limit visual warning member located in a position closer to the driver of said vehicle and further from the wall in the area where said vehicle is parked and suspended from an upper portion of a bendable second parking limit visual warning member by a flexible means joining said second warning member to said first warning member, wherein said second warning member is connected to said base means and is located in a position further from the vehicle driver and closer to said wall and is initially bendable to a fixed position; whereby said second warning

member is activated by contact with a bumper on said vehicle whereas said first warning member is activated by contact with

6.0% of cholesteryl propionate and about 4.5 to about 7.2% of cholesteryl chloride.



the front or rear-end thereof so as to give two (sequential) visual warnings independently of one another.

4,433,637

MICROENCAPSULATED CHOLESTERIC LIQUID CRYSTAL TEMPERATURE MEASURING DEVICE FOR DETERMINING THE TEMPERATURE OF NON-PLANAR OR PLANAR SURFACES

William L. Bulrley, Dayton; Donald E. Koopman, Miami Township, Montgomery County; David B. McQuain, Dayton, and William H. Reeves, Englewood, all of Ohio, assignors to Vectra International Corporation, Miamisburg, Ohio

Continuation-in-part of Ser. No. 45,276, Jun. 4, 1979, Pat. No. 4,301,054. This application Jun. 10, 1981, Ser. No. 272,194

The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.

Int. Cl.³ G01D 21/00; G01K 11/12

U.S. Cl. 116—207

17 Claims



1. A temperature measuring device for measuring the temperature of a surface comprising: a flexible sheet, a coating of microencapsulated cholesteric liquid crystal material covering at least a portion of the flexible sheet, a transparent sheet, means attaching the rigid transparent sheet to the flexible sheet to form a cavity therebetween, a transparent fill material filling the cavity between the flexible sheet and the transparent sheet, the transparent fill material being one in which adjacent portions thereof are relatively movable, the flexible sheet being engageable with a surface and conformable to the contour of the surface for transmission of thermal energy from the surface to the coating, each portion of the coating reflecting light energy in accordance with the temperature thereof and thus providing a thermal image of the surface, the thermal image being observable through the transparent sheet and through the transparent fill material, the composition of the coating comprising:
 - (a) a polymeric, film-forming binder material and
 - (b) microcapsules having transparent wall material, and having core material consisting essentially of about 55 to about 75% of cholesteryl pelargonate, about 14 to about 35% of oleyl cholesteryl carbonate, about 2.0 to about

APPLICATION FOR SPRAYING LIQUID CHEMICAL ONTO DRILL PIPE

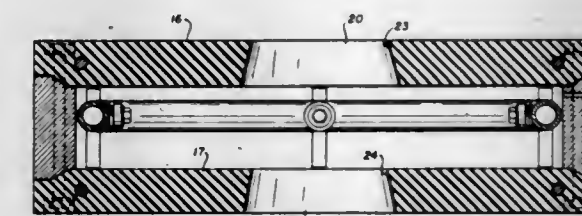
William H. Brown, 11137 - 29A Avenue, Edmonton, Alberta, Canada T6J 3Z4

Filed Jun. 1, 1982, Ser. No. 383,549

Int. Cl.³ B05C 5/00, 15/00

U.S. Cl. 118—316

7 Claims



1. An applicator, for spraying liquid chemical onto a pipe or rod string moving therethrough, said string having a varying outside diameter, comprising:
 - a. an annular housing mountable on the string and having a side wall and elastic, solid top and bottom walls which form a spray chamber, said latter walls forming aligned openings through which the string may pass, said openings each being undersize relative to the smallest outside diameter of the string to pass therethrough and having a sealing sur-

face adapted to grip the string outer surface to provide a substantially liquid-tight seal therewith, said housing, when in use, being free to move laterally with the string; and
a ring-like nozzle assembly, mounted within the spray chamber, for spraying the string.

4,433,640

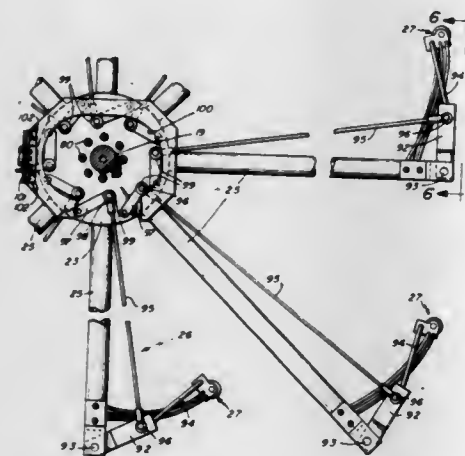
ROTARY SPRAYERS FOR APPLYING UNIFORM COATS TO CONVEYOR SUPPORTED WORK

Alfred E. Beck, Exeter, and Richard D. Cushing, Newton, both of N.H., assignors to Circle Machine Co., Inc., Seabrook, N.H.

Continuation-in-part of Ser. No. 211,282, Nov. 28, 1980, abandoned. This application Apr. 7, 1981, Ser. No. 251,868
Int. Cl.³ B05C 5/00

U.S. Cl. 118—323

11 Claims



1. Apparatus for spraying work being carried on a conveyor, said apparatus of a type including a rotor spaced from the conveyor with the rotor axis normal relative to the center thereof, means to rotate said rotor at a constant rate, a series of spray heads, a connection between each spray head and said rotor, said connections spacing said heads from the rotor axis a distance such that the spray heads have arcuate paths across the conveyor upstream and downstream with respect to the rotor axis and means operable to effect the discharge of spray from each spray head as it travels across the conveyor along at least one of said paths, means operable to decrease the radial distance of each spray head from the axis of said rotor from a maximum adjacent one margin of the conveyor to a minimum centrally thereof and then increase said distance to a maximum adjacent the other margin of said conveyor.

4,433,641

BABY PIG FEEDER

Dwaine C. Waite, Rte. 2, Harrison County, Woodbine, Iowa 51679

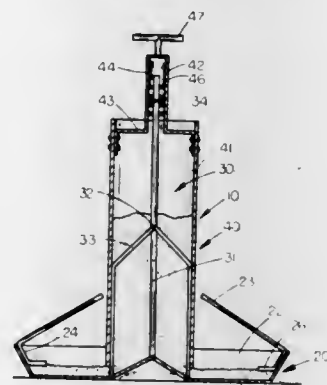
Filed Aug. 18, 1982, Ser. No. 409,210
Int. Cl.³ A01K 5/00

U.S. Cl. 119—53

6 Claims

1. A pig feeder of a type having a feed pan and a hopper whose position in relation to said feed pan can be raised or lowered, the improvement comprising a vertical support post fixedly attached to the pan and having an opening through its upper end; means fixedly attached to the hopper for supporting

a plurality of vertically spaced and aligned washers through which said support post passes; and a pin for insertion through



the support post opening, whereby the hopper may be selectively supported at any of various levels above the feed pan.

4,433,642

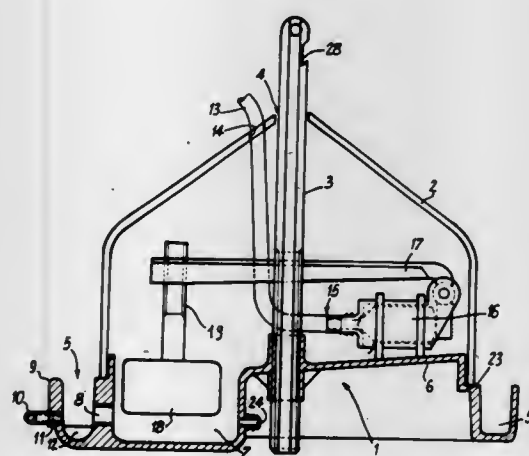
DRINKING TROUGH FOR POULTRY

Ernest Le Roy, 48, rue Monsieur Vincent, 35100 Rennes, France
Filed Apr. 1, 1982, Ser. No. 364,488

Int. Cl.³ A01K 7/02

U.S. Cl. 119—78

7 Claims



1. A water distributor for poultry, comprising in combination:
trough means, including inlet means and outlet means;
means for supplying water to said trough inlet means, including means for maintaining the supplied water at a constant level and means for circulating the supplied water;
truncated conical cover means having an open upper end; a rod attached to the base of the distributor and extending upwardly through said open upper end of said cover, said distributor being alternatively supportable on, or in elevated position above, the ground; and
said trough means further including scalloped plate means forming recessed areas and having in one of said areas a water distributor including a non-return valve connected to said outlet means, and a T-tap for the supply of water for drinking troughs for chicks.

4,433,643

METHOD AND APPARATUS FOR THE SUPPORT OF ANIMALS

Charles E. O. Fraser, 79 Marlborough, Southborough, Mass. 01772

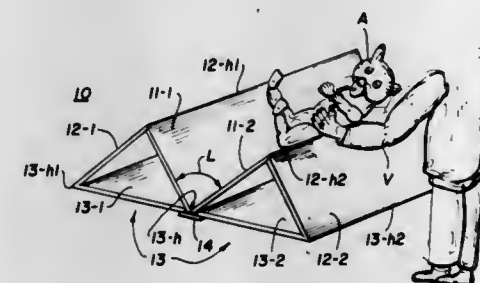
Filed Jun. 9, 1982, Ser. No. 386,802
Int. Cl.³ A61D 3/00

U.S. Cl. 119—103

10 Claims

1. Apparatus for the support of animals which comprises a base member;

a first side panel hingeably secured to one end of said base member;
a second side panel hingeably secured to the other end of said base member;



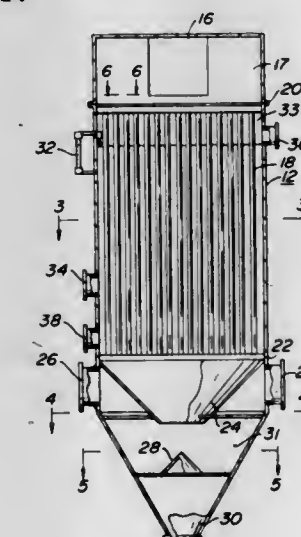
STEAM BOILERS

James J. Fitzpatrick, 317 Airdale Rd., Rosemont, Pa. 19011
Filed Nov. 6, 1981, Ser. No. 319,017

Int. Cl.³ F22B 9/02

U.S. Cl. 122—114

14 Claims



HEAT EXCHANGER

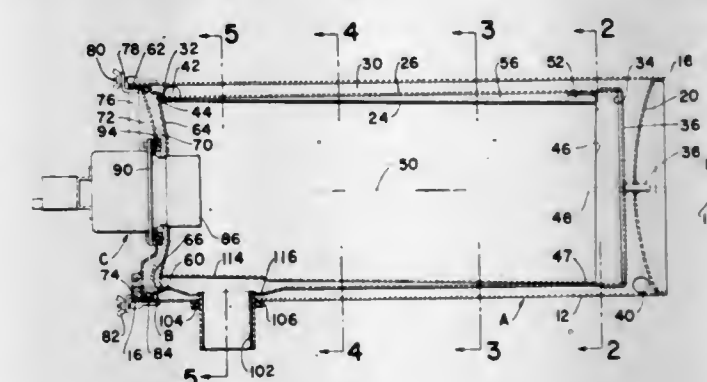
Harris W. Smith, Chagrin Falls, Ohio, assignor to Hunter Investment Company, Cleveland, Ohio

Filed May 20, 1981, Ser. No. 265,461

Int. Cl.³ F22B 23/06

U.S. Cl. 122—136 R

15 Claims



1. A heat exchanger having a longitudinal axis along which a plane extends to provide a reference for portions of said heat exchanger located on opposite sides of said plane, elongated inner and outer tubular members having first and second opposite ends and extending generally along said axis in cooperative relationship to define a generally annular passage therebetween, said second end of said inner tubular member being open and said second end of said outer tubular member being closed, an exhaust outlet in said outer tubular member adjacent said first end thereof on one side of said plane, a burner mounted adjacent said first ends for discharging gases into said inner tubular member and from which such gases flow around said second end thereof into said annular passage and back toward said first ends to discharge through said exhaust outlet, said tubular members being cooperatively positioned such that said passage on said one side of said plane has a cross-sectional area which is a minimum adjacent said second ends and gradually increases toward said first ends while having on the opposite side of said plane a cross-sectional area which is a maximum adjacent said second ends and gradually decreases toward said first ends, whereby a major portion of the burner exhaust gases flow from said inner tubular member around said second end thereof and into said annular passage on said opposite side of said plane and then flow generally longitudinally along and circumferentially around said passage over to said one side of said plane for discharge through said outlet.

4,433,646

BOILER WATER TRIP SYSTEM

Allan J. Zadiraka, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 16, 1982, Ser. No. 419,112

Int. Cl.³ F22B 37/42

U.S. Cl. 122—504.2

9 Claims

1. A boiler comprising a vessel, a plurality of tubes in said vessel connected at their ends to first and second tube sheets, said vessel having an inlet for high temperature gaseous effluent adjacent said first tube sheet and communicating with one end of said tubes, said vessel having an outlet communicating with the other end of said tubes, a metallic protective sleeve disposed within the inlet end portion of said tubes, a refractory juxtaposed to said first tube sheet and coupled to one end portion of said sleeves without interfering with flow through the sleeves, a retainer secured to each sleeve, said refractory including refractory members, each refractory member being coupled to one of said retainers for movement as a unit with its associated sleeve, each retainer and its sleeve being removably supported by said first tube sheet, and each retainer being an

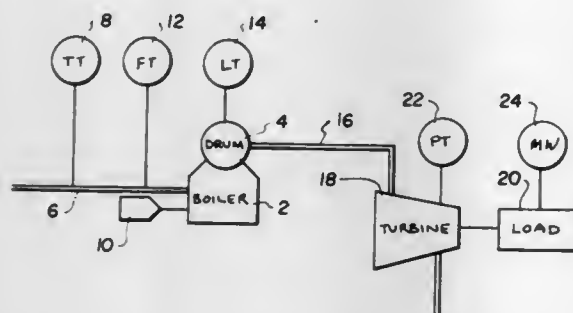
1. A boiler water level trip system for a boiler having a drum with an upper and lower water level limit comprising:
tripping means connected to the boiler for tripping the boiler operation upon the occurrence of a trip signal;
a feedwater flow transmitter for sensing flow into the boiler;
a drum level transmitter for sensing a water level in the drum;
a steam pressure transmitter for sensing steam pressure coming from the boiler;
a function generator connected to the pressure transmitter for converting the steam pressure in a first stage of a turbine into a flow value out of the boiler;
a comparator connected to said flow transmitter and to said

function generator for generating a flow error signal corresponding to a difference in flow into and out of the boiler;

an integrator connected to said comparator for integrating said flow error signal to generate a boiler level signal corresponding to a level of water in the boiler;

a first high/low indicator connected to said integrator for generating high and low indication signals upon the occurrence of a boiler level signal above and below selected limits respectively, said first high/low indicator having output terminals for each of said high and low level indication signals;

a second high/low indicator connected to said level transmitter for generating high and low level indication signals



upon the occurrence of upper and lower water levels in the drum, said second high/low indicator having output terminals for each of the high and low level indication signals;

a first AND gate having an input connected to each high level indication signal terminal of said first and second high level indicators and an output;

a second AND gate connected to the low level indication signal terminal of each of said first and second high/low indicators and having an output; and

an OR gate having inputs connected to each of said first and second AND gate outputs and an output connected to said tripping means, said OR gate generating said trip signal upon the occurrence of a signal from either of said first and second AND gates.

4,433,647

INTERNAL COMBUSTION MOTOR WITH TURBULENCE CHAMBER

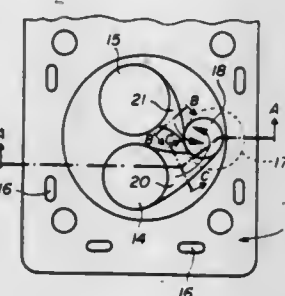
Rudolf Muller, Chemin du Ciclet, 1860 Aigle, Switzerland
PCT No. PCT/CH80/00157, § 371 Date Aug. 6, 1981, § 102(e)
Date Aug. 6, 1981, PCT Pub. No. WO81/02038, PCT Pub. Date Jul. 23, 1981

PCT Filed Dec. 18, 1980, Ser. No. 293,623

Claims priority, application Switzerland, Jan. 3, 1980, 1/80
Int. Cl.³ F02B 19/18, 31/00

U.S. Cl. 123—263

10 Claims



1. An internal combustion engine comprising at least one combustion chamber, a corresponding piston, a cylinder head, a turbulence chamber having a revolution of symmetry about a symmetry axis provided in said cylinder head at an upper end of said combustion chamber and ignition means for compressed gases mounted in a wall of said turbulence chamber, said turbulence chamber being connected to said combustion chamber by at least one tangential channel provided in said

cylinder head, said at least one tangential channel originating at a position remote from said turbulence chamber and opening at a tangent at a base portion of said turbulence chamber, said at least one tangential channel having a concave edge and a convex edge arranged so that the width of said at least one channel narrows down continuously in a direction toward said turbulence chamber, and said at least one channel having a depth which varies appreciably as an inverse progression with respect to the width of said at least one channel with the depth along said concave edge being greater than along said convex edge to thereby provide a better flow of combustible mixture penetrating in said turbulence chamber and enable an ordinate cyclonic turbulence of said combustible mixture around said symmetry axis of said turbulence chamber.

4,433,648

CONTROL MEANS FOR ENGINE COOLING SYSTEMS

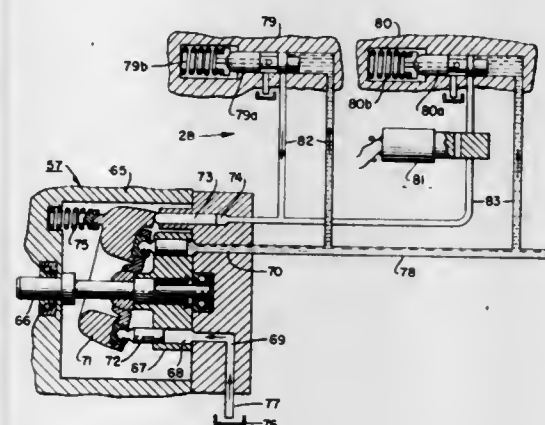
James C. LeBlanc, 38261 Long St., Mt. Clemens, Mich. 48045

Filed Jun. 10, 1980, Ser. No. 158,284

Int. Cl.³ F01P 7/02

U.S. Cl. 123—41.12

25 Claims



16. In a vehicle having an engine and a cooling system for said engine comprising:

means for circulating a coolant through said engine, a fluid motor drive fan disposed in operative relation with a radiator and an engine driven pump operatively connected to said fluid motor, said pump being a variable displacement pump, means for controlling the operation of said cooling system including a first pressure adjusting means operatively connected to said pump and responsive to an output pressure of said pump above a first predetermined pressure for varying the displacement and adjusting the output pressure of said pump to said fan at said first predetermined pressure to provide a normal cooling mode at a substantially constant fan speed, and second pressure adjusting means operatively connected to said pump and responsive to an output pressure of said pump above a second predetermined pressure and a predetermined temperature of said coolant for varying the displacement and adjusting the output pressure of said pump to said fan at said second predetermined pressure to provide a higher cooling mode at a higher fan speed than at said normal mode.

4,433,649

ENGINE

Hi B. Shin, 3635 W. 225th, Torrance, Calif. 90505

Filed Nov. 27, 1981, Ser. No. 325,117

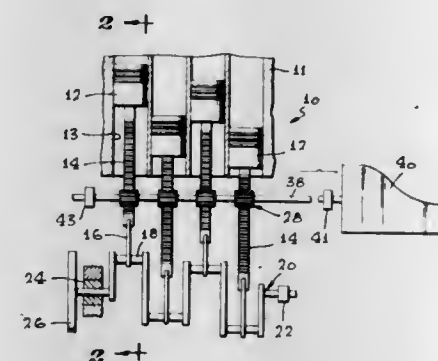
Int. Cl.³ F02B 75/26; F16H 21/22

U.S. Cl. 123—54 R

2 Claims

1. An engine of the class described comprising an engine block, at least one piston receiving cylinder formed in the engine block, a piston in each cylinder mounted for alternating rectilinear motion when the engine is operating, a downwardly extending piston rack secured to each piston, a power output

shaft, said shaft rotatably mounted in bearings and adapted to be connected to an engine drive chain, a gear associated with each piston, each gear having a concentric generally circular opening extending therethrough defining thereby an outer peripheral surface and an inner peripheral surface surrounding said circular opening, gear teeth on the outer periphery of each gear disposed in uniformly spaced angular relationship to each other, said gear teeth meshing with teeth on said piston rack, whereby the alternating rectilinear motion of said piston causes said gear to rotate alternately first in one direction and then in an opposite direction, a plurality of radially extending uniformly spaced angularly disposed ratchet teeth receiving openings, one for each gear tooth, formed on said inner peripheral surface, a ratchet pinion for each gear rigidly mounted on said power output shaft in said concentric opening of said gear, a plurality of ratchet teeth, one for each radially extending opening in said gear, pivotally mounted on said ratchet pinion, wherein each of said ratchet teeth extends along a plane which intersects adjacent respective teeth of said gear teeth located closest to each of said ratchet teeth, means individually biasing each ratchet tooth in a direction such that they pivot towards an associated radially extending opening, a stop associated with each ratchet tooth to prevent the ratchet tooth from pivoting beyond a predetermined amount in said direction whereby the alternating reciprocal movement of the pistons



when the engine is operating alternately rotates said gear first in one direction and then in an opposite direction, causing the ratchet teeth to pivot out of said radially extending openings when the gear rotates in its said opposite direction and prevents said ratchet teeth from pivoting out of said radially extending openings when the gear rotates in its said one direction so that alternating rotary motion of the gear causes the ratchet pinion to rotate in one direction whereby the power output shaft rotates in only one direction, said ratchet teeth having a size, shape and position on said ratchet pinion such that they remain out of power transmitting engagement with said inner peripheral surface of said gear whenever rotational speed of the power output shaft and pinion is greater than rotational speed of said gear in said one direction of said gear, so that if said engine is installed in a motor vehicle and the motor vehicle is driven at high speeds, the engine does not act as a drag on the motor vehicle when a driver releases pressure on a throttle of the engine to provide motor vehicle with an automatic free wheeling effect which only functions at higher speeds, a crankshaft rotatably mounted in bearings, a connecting rod pivotally secured at one end to a lower end of said piston rack and at another end to the crank of a crankshaft, and said crankshaft having a size, weight and shape such that a rotational energy imparted to the crankshaft returns each piston back into the cylinder in position in time for a next power stroke.

4,433,650

SYSTEM FOR CONTROLLING THE STARTING OPERATION OF AN INTERNAL COMBUSTION ENGINE

Matsuo Amano; Takao Teranishi, both of Hitachi; Yasunori Mouri; Osamu Abe, both of Katsuta, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

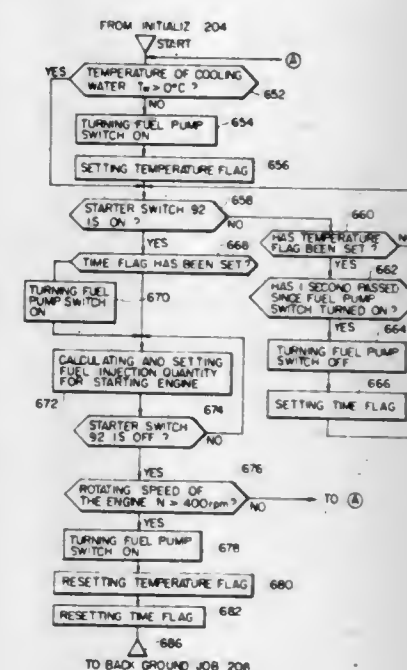
Filed Mar. 5, 1981, Ser. No. 240,968

Claims priority, application Japan, Mar. 5, 1980, 55-26676

Int. Cl.³ F02D 37/00

U.S. Cl. 123—179 G

7 Claims



1. A system for controlling the starting of an engine, comprising:

manipulation means including at least first and second contacts,

ignition means adapted to be connected to a power supply by said first contact,

a starter motor which is adapted to be connected to said power supply by said second contact,

a fuel injection system which includes an injector to be turned ON and OFF by electrical control, and a fuel pump for supplying pressurized fuel to said injector,

a temperature sensor which detects the temperature of a coolant of the engine, and

a control circuit to which said first and second contacts and said temperature sensor are connected, which drives said fuel pump from a point of time of turning-ON of said first contact and at least during a period of turning-OFF of said second contact and does not drive said fuel pump during any period of turning-ON of said second contact in case where, in a starting operation of said engine, the temperature of the coolant indicated by an output signal of said temperature sensor is not higher than a predetermined reference temperature, and which drives said fuel pump at least during any period of turning-ON of said second contact in case where the temperature of said coolant is higher than said reference temperature.

4,433,651

HELICAL INTAKE PORT TYPE SUCTION UNIT FOR HORIZONTAL SINGLE-CYLINDER DIRECT INJECTION TYPE DIESEL ENGINE

Kiyomi Nakakita, and Keiichiro Yamada, both of Sakaishi, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 19, 1982, Ser. No. 359,843

Claims priority, application Japan, Mar. 24, 1981, 56-41772[U]

Int. Cl.³ F02F 1/42

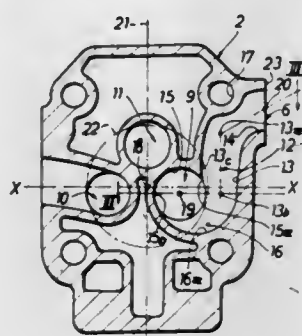
U.S. Cl. 123—188 M

4 Claims

1. A helical intake port type suction unit for a horizontal

direct injection type diesel engine having a single cylindrical combustion chamber with a center, said unit comprising:

- a cylinder head having a vertical center axis and comprising a substantially vertical inner wall facing said combustion chamber, an outer wall facing opposite to said inner wall, and at least one substantially vertical side wall;
- an intake valve opening and an exhaust valve opening disposed side by side in said inner wall, said intake valve opening having a peripheral rim, and a center spaced vertically, in a first vertical direction, from said combustion chamber center;
- a suction air opening disposed in said side wall, said suction air opening having a center spaced vertically, in second vertical direction opposite to said first vertical direction, from said combustion chamber center;



- a generally S shaped helical intake port connecting said suction air opening to said intake valve opening, said intake port including an elongated substantially linear mid section, said mid section extending generally vertically in said cylinder head, said mid section being positioned laterally of said center axis and being defined by an inner wall and an outer wall, said inner wall being closer to said center axis than said outer wall, said inner wall having an end tangentially connected to said rim, and said outer wall being connected to a curving wall which forms a fore helical section of said intake port, said curving wall being formed progressively closer to said rim and connecting tangentially to said rim, the tangential connection of said curving wall being closer to said center axis than the tangential connection of said inner wall.

4,433,652

COMPOSITE VALVE AND PROCESS

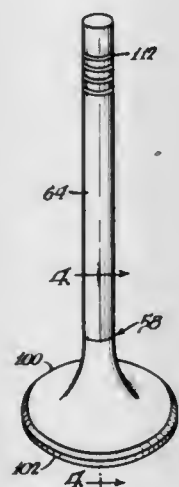
Matthew W. Holtzberg, Ringwood, N.J., and Lawrence D. Spaulding, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,322

Int. Cl.³ F01L 3/02

U.S. Cl. 123—188 AA

44 Claims



1. A composite engine valve, comprising:

a metal valve head for opening and closing an engine manifold communicating with a cylinder of an engine; and an elongated, thermoplastic, amide-imide resinous polymeric valve stem connected to said valve head said thermoplastic amide-imide valve stem and said metal valve head maintaining their structural integrity at engine operating conditions.

- 27. A process for forming a composite valve for use in an engine, comprising the steps of: molding a thermoplastic, amide-imide, resinous polymer to form an elongated valve stem; allowing said amide-imide valve stem to cool below its plastic deformation temperature; post curing said amide-imide valve stem by solid state polymerization to enhance the strength and integrity of said amide-imide valve stem; forming a metal valve head; and connecting said amide-imide valve stem to said metal valve head.

4,433,653

LIGHT METAL CYLINDER HEAD FOR A VALVE-CONTROLLED INTERNAL COMBUSTION ENGINE

Emil Lichtner, Odenthal-Voisswinkel; Gerd Ungerling, Bergisch Gladbach, and Gerhard Giebel, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 119,108, Feb. 6, 1980, Pat. No. 4,337,735. This application Jun. 24, 1982, Ser. No. 391,510

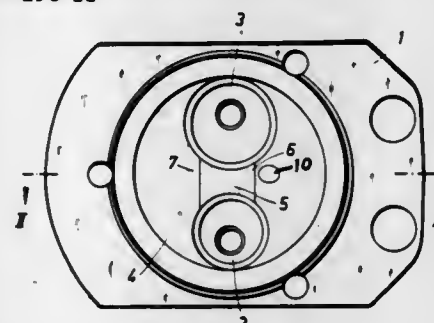
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904940

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ F02F 1/26

U.S. Cl. 123—193 H

3 Claims



- 1. A light metal cylinder head for an internal combustion engine controlled by valves, said cylinder head having a bottom which is adapted to be directed toward a combustion chamber belonging therewith, said bottom being provided with valve openings to allow communication with valves belonging therewith; and said cylinder head also having a bore communicating with said bottom substantially between said valve openings for receiving at least one of an injection nozzle and ignition aid, said cylinder head further having improvement in combination therewith comprising:

- means defining at least one expansion gap generally and including therewith in particular at least one corrosion-resistant titanium metal insert in that portion of said bottom extending specifically between said valve openings and to a limited extent capable of taking up changing stresses in said cylinder head; and
- an oxide layer coating additionally provided by anodic oxidation only on that portion of said bottom located between said valve openings and the region of said bore, said oxide layer coating having complementary dual effect thereof both for preventing cracks as well as fissure tendency due to thermal stresses and simultaneously for equalizing localized temperature differences in the cylinder head entirely to protect against formation of cracks since further increase of the combustion chamber temper-

ature is substantially reduced and taking-up of material stresses is made possible through more nominal heat expansion of said oxide layer coating compared with that of the light metal cylinder head itself, said metal insert comprising a material which is also resistant with respect to how said oxide layer coating is produced, said oxide layer coating providing insulation exclusively for a hot location in said bottom to decrease peak temperatures at said location on the one hand and on the other hand permitting only minimal increase of temperature thereof.

4,433,654

KNOCK CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Katsuhiko Yokooku, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Tokyo, Japan

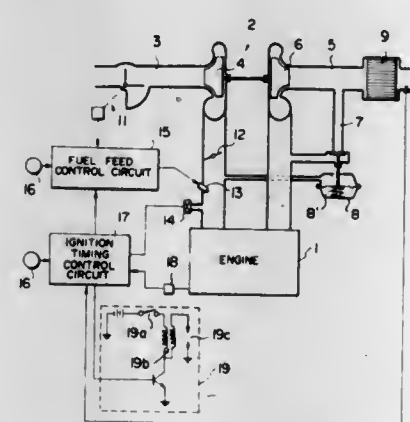
Filed Aug. 12, 1982, Ser. No. 407,552

Claims priority, application Japan, Aug. 25, 1981, 56-132930

Int. Cl.³ F02D 37/02

U.S. Cl. 123—425

6 Claims



- 1. A knock control device for an internal combustion engine having a combustion chamber with a spark plug, an intake system for introducing intake gas into the combustion chamber and an exhaust system for discharging exhaust gas therefrom comprising a knock detecting means for detecting occurrence of knock in the internal combustion engine, a temperature sensor for detecting the temperature of the exhaust system, and an ignition timing control means which receives the outputs of the knock detecting means and the temperature sensor, and is arranged to further retard the ignition timing by a first angle when knock occurs when the temperature of the exhaust system is lower than a predetermined value, and to further retard the ignition timing by a second angle smaller than the first angle when knock occurs when the temperature of the exhaust system is not lower than the predetermined value.

4,433,655

INTERNAL COMBUSTION ENGINE

Tony R. Vilella, 2030 N. Black Canyon Hwy., Phoenix, Ariz. 85009

Division of Ser. No. 949,372, Oct. 6, 1980, Pat. No. 4,291,651.

This application Jun. 29, 1981, Ser. No. 278,581

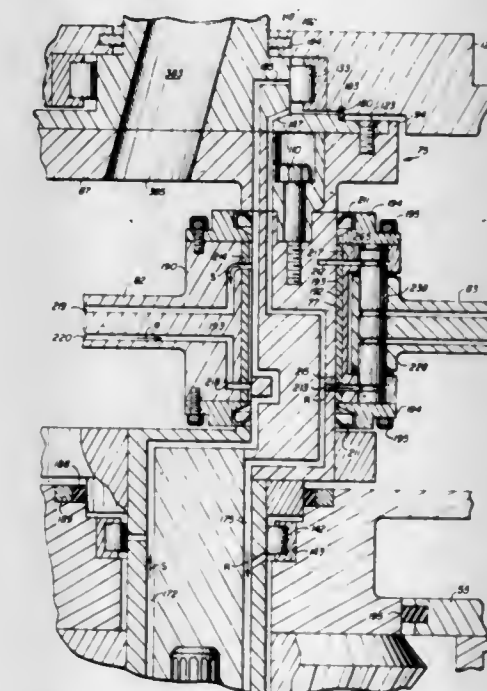
Int. Cl.³ F01M 1/00

U.S. Cl. 123—196 R

19 Claims

- 1. In an internal combustion engine which includes a first area of relative movement between a crankshaft and a crankcase in which it is journaled, a second area of relative movement between said crankshaft and the first end of a connecting rod journaled thereon, and a third area of relative movement between the second end of said connecting rod and a pivotally connected piston, reciprocal within a cylinder, improvements therein consisting of a lubrication system for supplying a lubricant to any of said areas, said system comprising:

- (a) a primary delivery channel extending longitudinally within said crankshaft;
- (b) a reservoir remote from said crankcase for holding a supply of said lubricant;
- (c) pump means for drawing said lubricant from said reservoir and for supplying pressurized lubricant to said primary delivery channel;
- (d) a primary return channel extending longitudinally within said crankshaft and communicating with said reservoir;
- (e) passage means communicating between said primary delivery channel and said primary return channel for supplying said pressurized lubricant to said first area of relative movement and returning said lubricant to said primary return channel, said passage means including



- a supply passage communicating between said area and said primary delivery channel; and
- a return passage communicating between said area and said primary return channel;

- (f) seal means for retaining said lubricant in said first area of relative movement; and
- (g) said second area of relative movement further including a rod bearing journaled said first end of said connecting rod to said crankshaft and wherein said seal means includes a first seal element proximate one end of said rod bearing and a second seal element proximate the other end of said rod bearing, each said seal element sealingly engageable between said crankshaft and said connecting rod.

4,433,656

AUTOMOTIVE OIL FILTER PRECHARGING ARRANGEMENT

Joseph E. Norwood, Sr., 312 Keyser Ave., Petersburg, W. Va. 26847

Filed Jul. 22, 1982, Ser. No. 400,753

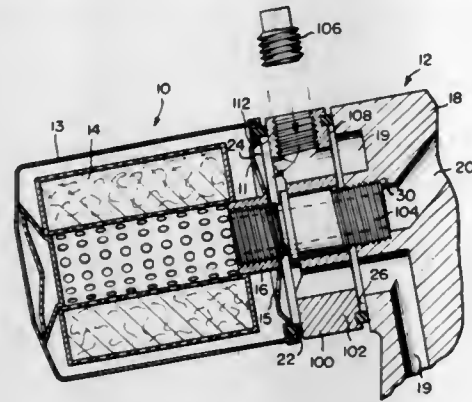
Int. Cl.³ F01M 1/00

U.S. Cl. 123—196 A

4 Claims

- 1. An adaptor for mounting and precharging with oil a spin-on type of oil filter on an internal combustion engine having a lubrication system including oil passages in the engine block, and mounting means on the block for an oil filter, the filter when so mounted being in the flow of the oil and having a threaded central mounting hole in the base thereof, a plurality of other holes in said base annularly disposed about said central mounting hole, and a circular gasket surrounding said plurality of other holes, said mounting means including a threaded nipple adapted to matingly engage said threaded central mounting hole and a sealing surface adapted to sealingly engage said gasket, said adaptor comprising:

- (1) a mounting plate adapted to be mounted on said filter mounting means, having:
 an engine mating surface adapted to mate with said sealing surface of said mounting means, said engine mating surface having a gasket thereon which forms a tight seal between said mating surface and said sealing surface;
 an oil filter mounting surface located on the side of said plate opposite to said engine mating surface;
 a central aperture extending through said plate from said engine mating surface to said oil filter mounting surface;
 a plurality of plate holes annularly arranged around said plate central aperture and passing through said plate to provide fluid communication between the filter mounting and engine mating surfaces of said plate; and
 a port in the periphery of said mounting plate in fluid communication with one of said plurality of plate holes;



- (2) an adaptor nipple, replacing said threaded nipple in said engine block, having:
 a threaded filter engaging portion adapted to matingly engage said threaded central mounting hole in said filter;
 a threaded engine mounting portion smaller in diameter than said mounting plate central aperture, which extends through said central aperture and is adapted to matingly engage said engine block; and
 a retaining flange extending outwardly from said adaptor nipple between said threaded filter engaging portion and said threaded engine mounting portion, for engaging said adaptor plate and retaining it on said engine block; and
 (3) closure means for sealing said port after said filter has been charged with oil.

4,433,657

MODIFICATION OF AN INTERNAL COMBUSTION ENGINE SO AS TO OPERATE PERMANENTLY WITH A REDUCED NUMBER OF CYLINDERS

George Levinson, 105-75 Flatlands First St., Brooklyn, N.Y. 11236

Filed Aug. 17, 1981, Ser. No. 293,423
 Int. Cl.³ F02D 13/06

U.S. Cl. 123—198 F

6 Claims

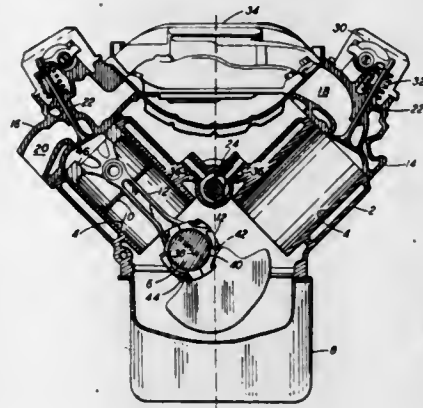
1. A method of converting an internal combustion engine of the type defined from operation with n cylinders to operation with m cylinders, where m is a positive integer less than n , comprising the following steps (a), (b), and (c), steps (a), and (b) not necessarily being performed in the order stated:

(a) removing the cylinder head from the cylinder block and forming in the crown of an operative piston associated with at least one cylinder a hole which is of substantial cross-sectional area relative to the cross-sectional area of the cylinder, and replacing the cylinder head;

(b) removing the intake manifold, removing the valve push rods and hydraulic valve lifters associated with said one cylinder, sealing the exit ports for oil opening into the bores for the valve lifters associated with said one cylinder, and replacing the intake manifold; and

(c) checking the balance of the engine and, if necessary, adjusting the engine to place it in balanced condition.

5. An internal combustion engine comprising a cylinder block formed with n cylinders, and a crankshaft for having n connecting rods journaled thereon to connect the crankshaft to respective pistons fitted reciprocally in the n cylinders respectively, said crankshaft being formed with a passageway which opens to the exterior of the crankshaft in n exit ports for feeding lubricating oil to the bearing surfaces for the connecting rods respectively, said cylinder block also being formed with n pairs of bores associated with the cylinders respectively for receiving actuating trains for inlet and exhaust valves, and



with passageways which open to the interior of said bores in exit ports for feeding oil to the bores, and the engine further comprising n initially operative pistons fitted reciprocally in the n cylinders respectively, at least one but less than all of said initially operative pistons being formed in its crown with a hole which is of substantial cross-sectional area relative to the cross-sectional area of the cylinder, n connecting rods journaled on the crankshaft and connecting the crankshaft to the n pistons respectively, valve actuating trains fitted in the bores associated with the cylinders in which the pistons without holes are fitted, and means for blocking flow of oil from the exit ports, opening to the interiors of the bores associated with the or each cylinder having fitted therein a piston with a hole.

4,433,658

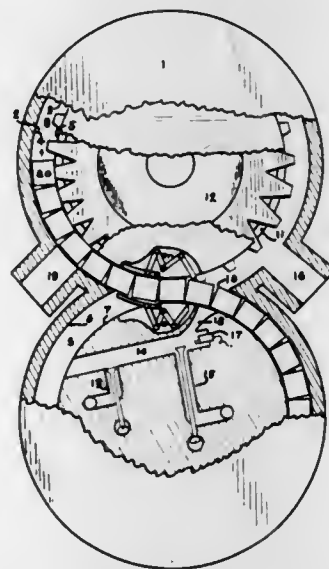
BI-ANNULUS ROTARY ENGINE

John S. Stojanowski, 198 Heberton Ave., Staten Island, N.Y. 10302

Continuation-in-part of Ser. No. 246,101, Mar. 20, 1981, abandoned. This application Mar. 16, 1983, Ser. No. 460,593
 Int. Cl.³ F02B 53/00

U.S. Cl. 123—221

6 Claims



1. A rotary engine of the internal combustion type, comprising:
 a rotor housing consisting of two hollow annular chambers

of the same size lying in the same plane; the circles drawn at the mid-point of each annulus being tangent to each other and non-intersecting;
 said annuluses overlap to form a common chamber;
 a rotor consisting of loosely coupled segments is centrally disposed within said annular chambers;
 said rotor consisting of a fixed number of segments which, when positioned totally within one annulus, fully circumscribes the smaller circumference of said annulus;
 said rotor being in slidable and sealable engagement with said rotor housing;
 said rotor being free to rotate in a fixed direction, alternately through each annulus thereby describing a 'figure 8' path;
 power transfer means are secured to said rotor via engagement of rotatable, concentrically disposed means within one annulus and extending beyond said rotor housing; said annulus being referred to as the power transfer annulus;
 compression/combustion means are recessed in the inner surface of the second annulus; said annulus being referred to as the non-power transfer annulus;
 said compression/combustion means is in spaced relationship with said common chamber;
 intake passage means are contained within said compression/combustion means and in cyclic cooperation and communication with said non-power transfer annulus;
 exhaust passage means are contained within said compression/combustion means and in cyclic cooperation and communication with said non-power transfer annulus;
 said intake and exhaust passage means being in cyclic cooperation and communication to provide mutually exclusive fluid flow systems.

4,433,659

PRECOMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINES WITH COMPRESSION-IGNITION

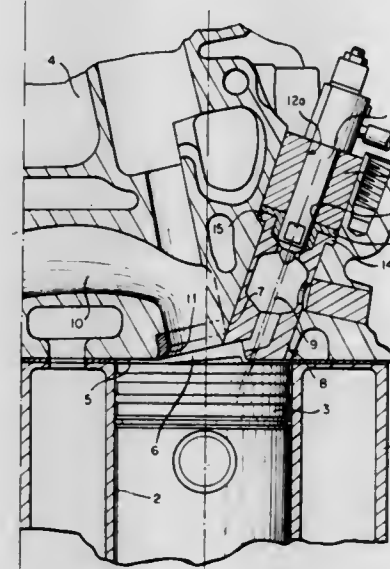
Antonio Burgio, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 17, 1979, Ser. No. 58,397

Claims priority, application Italy, Jul. 26, 1978, 53584/78[U]
 Int. Cl.³ F02B 19/10

U.S. Cl. 123—256

3 Claims



1. In an internal combustion engine with compression-ignition of the type having:
 at least one cylinder with a piston slidable therein;
 a cylinder head having a wall facing said cylinder;
 a combustion chamber within said cylinder delimited at one end by the said wall of the cylinder head and at the other end by the piston;
 a fuel injector associated with said cylinder;
 a seat in said wall of the cylinder head;
 a substantially cylindrical tubular metal body mounted in said seat and having an internal cavity which forms a precombustion

tion chamber communicating with the said combustion chamber, said internal cavity having a central cylindrical part, the end of which adjacent the combustion chamber is connected by means of a frusto-conical part with the cylindrical second part of reduced diameter having an axis parallel to the axis of said central part, a first end part, the axis of which is inclined to the axis of said cylindrical second part of reduced diameter, affording communication between the said second part and the combustion chamber, and a second end part coaxial with the said central cylindrical part at the end of said cavity opposite the combustion chamber, said second end part defining a seat for said fuel injector for the injection of fuel into said precombustion chamber,
 the improvements comprising the axis of the said cylindrical second part of reduced diameter being displaced with respect to the axis of the said central cylindrical part in the opposite direction to the inclination of said first end part, and said central cylindrical part being delimited by a wall having a radial hole defining a seat for a preheating glow plug compatible with said precombustion chamber with the axis of said radial hole being inclined at an angle substantially equal to 5° relative to a radial plane perpendicular to the axis of said central cylindrical part in the direction of the second end part.

4,433,660

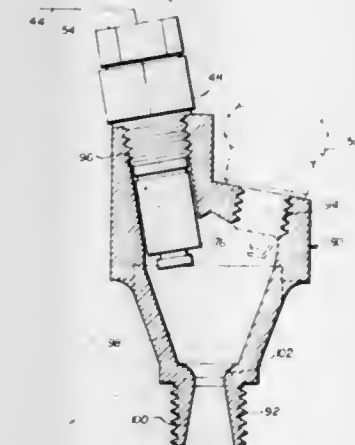
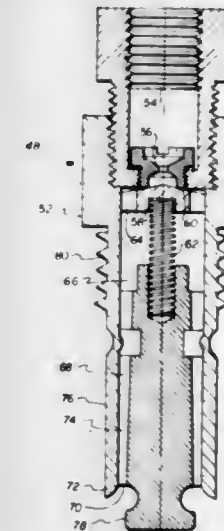
FUELING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Richard F. Blaser, 210 Caroline St., Cape Canaveral, Fla. 32920
 Filed Oct. 22, 1981, Ser. No. 314,016

Int. Cl.³ F02B 3/06

U.S. Cl. 123—266

16 Claims



1. A fueling system for directly supplying flash evaporated fuels to the combustion chamber of an internal combustion

engine operable in an Otto or diesel cycle during an intake event comprising:

- a housing arranged to be secured to the engine;
- a liquid fuel holding chamber in the housing and at least one restricted passageway providing communication between the holding chamber and the combustion chamber;
- a liquid fuel supply duct including fuel metering means in communication with the liquid fuel holding chamber;
- a one-way flow controller (e.g., check valve) for permitting flow of liquid fuel from the supply duct to the holding chamber only when the pressure in the duct exceeds the pressure in the chamber by a predetermined differential pressure and for preventing flow otherwise;
- said liquid fuel holding chamber and restricted passageway having a total volume sufficient to contain a liquid fuel supply sufficient for two or more combustion cycles of the engine combustion chamber;
- said housing having means for securing same to the engine adjacent the combustion chamber so that said liquid fuel holding chamber and the entire restricted passageway are in direct heat exchange relationship with the combustion chamber during operation of the engine, whereby liquid fuel in the chamber and passageway is compressed and superheated during each combustion event and is directly flash vaporized into the combustion chamber during the intake portion of the combustion cycle after the housing has been preheated during the first few combustion cycles.

4,433,661

DEVICE FOR THE SPEED-DEPENDENT CLOSURE LIMITATION OF A CARBURETTOR MAIN THROTTLE
Günter Härtel, Neuss; Armin Schürfeld, Meerbusch, and Wolfgang Jordan, Grevenbroich, all of Fed. Rep. of Germany, assignors to Bosch & Pierburg System oHG, Fed. Rep. of Germany

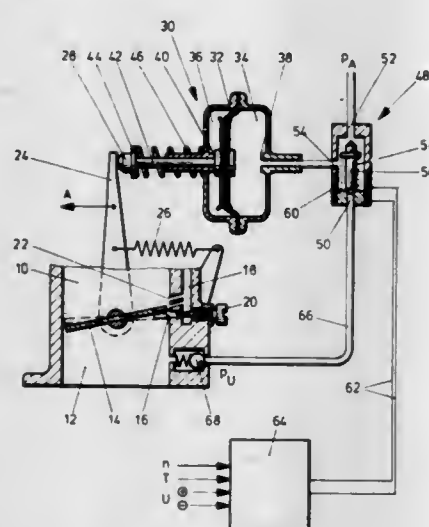
Filed Jun. 19, 1981, Ser. No. 275,430

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3022999

Int. Cl.³ F02M 7/04

U.S. Cl. 123—339

22 Claims



1. Device for the speed-dependent closing limitation of a selectively adjustable carburettor main throttle, a mixing chamber on one side of said main throttle and an engine intake pipe on the opposite side of said main throttle, means for biasing said main throttle in the closing direction, including a variably positionable throttle stop for effecting a substantially complete closure of the main throttle above a rotational speed switching threshold higher than the idling speed, and thus the interruption of the supply of fuel and air and causes an idling minimum opening position of the main throttle below the rotational speed switching threshold, an electromagnetic switching element operated when the speed falls below the rotational speed switching threshold, said electromagnetic switching element comprising an electromagnetic 3/2-way valve (48) having a valve outlet (54), a first valve inlet (50), a

second valve inlet (52), and means for selectively closing one of said first and second valve inlet while the other one is open, said first valve inlet in communication with said engine intake pipe, a non-return valve (68) between said first valve inlet and said engine intake pipe said second valve in communication with one of the ambient atmosphere and another pressure source, a diaphragm box (30) divided by a movable diaphragm (32) into a control pressure chamber (34) and a vented diaphragm chamber, said valve outlet is in flow communication with said first valve inlet (50) above the rotational speed switching threshold and also when the ignition is switched off, said valve outlet is in flow communication, with said second valve inlet (52) below the rotational speed switching threshold, said control pressure chamber (34) is in flow communication with the valve outlet (54) and said movable diaphragm (32), a throttle stop (28) mechanically connected to said movable diaphragm, and a stop spring (46) biases said throttle stop (28) toward the idling speed minimum opening position of said main throttle (14).

4,433,662

FUEL SUPPLY SYSTEM

Hans-Jürgen Müller, Gelsenkirchen; Karl Schmidt, Neuss; Asoke Chattopadhyay; Rolf P. Heidemanns, both of Neuss; Georg Habel, Brüggen, and Ortwin Wittman, Kaarst, all of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co., KG, Neuss, Fed. Rep. of Germany

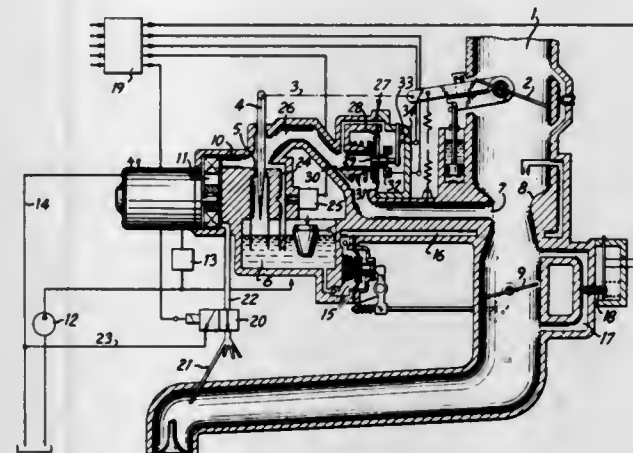
Filed Aug. 4, 1982, Ser. No. 405,232

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3130911

Int. Cl.³ F02M 7/12

U.S. Cl. 123—438

11 Claims



1. A fuel supply system for mixture-compressing internal combustion engines, with a carrier air channel which is arranged in addition to a main air channel, having a throttle valve, and branches off from said main air channel between an air quantity measuring valve and the throttle valve, the fuel metering nozzle discharging into said carrier air channel, with a proportioning valve, provided at said fuel metering nozzle, said proportioning valve being adjustable in dependence on an air quantity measuring valve which is arranged in said main air channel upstream from said throttle valve, with a pump assigned to said fuel metering nozzle, with distributor channels which originate from said carrier air channel upstream from said pump, said distributor channels leading to the associated suction nozzles before the inlet valve, with a differential pressure valve which controls the carrier air stream, is arranged before said fuel metering nozzle and is adjustable in dependence on operating parameters, the effective surface of said differential pressure valve being acted upon on the one side by a variable force and the air pressure in said carrier air channel at the fuel outlet area and on the other side by the air pressure in said carrier air channel before the flow opening of said differential pressure valve, characterized in that said carrier air channel (7) discharges into a Venturi (8) which is arranged

upstream from said throttle valve (9) in said main air channel (1).

4,433,663

ELECTRONICALLY CONTROLLED FUEL INJECTION DEVICE

Yoshiaki Asayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00097, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO81/03523, PCT Pub. Date Dec. 10, 1981

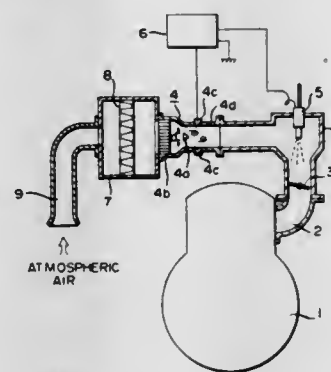
PCT Filed Apr. 23, 1981, Ser. No. 328,545

Claims priority, application Japan, May 26, 1980, 55-70574

Int. Cl.³ F02B 00/00

U.S. Cl. 123—494

5 Claims



1. An electronically controlled fuel injection apparatus for an internal combustion engine, comprising:
a Karman vortex flow meter for detecting the intake airflow volume of the engine and generating a frequency output corresponding to the number of vortices detected; and
an electromagnetic fuel injection valve downstream of said flow meter for injecting fuel synchronously with the frequency output from said Karman vortex flow meter, said vortex flow meter having a vortex generating member with a size for, at the air flow speed past said vortex generating member at the idling speed of the engine, giving a Reynolds number in the vicinity of the Reynolds number at which the Strouhal number is substantially a maximum in the low flow velocity range of the vortex flow meter.

4,433,664

FUEL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

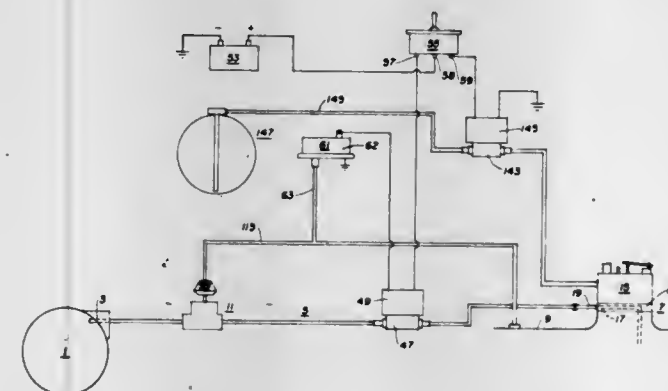
John J. Rodrigues, 23 Hall Dr., Orinda, Calif. 94563

Filed Jul. 17, 1980, Ser. No. 169,728

Int. Cl.³ F02B 43/00

U.S. Cl. 123—527

7 Claims



1. A gaseous fuel system for an internal combustion engine comprising a tank for holding gas in liquified form under substantial normally high pressures deemed risky under the hood of an internal combustion engine, a discharge fitting on said tank exposed at all times, inwardly of said tank, to gaseous

atmosphere within said tank, when said tank has such liquified gaseous fuel content to assure gaseous discharge at all times despite said pressurized liquified content, a discharge line from said discharge fitting and terminating in means for flow coupling said line to an intake manifold of such internal combustion engine, and a pressure regulator connected in said line in proximity to said tank for reducing such normally high tank pressures to materially lower values deemed safe when supplied at such low values to such internal combustion engine.

4,433,665

DEVICE FOR CONTROLLING CHOKE VALVE IN CARBURETOR FOR INTERNAL COMBUSTION ENGINE

Seiko Abe, Kariya; Toshihiko Igashira, Toyokawa; Hisasi Kawai, Toyohashi; Toshikazu Ina, Aichi, and Masayoshi Tokoro, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

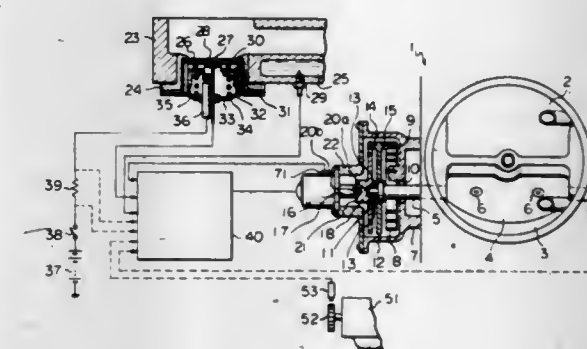
Filed Mar. 23, 1982, Ser. No. 361,099

Claims priority, application Japan, Mar. 23, 1981, 56-38922[U]

Int. Cl.³ F02M 1/02

U.S. Cl. 123—552

11 Claims



1. A device for controlling a choke valve in a carburetor for an internal combustion engine having an intake manifold, comprising:

- intake air heating means, having a heating surface and a bottom surface opposite said heating surface, for heating intake air;
 - temperature detecting means for detecting the temperature of said heating surface of said heating means;
 - control circuit means, responsive to a signal from said temperature detecting means, for generating an output signal related to the detected temperature of said heating surface; and
 - driving means, responsive to said output signal of said control circuit means, for changing the degree of opening of said choke valve.
8. A method for controlling a choke valve in a carburetor for an internal combustion engine having an intake manifold comprising the steps of:
- monitoring the temperature of a heating surface of heating means for heating intake air; and
 - controlling the degree of opening of said choke valve in response to said monitoring step.

4,433,666

EXHAUST GAS RECIRCULATION SYSTEM FOR DIESEL ENGINE

Kenji Masaki, Yokohama, and Seishi Yasuhara, Yokosuka, both of Japan, assignors to Nissan Motor Co., Limited, Yokohama, Japan

Filed Apr. 5, 1982, Ser. No. 365,589

Claims priority, application Japan, Apr. 7, 1981, 56-51984

Int. Cl.³ F02M 25/06

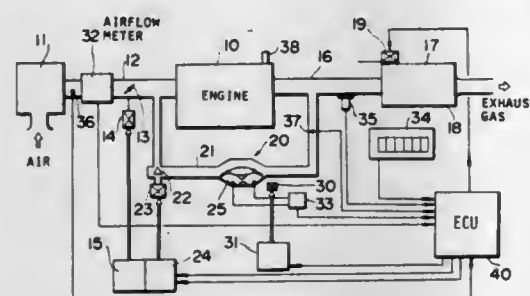
U.S. Cl. 123—569

12 Claims

1. In an automotive vehicle having a diesel engine including an intake passage provided therein with a throttle valve for

controlling the rate of air flow to said engine, an exhaust passage, an EGR passage connected at its one end to said exhaust passage and at the other end to said intake passage downstream of said throttle valve, said EGR passage having therein an EGR valve for controlling the rate of exhaust gas flow recirculated through said EGR passage, an EGR control system comprising:

- (a) a first sensor adapted to generate an output signal indicative of the rate of recirculated exhaust gas flow through said EGR passage;
- (b) a second sensor adapted to generate a check signal each time said vehicle travels a predetermined distance;



- (c) a third sensor adapted to generate an output signal indicative of the rate of air flow to said engine; and
- (d) a control unit calculating a target value for the EGR ratio based upon engine operating parameters and controlling said EGR valve to maintain the EGR ratio at the calculated target value, said control unit, responsive to the check signal from said second sensor, for calculating an actual value for the EGR ratio based upon the output signals from said first and third sensors and correcting the calculated target EGR ratio value or the calculated actual EGR ratio value, thereby reducing a deviation between the target and actual EGR ratio values to zero.

4,433,667

APPARATUS FOR REGULATING THE EXHAUST GAS RECIRCULATION RATE IN INTERNAL COMBUSTION ENGINES HAVING SELF-IGNITION

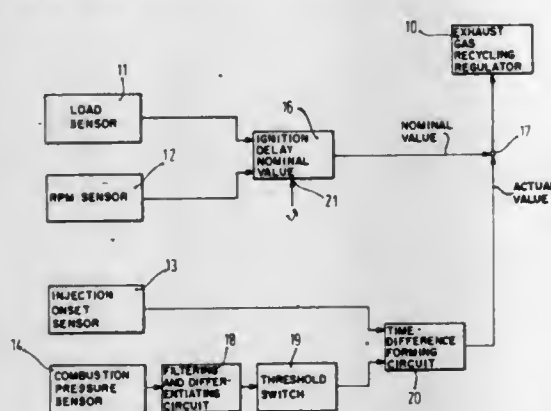
Wolfgang Ripper, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 15, 1982, Ser. No. 398,730

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134631

Int. Cl.³ F02M 25/06

U.S. Cl. 123—569

11 Claims



1. In a control device for regulating the exhaust gas recycling rate in an internal combustion engine with self-ignition, the improvement comprising:

- means for detecting the ignition delay in at least one cylinder of the engine and generating an actual value signal proportional thereto;
- means for generating a nominal value signal of the ignition delay which is dependent on engine operating characteristics; and
- means for adjusting the actual value signal to the nominal value signal.

4,433,668

CAPACITOR DISCHARGE IGNITION SYSTEM HAVING A CHARGING CONTROL MEANS

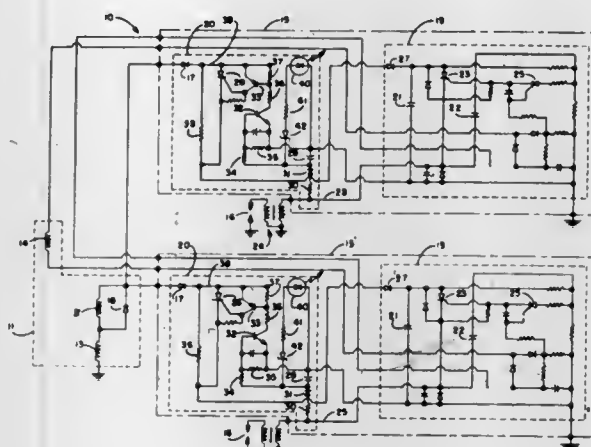
Arthur O. Fitzner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 14, 1981, Ser. No. 330,419

Int. Cl.³ F02P 3/06, 11/06

U.S. Cl. 123—597

9 Claims



1. A capacitor discharge ignition system for an internal combustion engine, comprising:

- (A) an energy source;
- (B) a power capacitor connected to be charged by said energy source;
- (C) a main electronic switch connected to discharge said power capacitor and fire a spark plug of said engine; and
- (D) a charging control means connected in circuit with said energy source, said power capacitor, and said main electronic switch to limit current flow from said energy source to said power capacitor should said power capacitor or said main electronic switch fail.

4,433,669

PLASMA IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

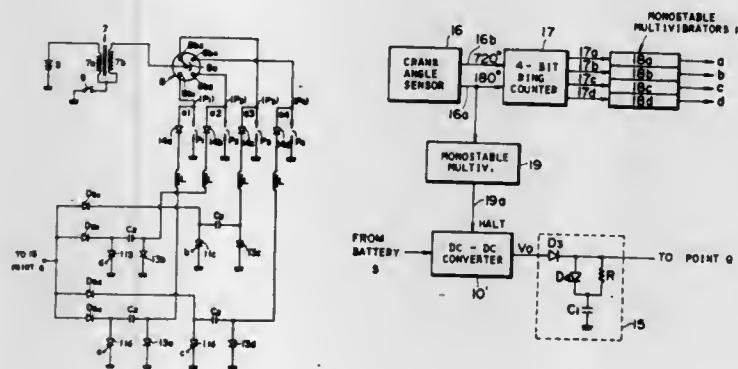
Yasuki Ishikawa; Hiroshi Endo, both of Yokosuka; Masazumi Sone, Tokyo, and Iwao Imai, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan
Filed Jun. 7, 1982, Ser. No. 386,781

Claims priority, application Japan, Jun. 12, 1981, 56-85523

Int. Cl.³ F02P 15/00

U.S. Cl. 123—620

5 Claims



1. A plasma ignition system for an internal combustion engine having a plasma ignition plug within each engine cylinder, which comprises:

- (a) a low DC voltage supply;
- (b) high surge voltage generating and distributing means which generates a high surge voltage on a basis of the low

- DC voltage from said low DC voltage supply and distributes the high surge voltage into one of the plasma ignition plugs according to a predetermined ignition order so as to generate a spark discharge at the plasma ignition plug;
- (c) plasma ignition energy generating means which generates a high DC voltage on a basis of the low DC voltage from said low DC voltage supply so as to provide a plasma ignition energy for each plasma ignition plug;
 - (d) a plurality of plasma ignition energy charging means each connected to said plasma ignition energy generating means and each of which receives the high DC voltage generated from said plasma ignition energy generating means so as to charge the plasma ignition energy for a corresponding plasma ignition plug;
 - (e) a plurality of switching elements each connected to said plasma ignition energy generating means and each of which turns on in response to a trigger pulse inputted thereto according to the predetermined ignition order so as to apply the plasma ignition energy within said corresponding plasma ignition energy charging means across the corresponding plasma ignition plug; and
 - (f) auxiliary turned on interval extending means, connected to said plasma ignition energy generating means in parallel with each of said switching elements, which extends the turned-on interval of time of each of said switching elements so as to fully discharge the plasma ignition energy within one of said plasma ignition charging means into the corresponding plasma ignition plug,
- whereby the plasma ignition can securely be carried out at each plasma ignition plug.

4,433,670

ENGINE IGNITION SYSTEM

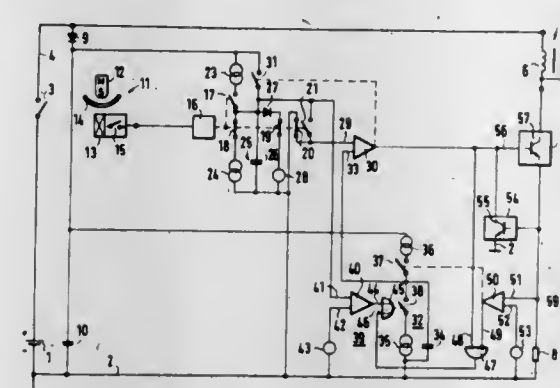
Adolf R. Fritz, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 3, 1982, Ser. No. 374,254

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118680

Int. Cl.³ F02P 1/00

U.S. Cl. 123—644

14 Claims



1. An ignition system for internal combustion engine including an ignition coil having a primary winding and a secondary winding and an electronic interrupter in series with said primary winding and also an engine driven signal generator having a first switching path for timing the ignition moment at which said interrupter is caused to interrupt the current of said primary circuit when said first switching path switches over from one state to another, the ignition system including means for causing the duration of the conducting condition of said electronic switch, as compared to the duration of the switching condition of said first switching path immediately before switching over at an ignition moment, to become increasingly shorter as engine speed slows, said system having also a storage element and means for providing a first change of the storage content thereof over the duration of the condition of said first switching path that follows immediately after an ignition moment and thereafter a change of said storage content in the other direction and means for the switching over of said electronic interrupter into its conducting state when said storage

content reaches a threshold value during said second change of said storage content, as well as means for modifying said threshold value by means of a regulating value dependent at least in part on engine speed, in which system, in accordance with the invention there are also provided:

- a monitoring circuit responsive to the storage contents of said storage element for providing a signal when said storage content reaches a reference value that corresponds to an engine speed lying below the idling speed of the engine and for thereby modifying said regulating value so that said threshold value is reached sooner.

4,433,671

PORTABLE COOKING IMPLEMENT

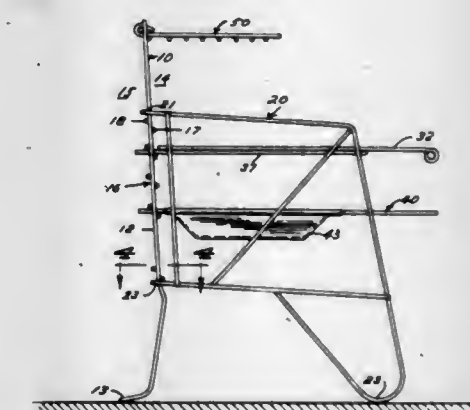
Ferdinando DeAmicis, 9560 John Street Rd., Thunder Bay, Ontario, Canada

Filed May 6, 1982, Ser. No. 375,354

Int. Cl.³ F24C 1/16

U.S. Cl. 126—9 R

8 Claims



1. A folding portable cooking implement comprising, in combination;

- frame means, to be disposed in a generally vertical plane, and including a lower ground engaging portion and a plurality of vertically spaced apart work frame support means spaced alternately on opposite sides of said frame means and adapted to removably receive and support a work frame;
- a plurality of stabilizer means rotatably disposed on said frame means for rotation about a vertical axis in the plane of said frame means between folded positions adjacent said frame means and extended positions forwardly of said frame means and including ground engaging support means adjacent their lower outer portions and
- a plurality of work frames each being held between a pair of adjacent work frame support means to support said work frames in a generally horizontal position forwardly of said frame means.

4,433,672

SOLAR ENERGY MODULATOR

Robert R. Hale, Upland, and Allan R. McDougal, La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,286

Int. Cl.³ F24J 3/02

U.S. Cl. 126—419

3 Claims

1. A solar energy flux modulator for a solar energy receiver optically coupled with a parabolic dish mirror and characterized by a solar flux acceptance opening having an axis coincident with the optic axis of the mirror, comprising:

- A. a solar flux modulator plate interposed between said mirror and said receiver and having a central opening concentric with said axis;
- B. means for establishing along said optical axis a graduated

shade zone from said flux opening and toward said mirror; and
C. moveable support means for displacing said modulator

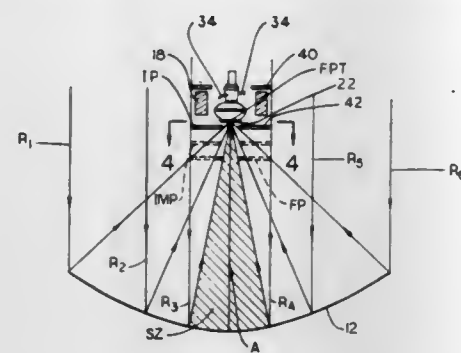


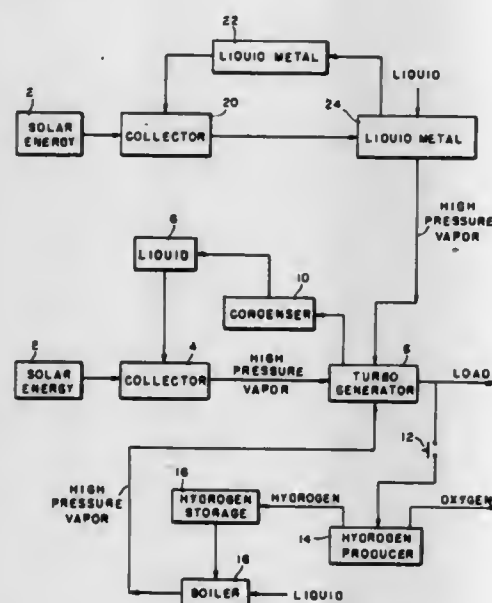
plate from a first minimum shade position adjacent said acceptance opening to a second and more shaded position remote from said acceptance opening, while maintaining the concentricity of said central opening with said axis.

4,433,673

METHOD AND APPARATUS FOR CONTINUOUSLY SUPPLYING A LOAD

Donald E. Vierling, 11309 Toledo Dr., Austin, Tex. 78759
Continuation-in-part of Ser. No. 81,876, Oct. 4, 1979. This application Aug. 25, 1982, Ser. No. 411,549
Int. Cl.³ F24J 3/02

U.S. Cl. 126-435



1. The method of continuously supplying a load by means of solar energy which comprises collecting solar energy and immediately producing useable energy therefrom to supply said load, at the same time collecting a further amount of solar energy to heat a molten metal to a high temperature, storing said heated metal until solar energy is not available, the amount of said stored energy being sufficient to supply said load for at least the majority of time solar energy is not available during a normal day, collecting a further amount of solar energy to produce hydrogen, and utilizing said hydrogen to supply said load when the first two energy supplies are exhausted.

4. Apparatus for continuously supplying a load by means of solar energy which comprises means for collecting solar energy, means for immediately producing useable energy from a portion of said collected energy to supply said load, a liquid metal storage means, means for feeding a second portion of said collected energy to said liquid metal storage means, means utilizing the energy in said stored liquid metal to supply said load when solar energy is not available, a hydrogen generator, means feeding a third portion of said collected energy to said hydrogen generator, hydrogen storage means connected to said hydrogen generator, and means utilizing said hydrogen to

supply said load when the first two energy supplies are exhausted.

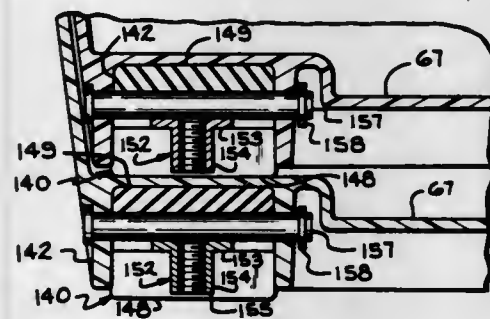
4,433,674

SOLAR COLLECTOR HAVING RESILIENT AND ADJUSTABLE MOUNTING MEANS

Frank W. Gilleland, Toledo, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio
Filed Dec. 23, 1981, Ser. No. 334,018
Int. Cl.³ F24J 3/02

U.S. Cl. 126-450

3 Claims



1. A solar collector assembly comprising an absorber means adapted to transfer heat to a fluid moving therealong; a solar energy transmitting cover member; a housing adapted to contain said absorber means, said housing having a collar section extending around the periphery thereof; sealing means located at the collar section of the housing; a clamping means extending along the collar section to substantially uniformly bias the transmitting member toward the collar section of the housing, said housing having a bottom wall, sidewalls and a plurality of spaced-apart foot sections adapted to receive a plurality of after-defined elastomeric bodies, said sidewalls being tapered and extended to form at least a portion to said foot sections; and elastomeric bodies fastened within said foot sections, said elastomeric bodies having an articulated slot adapted to slideably receive an insert adapted to engage a fastener means associated with a mounting bracket to movably secure said housing to said bracket, said articulated slot having a channel section in communication with at least one laterally extending undercut section, said insert having a base and a sleeve, said channel section being adapted to receive said sleeve and said undercut section being adapted to receive said base, said articulated slot having a recess in communication with said undercut section, said recess being adapted to receive a retainer means adapted to secure said elastomeric body to said foot section.

4,433,675

LIGHT SUPPLY APPARATUS FOR ENDOSCOPE

Katunaga Konoshima, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan
Filed Mar. 25, 1982, Ser. No. 361,885
Claims priority, application Japan, Apr. 1, 1981, 56-49183
Int. Cl.³ A61B 1/06

U.S. Cl. 128-6

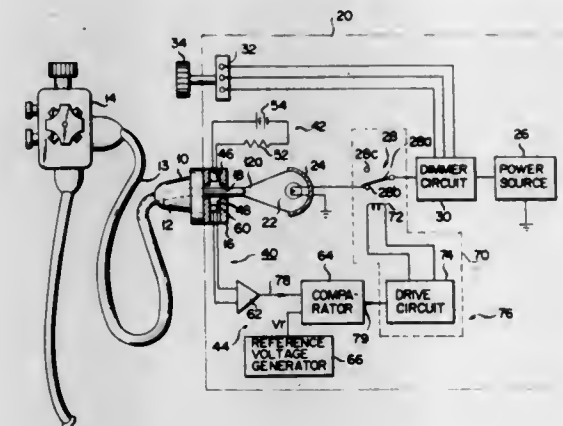
12 Claims

1. An apparatus for supplying an illumination light to an endoscope which includes a light guide means for transmitting the light to the endoscope and a connector member coupled to the light guide means, said apparatus comprising:

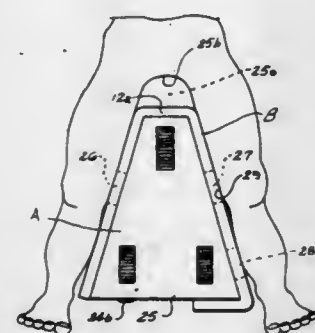
- a housing;
- light source means, provided within said housing and connected to a power source section, for receiving electric power supplied from the power source section and for emitting light;
- a socket member which is mounted on said housing and to which said connector member of said endoscope is detachably connected, said socket member having an opening through which said light guide means penetrates when said connector member is connected thereto; and
- light control means for optically detecting a connection and disconnection of said connector member to and from

said socket member, and for reducing an amount of light emitted from said light source means and transmitted to said opening of said socket member when said connector member is disconnected from said socket member, whereby the amount of light leaking to the outside of said housing through said opening is reduced, said light control means including,

- detecting means for photoelectrically detecting the disconnection of said connector member from said socket member, said detecting means having light gen-



means extended about the legs of the patient and fastened to said wedge shaped body fixing said legs against said outer cover strip at respective sides of said wedge shaped body,



said wedge shaped body between said outer cover strip and said sides maintaining said legs in divergent fixed positions corresponding generally to the divergent configuration of said sides.

4,433,679

KNEE AND ELBOW BRACE

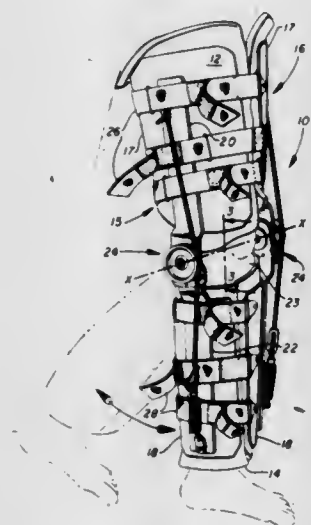
Donald M. Mauldin, 3631 Potomac, Dallas, Tex. 75235, and Richard E. Jones, III, 5804 Prestonview, Apt. 1089, Dallas, Tex. 75240

Continuation-in-part of Ser. No. 260,075, May 4, 1981, Pat. No. 4,370,977. This application Sep. 29, 1982, Ser. No. 426,981

Int. Cl.³ A61F 3/00

U.S. Cl. 128—80 F

10 Claims



1. A hinge joint for a knee brace comprising:
 - an adjusting disc having opposed first and second circular faces;
 - the first circular face of the adjusting disc comprising a plurality of first teeth positioned at circumferentially equally spaced points;
 - the second circular face of the adjusting disc comprising a tooth having a predetermined circumferential dimension;
 - a first hinge portion comprising a face having a plurality of teeth positioned at circumferentially equally spaced points and dimensioned to mate with the teeth of the first circular face of the adjusting disc to lock the adjusting disc and the first hinge portion against rotational movement with respect to each other;
 - a second hinge portion comprising a face having a plurality of slots formed therein, each for selective mating engagement with the tooth of the second circular face of the adjusting disc and each characterized by a different circumferential dimension so that the tooth of the second circular face of the adjusting disc and the slots of the face of the second hinge portion permit relative pivotal movement between the second hinge portion and the adjusting

disc, depending upon which of the slots receives the tooth; and

fastening means extending through the first and second hinge portions and the adjusting disc for maintaining the teeth of the first circular face of the adjusting disc in mating engagement with the teeth of the face of the first hinge portion and for maintaining the tooth of the second circular face of the adjusting disc in engagement with a selected slot of the face of the second hinge portion.

4,433,680

POLYURETHANE CASTING MATERIAL

Hee K. Yoon, North Brunswick, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Feb. 10, 1982, Ser. No. 347,596

Int. Cl.³ A61F 5/04

U.S. Cl. 128—90

6 Claims

1. A storage-stable orthopaedic cast bandage comprising a water-activatable polyurethane prepolymer coated on an open-weave fibrous substrate, said prepolymer comprising an aromatic polyisocyanate and a polyol in an equivalent ratio of from 2:1 to 15:1 and containing from 0.1% to 10%, based on the weight of prepolymer, of dimorpholinodiethylether as a catalyst.

4,433,681

BONE ELONGATION OR SHORTENING METHOD

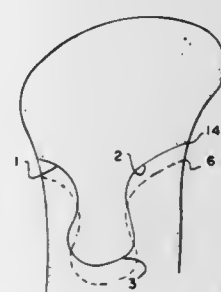
John E. Comparetto, P.O. Box 433, Nassawadox, Va. 23413

Continuation of Ser. No. 32,310, Apr. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 763,623, Jan. 28, 1977, Pat. No. 4,150,675. This application Jul. 7, 1981, Ser. No. 280,977

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 E

7 Claims



1. A corrective surgical procedure which corrects or improves upon an imperfection in a deformed living long bone which procedure comprises the steps of:
 - (a) Surgically exposing the deformed bone at an operative site auspicious for corrective surgery;
 - (b) cutting said deformed bone so as to sever same and thereby form a loosely interlocking dove-tail joint in adjacent osseous tissue of said long bone at said site;
 - (c) correctively reorienting the relative position of the interlocked adjacent parts of said surgically severed long bone within the limits of said loosely interlocking dovetail-like joint;
 - (d) stabilizing said severed long bone in said reoriented corrective position;
 - (e) closing said operative site in a manner conducive to tissue regrowth;
 - (f) wherein said step of severing further includes producing multiple curvilinear cuts which each have a cross section substantially in the shape of the capital Greek letter omega (Ω) whereby said interlocking dovetail-like joint is formed by said curvilinear cuts.

4,433,682

ANKLE PROTECTOR

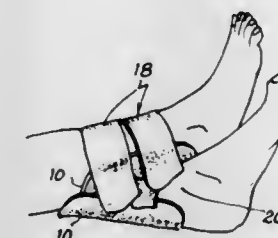
Sami A. Badra, 6186 College Ave., San Diego, Calif. 92101

Filed Mar. 1, 1982, Ser. No. 353,318

Int. Cl.³ A61F 5/30, 3/00, 13/06

U.S. Cl. 128—153

1 Claim



1. A pair of ankle and calf protectors, each comprising:
 - (a) a planar panel of resilient foam material having front and rear surfaces and top and bottom edges and being shaped to wrap around the rear of the ankle and lower calf, and having a concave cutaway portion defined in its bottom edge to fit the heel of the user;
 - (b) said panel having a lateral dimension sufficient to wrap around a portion of the ankle and lower calf and being sufficiently small to wrap around a small ankle without overlapping onto itself;
 - (c) strap means for securing said panel around an ankle, said strap means being secured at one end to the rear surface of said panel and the other end being removably securable at adjustable positions to the rear surface of said panel, whereby said panel can be applied against the rear of the ankle with said strap means wrapped around the front of the ankle and secured to the rear surface of the panel;
 - (d) said strap means comprise two bands of wide, parallel closely adjacent straps of resilient foam material to substantially cover the front of the ankle and calf over an area on the order of at least three-fourths of the height of said panel to protect the front of the ankle and calf as well as hold said panel in place;
 - (e) said foam straps being faced with a bonded fabric and said panel defining a hook-type fasteners on the rear surface thereto to engage said fabric at selectable portions along the lengths of said straps and retain said panel snugly on the ankle due to the resilient nature of the straps; and
 - (f) each of the protectors of said pair having said hook-type fasteners and straps on the opposite side of said panel from the other of the said protectors such that such pair defines left and right-hand protectors with ends of the straps being wearable on the outer side of each leg to prevent brushing against the straps of the other protector of said pair.

4,433,683

EXERCISE-MASSAGING DEVICE

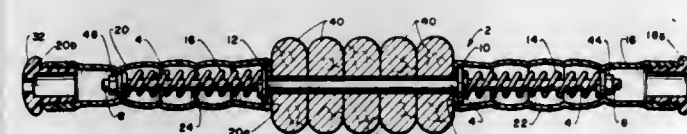
Kenneth H. McCoy, Santa Monica, Calif., and John Romain, 1629 Veteran Ave., Los Angeles, Calif. 90074, assignors to John Romain, Los Angeles, Calif.

Filed Jun. 29, 1981, Ser. No. 278,636

Int. Cl.³ A61H 15/00

U.S. Cl. 128—57

9 Claims



1. A hand-held exercise-massage device comprising the combination: an elongate support member defining an axis, handle members slidably mounted on said elongate support

member in the vicinity of opposite ends thereof and being capable of being grasped by the human hand, at least one rotatable element having an aperture therein for receiving said elongate support member and being rotatably and centrally mounted thereon between and independently of said handle members and being of a size greater in diameter than said handle members and adapted to impart a massaging action, and spring-biasing means cooperatively engaging each of said handle members so as to provide resilient resistance to said handle members during movement along said axis, said handle members being capable of movement along said axis toward and away from and independently of said at least one rotatable element.

4,433,684

ASSEMBLY FOR ADMINISTERING RESPIRATORY MEDICAMENT DOSAGE THROUGH A GAS MASK

Stanley J. Sarnoff, Bethesda, Md.; Rudolph S. Malooley, Annandale, Va.; George B. Calkins, and William R. Tarello, both of Bethesda, Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Mar. 18, 1981, Ser. No. 244,913

Int. Cl.³ A61M 15/00

U.S. Cl. 128—203.21

4 Claims



1. In a gas mask including a face blank arranged to be peripherally sealed with the wearer's face and a breathing inlet having an exterior filter communicating therewith, the improvement which comprises
 - means including an annular adapter member between said inlet and said filter defining a passage extending radially through said adapter member communicating with the interior of the face blank and exteriorly thereof;
 - said annular member having an exterior threaded portion disposed in surrounding relation with the exterior of said passage;
 - normally closed valve means in said passage;
 - coupling means for sealingly connecting with the passage, a container disposed in sealing relation with said coupling means having a respiratory medicament therein, and means for releasing successive predetermined dosages of said respiratory medicament from said container through said coupling means into the interior of said face blank;
 - said coupling means including a threaded member threadedly engaged with said threaded portion to fixedly secure said threaded member thereto in air excluding sealed relation with respect to the exterior of said passage, a tubular outlet extending from said container in alignment with said passage, flexible shroud means connected with said threaded member and disposed in sealing relation with said tubular outlet, and diaphragm means for provid-

ing a seal over said passage, said tubular outlet being adapted to pass through said passage and including means for piercing said diaphragm means and for moving said valve means therein from its normally closed position into an open position.

4,433,685

PRESSURE DEMAND REGULATOR WITH AUTOMATIC SHUT-OFF

Eugene A. Giorgini, Cheektowaga, N.Y., and John L. Sullivan, Fort Erie, Canada, assignors to Figgie International Inc., Willoughby, Ohio

Division of Ser. No. 185,894, Sep. 10, 1980, Pat. No. 4,345,592.

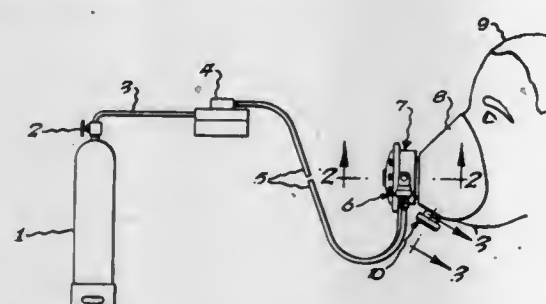
This application Aug. 23, 1982, Ser. No. 410,489

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ A62B 7/04

U.S. Cl. 128—204.26

7 Claims



1. In a pressure demand breathing apparatus including a face mask providing a mask chamber when fitted against the face of a user; line means including an air supply line and being capable of connecting said mask to a pressurized air supply; a pressure demand regulator positioned in said line means and including a valve responsive to pressure within said mask chamber and capable of admitting pressurized air to said mask chamber for a period of time required for respiration determined by the pressure within the mask chamber falling below a predetermined positive pressure; the improvement comprising shut-off means capable of interrupting air flow through said line means when the shut-off means senses air flow in excess of a preselected rate; and time delay means interconnected with said shut-off means and capable of preventing said shut-off means from interrupting the air flow for a preselected period of time after the shut-off means senses air flow in excess of the preselected rate, said preselected period of time being longer than said period of time required for respiration.

4,433,686

TRIMMING AID

John Charnley, Knutsford, England, assignor to Charnley Surgical Inventions Limited, Knutsford, England

Filed Oct. 2, 1981, Ser. No. 307,793

Claims priority, application United Kingdom, Nov. 1, 1980, 8035185; Sep. 3, 1981, 8126702

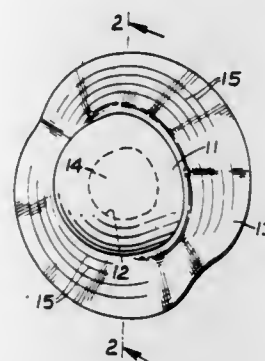
Int. Cl.³ A61B 17/00; A61F 1/03

U.S. Cl. 128—303 R

6 Claims

1. A trimming aid, for use in the trimming of the flange of an acetabular prosthesis of the kind described, said trimming aid comprising a body component of approximately hemispherical configuration and having a face wherein is a socket (said body component corresponding in dimensions and configuration with the socket member of the acetabular prosthesis with which it is to be used) and a separate flanged component comprising a flange (said flange corresponding in dimensions and configuration to the flange of the said prosthesis) and having a central protrusion which is an interference fit into the socket of

the body component of the trimming aid, whereby said body component and flanged component, when put together, define



an assembly of overall configuration corresponding to the acetabular prosthesis.

4,433,687

MICROSURGICAL SCISSORS

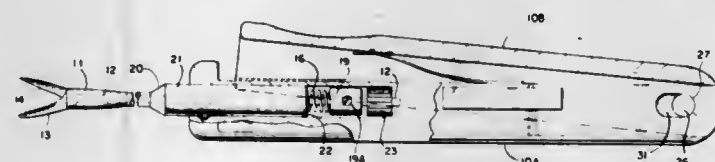
Roger M. Burke, Weston; Allen H. DeSatnick, Boston, and George P. Honkanen, North Scituate, all of Mass., assignors to Acufex Microsurgical, Inc., Norwood, Mass.

Continuation of Ser. No. 146,100, May 2, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,400

Int. Cl.³ A61B 17/32

U.S. Cl. 128—318

6 Claims



1. In a microsurgical scissors comprising: a handle for gripping the scissors; a tubular shaft extending forward from the handle and having a blade on the forward end of the shaft; a rotatable rod within the shaft, the rod having a blade on its forward end for engaging the shaft blade, the rod blade and the shaft blade each having a cutting edge, the cutting edges being angled to intersect in a shearing relationship; and actuating means associated with the handle for rotating the rod, and thereby rotating the rod blade past the shaft blade in a shearing relationship so that the point of contact travels along the blades; the improvement wherein the blades are arcuate in form about the axis of the rod and shaft, said arcuate shape forming means for said blades to nest one in the other, and wherein the scissors comprise biasing means for urging the rod in a longitudinal direction with respect to the shaft, and thereby bearing the cutting edges of the rod and shaft blades against each other at a point of contact and wherein the cutting edges of the blades are angled with respect to each other in the circumferential direction of the rod, and tilted outward with respect to the axis of the rod and shaft.

4,433,688

METHOD OF COATING A CATGUT SUTURE

Daniel Bichon, Gaillard, France, assignor to Assut S.A., Lausanne, Switzerland

Division of Ser. No. 279,972, Jun. 30, 1981. This application Jan. 4, 1983, Ser. No. 455,495

Claims priority, application Switzerland, Nov. 23, 1979, 10449/79

Int. Cl.³ A61L 17/00

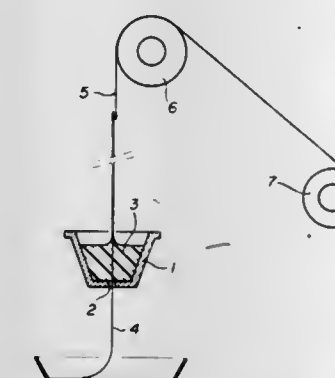
U.S. Cl. 128—335.5

8 Claims

1. A method for obtaining a sheathed catgut suture filament comprising the following steps:

Polymerizing at least one diacid with one or more of an equivalent of at least one polyol, thus providing a hydroxylated polyester,

Capping said polyester with between one and two equivalent



lents of at least one polyisocyanate, thus providing an isocyanate capped polymer, Capping a catgut filament with at least one layer of the isocyanate capped polymer, and Curing said coated filament in non-dry conditions.

4,433,689

SURGICAL CLAMP FOR VESSELS

Dieter von Zeppelin, Wittelsbacher Str. 20, D-8000 Munchen 5, Fed. Rep. of Germany

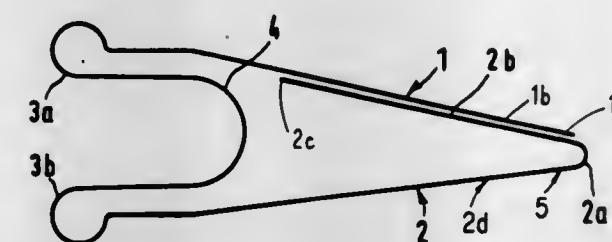
Filed Feb. 25, 1981, Ser. No. 237,979

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008122

Int. Cl.³ A61B 17/12

U.S. Cl. 128—346

2 Claims



1. A surgical clamp for vessels, said clamp comprising a single strip of resilient spring material formed to have an arched section at a rear end thereof and first and second jaw-forming sections extending forwardly of said arched section, said first jaw-forming section comprising a first portion of said strip which extends forwardly to a forward end of said first jaw-forming section and terminates at such forward end, said second jaw-forming section comprising a second portion of said strip which extends forwardly to a forward end of said second jaw-forming section and then reverses direction to define a third portion of said strip extending rearwardly adjacent said first portion, said third portion terminating at a location rearwardly of said forward end of said first jaw-forming section, said second portion being longer than said first portion, the first and third portions being resiliently separable to receive therebetween a vessel to be clamped whereby a substantially uniform clamping force is obtained over the entire coincident lengths of the first and third portions.

4,433,690

COMPACT ULTRASOUND APPARATUS FOR MEDICAL EXAMINATION

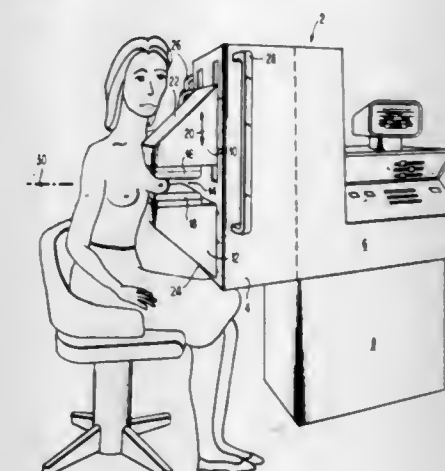
Philip S. Green, Atherton, and Jon C. Taenzer, Palo Alto, both of Calif., assignors to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,930

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660

14 Claims



1. An ultrasound apparatus for medical examination of a patient's breast; comprising in combination: (a) an ultrasonic wave-generating transducer for providing ultrasonic waves; (b) a first horizontal ultrasound window; (c) first guiding means containing a fluid medium for guiding said ultrasonic waves to said first horizontal ultrasound window; (d) a second horizontal ultrasound window; (e) each of said first and second ultrasound windows defining an examination gap for introducing and insonifying the patient's breast positioned therein with ultrasonic waves having a vertical main axis; (f) an ultrasonic receiving transducer for converting at least a portion of an acoustic image field received from said gap to electrical signals; (g) second guiding means containing a fluid medium for guiding ultrasound transmitted through said gap from said second ultrasound window to said ultrasound receiving transducer; (h) lens means associated with said second guiding means for focusing said acoustic image field from said gap at said ultrasonic receiving transducer and for forming an image of the patient's breast thereon; and (i) a rocking mirror associated with said second guiding means for deflecting ultrasound energy passing through said gap towards said receiving transducer in a direction which is different from said main insonification direction in said gap, wherein said rocking mirror is movable about a rotation axis for sweeping said acoustic image field across said receiving transducer.

4,433,691

MOVING TORQUE COIL OSCILLATORY DRIVE MEMBER

Bernard F. Bickman, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 5, 1981, Ser. No. 308,706

Int. Cl.³ A61B 5/10

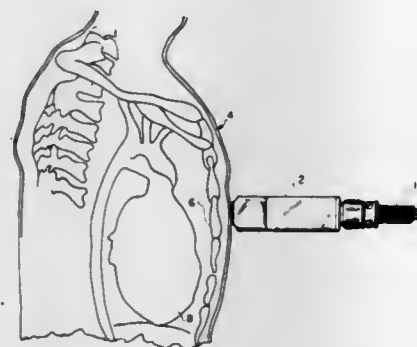
U.S. Cl. 128—660

8 Claims

1. An oscillatory driver apparatus comprising: a field pole piece assembly including means defining a fixed polarized magnetic field, said field pole piece assembly being substantially arcuate about a predetermined center of curvature and including a first and a second outer pole piece member and an inner pole piece member, said first

and second outer pole piece members being spaced, respectively, from opposite faces of said inner pole piece member, said inner pole piece member being symmetrically tapered from a minimum thickness dimension at the center of said pole piece assembly to a maximum thickness dimension at the ends thereof;

armature means mounted for oscillatory motion about a pivot point coincident with said center of curvature, said armature means including a torque coil mounted to be operative in said polarized magnetic field with said torque



coil being mounted to surround said inner pole piece member and to operate in the spaces between said inner pole piece member and said outer pole piece members; means for selectively energizing said torque coil with an oscillatory signal to produce a controlled magnetic field which reacts with said fixed polarized magnetic field to impart a magnetomotive force to said armature in accordance with the selective energization thereof; and signal transducing means mounted on and carried by said armature whereby a scanning oscillatory motion is imparted to said transducer directly by said armature.

4,433,692

ULTRASONIC DIAGNOSIS DEVICE

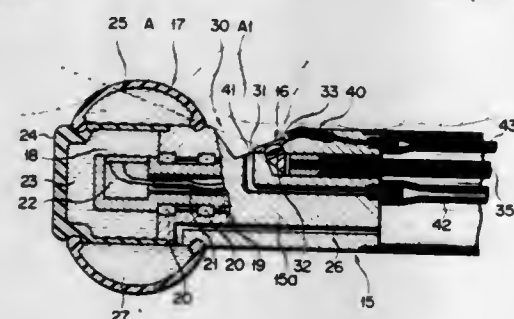
Kazuo Baba, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,024

Claims priority, application Japan, May 20, 1981, 56-76079
Int. Cl.³ A61B 10/00

U.S. Cl. 128-660

2 Claims



1. An ultrasonic wave diagnosis device comprising:
an insertion section having one end which is insertable into a body cavity, another end which is located outside the body cavity, and a central axis;
a control section connected to said another end of the insertion section;
an ultrasonic wave transmission/reception scanner disposed at said one end of the insertion section and having an ultrasonic wave oscillator therein;
a balloon inflatable toward the outside and surrounding said ultrasonic wave transmission/reception scanner disposed at said one end of the insertion section;
means disposed in said insertion section for supplying an ultrasonic wave propagation liquid medium to the balloon disposed in said insertion section to inflate the balloon; said insertion section having a recess formed in part of a

circumferential side surface thereof, which is in the vicinity of said balloon; and
an observation optical system disposed within the recess and having a field of sight toward the balloon, said observation optical system including an observation window and an illumination window; and
said recess having one inner surface which is inclined toward the central axis of the insertion section from the insertion section to the balloon such that said inclined inner surface of the recess is inclined toward the balloon, and said observation optical system being disposed in said one inclined inner surface of said recess.

4,433,693

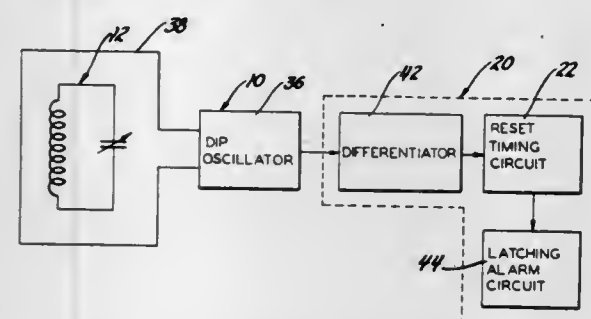
METHOD AND ASSEMBLY FOR MONITORING RESPIRATION AND DETECTING APNEA

Peter A. Hochstein, 14920 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Division of Ser. No. 79,457, Sep. 27, 1979, Pat. No. 4,279,253, which is a continuation-in-part of Ser. No. 783,168, Mar. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 598,934, Jul. 25, 1975, abandoned. This application May 1, 1981, Ser. No. 259,590
Int. Cl.³ A61B 5/08

U.S. Cl. 128-721

8 Claims



1. An assembly suitable for use in monitoring respiration and detecting apnea in a subject comprising; generating means for generating an electromagnetic field having an output frequency in a predetermined frequency range about the subject, passive circuit means having a resonant frequency variable in said predetermined frequency range and being responsive to said electromagnetic field when said resonant frequency matches said output frequency, transducer means adapted for attachment to the subject for varying said resonant frequency of said passive circuit means in response to the force exerted on said means for varying said resonant frequency by the expansion and contraction of that portion of the subject which expands and contracts during breathing, and detecting means responsive to said generating means for detecting when said passive circuit means is responsive to said electromagnetic field including reset timing means for providing a signal when said passive circuit means fails to respond to said electromagnetic field within a predetermined time period upon each occurrence of said passive circuit means being responsive to said electromagnetic field whereby said signal is provided in the event the subject fails to breathe within said predetermined time period.

4,433,694

DEVICE FOR APPLYING FILTERS TO CIGARETTES

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy
Filed Oct. 6, 1981, Ser. No. 309,162
Claims priority, application Italy, Nov. 17, 1980, 50175 A/80
Int. Cl.³ A24C 5/47

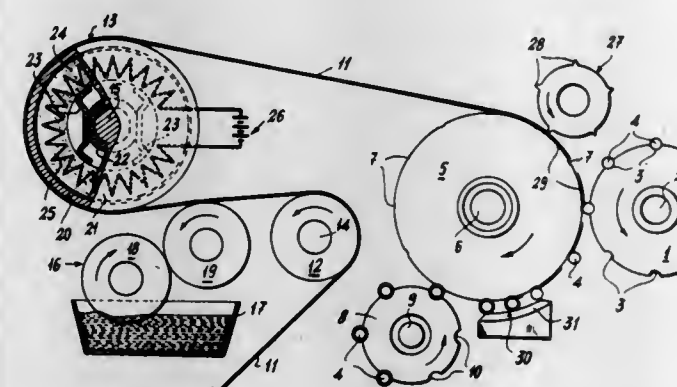
U.S. Cl. 131-92

2 Claims

1. A device for applying filters to cigarettes by connection bands, comprising:
a gluing device for applying adhesive material to a web; means for moving the web from said gluing device to a

position for adhering filters to cigarettes, defined by a rolling drum in combination with a counter-rolling element;

a cutting roller positioned adjacent the rolling drum to act therewith but before the rolling drum acts in combination with the counter-rolling element, for cutting the web into a plurality of bands; and



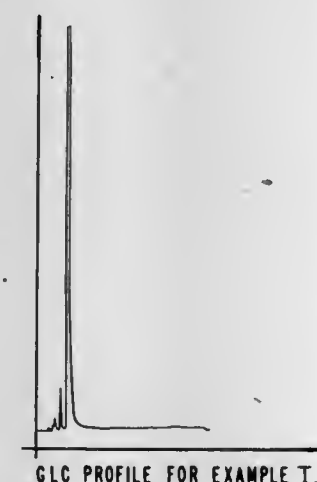
a drying roller positioned between said gluing device and said cutting roller, for almost drying the adhesive material on the web so that when the banded filters and cigarettes leave the adhering position the adhesive material on the band is dry.

4,433,695

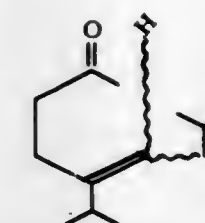
PROCESS FOR THE PRODUCTION OF ISOSOLANONE AND SOLANONE, INTERMEDIATES USEFUL IN SAID PROCESS AND ORGANOLEPTIC USES OF SAID INTERMEDIATES

John B. Hall, Rumson; James M. Sanders, Eatontown, and James N. Siano, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed May 20, 1982, Ser. No. 380,542
Int. Cl.³ A24B 3/12, 15/32

U.S. Cl. 131-276
Int. Cl.³ A24B 3/12, 15/32



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco or smoking tobacco article comprising the step of adding to a smoking tobacco or smoking tobacco article component, an aroma or taste augmenting or enhancing quantity of a mixture of cis and trans isomers of a compound having the structure:



wherein the wavy lines represent cis or trans juxtaosition of the hydrogen and 2-methyl-1-propenyl moieties around the carbon-carbon double bond.

4,433,696

VARIABLE DILUTION FILTER

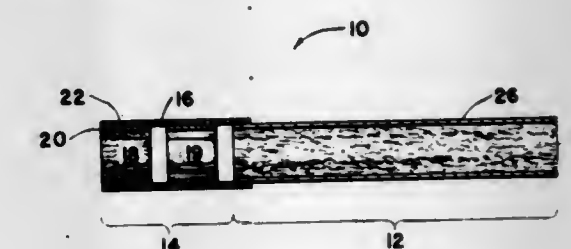
John M. Adams, Mechanicsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,973

Int. Cl.³ A24D 1/04, 3/00

U.S. Cl. 131-336

8 Claims



1. In a smoking article the improvements which comprise:
a filter mouthpiece attached to one end of said smoking article by air impervious tipping paper;
a second stage filter means mounted in said mouthpiece behind the tobacco portion of said smoking article and free to move in an axial direction in said mouthpiece in response to tapping said mouthpiece on a hard surface;
a first stage filter means rigidly mounted in said mouthpiece behind said second stage filter means such that there is space for axial movement of said second stage filter; and ventilation holes in said air impervious tipping paper forward of said first stage filter and behind the tobacco portion of said smoking article.

4,433,697

WRAPPER FOR SMOKING ARTICLES AND METHOD

Warren K. Cline, Brevard, and William F. Owens, Pisgah Forest, both of N.C., assignors to Olin Corporation, Pisgah Forest, N.C.

Filed Apr. 7, 1982, Ser. No. 366,314

Int. Cl.³ A24D 1/02, 1/18; A24B 3/14

U.S. Cl. 131-365

20 Claims

8. A smoking article comprising a tobacco charge and a wrapper for the tobacco charge, said wrapper comprising a cellulosic sheet containing a small percentage of ceramic fibers selected from the group consisting of polycrystalline alumina, aluminum-silicate and amorphous alumina and as a filler magnesium hydroxide and/or magnesium oxide coated on or applied to the fibers of the sheet.

4,433,698

HIGH PRESSURE PARTS WASHER

Ronald L. Blaul, Crystal Lake, Ill., assignor to Trigent, Inc., McHenry, Ill.

Filed Jun. 22, 1981, Ser. No. 275,965

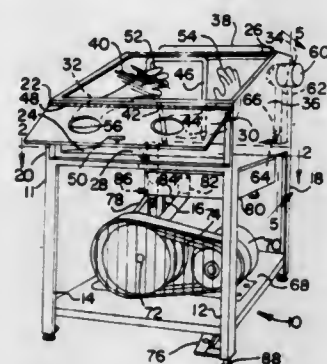
Int. Cl.³ B08B 3/02

U.S. Cl. 134-56 R

14 Claims

1. Parts cleaner adapted for high pressure hand spraying in a closed system comprising:
a fully enclosed spray chamber (24) including a spaced apart

sealed top wall and floor pan wall, and continuous side walls joining same including a front side wall, an end side wall at an end, and a rear side wall;
 a liquidproof pair of glove box gloves (54) extending into the spray chamber from one of said side walls and sealed at their bases to the latter, said walls all impervious;
 a closed, pump-recirculated liquid recycling circuit for a sprayed on liquid medium to be applied in the cleaner including a filter (82) upstream of the pump (72) and, on the downstream side, a high pressure hose and hand nozzle (44) supplied thereby and together manipulatable in said spray chamber; and



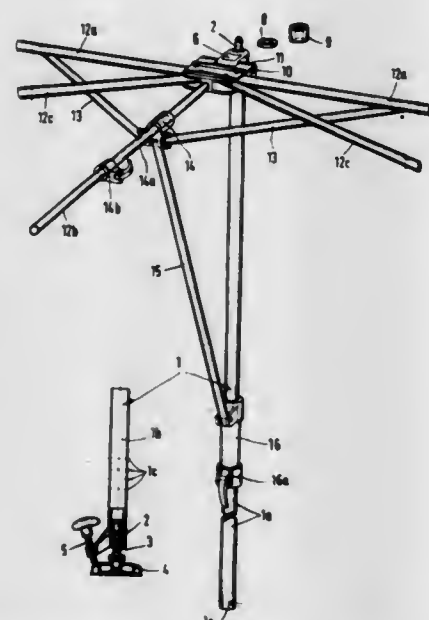
a closed, blower-recirculated atmosphere recycling system for the totally confined air contents contained by the chamber including a vapor-to-liquid agglomerating filter (136) to intercept the confined air and its entrained splash-induced spray contents upstream of the blower (140) and, on the downstream side, a tower and deflector (64) supplied by the blower and together cooperating to remove from the air stream for recycling the recovered liquid and to reintroduce the thus recycled air for continued circulation within its closed confines.

4,433,699 SUNSHADE

Tilman Schultes, and Joachim Seidel, both of Solingen, Fed. Rep. of Germany, assignors to Kortebach & Raub Kommanditgesellschaft, Solingen, Fed. Rep. of Germany
 Filed Nov. 6, 1981, Ser. No. 319,151
 Claims priority, application Fed. Rep. of Germany, Nov. 18, 1981, 3043465

Int. Cl.³ A45B 11/00, 17/00
 U.S. Cl. 135—20 R

29 Claims



1. In a sunshade having a cover which can be folded together in fan-like manner and is supported by at least two support struts which are pivoted at one end to a bearing member, the latter being swingable on a stand bar around at least

one horizontal axis and lockable thereon, and a spreading slide for pivoting an outer two of the support struts by means of a spreading strut, respectively, the spreading slide being displaceable and lockable on a central support strut which is connected to the bearing member, the improvement comprising

means comprising an adjustment bar pivoted to the spreading slide, said adjustment bar means for displacing said spreading slide on said central support strut when said support struts lie approximately parallel to the stand bar, means comprising an opening bar being operatively pivoted to said central support strut, said opening bar being securable to the stand bar, said opening bar means for swinging the support struts around the horizontal axis of the bearing member.

4,433,700

PANEL STRUCTURE

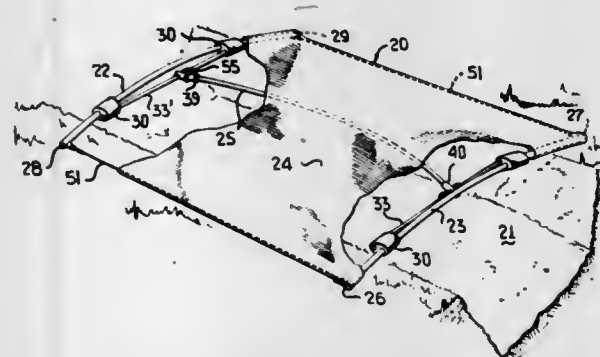
Pierre E. Dohet, 109 S. Lee St., Alexandria, Va. 22314

Filed Jun. 5, 1981, Ser. No. 270,927

Int. Cl.³ E04B 1/347

U.S. Cl. 135—97

18 Claims



1. A shelter structure capable of being assembled and disassembled including at least one free floating rod member having end portions, restraint means attached adjacent to at least each end portion of said rod member, at least one resilient stress bar having a given original length measured on a horizontal plane, end portions on said stress bar, means supporting said restraint means and one end portion of said stress bar remote from said rod member, constraining means operatively disposed between said rod member and the other end portion of said stress bar to guide slidable movement of said stress bar relative to said rod member, said slidable movement being in a plane including the longitudinal axis of said rod member during assembly and disassembly, the above elements being so constructed and arranged that when in assembled position, the stress bar imposes tensile loading on said restraint means, said loading decreasing the said original length of said stress bar, said restraint means limiting the maximum distance between said rod member and said means supporting the restraint means and one end portion of said stress bar.

4,433,701

POLYMER FLOOD MIXING APPARATUS AND METHOD

Bruce M. Cox, and Stanley V. Stephenson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 20, 1981, Ser. No. 284,658

Int. Cl.³ G05D 11/13

U.S. Cl. 137—101.19

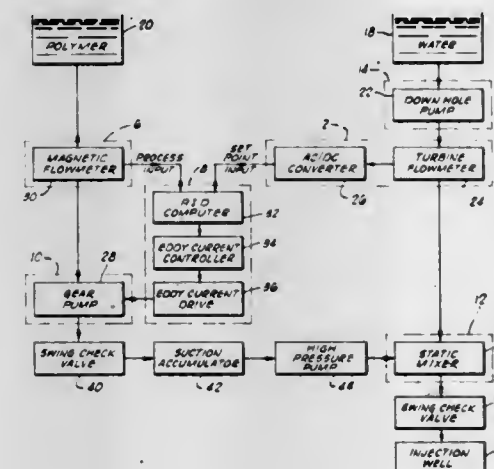
7 Claims

1. An apparatus for mixing a polymer with water to provide a mixture having a selectable viscosity and for injecting the mixture into a well, comprising:

first pump means for flowing the water, said first pump means having an outlet from which the water flows;

first flow detector means for generating a first electrical signal proportional to the volumetric flow of the water, said first flow detector means having an inlet connected to

the outlet of the first pump means and also having an outlet;
 second pump means for flowing the polymer, said second pump means having an inlet for receiving the polymer and also having an outlet for discharging the polymer;
 second flow detector means for generating a second electrical signal proportional to the volumetric flow of the polymer, said second flow detector means having an outlet from which the polymer flows and to which the inlet of said second pump means is connected;
 control means, responsive to said first electrical signal and said second electrical signal, for controlling said second pump means so that a selectable ratio between the volumetric flow of the water and the volumetric flow of the polymer is maintained, said control means including: proportional integral and derivative computer means for generating an output signal in response to said first electrical signal and said second electrical signal;



eddy current controller means, responsive to said output signal from said proportional integral and derivative computer means, for providing an eddy current control signal; and

eddy current drive means, responsive to said eddy current control signal, for providing an eddy current drive signal;

mixer means for mixing the flow of the water with the controlled flow of the polymer, said mixer means having a first inlet associated with the outlet of said first flow detector means and also having a second inlet associated with the outlet of said second pump means and further having an outlet from which the mixture is injected into the well; and
 said second pump means is responsive to said eddy current drive signal.

4,433,702

FULLY OPENING FLAPPER VALVE APPARATUS

John R. Baker, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jul. 6, 1981, Ser. No. 280,039

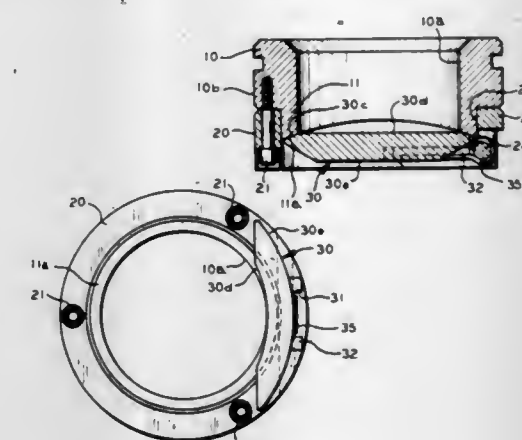
Int. Cl.³ F16K 15/03

U.S. Cl. 137—527.6

2 Claims

1. A flapper valve for incorporation within a tubular conduit of a subterranean well, comprising: an annular valve seat sleeve surrounding a fluid flow bore therethrough and having a fixed annular concave seating surface defined on said annular sleeve by the intersection of a cylindrical surface having an axis perpendicular to and passing through the axis of the flow bore and valve seat sleeve; valve head pivoting means having an axis exterior of said seating surface; a flapper valve head having the configuration of a circular section of a tubular wall, the axis of the circular section being perpendicular to the tubular wall, said tubular wall having inner and outer tubular surfaces having inner and outer tubular axes, respectively, each tubular axis being perpendicular to the axis through the flow bore of said seating surface when said valve head is manipulated to the closed position relative to the seating surface, the inner and outer tubular axes being parallel to said axis through the flow bore when said flapper valve head is manipulated to the open position relative to said seating surface; and convex sealing means positioned on said valve head between said inner

and outer tubular surfaces for sealing contact with said seating surface when said valve head is in the closed position, said sealing means having an annular surface having substantially the same effective diameter as the effective diameter of the seating surface.



4,433,703

PANEL MOUNTED VACUUM CONTROL VALVE

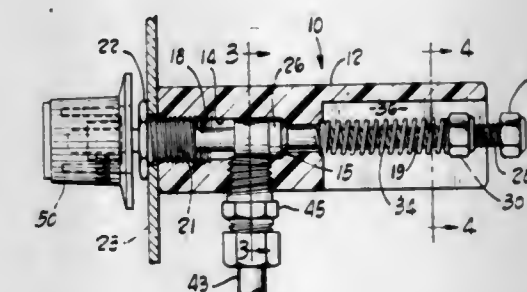
Henry H. Jenkins, 864 W. Hacienda Dr., Corona, Calif. 91720

Filed Apr. 12, 1982, Ser. No. 367,160

Int. Cl.³ F16K 17/06, 15/18

U.S. Cl. 137—541

2 Claims



2. A control valve including in combination a housing having first and second end portions, a bore in said housing,

valve means in said second end portion of said housing defining a slot opening to the exterior of said housing with said slot being defined by first and second generally parallel sidewalls and a connecting wall,

a valve seat in said bore, an actuating shaft having first and second end portions and extending in said bore,

a valve member movable into and out of contact with said valve seat to close and open said valve, said valve member connected to said shaft for movement therewith,

said second end portion of said shaft having threads thereon in threaded engagement with an axially movable nut member and residing in said slot,

a spring member biasing said valve member to closed position,

said nut member having surfaces lying adjacent said first and second generally parallel sidewalls respectively and preventing rotation of said nut,

said first end portion of said actuating shaft extending outwardly of said first end portion of said housing, knob

means secured to said first end portion of said actuating shaft to enable an operator to rotate said shaft and to move said shaft axially against the urging of said spring member to open said valve member and connect said bore on said valve member side of said valve seat to atmosphere, rotation of said shaft in a given direction causing axial movement of said nut member and compression of said spring member.

4,433,704

MECHANICAL CORDING AND HEALD SYSTEM CONTROLLED BY PULLEYS

Guy Decuq, Lyons, France, assignor to Verdol S.A., Caluire, France

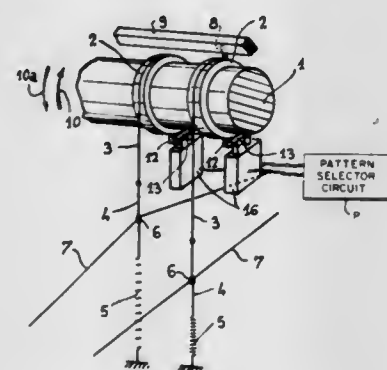
Filed Oct. 13, 1981, Ser. No. 310,715

Claims priority, application France, Oct. 15, 1980, 80 22421

Int. Cl.³ D03C 1/12

U.S. Cl. 139—66 R

8 Claims



1. In a mechanical cording and heald system for looms of the type having a plurality of heddle-raising units controlled by pattern selector means and supported by a common shaft, each unit including a pulley on the outer periphery of which is wound at least one funicular member having an end attached to said pulley and adapted to raise at least one heddle against suitable return means, each funicular member having a low and a high position, stop means to limit the rotation of said pulley under the action of said return means when said funicular member has reached its low position, and means to selectively connect said pulley with driving means rotating alternately in one or the other direction in synchronism with the operative cycle of the loom through an angle of less than 360° to cause said funicular member to move between its low and high positions, each unit comprising:

- (a) in said driving means first and second axially juxtaposed annular driving members mounted on the shaft;
- (b) means to impart to said driving members oppositely directed angular movements of the same amplitude in synchronism with said loom cycle, whereby at the end of each operative cycle of said loom each of said driving members has completed its rotation, one member being in a first position in which a pulley coupled thereto will reach the end of its stroke by winding the funicular member thereon, and the other member being in a second position in which a pulley coupled thereto will reach the end of its stroke by unwinding the funicular member therefrom; and
- (c) coupling means under the control of said pattern selector means and operative at the beginning of a loom cycle to selectively connect said pulley with the one of said driving means which is at said second position.

4,433,705

PICKING CHANNEL FOR A JET LOOM

Miloslav Cech, Brno; Vladimir Kuda, Blazovice, and Vladimir Vasicek, Moravsky Krumlov, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojenstvi, Brno, Czechoslovakia

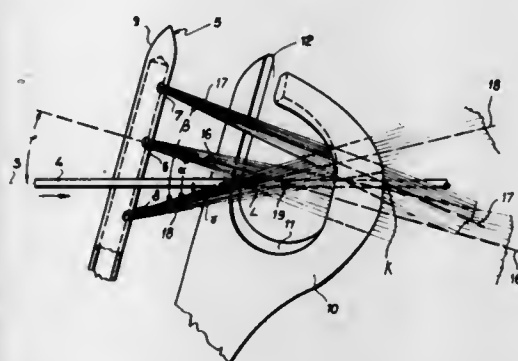
Filed Sep. 25, 1980, Ser. No. 190,730

Claims priority, application Czechoslovakia, Oct. 3, 1979, 6677-79

Int. Cl.³ D03D 47/30

U.S. Cl. 139—435

9 Claims



1. A picking channel for a jet loom for picking a weft thread through the warp shed by means of a jet of a carrier medium, comprising auxiliary blowing nozzles disposed along the path of the weft thread under insertion and directed obliquely into the picking direction of the weft thread, at least one auxiliary blowing section being disposed on at least one side of the weft thread under insertion and formed of at least three auxiliary blowing nozzles the axes of which constituting skew lines, the axis of the first auxiliary blowing nozzle intersecting the axis of the weft thread under insertion, and the axes of the other auxiliary blowing nozzles of the auxiliary blowing section passing the axis of the weft thread under insertion on the outside in the direction of the axis of the first auxiliary blowing nozzle.

4,433,706

WEFT INSERTING NOZZLE OF AN AIR JET TYPE WEAVING LOOM

Takao Takahashi; Kimimasa Ohnishi, and Sinzi Wakai, all of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

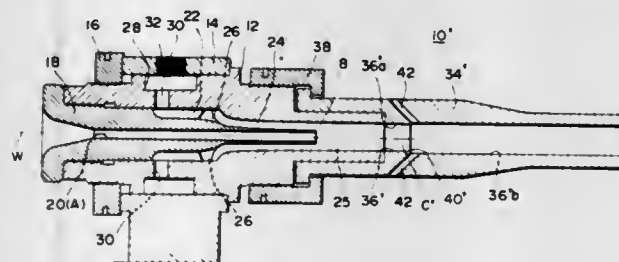
Filed Sep. 28, 1981, Ser. No. 306,299

Claims priority, application Japan, Oct. 15, 1980, 55-142927

Int. Cl.³ D03D 47/30

U.S. Cl. 139—435

1 Claim



- 1. A weft inserting nozzle for an air jet type weaving loom, comprising:
 - a weft inserting body having therein a weft inserting first hole through which a weft yarn is adapted to pass, and an exit portion;
 - a hollow body having a bore coaxially disposed about said weft inserting body to define around said exit portion an annular air jet opening from which pressurized air is ejected downstream for drawing the weft yarn out of said weft inserting body;
 - a tubular body coaxially aligned with and connected to the bore in said hollow body to define a coaxial weft inserting

second hole extending downstream from said annular air jet opening, said second hole having an upstream first section and a downstream second section, each of said sections having a uniform diameter throughout its length, the diameter of said second section being greater than that of said first section so that a stepped portion is defined between said first and second sections; said tubular body having a plurality of air holes extending therethrough and connecting said second section to a source of air, each of said plurality of air holes extending from said stepped portion radially outwardly and obliquely in an upstream direction.

4,433,707

METHOD AND APPARATUS FOR LEVEL LOADING OF VESSELS USING CATALYST ORIENTED PACKING

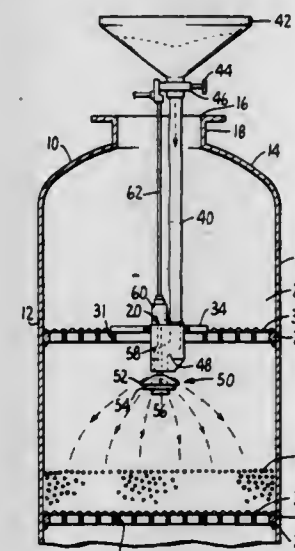
Robert A. Farnham, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 25, 1981, Ser. No. 305,696

Int. Cl.³ B65B 1/04

U.S. Cl. 141—1

12 Claims



1. Method of uniformly filling a large diameter catalytic reactor vessel with solid catalyst particles to avoid classification of larger particles and fines at different levels in said vessel which comprises:

- providing a gravity flow of said catalyst particles from a first hopper located above said vessel to a second hopper having an outlet located within said vessel and forming a cylindrical flow of said catalyst particles at the outlet of said second hopper near the center of said reactor vessel, dividing the cylindrical flow into an outer annular portion and an inner cylindrical portion,
- selectively deflecting the outer annular portion of said cylindrical flow radially outwardly at a first velocity sufficient so that said particles will reach the sidewall of said reactor vessel, and then, deflecting the inner cylindrical portion of said cylindrical flow radially outwardly at a lower velocity so that said particles will reach a portion of said vessel intermediate the center thereof and said sidewall.

4,433,708

AIR BAG SYSTEM

Nobuyuki Hashimoto, Toyota, and Takemi Hattori, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 29, 1981, Ser. No. 335,456

Claims priority, application Japan, Jan. 10, 1981, 56-1309[U]

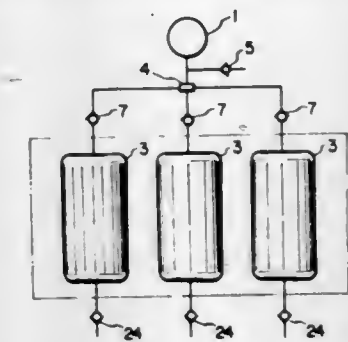
Int. Cl.³ B65B 3/04

U.S. Cl. 141—114

2 Claims

1. An air bag system, comprising a plurality of air bags, a pump for supplying each of said air bags with air through a respective pipe, dual function valves for operating as both a check valve and a stop valve, one of said dual function valves

being arranged in each of the pipes communicating said pump with a respective one of the air bags, a relief valve for discharging air from each of the air bags, each of said dual function valves including a poppet valve biased by a spring and arranged in a chamber communicating with the respective air



bag, the poppet valve acting as a check valve for the respective air bag to prevent outflow of air therefrom and being manually operable to act as a stop valve for opening and closing communication between the pump and the respective air bag for selectively inflating the respective air bag such that the plurality of air bags may be inflated individually.

4,433,709

DRYWALL HATCHET

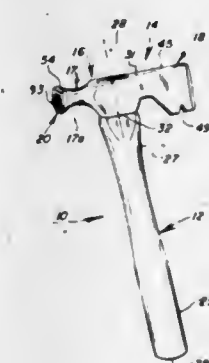
Lawrence W. Porter, Ringwood, Ill., assignor to Vaughan & Bushnell Manufacturing Co., Hebron, Ill.

Filed Mar. 29, 1982, Ser. No. 362,912

Int. Cl.³ B26B 23/00

U.S. Cl. 145—2 R

7 Claims



1. In a head unit for a drywall striking tool including a medial body portion, a hammerhead portion projecting longitudinally forwardly from the body portion, and a blade portion projecting longitudinally rearwardly from the body portion, the improvement wherein said hammerhead portion comprises a transversely extending truncated disk-like portion bounded by a substantially planar top marginal surface extending transversely between opposite ends thereof, and an arcuate side and bottom marginal surface extending substantially circularly around the disk-like portion from one of said ends of the top marginal surface to the opposite end thereof, said side and bottom marginal surface being convexly curved in the longitudinal direction of the head unit, said disk-like portion having a forwardly facing convexly curved striking surface extending between said marginal surfaces, said striking surface including a convexly curved central milled area having a plurality of serrations therein, and a substantially smooth convexly curved border of continuous curvature with said milled area, and said border extending from said milled area to said marginal surfaces completely around said striking surface, said striking surface thereby being free of prominent serrations.

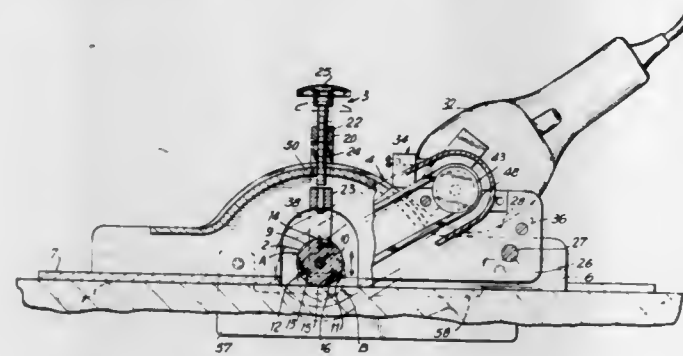
4,433,710

POWER PLANING TOOL

Antonio D. Posta, 1097 Boston Post Rd., Rye, N.Y. 10580
 Filed Oct. 28, 1981, Ser. No. 315,966
 Int. Cl.³ B27C 1/10

U.S. Cl. 145—4

11 Claims U.S. Cl. 160—120



1. A plane, adapted to cut a hinge recess in a door edge, comprising

a housing having a base having a cutout therethrough, the cutout being dimensioned so that it begins at a first edge of the base, extends axially across the base and ends short of a second edge of the base opposite the first edge, the cutout being substantially U-shaped;

a rotary cutter mounted for rotation relative to the base, the cutter being mounted from the housing and in alignment with the cutout;

means, mounted from the housing, for selectively adjusting the position of the cutter relative to the base so that when the cutter is at a first position the cutter extends through the cutout to a point below the bottom plane of the base and can contact and cut an underlying door edge, and when the cutter is at a second position the cutter does not extend through the cutout to a point below the bottom plane of the base and cannot contact and cut an underlying door edge;

limiting means, mounted from the housing, for preventing the cutter from cutting across the entire width of an underlying door edge when the cutter is at the first position, and in cutting contact with an underlying door edge so that an uncut strip of door edge is left after a hinge recess is cut therein by the plane, the uncut strip serving to limit lateral movement of a door hinge mounted in the hinge recess;

means, mounted from the housing, for rotating the cutter, the means for rotating comprising a first pulley on the cutter, a second pulley, mounted from the housing, a tensioned drive belt engaging the first pulley and the second pulley and means for driving the second pulley;

means, mounted from the housing, for maintaining the position of the first pulley and the second pulley, relative to one another, substantially constant when the position of the cutter is adjusted so that substantially constant tension on the drive belt is maintained; and

means, mounted from the housing, for limiting travel of the plane along the underlying door edge, said means for limiting travel comprising a guide mounted from the housing adjacent the second edge, the guide extending below the bottom plane of the base and being substantially perpendicular to the base, the guide having a cutout, the cutout in the guide and the second edge of the base forming there between a longitudinal slot closed at its ends, a guide pin removable positionable in the slot,

and means, removably attachable to a door, for fixing the guide pin at a desired limiting position on the door whereby when the guide pin is in the slot and the plane is moved along the door edge travel of the plane will be halted when the end of the slot contacts the guide pin within the slot.

4,433,711

COIL CURTAIN

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
 Filed Mar. 14, 1979, Ser. No. 20,495
 Int. Cl.³ A47H 1/00

10 Claims



1. A coil curtain retracting to a series of rolls adjoining to each other when open and extending to a sheet reinforced with a series of uniformly spaced residual rolls when closed, said coil curtain comprising in combination

(a) one or more coiling sheets, said coiling sheets rolling itself into one or two coils when an external restraint is absent;

(b) one end of one of said coiling sheets is spliced to the other end of first adjacent coiling sheet of said coiling sheets, wherein said one of said coiling sheets and said first adjacent coiling sheet roll into a coil in the same direction superimposed to each other;

(c) the other end of said one of said coiling sheets is spliced to the one end of second adjacent coiling sheet of said coiling sheets, wherein said one of said coiling sheets and said second adjacent coiling sheet roll into a coil in the same direction superimposed to each other; whereby, one half of said one of said coiling sheets and the other half of said first adjacent coiling sheet roll into one coil, and the other half of said one of said coiling sheets and the one half of said second adjacent coiling sheet roll into the other coil.

4,433,712

INSULATING DEVICE FOR IMPEDING HEAT FLOW

Timothy Mellon, Guilford, and Gustaf B. Carlson, Haddam, both of Conn., assignors to Independent Systems Corporation, Durham, Conn.

Filed Dec. 11, 1980, Ser. No. 215,427
 Int. Cl.³ A47H 1/00

U.S. Cl. 160—122

18 Claims

1. Apparatus for reducing the amount of heat introduced into or leaving a space through a barrier comprising:

a support member secured to the barrier; and

a flexible sheet adjoining the space and formed of a material having a low heat-emitting surface fixed at one edge to said support and at a second edge to a mounting at a location spaced from the location at which said one edge is fixed to said support, said sheet adapted to cooperate with the barrier and said support to create an air-filled chamber that prevents the flow of air to or from the space

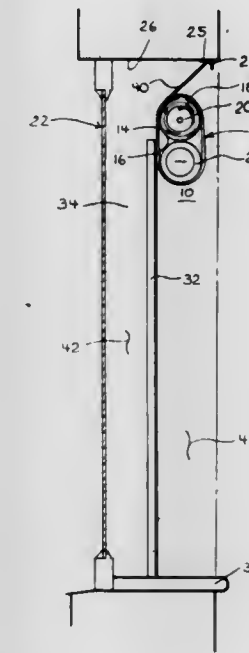
4,433,714

ROLLER SHUTTER DOORS

Arthur B. Barber, 111 Albert St., Strathfield, Sydney, New South Wales, Australia
 Filed Oct. 23, 1981, Ser. No. 314,110
 Int. Cl.³ E06B 3/12

U.S. Cl. 160—235

5 Claims



the space through the barrier, and that blocks the path of radiant energy directed at the space through the barrier.

4,433,713

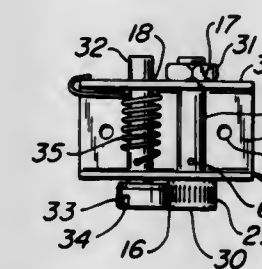
BLIND

Larry L. Kelly, 3295 Bridle Dr., Hayward, Calif. 94541
 Filed Jul. 19, 1982, Ser. No. 399,634

Int. Cl.³ E06B 9/26, 9/38; F16D 63/00

U.S. Cl. 160—166 R

5 Claims



1. In a blind having a plurality of parallel slats, and including a headrail at one end and a baserail at the other end, a device for maintaining said slats in coplanar alignment with regard to blind orientation, comprising:

a guy wire extending along said blind's length and perpendicular to said slats and guiding said slats into coplanar alignment, wherein said guy wire is secured to and extended along said blind's length between said headrail and said baserail; and

ratchet means for adjusting said guy wires tautness, including:

(a) an elongated spindle for spooling said guy wire, said spindle having an enlarged cylindrical head portion including a plurality of parallel, spaced notches extending axially along a head outer surface; and

(b) an elongated shaft parallel to said spindle and having an enlarged eccentric head portion including an axially extending protuberance for engagement with said spindle's spaced notches, said engagement being unyielding in a guy wire unspooling direction of spindle rotation and said engagement being yielding in a guy wire spooling direction of spindle rotation.

4,433,715

MODULAR APPARATUS FOR CASTING METAL STRIP

Robert W. Smith, Long Valley, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 152,208, May 21, 1980, abandoned. This application Apr. 9, 1982, Ser. No. 366,941
 Int. Cl.³ B22D 11/00

U.S. Cl. 164—423

4 Claims

1. A modular apparatus for casting molten metal onto a movable chill surface to form continuous strip, which comprises in combination:

(a) a crucible for holding the molten metal comprising

(1) a receptacle having two open ends and

(2) a separate base in sealing engagement with a first end of the receptacle and having a through passage,

(b) a cap member in sealing engagement with the second end of the receptacle,

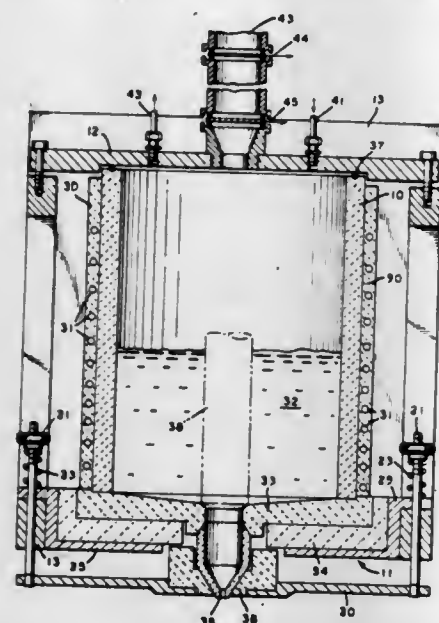
(c) heating means for maintaining the metal in the molten state in the receptacle, and

(d) a nozzle having one end in sealing engagement with the base and providing, in communication with the through passage, a conduit for passing molten metal from the crucible into contact with the chill surface,

(e) means for stopping molten metal flow out of the crucible with or without the nozzle in place,

(f) crucible support means attached to the cap member and supporting the separate base, and

(g) resilient nozzle support means for supporting the other end of the nozzle and for providing controlled loading



forces for the sealing engagements at the seals at the ends of the receptacle, and between said one end of the nozzle and the through passage of the base.

4,433,716

ROLLER APRON FOR THE WITHDRAWAL AND/OR STRAIGHTENING REGION OF A CONTINUOUS CASTING INSTALLATION FOR STRANDS

Hans Streubel, Erkrath, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

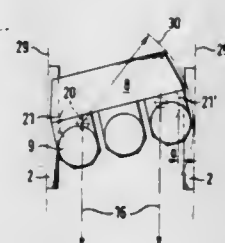
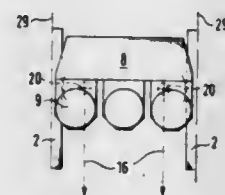
Filed Feb. 3, 1982, Ser. No. 345,542

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106531

Int. Cl.³ B22D 11/128

U.S. Cl. 164-448

6 Claims



1. A roller apron for a withdrawal and/or straightening region of a continuous casting installation for the continuous casting of strands moving along a strand path of travel, comprising:

- two roll tracks subdivided into sections along partition lines extending transversely relative to said two roll tracks;
- each section of each roll track containing at least two rolls;
- a respective traverse at which there are mounted the rolls in each section of each one of said two roll tracks;
- stationary arranged pressurized fluid medium cylinders containing piston rod heads;
- one of the traverses in each said section of one of said two roll tracks being affixed to said frame means and the other traverse in each said section of the other one of said two

roll tracks defining a movable traverse which is hinged connected at said piston rod heads of said stationarily arranged pressurized fluid medium cylinders;

stand means containing guides;

said partition lines extending along said stand means;

the piston rod heads being operatively associated with said guides of said stand means;

said guides extending transversely with respect to the related roll track and being arranged at the region of the partition lines between the sections; and

each section at each side of the strand path of travel containing two of said pressurized fluid medium cylinders, the piston rod heads of which are guided at one side thereof along a related one of said guides.

4,433,717

PROCESS FOR BOW TYPE CONTINUOUS CASTING

Yasuo Suzuki; Shuji Nagata, both of Kitakyushu; Takashiro Nonaka, and Tadashi Murakami, both of Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

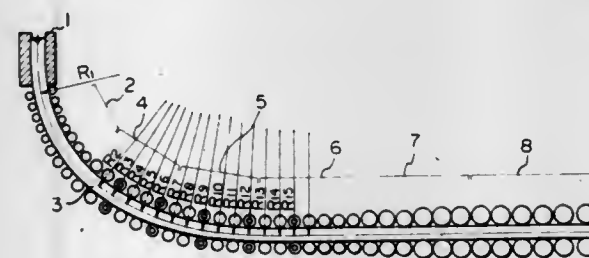
Filed Apr. 2, 1981, Ser. No. 250,303

Claims priority, application Japan, Apr. 2, 1980, 55-43380; Apr. 2, 1980, 55-43382

Int. Cl.³ B22D 11/16

U.S. Cl. 164-454

11 Claims



1. A bow type continuous casting process using a curved mold, comprising:
- continuously casting molten steel into the curved mold to obtain a curved strand having a thickness of not less than 200 mm;
- subjecting the curved strand to multi-point straightening, initiating the straightening at a region of the strand where the thickness of the solidified shell of the strand is at least 20 mm and not more than 60 mm; and
- controlling the speed of the strand and the cooling conditions while carrying out the multi-point straightening for maintaining the thickness of the solidified shell from at least 20 mm to not more than 60 mm until completion of said straightening.

4,433,718

THERMOSTATICALLY-REGULATED ARRANGEMENT FOR AND METHOD OF SWITCHING POWER TO A HEATING/COOLING SYSTEM, AND METHODS OF INSTALLING AND RETROFITTING THE ARRANGEMENT AT AN ELECTRICAL OUTLET BOX

Elias H. Bresin, 1020 Northern Blvd., Baldwin Harbor, N.Y. 11510, assignor to Elias H. Bresin, Baldwin Harbor and David Sanders, New York, both of N.Y., a part interest

Filed Jun. 21, 1982, Ser. No. 390,761

Int. Cl.³ F23N 5/20

U.S. Cl. 165-12

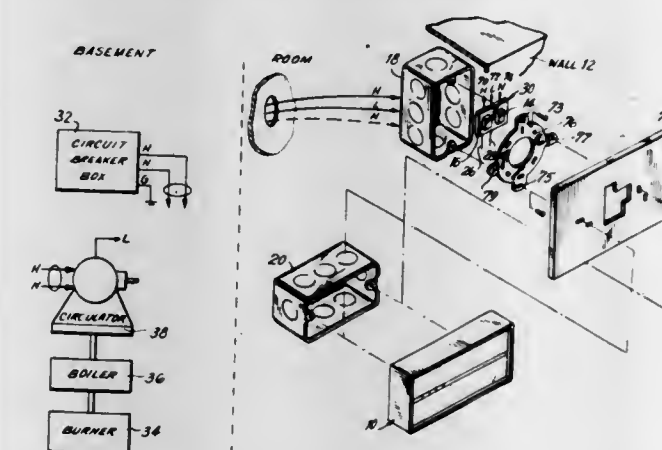
23 Claims

1. A compact temperature-regulated power control arrangement for switching an electrical power source at a rated line voltage to a heating/cooling system load, comprising:

- (a) low voltage-operated thermostat means mounted at and in front of an electrical outlet box in a room whose temperature is to be regulated, and being settable at any desired predetermined time and temperature characteristic, said thermostat means being operative for sensing the room temperature, and having a low voltage-operated

thermostat switch switchable at a low voltage below the line voltage between a heat-off condition in which a heat-off signal is generated when the sensed temperature is above a set temperature, and a heat-on condition in which a low voltage heat-on signal is generated when the sensed temperature is below the set temperature;

- (b) compact transformer means operatively connected between the power source and the thermostat means, for converting the line voltage to the low transformer voltage required to operate the thermostat switch;



- (c) compact control means operatively connected between the thermostat means and the load, for conducting power to the load in the heat-on condition, and for interrupting power to the load in the heat-off condition; and
- (d) means for mounting the compact transformer means and the compact control means rearwardly of the thermostat means and within the electrical outlet box, to simplify the retrofit replacement of a conventional line voltage-operated thermostat with a low voltage-operated thermostat.

4,433,719

PORTABLE, REMOTE ENVIRONMENTAL CONTROL SYSTEM

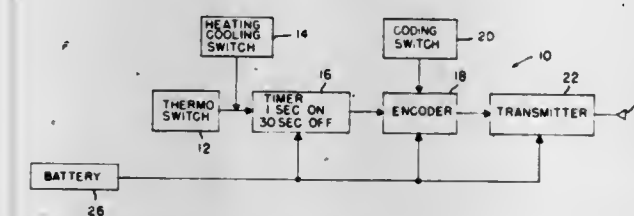
Raymond L. Cherry, King County, Wash.; Gene F. Pfeiffer, Lewis and Clark County, Mont., and Randall P. Maes, King County, Wash., assignors to TASA Products Limited, Seattle, Wash.

Filed Mar. 11, 1982, Ser. No. 357,293

Int. Cl.³ G05D 23/00

U.S. Cl. 165-26

19 Claims



1. A system for operating an environmental control unit which regulates an environmental condition at a remote location, comprising:

- a transmitter unit placed at said remote location, said unit including:
- (1) environmental-sensing means for sensing the value of said environmental condition;
- (2) comparator means for comparing the value of said environmental condition to a preset value and for producing an actuating signal responsive to a predetermined difference therebetween;
- (3) a radio transmitter actuated by said actuating signal, thereby generating an RF signal in accordance with said environmental condition; and
- a receiver unit connected to said environmental control unit, said receiver unit generating an output which energizes

said environmental control unit responsive to receipt of said RF signal, said environmental control unit being actuated by placing a relatively low impedance between a pair of terminals across which an AC signal is present and wherein said receiver unit includes a circuit for selectively applying a low impedance between said terminals responsive to the receipt of said RF signal while applying power to said receiver unit from the AC signal across said terminals, said circuit comprising:

- an energy storage device applying electrical power to said receiver unit while discharging and storing energy while charging;
- a rectifier connected to said energy storage device, said rectifier charging said energy storage device with DC power upon receipt of said AC signal while disconnecting said energy storage device when the magnitude of said AC voltage is less than the voltage from said energy storage device;
- a first normally open switch selectively being closed to apply said AC signal to said receiver;
- a second normally open switch connected across said terminals, said switch being selectively closed to place a low impedance between said terminals; and
- control means effective upon receipt of said RF signal by said receiver to close said first switch and open said second switch during a predetermined portion of each AC cycle and to close said second switch during the remainder of said AC cycle, said predetermined portion constituting a relatively small portion of said AC cycle so that the average impedance between said terminals is relatively low.

4,433,720

EARTH TEMPERED BUILDING DESIGN SYSTEM

W. Robert Lowstuter, 8718 Orient Way, NE., St. Petersburg, Fla. 33702

Filed Apr. 24, 1981, Ser. No. 257,191

Int. Cl.² E02D 27/32

U.S. Cl. 52-169.11

16 Claims



1. A thermal interceptor for building climate modification, wherein a building wall defines a segment of an enclosure, the interceptor comprising:

- at least one thermal conductor extending at least partially along the height of the wall;
- said thermal conductor having a thermal conductivity greater than the wall;
- said thermal conductor being in thermal contact with the wall;
- at least one thermal probe extending into the earth adjacent the building wall to a depth wherein the earth exhibits a substantially constant temperature for the location of the building; and
- means for directly connecting said thermal conductor to said thermal probe enabling the natural flow of heat between said thermal conductor and said thermal probe to maintain the

temperature of the building commensurate with said substantially constant temperature.

4,433,721

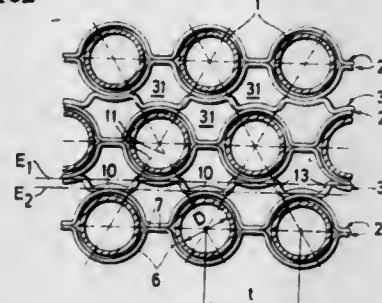
SPACER GRID FOR SUPPORTING ROD-SHAPED MEMBERS

Armando Biaggi, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Aug. 3, 1981, Ser. No. 289,240

Claims priority, application Switzerland, Aug. 6, 1980, 5945/80

Int. Cl.³ F28F 9/00

U.S. Cl. 165—162



1. A spacer grid for supporting a plurality of parallel rod-shaped members, said grid comprising pairs of guide strips disposed in abutting relation to support a respective row of rod-shaped member, each said guide strip having alternating substantially semi-cylindrical portions and flat portions with each semi-cylindrical portion of one strip disposed opposite a respective semi-cylindrical portion of the other strip to define a circular opening to receive a rod-shaped member; and a plurality of spacer strips, each said spacer strip being disposed in parallel relation to and between two adjacent pairs of guide strips, each said spacer strip having alternating bent portions and rectilinear portions with each bent portion bearing against a respective semi-cylindrical portion of an adjacent guide strip.

4,433,722

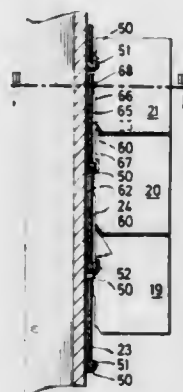
HEAT EXCHANGER HAVING PIPE COILS SUPPORTED IN SUPPORT PLATES

Alfred Fueglistler, Winterthur, CH-8400 Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Sep. 15, 1981, Ser. No. 302,664

Claims priority, application Switzerland, Sep. 17, 1980, 6958/80

Int. Cl.³ F28D 7/00

U.S. Cl. 165—162



1. A heat exchanger comprising a pipe; a plurality of support plates extending radially of said pipe and having a plurality of bores therein; a plurality of pipe coils passing through said bores of said plates, and a thin-walled sleeve disposed about said pipe in spaced relation thereto, one end of said sleeve being secured to said

pipe and an opposite end of said sleeve being secured to said support plates to resiliently mount said support plates relative to said pipe.

4,433,723

HEAT EXCHANGER METHOD AND APPARATUS

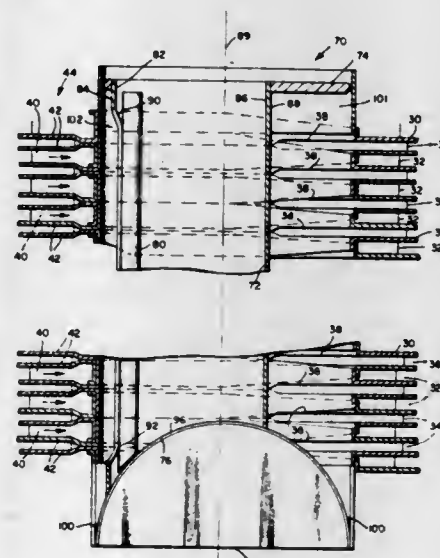
Kenneth O. Parker, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 725,613, Sep. 22, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 922,624

Int. Cl.³ F28F 3/00

U.S. Cl. 165—166

1 Claim



1. In combination, a heat exchanger of the counterflow type with formed tube air outlet manifolds having openings communicating with air passages of the heat exchanger core, and air outlet manifold inserts, said inserts each comprising: a segmented cylindrical tube having apertures longitudinally spaced, aligned, and elongated in the cylindrical portion opposite from said air passages; means carried by said tubular member and in cooperation with a manifold to define a chamber within the manifold surrounding said tubular member, said means comprising a plate having an opening accommodating one end of said segmented cylindrical tube and secured thereto and a hemispherical plate secured to the other end of said segmented cylindrical tube; and a pair of cylindrical members longitudinally positioned within said segmented cylindrical tube, each of said cylindrical members being secured to said cylindrical tube adjacent opposed corresponding vertical edges of the apertures.

4,433,724

ELECTRODE DEVICE FOR ELECTRICALLY HEATING UNDERGROUND DEPOSITS OF HYDROCARBONS

Toshio Nagano, Osaka; Toshiyuki Kobayashi, Hyogo; Nobutaka Koshirakawa, Hyogo, and Takeo Inoue, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,379

Claims priority, application Japan, Apr. 14, 1980, 55-51127

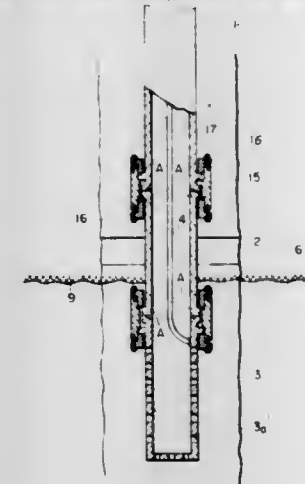
Int. Cl.³ E21B 36/04

U.S. Cl. 166—60

4 Claims

1. In an oil well construction in which an insulated pipe of porcelain is interposed between and has one end contacting a main guide pipe and a second end contacting an electrode thereby to insulatingly connect the guide pipe and electrode and in which an electric current is coupled to said electrode, an electrode device for electrically heating underground deposits of hydrocarbons comprising an insulated pipe having a body portion of a first diameter, an end portion of a second diameter greater than said first diameter, and an outer circumferential

portion between said body portion and said end portion, said outer circumferential portion being formed with counter-tapered surfaces which diverge at a predetermined angle away from said body portion and toward said end portion; shock absorbers; fastening fixtures disposed in abutting engagement



with said counter-tapered surfaces through said shock absorbers; said shock absorbers disposed annularly about said insulating pipe and disposed between the end portion of a second diameter and said fastening fixtures; and means for coupling said fastening fixtures to connectors which are coupled to said main guide pipe and said electrode.

4,433,725

ADJUSTABLE SPACER WITH ROTATIONAL LOCK

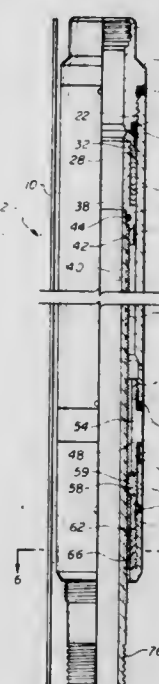
Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 307,908

Int. Cl.³ E21B 17/07

U.S. Cl. 166—65 R

1 Claim



1. A pumping assembly for use within the casing of a subterranean well, comprising: an electric submersible pump attached to a lower tubular member; anchoring means affixing an upper tubular member to said casing; an electrical cable attached to said electric submersible pump and to said anchoring means; inner and outer telescoping members between said electric submersible pump and said anchoring means, said telescoping members permitting relative longitudinal mo-

vement between said anchoring means and said electric submersible pump; means for preventing rotation between said inner and outer telescoping members upon relative longitudinal movement therebetween; first threaded elements extending along the exterior of said inner telescoping member; at least one segment relatively longitudinally fixed to said outer telescoping member and having second threaded elements on the interior thereof for engaging said first threaded elements; and a longitudinally movable cylindrical sleeve threadably engaging the outer tubular member for movement from a first to a second position and having a stepped inner surface retaining said segment in a radially inward position in threaded engagement with said first threaded elements in said first position, threaded disengagement of said cylindrical sleeve to said second position allowing said segment to expand radially outward to ratchet relative to said first threaded elements during longitudinal movement between said inner and outer telescoping members whereby the spacing between said anchoring means and said electric submersible pump removes slack from said electrical cable extending therebetween, and rotational movement of said cylindrical sleeve to said first position prevents further telescoping movement between said telescoping members.

4,433,726

ENERGIZED PACKER ANCHOR SEAL ASSEMBLY

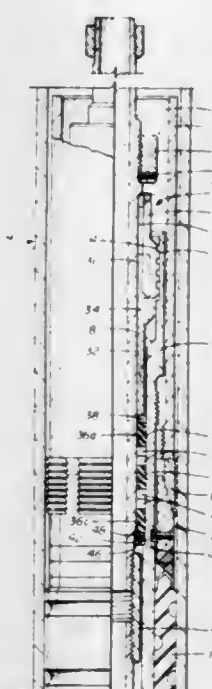
Dan C. Preston, Jr., Whittier, and Yung J. Kim, Hacienda Heights, both of Calif., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Feb. 18, 1982, Ser. No. 349,783

Int. Cl.³ E21B 33/12

U.S. Cl. 166—118

11 Claims



1. A tubing anchor seal assembly for use in inserting a tubing string into secured sealing engagement in the bore of a cylindrical tool anchored in a subterranean well comprising: a mandrel having means for incorporating said assembly in said tubing string; a radially expandable latch engageable with said tool and having means for securing said anchor seal assembly in a first position against upward movement; shoulder means extending radially outward from said mandrel for abutting a surface on said tool in a second position to prevent further downward movement of said anchor seal assembly; said mandrel being longitudinally shiftable relative to said latch between said first and second positions, when said latch is engaged; an annular sealing means disposed around said mandrel and longitudinally shiftable relative thereto for establishing

sealing integrity between said mandrel and the inner bore of said cylindrical tool and located between said latch and said shoulder means; concentric means on the exterior of said mandrel extending between said seal means and said latch and abutting said latch upon upward movement of said mandrel; and protruding means on said mandrel above and below said seal means; whereby upon upward movement of said mandrel said seal means are longitudinally compressed between the lower protruding means and said concentric means abutting said latch, and upon downward movement of said mandrel, the upper protruding means engages said concentric means to longitudinally compress said seal means, so that said seal means are energized by movement of said mandrel in either direction.

4,433,727

OIL RECOVERY PROCESS

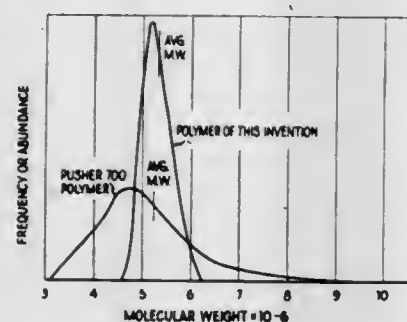
Perry A. Argabright, Larkspur, and John S. Rhudy, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jun. 19, 1981, Ser. No. 275,594

Int. Cl.³ E21B 43/22

U.S. Cl. 166—252

9 Claims



1. A process for recovering oil from a subterranean oil-bearing reservoir having located thereat at least one input well and at least one output well through which the oil in the reservoir is recovered in response to the force applied by a displacement fluid; comprising: predetermining the injectivity and mobility properties required of an oil displacement emulsion and a mobility buffer to meet the performance demands of a subterranean oil bearing reservoir both at an input well and in the matrix of the reservoir; providing an oil displacement emulsion and a mobility buffer having the required predetermined injectivity and mobility properties; injecting the emulsion into a reservoir through at least one input well formed in the reservoir; injecting into said input well the mobility buffer, said buffer being in the form of an aqueous solution of a polymer having an average molecular weight of about 10 million, and a molecular weight distribution of about 0.02 to about 0.22 as determined by the ratio σ/M wherein σ is the standard deviation of molecular weight of abundance of a molecular species present in the polymer and M is the average molecular weight of the polymer, the reciprocal relative mobility of said buffer being such that it is lower at and adjacent to the input well than it is in the matrix of the reservoir; and recovering oil at an output well formed in the reservoir.

4,433,728

PROCESS FOR SELECTIVELY REDUCING THE FLUID INJECTION RATE OR PRODUCTION RATE OF A WELL

Robert D. Sydansk, Littleton, Colo., and Paul R. Gucwa, Green Brae, Calif., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 164,619, Jun. 30, 1980, Pat. No. 4,287,951. This application Aug. 25, 1981, Ser. No. 295,962

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ E21B 33/138, 43/22

U.S. Cl. 166—270

9 Claims

1. A process for improving areal conformance of fluids injected into or produced from a subterranean sandstone formation via a multiwell system, the multiwell system having at

least one well wherein appreciably greater amounts of fluid than required to result in or maintain a substantially uniform flood front are injected into or produced from the at least one well than other wells of the multiwell system, the at least one well having a well bore penetrating and in fluid communication with the formation which has a near well bore environment, the process comprising:

injecting into said near well bore environment via said well bore a caustic aqueous solution, having caustic dissolved therein;

shutting in said well bore for a period of time sufficient to allow said caustic to interact with said sandstone formation thereby resulting in at least a portion of said caustic being held within said near well bore environment;

injecting into said near well bore environment an aqueous spacer slug; and thereafter,

injecting into said near well bore environment via said well bore a polyvalent cation containing solution having a polyvalent cation dissolved therein that is reactive with said caustic, permitting said polyvalent cation to react with said at least a portion of said caustic to form an insoluble precipitate in said near well bore environment of the formation over substantially the entire well bore interval, said precipitate reducing the permeability of said near well bore environment over substantially the entire well bore interval.

4,433,729

PROCESS FOR SELECTIVELY REDUCING THE FLUID INJECTION RATE OR PRODUCTION RATE OF A WELL

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 164,618, Jun. 30, 1980, Pat. No. 4,304,301. This application Sep. 8, 1981, Ser. No. 299,918

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ E21B 33/138, 43/22

U.S. Cl. 166—270

9 Claims

1. A process for improving areal conformance of fluids injected into or produced from a subterranean formation via a multiwell system, the multiwell system having at least one well wherein appreciably greater amounts of fluid than required to result in or maintain a uniform flood front are injected into or produced from the at least one well than other wells of the multiwell system, the at least one well having a well bore penetrating and in fluid communication with the formation which has a near well bore environment, the process comprising:

injecting into said near well bore environment via said well bore a caustic aqueous solution;

injecting into said near bore environment via said well bore a polyvalent cation containing aqueous solution having a polyvalent cation dissolved therein, said polyvalent cation reacting with said caustic when said caustic aqueous solution mixes with said polyvalent cation containing aqueous solution to form an insoluble precipitate over substantially the entire well bore interval in said near well bore environment of the formation; and

injecting into said near well bore environment via said well bore a hydrocarbon spacer between said caustic aqueous solution and said polyvalent cation containing aqueous solution, said hydrocarbon spacer causing delayed mixing of said solutions until said solutions are in said near well bore environment and said mixing resulting in formation of said insoluble precipitate which reduces the permeability of said near well bore environment over substantially the entire well bore interval.

4,433,730

OPTIMUM GRADING OF CHEMICAL CONCENTRATIONS IN A MICELLAR FLOOD

Scott P. Trushenski, Salt Lake City, Utah, assignor to Standard Oil Company, Chicago, Ill.

Filed Mar. 30, 1981, Ser. No. 248,739

Int. Cl.³ E21B 43/22

U.S. Cl. 166—274

12 Claims

1. In a method for displacing oil through an oil bearing formation penetrated by injection and producing wells, the improvement comprising: (a) injecting an aqueous micellar fluid bank into the formation through the injection well, and (b) injecting a mobility control fluid bank into the formation through the injection well to displace the oil to the producing wells, whereby the composition of the micellar and mobility control fluid banks are graded such that the leading edge of the micellar bank is miscible with oil and the rear portion of the mobility control fluid bank is miscible with water.

4,433,731

LIQUID WATER LOSS REDUCING ADDITIVES FOR CEMENT SLURRIES

Jiten Chatterji; Bobby G. Brake, and John M. Tinsley, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 301,560, Sep. 14, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 480,087

Int. Cl.³ E21B 33/138, 33/14

U.S. Cl. 166—293

8 Claims

3. A method of reducing the water loss from a cement slurry formed using sea water and used for cementing a well comprising the step of mixing a liquid water loss reducing additive with the sea water used to form the cement slurry, said liquid water loss reducing additive consisting of an aqueous solution of carboxymethylhydroxyethylcellulose having a carboxymethyl D.S. in the range of from about 0.1 to about 0.7 and an ethylene oxide M.S. in the range of from about 0.7 to about 2.5 and having a molecular weight such that a 5% by weight aqueous solution of said carboxymethylhydroxyethylcellulose at a temperature of 78° F. has a viscosity in the range of from about 75 to about 300 centipoises measured on a Brookfield viscometer at 60 rpm using a No. 4 spindle and a base selected from the group consisting of sodium hydroxide and potassium hydroxide said base being present in said additive in an amount in the range of from about 2% to about 5% by weight of said additive.

4,433,732

CABLE TRAY PROTECTION SYSTEM

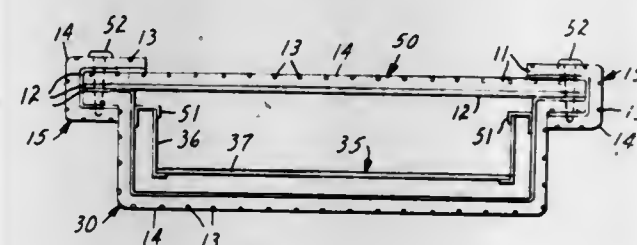
Richard R. Licht, New Richmond, Wis.; Alan J. Marlor, Minneapolis, and Joseph C. Peisert, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 6, 1982, Ser. No. 366,098

Int. Cl.³ A62C 3/00

U.S. Cl. 169—48

7 Claims



1. A fire protection system for installation about the periphery of a cable tray consisting of parallel side rails and spaced cross members fitted between the side rails, said fire protection system comprising component members formed from flexible, heat expanding, fire retardant composite sheet material having

laminated on one major surface thereof a metal base layer, a wire netting laminated to the other major surface and an aluminum foil layer overlying said wire netting, said component members including a flat bottom portion, upraised longitudinally extending side portions, flanges extending laterally outwardly and parallel to said flat bottom portion along the longitudinal edge of each said side portion, a flat top member comprising a sheet of said fire retardant composite sheet material overlying said cable tray and juxtaposed and supported along its longitudinal edges by said laterally outwardly extending flanges of said side portions, elongated C-channel joining members fabricated from said fire retardant composite sheet material, coextensive with said laterally outwardly extending flanges, frictionally receiving and retaining within the throat thereof the juxtaposed longitudinal edge portion of said flat top member and each said laterally outwardly extending flange, and fastening means securing each said C-channel joining member and said juxtaposed longitudinal edge portion of said flat top member and said laterally outwardly extending flange together, said fire protection system being substantially non-insulating under ordinary ambient temperature conditions but becoming thermally insulating upon exposure to heat or flame.

4,433,733

OIL STORAGE TANK EXTINGUISHER

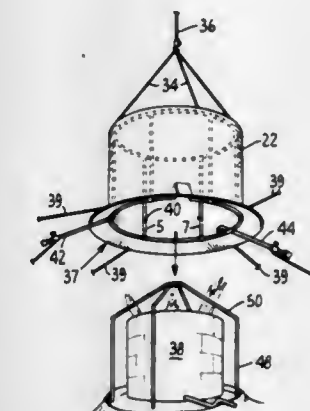
Byron H. Cunningham, 1661 Las Piedras Ct., Los Gatos, Calif. 95030

Filed Dec. 10, 1981, Ser. No. 329,183

Int. Cl.³ A62C 1/18

U.S. Cl. 169—49

5 Claims



1. A fire extinguishing and protective device for an oil tank or the like comprising in combination:

- a light framework forming a chamber having a closed top and closed sides and an open bottom, said chamber being somewhat larger than a fire source,
- a flexible, fireproof material covering the sides and top of said chamber,
- flexible flaps around the bottom of the sides,
- means for lifting and placing the chamber device over a source of fire and guying means to aid in placing the device and to maintain said flaps in a horizontal position, and means for lowering said chamber over the top and sides of the fire source to snuff out the fire.

4,433,734

SOIL CULTIVATING IMPLEMENT

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Division of Ser. No. 181,422, Aug. 26, 1980, Pat. No. 4,344,490.

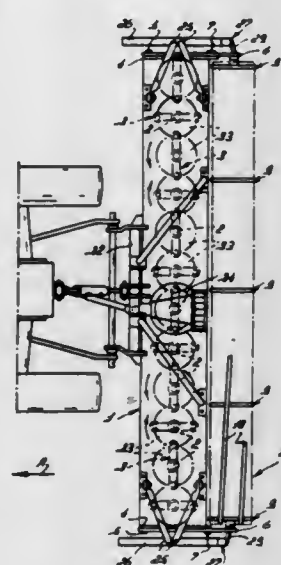
This application May 18, 1982, Ser. No. 379,291

Claims priority, application Netherlands, Sep. 5, 1979, 7906631

Int. Cl.³ A01B 33/06

U.S. Cl. 172—68

6 Claims



1. A soil cultivating implement comprising a plurality of soil working members that are arranged in a transverse row in side-by-side relationship, drive means connected to rotate said soil working members about upwardly extending shafts that define axes of rotation for said soil working members, an elongated ground engaging roller being positioned to the rear of said soil working members, said roller extending across the working width of said row of members, a side-plate being positioned adjacent an outer end of said row to arrest the lateral movement of worked soil, said side-plate being connected to the implement, soil guide means being positioned adjacent the rear of said side-plate and at least a part of said guide means extending towards an outer end of said roller, said guide means including an upper portion that is detachably connected to said side-plate and a lower blade that is inclined to said side plate and normally positioned adjacent the ground and between a lateral end of the roller and the rear of said side-plate, and an upper spring portion that spring-loads said side-plate, said blade being attached to the lower end of said spring portion and inclined to that portion.

4,433,735

SPRAYER TRAILER, TILLAGE IMPLEMENT AND HITCH FOR ATTACHING IMPLEMENT TO TRAILER

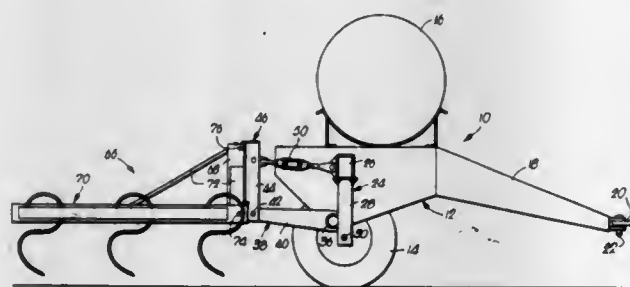
Otho A. Clark, Rte. 1, Independence, Mo. 64050

Filed Feb. 16, 1982, Ser. No. 349,266

Int. Cl.³ A01B 59/043

U.S. Cl. 172—443

10 Claims



1. In combination with a sprayer trailer and a tillage implement, said sprayer trailer having a tongue at the normally

forward end thereof provided with means for connecting the trailer to a towing vehicle, said implement being provided with framework, a hitch for attaching the implement to and behind the trailer comprising:

- an implement carrier in the form of a single rigid frame member at the normally rear end of the trailer;
- four point linkage directly interconnecting the trailer and the carrier;
- power means interconnecting the linkage and the trailer for raising the carrier;
- a standard mounted on the implement framework at the front of the latter; and
- three point coupling means directly connecting the carrier with the standard and framework.

4,433,736

DEVICE FOR AVOIDING SECONDARY IMPACTS RESULTING FROM THE BOUNCES OF A MASS AGAINST A TARGET-MEMBER

Pierre-Claude Layotte, Les Mathes, and Laurent Bozec, Le Vesinet, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

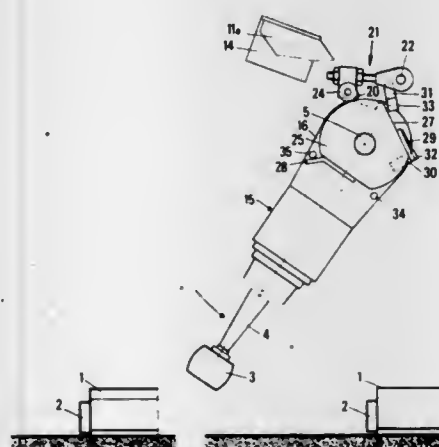
Filed May 11, 1982, Ser. No. 377,113

Claims priority, application France, May 11, 1981, 81 09474

Int. Cl.³ B23B 45/16

U.S. Cl. 173—94

6 Claims



1. A device for avoiding secondary impacts of a mass (3) against a target member (1) due to the bounces of the mass after a first impact, the mass being secured to one end of a rigid arm (4) adapted to pivot about an axle (5) with respect to a support (7), and the device comprising means for maintaining the rigid arm apart from the target member after the first bounce, said means comprising a pawl (21) pivotable with respect to the support, at least one housing (19) for the pawl, provided in the rigid arm, and a temporization means for permitting the pawl to penetrate into its housing only after a first bounce of the mass against the target member, and the introduction of the pawl into its housing blocking the lowering motion of the rigid arm.

4,433,737

WATER JET SEDIMENT PROBE

Richard J. Malloy, Ojai, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,713

Int. Cl.³ E21B 7/18

U.S. Cl. 175—5

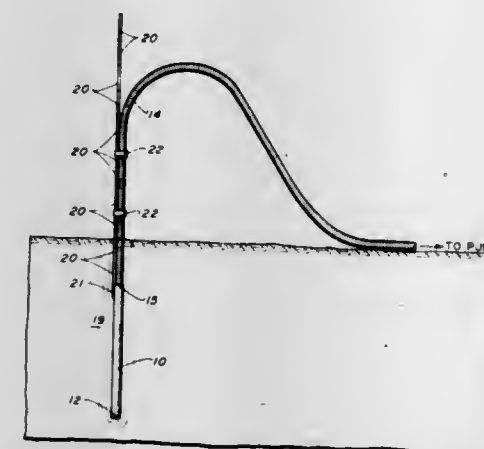
8 Claims

1. A water jet sediment probe system, operable to be spudded into sediment by a single person without assistance for jetting straight holes of indefinite depth, comprising:

- a. a source of water under pressure,
- b. a probe means,

- c. a flexible hose having one end thereof connected to said source of water and the other end connected to said probe means,
- d. said probe means consisting substantially of a short rigid length of pipe having a jet end and a connector end; said connector end being connected to the other end of said flexible hose wherein water under pressure from said source passes through said flexible hose and is jetted from the jet end of said probe means for liquifying sediment;
- e. a hose stiffening means connected to said probe means and comprising a plurality of rigid sectional means operable to

with a reamer of the same diameter as the bit used to change the direction of the well bore and the drilling assembly to be used to drill ahead, removing the reamer and the drilling assembly from the well bore, replacing the reamer with a drilling bit of the same diameter as the previously used bit, running the bit and drilling assembly to the bottom of the well bore, and drilling ahead in the desired direction.



4,433,739

MINING DRILL

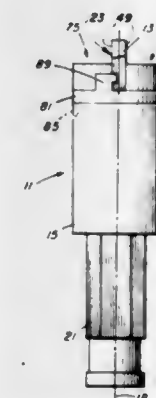
Vinod K. Sarin, Lexington, Mass., assignor to GTE Laboratories, Inc., Waltham, Mass.

Filed Feb. 8, 1982, Ser. No. 346,971

Int. Cl.³ E21B 10/62

U.S. Cl. 175—410

1 Claim



be connected together section by section in series and in straight alignment for increasing the rigid length thereof as desired from the connector end of said probe means; said hose stiffening means additively holding consecutive portions of said flexible hose in a rigid manner and in straight alignment with said probe means to permit said probe means together with a desired rigidized length of said flexible hose to be spudded into sediment by liquification thereof to a desired depth without necessitating the interruption of water flow through said flexible hose and said probe means.

4,433,738

METHOD AND APPARATUS FOR USE WHEN CHANGING THE DIRECTION OF A WELL BORE

Ernest W. Moreland, Rte. 4, Box 24, New Iberia, La. 70560

Filed Dec. 24, 1981, Ser. No. 334,259

Int. Cl.³ E21B 7/06

U.S. Cl. 175—61

1 Claim



1. A method of changing the direction of a well bore comprising the steps of drilling a section of a well bore using a downhole motor to rotate the bit and a bent sub to change the direction of the well bore the desired amount, removing the bent sub, downhole motor and bit from the well bore, reaming the section of the well bore drilled with the downhole motor

1. A mine drill for aiding collection of detritus during drilling comprising a drive body being cylindrically and tubularly shaped about an axis of rotation and having an axial passage for the flow of detritus, an elongated insert mounted at the forward end of said drive body for movement about said axis of rotation whereby leading insert surfaces are presented forward of trailing insert surfaces in the direction of rotation, said insert forwardly projecting cutting edges, a base surface, side surfaces intermediate end portions and normal to said base surface extending toward said cutting edges, said base surface lying in a plane substantially normal to the axis of rotation, said drive body having a support surface and a pair of flanges projecting forwardly in an axial direction forming a pair of diametrically opposed passageways for the flow of detritus, each flange being an extension of the tubularly shaped drive body, each passageway being formed by a respective outwardly facing insert surface and inwardly facing flange surface, each flange having an insert engaging surface projecting in the axial direction for transmitting torsional forces of said drive body to said insert, said drive body including a circumferential groove adjacent said flanges said, insert being mounted to said drive body with said base surface engaging said support surface and said respective trailing insert surfaces, a keeper ring including a projecting key portion mounted in said circumferential groove, said keeper ring including a pair of tab portions projecting in the forward direction, each tab having a protrusion projecting in the circumferential direction, said insert including a pair of notches, each notch being positioned on a respective side surface for receiving a respective tab portion, each tab engaging a respective notch for preventing forward release of said insert.

4,433,740

WEIGHING APPARATUS INCLUDING A RESILIENTLY CONNECTED SCALE PAN CARRIER

Paul Luchinger, Uster, Switzerland, assignor to Mettler Instrument AG, Greifensee, Switzerland

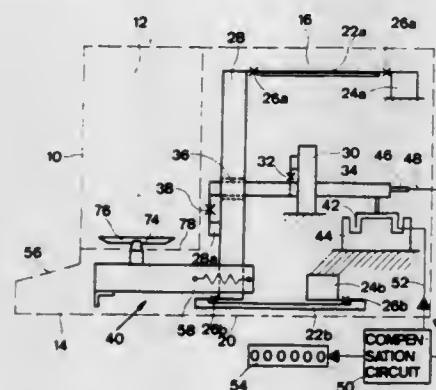
Filed Feb. 8, 1982, Ser. No. 346,759

Claims priority, application Switzerland, Apr. 10, 1981, 2417/81

Int. Cl.³ G01G 21/10, 3/08

U.S. Cl. 177—187

8 Claims



1. In a weighing apparatus of the type including a housing (10), a load receiving member (28), and means (22a, 22b) connecting said load receiving member for vertical movement relative to said housing;

the improvement which comprises
scale pan carrier means (40) for supporting a scale pan (76);
means (86, 88) connecting said pan carrier means with said load receiving member for limited horizontal movement between first and second positions relative to said load receiving member; and
resilient means (82) biasing said pan carrier means toward said first position.

4,433,741

STRAIN GAGE SCALE

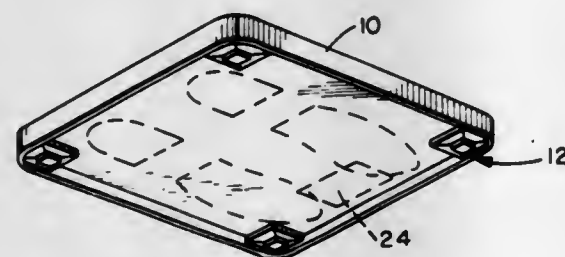
William D. Ryckman, Jr., Orange, Conn., assignor to General Electric Company, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,360

Int. Cl.³ G01G 3/14, 21/23

U.S. Cl. 177—199

3 Claims



1. In a strain gage weighing scale with a load platform, a plurality of individually spaced foot structures supporting said platform, an improvement in each foot structure of a sandwich construction comprising,
a bottom support plate,
a pair of spaced first fulcrums on said plate,
a floating beam plate on said first fulcrums and spaced above and substantially coextensive with said bottom plate,
said plates being substantially flat, square, hard metallic plates and interchangeable in said sandwich,
a pair of differently spaced and equally offset second fulcrums on said beam plate supporting said platform,
strain gage means secured to said beam plate between the closer pair of fulcrums,
means connected to said gage means converting the gage resistance change under load to read the weight of the load,

an integral, deformable plastic housing supporting and securing the plates and fulcrums together,
the sides of said plastic housing including a plurality of vertical barbs,
elongated slots in said platform receiving said barbs locking said sandwich together against said platform, and
a support cup on the bottom of said housing conformed to flatten under load along and against the support plate thus spreading the barbs along said slots to remove friction therebetween while maintaining said sandwich together on and against said support plate.

4,433,742

LINEAR MOTION LINKAGE

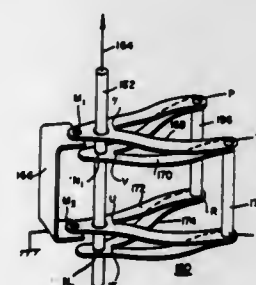
Shih-Ying Lee, Lincoln, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed May 19, 1981, Ser. No. 265,092

Int. Cl.³ G01G 3/08, 21/24; E04G 3/00

U.S. Cl. 177—229

4 Claims



1. Linkage for constraining motion of a reference member to be along a reference axis, said reference axis being fixed with respect to a support member, comprising:
two pairs of flexure elements, having corresponding vertex end, flexure, and distal end portions, each of said flexure elements having a vertex end portion and at least one flexure portion extending therefrom and terminating in an associated distal end portion,
a rigid coupling member associated with each set of corresponding distal end portions of said two pairs, wherein the corresponding distal end portions of each pair are coupled to each other,
wherein said coupling members couple the respective junctions of the distal end portions of the first pair of flexure elements to the respective junctions of the corresponding distal end portions of the second pair at points separated by a predetermined distance in the direction of said reference axis,
wherein the vertex portions of said first pair of flexure elements are equidistant from the corresponding distal portions of those elements,
wherein the vertex portions of said second pair of flexure elements are equidistant from the corresponding distal end portions of those elements,
wherein the vertex portions of upper flexure element of each pair are coupled to said reference member at points separated in the direction of said reference axis by a direction substantially equal to said predetermined distance, and
wherein the vertex portions of the lower flexure element of each pair are coupled to said support member at points separated in the direction of said reference axis by a distance substantially equal to said predetermined distance.

4,433,743

CONTROL CIRCUIT FOR VEHICLE LEVEL ADJUSTING APPARATUS

Taiji Ohmori; Toshio Kasahara, and Yoshiaki Uchida, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

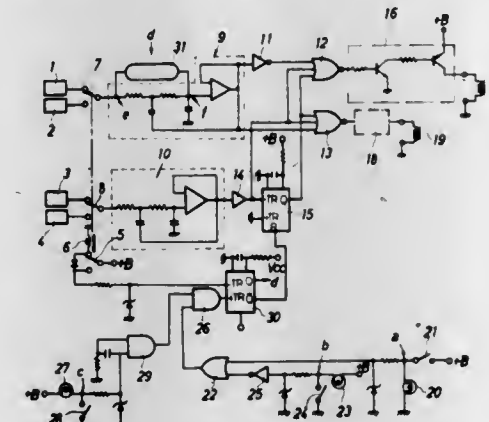
Filed Feb. 24, 1982, Ser. No. 351,856

Claims priority, application Japan, Feb. 25, 1981, 56-26558

Int. Cl.³ B60G 17/00

U.S. Cl. 180—41

4 Claims



1. In a control circuit for a vehicle level adjusting apparatus including:

a first circuit which receives at least one first signal based on a comparison between a reference vehicle level range and an actual vehicle level to make a judgment as to the necessity of an adjustment of the vehicle level and issues a second signal, said second signal having a first signal status when said adjustment is judged to be necessary and a second signal status when said adjustment is judged to be unnecessary;
a second circuit comprising a monostable multivibrator which receives said second signal and issues a third signal based on said second signal status of said second signal, as prolonged by a predetermined time in a normal state of said second circuit and as not prolonged in a reset state of said second circuit;
a third circuit which receives said third signal and issues a control signal to said vehicle level adjusting apparatus;
an improvement comprising: a fourth circuit, connected to a reset terminal of said second circuit, which receives a fourth signal based on a halt state of said vehicle and a fifth signal based on an operation of a door of said vehicle, and resets said second circuit.

4,433,744

BATTERY POWERED ELECTRIC MOTOR VEHICLE

Karl Mühlbacher, 12, Fischerhofweg, Graz, Austria

Filed Sep. 9, 1981, Ser. No. 300,555

Claims priority, application Austria, Sep. 30, 1980, 4892/80

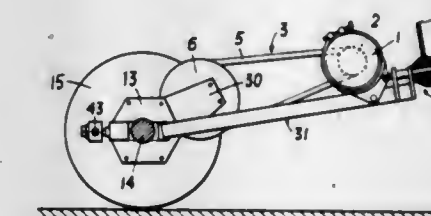
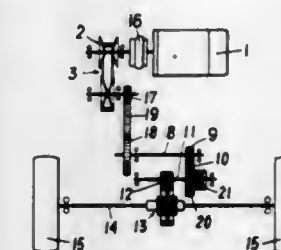
Int. Cl.³ B60K 1/00

U.S. Cl. 180—65 E

6 Claims

1. A battery-powered electric motor vehicle comprising a vehicle frame and an electric motor with a main shaft being connected to a differential gear by means of a gear train with a continuously variable transmission ratio, with said differential gear driving a rigid-type axle of the driving wheels of said electric motor vehicle, and with said main shaft and all gear shafts being parallel to said axle of said driving wheel, wherein said electric motor and said variable transmission gear are mounted on a subframe, which is connected to a housing of said rigid-type axle on the one side, whereas the other side thereof, which is carrying said electric motor, is attached to said vehicle frame by means of a cardanic suspension, and a

transverse link having one end hinged to said vehicle frame and its other end hinged to said axle housing whereby said axle



4,433,745

AIR CUSHION VEHICLE

Kay Rollins; Anthony N. Key, both of Ryde, and Thomas F. Arlotte, Newport, all of England, assignors to British Hovercraft Corporation Ltd., Yeovil, England

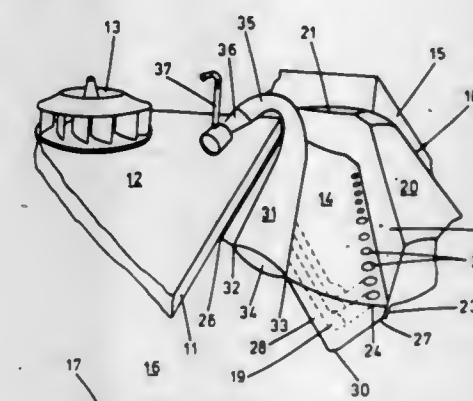
Filed Jul. 7, 1981, Ser. No. 281,247

Claims priority, application United Kingdom, Jul. 14, 1980, 8022985

Int. Cl.³ B60V 1/11

U.S. Cl. 180—118

3 Claims



1. An air cushion vehicle including a rigid body structure, a plenum chamber in said rigid body structure, at least one lift fan for supplying pressurized air to said plenum chamber, cushion sealing means including a flexible skirt structure extending below the rigid body structure to contain the air cushion, an elongate strip secured to the flexible skirt structure to form at least one inflatable member on said flexible skirt structure, a duct extending from said inflatable member to said plenum chamber, means for providing a source of high pressure air, air ejector means in said duct, said air ejector means including a conduit providing a passageway from said source of high pressure air to said duct whereby the geometry of said inflatable member may be rapidly changed from an uninflated shape to an inflated shape to simultaneously effect a change in the geometry of the flexible wall structure to provide directional control of the air cushion vehicle.

4,433,746

VEHICLE SPEED CONTROL

James Steel, Newcastle Upon Tyne, England, assignor to Ogden Electronics Ltd., Yorkshire, England

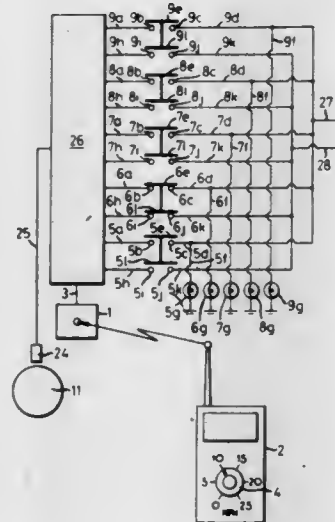
Filed Mar. 18, 1981, Ser. No. 245,205

Claims priority, application United Kingdom, Mar. 19, 1980, 8009243; Sep. 25, 1980, 8031051

Int. Cl.³ B60Q 1/54

U.S. Cl. 180-171

9 Claims



1. Apparatus for controlling the speed of a vehicle having a retarder, the apparatus comprising:
 - means for transmitting first signals indicative of a reference speed to said vehicle and for receiving same thereat,
 - means for generating second signals indicative of speed of the vehicle,
 - means for comparing the first and second signals and for generating third signals when the second signals indicate that the speed of the vehicle is in excess of the reference speed, and
 - control means automatically responsive to the third signals, the control means being adapted to automatically control operation of the retarder so that, when the speed of the vehicle exceeds the reference speed, the vehicle is retarded by the retarder until the vehicle speed is below the reference speed,
 - said control means including a plurality of devices successively and sequentially operable in accordance with the length of an elapsed time period during which the vehicle speed exceeds the reference speed, said devices progressively controlling the magnitude of power applied to the retarder.

4,433,747

MOTORCYCLE WITH IMPROVED REAR SUSPENSION

Eric Offenstadt, Pontoise, France, assignor to Sercati S.A.R.L., Paris, France

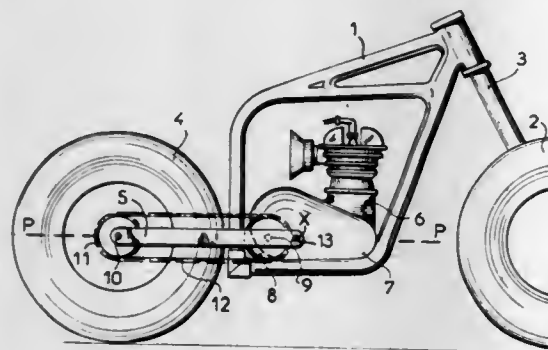
Filed Nov. 30, 1981, Ser. No. 325,873

Claims priority, application France, Dec. 1, 1980, 80 25479

Int. Cl.³ B62K 25/02

U.S. Cl. 180-227

13 Claims



1. A motorcycle comprising a frame, front and rear wheels,

suspension means guiding said rear wheel for travel relative to said frame in an arc about a suspension travel axis, a motor secured to said frame, and transmission means for transmitting drive from said motor to said rear wheel, said transmission means including a driven pinion connected to the rear wheel axle, a driving pinion mounted on the frame and a flexible loop connecting said pinions whereby tension in said loop transmits drive from said driving pinion to said driven pinion, characterized in that said suspension travel axis is disposed in front of the axis of said driving pinion, whereby tension in said loop tends to reduce excursions of said rear wheel under acceleration.

4,433,748

INSTRUCTING SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

Tetsuo Satoh, Ohta; Masaaki Ohgami, Musashino, and Shoji Ogata, Ohta, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

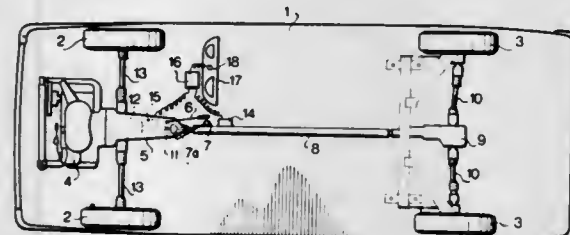
Filed Nov. 12, 1981, Ser. No. 320,776

Claims priority, application Japan, Nov. 11, 1980, 55-158352

Int. Cl.³ B60K 17/34, 23/08

U.S. Cl. 180-247

7 Claims



1. An instruction system for a four-wheel drive vehicle powered by an internal combustion engine, comprising:
 - a transmission means for transmitting power from said engine to two main driving wheels,
 - a clutch means for selectively transmitting said power to two auxiliary wheels,
 - a select lever means for engaging said clutch means,
 - speed detector means for detecting speed of said two main driving wheels and said two auxiliary wheels, respectively, and for producing first and second voltage pulse trains dependent on the speed of the main driving wheels and auxiliary wheels, respectively,
 - first and second integrator means for integrating said first and second voltage pulse trains,
 - amplifier means for amplifying the difference between the integrated voltages from said first and second integrator means,
 - comparator means for comparing the output of said amplifier means with a reference value and for producing an output voltage when said output is higher than said reference value, and
 - indicating means responsive to the output voltage of said comparator means for signaling a slipping of the wheels.

4,433,749

ACOUSTIC REAR RADIATION ABSORPTION FOR LOUSPEAKER SYSTEMS

William H. Watkins, and William D. Watkins, both of 1244 Caribbean Dr., Kingsport, Tenn. 37660

Filed Feb. 19, 1982, Ser. No. 350,183

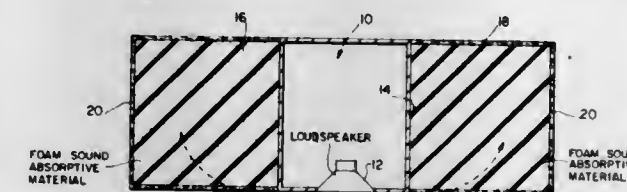
Int. Cl.³ H05K 5/00

U.S. Cl. 181-151

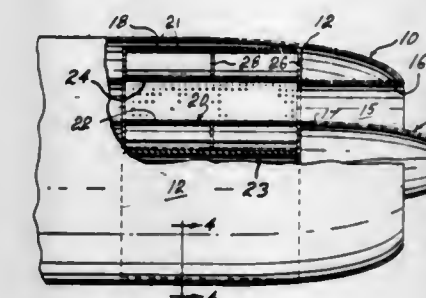
3 Claims

1. In a loudspeaker system including a loudspeaker located within a housing, the improvement comprising sound absorbing means, comprising sound absorptive damping material supported directly on the outside of the loudspeaker housing and extending outwardly a substantial distance from both sides thereof, for absorbing sound coming from the front of the loudspeaker which travels from the loudspeaker in direction

towards the rear of the loudspeaker system so as to prevent this sound from being reflected from a wall located behind the loudspeaker system, thereby permitting the loudspeaker system to more accurately reproduce the recording site ambience inherent in a recording played by the system and to permit



constituting a battery of cells between the first shell and the second shell, the adjacent cells in the battery being formed by similarly formed sheet metal members with each member having a first concavely curved section relative to the second shell and forming a wall of the inlet passage of a first cell, a



more accurate and natural imaging, the lateral extent of the sound absorptive material on both sides of the housing being on at least the order of the width of the housing such as to provide absorption of substantially all of the sound from the loudspeaker which travels in direction towards the rear of the loudspeaker system.

second continuing convexly curved section relative to the gas path and forming a portion of the cavity of a second cell with the first shell, an inwardly looped third section forming the convex wall of the inlet passage of the second cell such that each sheet metal member overlaps an adjacent member to form subsequent cells.

4,433,750

SYNTHETIC HORN PROJECTOR WITH METAL INSERT

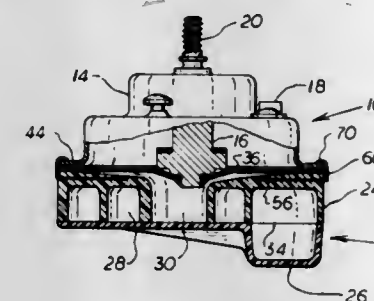
James A. Neese, Flora, Ill., assignor to Sparton Corporation, Jackson, Mich.

Continuation-in-part of Ser. No. 236,662, Feb. 23, 1981, Pat. No. 4,361,952. This application Jan. 15, 1982, Ser. No. 339,319

Int. Cl.³ B60Q 5/00; G10K 11/00

U.S. Cl. 181-179

6 Claims



1. As an article of manufacture, a molded synthetic plastic electric horn projector having an annular planar surface defined thereon for mounting the projector upon a motor subassembly having a flange portion, a metal insert integrally molded into the material of said projector, and a deformable metal flange of annular configuration defined upon said insert surrounding said mounting surface and projecting from said projector configuration adjacent said mounting surface intersecting the plane of said mounting surface and extending therebeyond for deformation upon the subassembly flange portion.

4,433,751

SOUND SUPPRESSOR LINER

Hilaire Bonneau, Boucherville, Canada, assignor to Pratt & Whitney Aircraft of Canada Limited, Longueuil, Canada

Filed Dec. 9, 1981, Ser. No. 329,008

Int. Cl.³ F01N 1/02

U.S. Cl. 181-213

5 Claims

1. A suppressor liner comprising a first shell and a second shell spaced from the first shell with the second shell being permeable to sound and in contact with a gas path, sheet metal members forming a plurality of attenuator cells, each cell defining a cavity and having inlet passage means therein and

4,433,752

RESCUE SYSTEM ON HIGH-RISE BUILDINGS

Franz-Josef Günter, Grevenbroich, Fed. Rep. of Germany, assignor to Walther & Cie. Aktiengesellschaft, Cologne-Dellbrück, Fed. Rep. of Germany

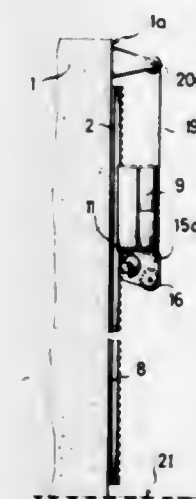
Filed Oct. 14, 1981, Ser. No. 311,304

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042953

U.S. Cl. 182-82

Int. Cl.³ A62B 1/02; B66B 9/00

5 Claims



1. A rescue device for evacuating persons from a high-rise building, comprising an upright climb rail mounted on a face wall of the building and having an elongated rack; a movable rescue cabin provided with a gear engageable with said rack; drive means and a transmission unit interconnected between said gear and said drive means for moving said cabin upwardly and downwardly along said rack, said drive means including a cable drum connected to said transmission unit for rotation of said drum and having a cable wound thereon; and a deflecting roller positioned above said rail and secured to said face wall at the highest possible location thereto, said cable being taken up by said roller from said cable and guided from said drum in the upward direction to and about said deflecting roller so that the weight of the rescue cabin during its movement upwardly and downwardly is at least partially absorbed by said cable.

4,433,753

WORK SUPPORTING APPARATUS

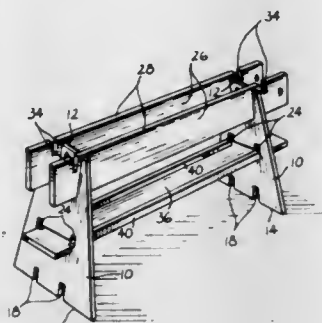
Marshall Watson, P.O. Box 474, Sublette, Kans. 67877

Filed Aug. 11, 1982, Ser. No. 407,033

Int. Cl.³ B27B 21/00; A47B 37/00

U.S. Cl. 182—151

10 Claims



1. Work supporting apparatus having a unit comprising:
 - a pair of legs each having a substantially solid body portion tapering from bottom to top, each leg having a lower edge for engagement with a support surface and an upper edge presenting a pair of spaced apart slots therein;
 - a pair of elongated rails each having a longitudinal axis and upper and lower edges extending generally parallel to said longitudinal axis;
 - a pair of slots in the lower edge of each rail near opposite ends thereof sized to detachably interlock with the slots in the upper edges of said legs in a manner to connect the legs and rails together with the legs spaced apart and the rails spaced apart in extension between the legs to provide a space between the rails and above the legs for receiving a work supporting member in an assembled condition of the unit;
 - a rigid brace having opposite side edges and a pair of slots near opposite ends of each side edge, said brace presenting an upper surface adapted to receive and hold objects thereon and upstanding lips on each side edge to maintain objects on said upper surface; and
 - an opening in the body portion of each leg at a location intermediate said upper and lower edges of the leg, each opening having a configuration to receive an end portion of said brace and to detachably interlock with the slots thereof in a manner to rigidly connect said brace in extension between said legs with said upper surface in a substantially horizontal orientation to receive and hold objects in the assembled condition of the unit, each opening further including a pair of slot portions sized and located to receive said lips when the brace is extended through the opening.

4,433,754

STEPLADDER STABILIZER ASSEMBLY

John Beach, 435 E. 157th Pl., South Holland, Ill. 60473

Filed Nov. 13, 1981, Ser. No. 320,856

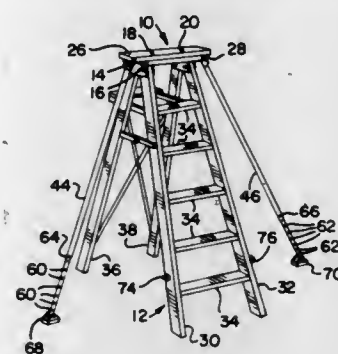
Int. Cl.³ E06C 1/20

U.S. Cl. 182—172

6 Claims

1. A stabilizer assembly for use with a stepladder having a top end platform associated with spaced apart side rails, said top end platform having a lateral dimension and first and second lateral ends, said assembly comprising a single board having a top and a bottom surface, and substantially opposing first and second side ends, said board being removably secured by a plurality of fastening means to said top end platform in such a manner that said first side end extends laterally at least to said first lateral end of said top end platform and said second side end extends laterally at least to said second lateral end of said top end platform; first and second hinge means associated with said bottom surface of said board at or near said first and second side ends of said board, respectively; and first and second elongated support means associated with said first and second hinge means, respectively, and extending from said

secured single board to improve the stability of said stepladder, and said first and second hinge means are situated relative to



said board such that said boards means further acts to restrict said pivotal movement of said first and second elongated support means, respectively.

4,433,755

ELEVATOR APPARATUS

Sadayuki Ohtomi, Inazawa, Japan, assignor to Mitsubishi Denki

Kabushiki Kaisha, Tokyo, Japan

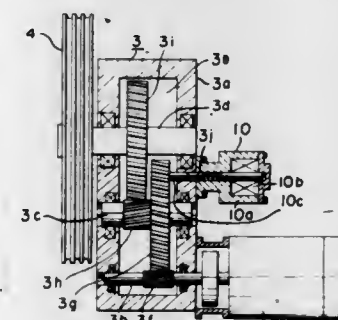
Filed May 20, 1981, Ser. No. 265,677

Claims priority, application Japan, Jun. 3, 1980, 55-74489

Int. Cl.³ B66B 11/04

U.S. Cl. 187—20

3 Claims



3. In an elevator apparatus comprising a reduction gear unit having a reduction mechanism of rotary parts of parallel axial gears, an input shaft and an output shaft as main parts; a main rope suspending a car and a counterweight; a traction sheave which is directly connected to said output shaft and on which said main rope is wound; and a traction motor for rotating said input shaft of said reduction gear unit, an improvement comprising a friction device for imparting pushing force to said rotary parts of said reduction gear unit; wherein said friction device comprises a body which is fitted on the outer surface of said reduction gear unit and which holds an electromagnetic coil inside; a friction member whose one end is placed to face the side surface of said rotary parts of said reduction gear unit and whose other end is inserted in said electromagnetic coil; wherein said improvement further comprises control means for detecting a balance of the weight of said car and said counterweight, and for actuating said electromagnetic coil when said balance is detected.

4,433,756

ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and Alan L. Husson, Hackettstown, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1982, Ser. No. 356,685

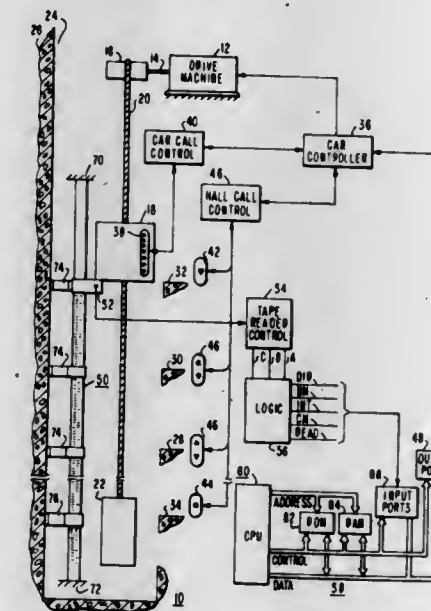
Int. Cl.³ B66B 3/02

U.S. Cl. 187—29 R

25 Claims

1. An elevator system, comprising:
 - a building having a hoistway and a plurality of floors,

an elevator car mounted for vertical movement in the hoistway of said building to serve the floors therein, elevator control means for controlling the movement of said elevator car, and a vertically extending, extensible coded tape in said hoistway, which, in cooperation with said elevator control means, identifies the absolute position of said elevator in said hoistway,



said tape being tensioned and stretched a predetermined dimension beyond its untensioned length, and fixed at predetermined locations such that the positional relationship between at least certain of the floors and the tape remains unchanged, notwithstanding compression of said building.

4,433,757

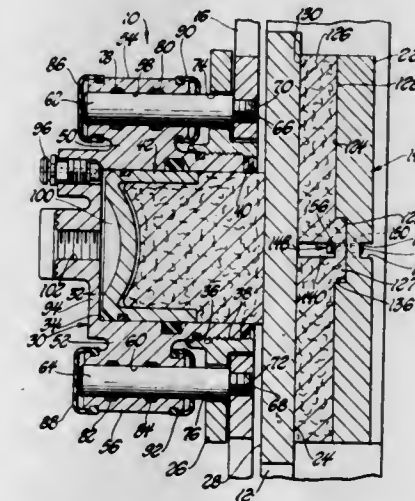
DISC BRAKE LINING RETAINER AND WEAR WARNING ARRANGEMENT

Edward H. Warwick, Englewood, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1982, Ser. No. 353,414

Int. Cl.³ F16D 66/00

U.S. Cl. 188—1.11



1. In a disc brake caliper having a caliper leg on one side of a disc to be braked and a friction bracking element mounted on said leg for selective friction braking engagement with the disc one side, the improvement comprising:

said friction bracking element consisting solely of friction brake lining material having a friction bracking surface facing the disc one side and a caliper leg mounting surface facing and in surface engagement relation with said cali-

per leg, and at least one boss integrally formed therewith and extending outwardly of said mounting surface; said caliper leg having at least one recess formed therein receiving said at least one boss therein in mating relation with the side wall of said boss engaging the side wall of said recess and being of sufficient area to transmit brake torque therethrough; and retaining means holding said friction bracking element on said caliper leg in position for friction braking engagement with the disc one side and permitting ready removal and replacement of said friction bracking element as needed, said retaining means comprising a spring clip located within aligned openings in said boss and the bottom wall of said caliper leg recess and having a spring portion and a securing portion spring loaded by said spring portion to continually urge said boss into full mating relation with said caliper leg recess, and having a tab formed to extend toward the disc to engage the disc only upon a predetermined amount of lining material wear and only during brake actuation to generate a lining wear warning noise.

4,433,758

BRAKE ADJUSTER HAVING A ROD DRAWN THROUGH A DRAW RING

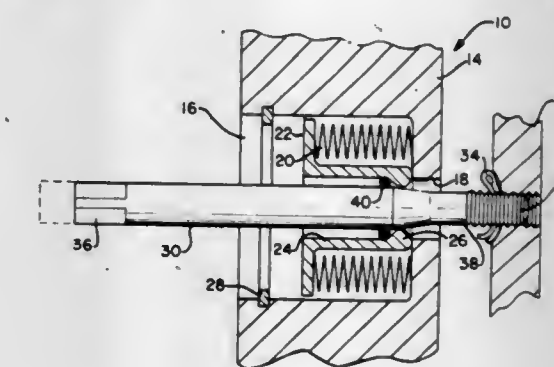
Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,321

Int. Cl.³ F16D 65/52

U.S. Cl. 188—196 R

8 Claims



1 Claim

1. A brake adjuster assembly for interconnection between the pressure plate and the brake housing of a wheel of a vehicle, comprising:
 - a support member maintained in fixed relationship to the brake housing;
 - reciprocating means operatively associated with said support member for reciprocating movement between first and second ends thereof;
 - a draw ring carried by said reciprocating means and movable therewith;
 - a rod passing through said draw ring and connected at one end thereof to the pressure plate, said draw ring being in swaging and reshaping engagement with said rod; and wherein said rod is a fluted rod having ribs thereon in said swaging and reshaping engagement with said draw ring.

4,433,759

GAS SPRING

Hisao Ichinose, Yokohama, Japan, assignor to Nissan Motor Co. Ltd., Yokohama, Japan

Filed Aug. 4, 1981, Ser. No. 289,858

Claims priority, application Japan, Sep. 11, 1980, 55-129573

Int. Cl.³ F16F 9/19

U.S. Cl. 188—282

14 Claims

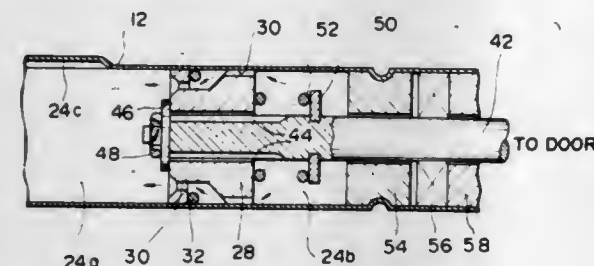
1. A gas spring comprising:
 - a cylinder;
 - a free piston axially slidably and sealingly received in said

cylinder to divide the interior of said cylinder into a gas chamber and a working liquid chamber;

a piston axially slidably received in said working liquid chamber to divide the same into first and second working liquid chamber sections, the first section being located in the vicinity of said gas chamber;

a piston rod connected at its one end to said piston and extending therefrom through said second working liquid chamber section to project axially outwardly from said cylinder;

a first valve means for providing a passage between said first and second working liquid chamber sections only when said piston moves in a direction to contract said second working liquid chamber section;



a second valve means for providing a passage between said first and second working liquid chamber sections only when said piston moves in a direction to contract said first working liquid chamber section; and

a third means for providing an additional passage when said piston is positioned in a predetermined area near said gas chamber,

wherein said second means is constructed to form the passage between said first and second working liquid chamber sections when said piston rod is pushed toward said gas chamber to provide a displacement thereof relative to said piston.

4,433,760

DEFORMABLE LIGHTWEIGHT LUGGAGE

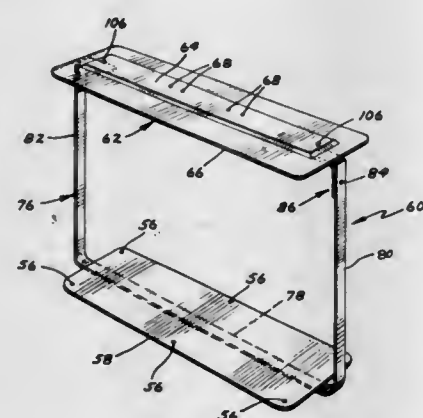
Joseph Y. Pelavin, North Bergen, N.J., assignor to CPG Products Corp., Minneapolis, Minn.

Filed Feb. 25, 1982, Ser. No. 352,482

Int. Cl.³ A45G 13/04

U.S. Cl. 190—115

22 Claims



1. Luggage comprising a pliable cover material forming flexible top, bottom, end, front and rear walls, a plate overlying said bottom wall and generally coextensive therewith, a metallic spring band having a section underlying only the central portion of said plate and spaced inwardly from said front and rear walls, said spring band including upwardly extending integral leg sections confronting only central portions of said end walls and spaced inwardly from said front and rear walls, a panel underlying said top wall and generally coextensive therewith, and respective means fixedly connecting and fasten-

ing centrally disposed end portions of said panel to the upper ends of said leg sections.

4,433,761

PORTFOLIO WITH FRAME AND INTEGRAL ARTICLE RETAINERS

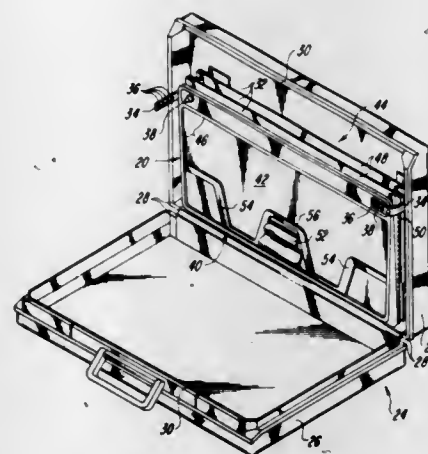
Roger D. Winter, Lakewood; David E. Workman, Evergreen, and Mark B. Nordstrom, Denver, all of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jan. 27, 1982, Ser. No. 343,252

Int. Cl.³ A45C 3/02, 13/04

U.S. Cl. 190—109

31 Claims



1. A portfolio comprising: portfolio frame having a peripheral margin structure defining an interior opening through the portfolio frame; a backing panel extending over the interior opening and operatively connected to the portfolio frame to substantially resist forces applied thereto; and article retaining means operatively connected to the peripheral margin structure and extending into the interior opening adjacent the backing panel, said article retaining means resiliently deflectable to a deflected position spaced away from the backing panel and operatively developing retaining force through the operative connection to the portfolio frame for retaining articles in the space between the backing panel and the deflected article retaining means.

4,433,762

OPPOSED REACTION TRANSMISSION BRAKE

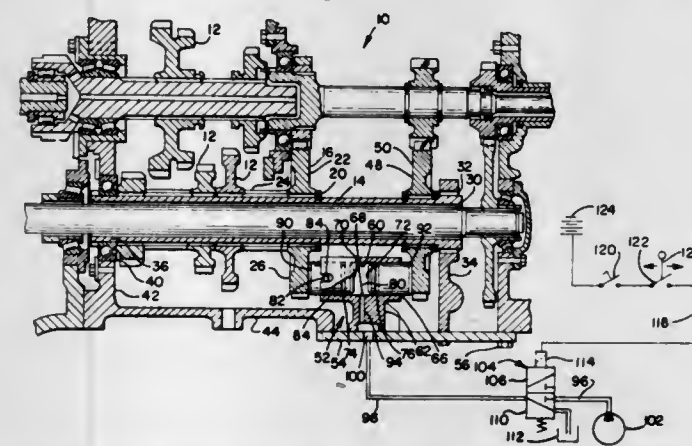
Josef F. Prokop, Downers Grove; Robert R. Coons, Hinsdale, and Richard H. Mylander, Glen Ellyn, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Jul. 30, 1981, Ser. No. 288,623

Int. Cl.³ B60K 41/28

U.S. Cl. 192—4 A

18 Claims



1. In a transmission having a housing containing a rotatable shaft to which a plurality of constant mesh gears are mounted,

a source of fluid pressure and a source of electrical energy, the improvement comprising:

a transmission access plate having a fluid access port;

a dual piston opposed reaction brake mounted to the interior surface of said transmission access plate between a pair of said constant mesh gears;

a solenoid operated two position valve having a supply conduit connecting it hydraulically with said source of fluid pressure and said dual piston opposed reaction brake and an electrical circuit connecting it electrically to said source of electrical energy;

a clutch pedal foot operated switch in said electrical circuit; a lever actuated switch in series with said clutch pedal foot operated switch in said electrical circuit whereby said dual piston opposed reaction brake will be actuated hydraulically upon the simultaneous closing of said clutch pedal foot operated switch and said lever actuated switch.

4,433,763

SOLENOID OPERATED SERVICE BRAKE APPLICATION UNIT

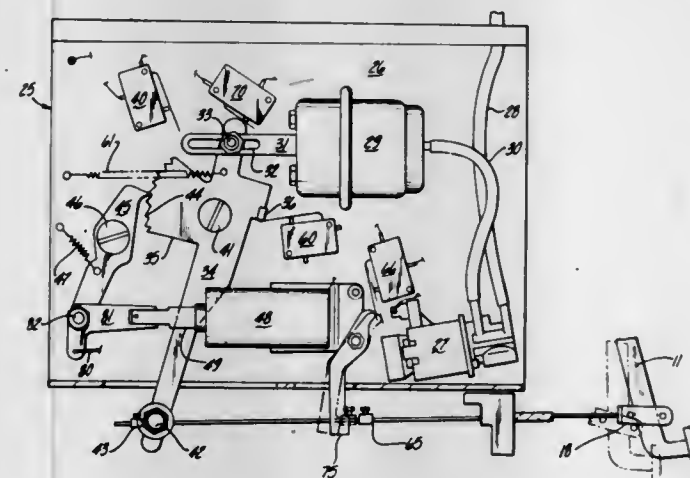
Vincent P. Lizzio, 45 Moorland Dr., Grosse Pointe Shores, Mich. 48236

Filed Jun. 2, 1982, Ser. No. 365,521

Int. Cl.³ B60K 41/26

U.S. Cl. 192—4 A

15 Claims



1. A method for an application and release of the service brake of an automotive-type transmission equipped vehicle having a transmission selector lever level after the operator of said vehicle has brought the vehicle to a stop by application of pressure to said service brake, said method including the steps of:

- placing the transmission selector lever of said vehicle in a first predetermined position while pressure is still being applied to said service brake;
- causing a restraining means to apply force to said service brake and keep said force applied while said transmission selector lever is in said first predetermined position, thereby keeping the service brake of said vehicle applied; and
- causing said service brake to remain applied until said operator places said transmission selector lever in a second predetermined position and applies a slight additional pressure, over that initially applied, to the service brake of said vehicle.

4,433,764

CLUTCH-BRAKE ASSEMBLY

Edward J. Gosenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 4, 1981, Ser. No. 299,454

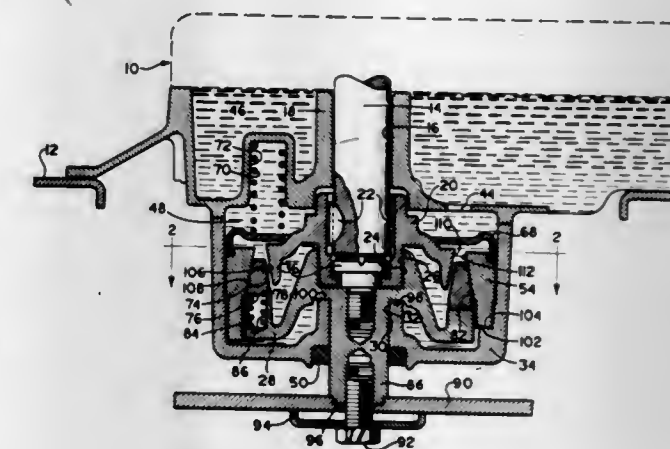
Int. Cl.³ F16D 11/06

U.S. Cl. 192—18 R

19 Claims

1. A clutch-brake assembly for controlling the transmission

of power between a source such as an engine, a use element such as a rotating blade, and a support element such as a frame, comprising, in combination with oil: a housing adapted to be secured to said support element and retain said oil; an input member located within said housing, mounted for rotation about an axis, adapted to be secured to said source for driving rotation, and having a clutching surface; an output member mounted for rotation about said axis and having a cam surface facing said clutching surface; a friction member located within said housing and having a friction surface juxtaposition said clutching surface and a cam surface engaging said cam surface of said output member whereby rotational movement of said friction member and said output member relative to one an-



other will result in axial movement of said friction member relative to said output member; a brake member in said housing having a braking surface juxtaposition said friction surface and mounted for axial movement with respect to said housing a distance to engage said braking and friction surfaces and move said friction surface out of engagement with said clutching surface; means axially biasing said friction member toward said input and braking members and away from said output member; means axially biasing said brake member toward said friction member; and means to move said brake member away from said friction member against the force of said brake biasing means a distance to allow said friction biasing means to move said friction member into engagement with said clutching surface.

4,433,765

SPRING CLUTCHES

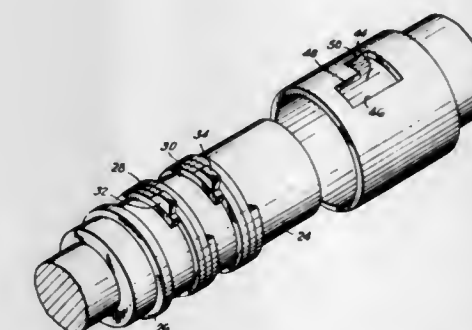
Edward T. Rude, Fairfield; Jules Nisenson, Stamford, and Martin Wayne, Riverside, all of Conn., assignors to General Clutch Corp., New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,227

Int. Cl.³ F16D 7/02, 1/00, 49/20

U.S. Cl. 192—41 S

7 Claims



1. A spring clutch comprising a first shaft, a coaxially mounted second shaft, and at least first and second springs, helically wound and coaxially disposed between said first and second shafts, for making frictional contact with said first shaft,

said at least first and second springs each having a tab near at least one end, said tabs being radially directed toward said second shaft,
 said second shaft having at least first and second load surfaces for engaging respective ones of said tabs,
 rotation of one of said shafts in at least one direction causing said at least first and second springs to rotate therewith and to apply a torque in the same direction to the other of said shafts,
 said tab near said one end of said first spring making contact with said first load surface of said second shaft before said tab near said one end of said second spring makes contact with said second load surface of said second shaft, said first spring slipping on said first shaft prior to said tab near said one end of said second spring making contact with said second load surface of said second shaft if the torque applied to said first shaft exceeds a predetermined value.

4,433,766

BI-DIRECTIONAL OVERRUNNING CLUTCH

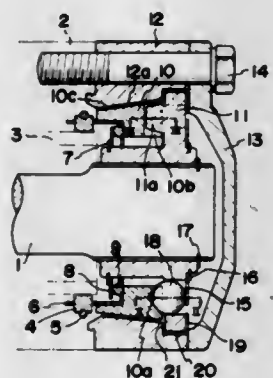
Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan

Continuation of Ser. No. 47,804, Jun. 11, 1979, abandoned. This application Nov. 20, 1981, Ser. No. 323,709

Int. Cl.³ F16D 21/08, 41/06, 41/22

U.S. Cl. 192—50

5 Claims



1. A bi-directional overrunning clutch, particularly for use in a hub drive assembly wherein the hub is selectively freely rotatable or positively-driven, said clutch comprising:

- drive shaft means selectively operationally in a driving mode and rotating to transmit a rotational driving force and in a non-driving mode to interrupt said rotational driving force;
- a drive clutch member fixedly assembled on said drive shaft means to rotate therewith during said driving mode thereof;
- a driven clutch member positioned to receive rotational movement from said drive clutch member during said driving mode of said drive shaft means, said driven clutch member being mounted for relative axial movement with respect to said drive clutch member and said drive shaft means between an operative position axially spaced from said drive clutch member and an inoperative position axially adjacent said drive clutch member;
- said driven clutch member having surface means for drivingly engaging the hub when said driven clutch member is in said operative position thereof and for transmitting said rotational movement from said drive clutch member to the hub;
- means for urging said driven clutch member to said inoperative position thereof such that said surface means is out of engagement with the hub;
- said drive clutch member and said driven clutch member having therebetween separate first and second engagement means for transmitting said rotational movement of said drive clutch member to said driven clutch member and for, upon rotation of said drive clutch member, mov-

ing said driven clutch member to said operative position against the force of said urging means;

said first engagement means comprising a first pair of cam surfaces including a surface of said driven clutch member inclined circumferentially of said driven clutch member and a surface of an element associated with said drive clutch member;

said second engagement means comprising a second pair of cam surfaces including surfaces on said driven clutch member and said drive clutch member inclined circumferentially of said driven clutch member and said drive clutch member;

the angle of said inclined surface of said driven clutch member of said first pair of cam surfaces being greater than the angle of said inclined surfaces of said driven clutch member and said drive clutch member of said second pair of cam surfaces, taken in directions circumferentially of said driven clutch member and said drive clutch member, and said first pair of cam surfaces being in contact when said driven clutch member is in said inoperative position thereof, such that said first and second pairs of cam surfaces are sequentially operable to maintain said driven clutch member in said operative position thereof during said drive mode of said drive shaft means; and

said driven clutch member including brake means for, upon interruption of said driving mode of said drive shaft means, retarding continued rotation of said driven clutch member and enabling said urging means to move said driven clutch member to said inoperative position thereof.

4,433,767

POWER TRANSMISSION MECHANISM

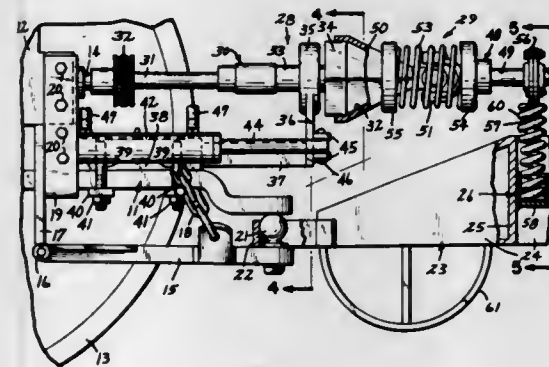
Charles C. Thor, Box 654, Hutchinson, Minn. 55350

Continuation of Ser. No. 57,601, Jul. 16, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,750

Int. Cl.³ F16D 25/08, 25/12

U.S. Cl. 192—67 P

6 Claims



1. Power transmission mechanism comprising:

- (a) a longitudinally extensible and retractable driving shaft having an outer end portion including a longitudinally outwardly tapering coupling head and an inner end portion;
- (b) a driven shaft having an inner end portion, an outer portion, and a universal joint connecting said outer end portion to said inner end portion;
- (c) said inner end portions of said shafts being arranged to be connected, one to a prime mover for rotation, and the other to an apparatus to be driven;
- (d) said outer end portion of said driven shaft comprising a longitudinally inwardly tapering coupling socket for interfitting reception of the tapered head of said first shaft;
- (e) yielding means urging said inner and outer end portions of the driven shaft toward axial alignment with each other;
- (f) and means for imparting extending and retracting movements to said driving shaft to move said head into and out of interfitting driving engagement with said socket, wherein said coupling head has a generally circular cross-sectional configuration and a sprocket element having a

plurality of teeth is attached to the outer surface of the coupling head adjacent its widest end, and wherein said coupling socket has a generally circular cross-sectional configuration and at least one engagement finger extending from said coupling socket for reception between an adjacent pair of said teeth.

4,433,768

CLUTCH THROW-OUT

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim; Lothar Walter, and Heinrich Kunkel, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

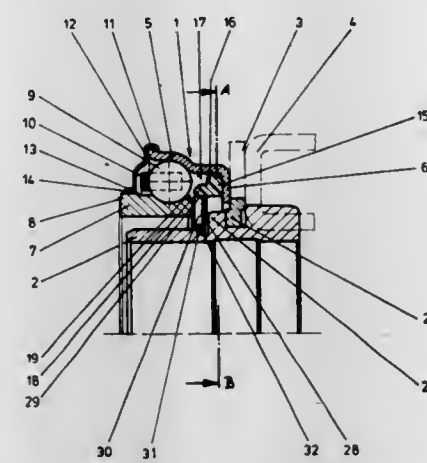
Filed Feb. 11, 1981, Ser. No. 233,399

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 8004784

Int. Cl.³ F16D 23/14

U.S. Cl. 192—98

6 Claims



1. In a clutch throw-out, particularly for motor vehicle clutches, including a sliding sleeve and a self-centering clutch thrust-bearing having a bore, which thrust-bearing abuts in a radially shiftable manner against a pressure plate of the sliding sleeve, and having an elastic ring positioned with respect to said bore for damping the movements of said bearing in a circumferential direction, the improvement comprising providing said damping ring with a plurality of elastic tongues arranged in pairs and converging in an essentially radial direction, a plurality of protrusions arranged between said tongues and fixed with respect to said sliding sleeve, said tongues abutting with clearance against the lateral surfaces of said protrusions, a projection being formed out of said pressure plate and one of said radially directed protrusions lying against said projection with facing surfaces abutting, said projection being located with substantial clearance in a recess of said stationary bearing ring.

4,433,769

GRINDING MILL CONTROL SYSTEM

Serge L. Scuccato, Peterborough, and Marvin B. Shaver, Beaconsfield, both of Canada, assignors to Dominion Engineering Works Limited, Lachine, Canada

Continuation-in-part of Ser. No. 81,032, Oct. 1, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,627

Claims priority, application Canada, Oct. 13, 1978, 313334

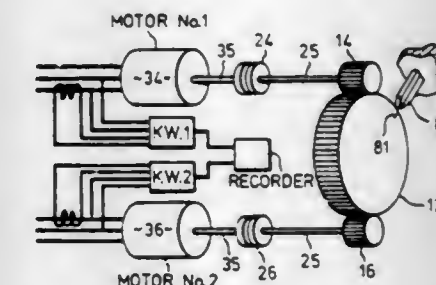
Int. Cl.³ B60K 41/02; F16H 37/06

U.S. Cl. 192—0.098

4 Claims

1. A mill drive system having a mill drum rotatably mounted between spaced bearings, a large gear connected thereto in driving relation, at least two pinion gears mounted in constant meshing relation with the large gear, at least two electric motors to drive the respective pinion gears, variable clutches to permit variation in transmission of torque between each motor and the respective pinion gear, and regulating means for selectively controlling the clutches, said system being subject while under steady state operation to recurrent cyclic imbal-

ance in the instantaneous values of electrical power required by said motors, angular position indicating means located at a predetermined angular position on the large gear and datum indicating means positioned in predetermined angular relation



adjacent the large gear to provide indication of the coincidence of the indicating means, and clutch control means for effecting locking-up of the clutches at a preselected angular position of the gear wheel whereby the cyclic variation in load of the motors may be selectively moderated.

4,433,770

TORSIONAL DAMPERS

Pierre Loizeau, Ville D'Avray, and Roger Carmillet, Paris, both of France, assignors to Valeo, Paris, France

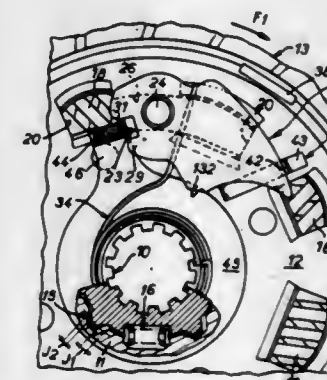
Filed Nov. 25, 1981, Ser. No. 324,843

Claims priority, application France, Dec. 2, 1980, 80 25527

Int. Cl.³ F16D 3/14

U.S. Cl. 192—106.2

10 Claims



1. A torsional damper such as a friction clutch plate, comprising at least two coaxial parts mounted to rotate relative to one another within a defined range of relative angular movement, elastic means between said parts acting circumferentially over at least part of said defined range of relative angular movement so as to resist same, at least one intermediate member responsive to centrifugal force by modifying the operating characteristics of the damper over at least part of said range of relative angular movement through its reversible movement against the action of return means between a standby position, which it occupies for a first range of relatively low rotational speeds of the damper assembly, and at least one operative position, which it occupies at relatively high rotational speeds of the damper assembly, said intermediate member modifying the operating characteristics of the damper in said standby position and having no effect thereon in the or each of said operative positions.

4,433,771

TORSION DAMPING DEVICE FOR A CLUTCH PLATE
Andre Caray, Paris, France, assignor to Valeo S.A., Paris, France

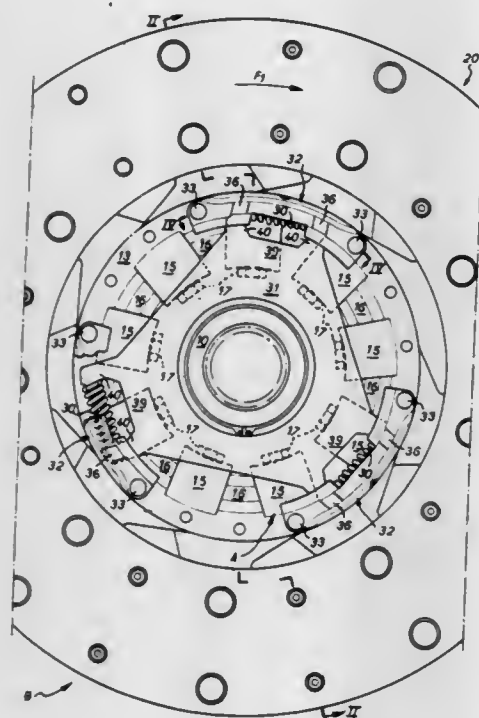
Filed Jul. 14, 1981, Ser. No. 283,284

Claims priority, application France, Jul. 15, 1980, 80 15598

Int. Cl.³ F16D 3/66

U.S. Cl. 192—106.2

15 Claims



1. A torsion damping device for a clutch plate assembly, said torsion damping device having an axis and comprising a common hub and separate first and second torsion damping stages, the first torsion damping stage comprising a relatively low stiffness torsion damping means and the second torsion damping stage comprising relatively high stiffness torsion damping means, said first and second torsion damping means being arranged axially adjacent each other on said common hub, each of said first and second torsion damping means comprising two coaxial parts mounted for relative angular movement and a plurality of elastic members interposed circumferentially between said coaxial parts and opposing relative angular movement thereof, said elastic members of said first damping stage being arranged in a first circumferential array about the axis of said torsion damping device and said elastic members of said second damping stage being arranged in a second circumferential array about the axis of said torsion damping device, the diameter of said first array being greater than that of said second array, one of said coaxial parts of said first damping stage being in the form of transverse flange fixed for rotation with said common hub and a plurality of pairs of separate part-annular guide plates respectively accommodating said elastic members, said pairs of guide plates being fixed for rotation with each other and with one of said coaxial parts of said second damping stage, the other of said coaxial parts of said second damping stage being in engagement with play with said common hub, said pairs of guide plates extending circumferentially to both ends of their associated elastic members, and axially outer guide plates defining with said common hub an axially outwardly opening annular recess.

4,433,772

LOCK WITH LOCKING FUNCTION ADAPTED TO BE ACTUATED AFTER THE INSERTION OF A COIN
Armin Eisermann; Heinz T. Eicken, and Diethard Geiger, all of Velbert, Fed. Rep. of Germany, assignors to Schulte-Schlagbaum AG, Velbert, Fed. Rep. of Germany

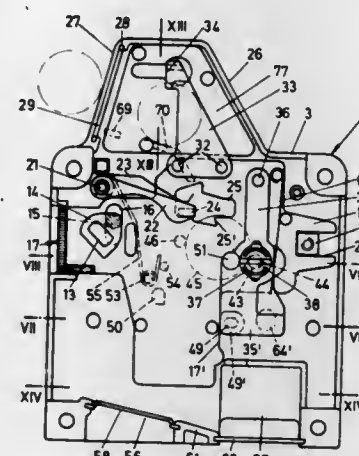
Filed May 21, 1982, Ser. No. 380,503

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124180

Int. Cl.³ G07F 5/02

U.S. Cl. 194—59

14 Claims



1. In a lock with a locking function adapted to be actuated after the insertion of a coin, in which the coin drops into a supported position in a bolt which is displaceable by key actuation, the edge of the coin releasing the bolt for locking displacement to a locking position by disengaging a pawl, the supported position being established by a first resting point on the bolt and a second resting point, the distance between the two resting points being variable as a function of the locking displacement of the bolt, the improvement wherein the second resting point is formed by a projection member having an eccentrically shaped end portion, said projection member being seated on a lever pivoted to the bolt, such that upon the locking displacement of the bolt, the lever pivots into a position wherein the distance between the eccentrically shaped end portion and the first bolt resting point is increased, the projection member including an attack surface facing a rear wall of the lock for engagement with a conversion tool.

4,433,773

APPARATUS FOR MANIPULATING STACKS OF PAPER SHEETS OR THE LIKE

Paul Jendrusch, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

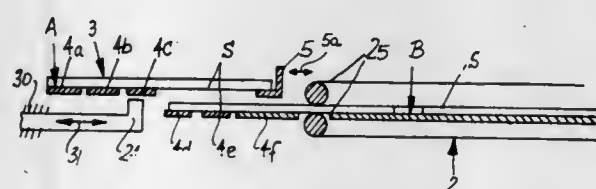
Filed Jan. 6, 1982, Ser. No. 337,426

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100583

Int. Cl.³ B65G 37/00

U.S. Cl. 198—467

18 Claims



1. Apparatus for manipulating a series of flat articles, such as closely adjacent flexible stacks of paper sheets, comprising a feeding unit including first conveyor means for advancing the articles of said series in a first direction and along a first path; a removing unit including second conveyor means for advancing

ing successive articles of said series in a second direction and along a second path located at a level below said first path; and means for transferring successive articles of said series from said first into said second path, including a table having a succession of sections disposed one behind the other, as considered in said second direction, and movable between upper positions in which they are located at the level of said first path and support from below an article supplied by said feeding unit and lower positions in which the article thereon is located at the level of said second path, means for moving said sections including means for simultaneously lowering said sections from said first to said second positions and for individually lifting the sections of said succession from said lower positions to said upper positions as soon as an article which is supported by said sections during movement to said lower positions is advanced along said second path beyond a section, and means for temporarily supporting portions of successive articles in said first path during advancement of such articles into the range of said sections, said moving means further comprising discrete sensors, one for each of said sections and each arranged to generate signals denoting the presence or absence of an article on top of the respective section, said lifting means including devices which are actuatable in response to signals from said sensors to move a section back to the upper position when the signal from the respective sensor indicates that the article which has been lowered by said sections is advanced beyond the corresponding section.

4,433,774

BLANK CONVEYOR APPARATUS

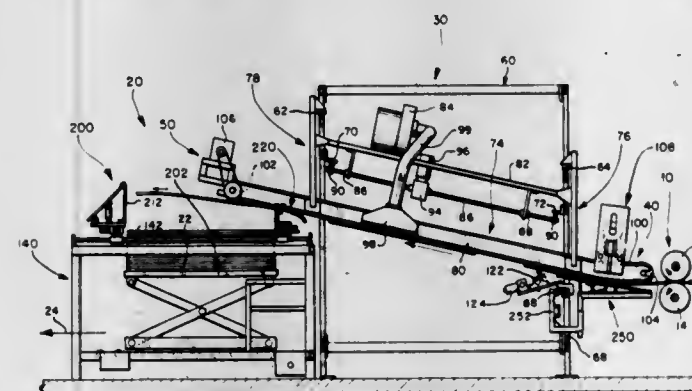
Richard R. Lopes, Salem, Wis., assignor to Stone Container Corporation, Chicago, Ill.

Filed Mar. 13, 1981, Ser. No. 243,358

Int. Cl.³ B65G 47/91

U.S. Cl. 198—689

8 Claims



1. An improved conveyor system for conveying die cut blanks from a rotary die cutter to a blank stacking device, said conveyor system comprising:

vacuum belt conveyor means for suspending and transporting blanks from the rotary die cutter to the blank stacking device, said conveyor means comprising a perforated belt, means for translationally moving the belt, and means for generating a subatmospheric pressure on one side of the belt such that blanks brought into contact with the other side of the belt are held against the belt by atmospheric pressure, said conveyor means having a blank take-up section and a blank release section; and means for positioning the conveyor means between the rotary die cutter and the stacking device such that the blank take-up section is adjacent the die cutter, the blank release section is adjacent the stacking device, and the perforated belt of the conveyor means operates automatically to engage blanks before they have been released by the die cutter, to retain blanks in registry as they are transported to the stacking device, and then to release the in-registry blanks to the stacking device; said positioning means further comprising a frame positioned between the die cutter and the blank stacking device, and first means, mounted to slide along the frame and secured

to the conveyor means adjacent the blank take-up section, for mounting the blank take-up section of the conveyor means to the frame.

4,433,775

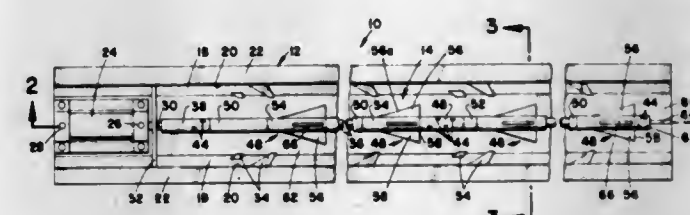
PUSHER ASSEMBLY FOR SCRAP METAL CONVEYORS
Barry S. Hollowell, Warrensville Heights, Ohio, assignor to Mayfran, Inc., Cleveland, Ohio

Filed May 18, 1981, Ser. No. 265,037

Int. Cl.³ B65G 25/00

U.S. Cl. 198—742

10 Claims



1. A pusher assembly for a scrap metal conveyor having a trough including bottom wall means on which the pusher assembly is supported for longitudinal reciprocation to advance scrap metal along the trough between opposite ends thereof and means at one end of said trough to reciprocate said pusher assembly, said pusher assembly comprising rigid push rod means extending longitudinally along said trough, said push rod means being circular in cross-section and having an axis, a plurality of axially spaced apart scrap metal pusher means each supported on said push rod means for reciprocation therewith and against axial displacement relative thereto and for swinging circumferential pivotal movement relative to one another and to said push rod means, said swinging movement being restricted to a plane transverse to said axis, each said pusher means including pusher blade means and a tubular support sleeve for said blade means, spacer sleeve means between the support sleeves of axially adjacent ones of said pusher means and providing said axially spaced apart relationship therebetween, said support sleeves and said spacer sleeve means being axially slidably received on and removable from said push rod means, and means releasably retaining said support sleeves and said spacer sleeve means on said push rod means.

4,433,776

DRIVEN ROLLER TUBE CONVEYOR

Ralston G. Edwards, Jr., Newfield; John R. B. Walkden; Walter H. Carstensen, both of Vineland; Gregory E. Murphy, Erial, and John E. Lisi, Newfield, all of N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 6, 1981, Ser. No. 280,579

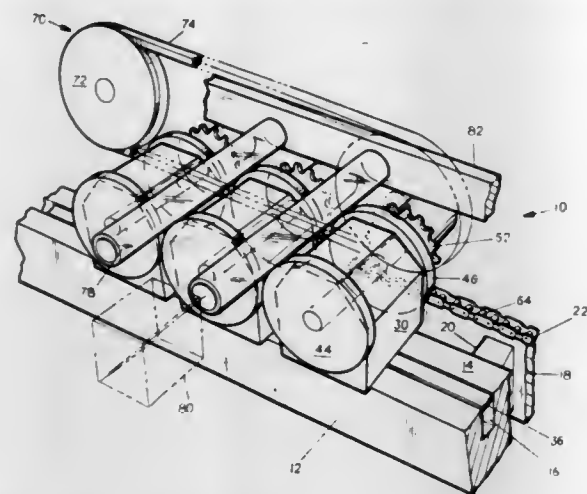
Int. Cl.³ B65A 17/24

U.S. Cl. 198—779

16 Claims

1. A roller conveyor comprising, in combination, a plurality of rollers supported for rotation about parallel, spaced-apart axes, means for translating said rollers along an axis generally perpendicular to said spaced-apart axes, means for driving said rollers at a reference surface speed, and means operably disposed intermediate said drive means and said rollers for rota-

tionally coupling said rollers to said drive means upon relative rotation therebetween in one direction and rotationally releas-



ing said rollers from said drive means upon relative rotation therebetween in the opposite direction.

4,433,777

CONVEYOR BELT DRIVE SPROCKET

Neal W. Densmore, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

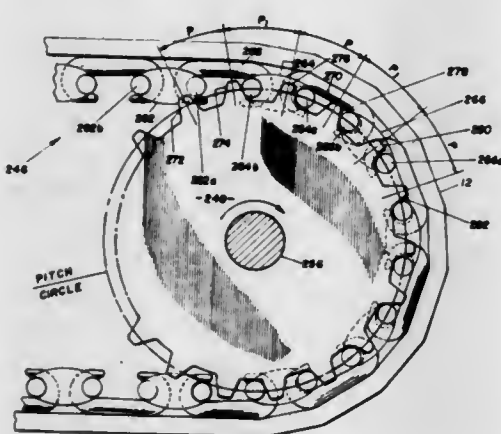
Division of Ser. No. 80,760, Oct. 1, 1979, Pat. No. 4,339,031.

This application Dec. 23, 1981, Ser. No. 333,594

Int. Cl.³ B65G 23/06

U.S. Cl. 198—834

1 Claim



1. In an elongated conveyor having an orbital material conveying belt of the type comprising an elongated web of resilient material and a chain attached to and extending along the longitudinal length of said web, said belt extending between and about rotatable means disposed at opposite ends of said belt for maintaining said belt in tension and driving same, the improvement comprising:

at least one of said rotatable means including a drive sprocket having alternating space teeth in a plurality of sets thereof, each of said teeth having a leading drive surface engaging said chain, each set including first and second teeth being spaced a given distance from each other on a pitch circle defined about said sprocket and with the second and third teeth being spaced a distance less than said given distance whereby upon engagement of said teeth with said chain adjacent links of said chain are moved closer together to thereby relieve some of the increased tension in said belt caused by the chain passing around said sprocket.

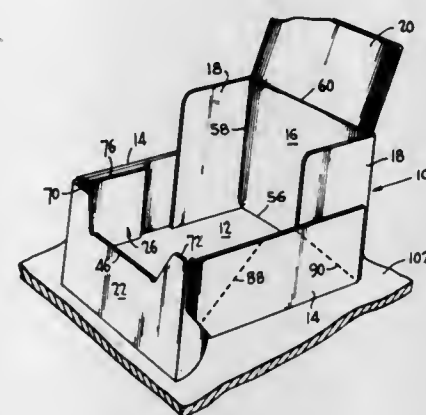
4,433,778
AUTOMATIC TILT DISPLAY CARTON
Patrick S. Maio, Ringwood, and John F. Lee, Vernon, both of N.J., assignors to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Sep. 17, 1982, Ser. No. 419,163

Int. Cl.³ B65D 5/20

U.S. Cl. 206—45.25

17 Claims



1. An automatic tilt display carton comprising a bottom wall, side walls extending upwardly from side edges of said bottom wall, and a first end wall connected to a first edge of said bottom wall, said end wall extending below said bottom wall and including a connecting panel directly depending from said bottom wall first edge, said first end wall having connecting flaps extending from opposite edges of said first end wall and secured to adjacent portions of said side walls wherein in the erected state of said carton said first edge of said bottom wall is elevated and said bottom wall tilts towards a second edge of said bottom wall, and a second end wall connected to said second edge of said bottom wall.

4,433,779

DENTIST'S APPARATUS FOR STORING AND VIBRATION MIXING OF AMALGAM COMPONENTS
Alfred Schmid, Jr.; Hans Müller, and Alexander P. Jaecklin, all of St. Gall, Switzerland, assignors to Coltene AG, Switzerland

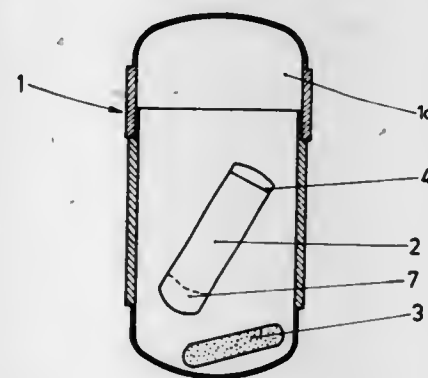
Filed Jan. 11, 1983, Ser. No. 457,159

Claims priority, application Switzerland, Jan. 19, 1982, 304/82

Int. Cl.³ B65D 25/08

U.S. Cl. 206—220

18 Claims



1. A capsule for storing and vibration mixing of two component materials for dental application, comprising a mixing space which contains a first component and a pestle, the pestle being in the form of a hollow body which contains a second component, the hollow body being provided with a cover which is attached to the hollow body, the pestle includes at least one opening which permits exit of said second component into the mixing space, and said opening being rendered passable as a result of a mixing vibration movement.

4,433,780

GREETING CARD

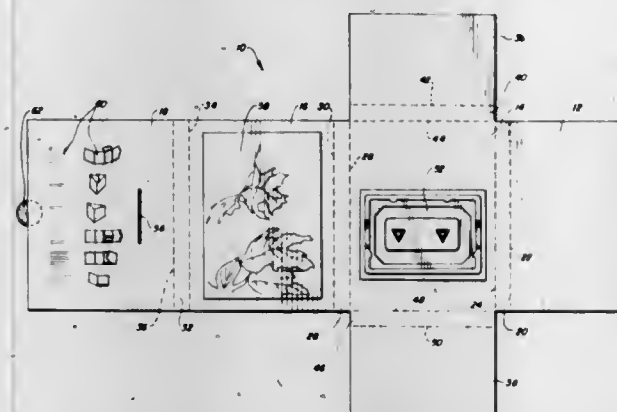
Karen E. Ellis, 8012 S. Drexel, Chicago, Ill. 60619

Filed Nov. 16, 1981, Ser. No. 321,390

Int. Cl.³ B65D 85/00, 85/672, 73/00

U.S. Cl. 206—232

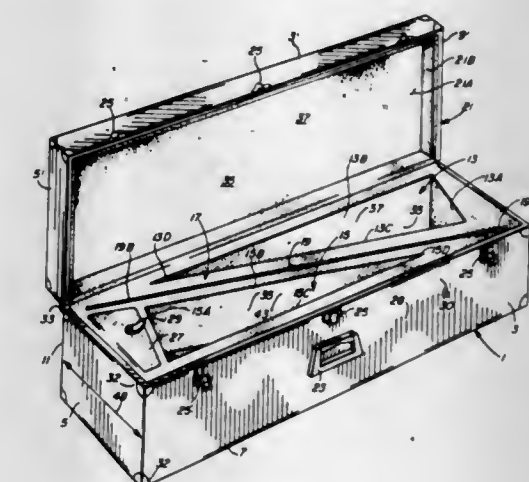
1 Claim



1. A greeting card in the form of a folded rectilinear box which comprises:

a foldable member formed of cover stock and carrying thereon means for receiving an audio cassette; said receiving means comprising a receptacle having a configuration that is complementary to the configuration of a standard audio cassette for snugly receiving a standard audio cassette; said receptacle being connected to said foldable member in a location whereby when the foldable member is folded, said receptacle being enclosed within said rectilinear box; said rectilinear box being formed from said foldable member comprising a first panel, a second panel, a third panel and a fourth panel; the first panel being separated from the second panel by a first intermediate portion defined by two fold lines; said second panel being separated from the third panel by a second intermediate portion defined by two fold lines; said fourth panel being separated from the third panel by a third intermediate portion defined by two fold lines; a pair of flaps extending outwardly from said second panel, each of said flaps being separated from said second panel by a portion defined by two fold lines; means for connecting said first panel to said fourth panel; said foldable member also being formed into an upstanding display-type structure when it is folded in a direction that is opposite to the direction of folding to form said rectilinear box and when said first panel is connected to said fourth panel.

being adjacent to the pointed end portion of said second generally triangular compartment, and the base end portion of said second generally triangular compartment being adjacent to the pointed end portion of said first generally triangular compartment so that outer walls of said first and second generally triangular compartments approximately coincide with the sides of a parallelepiped, the distance between a front wall and a rear wall of said trombone case being substantially less than twice the width of the base end portion of either of said first and second generally triangular compartments;



a well section bounding at least one of said first and second generally triangular compartments, said wall section having an elongated padded groove therein for receiving and snugly engaging a slide section which mates with either of said first and second bell sections, wherein said wall section having said elongated padded groove therein is diagonally disposed between said first and second generally triangular compartments and serves as a wall for each of said first and second generally triangular compartments; and a cover section closeable on said body section to enclose said first and second generally triangular compartments, said cover section having a padded interior surface.

4,433,782

MAGAZINE ASSEMBLY FOR COIL NAILS

Siegfried E. O. Figge, Newmarket, and Herbert E. Leistner, Toronto, both of Canada, assignors to Sigma Tool & Machine Limited, Scarborough, Canada

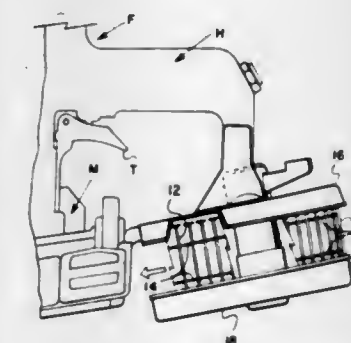
Filed Sep. 29, 1982, Ser. No. 427,659

Claims priority, application Canada, Oct. 20, 1981, 388320

Int. Cl.³ B65D 85/24

U.S. Cl. 206—338

10 Claims



1. A magazine for use in association with a fastener driving tool of the type employing fasteners associated together in a strip formed into a coil, such a magazine comprising: a fixed portion adapted to be fastened to such a fastener driving tool;

4,433,781

COMPACT DUAL BELL SECTION TROMBONE CASE
Donald A. Hummel, P.O. Box 1329, Wickenburg, Ariz. 85358

Filed Sep. 27, 1982, Ser. No. 424,640

Int. Cl.³ A45C 11/00

U.S. Cl. 206—314

12 Claims

1. A trombone case comprising in combination: a body section including first and second padded generally triangular compartments for storing first and second bell sections, respectively, a base end portion of said first generally triangular compartment receiving and snugly engaging an enlarged flared horn end portion of said first bell section, a generally pointed end portion of said first generally triangular compartment receiving and snugly engaging a narrowed tubular portion of said first bell section opposite to the enlarged flared horn portion thereof, a base end portion of said second generally triangular compartment receiving and snugly engaging an enlarged flared portion of said second bell section, and a generally pointed end portion of said second generally triangular compartment receiving and snugly engaging a narrowed tubular portion of said second bell section opposite to the enlarged flared horn portion thereof, the base end portion of said first generally triangular compartment

wall means forming a portion of said fixed portion for engaging said coil of fasteners;
 a mounting member associated with said fixed portion and extending along an axis centrally of a said coil of fasteners;
 a movable attachment member incorporated in said mounting member, and movable between locking and releasing positions, and in said locking position, extending outwardly with respect to said mounting member;
 a movable magazine portion defining wall means adapted to engage a said coil of fasteners;
 exit means on at least one of said fixed and movable magazine portions, for permitting exit of said fastenings as they are withdrawn from said magazine;
 a slidable guide member formed on said movable portion, being dimensioned and shaped to be interengageable with said mounting member, and removed therefrom, and, locking abutment means located inwardly of said guide member, for interengaging with said locking means on said fixed magazine portion.

4,433,783

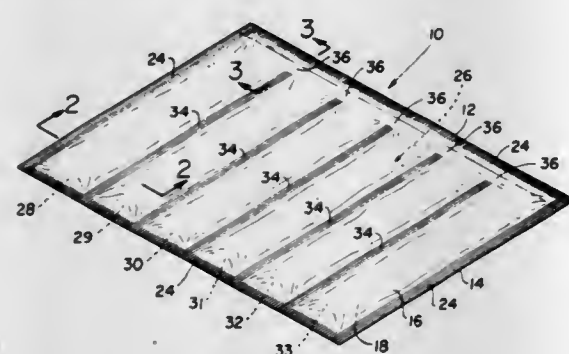
SOAP POWDER PACKAGE

Robert H. Dickinson, 1132 Winding Dr., Cherry Hill, N.J. 08034

Filed Dec. 17, 1979, Ser. No. 104,039
 Int. Cl.³ B65D 27/08, 85/00, 30/22

U.S. Cl. 206—484

1 Claim



1. A rupture-proof package formed of paper construction material for soap powder comprising a cooperating pair of front and rear rectangular panels presenting opposite long and short dimensioned sides arranged in superposed relation and having heat sealable surfaces in facing relation to each other, a rectangular peripherally applied heat seal for joining said front and rear panels to each other so as to bound therebetween a correspondingly rectangularly shaped storage compartment for a layer of soap powder having an operative interposed position therebetween prior to the application of said peripheral heat seal, and five position-retaining heat seals additionally joining said front and rear panels to each other applied in spaced apart relation along said long dimension of said package so as to correspondingly delineate said compartment into six sub-compartments each oriented lengthwise in said short dimension thereof to thereby minimize the shifting concentration of said stored layer of powder within said compartment, each said position-retaining heat seal extending in spanning relation between an opposing pair of said long dimensioned peripheral heat seals only for most but not all of the distance therebetween to thereby form at least one communicating air passage extending in the long dimension of said package between said sub-compartments in the unsealed distance left between said position-retaining heat seals and said peripheral heat seal in adjacent position thereto, whereby any external pressure applied against any air trapped in said package during the sealed enclosure of said soap powder is merely displaced to another location rather than contributing to the rupture of said package and any select number of less than said six sub-compartments are adapted to be opened for removal of the contents therefrom by merely severing said package in said long dimension

thereof in said unsealed distance and for an extent corresponding to said select number of sub-compartments.

4,433,784

ARRANGEMENT ON PACKING CONTAINERS

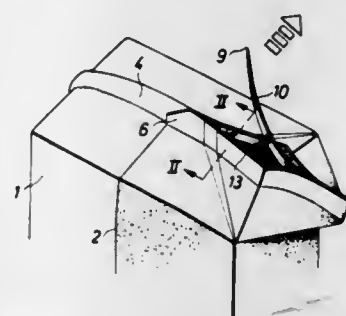
Tom Kjelgaard, Löddeköpinge, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 6, 1982, Ser. No. 446,941

Claims priority, application Sweden, Dec. 30, 1981, 8107861
 Int. Cl.³ B65D 17/48

U.S. Cl. 206—617

6 Claims



1. An opening arrangement for a packing container of the type having a sealing fin extending over a top end wall, the sealing fin including two adjoining sheets of a packing material covered with a plastic covering on at least their facing surfaces, the opening arrangement comprising:

a strip inserted between the adjoining sheets of the sealing fin along at least a portion of the sealing fin, said strip including a central layer and two outer layers of a plastic material similar to the plastic covering on each sheet of the packing material, said outer layers of said strip being sealed to the plastic covering of each sheet, an adhesive force between said central layer of said strip and said outer layers of said strip being weaker than an adhesive force between said outer layers of said strip and the plastic covering of each sheet to enable said central layer to be pulled away to open the packing container.

4,433,785

LEANER GAUGE FOR NARROW NECK CONTAINERS

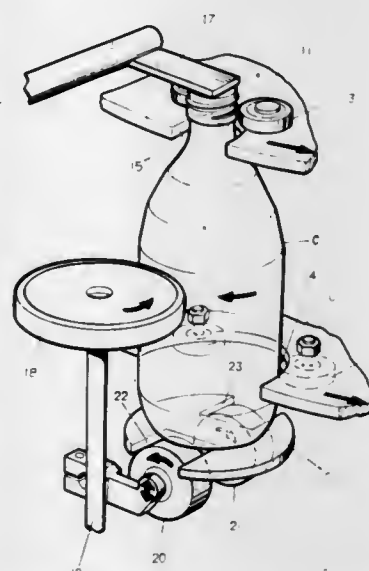
Darius O. Riggs, Ottawa Lake, Mich., and Thomas B. Sorbie, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 24, 1981, Ser. No. 276,770

Int. Cl.³ B07C 5/00

U.S. Cl. 209—531

11 Claims



1. Method of measuring the plane of the bottom of a glass container relative to its vertical axis comprising:
 sliding a container sideways over a slide plate into a gauging position;

holding the container in light contact with the slide plate during movement thereof;
 rotating the container about its vertical axis;
 sensing the relative height of the bottom of the bottle at diametrically opposed points as it is rotated; and
 rejecting containers whose bottoms are non-normal to their vertical axis a predetermined amount.

4,433,786

BICYCLE RACK

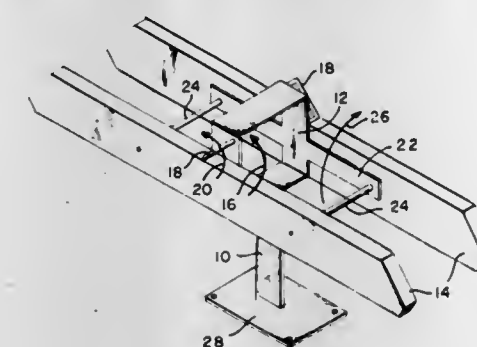
Timothy T. Wahl, 6732 13th Ave. NW., Seattle, Wash. 98117

Filed Apr. 30, 1981, Ser. No. 258,921

Int. Cl.³ E05B 73/00

U.S. Cl. 211—5

12 Claims



1. A rack to which a bicycle may be conveniently locked while the bicycle and its finish are protected, comprising:

(a) a support projecting upwardly from the ground;
 (b) two elevated wooden panels attached to the support, laterally spaced to straddle the support, and extending substantially parallel to one another at least as far as the distance between the fork and seat-stay of the bicycle; and
 (c) a locking loop rigidly affixed on each side of the support capable of receiving a lock used to secure a bicycle, wherein (1) the bicycle is lockable to the rack so that the wheels of the bicycle extend substantially parallel to the panels and adjacent to the panel, and (2) the panels are sufficiently spaced so that bicycles may be simultaneously locked without interference adjacent both panels, further comprising at least one support rod extending between the panels and defining another locking loop defined by the support, a section of one panel, the rod, and a section of the second panel.

4,433,787

COIN OPERATED BICYCLE LOCKING RACK

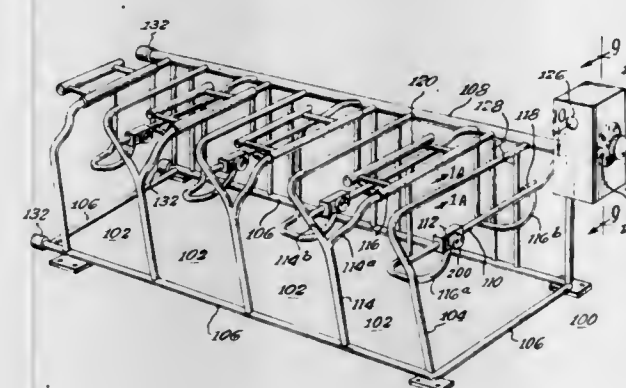
Steven F. Cook, 6646 N. Clark, Chicago, Ill. 60626, and Glen E. Burlingame, 2858 W. 55th Street, Chicago, Ill. 60632

Filed Jun. 5, 1981, Ser. No. 270,967

Int. Cl.³ E05B 73/00

U.S. Cl. 211—5

15 Claims



1. A coin operated locking bicycle rack comprising:

a plurality of stalls having first and second sides for receiving bicycles therebetween;
 a plurality of arms being mounted to said first sides of said stalls and being adapted to selectively traverse the stalls to engage bicycles positioned within said stalls;
 a plurality of locking means being mounted to said second sides of said stalls for receiving and locking said arms in a bicycle securing position wherein said arms traverse said stalls; and
 centrally located stall control means for selecting an unoccupied stall and including coin responsive means for enabling the operation of said stall control means to release the locking means of said selected stall and accordingly said selected stall whereby a bicycle can be inserted and locked thereto by said selected stall locking means.

4,433,788

ENCLOSURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT

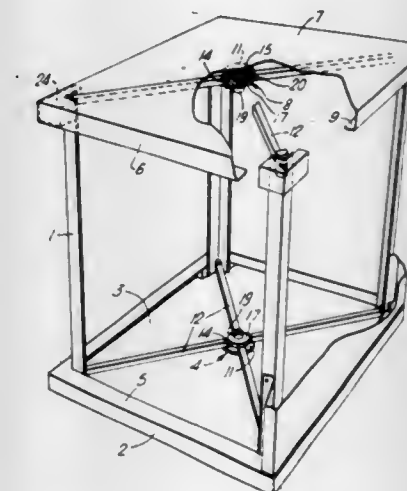
David P. Erlam, Winchester, and Thornton N. J. Archard, Epsom, both of England, assignors to BICC Public Limited Company, London, England

Filed Apr. 24, 1981, Ser. No. 257,149

Int. Cl.³ A47F 7/00

U.S. Cl. 211—26

14 Claims



1. A skeleton frame for a fabricated structure for housing electrical equipment, which skeleton frame comprises at least three substantially rigid upstanding elongate members which are arranged at spaced positions around the periphery of the frame and which are secured together at each of at least two positions spaced along their lengths wherein, at at least one of said positions the upstanding elongate members are secured together by an endless flexible band of metal or metal alloy which surrounds the members and is maintained in tension by at least one bracing device positioned between the elongate members and comprising a central hub, a plurality of substantially rigid, elongate bracing members extending radially outwardly from the hub and each engaging one of the upstanding elongate members, and adjustable means urging the bracing members outwardly in the directions of their lengths to maintain the endless band under such a tension that the frame is held substantially rigid.

4,433,789

CONVERTIBLE CHILD RESISTANT CLOSURE

Kenneth J. Gibilisco, Warminster, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 20, 1982, Ser. No. 451,502

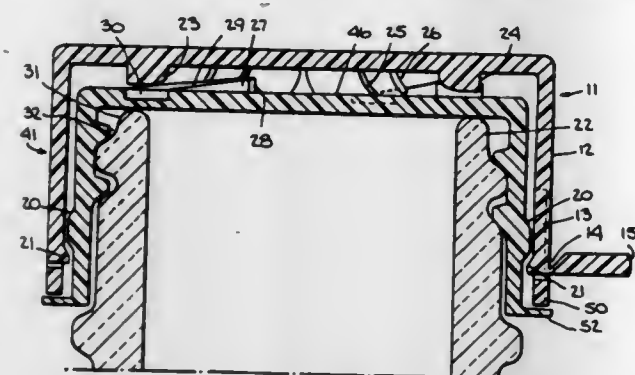
Int. Cl.³ B65D 55/02

U.S. Cl. 215—220

8 Claims

1. In an improved child resistant two-piece closure for containers having inner and outer cap members, said inner and outer cap members allowing relative rotatory and axial movement between said inner and outer members and having flexi-

ble means and ratchet drive means attached to the inner surface of said outer cap member and/or the outer surface of said inner cap member to maintain said members in axial position two to allow rotation of said outer cap without imparting motion to said inner cap in the loosening direction but causing engagement of the ratchet drive means in the tightening direction and



means for locking said inner and outer cap members in axial position one, thereby permitting removal of said closure by rotation in the loosening direction, the improvement which comprises provision of a means for removing said outer cap member without removing said inner cap member thereby converting said two piece child resistant closure into a one piece non-child resistant closure.

4,433,790

TAMPER-PROOF CLOSURE

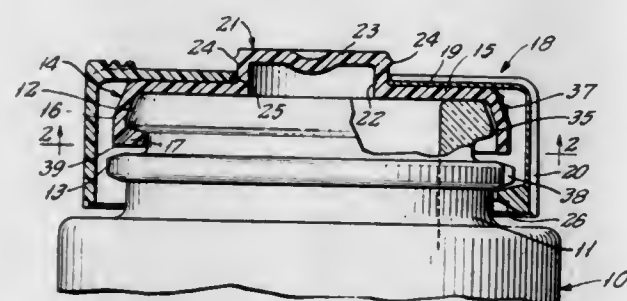
Royal H. Gibson, Rumson, N.J., assignor to Gibson Associates, Inc., Cranford, N.J.

Filed Feb. 18, 1983, Ser. No. 467,817

Int. Cl.³ B65D 41/02, 41/32

U.S. Cl. 215-246

16 Claims



1. As an article of manufacture, a cup-shaped container-closure cap having a cylindrical skirt and a closure end, a frangible cover surrounding the closed end and skirt of said cap, and interengaged means on said cover and cap retaining their assembled relation, said cap and said cover each being of stiffly yieldable plastic material, radially inward container-bead engaging means integrally formed with said skirt at the open end of said cap, said frangible cover being circumferentially continuous at least in a region axially beyond the open end of said skirt, and radially inward container-bead engaging means integrally formed with said cover at said circumferentially continuous region.

4,433,791

PRESSURE RELIEF DEVICE FOR INTERNALLY PRESSURIZED FLUID CONTAINER

Walter J. Mulawski, Chelmsford, Mass., assignor to Sexton Can Company, Inc., Everett, Mass.

Continuation of Ser. No. 169,404, Jul. 16, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,200

Int. Cl.³ B65D 51/16, 83/14

U.S. Cl. 220-89 A

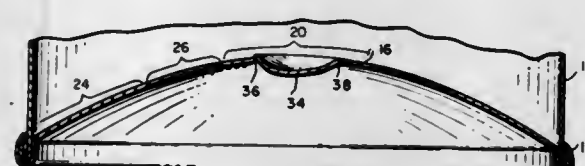
7 Claims

1. A pressure release device for an internally pressurized

fluid container of the type having a tubular side wall, said device comprising:

a dome-shaped inwardly concave closure element circumferentially joined to one end of said side wall, said closure element being deep drawn of tempered steel, with a circular central area spaced from an annular outer area by an annular intermediate area traversed by radially extending Lüders Lines,

a dome-shaped outwardly convex tab member in said central area, said tab member being partially circumscribed by a single weakened line of reduced material thickness, said line lying on a circle, with the ends of said line being separated by a connecting area of substantially undisturbed material thickness and strength,



said closure element having a structural integrity which reacts to an increase in fluid pressure in said container above a prescribed level by undergoing at least a partial eversion which initially occurs at said annular outer area and thereafter progresses across said annular intermediate area into said circular central area to initiate a fracture of the closure element along said weakened line of reduced material thickness by pulling the opposite sides of said line apart, with the said connecting area remaining intact during any resulting outward deflection of the tab member occasioned by fluid escaping from said container through said fracture.

4,433,792

OPENING AND STOPPER DEVICE

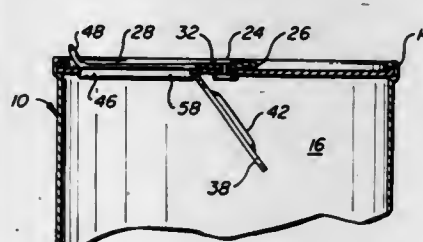
George Mandel, 62 Long View Ct., Danville, Calif. 94526

Filed Sep. 29, 1982, Ser. No. 427,500

Int. Cl.³ B65D 17/34

U.S. Cl. 220-269

7 Claims



1. In a container having an aluminium top with a tab opening mechanism engaging a scored flap in said top for forming a contents dispensing aperture, the improvement comprising: a resealing means on said tab opening mechanism for hermetically resealing said aperture, wherein said tab mechanism includes a pivot element centrally connected to said aluminium top and a tab member having a finger lift portion and a detent edge, said tab member being pivotally connected to said pivot element between said finger lift portion and said detent edge, said detent edge being directed at said scored flap for separating said flap from said aluminium top and depressing said flap into said container on lifting said lift portion and, wherein said resealing means comprises a stopper member incorporated on the underside of said lift portion of said tab member, said stopper member having a configuration complementary to said aperture formed on opening said container said stopper member being inserted in said aperture by pivoting said tab member to locate said stopper member over said aperture and depressing said lift portion of said tab member.

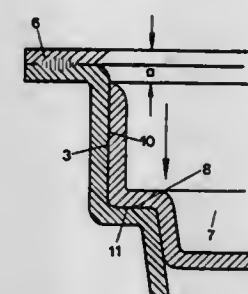
4,433,793

CONTAINER HAVING FRANGIBLE OPENING MEANS
Ole Ingemann, Svendborg, Denmark, assignor to A/S Hastrup Plastic, Langeskov, Denmark

Continuation of Ser. No. 210,896, Nov. 28, 1980, Pat. No. 4,332,332. This application Mar. 10, 1982, Ser. No. 356,892
Claims priority, application Sweden, Dec. 17, 1979, 79103620
Int. Cl.³ B65D 17/40

U.S. Cl. 220-276

18 Claims



1. A container construction comprising a container body adapted for containing a product and including an annular wall and an annular flange extending outwardly from said wall at an upper edge thereof, said container body defining an open mouth within said wall, openable closure means closing said open mouth for sealing the product in said container body, said closure means comprising a lid including an annular wall engaged within the annular wall of said container body and an annular flange extending outwardly from said annular wall of the lid adjacent the annular flange of the container body, and sealing means including a continuous, annular seal sealably and permanently connecting said annular flange of the container body with said annular flange of the lid to seal the product within the container body, said lid including an annular failure zone located radially inwards of said sealing means in a position in which the failure zone can be ruptured by application of force to said lid to separate the flange of the lid from the remainder of the lid whereupon said flange of the lid remains secured to the flange of the container body and said remainder of the lid is removable from the container body to gain access to the product in said container body, said remainder of the lid being thereafter insertable into said container body to close the same by re-engaging the annular wall of the lid with the annular wall of the container body, the disposition of said annular failure zone with respect to said sealing means and of said lid and container body being such that rupture of said failure zone is effected by relatively displacing said lid with respect to said container body whereafter said lid is removable from said container body by pulling said lid out of said body.

4,433,794

JIG FOR MACHINING STYLUS BLANKS

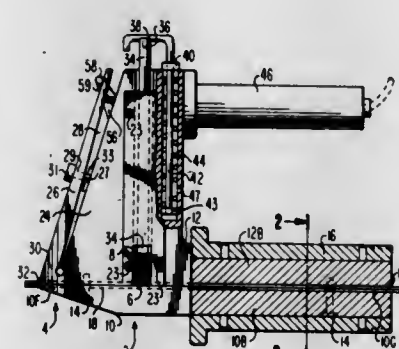
Yashaya Yarnitsky, and Shmuel Kaldor, both of Haifa, Israel, assignors to RCA Corporation, New York, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,620

Int. Cl.³ B65G 61/00

U.S. Cl. 221-224

11 Claims



1. A jig for use in machining blanks comprising:
a housing having a front end, a feed channel, and a storage

channel, said feed channel extending to the front end and said storage channel communicating with the feed channel;

a releasable gripping means located at the front end of said housing for gripping and releasing blanks transported to said releasable gripping means, said releasable gripping means including a deformable region of the housing integrally formed adjacent the front end thereof, wherein a section of the housing forms a fixed first jaw and the deformable region forms a movable second jaw, the first and second jaws being aligned with each other to form a vise; and

means disposed partly within said housing for transporting individual blanks from the storage channel through the feed channel to the releasable gripping means.

4,433,795

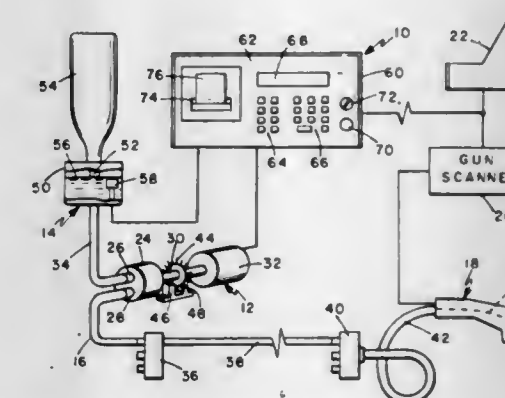
LIQUID METERING AND DISPENSING SYSTEM
Romaine R. Maiefski, 1035 Golden Rd., Encinitas, Calif. 92024, and Albert J. Puglisi, Escondido, Calif., assignors to Romaine R. Maiefski, Encinitas, Calif.

Filed Jul. 31, 1981, Ser. No. 289,112

Int. Cl.³ B67D 5/30

U.S. Cl. 222-14

18 Claims



1. A system for metering and dispensing liquid from a reservoir through a dispenser connected to the remote end of a flow line comprising:

positive displacement pump means for receiving the liquid through a pump inlet and discharging a predetermined minute volume of the liquid through a pump outlet connected to the other end of the flow line for each predetermined amount of movement of a pump element;

means for connecting the reservoir to the pump inlet;

motor means for driving the pump means;

input means for enabling an operator to select a desired pour size volume equal to or greater than the predetermined minute volume and for commanding the dispensing of the selected pour size volume;

feedback control means for dispensing the selected pour size volume of the liquid through the dispenser in response to a command to the input means by energizing the motor means, counting the number of times that the pump element moves the predetermined amount, and de-energizing the motor means when the count indicates that the pump means has discharged the selected pour size volume of the liquid;

means for monitoring the quantity of liquid in the reservoir; means for generating a restock signal to notify the operator when the reservoir is empty; and

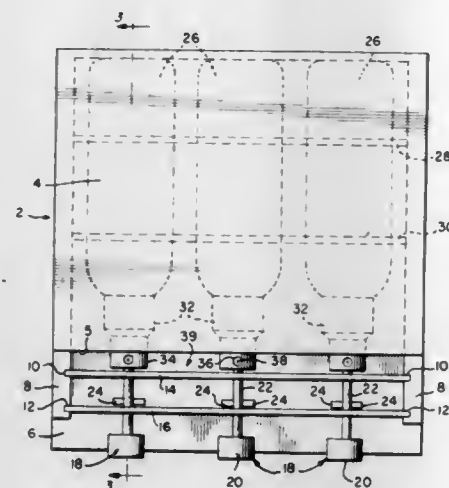
means for inhibiting energization of the pump means upon receiving the restock signal.

4,433,796

**FRAGRANCE OR THE LIKE DISPENSER,
PARTICULARLY FOR AUTOMOBILES**Kenneth E. Brooks, Jr., 5047 Dry Well Ct., Columbia, Md.
21045Filed Aug. 6, 1981, Ser. No. 290,719
Int. Cl.³ B67D 5/52

U.S. Cl. 222—135

8 Claims



1. A dispenser mounted in an automobile, and comprising:
 - a housing having a base secured substantially horizontally in the automobile, a lid spaced above said base, and a front wall mounted on said base with the upper edge of said front wall being spaced forwardly of the front edge of said lid to define a substantially horizontal aperture between said edges;
 - at least one elongated container supported substantially horizontally in said housing and having a fragrance therein;
 - said container having valve means depressable in the lengthwise direction of said container to dispense said fragrance from an orifice of said valve means, said orifice being directed upwardly below and in register with said aperture;
 - a movable actuating member having a part passing through said front wall, said part being movable in said lengthwise direction towards said container to depress said valve means to cause a spray of said fragrance to discharge upwardly through said aperture into the interior of said automobile; and
 - said housing having a second front wall spaced from said first mentioned front wall, and said movable actuating member passing through said second front wall.

4,433,797

METERED QUANTITY DISPENSING VALVEKarl Galia, Oehningen, Fed. Rep. of Germany
Division of Ser. No. 150,694, May 16, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,277

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920497; Nov. 20, 1979, 2946814

Int. Cl.³ B65D 83/14

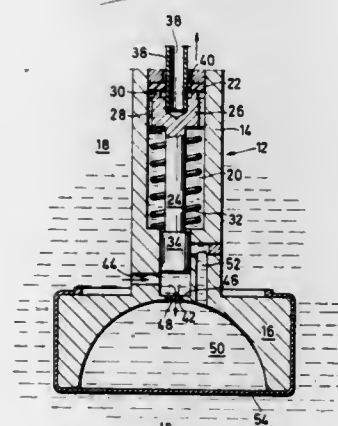
U.S. Cl. 222—207

9 Claims

1. A valve assembly for dispensing a metered quantity of a flowable product from a container having a pressurized interior ambient, said valve assembly when installed in said container comprising:
 - A. a valve body having a discharge portion extending out of said container, and a main body portion residing within said pressurized ambient;
 - B. said valve body defining a primary flow passage extending through from said discharge portion to said main body portion, enabling said flowable product to be expelled from said container;
 - C. spring biased discharge valve means positioned within

said discharge portion to release said flowable product from said container;

- D. product metering container means positioned within said pressurized interior ambient, in fluid registry with said main body portion, having a metering chamber adapted to hold a predetermined quantity of said flowable product, said metering chamber defined by a member having a rigid concave inner wall and a resilient wall positioned over said concave inner wall in fluid-tight engagement with said member about the entire outer boundary of said concave inner wall, said resilient wall exposed to said pressurized ambient and adapted to collapse against said concave inner wall in response to fluid pressure to expel flowable material from said chamber;



- E. a secondary flow passage connecting said metering chamber and said primary flow passage;
- F. a tertiary flow passage providing a fluid inlet to said chamber from said pressurized interior ambient; and
- G. a second flow-switching valve means positioned in communication with said product metering container means, actuated in response to the operation of said discharge valve means, to prevent ingress of said flowable product from said pressurized interior ambient into said chamber when said discharge valve means is positioned to enable the expulsion of said flowable product out of said chamber and said container to occur.

4,433,798

**VOLUMETRIC DOSING APPARATUS FOR
PARTICULATE MATTER**Andrea Romagnoli, San Lazzaro di Savena, Italy, assignor to
Industria Macchine Automatiche, Bologna, Italy

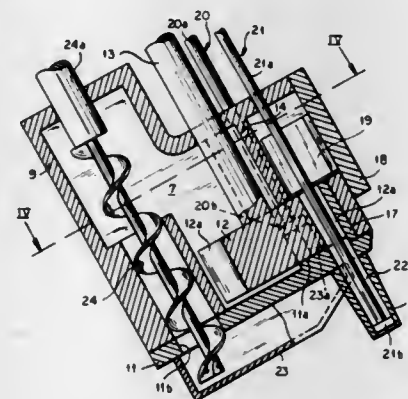
Filed Jan. 21, 1982, Ser. No. 341,170

Claims priority, application Italy, Jan. 23, 1981, 3314 A/81

Int. Cl.³ B67D 5/52

U.S. Cl. 222—255

8 Claims



1. An apparatus for volumetrically dosing particulate matter, comprising:
 - a housing divided by an internal partition into a supply compartment and a discharge compartment;
 - hopper means communicating with said supply compart-

ment for keeping same partly filled with a mass of particles to be dispensed;

- a dosing drum disposed in said housing near the bottom thereof and rotatable about a generally vertical axis, said dosing drum having a plurality of angularly equispaced peripheral notches of constant transverse cross section which are open to upper and lower faces and to the circumference of said drum so as to be entirely occupied by particles of a surrounding mass, said drum lying partly in said supply compartment and extending into said discharge compartment with a sectoral portion encompassing two of said notches, said discharge compartment having an arcuate wall in contact with the periphery of said sectoral portion;

- drive means coupled with said drum for intermittently rotating same in steps equaling the pitch of said notches, thereby successively arresting an incoming notch in a first and in a second position in said discharge compartment, said housing being provided with an overflow outlet and with a dosing outlet respectively underlying a notch of said drum in said first and said second position thereof;
- a first plunger reciprocable parallel to said axis in said discharge compartment above said overflow outlet and coupled with said drive means for entering a notch in said first position from above and descending therein to a predetermined level with resulting expulsion of a certain fraction of the contents of the notch into said overflow outlet; and
- a second plunger reciprocable parallel to said axis in said discharge compartment above said dosing outlet and coupled with said drive means for entering a notch in said second position from above and passing completely there-through to eject the remaining contents of the notch into said dosing outlet.

4,433,799

**LIQUID DISPENSING PUMP ARRANGEMENT WITH
SELECTIVE STROKE RESTRICTION**

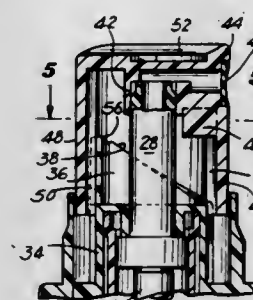
Douglas F. Corsette, Los Angeles, Calif., assignor to Calmar, Inc., Watchung, N.J.

Filed Mar. 31, 1982, Ser. No. 363,835

Int. Cl.³ B65D 47/34

U.S. Cl. 222—309

15 Claims



1. A liquid dispensing pump arrangement for dispensing predetermined quantities of a dispensible liquid contained in a vessel, comprising
 - reciprocating pump means having a dip tube extending into said liquid in said vessel and a depressible pump stem through which the liquid is delivered;
 - a vessel closure fastenable onto a cooperating port of the vessel and supporting the reciprocating pump means with said dip tube immersed into said liquid and including a pedestal surrounding a portion of said stem and having a generally cylindrical outer surface with a plurality of circumferentially spaced axial cutouts thereon;
 - a finger-depressible push-button dispensing head disposed atop said stem and including socket means surrounding a top portion of said stem, an outlet nozzle extending from said socket means, and depending skirt means extending over at least a portion of the cylindrical surface of said pedestal;
 - a helical ramp on said pedestal extending circumferentially at least part way around said stem and having a sloping cam surface engageable with said dispensing head to limit down-

ward stroke distance thereof a plurality of different amounts at a respective plurality of rotational positions of said head relative to said vessel closure;

- a plurality of circumferentially-spaced fins disposed on said depending skirt means corresponding with at least some of said cutouts and cooperating therewith to define said plurality of rotational positions of said dispensing head relative to said closure and yieldably resisting rotation between such positions.

4,433,800

POURING FITMENT AND CLOSURE ASSEMBLY

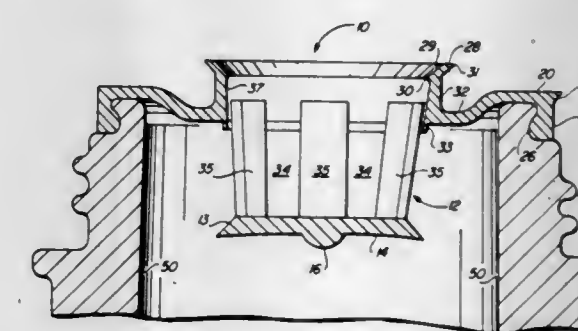
Edward W. Owens, Tucson, Ariz., assignor to Top-Seal Corporation, Tempe, Ariz.

Filed Dec. 24, 1981, Ser. No. 334,322

Int. Cl.³ B65D 25/40

U.S. Cl. 222—547

17 Claims



1. A pouring fitment for controlling flow of liquid from an associated container comprising a central tubular body for placement in the opening of the associated container, said tubular body open at the outside end and closed by a disk-like end plate at the interior end, said disk-like end plate having a turbulence introducing beveled peripheral edge forming an acute angle, said acute angle directed interiorly to the associated container in order to introduce turbulence into the liquid and slow the liquid as it flows between the end plate beveled edge and the container side; a plurality of ports through said tubular body proximate said end plate; and means adapted to attach said central tubular body to the associated container opening whereby when the associated container holding liquid is up-ended, the liquid in the container flows into said central tubular body through said ports and out said central tubular body open end.

4,433,801

PAINTER'S CADDY

Glen E. Swinney, Rte. 1, Box 234-A, Axton, Va. 24054

Filed Apr. 2, 1982, Ser. No. 364,877

Int. Cl.³ A46B 17/00

U.S. Cl. 224—148

1 Claim



1. In apparatus for holding and carrying a container with

paint therein on the person of a painter wherein a paint holding part is movably linked to a belt carried part by a linking means which provides for damped and restrained movement of said container to enable it to remain generally upright under the influence of its weight and the weight of the carried paint without sloshing or spilling as the painter moves about, the improvements which comprise a horizontally projecting member on said belt carried part having a rounded end, a hinge having a pair of leaf members relatively rotatable about a hinge pin, one leaf of said hinge being pivotally attached to said horizontally projecting member for rotation in a horizontal plane, the second leaf of said hinge being attached to and depending from said first leaf by said hinge pin for rotational movement in a substantially vertical plane, said second leaf being also pivotally connected to said paint holding part for rotation of the latter in a vertical plane perpendicular to the plane of rotation of said second leaf about the hinge pin, said second leaf being impeded from unrestrained movement toward the wearer by contact with said rounded end of said horizontally projecting member on said belt carried part, at least one of said pivotal connections of said second leaf providing frictional resistance sufficient to damp any tendency of said paint carrying part to freely oscillate.

4,433,802

COMBINATION BACK PACK AND BICYCLE SADDLE PACK

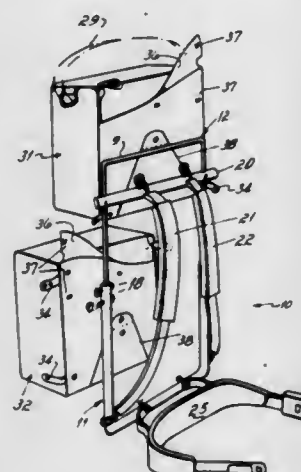
Robert M. Woolf, 2722 Queen City Ave., Cincinnati, Ohio 45238

Filed Dec. 9, 1982, Ser. No. 448,388

Int. Cl.³ B62B 1/20; B62J 9/00

U.S. Cl. 224-153

10 Claims



1. A pack which can be used alternately as a backpack and as a saddle pack for a bicycle, comprising, a generally rectangular frame, a pair of pack bags and attachment means for mounting the bags to the frame one above the other thereon for backpack use, a pair of back straps connectable to the frame for supporting it on a wearer's back, means for detachably mounting said frame horizontally above the rear wheel of a bicycle, the mounting means comprising, a bracket mountable to the bicycle adjacent the seat thereon to receive and support one end of the frame and a support strut mountable at a lower end thereof adjacent the rear axle of the bicycle, the strut when so mounted being swingable about the axle between an out-of-use forward position in which an upper end of the strut is received by said bracket, and an in-use rearward position in which said upper end of the strut is positioned to be connected to the frame to support the frame horizontally over the rear wheel, means for connecting the strut to the frame, and means for attaching each bag to the frame when the latter is

mounted to the bicycle, so that the bags hang suspended from the frame on each side of the rear wheel.

4,433,803

TENNIS BALL HOLDER BELT

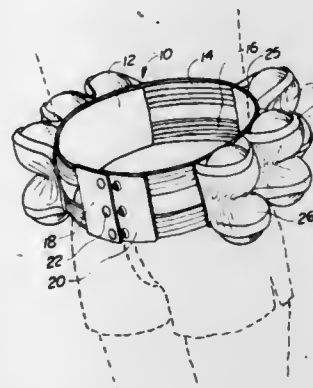
Gidon Liberboim, 5938 Yarwell, Houston, Tex. 77096

Filed Aug. 7, 1981, Ser. No. 290,869

Int. Cl.³ A45C 11/00

U.S. Cl. 224-251

17 Claims



1. A tennis ball holder belt comprising: an elongated strip of material suitable for wear by humans, having two connectable ends thereof; means for connecting said two ends to form a belt; said belt having at least two panels attached thereto; each of said panels having a plurality of rows, said rows including a plurality of pocket members, with each pocket member having at least one opening for receiving substantially an entire tennis ball and holding it securely therein; said panels having an uppermost row of pocket members; said panels having a lowermost row of pocket members; at least one of said openings of said pocket members in said uppermost row are oriented 180° to at least one opening on said pocket members in said lowermost row; whereby when said belt is worn, at least one opening in said pocket member in said uppermost row is upwardly directed and at least one opening in said pocket member in said lowermost row is downwardly directed; and, an elastic restraining means associated with each pocket member for receiving and encircling the periphery of the tennis ball thereby retaining said tennis ball substantially in said pocket.

4,433,804

VEHICLE ARTICLE CARRIER

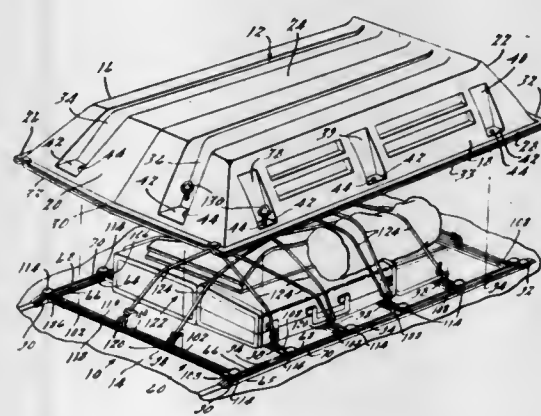
John A. Bott, 931 Lakeshore Dr., Grosse Point, Mich. 48236

Filed Dec. 30, 1981, Ser. No. 335,698

Int. Cl.³ B60R 9/04

U.S. Cl. 224-321

9 Claims



1. An article carrier adapted to be secured to a generally

horizontally extending exterior body surface of a motor vehicle, comprising:

at least two elongated spaced parallel support members fixedly secured directly upon said surface of said vehicle and having a low profile against said surface; at least two elongated spaced parallel cross members adjustably and removably secured to said support members; each of said support members and said cross members being of greater width than height in transverse cross section, with said width extending parallel to said body surface; said support members and cross members having upper article supporting surfaces and longitudinally extending upwardly opening channels, with said supporting surfaces on the upper sides of said support members and cross members, and clamping surfaces extending longitudinally within the interior of said channels interior to said support members and cross members;

sliding fastener means disposed within said channels clampingly engageable with the clamping surfaces of said channelled support members and cross members, and being slidably adjustably moveable longitudinally in said support members and cross members for repositioning within said respective support member or cross member or on another of said channelled support members or cross members when not clampingly engaged with said clamping surface;

manually engageable means for clampingly engaging said fastener means to said support members or cross members, secured to said sliding fastener means and operably engaging an elongated threaded element projecting into said channel and projecting above said supporting surfaces; article retaining means comprising an enclosure mounted directly upon said article supporting surfaces, said enclosure comprising a front wall, a rear wall, two side walls and a top wall and including exteriorly exposed horizontal portions disposed at least at one of said side, front or back walls of said enclosure and said enclosure including means for disposing said horizontal portions of said enclosure between at least a portion of said manually engageable means and said sliding fastener means, wherein said enclosure is secured to at least one of said support members or cross members by the clamping engagement of said sliding fastener means with at least one of said support members or cross members by said manually engageable means.

4,433,805

SOLDERING METHOD FOR ELECTRIC AND OR ELECTRONIC COMPONENTS

Akira Kanno, Iwate, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan

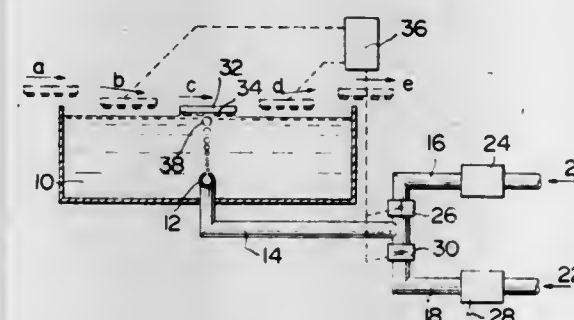
Filed Aug. 5, 1981, Ser. No. 290,340

Claims priority, application Japan, Apr. 10, 1981, 56-53040

Int. Cl.³ H05K 3/34

U.S. Cl. 228-180 R

5 Claims



1. A soldering method for soldering components to a printed-circuit board using a bubble type pool of molten solder, comprising introducing compressed air into the molten solder during soldering to form air bubbles which rapidly rise in the molten solder striking against the board and components to achieve soldering of the components to the board, interrupting

the supply of compressed air after soldering and, subsequently, introducing inert gas into the molten solder.

4,433,806

CLOSURE INTERLOCK FOR CARTONS OF THE WRAP AROUND TYPE

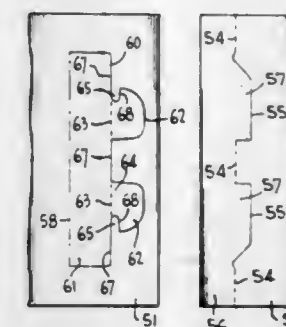
Robert H. Ganz, Saddle River, N.J., and Guelfo A. Manizza, Blauvelt, N.Y., assignors to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Apr. 21, 1982, Ser. No. 370,387

Int. Cl.³ B65D 5/10

U.S. Cl. 229-40

10 Claims



1. A closure interlock for a closure panel assembly of a carton of the wrap around type, said closure interlock comprising an inner closure panel and an outer closure panel each having a free edge, said inner closure panel having struck therefrom a secondary locking tab carried by a secondary flap with said secondary locking tab being disposed between said free edge of said inner closure panel and said secondary flap, said secondary locking tab facing said free edge of said inner closure panel, the displacement of said secondary locking tab and said secondary flap from said inner closure panel defining an opening in said inner closure panel having as a boundary thereof a primary locking shoulder, and said outer closure panel having a terminal edge flap portion in part defined by a fold line and in part by cut line means, said cut line means defining a primary locking tab carried by said terminal edge flap portion and facing away from said outer closure panel free edge for locking behind said primary locking shoulder, said secondary locking tab being connected to said secondary flap by a narrow neck portion, said narrow neck portion having an outline of which a part defines at least one secondary shoulder on said inner closure panel separate from said secondary locking tab and facing away from said primary locking shoulder, and said secondary locking tab being aligned with said primary locking tab transversely of the length of said closure interlock.

4,433,807

CARTON CLOSURE INTERLOCK

Robert H. Ganz, Saddle River, N.J., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Apr. 21, 1982, Ser. No. 370,558

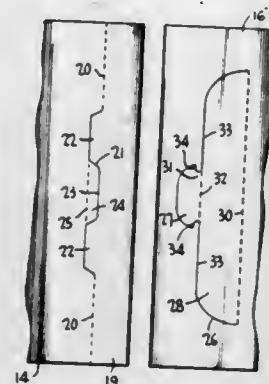
Int. Cl.³ B65D 5/10

U.S. Cl. 229-40

13 Claims

1. A closure interlock for a closure panel assembly of a carton of the wrap around type, said closure interlock comprising an inner closure panel and an outer closure panel each having a free edge, said inner closure panel having struck therefrom a secondary locking tab carried by a flap with said secondary locking tab facing said free edge of said inner closure panel, the displacement of said secondary locking tab and said flap from said inner closure panel defining an opening in said inner closure panel having as a boundary thereof a primary locking shoulder, and said outer closure panel having a terminal edge flap portion in part defined by a fold line and in part by cut line means, said cut line means defining a primary locking tab carried by said terminal edge flap portion and facing away from said outer closure panel free edge for locking

behind said primary locking shoulder, said cut line means also defining a secondary locking shoulder facing away from said



outer closure panel free edge for having received therebehind said secondary locking tab.

4,433,808

POURABLE, RECLOSABLE LID

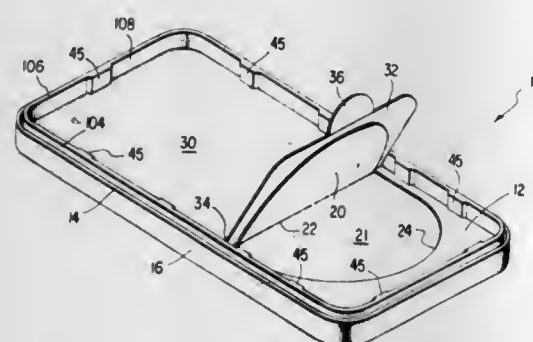
Robert L. Gordon, Monroe, and John G. Smith, Warwick, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,128

Int. Cl.³ B65D 5/64, 5/54, 5/70

U.S. Cl. 229—43

11 Claims



1. A top closure lid construction for a container, the lid being formed of:

(a) a cover member formed of a relatively brittle plastics material, the cover member having means along its periphery for sealing attachment to the upper open end portion of a container, the cover member having a tongue formed integrally therefrom, the tongue partially defined by a weakened hinge-forming line to serve as a hinge for the tongue, the remainder of the tongue defined by a curved cut line extending through the thickness of the cover member, the ends of the cut line terminating, respectively, at the ends of the weakened hinge-forming line, whereby when the tongue is pivoted upwardly about its hinge-forming line, a dispensing opening is defined in the cover member; and

(b) a main paperboard insert superposed on and bonded to the top surface of the cover member and having an end area overlying said tongue, the main paperboard insert having a fold line overlying and substantially aligned with the weakened hinge-forming line of the cover member, the said end area of the main paperboard insert having a pull tab connected thereto, whereby when the pull tab is pulled upwardly, both the cover member tongue and the overlying end area of the main paperboard insert pivot about their respective hinges and fold lines to thereby define an opening in the cover member and the cover member tongue is at least partially broken off from the remainder of the cover member and the tongue is thereafter carried by the end area of the main paperboard insert to thereby preclude blocking of the dispensing opening

during dispensing by the inherent resiliency of the plastics cover member material from which the tongue is formed.

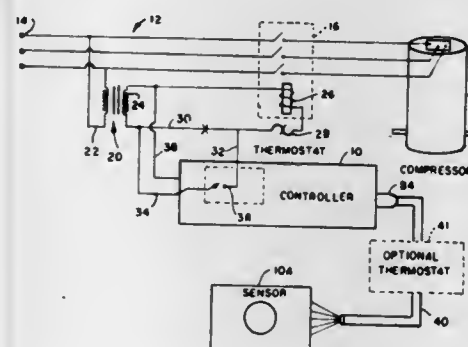
4,433,809

CONTROLLER FOR AIR CONDITIONING OR HEATING SYSTEM

Daniel R. Schulz, 1009 Hollywood Ave., Clearwater, Fla. 33519
Continuation-in-part of Ser. No. 129,690, Mar. 12, 1980, Pat. No. 4,288,990, said Ser. No. 129,690, is a continuation of Ser. No. 30,369, Apr. 16, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,882
Int. Cl.³ G05D 23/00

U.S. Cl. 236—47

20 Claims



1. A control for heating an air conditioning and/or heating system in a region, comprising in combination:

first means for establishing electrical signals corresponding to an upper and lower temperature of a first temperature range;

second means for establishing electrical signals corresponding to an upper and lower temperature of a second temperature range;

timer means for providing periodic outputs during a given operating cycle;

third means for providing a presence signal upon detecting a person inhabiting the region;

means connecting said timer means to said third means for actuating said third means at a selected one of said periodic outputs of a given operating cycle of said timer means;

said third means providing said presence signal for the remainder of said operating cycle upon detecting a person inhabiting the region; and

fourth means connected to said first, second and third means for controlling the system in accordance with said first temperature range upon a presence signal from said third means and for controlling the system in accordance with said second temperature range upon a lack of a presence signal from said third means.

4,433,810

HOT WATER HEATING SYSTEM

Saul Gottlieb, Wantagh, N.Y., assignor to Simon Gottlieb, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 820,296, Jul. 29, 1977. This application Apr. 2, 1979, Ser. No. 25,938

Int. Cl.³ F24D 3/02, 5/10

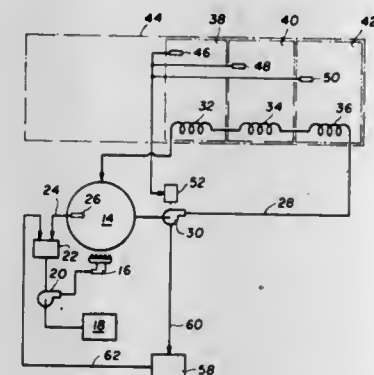
U.S. Cl. 237—8 R

3 Claims

1. An improvement to a hot water heating system for regulating the temperature of said hot water being used for heating purposes therein as a function of the ambient weather conditions, said improvement comprising plural delineated zones to be heated so located as to be affected by changing ambient weather conditions, a hot water circulating system operatively arranged in heating relation to said delineated zones, said hot water circulating system including at least one hot water pumping means for circulating said hot water and temperature-sensitive means in said delineated zones connected in controlling relation to said pumping means for providing operation of

said pumping means for a selected duration of time in accordance with the temperature in said delineated zones as sensed by said temperature-sensitive means, a boiler operatively arranged in heating relation to said circulating hot water to maintain the temperature thereof at a selected temperature level, and control means operatively connected in controlling relation to both said pumping means and said boiler so as to lower the boiler operating temperature when detecting a significantly longer period of non-operation of said pumping

said control means to adjust the flow of fluid from said manifold means upon a change of flow rate from the jet, said control means including an elongated chamber for the non-Newtonian fluid, an inlet tube operably associated with the fluid pressure in said manifold means, a capillary tube connected at one end to said inlet tube and to said chamber at the other end and an outlet tube in communication with said means to supply the non-Newtonian fluid, said outlet tube, said capillary tube and said inlet tube having substantially the same diameter.



means than a period of operation thereof over a given selected period of time, whereby nominal operation of said pumping means indicative of the use of hot water at an excessive temperature for given ambient weather conditions as sensed by said temperature-sensitive means in said delineated zones is modified by corresponding modification of said boiler operating temperature such that there is a reduction in said hot water temperature to that desired extent until there is a correspondingly greater extent of said pumping means duration of operation.

4,433,811

FLOW CONTROLLER

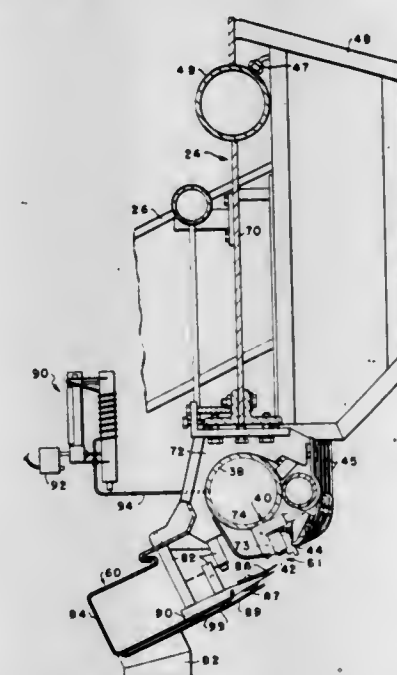
Thomas E. Godfrey, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 258,410, Apr. 28, 1981, abandoned. This application Oct. 18, 1922, Ser. No. 434,793

Int. Cl.³ B05B 12/10

U.S. Cl. 239—74

5 Claims



1. Apparatus for controlling the flow rate of a non-Newtonian fluid from a fluid jet comprising: a fluid jet, manifold means supplying a non-Newtonian fluid to said jet, means supplying non-Newtonian fluid to said manifold means, control means to control the flow of non-Newtonian fluid from said manifold means and pressure sensitive means operably associated with said manifold means to automatically cause

4,433,812

PAINT SPRAY ATTACHMENT

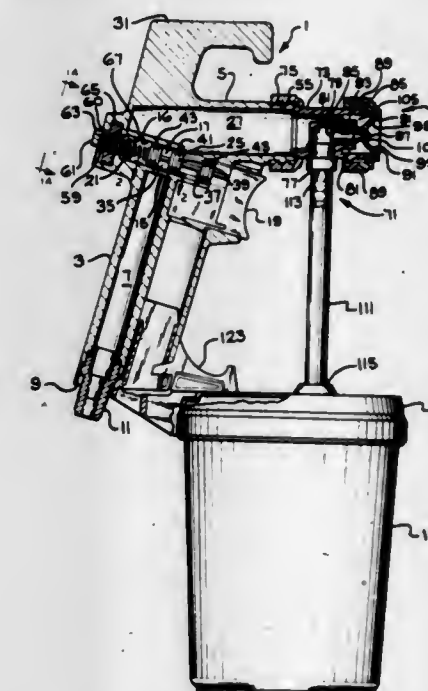
Thomas E. Grime, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Division of Ser. No. 205,915, Nov. 12, 1980. This application Sep. 30, 1982, Ser. No. 429,153

Int. Cl.³ B05B 7/08, 7/24

U.S. Cl. 239—290

12 Claims



1. A paint spray attachment for a gun for supplying a compressed fluid, the gun having a handle, the handle including a cavity, such paint spray attachment comprising, in combination, a hollow adapter, one end of said adapter positioned on the discharge end of said spray gun, the other end of said adapter defining a discharge opening;

an aperture defined in the wall of said adapter;

a passageway positioned in said adapter, said passageway being in communication with said aperture and terminating in a discharge aperture;

a chamber defined in said adapter around said passageway;

an air cap positioned on such other end of said adapter;

at least one fluid aperture defined in said air cap adjacent said passageway discharge aperture, said fluid aperture being in communication with said chamber;

a cup position in spaced relationship to said adapter;

conduit means between said cup and said adapter aperture;

a bracket for attaching said cup to said gun handle, wherein said bracket is removably positioned in the handle cavity.

4,433,813

METHOD FOR FORMING WOOD FIBRES

Rodney Wharton, Wych Elm, Ampney Crucis, Cirencester, Gloucestershire, and Timothy W. Gilder, Lypiatt House, Chelworth Rd., Cricklade, Swindon, both of England

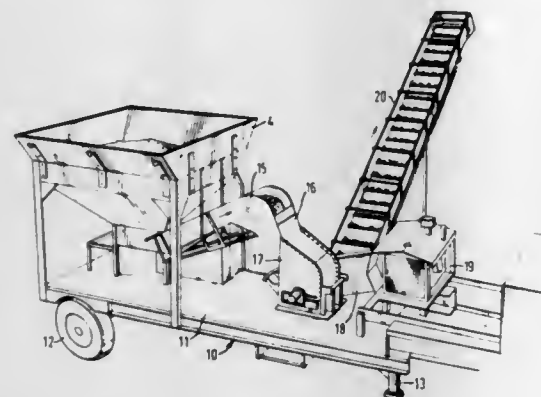
Filed Aug. 5, 1980, Ser. No. 175,679

Claims priority, application United Kingdom, Aug. 10, 1979, 7927881

Int. Cl.³ B27I 11/08

U.S. Cl. 241—21

9 Claims



1. A method of forming wood fibres for use in the production of a riding surface comprising feeding wood chips having a length, in the grain direction, of from 18 mm to 35 mm, to a milling machine adjusted to break the wood chips into wood fibres, the lengths of the fibres produced by the milling machine being substantially in accordance with the following percentages by volume, of the total volume:

Wood fibre length	Percentage of Total Fibre
0 mm-5 mm	10%-20%
5 mm-15 mm	40%-55%
15 mm-35 mm	35%-50%

4,433,814

CORE-ENGAGER RETAINER FOR AN EXPANSIBLE SHAFT

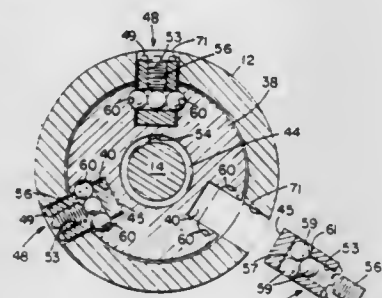
Virgil M. Pontes, N. Dighton, and Lawrence C. Young, South Easton, both of Mass., assignors to Double E Company Inc., Brockton, Mass.

Filed Apr. 14, 1983, Ser. No. 485,111

Int. Cl.³ B65H 75/24

U.S. Cl. 242—72.1

14 Claims



1. In an expansible shaft comprising: an axially-extending housing; a core engager movable radially relative to said housing between an expanded position in which said core engager extends beyond the outer wall of said housing and a retracted position in which said core engager is positioned radially within said expanded position thereof; and, an actuator arranged to cause said core engager to move towards and away from said retracted position and said expanded position in response to axial movement of said actuator; said actuator having a first cam surface inclined with respect

to said shaft axis, and a slot at one side of, radially outwardly of, and parallel to said first cam surface; and, said core engager having a radially inwardly projecting cam follower slidably engaging said first cam surface, that improvement wherein:

said cam follower includes a cross-bore one end of which overlies and follows said slot as said surface of said cam follower slides along said first cam surface and a second bore which extends generally perpendicular to and intersects said cross-bore;

a first member is positioned within and forms a slip-fit with said cross-bore so as to be movable axially of said cross-bore;

a second member is positioned within and movable axially of said second bore;

the end of said first member nearer said second bore is convex; and

the length of said first member is such that when said second member is positioned within the intersection of said bores in engagement with a portion of said first member is forced to project from said cam follower into said slot, and when said second member is withdrawn from the intersection of said bores said first member may be positioned wholly within said cross-bore.

4,433,815

TUBE WHICH CAN BE AXIALLY STACKED

Armando D'Agnolo, Porcia, Italy, assignor to Officine Savio S.p.A., Italy

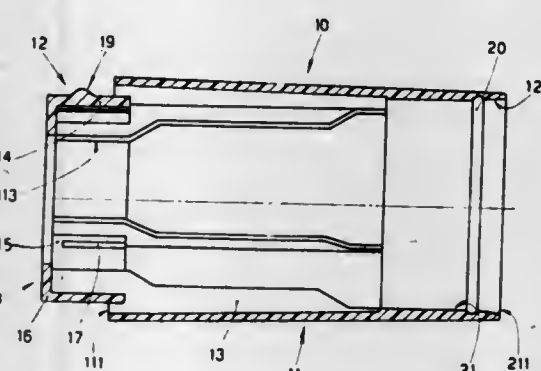
Filed Oct. 7, 1981, Ser. No. 309,508

Claims priority, application Italy, Oct. 10, 1980, 83447 A/80

Int. Cl.³ B65H 75/18

U.S. Cl. 242—118

2 Claims



1. An axially stackable tube able to sustain bobbins for doubling and twisting operations; comprising a first tubular section defining circumferential alternating rigid and radially elastic segments, each said radially elastic segment defining an arcuate circumferential interference element on the outside thereof, a second tubular section fixed to said first section axially beyond an end face of said second section by axial radial guides positioned interiorly of said first and second sections and fixed to both sections; said second section defining an inner circumferential seat at the other end of said second section for the arcuate interference elements of a second tube whereby the first section acts as a manual grip and the arcuate interference elements of a second tube cooperate with said inner circumferential seat to axially stack two tubes.

4,433,816

WIRE GUIDE AND RETAINER ASSEMBLY

Kenneth E. Rousseau, Wichita, Kans., assignor to Harper Trucks, Inc., Wichita, Kans.

Filed Apr. 12, 1982, Ser. No. 367,170

Int. Cl.³ B65H 49/00, 17/20

U.S. Cl. 242—129.62

10 Claims

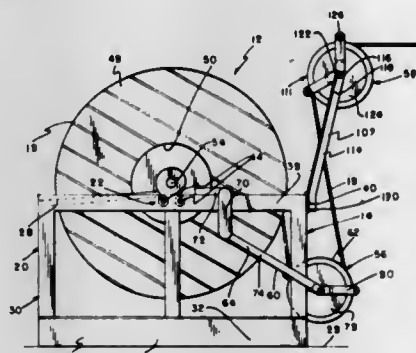
1. A wire guide and retainer assembly adapted to receive and

direct a wire type strand member from a rotatable spool member; comprising:

(a) a support assembly;

(b) a first wire guide assembly having a first frame support assembly with one end connected to said support assembly and a first pulley assembly connected to said first frame support assembly;

(c) said first frame support assembly having support arms with one end pivotally connected to said support assembly and a support shaft connected between outer ends of said support arms;



(d) said first pulley assembly including a first pulley member mounted on said support shaft and a first retainer assembly connected to said first pulley member and pivotally mounted on said support shaft; and

(e) said first pulley member and said first retainer assembly both rotatably mounted on and freely movable axially of said support shaft;

whereby the wire strand member is trained between said first retainer assembly and about said first pulley member and extended in a vertical direction and said first pulley assembly is movable laterally on said support shaft to conform with the position of the wire strand being removed from the spool member.

4,433,817

SPOOL PIN HOLDER FOR A SEWING MACHINE

Philip F. Minalga, Piscataway, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 29, 1982, Ser. No. 426,354

Int. Cl.³ B65H 49/18

U.S. Cl. 242—134

4 Claims



1. A spool pin mounting arrangement for a thread spool comprising a spool pin extending along a first length at least a sufficient distance to accommodate said thread spool, said spool pin including a spherical segment having said first length adjacent one side thereof and a second length to an end thereof adjacent the other side of said segment; a spool pin post having a socket complementary to and accommodating said spherical segment of said spool pin and an aperture extending from the center of said socket to the outside of said spool pin post capa-

ble of accommodating said spool pin up to a selected angular orientation therein, means operating on said second length of said spool pin for resiliently allowing said spool pin to displace to said selected angular orientation in said aperture in response to a disturbing force and for applying a restoring force thereto in opposition to said disturbing force for returning said spool pin to a central position upon removal of said disturbing force.

4,433,818

BEACON-RECEIVER FOR COMMAND GUIDED MISSILES

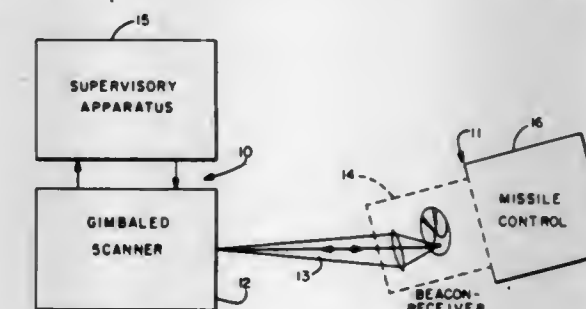
Jerome F. Coffel, New Hope, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 29, 1982, Ser. No. 344,119

Int. Cl.³ F41G 7/26

U.S. Cl. 244—3.13

11 Claims



8. Apparatus for remotely determining the magnitude of the angular disorientation of a body with respect to the axis of a beam of electromagnetic radiation falling thereon, comprising, in combination:

means at a site remote from the body for projecting a beam of electromagnetic radiation along an axis toward the body;

a member carried by the body for receiving and retroreflecting said beam, said member having a patterned surface including a first area which is retroreflective, and a second area which is not retroreflective;

means causing rotation of said member about a spin axis passing through said surface;

focusing means carried by the body at a site spaced from said member and having an optical axis passing through said surface, so that radiation from said beam reaching said focusing means at an oblique angle to said optical axis is focused on said surface as an image which defines on said areas, as said member rotates, a closed curve about said spin axis and is retroreflected through said focusing means in the portion of each rotation of said member during which said image falls on said first area;

and means for receiving the radiation retroreflected through said focusing means and determining the relation of said portion of the total period of rotation of said member, as a measure of said oblique angle.

4,433,819

AERODYNAMIC DEVICE

Alfred C. Carrington, 33811 Morse St., Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 22,068, Mar. 19, 1979, abandoned. This application Feb. 4, 1982, Ser. No. 345,788

Int. Cl.³ B64C 29/00, 39/06

U.S. Cl. 244—12.2

7 Claims

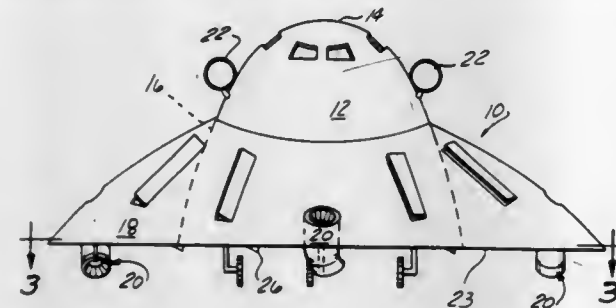
7. An aerodynamic device comprising:

(a) a central body including a vertical axis, an outer wall and a bottom wall;

(b) an outer rotatable disc concentric with the central body axis, including an upper wall and a bottom wall;

(c) a plurality of jets affixed to the disc bottom wall selectively vectorable between a vertical, tangential or radial direction;

- (d) means for counteracting the torque generated by the disc;
 (e) means for vectoring the jets in a common direction;



- (f) means for rotatably supporting the disc with the central body;
 (g) means for rotating the outer rotatable disc.

4,433,820

AIRCRAFT UNDERCARRIAGE

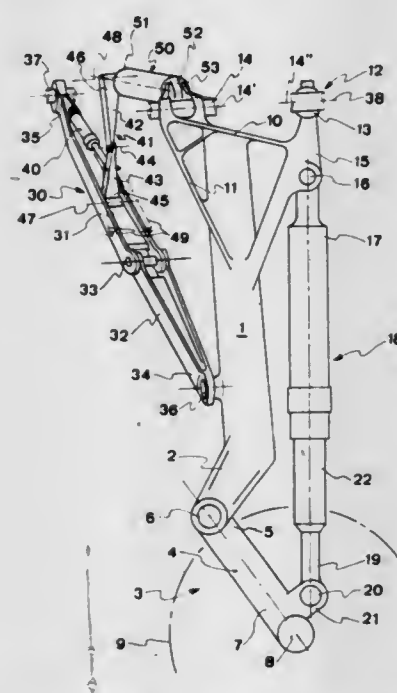
Andre Turiot, Morsang S/Orge, France, assignor to Messier-Hispano-Bugatti (S.A.), Montrouge, France

Filed Jul. 23, 1982, Ser. No. 401,278

Claims priority, application France, Aug. 12, 1981, 81 15586
 Int. Cl.³ B64C 25/10

U.S. Cl. 244—102 R

7 Claims



1. An undercarriage for an aircraft including a rigid structure, the undercarriage comprising: a leg pivotally mounted about a first pivot axis which is fixed relative to said rigid structure; a main side-brace comprising at least two articulated levers having first ends pivotally connected to each other about a fourth pivot axis, and having respective other ends pivotally mounted about a second pivot axis which is fixed relative to said rigid structure, and about a third pivot axis which is fixed relative to said leg; and drive means for causing said levers to pivot relative to each other; the improvement wherein said first, second, third, and fourth pivot axes are parallel to each other; and wherein said first ends of the levers comprise respective two-tined forks with corresponding pairs of tine ends being pivotally interconnected about said fourth pivot axis, said levers, when in an extended position, having a common center line which intersects said fourth pivot axis at a point S and at an oblique angle α the point S being located between the tines of both forks such that relative to the point S and to the center line of the lever to which it belongs, one tine of each fork constitutes an acute angle side tine and the other tine constitutes an obtuse angle side tine; said forks being so disposed relative to each other that one tine of each fork constitutes an inside tine and the other an outside tine, where the inside tine of each fork is located in between the two tines

of the other fork; and wherein said inside tines are said obtuse angle side tines and said outside tines are said acute angle side tines.

4,433,821

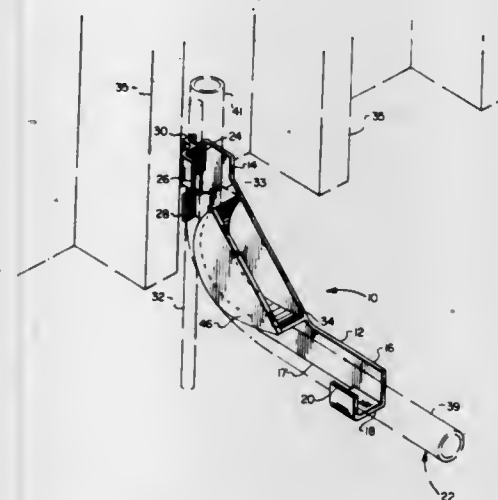
CONDUIT BENDING AND SUPPORT DEVICE

Charles N. Bolding, 1504 Roundup Trail, and Paul D. Hastings, 2000 Dixie La., both of Round Rock, Tex. 78664
 Filed Aug. 7, 1981, Ser. No. 290,841

Int. Cl.³ F16L 3/08

U.S. Cl. 248—65

7 Claims



1. A bending and support device for non-rigid tubing such as plastic water distribution conduit and the like for changing the direction of a conduit run and supporting said conduit in the bent condition, said device comprising:

- a frame comprising a substantially flat plate including at least two end portions extending at an angle with respect to each other;
- a first conduit support bracket fixed to one end portion;
- a second conduit support bracket fixed to the other end portion, said support brackets each including respective portions forming channels for receiving and supporting said conduit at opposite ends of a bend in said conduit;
- surface means fixed to said frame between said support brackets for supporting said conduit along at least a portion of the inner radius of a bend in said conduit; and
- said support brackets are spaced from said surface means sufficiently to permit engaging said conduit by said support brackets and said surface means intermediate the ends of said conduit and without extending an end of said conduit through the channel formed by either of said support brackets.

4,433,822

PAINT CAN RECEPTACLE AND THE LIKE

Nurmi Caggiano, 52 Wagon Wheel Ct., Pulaski, Pa. 16143

Filed Aug. 18, 1981, Ser. No. 293,995

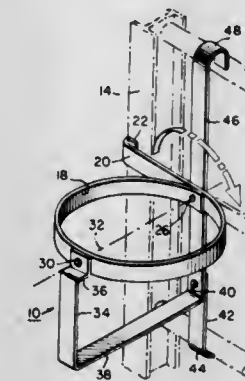
Int. Cl.³ E06C 7/14

U.S. Cl. 248—210

6 Claims

1. A paint can receptacle which comprises, a circular strip horizontally disposed, a J-shaped ladder grip projecting tangentially from said circular strip, for rail engagement by the leg portion thereof, a first pivotal pin positioned in the vicinity of the tangential union of the J-shaped ladder grip and the circular strip, said pivotal pin joining the circular strip with a vertically disposed ladder rung gripping member having an arcuately configured rung grip terminally disposed thereto and joining a base support member along the opposite end thereof, said pivotal pin being joined intermediately along the vertically disposed ladder rung gripping member, a second pivotal pin positioned diametrically opposite said first pivotal pin, said second pivotal pin joining a downwardly projecting vertical support member said base support member being supported by

said downwardly projecting vertical support member and the vertically disposed ladder rung gripping member, and a downwardly disposed support member having an arcuate ladder



rung brace positioned as a terminal edge thereof and secured to a lower portion of the vertically disposed ladder rung gripping member.

4,433,823

DRINK COASTERS

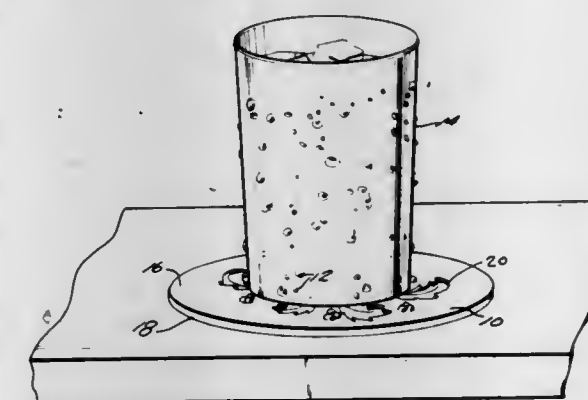
Mark Pearson, 15 Rae St., East Bentleigh. 3165, Melbourne, Victoria, Australia

Filed Jan. 22, 1981, Ser. No. 227,347

Int. Cl.³ A47G 23/03

U.S. Cl. 248—346.1

5 Claims



1. A drink coaster, comprising:

- a disk of microporous metal constituted by a sintered compact of metal powder having a porosity of about 27-30 percent, and having a lower face including at least one portion comprising support surface means by which said coaster may be supported on a table top, said support surface means being constituted by a substantially drink liquid-impervious layer of said metal formed in situ on said sintered compact as an integral feature which is physically at one therewith.

4,433,824

VIDEO PROJECTOR ADJUSTABLE SUPPORT

Mansour Koosha, Endwell, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,585

Int. Cl.³ F16M 1/00

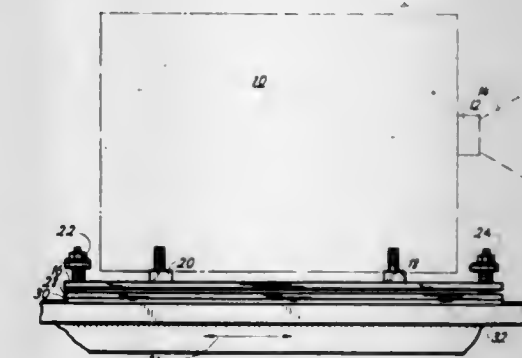
U.S. Cl. 248—662

6 Claims

1. Alignment and adjustable support structure for a video projector which permits movement of said video projector out of a precisely aligned position and return without requiring realignment or readjustment, comprising:

- a base plate having a first selected shape, a selected thickness, and top and bottom parallel surfaces, said base plate including at least three jack screws having a length greater than said selected thickness for adjusting said base plate relative to a post plate, and each of said jack screws

defining an aperture having a first diameter through the longitudinal axis;
 means for rigidly securing said video projector to said base plate;
 said post plate having a second selected shape, and top and bottom parallel surfaces, said post plate further defining at least three apertures between said top and bottom surfaces of said post plate, said apertures suitable for allowing a fastening means having a diameter smaller than said diameter of said longitudinal aperture of said jack screw to extend therethrough, said longitudinal axis of said apertures through said post plate being perpendicular to said top and bottom parallel surfaces of said post plate, and in register with the longitudinal axis of said apertures through said jack screws;



fastening means extending through said aperture in said post plate and said apertures in said jack screws in register therewith for securing said post plate in a selected position relative to said base plate as determined by said jack screws;

a rolling plate having a selected shape, and top and bottom parallel surfaces, said top surface for supporting said bottom surface of said post plate, said bottom surface of said rolling plate defining a pair of parallel guides such that said rolling plate may be moved along a pair of parallel rails;

means for securing said rolling plate to said post plate; and guide rails for supporting said rolling plate; so that said video projector is movable out of an aligned and adjusted position and is returnable without requiring a change in alignment or adjustment.

4,433,825

STRESS-RESISTANT MOUNT FOR THE CASING OF A CENTRIFUGAL PUMP

Robert Darnedde, and Jürgen Koch, both of Frankenthal, Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,965

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005093

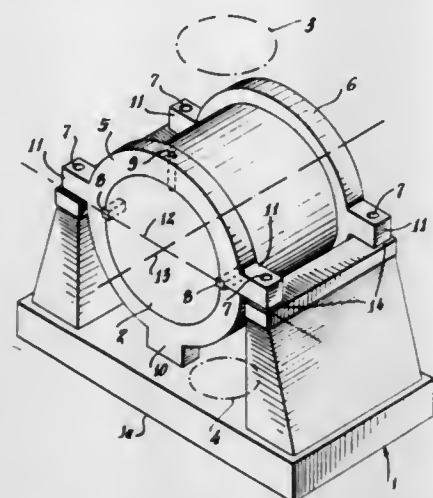
Int. Cl.³ F16M 1/00

U.S. Cl. 248—672

18 Claims

1. The combination of a support; an externally stressed pump casing; and means for securing said casing to said support,

comprising at least one annular member surrounding and carrying said casing to thereby take up stresses acting on said



casing, and means for transmitting such stresses from said annular member to said support.

4,433,826

ADJUSTABLE LONG BOLT

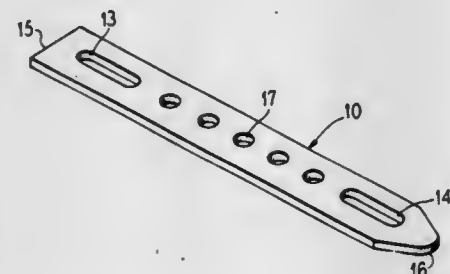
Vernon R. Schimmel, Lincolnwood, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Sep. 25, 1981, Ser. No. 305,396

Int. Cl.³ E04G 17/06

U.S. Cl. 249—38

18 Claims



1. In a modular concrete form structure including a concrete form panel and a second panel mounted in angled relation which panels are to be supported together by a prop, the improvement of an adjustable long bolt extendable into slots in the panel and the prop for connecting them together; another of the panels being supported by the prop, the bolt being generally flat along its length, a pair of elongated slots disposed in adjacency to opposite ends of the bolt and at least one circular hole disposed between the slots having its mid-point disposed along a longitudinal line in longitudinal alignment with longitudinal axes of said elongated slots, the longitudinal spacing between said slots with respect to said at least one circular hole being varied to enable the bolt to be installed in a larger number of adjustable positions by turning the bolt on its end through an arc of rotation of 180°, a slotted water plate carried on the prop with the bolt extended therethrough, a connecting wire tie for insertion into one of said slots adjacent one end of said bolt, and a wedge bolt for insertion through an elongated slot at an opposite end of said bolt thus serving to tie the panels and the water plate in snug wedged assembly together, the bolt being headless and being hammerable from either end to effect assembly or disassembly from said slotted water plate.

4,433,827

HIGH PRESSURE SHUT-OFF VALVE

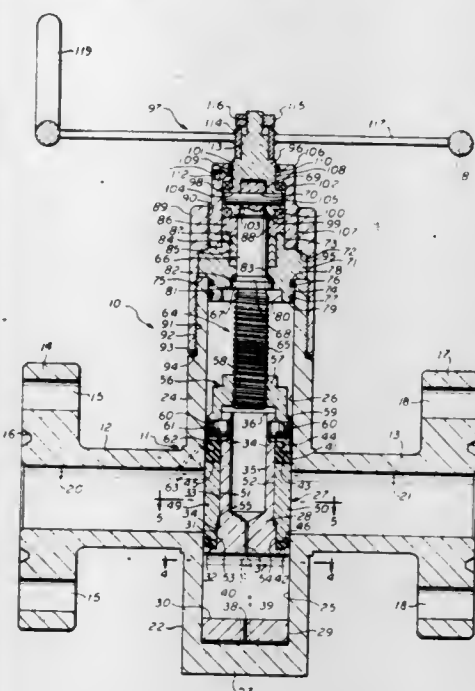
Billy L. Redmon, and Buford G. Forester, both of Pasadena, Tex., assignors to Custom Oilfield Products, Inc., Houston, Tex.

Filed Dec. 4, 1981, Ser. No. 327,331

Int. Cl.³ F16K 25/00

U.S. Cl. 251—191

22 Claims



1. A high pressure shut-off valve comprising a hollow valve body having an open end, a closed end and a cylindrical cavity therein, cover means for said open end, aligned tubular inlet and outlet portions on opposite sides of said valve body defining a continuous straight bore intersecting said cavity at a right angle thereto, a plug valve assembly positioned in said cavity and comprising a supporting mandrel having a sliding fit in said cavity between an extended position abutting said closed end and a retracted position a predetermined distance therefrom, said mandrel having an end portion with a laterally extending valve passage therethrough and an intermediate portion closing said valve body bore when in said extended position and said valve passage being aligned with said valve body bore when in said retracted position, said intermediate portion being of one-piece construction with a fixed radius and providing fixed surfaces of cylindrical configuration having a sliding fit in said cavity, a sealing sleeve member of elastomeric material surrounding said mandrel intermediate portion and movable relative thereto and engaging the entire circumferential wall of said cavity around said bore to seal the same against leakage when closed, and operating means for moving said plug valve assembly between said extended and retracted positions and including means engageable with said sleeve member in said extended position to compress the same longitudinally along said mandrel to against leakage of pressure around said intermediate mandrel portion.

4,433,828

REACTOR VESSEL STUD CLOSURE SYSTEM

Stanley R. Spiegelman, Churchill; Robert B. Salton, Plum Borough; Robert W. Beer, Murrysburg; Louis J. Malandra, Boston, all of Pa., and Michael L. Cognevich, Houston, Tex., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1981, Ser. No. 229,362

Int. Cl.³ E21B 19/00

U.S. Cl. 254—29 A

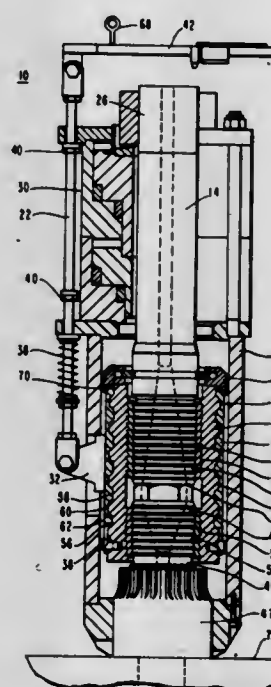
13 Claims

1. An apparatus for enabling loosening and tightening of a

stud nut on a reactor vessel stud by forcing compression of a seal between a reactor vessel head and a reactor vessel flange, said apparatus having a certain mass and comprising:

gripper means for grasping the reactor vessel stud comprising a split gripper comprised of a plurality of sections which are movable to a closed position to form a cylinder with an inner surface in gripping contact with an upper end of the vessel stud nut,

said gripper means also including a cylindrical gripper sleeve, having an inner surface surrounding and in sliding contact with said split gripper, disposed for movement up and down, and having wedge means on at least one of said gripper sleeve and said split gripper controlling the opening and closing of said split gripper around the vessel stud to respective disengaged and engaged positions relative to said stud,



actuating means for causing said gripper means to move to said engaged and disengaged positions comprising a plurality of vertically disposed actuator rods affixed by securing means at a lower end to said gripper sleeve and at an upper end to a common plate, said actuator rods being movable longitudinally by movement of said common plate to a first position wherein said gripper sleeve is moved in one longitudinal direction to move said split gripper to said engaged position, said actuator rods being movable longitudinally to a second position wherein said gripper sleeve is moved in the longitudinal direction opposite said one longitudinal direction to said disengaged position, and

means for applying a force of elongation to the vessel stud so that the stud nut may be loosened or tightened.

4,433,829

LOG RAISER

Mark D. Grover, 1700 Spanish Canyon, and Thomas C. Shaffer, 2600 Boonville Rd., both of Ukiah, Calif. 95482

Filed Jul. 26, 1982, Ser. No. 401,941

Int. Cl.³ B65G 7/12

U.S. Cl. 254—131

2 Claims

1. An apparatus for raising a log above ground to facilitate its cutting comprising:

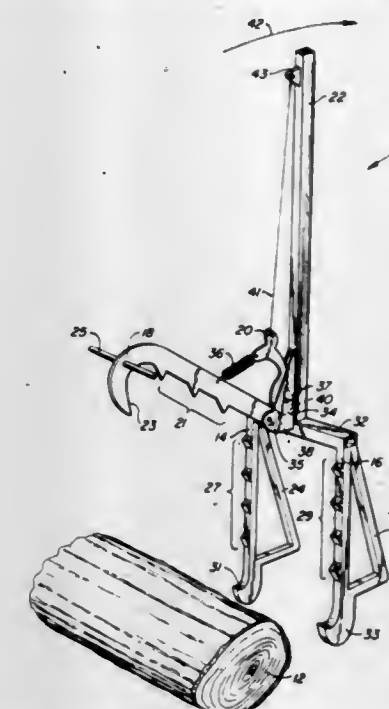
means for contacting the log along a portion of its outer periphery;

a lever arm extending outwardly from said log contacting means;

a hinged claw connected to the lever arm for holding the log against said log contacting means, said claw having means near its hinged connection to the lever arm defining a generally eccentric surface;

means for locking the claw against the log, said claw locking

means being rotatably connected to the lever arm and having a generally like eccentric surface for interlocking engagement with the eccentric surface of said claw; means for connecting said claw to said claw locking means, whereby when said claw is locked against the log the eccentric surface of said claw locking means is moved into



contact with the eccentric surface of said claw and movement of said claw away from the log is substantially prevented; and

means attached to said log contacting means for supporting the log above the ground after the gripped log has been rotated by the lever arm.

4,433,830

LIFTING SYSTEM FOR A TURBINE DISC

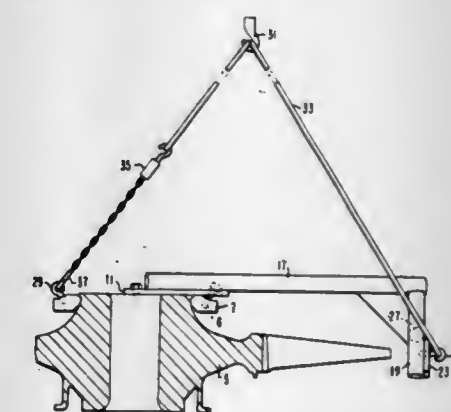
Ira J. Campbell, East Bradford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,152

Int. Cl.³ B66D 3/00

U.S. Cl. 254—264

5 Claims



1. A lifting system for a turbine disc having a circular array of blades having a generally circular outer periphery and a plurality of holes disposed in said turbine disc, said lifting system comprising a base portion having holes which register with said holes in the turbine disc, said base being disposed on the upper portion of the disc;

an elongated portion which extends from the base portion to beyond the outer periphery of the blades;

a cantilevered portion which extends from the distal end of the elongated portion and over the outer periphery of the blades;

a first means for receiving a hoist disposed on said cantilevered portion and generally aligned with the center of gravity of the disc;
 a second means for receiving a hoist disposed on the lower portion of the disc;
 a hoist for lifting said disc attached to said first hoist receiving means; and
 an auxiliary hoist capable of lifting at least a portion of said disc attached to said second hoist receiving means and attached to said first mentioned hoist, whereby the disc can be easily moved from a vertical to a horizontal orientation and vice versa and lifted and held in any orientation without damaging the tips of the blades.

4,433,831

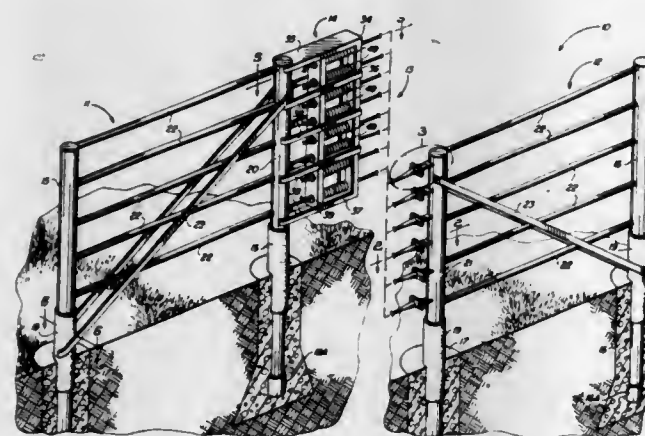
FENCE TENSIONING DEVICE

Richard E. Bunker, 5202 E. Washington St., Phoenix, Ariz. 85034

Filed Jun. 18, 1982, Ser. No. 389,667
 Int. Cl.³ B21F 27/00

U.S. Cl. 256—39

4 Claims



1. A fence tensioning and anchoring device for flexible fencing members comprising in combination:

- a first upstanding support,
- means for anchoring said first support to the ground,
- a stress distributing assembly mounted on said first support, said assembly comprising a tension compensating device, said device comprising a bracket having a top, one side and a bottom,
- a bar mounted within said bracket for movement in said bracket longitudinally of said top and bottom and said fencing members,
- a plurality of flexible cable members,
- one end of each of said cable members extending through said side of said bracket and being anchored to said bar in a spaced arrangement,
- coil spring means mounted within said bracket, one mounted around each of said cable members for extending between said side of said bracket and said bar axially applying a tension force between said side and a point on said bar adjacent the point of anchoring of the associated cable member to said bar, whereby a resultant like amount of tension is applied to each of said cable members,
- a second upstanding support spaced from said first support, means for anchoring the other end of each of said cable members to said second support so that said cable members extending between said first and second supports lie under tension in a substantially centerline tensioning arrangement,
- a third upstanding support spacedly positioned from said first support,
- substantially rigid rail means spacedly mounted in a parallel plane between said first and third supports, and
- strut means extending between the top of said first support and the anchored end of said third support for anchoring one end of said fence.

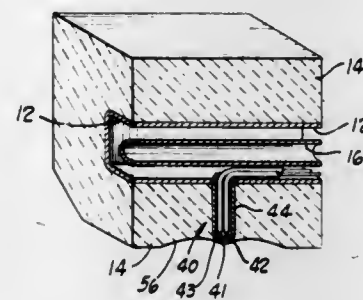
4,433,832
METALLURGICAL LANCE

Douglas E. Butts, Brookpark, Ohio, assignor to Inland Enterprises, Inc., Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,465
 Int. Cl.³ C21D 11/00

U.S. Cl. 266—87

12 Claims



1. A refractory clad metallurgical lance for injecting gas into molten metal by emerging the lower nozzle portion of the lance into the molten metal, the lance comprising:

a linear metal conduit having an outer refractory cladding material encasing at least the lower portion of the metal conduit wherein the refractory cladding contains a nozzle discharge opening communicating with said metal conduit to form a nozzle portion, whereby the metal conduit is adapted to transmit inert gas to the nozzle portion of the lance;

thermocouple means disposed within said refractory cladding in the lower portion of the lance, said thermocouple means disposed within a refractory protective tube directed radially outwardly from said metal conduit and within said refractory cladding material, said protective tube having an outermost tip portion within said refractory cladding material adjacent to the exterior peripheral surface of the refractory cladding material, said tip portion containing a thermocouple joint for continuously measuring the temperature of the molten metal while the lance is disposed in the molten metal; and

said metal conduit comprising an interior metal pipe disposed within an exterior tube and secured thereto in a radially spaced relationship to provide an air space between the interior pipe and the outer tube, said outer tube encased within said refractory cladding material, said thermocouple means having lead wires disposed in said air space between the interior pipe and the outer tube and connected to an exterior temperature indicator.

4,433,833

APPARATUS FOR CONTROLLING THE SPRING CONSTANT OF A LAMINATED LEAF SPRING ASSEMBLY

Takayuki Tabe, Tokyo, and Takeyoshi Shinbori, Yokosuka, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Sep. 13, 1982, Ser. No. 417,383

Claims priority, application Japan, Mar. 23, 1982, 57-46057
 Int. Cl.³ B60G 11/36

U.S. Cl. 267—18

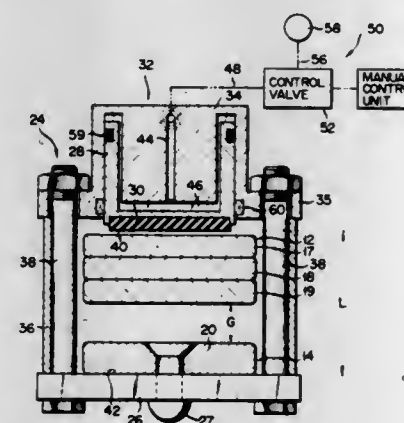
7 Claims

1. In an apparatus for controlling the spring constant of a laminated leaf spring assembly used in a vehicle, wherein said leaf spring assembly includes a main spring unit of a first spring constant and a helper spring unit of a second spring constant both extending in the running direction of the vehicle, the spring units being coupled together at their central portions wherein the ends of the main spring unit are attached respectively to the body of the vehicle and the central portion of the main spring unit is attached to a wheel of the vehicle, and wherein a gap is formed between the helper spring unit and the main spring unit when the leaf spring assembly is unloaded, said gap diminishing when a load is applied to the leaf spring

assembly in excess of a predetermined value, the improvement comprising:

clamping means provided at at least two opposite locations on the leaf spring assembly with respect to the central portions of the main spring unit and the helper spring unit for clamping the main spring unit and the helper spring unit to face one another of form a certain gap between the ends of the helper spring unit and the confronting surface of the main spring unit when the leaf spring assembly is unloaded,

said clamping means including a spring supporting member attached to the helper spring unit, hydraulic cylinder means having a hydraulic cylinder and including a press member movable in said cylinder, said cylinder facing said spring supporting member and having an opening at a lower end thereof, said press member being movable in said cylinder between a position wherein said press member is separated from the main spring unit, and a position wherein said press member urges the main spring unit downward to engage with the helper spring unit, and



coupling means for coupling said supporting member and said cylinder means to one another, said coupling means extending from the spring supporting member toward said cylinder means wherein the width of said coupling means is greater than that of the main spring unit; and

hydraulic control means coupled to said cylinder means for driving said clamping means to vary the gap between the spring units,

said hydraulic control means including a fluid source for supplying operating fluid to said cylinder, a control valve for controlling the quantity of the operating fluid supplied to said cylinder, and command means for issuing commands to operate said control valve;

wherein said certain gap between the ends of the helper spring unit and the main spring unit can be reduced by a desired amount by operation of said hydraulic control means to obtain a desired load-deflection characteristic for the leaf spring assembly; said characteristic being functionally related to the first and the second spring constants of the main and the helper spring units.

4,433,834

COMPOSITE CUSHION PAD

Karl J. Jwuc, Tallmadge, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 185,714, Sep. 10, 1980, abandoned, which is a continuation of Ser. No. 121,332, Feb. 13, 1980, abandoned, which is a continuation of Ser. No. 963,381, Nov. 24, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,617

Int. Cl.³ F16F 1/40

U.S. Cl. 267—141.1

3 Claims

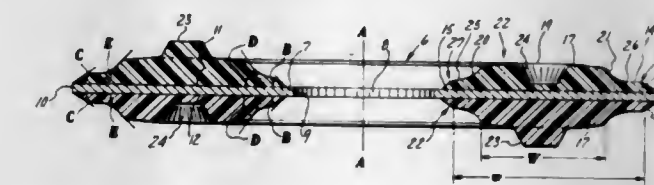
1. A composite cushion pad used with like cushion pads in juxtaposed abutting relation to resist a load applied thereagainst, comprising:

(a) a rigid plate having an outer cylindrical periphery in radially spaced relation from a centrally disposed circular

opening which extends axially through the plate, at least one annular planar surface being defined between the opening and outer periphery of the plate;

(b) a first resilient solid elastomeric annular cushion secured to, and substantially covering the surface and extending therefrom, the first cushion surrounding the opening and having curved inner and outer marginal sidewalls in radially spaced relation, the inner marginal sidewall being closer the opening and the outer marginal sidewall being closer the outer periphery, the marginal sidewalls of the first cushion generally converging in a direction away from the plate and being disposed at acute angles, relative to the plate, such that under compression the first cushion will not bulge outwardly of the outer periphery of the plate;

(c) a second resilient solid elastomeric annular cushion superimposed on the first cushion and integrally formed therewith and extending therefrom in a direction away from the plate, the second cushion having a curved inner



marginal sidewall which is laterally offset inwardly from the inner marginal sidewall of the first cushion in a direction away from the opening, and a second outer marginal sidewall which is laterally offset inwardly from the outer marginal sidewall of the first cushion in a direction toward the opening, the marginal sidewalls of the second cushion generally converging towards each other in a direction away from the plate and being disposed at acute angles, relative to the plate, that are greater than correspondingly measured angles of the closest marginal sidewalls of the first cushion to provide a sharp difference between the initial soft cushioning and subsequent stiff cushioning of the pad, the top second cushion having an annular outer surface which is substantially flat and in a plane which is parallel to the planar surface of the plate, and the bottom first cushion having a pair of outer annular surfaces which connect the laterally offset marginal sidewalls of the first and second cushions and which are substantially in the same plane and generally parallel to the plane of the planar surface of the plate.

4,433,835

WAFER CHUCK WITH WAFER CLEANING FEATURE

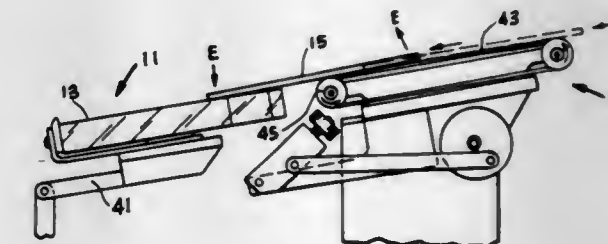
William R. Wheeler, Saratoga, Calif., assignor to Tencor Instruments, Mountain View, Calif.

Filed Nov. 30, 1981, Ser. No. 325,688

Int. Cl.³ B25B 11/00

U.S. Cl. 269—14

3 Claims



1. A wafer chuck and wafer pusher comprising, a rigid, wafer support surface, having a gross area at least as great as the area of a wafer to be supported, said surface having a plurality of peaks and valleys, said peaks being truncated members having equal elevation, said peaks

forming mesas having polygonal edges thereby defining a support plane for the wafer, the ratio of the aggregate area of said peaks contacting the wafer compared to the valleys between said peaks being less than ten to one, said support surface having an area generally congruent with the area of a wafer to be supported, said congruent area of the support surface including a chordal edge region having an upright rigid wafer stopping member extending in elevation above the wafer support plane, the peaks of the support plane forming mesas with polygonal edges in said support plan parallel to said chordal edge,

means for communicating vacuum pressure to said valleys, said means of communicating vacuum pressure being variable to release said wafer for travel across the mesas, and

wafer pushing means comprising a pair of resilient rollers mounted on top of upright arms, the bottoms of said arms hinged for bringing said rollers below said support plane in a first position and placing said rollers in the support plane in a second position, said wafer pushing means being disposed adjacent to said support surface for urging a wafer oriented in a congruent manner with the support surface into an overlying relation therewith.

4,433,836

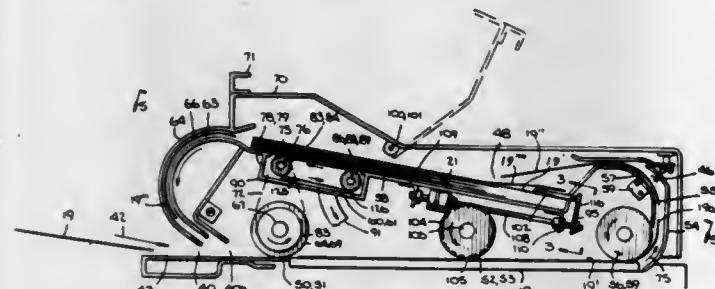
END OF STACK SENSOR

Walter J. Kulpa, Norwalk, and John R. Paulik, Newtown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 9, 1981, Ser. No. 309,868

Int. Cl.³ B65H 3/04

U.S. Cl. 271—3.1

4 Claims



1. In a recirculating sheet feeding apparatus in which a plurality of sheets are fed successively from one surface of a stack thereof to a processing station and then returned to the opposite surface of the stack, a device for determining when all of the sheets in the stack have been fed to the processing station and returned to the stack, said device comprising:

- a support means for supporting a stack of sheets to be fed successively to the processing station, said support means including an aperture therein located so as to normally be obstructed by said stack,
- feeding means for feeding sheets successively from one surface of said stack to the processing station and for returning the sheets to the opposite surface of said stack, the returning of said sheets to said stack defining a trailing edge and side edges of said stack,
- an elongate separator member adapted to normally contact the outermost sheet of said stack,
- mounting means disposed adjacent said stack for mounting said elongate separator member to extend inwardly relative to said stack from said trailing edge thereof and for rotating said elongate separator member through said aperture and around one of said side edges of said stack after said outermost sheet of said stack has been fed to said processing station and returned to said stack so that said elongate separator member again contacts said outermost sheet, said mounting means comprising a rotatable shaft mounted on said support means and an arm mounted on said shaft for rotation therewith in a plane adjacent and parallel to said trailing edge of said stack, said elongate separator member being mounted on said arm such that

said elongate separator member moves in an orbital path around said shaft, and

- drive means operable to move said mounting means to cause said rotation of said elongate separator member whereby each rotation of said elongate separator member provides an indication that all of the sheets in said stack have been fed to said processing station and returned to said stack.

4,433,837

SHEET SORTER APPARATUS

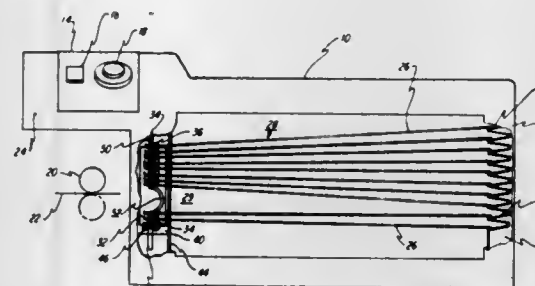
Robert F. Romanowski, Rochester, N.Y., assignor to Salvatore Latone, Rochester, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,997

Int. Cl.³ B65H 39/11

U.S. Cl. 271—293

20 Claims



1. Sheet sorting apparatus which comprises a plurality of sheet receiving trays disposed in a stack, said trays having forward sheet receiving ends and rear ends opposite to said forward ends, means retaining said trays in stacked relationship and moveable therewith, means defining a path along which said trays and retaining means are movable, said path including first, second and third regions, said third region defining steps with said first and second regions at the opposite ends of said third region where adjacent ones of said trays are spaced apart to receive said sheets, said retaining means being a carriage having an opening equal in length to the height of said stack at the forward ends of said trays, said trays being disposed in said opening, and means engageable with the tray at the step at one end of said third region or with the tray at the step at the opposite end of said third region to move said stack with said retaining means carriage along said path.

4,433,838

EXERCISE STRUCTURE AND BALL GAME

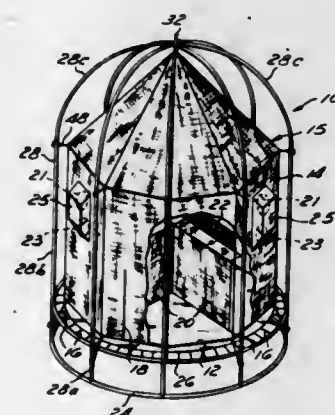
Donald W. Gordon, Yorba Linda, Calif.

Filed May 16, 1979, Ser. No. 39,347

Int. Cl.³ A63B 5/00

U.S. Cl. 272—65

11 Claims



1. A structure for use as an exercise compartment comprising:
means for forming a rebound surface, said surface acting as

a horizontal springboard which allows a user to exercise by jumping on said surface;
rigid support means for supporting said rebound surface; and means for enclosing the air space above said rebound surface to form a cell above said rebound surface, said cell of a sufficient size to permit one or more humans to use said rebound surface as an exercise springboard, said enclosing means positioned at or within the outer perimeter of said surface to protect the user from being injured by falling from said surface or by encountering said rigid support means while exercising.

4,433,839

BASKETBALL RIM ASSEMBLY

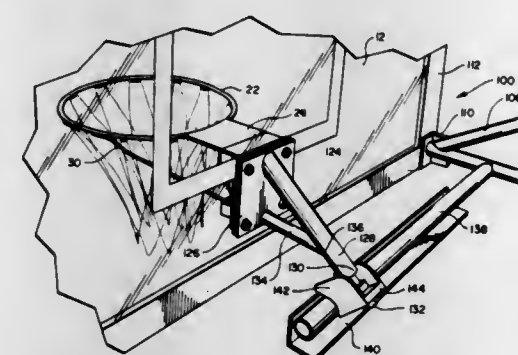
John Simonseth, 18936 11th Ave. NE., Seattle, Wash. 98155

Filed Mar. 25, 1982, Ser. No. 361,795

Int. Cl.³ A63B 63/08

U.S. Cl. 273—1.5 R

5 Claims



5. A basketball rim assembly comprising:

- a backboard of generally conventional planar configuration with a front surface, a rear surface, and a perimeter portion, said backboard having a set of circular through mounting holes at a rim mounting location, said through mounting holes being spaced from one another and each having a first diameter;
- a basketball rim having a generally conventional configuration and comprising a circular rim member with a front portion and a rear portion, and a mounting portion comprising a vertical front mounting plate positioned generally coplanar with and proximate to the front surface of the backboard at the mounting location;
- a unitary rigid force transfer means for absorbing and distributing forces exerted on said basketball rim, said force transfer means including backboard support members supporting said backboard, a frame on said backboard, a torsion bar affixed to said frame and positioned immediately adjacent to and spaced from said backboard, a vertically oriented rear mounting plate positioned at said mounting location, said rear mounting plate having a planar surface located adjacent to and spaced from said backboard, said rear mounting plate being rigidly affixed to said torsion bar, a plurality of connecting members rigidly connected between said vertical front mounting plate and said rear mounting plate, said connecting members each having a maximum dimension less than said first diameter to define a clearance between the surfaces of said connecting members and said backboard, each connecting member being positioned to extend through a respective one of the through holes in the backboard and securing said front mounting plate to said rear mounting plate with said backboard being located therebetween, said force transfer means absorbing forces exerted on said basketball rim by transferring said forces to said torsion bar via said connecting members and said front and rear plates, and to said frame via said torsion bar and from said frame to said backboard support members thus preventing those forces from being applied to said backboard.

4,433,840

ELECTRICALLY CONDUCTIVE GAME BALL

John A. Van Auker, 16 La Gorce Cir., Miami Beach, Fla. 33141
Continuation of Ser. No. 77,729, Sep. 21, 1979, Pat. No.

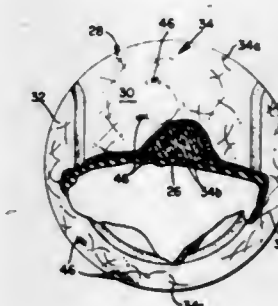
4,299,384, which is a continuation-in-part of Ser. No. 683,283, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 570,766, Apr. 23, 1975, abandoned. This application Nov. 10, 1981, Ser. No. 320,066

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ A63B 61/00

U.S. Cl. 273—61 R

1 Claim



1. A tennis ball for use with an electrical detection circuit in which touchdown of the ball in a selected area is detected by completion of a circuit between spaced apart electrical conductors lying in said area, said tennis ball comprising an elastically deformable sphere, a cover covering said sphere, a multiplicity of electrically conductive fibers incorporated into said cover and having portions on the inner and outer sides of said cover, and electrically conductive means formed separately of said fibers and said cover and lying entirely and solely between said cover and said sphere without passing through said cover and without being incorporated into said cover, said electrically conductive means being in contact with and electrically interconnecting the portions of said fibers on the inner side of said cover, said electrically conductive means cooperating with said fibers to provide an electrically conductive network extending along the inner side of said cover and passing through said cover to extend along the outer side of said cover for completing a circuit across a pair of said conductors upon touchdown of the tennis ball on said conductors.

4,433,841

MULTIPLE CHOICE TOSSING GAME

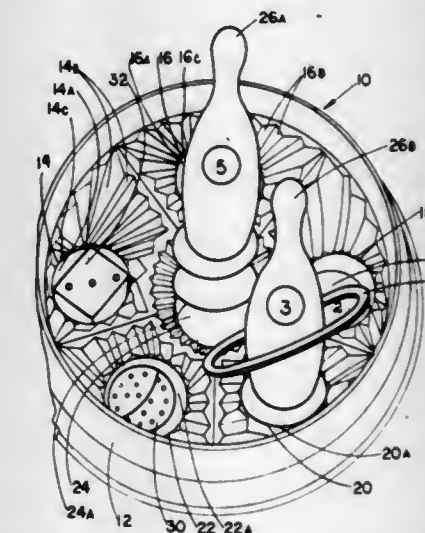
Bill S. Kim, 1238 S. Orange Dr., Los Angeles, Calif. 90019, and Jung J. Ban, 161 S. Occidental Blvd., #1, Los Angeles, Calif. 90057

Filed May 11, 1982, Ser. No. 377,004

Int. Cl.³ A63B 67/06

U.S. Cl. 273—338

1 Claim



1. In a multiple choice tossing game, playable with tossing

rings and other tossing means by one as well as several participants, comprising:

- (a) a bowl shaped base, having an upper circular edge and therewithin a plurality of numbered pits including a center pit around which the other pits are circularly disposed, said pits, respectively are flat bottomed and terminate in an upper circular edge, from which a plurality of narrow mutually offset sections radiate slanting upwardly towards the said upper edge of the bowl, so as to terminate in and form ridges with slanting sections from adjacent pits,
- (b) A plurality of numbered bowling pins, for receiving the tossing rings, capable of being pressure fitted, respectively within the pits, said pins are removable, so that the pits of the base may be utilized for receiving other tossing means.

4,433,842

TARGET PIGEON

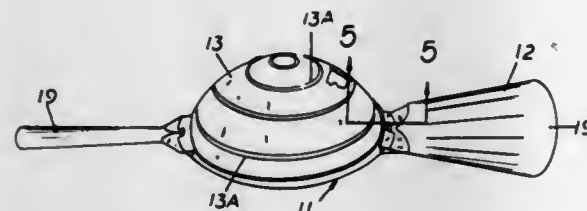
Millo Bertini, 679 Garden St., Trumbull, Conn. 06611

Filed Jan. 26, 1981, Ser. No. 228,088

Int. Cl.³ F41J 9/16

U.S. Cl. 273—363

12 Claims



4. A target pigeon comprising
 - a generally flat web formed at a web axis with a central throughgoing hole and having a pair of diametrically opposite ends;
 - a pair of vanes on said web extending diametrically oppositely from said ends thereof and tipped propeller-fashion to each other;
 - a pair of diametrically opposite holding tabs on said ends of said webs directed generally axially and tipped inwardly toward each other, said vanes, web, and tabs being integrally formed and together having a predetermined relatively great mass; and
 - a cup-shaped witness cap having an axially directed and substantially circular annular rim centered on a cap axis and formed with a pair of diametrically opposite outwardly open notches, said rim being axially engageable with said ends of said web inwardly of said tabs with said tabs fitting in said notches, said cap having a predetermined relatively small mass relative to said great mass.

4,433,843

MULTI-PLY PAPER TARGET

Larry J. Bricco, Neenah, Wis., assignor to Laminations Corporation, Neenah, Wis.

Filed Sep. 24, 1981, Ser. No. 305,191

Int. Cl.³ F41J 1/08, 1/10

U.S. Cl. 273—407

31 Claims

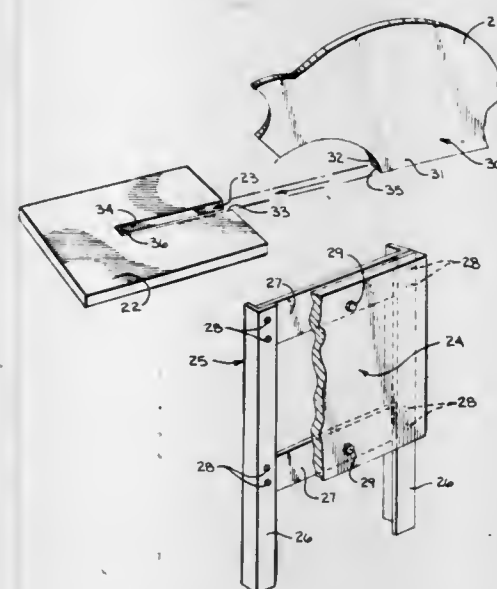
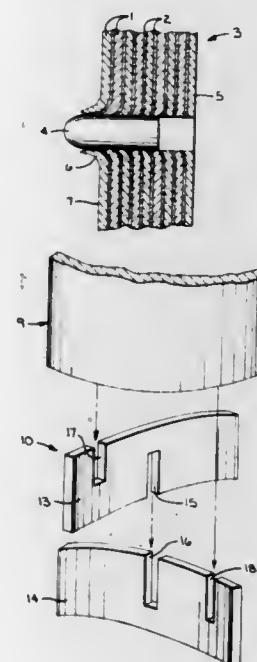
8. A method of making a target comprising the steps of selecting a continuous web of sheet-like paper material from recycled chipboard material having a density of from about 3.0 to about 3.5 pounds per point of caliper, convolutely winding said continuous web of sheet-like paper material into a tubular structure having substantially coplanar successively outwardly extending plies of said paper material, adhesively bonding the respective plies to one another as the winding proceeds, and cutting the tubular structure to form a substantially non-shattering and non-splintering target member having a predetermined target face.

13. A target assembly, comprising a target member and a base including at least one member for supporting the target member in a shooting position, at least one of said base and target members comprising a multiplicity of substantially co-

planar plies of paper sheets adhesively bonded together into a rigid laminate wherein each of said plies is composed of recycled chipboard having a thickness ranging from about 0.025 inches to about 0.035 inches and said recycled chipboard has a density of from about 3.0 to about 3.5 pounds per point of caliper.

20. A substantially non-shattering, non-splintering and non-ricocheting target assembly, comprising

a substantially flat base of convolutely wound, substantially coplanar paper plies adhesively bonded into a substantially rigid laminate having an upwardly directed face including a slot separating a pair of spaced side edges, and a silhouette of convolutely wound, substantially coplanar paper plies adhesively bonded into a substantially rigid laminate having a top portion forming a predetermined



target shape and a bottom portion including a supporting projection to be removably retained within said base slot and having first and second oppositely spaced side edges to be removably engaged by said first and second base side edges, respectively, to provide upstanding support of said silhouette by said base.

22. A substantially non-shattering, non-splintering and non-ricocheting target assembly, comprising

a first base member of convolutely wound, substantially coplanar paper plies adhesively bonded into a substantially rigid laminate having a first supporting side edge and an oppositely disposed second side edge including first and second upwardly directed notches,

a second base member of convolutely wound, substantially

coplanar paper plies adhesively bonded into a substantially rigid laminate having a first supporting side edge including a downwardly directed notch removably retained within said first upwardly directed notch and a second oppositely spaced side edge providing a third upwardly directed notch,

said first and second base members removably joined by said first upwardly directed notch and said downwardly directed notch to form an X-shaped base sub-assembly supported by said first supporting side edges, and

a target of convolutely wound, substantially coplanar paper plies adhesively bonded into a substantially rigid laminate forming a predetermined target shape and having a supporting side edge removably engaged within said second and third upwardly directed notches to provide upstanding support for said target while permitting ready disassembly and re-assembly for replacing a worn-out target and transporting said target assembly.

25. A substantially non-shattering, non-splintering and non-ricocheting target assembly, comprising

a first U-shaped base member of convolutely wound, substantially co-planar paper plies adhesively bonded into a substantially rigid laminate having a first supporting side edge and a second oppositely spaced side edge providing a first upwardly directed notch,

a second U-shaped base member of convolutely wound, substantially co-planar paper plies adhesively bonded into a substantially rigid laminate having a first supporting side edge and a second oppositely spaced side edge providing a second upwardly directed notch, and

a U-shaped target of convolutely wound, substantially coplanar paper plies adhesively bonded into a substantially rigid laminate including a base portion providing a target face and first and second spaced leg portions vertically extending along said target face, a side edge of said U-shaped target removably retained within said first and second upwardly directed notches to provide upstanding support for said target while permitting ready disassembly and re-assembly for replacing a worn-out target and transporting said target assembly.

4,433,844

DRIVE MECHANISM FOR A VARIABLE SPEED GAMING DEVICE

Donald E. Hooker, Wilmette, and Roman A. Tojza, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Division of Ser. No. 136,818, Apr. 3, 1980, Pat. No. 4,373,727.

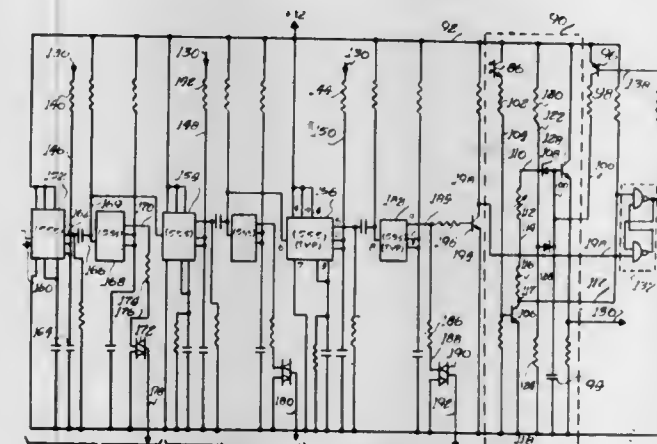
This application Jun. 4, 1982, Ser. No. 385,009

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R

8 Claims



1. A drive mechanism for actuating and rotating a rotatable shaft to which a toothed ratchet means is attached in response to movement of an operating handle through an operating stroke, comprising:

plate means that is movable from a rest position to an extended position;

pawl means pivotally carried by said plate means and being adapted to move from a rest position to engage the ratchet means for rotating the same during operation;

drive means operably connected to said pawl means and plate means and adapted to move said pawl means from a rest position and cause said pawl means to engage said ratchet means during a first interval of movement and to drivingly rotate said ratchet means and shaft during a further interval of movement, said drive means operating at a speed that is proportional to the strength of the electrical signal applied thereto;

circuit means for generating the electrical signals and applying the same to said drive means, the strength of the signals being proportional to the speed with which said operating handle is moved through its operating stroke.

4,433,845

INSULATED HONEYCOMB SEAL

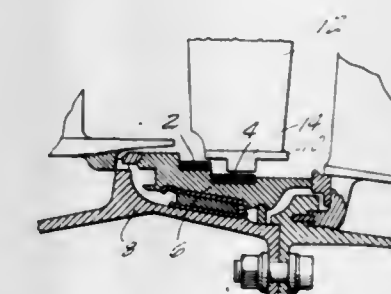
Lawrence T. Shlembob, Rocky Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 29, 1981, Ser. No. 306,838

Int. Cl.³ F16J 15/40

U.S. Cl. 277—1

6 Claims



1. In the manufacture of a seal for a row of turbine blades the steps of:

providing a honeycomb seal with the cells therein substantially radial;

closing the outer ends of the cells by a surrounding ring; and flame spraying an insulating material into the cells to fill at least partially the cells radially inward from the outer ends, the insulating material being clay particles with an alloy coating and

curing this material to the desired hardness by the heat of the flame spraying.

4,433,846

READILY REMOVABLE SHAFT SEAL INCLUDING VENTING TAB

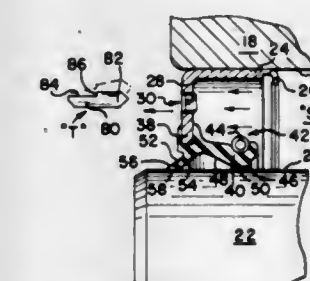
Richard A. Romero, and Michael J. Schmidt, both of Schaumburg, Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Apr. 20, 1983, Ser. No. 486,983

Int. Cl.³ F16J 15/16, 15/32

U.S. Cl. 277—9

12 Claims



1. A fluid seal for retaining lubricant within a sealed region

during relative movement of two machine members, said seal comprising, in combination, a relatively rigid casing portion adapted to be received in fluid tight relation with respect to the first of said two machine members, said casing including a mounting surface portion adapted for snug reception with respect to said first member, another, spaced apart bonding portion adapted to have a portion of an associated sealing lip body bonded thereto, and an intermediate casing portion extending between said mounting portion and said bonding portion, and an elastomeric primary sealing lip body having a frusto-conical surface generally directed towards said sealed region and a frusto-conical surface directed generally away from said sealed region, with said frusto-conical surfaces meeting along a generally circular or sinuous locus defining a seal band for intended engagement with part of the second of said machine members, said sealing lip body also having a bonding portion bonded to said bonding portion of said casing, with at least said intermediate portion of said casing having a cut through portion and at least part of a hinge portion combining to define at least a portion of the periphery of a predetermined tab area to provide a vent permitting passage of gas and vapor into and out of said sealed region, said tab area also being an area capable of removal or bending when engaged with a tool adapted to be used in removing said seal from said first machine member.

4,433,847

CONDUIT SEALING SYSTEM

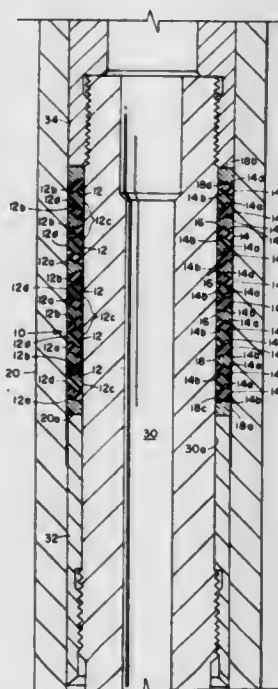
Roger A. Weinberg, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Mar. 25, 1982, Ser. No. 361,678

Int. Cl.³ F16J 15/12

U.S. Cl. 277—125

12 Claims



1. In a seal system mountable on a first conduit and sealingly engagable with a second conduit within a well bore for isolating an annular section between said conduits, the improvement comprising a plurality of axially spaced, annular, elastomeric sealing elements having a truncated pear-shaped cross-section with an inner peripheral surface of greater axial length than the outer peripheral surface and reversely curved side wall surfaces connecting said inner and outer peripheral surfaces, an annular bearing element formed of a relatively nonextrudable bearing material abutting each axial side of each said elastomeric sealing element with a correspondingly shaped reversely curved surface, and means for axially clamping all said sealing elements and retaining elements in assembly.

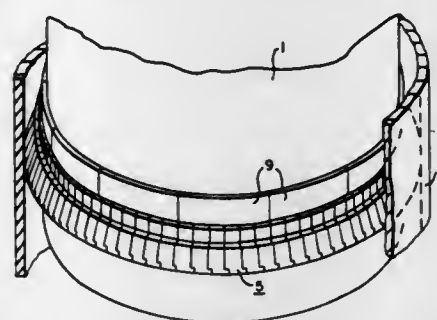
4,433,848
LARGE ANNULAR SEGMENTED SEAL WITH LOCK PORTIONS FOR MISSILE LAUNCH TUBE
W. Wayne Williams, Westwood, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 451,585

Int. Cl.³ F16J 15/10, 15/32; F41F 3/04

U.S. Cl. 277—199

5 Claims



1. A seal for a large annular opening, said seal comprising: a plurality of overlapping seal segments disposed in an annular array; each seal segment having a base portion, which fits a cylindrical surface, and a seal portion extending at such an angle to the base portion to form an acute angle with said base portion on a high pressure side of said seal segment; each seal portion having side margins with diagonally opposing steps, which overlap steps on adjacent seal portions; a plurality of seal portions disposed adjacent each other and having a bulbous distal end with an opening in the bulbous end which registers with adjacent openings; and an elongated member, which fits into said opening, to positively lock said bulbous ends together.

4,433,849
CONTROL CIRCUIT FOR A VEHICLE LEVELING SYSTEM

Taiji Ohmori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

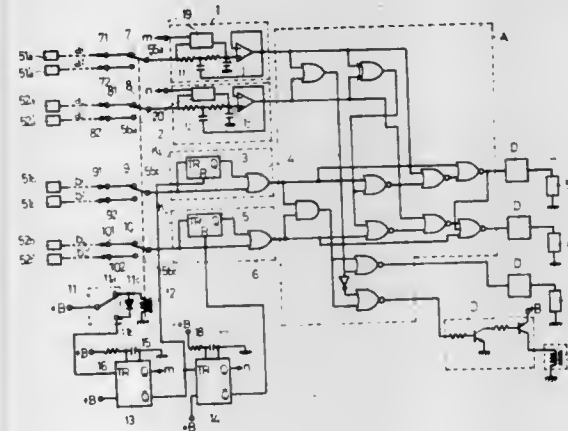
Filed Nov. 9, 1981, Ser. No. 319,471

Claims priority, application Japan, Nov. 13, 1980, 55-159864; Nov. 14, 1980, 55-160609

Int. Cl.³ B60G 17/00

U.S. Cl. 280—6 R

8 Claims



1. In a control circuit for a vehicle levelling system, including: detecting means for detecting a change in vehicle height with respect to a predetermined reference vehicle-height position and generating a pair of control signals consisting of a directional signal and a command signal, said directional signal indicating whether the direction of displacement is upward or downward and said command signal indicating whether the vehicle height adjustment is to be made or stopped;

control circuit means for controlling the operation of a mechanical system to adjust the vehicle height to said reference position according to said control signals; and a holding circuit which, when said command signal has changed from an adjustment-off signal to an adjustment-on signal, holds said adjustment-off signal for a certain period of time and then allows said adjustment-on signal to be transmitted to said control circuit, the improvement comprising:

said detecting means being constructed so as to detect change in vehicle height with respect to a plurality of different reference vehicle-height positions, each of said reference vehicle-height positions having a predetermined proper vehicle height range;

switching means for selecting any of said plurality of reference vehicle-height positions, said switching means being mounted at the input section of said control circuit means for controlling the operation of said mechanical system; and

a circuit for temporarily interrupting the function of said holding circuit at the time of operation of said switching means.

4,433,850

FRONT WHEEL SUSPENSION SYSTEM FOR MOTORCYCLES

Shinichi Miyakoshi, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

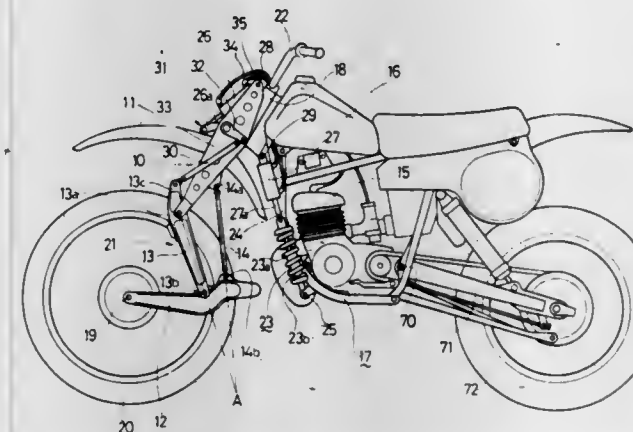
Filed Mar. 9, 1982, Ser. No. 356,362

Claims priority, application Japan, Mar. 10, 1981, 56-34421; Mar. 20, 1981, 56-40753

Int. Cl.³ B62K 25/12

U.S. Cl. 280—277

18 Claims



1. A front wheel suspension system for motorcycles, comprising:

a vehicle body frame;

an upper fork supported by said vehicle body frame;

a lower fork which supports a front wheel;

links connecting between said upper fork and said lower fork;

a shock absorber including at least a damper;

transmission system means for transmitting to said shock absorber a load applied from said front wheel to said lower fork and said links;

said shock absorber being fixed to said vehicle frame;

said load transmission system means for said shock absorber including a pressure fluid circuit, and said shock absorber being operated through a fluid pressure;

said fluid circuit comprising:

a first fluid pressure cylinder, said first cylinder having a first piston slidably disposed therein and being supported by said upper fork;

a second fluid pressure cylinder, said second cylinder having a second piston slidably disposed therein and being supported by said vehicle body frame;

pipe-line means connected between said first cylinder and

said second cylinder, the outside end of a piston rod of said first piston being connected at least operatively to said connecting links and the outside end of a piston rod of said second piston being connected to one end of said shock absorber;

said pipe-line means being disposed between said first cylinder and said second cylinder so that the movement of said first piston upon upward movement of said front wheel causes a compressing action in said shock absorber through an extruding action of said second piston of said second cylinder;

said first cylinder being pivotably connected at the upper end thereof to an upper portion of said upper fork; and the outer end of the piston rod of said first piston is connected to said connecting links through a linkage.

4,433,851

FRONT SUSPENSION SYSTEM FOR MOTORCYCLES

Shinichi Miyakoshi, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

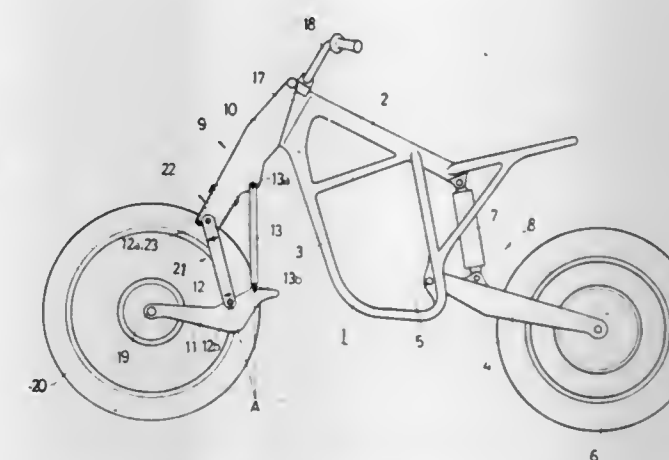
Filed Aug. 16, 1982, Ser. No. 408,286

Claims priority, application Japan, Aug. 17, 1981, 56-122104[U]

Int. Cl.³ B62K 25/12

U.S. Cl. 280—277

6 Claims



1. A front suspension system for a motorcycle, comprising: an upper fork member supported for pivotal steering motion by a vehicle body frame;

a lower fork member which supports a front wheel at one end thereof;

a link mechanism which pivotably suspends said lower fork member from said upper fork member; and

at least one pivotable-shaft actuated damper having a pivot shaft adapted to provide a pivotal reaction force proportional to a pivoted amount thereof in operative cooperation with said link mechanism, said pivotable-shaft actuated damper being disposed substantially entirely in the interior of said upper fork member.

4,433,852

FOLDABLE AND PORTABLE VEHICLE

David T. Hon, Los Angeles, Calif., assignor to Hon Corporation, Los Angeles, Calif.

Filed Feb. 12, 1981, Ser. No. 233,624

Int. Cl.³ B62K 15/00

U.S. Cl. 280—278

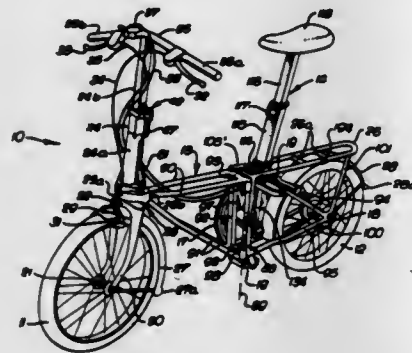
48 Claims

19. A foldable and portable vehicle having a folding frame comprising:

front and rear generally triangular frame sections disposed normally in end to end relation and joined together by a generally upright hinge for folding of said sections about an upright axis into side-by-side relation;

said front frame section having a generally flat and generally horizontal upper side, and a vertically compact front

wheel mount at the front end of said upper side substantially level with said upper side;
said rear frame section having an upright front side and a downwardly and rearwardly inclined rear upper side and a rear wheel mount at the rear end of said rear upper side, an elongated steering post normally disposed in an upright position above said front wheel mount, and having a lower end immediately above the front wheel mount, said steering post being joined at its upper end to a handlebar having laterally projecting opposite end portions;
hinge means pivotally supporting said steering post for downward swinging of said steering post and handlebar



about an axis extending along one side of said lower end of said steering post into a depending folded position in which the steering post and handlebar are offset laterally to one side of the front wheel mount with said steering post lower end substantially level with the front wheel mount and with said handlebar end portions extending generally front-to-rear relative to said front frame section on the side thereof for positioning between the planes of said front and rear frame sections when said sections are folded to side-by-side relation; and
means for latching said steering post releasably in the upright position.

4,433,853

CONVERTIBLE TRAILER HITCH

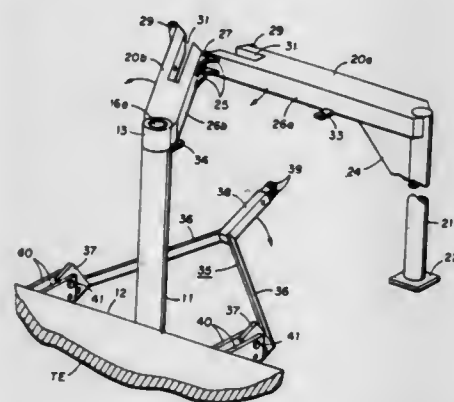
Dennis L. Swaim, Rte. #4, Box 323, Ottumwa, Iowa 25501

Filed May 21, 1982, Ser. No. 380,516

Int. Cl.³ B60D 1/00

U.S. Cl. 280—415 R

5 Claims



1. In a convertible trailer hitch including a gooseneck arm having first and second arm members, the second arm member extending transversely from adjacent one end of the first arm member, the two arm members lying in and partially bounding a first plane, the second arm member including means for pivotally attaching its end remote from the first arm member to a towing vehicle, the improvement comprising: first pivot means for pivoting the other end of the first arm member to a towed vehicle for swinging movement of the first arm member in a second plane transversely of the first plane; and a brace member having one end removably attached to the first arm member intermediate said ends thereof, the other end of the brace member including second pivot means for pivoting the

brace member to a trailer for swinging movement of at least a portion of the brace member in said first plane away from the first arm member when detached therefrom, said one end of the brace member including means for attaching the same to a towing vehicle in the vicinity of its rear bumper when the brace member is detached from the first arm member and swung as aforesaid, said other end of the brace member also including said means in conjunction with said second pivot means for rigidly attaching said other end of the brace member to a trailer when said one end of the brace member is attached to a towing vehicle as aforesaid.

4,433,854

INTERCHANGEABLE BALL HITCH

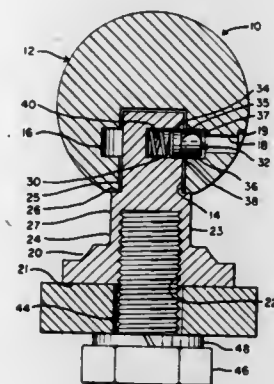
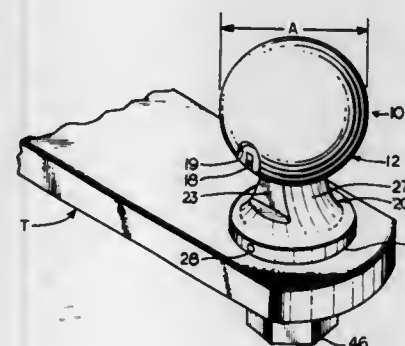
Jerry R. Smith, Littleton, Colo., assignor to Innovative Research, Littleton, Colo.

Filed Oct. 19, 1981, Ser. No. 312,247

Int. Cl.³ B60D 1/00

U.S. Cl. 280—511

12 Claims



1. Ball hitch apparatus, comprising:
a support base having a stub shaft extending upwardly therefrom;
a latch pin in said stub shaft adapted to protrude radially outwardly therefrom; and
a generally spherical body with a bore extending radially inward from its bottom peripheral surface, and a cavity recessed therein from the periphery of said radial bore and adapted to receive therein said latch pin when the stub shaft of said support base is inserted into said radial bore in said spherical body.

4,433,855

SNOW SKI

Paul R. Wyke, c/o Holmgren, 2809 "R" St. SE., Auburn, Wash. 98002

Continuation-in-part of Ser. No. 145,569, Jun. 6, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 299,883

Int. Cl.³ A63C 5/04

U.S. Cl. 280—609

14 Claims

1. A snow ski having essentially parallel lower side edges that bite into snow, and a running surface between said edges which has a transverse shape that changes gradually from the

front end of the running surface to the rear of the ski and which is transversely concave in the front and central regions of the ski, the concavity in said front and central regions being greatest at said front end and decreasing gradually rearwardly through said front and central regions in a manner that provides a low overall angle of attack and a smooth, almost tangential entry of the ski into snow to facilitate flow of snow



beneath the ski and move the center of lift rearward toward the skier, and said transverse shape further decreasing in concavity rearward of said central region toward the rear of the ski to gradually reduce resistance to sideways sliding and thereby facilitate sideways sliding at the rear of the ski; said edges and running surface permitting a skier to easily turn the ski by merely tilting it up on one of said edges.

4,433,856

SPRING SEAT FOR SNOWMOBILE STRUT

Kelsuke Yoshida, Cypress, Calif., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

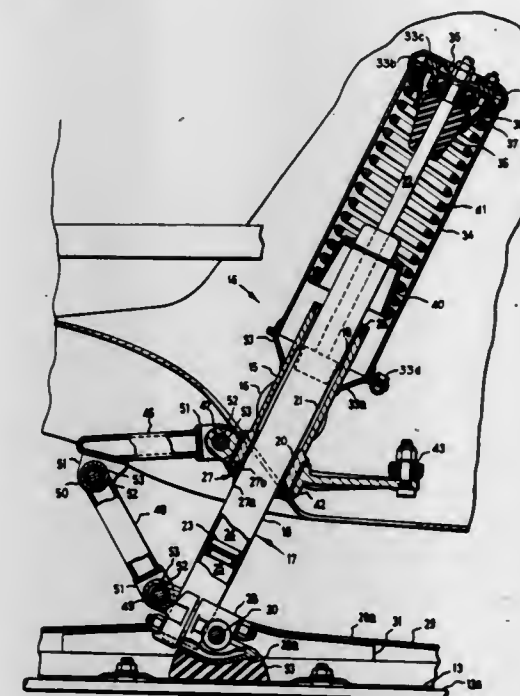
Continuation of Ser. No. 75,201, Sep. 12, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,811

Claims priority, application Japan, Sep. 29, 1978, 53-120620; Nov. 30, 1978, 53-148508

Int. Cl.³ B60G 25/00

U.S. Cl. 280—668

15 Claims



14. In a strut-type suspension for supporting part of the chassis of a vehicle, said suspension including a fixed tube mountable to said chassis, a bearing inside said fixed tube, a movable tube slidably mounted in said bearing, said movable tube and bearing having cylindrical engaging walls with respective axes, and being coaxial, said movable tube being slidably mounted in said bearing, the improvement comprising:

restraint means comprising a tubular member attached to said fixed tube and surrounding said movable tube above said fixed tube;
attachment means releasably attaching said restraint means to said fixed tube, said restraint means being structurally attached to said chassis only through said fixed tube; and
bias means opposed in compression between said movable tube and structure axially restrained with respect to said fixed tube.

4,433,857

VEHICLE WITH INDIVIDUALLY SUSPENDED WHEELS
Albert Zwilve, F. Clockstraat 68, 9665 BD Oude Pekela, Netherlands

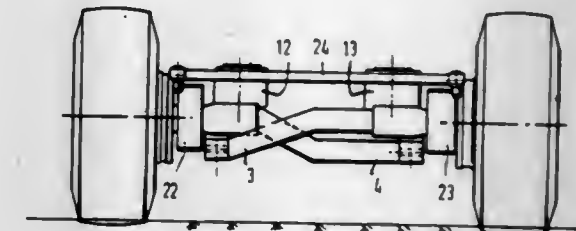
Filed Jul. 2, 1981, Ser. No. 279,851

Claims priority, application Netherlands, Jun. 22, 1981, 8103010

Int. Cl.³ B60G 3/00

U.S. Cl. 280—690

2 Claims



1. A vehicle comprising a wheel set including at least two wheels, and a chassis frame which, as viewed in the normal direction of travel, includes a left-hand and a right-hand longitudinal member, from each of which an individually sprung wheel of said wheel set is suspended, via an arm, in a first pivot joint, both the left-hand wheel and the right-hand wheel having extended stub axles, the extensions of which cross each other and are pivotally suspended from said chassis frame in a second pivot joint adjacent to the opposite wheel of the wheel set, characterized in that the first and second pivot joints associated with each wheel form a composite pivot joint consisting of two concentric component pivots rotatable one about the other, with each composite pivot joint being connected to the respective longitudinal frame member either direct or by means of a bracket.

4,433,858

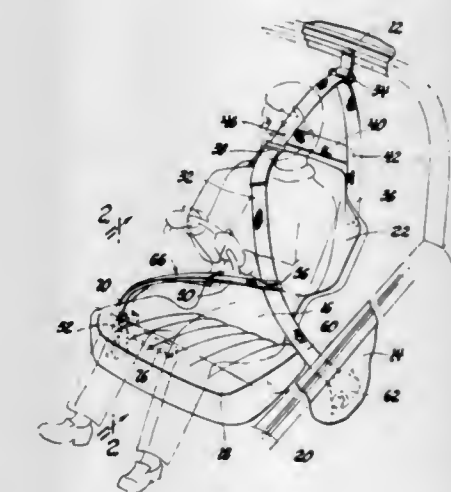
PASSIVE BELT RESPONSIVE TO SEAT OCCUPANCY
Edward F. Taylor, Farmington Hills, and James C. O'Kane, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1982, Ser. No. 349,620

Int. Cl.³ B60R 21/10

U.S. Cl. 280—802

1 Claim



1. A passive restraint belt system for restraining an occupant upon a resilient foam seat bottom cushion movable between a depressed state of the weight of an occupant seated thereon and an undepressed state and mounted in a motor vehicle body having a door hingedly mounted for movement between open and closed positions comprising:
a shoulder belt disposed diagonally across the seat when the door is closed to restrain the occupant upper torso;
a lap belt having an inboard end mounted on the vehicle

body inboard of the seat generally adjacent the occupant hip and an outboard end attached to the shoulder belt so that the lap belt crosses the occupant lower torso when the shoulder belt is disposed in the diagonal restraining position;

a belt control arm of generally C-shape having an upper tubular sheath enclosing the lap belt and a lower operating portion integral with the tubular sheath and embedded in the resilient foam cushion; and

pivot means mounting the control arm on the seat adjacent to the inboard occupant hip whereby the occupant weight depressing the resilient foam cushion depresses the operating portion and pivots the belt control arm about the pivot means to lower the lap belt to the normal restraining position when the seat is occupied, said resilient foam cushion being restored to the undepressed state upon removal of the occupant weight from the seat so that the operating portion of the control arm embedded in the resilient foam is raised to pivot the belt control arm about the pivot means and thereby raise the tubular sleeve portion so that the lap belt is raised when the seat is not occupied.

4,433,859

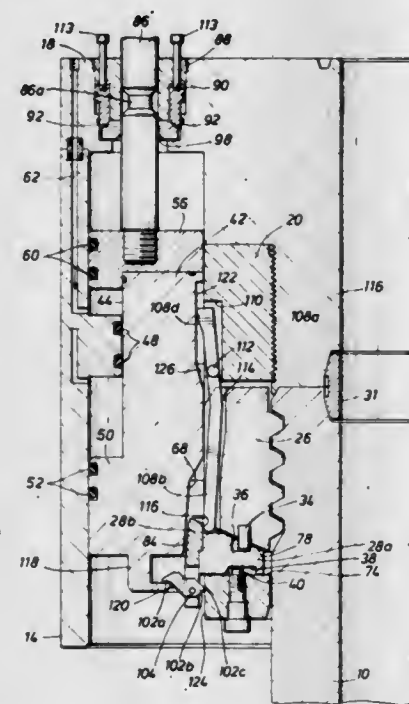
WELLHEAD CONNECTOR WITH RELEASE MECHANISM

Gary R. Driver, and Richard J. Herman, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jul. 16, 1981, Ser. No. 284,008

Int. Cl.³ F16L 37/08

U.S. Cl. 285—34



1. Apparatus for connecting a pair of tubular bodies in generally coaxial alignment, comprising:

a plurality of movable members carried by one of said bodies for generally radial extension and retraction with respect thereto;

drive means movably carried by said one body and operatively associated with said movable members, said drive means being operative, upon movement in a first direction, to radially extend said movable members;

and release means pivotally interengaged between said one body and said movable members when said movable members are so extended and operative, upon pivotal movement, to at least partially radially retract said movable members, said release means comprising a first set of levers each pivotally mounted on a respective one of said movable members and having a force-transmitting arm engagable with said one body and further having a force-receiving arm; and

said drive means further being engagable with said force

receiving arms and operative, upon movement in a second direction opposite to said first direction, to so pivotally move said first set of levers to at least partially radially retract said movable members.

4,433,860

ADJUSTABLE FLANGED FITTING FOR ROOF OPENINGS

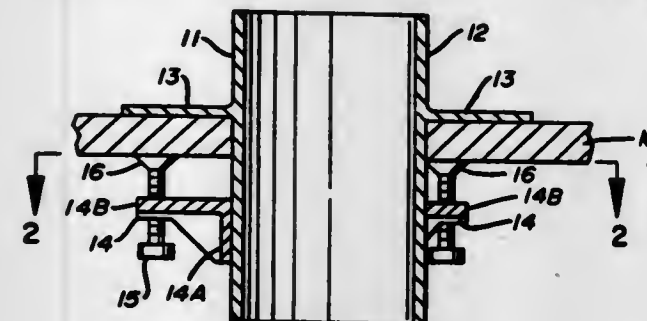
William W. Lindquist, 190 Clarencedale Ave., Youngstown, Ohio 44512

Filed Oct. 20, 1980, Ser. No. 198,770

Int. Cl.³ F16L 5/00

U.S. Cl. 285—192

4 Claims



1. An adjustable flanged drainage fitting for roof openings consisting of a vertically disposed tubular member having upper and lower ends and having an integral horizontal disposed outwardly extending annular flange thereon below the upper end thereof, a plurality of radially extending brackets and means attaching said brackets to said tubular member between said annular flange and the lower end of said tubular member, vertically disposed threaded openings in said radially extending brackets, said radially extending brackets arranged in circumferentially spaced relation to one another and in spaced relation to said annular flange, vertically disposed threaded bolts threadably engaged in said threaded openings in said brackets arranged for movement toward and away from said annular flange in a clamping-like action when rotated.

4,433,861

ARRANGEMENT FOR CONNECTING TWO PIPE ENDS

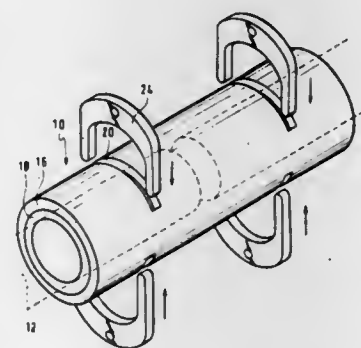
Stefan Kreczik, Neudeck 3, 7101 Langen-Brettach, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,962

Int. Cl.³ F16L 37/00, 21/02, 13/14, 55/00

U.S. Cl. 285—305

17 Claims



1. An arrangement for connecting two pipes which are insertable into one another with radial play and which are made of a material which is at least semi-rigid, characterized by two pipe ends of different diameter with the pipe end of smaller diameter inserted in the pipe end of larger diameter with a radial space between the two pipe ends, a packing sleeve arranged in said radial space between said two pipe ends and filling said radial space, the wall of the larger diameter pipe end having at least one radially outwardly open slot extending

transversely to the pipe axis, which slot extends around less than half of the circumference of said larger diameter pipe end, a groove defined internally of said larger pipe end and radially aligned with said slot, a generally horseshoe-shaped tension hoop associated with said slot and having legs extending into said groove, the thickness of said tension hoop in its axial extent corresponding to the axial width of said slot and which tension hoop is inserted in said radial space between said two pipe ends, and said tension hoop legs being inserted in said groove at least half of the circumference of the smaller diameter one of said pipe ends and sufficiently compressing said packing sleeve radially as so inserted to connect and axially retain said smaller diameter pipe relative to said larger diameter pipe.

4,433,862

PIPE JOINT

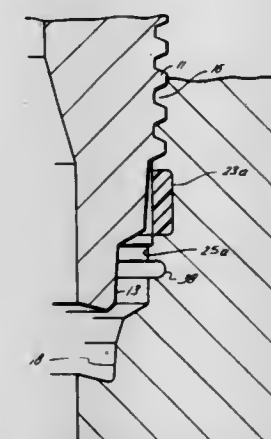
George M. Raulins, and George G. Grimmer, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 367,952, Apr. 13, 1982. This application Jan. 7, 1983, Ser. No. 456,526

Int. Cl.³ F16L 19/00, 25/00, 15/00

U.S. Cl. 285—350

20 Claims



1. A pipe joint comprising, a box having a tapered thread and an annular primary seal surface, an annular seal groove in the box at the last thread, an annular excess seal groove between the seal groove and primary seal surface, an annular secondary seal surface between said two grooves, a pipe having a tapered thread and an annular primary seal surface for sealing engagement with the primary seal surface of the box, said pipe thread extending into said seal groove when the pipe joint is fully made up, an annular secondary seal surface on said pipe between the thread and primary seal surface for engaging said secondary seal surface in the box prior to final make-up of the pipe joint, and an annular seal member of compressible material in said seal groove, said seal member originally of a volume in excess of the volume of the groove as defined by the pipe when the pipe joint is fully made up, said box and pipe threads preventing substantial extrusion of said seal therethrough, said seal during make-up being extruded past said secondary seal surfaces until said surfaces engage to provide a secondary seal and confine said seal for compression during final make-up of the pipe joint, said excess seal groove receiving at least a part of said extrusion to prevent it from reaching said primary seal surfaces.

4,433,863

POOL NOZZLE HEAD REMOVING AND REPLACING TOOL

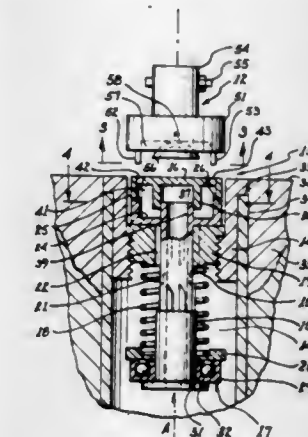
Lester R. Mathews, 9810 N. 37th St., Phoenix, Ariz. 85028, assignor to Lester R. Mathews; Lucien Warner and Water Circulation Patents, part interest to each

Filed Aug. 9, 1982, Ser. No. 406,757

Int. Cl.³ A47F 13/06

U.S. Cl. 294—19 R

2 Claims



1. A tool for removing a nozzle head having a substantially flat top surface from below the water level of a swimming pool in which said nozzle head is rotatably connected into a water supply receptacle and has spaced openings on the top surface thereof, said tool comprising a substantially cylindrical body with first and second ends, lugs projecting in the axial direction from the first end of said cylindrical body for engaging the corresponding spaced openings in said nozzle head, a vacuum cup made of resilient material disposed on the first end of said body between said lugs for attachment to said nozzle head when said body is pushed toward said nozzle head and said lugs are received in the openings in the top surface in said nozzle head, and an elongated handle attached to the second end of said body for rotating, lifting, and replacing said head.

4,433,864

CAN TOP LID HOLDER

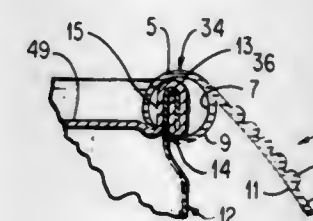
Franklin D. Byrd, 23 Elm St., Hinesville, Ga. 31313

Filed Aug. 18, 1982, Ser. No. 409,173

Int. Cl.³ A47J 45/00

U.S. Cl. 294—27 H

9 Claims



1. A device for holding a can with a top lip comprising: a. a structure that can be held by the user of said device; and b. a first holding area, with an inner area, the circumference of which is larger than the circumference of the cross-section of said top lip of said can, secured to said structure and operative to be secured onto said top lip of said can comprising: (1) a first outer gripping finger secured to said structure and operative to fit over said top lip and against the inner surface of said top lip, hooking over said top lip and down and against said inner surface of said top lip and operative to apply a securing force to said inner surface of said top lip when said device is utilized and

said top lip of said can is within said first holding area; and
 (2) a first inner gripping finger secured to said structure and operative to fit up, under, and against the bottom edge of said top lip, hooking under said bottom edge of said top lip and operative to apply an upward force to said bottom edge of said top lip when said device is raised vertically.

4,433,865

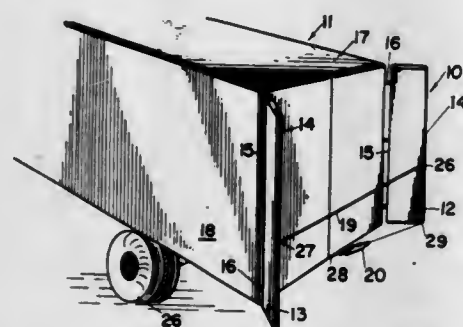
VEHICLE SWAY DAMPER

Edward E. Crompton, Jr., 906 W. Arlington Rd., Erie, Pa. 16509
 Filed Apr. 14, 1982, Ser. No. 368,146

Int. Cl.³ B62D 35/00

U.S. Cl. 296-1 S

11 Claims



1. A flap system for a vehicle comprising, a plurality of elongated plate-like flap members each having a first edge and a second edge, hinge means attached to said first edge of each said flap and adapted to swingably connect said flaps to a first side and a second side respectively of a vehicle, link means pivotally attached to said second edge of one said first flap and a second edge of said second flap, said link means being connected to said flaps and adapted to hold said first edges of said flaps in spaced relation to each other, means connected to at least one said flap at its second edge adapted to allow each said flap to swing freely in a first direction, and to restrain the swinging movement of each said flap in a second direction.

4,433,866

STRUCTURE FOR MOUNTING FUNCTIONAL PARTS ON A CLOSABLE MEMBER OF A VEHICLE

Taro Hagiwara, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

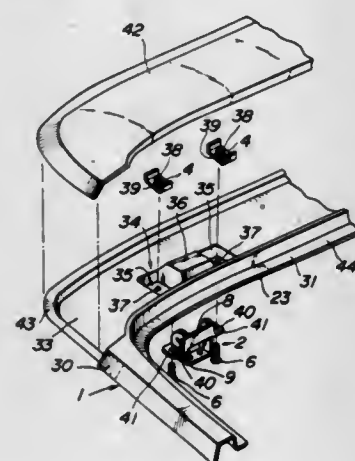
Filed Apr. 16, 1981, Ser. No. 254,789

Claims priority, application Japan, Apr. 17, 1980, 55-49534

Int. Cl.³ B62D 25/12, 27/00

U.S. Cl. 296-76

7 Claims



1. A structure for mounting functional parts on a closable member of a vehicle, wherein the closable member consists of

a sheet material and has a predetermined location to mount thereon the functional parts and is provided with a reinforcing member, said location being defined by an emboss which is recessed from the general surface of the closable member toward the rear side thereof, the reinforcing member being provided on the outer surface of the emboss and the functional parts being mounted on the rear surface of the emboss, the closable member on the outer surface side of the emboss being provided with a cover member which completely covers the emboss and is coplanar with the general surface of the closable member, said reinforcing member being secured to the outer surface of the emboss by adhesive material, said functional parts being connected tightly with the reinforcing member by bolts and nuts, and said nuts being welded to one of the reinforcing member and the functional parts.

4,433,867

ROOF RAIL MOLDING MEMBER

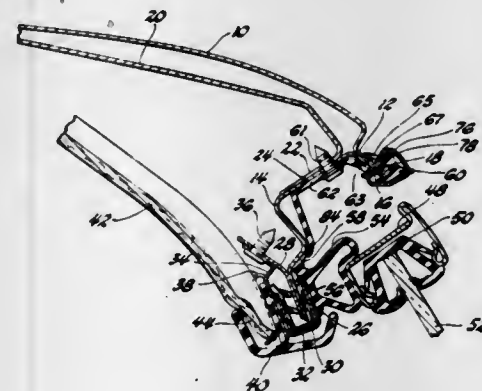
William H. Perry, Rochester; David C. Stewart, Farmington Hills, and Geoffrey Waterworth, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1981, Ser. No. 314,559

Int. Cl.³ B60J 5/04

U.S. Cl. 296-146

3 Claims



1. A roof rail molding for a vehicle body having a roof rail extending longitudinally above a door opening and having a flange pinch-welded to a juxtaposed flange of the roof outer panel, and a resilient compressible sealing strip suitably secured to the vehicle body inboard of the door opening for sealing engagement by a hinged door and having a sealing leg for sealing engagement with the roof rail, said molding comprising:

a plastic molding attached to the roof rail and facing downwardly to define the top edge of the door opening, said molding having an outboard edge portion defining a recess by which the molding is installed over the pinch-weld flange and defining a sealant cavity, said molding further having an inboard edge portion adapted to continuously overlie a portion of the sealing strip leg.

4,433,868

CAB FOR WALK-BEHIND TRACTOR

Lynn E. Hochwitz, Sheboygan Falls; Daniel W. Schaefer, Port Washington, and Michael L. Dawson, West Bend, all of Wis., assignors to Simplicity Manufacturing, Inc., Port Washington, Wis.

Filed Dec. 31, 1981, Ser. No. 336,330

Int. Cl.³ B62D 39/00

U.S. Cl. 296-190

7 Claims

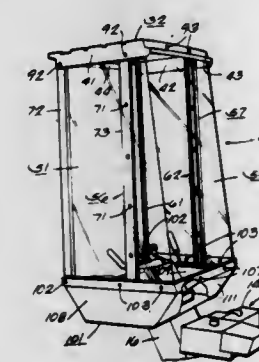
1. A cab for a walk-behind tractor that has a substantially upright handlebar support from the top of which handlebars project rearwardly and to opposite sides, said cab being characterized by:

A. A shroud member having

(1) a substantially U-shaped bottom wall with

(a) a front portion which can extend laterally across the handlebar support in front of the same and

- (b) opposite side portions that project rearward from said front portion to be disposed at opposite sides of the handlebar support,
 (2) a front wall projecting upward from the front edge of said front portion of the bottom wall, and
 (3) a pair of opposite upwardly projecting side walls, each extending rearward from an end of said front wall and all along an outer edge of one of said side portions of the bottom wall;
 B. A pair of elongated clamping members, each projecting laterally inwardly from one of said side walls and each having clamping means at an inner end thereof for securement to one of the handlebars;
 C. A pair of elongated brace legs, each having a first connection at an upper end thereof to said front wall and projecting



- obliquely rearward and downward therefrom to have a second connection at its other end to the handlebar support, said legs being laterally spaced apart to have their said second connections at opposite sides of the handlebar support;
 D. A pair of transparent side panels, each connected near a lower edge thereof with one of said side walls of the shroud member and projecting upward therefrom;
 E. A transparent front panel connected near a lower edge thereof with said front wall of the shroud member; and
 F. A top having
 (1) a downwardly projecting front edge connected with an upper edge portion of said front panel, and
 (2) a pair of opposite downwardly projecting side edges, each connected with an upper edge of one of said side panels.

4,433,869

BABY WALKER

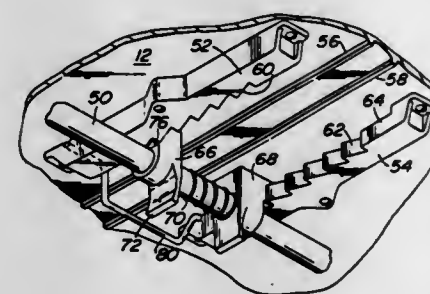
Rex E. Payne, Jr., Elverson, and Ronald R. Hoffman, Morgantown, both of Pa., assignors to Dawn Designs, Inc., Elverson, Pa.

Filed Dec. 15, 1980, Ser. No. 216,593

Int. Cl.³ A47D 13/04; A61H 3/04; A63C 3/04

U.S. Cl. 297-5

10 Claims



1. A baby walker comprising a tray and seat adjustable as a unit vertically with respect to a base by connecting means extending therebetween, at least one rack fixedly mounted to a bottom surface of said tray, said rack having teeth, a pawl slideably supported with respect to said connecting means adjacent said rack, said pawl having at least one tooth spring biased into meshing contact with at least one tooth on said rack, said meshed teeth being shaped so that said tray and seat

can be elevated with respect to said base by applying only an upward force on the tray.

4,433,870

COLLAPSIBLE SPORTSMAN'S STOOL

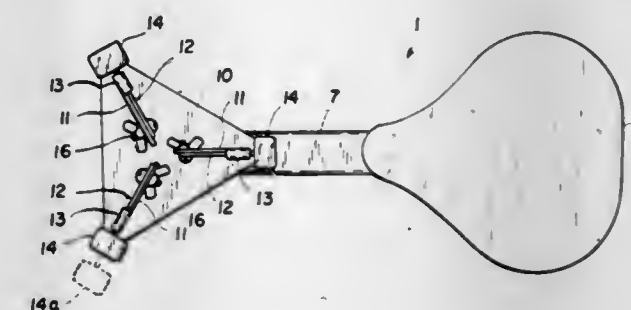
Donald J. Bairn, 856 McLaughlin Rd., and Thomas M. Lucas, 725 Chartiers St. (rear), both of Bridgeville, Pa. 15017

Filed May 29, 1981, Ser. No. 268,564

Int. Cl.³ A47C 4/00

U.S. Cl. 297-16

1 Claim



1. A collapsible stool for sportsmen and the like comprising telescoping tubes having adjusting means for selectively adjusting the amount of extension and height of said tubes, a stool pivotally connected at the top end of one of said tubes and collapsible so as to be positioned alongside said tubes, a base connected at the bottom end of the other of said tubes, pivotal means for pivoting and collapsing said base so as to extend alongside the bottom portion of said tubes, said base including a platform to prevent sinking of said tubes into wet ground, runner-like strips integrally depending vertically from the bottom surface of said platform and having bottom intumed flanges adjustable runner-like strip extensions having lengths comparable to the length of said strips and being slidably mounted on said flanges and alongside said strips to facilitate sliding or sinking in mud to allow said base to lie on the ground surface, and foot pads depending from the extremities of said extensions to adjust the length of said extensions to provide a firm support for said platform.

4,433,871

MACHINE FOR CUTTING CURBSTONES, SIDEWALLS AND THE LIKE

Rene Bertrand, 648 Lasalle, St. Jean, Quebec, Canada J3B 2R2

Filed Jun. 17, 1982, Ser. No. 389,572

Int. Cl.³ E01C 23/09

U.S. Cl. 299-41

15 Claims



1. A machine including a powered truck-like vehicle having a support base at the rear and an apparatus mounted thereon for cutting a drive-in passage across a concrete curbstone, a sidewalk or the like, said apparatus comprising:

two spaced parallel booms mounted at one end on said base and an elongated bridge structure extending between said booms perpendicularly thereto and connected to said booms for displacement therealong relative to said one

end of said booms, and means for displacing said structure along said booms;
 means pivoting said booms and bridge structure together from an inoperative position where said bridge structure stands above said support base to an operative position where said booms and bridge structure are swung outwardly of said support base for cutting a curbstone, sidewalk or the like;
 a carrier having a concrete-cutting rotary saw thereon for rotation about an axis generally normal to said carrier, and means mounting said saw on said carrier;
 means mounting said carrier on said bridge structure for displacement thereof in a first direction along one face of said bridge structure, and means for displacing said carrier in said first direction;
 means on said carrier mounting means, for displacing said carrier in a second direction perpendicular to said first direction;
 whereby, with said apparatus in said operative position, said rotary saw is advanced first in said second direction through said curbstone, sidewalk or the like, and then in said first direction to cut an elongated slot determining the longitudinal extent of said drive-in passage, wherein said bridge structure has a central section and, at either end thereof, a terminal section; means pivotally mounting said terminal sections at the ends of said central section and means pivoting said terminal sections upwardly with respect to said central section selectively to place said terminal sections at an incline suitable to displace the said carriage and saw along a slope corresponding to said incline for cutting said curbstone, sidewalk or the like whereby to produce terminal inclined extents for said drive-in passage, said inclined extents joining said longitudinal extent.

4,433,872

PRESSURE MODIFIED BRAKE ACTUATING PRESSURE PROPORTIONER

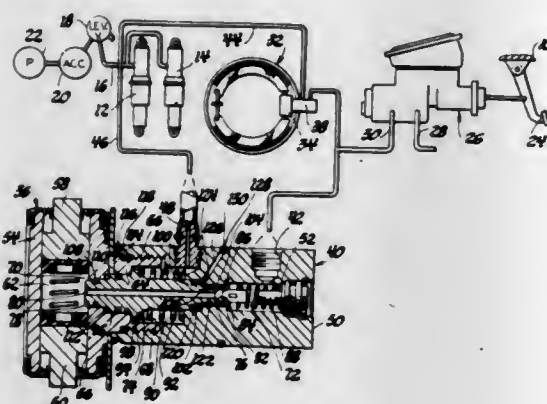
Donald L. Parker, Middletown, and Hubert Hogg, Hamilton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1981, Ser. No. 319,685

Int. Cl.³ B60T 8/22

U.S. Cl. 303—22 A

2 Claims



1. In a hydraulic brake pressure proportioner having a housing with a bore therein, a brake pressure inlet and a brake pressure outlet respectively communicating with opposite ends of said bore, a differential area proportioner piston reciprocally received in said bore, and spring means urging said piston in a non-proportioning direction and yielding under sufficient outlet brake pressure acting on said proportioner piston to permit piston proportioning action to proportion outlet brake pressure relative to inlet brake pressure, the improvement comprising:

a fluid pressure chamber positioned in said housing between said inlet and said outlet and defined by a part of said bore and a part of said piston, said piston having an effective piston differential area exposed to variable fluid pressure in said chamber to generate a force variable with said

variable fluid pressure and acting with said spring means on said piston to increase the outlet brake pressure value at which said piston proportioning action can begin in accordance with the increase in fluid pressure in said chamber; first and second vent means in said housing respectively between said chamber and said brake pressure inlet and said chamber and said brake pressure outlet;
 and sealing means sealing said piston relative to said bore on each side of each of said first and second vent means;
 said sealing means and said vent means assuring the venting of any fluid from said fluid pressure chamber or said brake pressure inlet or said brake pressure outlet and effectively preventing the mixture of any brake pressure fluid with any variable pressure chamber fluid.

4,433,873

CONTROL VALVE ASSEMBLY

Glyn P. R. Farr, Warwick, Great Britain, assignor to Lucas Industries Limited, Birmingham, England

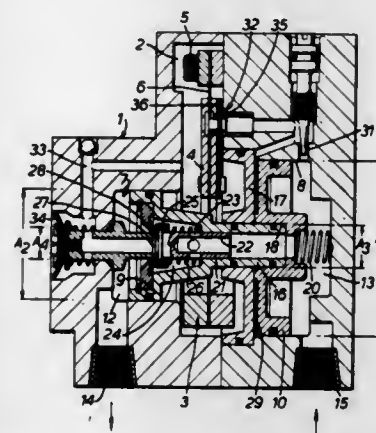
Filed Aug. 31, 1981, Ser. No. 298,191

Claims priority, application United Kingdom, Aug. 29, 1980, 8028069

Int. Cl.³ B60T 8/16

U.S. Cl. 303—24 A

9 Claims



1. A brake pressure control valve for location between a source of brake actuating fluid and the wheel brakes of a vehicle to control the fluid pressure applied to said wheel brakes during brake application, the control valve comprising: an inlet chamber the pressure within which is under driver control; an outlet chamber connected to said wheel brakes; control piston means exposed to the pressures prevailing in said inlet chamber and said outlet chamber respectively; an auxiliary control chamber bounded on one side by said control piston means; a source of operating fluid connected at all times during brake application to said auxiliary control chamber; and deceleration responsive vent valve means for controlling the venting of the auxiliary chamber to establish therein a working pressure dependent on vehicle deceleration, said vent valve means including a fixed vent valve seat and a deceleration responsive member which, upon sensed deceleration, engages the vent valve seat to close the vent valve means thereby allowing pressure within the auxiliary control chamber to increase until such pressure acting over the area of the vent valve seat overcomes the force with which the deceleration responsive member is urged by the sensed deceleration against the vent valve seat.

4,433,874

CRAWLER SHOE HAVING WORK-HARDENED PIN-RECEIVING HOLE

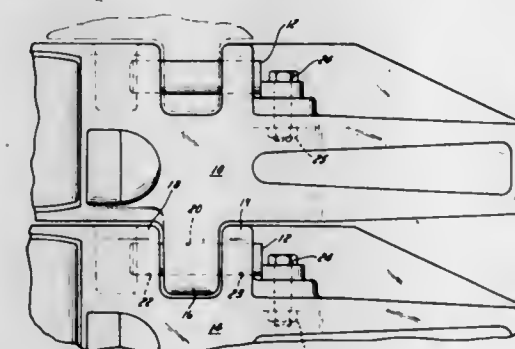
Raymond C. Melvin, Elm Grove, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Feb. 11, 1982, Ser. No. 347,897

Int. Cl.³ B62D 55/20

U.S. Cl. 305—53

1 Claim



1. As an article of manufacture:

a crawler shoe for a mining shovel or the like, said shoe having an outer surface and having a portion in which a cylindrical hole is provided for receiving a pin which pivotally connects the shoe to an adjacent shoe, said shoe being fabricated of work-hardenable Hadfield-manganese steel alloy, said outer surface of said shoe being work-hardenable, and the wall of said hole being work-hardened by rolling a rotatable member thereagainst so that the steel alloy defining and adjacent the hole is compressed to a predetermined depth on the order of one-tenth of an inch and to a predetermined degree of hardness on the order of 45 on the Rockwell "C" hardness scale from an initial untreated degree of hardness on the order of 23 on the Rockwell "C" hardness scale.

4,433,875

TORQUE TRANSMITTING BEARING AND METHOD OF ASSEMBLY

Lothar Walter, Schweinfurt; Manfred Brandenstein, Eussenheim; Horst M. Ernst, Eltingshausen, and Armin Olschewski, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

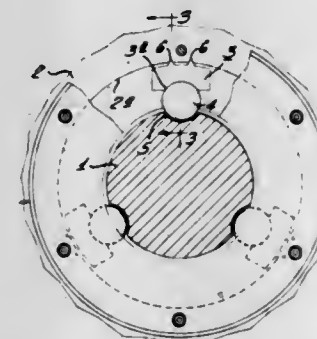
Filed Aug. 16, 1982, Ser. No. 408,440

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 8124026[U]

Int. Cl.³ F16C 29/04

U.S. Cl. 308—6 R

3 Claims



1. Torque transmitting bearing assembly comprising a shaft member mounted for axial movement in the bore of a housing, a plurality of rolling elements in the annular space between the shaft member and housing bore, said shaft member having an axially extending inner raceway groove for the rolling elements and a bearing race plate engageable between the rolling elements and the bore of the housing and having an axial groove defining the outer raceway for the rolling elements and

at least a pair of radial projections disposed on opposite sides of a radial plane through the center of said axial groove and each projection having a longitudinally extending knife-like edge confronting the housing bore extending in the direction of said axial groove and engageable in the bore surface to align the bearing race plate and to fix the same in a radial and peripheral direction so that torque can be transmitted in either direction upon relative rotation of said shaft and housing, said projections comprising a plurality of sections longitudinally spaced apart, the sections increasing in radial height from one end of said plate to the opposite end thereof.

4,433,876

ROLLING BEARING FOR LINEAR MOTION

Tatsuo Mottate, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

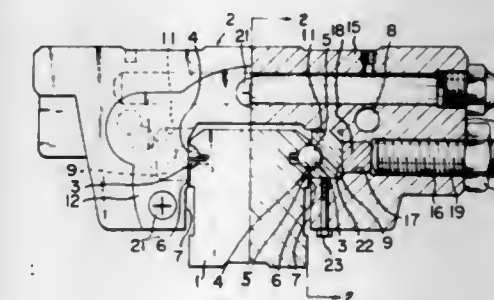
Filed Aug. 20, 1981, Ser. No. 294,766

Claims priority, application Japan, Mar. 12, 1981, 56-35816; Apr. 14, 1981, 56-53509

Int. Cl.³ F16C 29/06

U.S. Cl. 308—6 C

6 Claims



3. A rolling bearing for linear motion wherein a slide unit is mounted on a track rail, track plates having track surfaces facing track surfaces on both sides of the track rail are fitted symmetrically left and right at channel shaped inside surfaces of said slide unit, and the slide unit is capable of making a linear motion against the track rail through rolling bodies mounted between the track surface of said track plate and the track surface of said track rail, characterized in that:

on said track rail side, there are provided in the horizontal direction at the vertical left and right outside surfaces, a pair of track surfaces where a group of balls roll, while, on the slide unit side where it faces said track surfaces, at the vertical left and right inside surfaces there are provided in the horizontal direction a pair of track surfaces where the group of balls roll, said both track surfaces are constructed respectively by an upper half track surface and a lower half track surface, said track surfaces of said track rail and of said slide unit make contacts with the ball only at respective contact points of slide unit upper contact point which is located at the upper half track surface of the track surface of the slide unit and of track rail lower contact point which is located at the lower half track surface of the track surface of the track rail, both being symmetric each other to the center of the ball, and of slide unit lower contact point which is located at the lower half track surface of the track surface of the slide unit and of track rail upper contact point which is located at the upper half track surface of the track surface of the track rail, both being symmetric each other to the center of the ball, the track surfaces of said track rail and said slide unit are constructed so that said slide unit upper contact point and said track rail lower contact point are located symmetrically to the center of the ball with an angle less than 45° from the vertical plane passing through the center of the ball, and also said slide unit lower contact point and said track rail upper contact point are located symmetrically to the center of the ball with an angle more than 45° from the vertical plane passing through the center of the ball, at least one of the track plates of said slide unit is fitted onto the slide unit main body so that it can advance

or retract against the corresponding track surface of the track rail, a threaded hole passes through on the slide unit main body from the outer surface towards said track plate, the end of a preload bolt screwed in said threaded hole makes contact with a plug fitted slidably in the axial direction of said threaded hole, and that said plug is caused to make pressure contact at its plane of end face with a similar plane at the back portion of the track surface.

4,433,877

SUPPORT ASSEMBLY FOR VEHICLE WHEELS

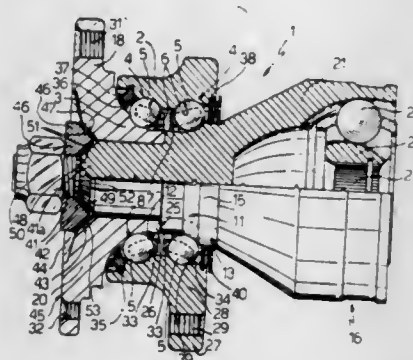
Franco Colanzi, Turin, Italy, assignor to RIV-SKF Officine Di Villar Perosa SpA, Turin, Italy

Filed Feb. 18, 1982, Ser. No. 349,703

Claims priority, application Italy, Feb. 27, 1981, 67267 A/81
Int. Cl.³ F16C 19/08, 33/60; F16D 1/06

U.S. Cl. 308—191

11 Claims



1. A support assembly (1) for a vehicle drive wheel, comprising a dual track inner race provided with a removable inner race end section (3) which has a support flange (18) for said wheel and one annular track for a set of rolling bodies, a dual track outer race (2) facing the inner race and provided with a flange (27) adapted to engage an upright of a suspension for said wheel, a set of rolling bodies (4, 5) in each track, the rolling bodies of each set supported in place by an annular spacer cage disposed between said two races (23), the tracks (6, 8) of said races being longitudinally offset to accommodate both axial and radial loads, said removable inner race end section (3) being mounted on an element (21) which transmits motion to said wheel, the element having a journal section (15) with an end cylindrical surface (56) arranged to support a corresponding inner surface of the removable inner race end section (3) and a locking ring assembly (46, 50) for holding the removable inner race end section immovably in position on the journal, the outer end surfaces (42, 43) of the removable inner race end section (3) and the journal section (15) having gripping elements, and the locking ring assembly having interfitting elements (51) for simultaneously engaging the gripping elements of both the removable inner race end section and the journal whereby the removable inner race end section (3) can be readily installed and removed and held immovably in position on the journal by the locking ring assembly after mounting.

4,433,878

SELF-ALIGNING BEARING ASSEMBLY

Ben J. Rosenthal, Wilmette, Ill., assignor to Rosenthal Manufacturing Co., Inc., Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 428,370

Int. Cl.³ F16C 13/00, 35/00; F16J 1/14

U.S. Cl. 308—203

7 Claims

1. A self-aligning bearing assembly for engaging, supporting, and permitting the free rotation of, the end of a load bearing shaft, said self-aligning bearing assembly comprising:
a sub-base having a top and a bottom;
a supporting sub-assembly being located above said sub-base, said supporting sub-assembly having a base and

roller means for supporting the end of said load bearing shaft and permitting the free rotation thereof;
alignment means operatively engaging and disposed between the top of said sub-base and the base of said supporting sub-assembly for directly transferring the load supported by said supporting sub-assembly to said sub-base while permitting said supporting sub-assembly to tilt in relation to said sub-base;

said alignment means comprising a pair of parallel, juxtaposed channels, the first one of said channels located in the base of said supporting sub-assembly and having its axis normal to the axis of said load bearing shaft, and the



second one of said channels located in the top of said sub-base, and an alignment shaft located within and between said channels; and
said alignment means further comprising at least two stabilizing members, said stabilizing members fixedly attached to said base of said supporting sub-assembly, one each of said stabilizing members attached to said base on each side of said channels, each of said stabilizing members further having damping means for operatively connecting each of said stabilizing members to said sub-base whereby tilting of the supporting sub-assembly in relation to said sub-base is damped.

4,433,879

ADJUSTABLE EXTENSION-CAM SHIM

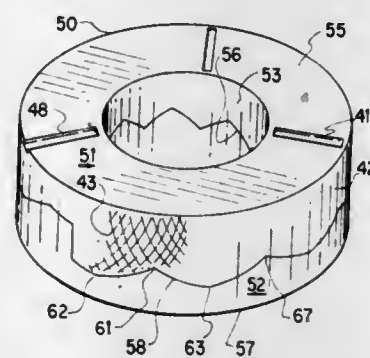
James C. Morris, 9860 Ravenna Rd., Twinsburg, Ohio 44087

Filed Apr. 2, 1981, Ser. No. 250,320

Int. Cl.³ F16C 33/00; F16B 41/00

U.S. Cl. 308—244

1 Claim



1. A shim comprising a first cam axially longitudinally inter-fitted with a second cam, said first cam having an end with a planar surface and an oppositely disposed end having a serrated helical surface, said second cam having an end with a planar surface and an oppositely disposed end having a serrated helical surface, at least one ramp in serrated helical surface of each cam, said ramp comprising plural, stepped circumferential serrations provided in said ramp, said serrations being in vertically stepped relationship one with another and terminating in a wall demarcating the highest serration from the lowest in said helical surface, said serrations of said first cam being complementarily interfitted with said serrations of said second cam, at least one surface of at least one cam having at least one adjustment means thereon, both said first and second cam having an axial bore hole and terminating in a relief at said planar surface of said cams, said cams being loosely coupled by a shaft having a flanged portion at each end, said shaft being

shorter in length than the minimum thickness of said shim with said serrated surfaces in full engagement, and said reliefs being deep enough to allow said first cam and said second cam to be separated sufficiently to allow adjustment to the maximum thickness of said shim.

4,433,880

FREE STANDING MODULAR UNIT FOR STORING, DISPLAYING, AND SELLING MERCHANDISE

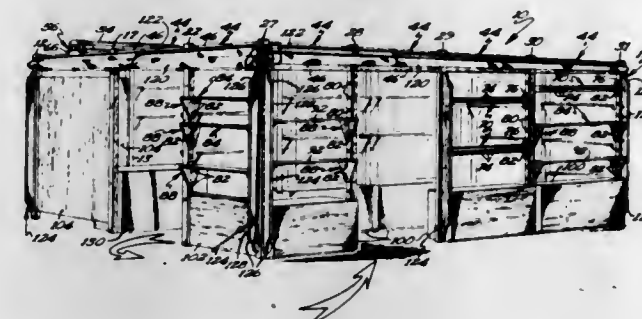
William S. Maravelas, Jr., Maple Grove; Alexandria D. Bighley, Arden Hills, and Marco A. Calabrese, Minneapolis, all of Minn., assignors to Deck the Halls, Inc., Roseville, Minn.

Filed Sep. 20, 1982, Ser. No. 420,421

Int. Cl.³ A47F 3/14

U.S. Cl. 312—3

11 Claims



1. Free standing modular unit for storing, displaying, and selling merchandise comprising, in combination: a plurality of elongated posts having top ends and bottom ends, with some of the posts being perimeter posts and some of the posts being interior posts, with some of the perimeter posts being corner posts; a plurality of members for separating and connecting the posts, with the post separation and connector members having first and second ends; means for providing visually hidden locking between the ends of the post separation and connector members and the elongated posts adjacent their top ends without the use of tools, with the visually hidden locking means comprising at least a first hook extending from either the end of the post separation and connector member or the post adjacent the top end and a complementary aperture formed in the other of the separation and connector member or the post for receipt of and interlocking with the hook; a generally open ceiling which allows water to pass therethrough, which presents an aesthetic appearance, and which can be assembled in the modular unit without the use of tools comprising: lattice grids formed of intersecting elongated strips having free ends, and with the post separation and connector members including lips for receipt of and supporting the free ends of the intersecting elongated strips forming the lattice grids; means for selectively closing the perimeter surface of the modular unit without requiring fire doors or draft curtains comprising: flexible coverings formed of non-combustible or fire treated materials; and means for rolling and unrolling the covering from an unrolled positioned closing the perimeter surface of the modular unit to a rolled position adjacent the top ends of the elongated perimeter posts; merchandise storing, displaying and holding members; means for attaching the merchandise storing, displaying and holding members to the posts comprising: apertures formed in the elongated posts between their top and bottom ends; apertures formed in the merchandise storing, displaying, and holding members; and dowels having a size and length for passing through the apertures of the merchandise storing, displaying, and holding members and into the apertures of the elongated posts to interlock the merchandise storing, displaying and holding members to the elongated posts; with at least two adjacent perimeter posts having a unit access opening; means for preventing the coverings from damaging the merchandise storing, displaying and holding members and the merchandise located thereon comprising perimeter edge extenders located at least on the corner posts of the unit having top and bottom cam contoured edges and an elongated side for engaging with the covering in its unrolled position; and the posts, the post separation and connector members, the inter-

4,433,881

CONNECTING MECHANISM FOR WORD PROCESSOR-CONTROLLED PRINTER OUTPUT MODULE CABINETS

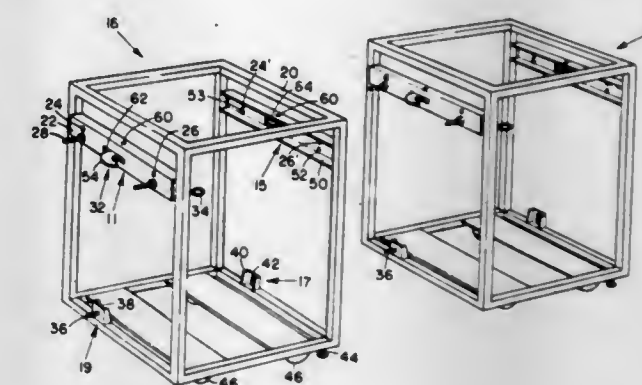
Franklyn H. Witten, and Sherman S. Kline, both of San Antonio, Tex., assignors to Datapoint Corporation, San Antonio, Tex.

Filed Nov. 16, 1981, Ser. No. 321,807

Int. Cl.³ A47B 81/00

U.S. Cl. 312—107.5

3 Claims



1. A connecting and aligning mechanism for a word processor-controlled printer having output module cabinets with facing adjacent wall members comprising:

first positioning means mounted on a first portion of said facing adjacent wall members of output module cabinets comprising a docking channel member mounted on a first modular cabinet and having laterally spaced first and second male aligning members, and a second docking channel member mounted on a second modular cabinet and having laterally spaced first and second female aligning apertures for mating with said first and second male aligning members for connecting the output module cabinets;

a latching pin mounted in said first docking channel member; a latching member including a spring biased rotatable hook means mounted in said second docking channel member for engaging said latching pin; and

second positioning means mounted on a second portion of said facing adjacent wall members of said output modular cabinets vertically spaced from the first portion comprising a male positioner mounted on said first modular cabinet and a female positioner mounted on said second modular cabinet.

4,433,882

MODULAR, STACKABLE, SUSPENDABLE DRAWER CABINET

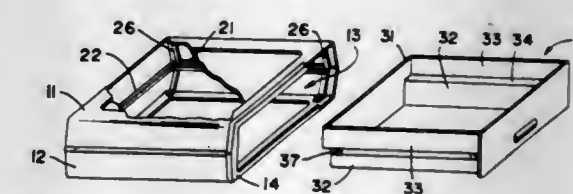
George L. Brown, 419 E. N St., Benicia, Calif. 94510

Filed Mar. 26, 1982, Ser. No. 362,552

Int. Cl.³ F16B 12/00; A47B 88/00

U.S. Cl. 312—111

9 Claims



1. A modular drawer cabinet adapted for vertically stacked assembly, comprising a thin, non-load-bearing cabinet shell defining a generally rectangular, hollow, closed solid having

one open end and four vertically extending vertices, a drawer disposed within said cabinet, means for supporting said drawer in translatable fashion from said open end of said cabinet, means for transferring the weight load of said drawer and its contents directly to adjacent stacked modular drawer cabinets, said last mentioned means including a plurality of corner braces, each extending generally vertically within said cabinet and disposed in one of said vertices, means for connecting the corner braces of vertically adjacent modular drawer cabinets without applying said weight loads to the respective cabinets, said means for supporting said drawer including drawer track means disposed within said cabinet and supported by said corner braces.

4,433,883

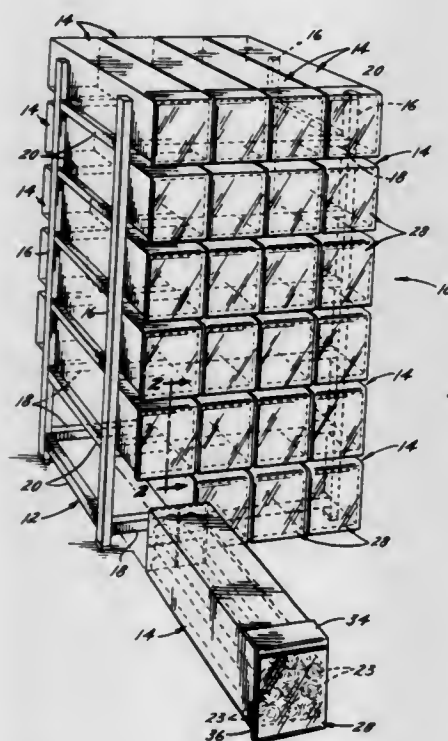
STORAGE AND DISPLAY SYSTEM FOR ROLLS OF DECORATIVE WALL COVERING

Carl H. Boender, Lansing, Ill., and Roger M. Zigterman, Highland, Ind., assignors to Wallpapers Galore, Inc., Hammond, Ind.

Filed Oct. 22, 1981, Ser. No. 313,650
Int. Cl.³ A47B 47/00; G09F 3/00

U.S. Cl. 312-234.1

3 Claims



1. A storage and display system for holding rolls of decorative wall coverings and the like comprising, in combination:

- (a) a support frame having vertical members at its corners, and horizontal members at its front, rear and sides to define a plurality of shelves;
- (b) a row of bins on each shelf, each bin comprising a horizontally elongated parallelepiped made from corrugated cardboard and having a substantially rectangular cross-section and opening at its front end, each bin being placed across the shelves so that the vertical walls of adjacent bins and the vertical members of the support frame are in close, side-by-side relationship so as to support the contents of each bin; and
- (c) a flap sized to cover the opening at the front of the bin and hingedly attached to the outside of the top near the front of each bin so that gravity causes the flaps to overlie the opening of its bin, said flap having a clear pocket on its outer surface open along its upper edge so that a sample of the wall covering stored within each bin can be displayed therefrom.

4,433,884 WORK SURFACE SUPPORT SYSTEM

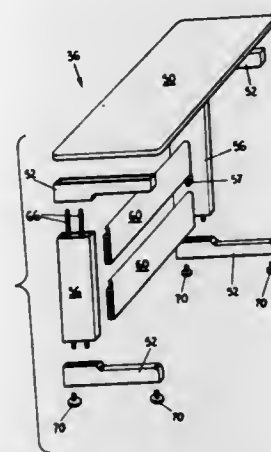
Thomas M. Edwards, Wyoming; James O. Kelley, Spring Lake, and Michael D. Beard, Hudsonville, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Aug. 10, 1981, Ser. No. 291,770

Int. Cl.³ A47B 91/00

U.S. Cl. 312-256

18 Claims



16. An assembly for supporting a work surface comprising: a hollow vertical leg having an elongated rectangular horizontal cross-section which is uniform in dimensions throughout the length thereof;
- a first hollow bracket member including an extension arm disposed generally perpendicular to the longitudinal axis of said leg for mounting to an underside of a work surface and a base portion collinearly arranged with said leg for mounting to said vertical leg, a bottom surface of said base being congruent with an upper edge of said hollow vertical leg;
- a second hollow bracket having an upper surface portion of a shape congruent with said rectangular cross-section of said hollow vertical leg, said upper surface portion being in contact with a lower edge of said hollow leg; and
- means extending from said first bracket to said second bracket through said hollow leg for securing said vertical leg to said first and second bracket members.

4,433,885

LAZY SUSAN ASSEMBLY HAVING A ROTATIONAL AND VERTICAL ADJUSTMENT MECHANISM

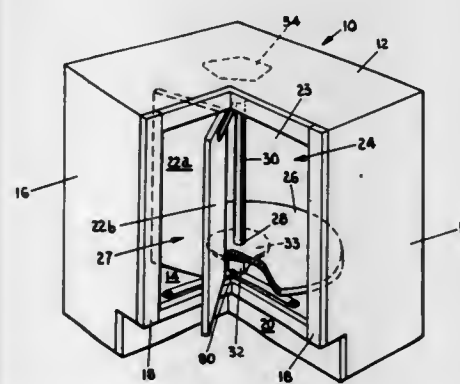
Clayton C. Baker, Belding, Mich., assignor to Leslie Metal Arts Company, Grand Rapids, Mich.

Filed May 22, 1981, Ser. No. 266,381

Int. Cl.³ A47B 81/00; A47F 3/10

U.S. Cl. 312-305

26 Claims



1. In a rotary catch mechanism for a shaft supported in a housing by bearings for rotation about a vertical axis, said mechanism including: a cam having a notch in a peripheral surface thereof and mounted for rotation with said shaft;
- a follower including means selectively received in said notch

for maintaining said shaft in a selected at rest rotary position relative to said housing;

the position of said follower being adjustable with respect to said housing; and

means for adjusting the selected at-rest rotary position of said shaft relative to said housing;

the improvement in said shaft-adjusting means which comprises:

mounting means for pivotably mounting said follower to said housing for pivoting movement about an eccentric axis;

wherein pivoting of said follower about said eccentric axis adjusts the angular position of the follower with respect to said housing, thereby changing the selected at-rest rotary position of said shaft relative to the housing.

4,433,886

CONNECTOR MOUNTING FOR INTEGRATED CIRCUIT CHIP PACKAGES

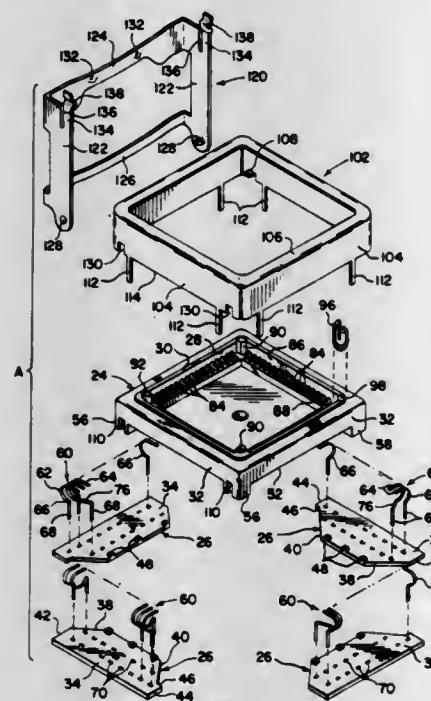
James W. Cassarly; Robert W. Rollings, both of Huntingdon, and Frank C. Youngfleish, Pennsylvania Furnace, all of Pa., assignors to Elco Corporation, El Segundo, Calif.

Filed Dec. 17, 1981, Ser. No. 331,619

Int. Cl.³ H01R 23/70

U.S. Cl. 339-14 R

27 Claims



1. A connector mounting for an integrated circuit chip package having a plurality of electrical circuit contacts around the periphery of the underside of the terminal board thereof and a centrally located heat sink mounted on and upstanding from the upper side of the terminal board and overlying a substantial portion of the surface area thereof, said mounting comprising a plastic housing having an upwardly opening housing recess in its upper side defined by vertical inner side walls of said housing and a horizontal bottom wall, said recess conforming to the outer configuration of said terminal board and adapted to receive and position said chip package in said recess with its said circuit contacts facing downwardly, a plurality of electrical contact members secured in said housing within respective cavities therein and having flexible spring contact arm portions extending laterally inward through window openings in said housing recess side walls and into and exposed within the housing recess, said contact members also having rigid contact pin portions projecting downwardly in parallel relation from the bottom side of said housing, and a clamp member mounted on said housing and engaging and clamping said chip package in said housing recess with the said circuit contacts of said package pressed against and in electrical contact with the said spring contact arm portions of respective ones of said contact members, said clamp member comprising a frame member including a pair of elongated parallel side wall members joined

together approximately at their opposite ends by a pair of parallel narrow transverse tie strap members, said side wall members being located entirely outward of said housing and extending closely alongside opposite outer sides thereof and defining with said tie strap members an unobstructed opening therebetween exposing substantially the entire upper side of said chip package, except for the relatively narrow band portions thereof covered at the opposite ends of the chip package by the said tie strap members, for the accommodation within said opening of the said upstanding heat sink on said chip package.

4,433,887

ADJUSTABLE AND READILY SOLDERABLE SHEET-LIKE CONNECTORS

Ryoichi Sado, and Kazutoki Tahara, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 189,326, Sep. 22, 1980,

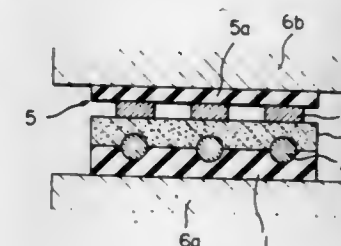
abandoned. This application Sep. 30, 1982, Ser. No. 432,063

Claims priority, application Japan, Oct. 4, 1979, 54-137749

Int. Cl.³ H01R 7/02

U.S. Cl. 339-17 R

9 Claims



1. An adjustable and readily solderable sheet-like connector which comprises:

- (a) a sheet-like body made of an electrically insulating elastic material,
- (b) a plurality of wires made of a plastically deformable soft metal or alloy susceptible to soldering provided as integrally bonded to the sheet-like body in a planar arrangement running substantially in parallel with each other, at least part of the surface of each of the wires being not embedded in the sheet-like body forming a set of parallel electroconductive paths on the surface of the sheet-like body, and
- (c) a soldering layer at least partly covering the surfaces of the wires at the portions not embedded in the sheet-like body which is made of a composite material composed of a matrix of a plastically flowable material and particles or chopped fibers of a solder alloy dispersed therein.

4,433,888

PRINTED CIRCUIT EDGEBOARD CONNECTOR WITH MULTI-FUNCTION LOCK

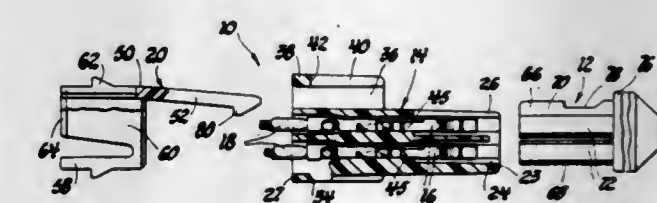
James L. Winger, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 6, 1982, Ser. No. 395,503

Int. Cl.³ H01R 23/56

U.S. Cl. 339-91 R

2 Claims



1. A printed circuit edgeboard connector comprising: a connector body having two rows of terminal cavities, lateral slot means at one end of the connector body disposed

between the two rows of terminal cavities and communicating with the cavities in each row, said lateral slot means extending through a side wall of the connector body, a pair of parallel slots in an opposite end of the connector at the outer ends of the respective rows of terminal cavities, said parallel slots extending through a side wall of the connector body and communicating with a transverse slot outside the side wall formed by a shroud at the opposite end of the connector body, and a multi-function lock comprising a U-shaped body and a flexible lock arm integrally attached to a center leg of the U-shaped body, said multi-function lock being disposed in the parallel and transverse slots so that the flexible lock arm projects out of said shroud alongside the one end of the connector body and overlies the lateral slot means extending through the side wall of the connector body.

4,433,889

ELECTRICAL CONNECTOR HAVING A MOISTURE SEAL

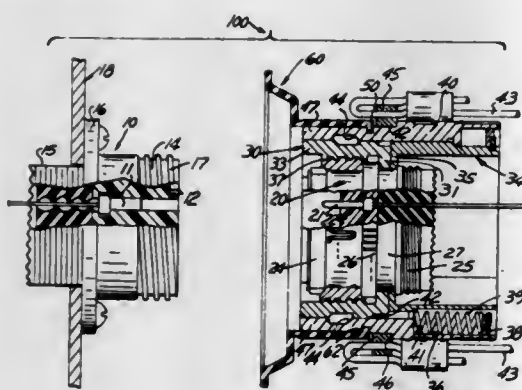
Lloyd G. Ratchford, Oneonta; Dee A. Werth, Afton; Vincent A. Luca, Jr., and Alan L. Schildkraut, both of Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1981, Ser. No. 334,866

Int. Cl.³ H01R 13/52

U.S. Cl. 339-94 M

6 Claims



1. A releasing electrical connector having a moisture seal, the releasing electrical connector including a pair of connector members (10, 20) with each having, respectively, a forward end portion (14, 24), a duality of electrical contacts (11, 21) carried by said connector members and forming an electrical interconnection, and means (30, 34, 40, 39, 37, 17) for releasably coupling the connector members, one of the connector members (10) being mounted in a panel (18) and having its forward end portion (14) extending therefrom and mated with the forward end portion (24) of the other connector member (20), the releasable coupling means including an operating sleeve (40) disposed about the mated end portions (14, 24), said moisture seal characterized by:

said operating sleeve (40) having an annular cavity (50) disposed in the outer surface thereof; and a resilient seal member (60) including a tubular portion (66), a collapsible cup portion (64), and a hinge-like connection therebetween defined by each said portion having an end portion (71, 73) of reduced thickness being connected together, said cup portion including a foot portion (67) having a substantially flat forward end face (61) and said cup portion being disposed around the mated end portions (14, 24) such that said forward end face (61) thereof is compressed against the panel (18), said tubular portion (66) being arranged snugly about the forward end portion of the operating sleeve (40) and having a radially inwardly directed annular shoulder (62) disposed within said annular cavity (50) in said operating sleeve (40), said foot portion (67) further having a chamfered end face (63) extending from said flat end face (61) with said end faces (61, 63) being adapted to flatten against the panel (18), said

connector members being coupled together causing the cup (64) to collapse about the panel (18) and the second end face (63) to flatten against the panel.

4,433,890

CONNECTORS FOR FLEXIBLE PRINTED CIRCUITS AND METHOD THEREFOR

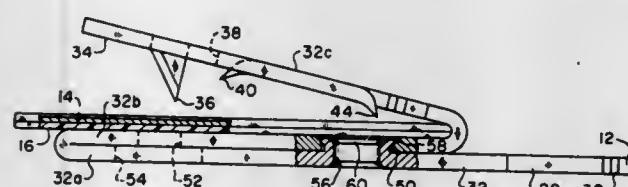
Vincent E. Marino, 7 Jacqueline Ct., Port Jefferson Station, N.Y. 11776; Robert J. Nicola, 107 Atlantic Ave., West Sayville, N.Y. 11796; Karl Maier, 29 Eva La., Farmingville, N.Y. 11738, and Richard W. Stockinger, 790 Sycamore Ave., Bohemia, N.Y. 11716

Filed Jul. 6, 1981, Ser. No. 280,941

Int. Cl.³ H01R 4/10, 43/04

U.S. Cl. 339-97 C

10 Claims



1. In an electrical connector, a one-piece continuous body bent lengthwise upon itself to form three overlying electrically connected surfaces at least two of which have a space therebetween to receive an elongated electrical conductor therein and between said two surfaces and the third of which has fastener means inseparably connecting the same in overlying relation to one of said two surfaces,

knife-shaped piercing means having a lengthwise dimension greater than its widthwise dimension on and extending lengthwise in the direction of one of said two surfaces for piercing through the electrical conductor in the direction of the elongation thereof to leave the width thereof substantially undisturbed to make positive electrical connection therewith and bendable into locking cooperation with another of said two surfaces to retain said two surfaces secured together in positive electrical contact with the electric conductor engaged therebetween when the space between said two surfaces is closed,

and tab means on said third surface to enable the completion of an electrical circuit with the electrical conductor through said body.

4,433,891

SUPPORT FOR CURRENT CARRYING MEMBER

George D. Gregory, Isla Verde, P.R. assignor to Challenger Caribbean Corporation, Canovanas; Challenger Products Corporation, Rio Piedras, both of, P.R. and Commander Electrical Equipment, Inc., Scarborough, Canada

Filed Mar. 11, 1982, Ser. No. 357,007

Int. Cl.³ H01C 3/08

U.S. Cl. 339-217 R

7 Claims



1. In combination, a molded plastic housing having internal and peripheral portions set apart by a separation wall of said housing, said wall being provided with a horizontal slot therein, said

peripheral portion being provided with two opposing walls extending from said separation wall, one of said opposing walls being provided with a vertical groove from the top thereof to a horizontal plane, said horizontal plane being oriented just below the bottom of said horizontal slot, the other of said opposing walls being provided with a first vertical groove from the top thereof to said horizontal plane and with a second vertical groove from the bottom thereof to a location level with the bottom of said slot; and

a support for insertion into said grooves of said opposing walls including a metallic sheet having an oval hole therein, a single tab extending outward from said sheet along a first direction so as to be engageable with said vertical groove of said one opposing wall, and two additional spaced apart tabs extending outwardly from said sheet along a direction opposite to said first direction so as to be engageable with said vertical grooves of said other of said opposing walls.

4,433,893

PROCESS FOR PRODUCING HOLOGRAMS

Masazi Yokota, and Masaru Noguchi, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Asaka, Japan

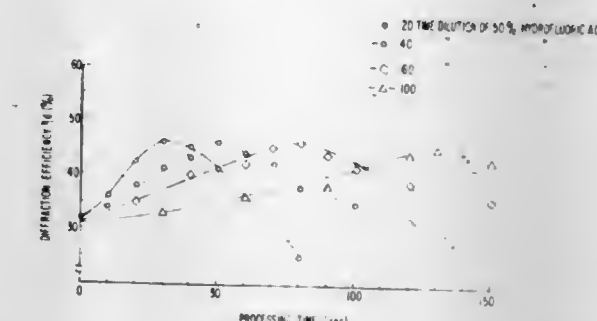
Filed Jan. 12, 1982, Ser. No. 338,940

Claims priority, application Japan, Jan. 12, 1981, 56-2904

Int. Cl.³ G03H 1/22

U.S. Cl. 350-3.61

2 Claims



1. In a process for producing glass holograms having an uneven surface, the improvement wherein a surface of said glass holograms is subjected to a surface treatment with hydrofluoric acid.

4,433,894

METHOD AND APPARATUS FOR GENERATING OPTICAL SCANS

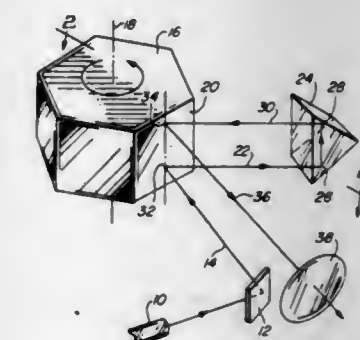
Derald F. Hanson, and Randy J. Sherman, both of Phoenix, Ariz., assignors to Lincoln Laser Company, Phoenix, Ariz.

Filed Nov. 12, 1981, Ser. No. 320,331

Int. Cl.³ G02B 27/17

U.S. Cl. 350-6.8

10 Claims



1. A method for generating an optical output beam which repetitively scans a fixed straight path on a target by utilizing a rotating polygon mirror including a plurality of mirror facets, wherein the vertical angle of the mirror facets varies and defines a facet to axis error for each mirror facet, said method comprising the steps of:

- directing an input beam of collimated light onto the facets of the rotating polygon mirror along a first path lying within a plane oriented perpendicular to the rotational axis of said mirror to produce a first scanned reflected output beam as each facet of said polygon mirror is rotated past the input light beam;
- generating a second scanned reflected output beam by redirecting the first scanned reflected output beam through a prism and back onto said mirror facet along a second path, the second path being vertically displaced from the first path by a distance related to the facet to axis error, each point at which the second scanned reflected output beam intercepts said mirror facet being laterally offset from a corresponding point at which the input beam intercepts said mirror facet by a distance related to the facet to axis error wherein the hypotenuse facet of said prism is oriented parallel to the rotational axis of said mirror and wherein the roof edge of said prism lies within

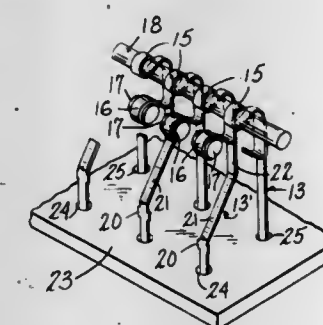
4,433,892
TERMINAL STRIP WITH AUXILIARY SUPPORT
Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corp., Flushing, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,970

Int. Cl.³ H01R 9/09

U.S. Cl. 339-258 P

2 Claims



2. A strip of interconnected edge clips for attachment to contact pads on a circuit-bearing chip, comprising: a plurality of edge clips each having a free end and a stem end, the stem ends of the clips being connected with a carrier strip;

a pair of spaced spring fingers on the free end of each clip for receiving an edge of the circuit-bearing chip therebetween; and

an elongate auxiliary support strand extending past the free ends of the plurality of clips and being secured to the free end of each clip to provide auxiliary support for the clips; one of the spring fingers of each clip being crimped to the auxiliary support strand, and said one spring finger having a notch therein defining a fracture line, whereby the finger may be broken to release the support strand after the clip is attached to a circuit-bearing board.

a plane positioned between the first and second scanned reflected output beams and oriented perpendicular to the rotational axis of said mirror;

- c. generating a third scanned reflected output beam by reflecting the second scanned reflected output beam from said mirror facet, wherein the plurality of third scanned reflected output beams generated by the sequentially rotated facets of said polygon mirror are scanned through parallel, non-coincident paths; and
- d. converging the plurality of third scanned reflected output beams onto the fixed straight path such that the optical output signal repetitively scans the fixed path to thereby eliminate all facet to axis errors for said polygon mirror.

4,433,895

INTEGRATED OPTICAL STRUCTURE WITH VELOCITY MATCHED DIRECTIONAL COUPLING

Claude Puech; Michel Papuchon, and Hervé Arditty, all of Paris, France, assignors to Thomson-CSF, Paris, France

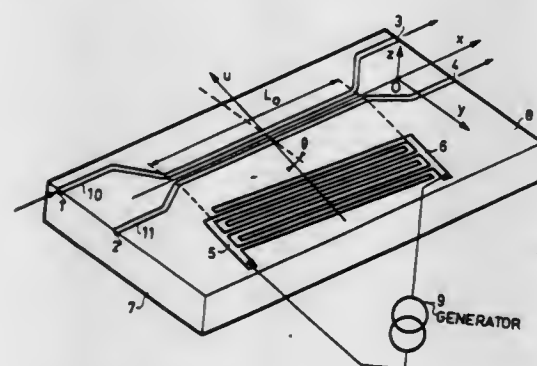
Filed Aug. 20, 1981, Ser. No. 294,557

Claims priority, application France, Aug. 29, 1980, 80 18772

Int. Cl.³ G02B 5/174

U.S. Cl. 350—96.13

15 Claims



1. An integrated optical structure with velocity matched directional coupling comprising:
- a substrate,
 - two optical waveguides on the surface of said substrate providing an exchange of energy over a predetermined coupling distance, and
 - an electromechanical transducer emitting a progressive, elastic surface wave inducing the synchronous propagation of an index disturbance accompanying the guided photons,
- the obliquity of wavefronts reaching said waveguides being adjusted so that synchronous propagation is achieved between said guided photons and said index disturbance.

4,433,896

COAXIAL OPTICAL FIBER CONNECTOR

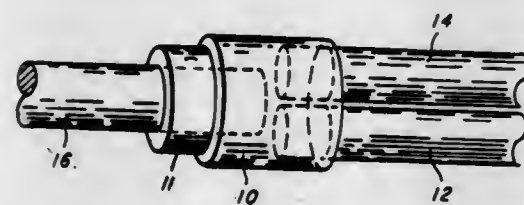
Gary A. Frazier, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 5, 1981, Ser. No. 308,346

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21

8 Claims



1. A fiber optic coupler for coupling two mutually isolated fibers to a union fiber, comprising:
- a female element generally shaped as a cylindrical shell, said female element comprising an inside diameter which is

equal to twice the diameter of one of said mutually isolated fibers, plus clearance; and

- a male element shaped generally as a cylindrical shell, said male element having an inside diameter which is equal to the diameter of said union fiber plus clearance, and said male element having an outside diameter which is approximately equal to the inside diameter of said female element.

4,433,897

LENS SUPPORTING ASSEMBLY

Masaaki Kojima, Tokyo; Takayuki Suzuki, and Hiromichi Abe, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

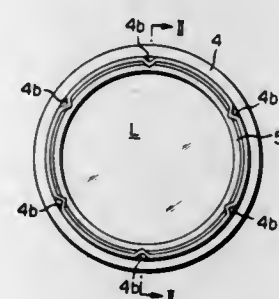
Filed Jul. 27, 1981, Ser. No. 287,106

Claims priority, application Japan, Aug. 8, 1980, 55/108205

Int. Cl.³ G02B 7/02

U.S. Cl. 350—252

7 Claims



1. An optical lens supporting assembly comprising a support frame having a cylindrical containing section and an internally projecting flange at one end of the containing section, an optical lens fitting in the containing section and having one surface bearing against said flange, a lens keep ring member fitting in the containing section and having one end face bearing against the peripheral edge of the opposite surface of the lens for holding the lens between the flange and said one end face, and means providing an even number of calking projections bearing against the opposite end face of the ring member for holding the ring member against the lens, said even number of calking projections being circumferentially spaced around the containing section at mutually opposed positions and at equal angular intervals with respect to the optical center of the lens.

4,433,898

FIBER OPTIC ASSEMBLY FOR COUPLING AN OPTICAL FIBER AND A LIGHT SOURCE

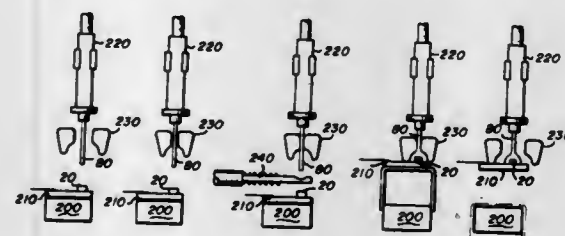
Saeed Nasiri, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 22, 1980, Ser. No. 219,076

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.17

15 Claims



1. A method for heat molding a plastic optical fiber to a light source having a light emitting surface and mounted to a base, the method comprising the steps of:
- heating the light source;
 - heating one end of the plastic optical fiber;
 - aligning the heated one end of the plastic optical fiber with the heated light source;

abutting the heated one end of the plastic optical fiber against the heated light source to encapsulate the light emitting surface of the light source in plastic optical fiber; and

cooling the plastic optical fiber and the light source.

4,433,899

REAR VIEW MIRROR FOR DROP TYPE BICYCLE HANDLE BARS

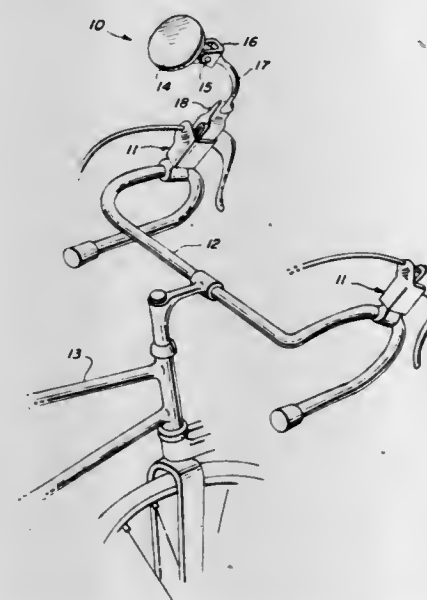
Frederick Sellet, 546 94th St., Brooklyn, N.Y. 11209; Guerino F. George, 7803 14th Ave., Brooklyn, N.Y. 11228, and Thomas S. Abbondante, 1052 62nd St., Brooklyn, N.Y. 11219

Filed Sep. 28, 1981, Ser. No. 306,084

Int. Cl.³ G02B 7/18

U.S. Cl. 350—307

1 Claim



1. In combination, a hand brake and a rear view mirror for drop type bicycle bars, the hand brake being supported from the hand bar in upstanding orientation and comprising a resilient rubber boot surrounding an internal brake mechanism, said rear view mirror comprising a mirror pivoted on a pin supported in a bracket affixed to an arcuately curved stem, an inverted U-shaped clip member depending from and supporting the lower end of the stem and having a pair of spaced apart parallel bifurcated legs insertable into said hand brake to straddle the brake mechanism and be securely retained between said boot and brake mechanism, said mirror being pivotable between a forward and rearward facing direction, whereby said rear view mirror can be utilized on right or left hand brakes.

4,433,900

PERMANENT DISPLAY LIQUID CRYSTAL DEVICE VIA VOLTAGE APPLICATION

Nobuyuki Sekimura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,312

Claims priority, application Japan, Sep. 25, 1980, 55-134109; Sep. 25, 1980, 55-134110; Sep. 26, 1980, 55-133736; Sep. 26, 1980, 55-133738; Sep. 26, 1980, 55-133739

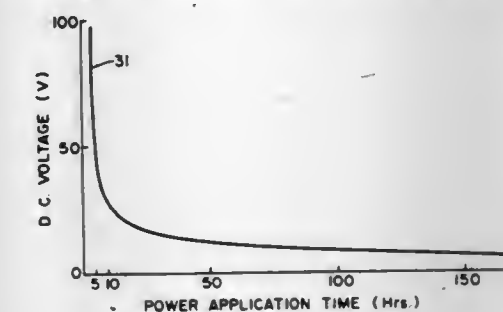
Int. Cl.³ G02F 1/137, 1/133

U.S. Cl. 350—331 R

39 Claims

1. A liquid crystal display device having a layer of liquid crystals sandwiched between a pair of substrates of which at least one substrate is transparent, characterized in that the

liquid crystal display device comprises a fixed display pattern formed by applying an effective voltage of at least about 3



volts D.C. or 10 volts A.C. for at least about 5 hours to provide a permanent orientation of said layer of said liquid crystals.

4,433,901

ALL SOLID TYPE ELECTROCHROMIC DISPLAY ELEMENT

Yosuke Takahashi, Sagami-hara; Hideki Akasaka, Yokohama; Toshikatsu Kasui, Tokyo; Tatsuo Niwa, and Tsunao Sukegawa, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

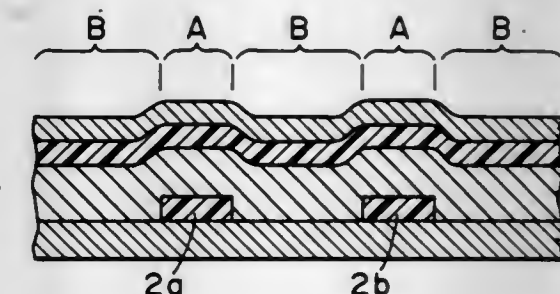
Filed Jun. 1, 1981, Ser. No. 268,683

Claims priority, application Japan, Jun. 19, 1980, 55-82109

Int. Cl.³ G02F 1/17

U.S. Cl. 350—357

4 Claims



1. An all solid type electrochromic display element comprising a first electrode, a first oxidation-reduction reaction layer which is reversibly oxidation-reduction reactive, a transparent insulating layer which is a good proton conductor, a second oxidation-reduction reaction layer which is reversibly oxidation-reduction reactive and a second electrode, laminated in that order, wherein when one of said first and second oxidation-reduction reaction layers is oxidized, the other is reduced, said two layers being formed of an electrochromic material which is able to change in color when a voltage is applied thereto and wherein at least one of said first and second electrodes is transparent, and characterized in that p1 (a) the only patterned layer being one of said first and second oxidation-reduction reaction layers which is patterned in the form of a figure to be displayed;

(b) a voltage level equal to or more than a minimum voltage required for causing the change in color at a portion corresponding to the figure to be displayed out of patterned reaction layer and non-patterned reaction layer, the voltage level being lower than a minimum voltage needed for causing the change in color of the whole of the patterned reaction layer and non-patterned reaction layer, is applied between said first and second electrodes.

4,433,902

PROJECTION PRINTER

Miroslav S. Osmera; Ralf M. Brooks, and Sung-Soon Kim, all of Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

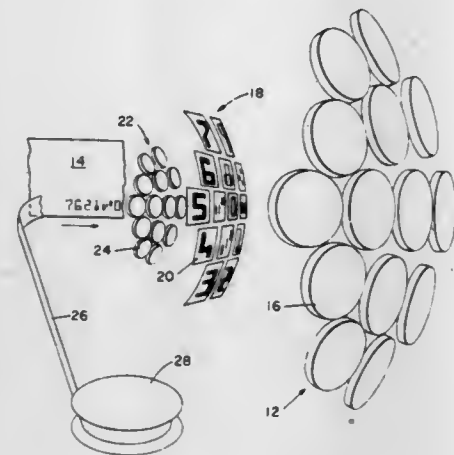
Continuation of Ser. No. 159,888, Jun. 16, 1980, abandoned.

This application Nov. 12, 1981, Ser. No. 320,803

Int. Cl.³ B41B 13/00

U.S. Cl. 354—10

2 Claims



1. A projection printer comprising a plurality of thermal energy light elements arranged in arcuate manner, printing paper spaced from said plurality of light elements and movable along a line of printing, a plurality of masks each associated with and disposed in like arcuate manner as each of said light elements and including an enlarged aperture representing a character to be printed, a plurality of projection lenses each associated with and positioned in like arcuate manner as each of said light elements and each of said masks to receive images of characters and to reduce said images prior to printing, and a ribbon having thermal sensitive ink material thereon and movable with said printing paper and positioned in contact therewith for transferring said ink material thereto upon pulsing of said light elements to act on said ribbon by heating said ink material in the shape of apertures in said masks for printing of characters on said printing paper.

4,433,903

REMOTE CONTROLLED CAMERA OPERATING DEVICE

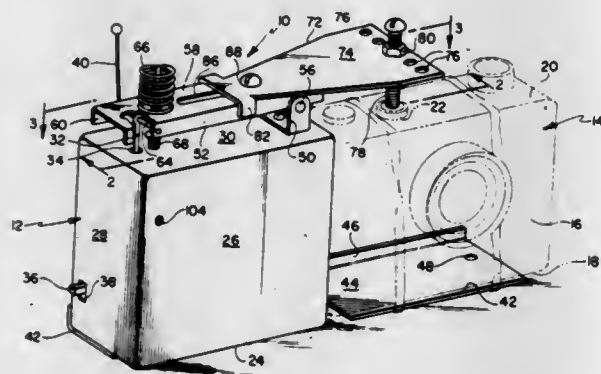
Nader Afdasta, 30 Viking Dr., Bristol, R.I. 02809

Filed Sep. 15, 1982, Ser. No. 418,307

Int. Cl.³ G03B 17/38

U.S. Cl. 354—266

8 Claims



1. A device for the remote controlled actuation of a camera of the type having a depressible shutter button disposed on an outer surface thereof, said device comprising a housing, a bracket outwardly extending from said housing and on which the base of said camera is adapted to rest, means associated

with said bracket for releasable positioning said camera thereon, a lever arm pivotally mounted on said housing and adapted to be driven at one end thereof by drive means mounted in said housing and operable upon a predetermined signal, a plate adjustably attached to said lever arm and adapted to extend outwardly over said bracket, said plate longitudinally slidable with respect to said lever arm, an actuation pin vertically adjustably mounted at the outer end of said plate, said pin further being adjustably movable back and forth along the width of said plate such that said actuation pin can be disposed in a variety of positions including one directly above the depressible shutter button of the camera supported by said bracket such that actuation of said drive means by said predetermined signal moves said plate outer end downwardly so that said pin contacts and depresses said button.

4,433,904

ELECTROPHOTOGRAPHIC COPYING MACHINE

Isao Ikemoto; Junichi Koiso; Akibiko Tamura, and Tsugio Hirabayashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

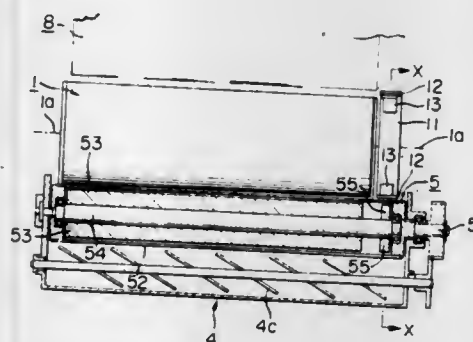
Filed Dec. 8, 1981, Ser. No. 328,749

Claims priority, application Japan, Dec. 20, 1980, 55-179692

Int. Cl.³ G03G 15/09

U.S. Cl. 355—3 DD

12 Claims



1. In an electrostatic image reproducing system including an image recording body having an image recording area thereon, a developing unit arranged adjacent to said image recording body to develop a latent image formed on said image recording body by developer containing a magnetic material, and a cleaning unit arranged adjacent to said image recording body to clean developer off of said image recording body, the improvement wherein one of said developing unit and said cleaning unit comprises:

- a first magnetic brush unit including a first revolving element having a first revolving axis therein and having a plurality of magnets inside said first revolving element, said first revolving element being adjacent to said image recording body and confronting said image recording area of said image recording body; and
- a second magnetic brush unit axially adjacent to said first magnetic brush unit for attracting and transferring developer, including a second revolving element having a second revolving axis therein which is substantially colinear with said first revolving axis, said second magnetic brush unit being arranged so as to be adjacent to but not confronting said image recording area of said image recording body.

4,433,905

SHEET AND ORIGINAL FEEDING FOR IMAGE FORMING SYSTEM

Toshio Haramaki, Yokohama, and Shigeru Nakayama, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

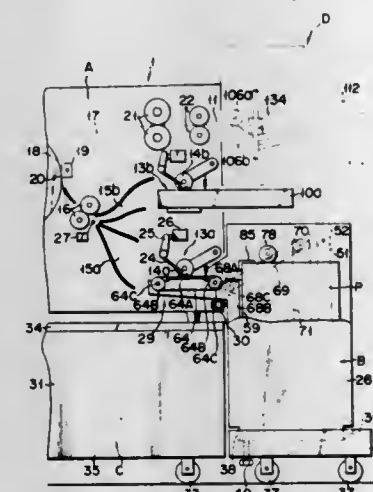
Filed Mar. 23, 1982, Ser. No. 361,104

Claims priority, application Japan, Mar. 27, 1981, 56-45202

Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 SH

12 Claims



1. An image forming system comprising:

- a platform placed on a floor;
- an image forming device having a first body mounted on said platform and an exposure unit provided on the upside of the first body for exposing an original placed thereon;
- sheet feeding means provided at one side of the first body and including a cassette which receives a small number of copying papers of one size therein and is detachably attached to a middle part of said one side of the first body and a feeder placed on the floor which receives a large number of copying papers with another size therein and is detachably attached to a lower part of said one side of the first body;
- sheet exhausting means provided at an upper part of said one side of the first body;
- said image forming device for copying an image corresponding to the original on a copy sheet fed from said sheet feeding means and for exhausting the copied sheet from said sheet exhausting means; and
- an original feeding device having a second body arranged on the exposure unit, an original inserting means provided at one side of the second body in the same side of the one side of the first body and inserted with the original thereto, an original exhausting means provided at said one side of the second body and exhausted with the copied original and a conveying mechanism for conveying the inserted original to the exposure unit and conveying the original exposed thereat to the original exhaust means.

4,433,906

MICROFILM READER PRINTER EQUIPPED WITH IMPROVED EXPOSURE AMOUNT CONTROL ARRANGEMENT

Keiji Nakatani, Kawasaki, and Shiro Toriumi, Zama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1981, Ser. No. 300,284

Claims priority, application Japan, Sep. 26, 1980, 55-134838

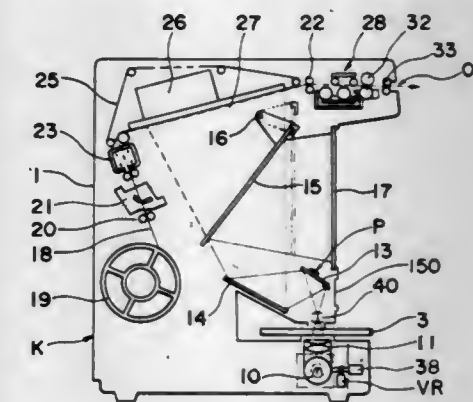
Int. Cl.³ G03B 27/52

U.S. Cl. 355—55

14 Claims

- 1. A microfilm reader printer comprising:
- a light source for illuminating images on a microfilm;
- a projecting surface;
- an optical system between said light source and said projecting surface including (a) at least one projecting lens for

projecting images from the microfilm onto said projecting surface, (b) means for changing the projection magnification of the projected images without changing the distance between the microfilm and said projecting surface and being constituted by interchangeable lenses at a position along the optical axis of said optical system and which interchangeable lenses have different distances between the exit pupils thereof and the projecting surface, respectively, and (c) a condenser lens movable along the optical axis between said light source and said microfilm; a photodetector provided in the light path from said light source to said projecting surface; and control means connected between said photodetector and said light source for setting the quantity of light delivered onto the projecting surface at a value in accordance with the output of said photodetector by controlling the length of time of operation of said light source;



a position detecting means for detecting the position of said condenser lens which has been changed in accordance with the change-over of the projection magnification; and compensating means operatively associated with said control means and said position detecting means for compensating for the change in the quantity of light delivered onto the projecting surface after the changeover of the projection magnification by changing said time of operation in accordance with the changed projection magnification by compensating the output of said photodetector in accordance with the position detected by said position detecting means so as to adjust the length of time of operation of said light source for setting the quantity of light delivered to said projecting surface at a predetermined value, whereby the quantity of light on the projecting surface is maintained at said predetermined constant value regardless of the changeover of the projection magnification.

4,433,907

LENS ALIGNMENT STRUCTURE

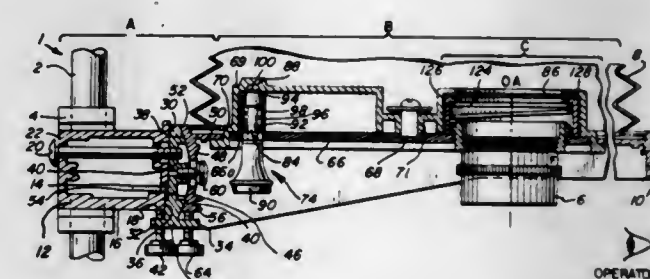
Giuseppe Tarsia, Valley Stream, N.Y., assignor to Berkey Photo, Inc., White Plains, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,775

Int. Cl.³ G03B 27/52

U.S. Cl. 355—55

23 Claims



1. An adjustable lens mounting comprising:

- a lens stage having a longitudinal axis extending from front to rear and a lateral axis extending from left to right, said

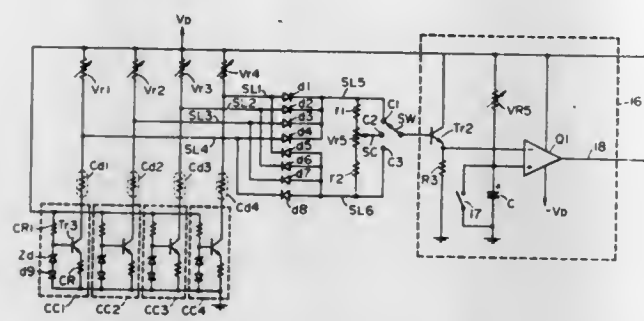
lens stage including pitch alignment means for selectively adjusting the rotation of said lens stage about said lateral axis and roll alignment means for selectively adjusting the rotation of said lens stage about said longitudinal axis; and a lens mount means associated with said lens stage for positioning a lens element in the optical path.

4,433,908

DEVICE FOR SETTING EXPOSURE QUANTITY
Kokichi Omi, Kawasaki, and Yasuo Kuroda, Sagami-hara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 136,104, Mar. 31, 1980, abandoned.
This application Nov. 12, 1981, Ser. No. 320,702
Claims priority, application Japan, Apr. 9, 1979, 54-43252
Int. Cl.³ G03B 27/80

U.S. Cl. 355—68

3 Claims



1. An exposure quantity setting device comprising:
 - (a) detection means including a plurality of light detectors for receiving light from a plurality of divided portions in an object, and for forming a light signal corresponding to the intensity of the light received;
 - (b) first selection means for selecting the maximum light signal obtained from the light detector which has detected the maximum amount of light among said plurality of light detectors;
 - (c) second selection means for selecting the minimum light signal obtained from the light detector which has detected the minimum amount of light among said plurality of light detectors;
 - (d) third selection means including intermediate light signal forming means for forming an intermediate light signal between the maximum and minimum light signals, means for varying the intermediate signal level formed by said third selection means between the maximum and minimum light signal levels, and means for selecting among the maximum light signal obtained from said first selection means, the minimum light signal obtained from said second selection means, and the intermediate light signal obtained from said intermediate light signal forming means; and
 - (e) exposure quantity setting means for setting an exposure quantity by a light signal selected by said third selection means.

4,433,909

PIVOTING REFERENCE EDGE
Kate Goes In Center, Loveland, Colo., and Francis J. Schell, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 22, 1982, Ser. No. 360,309
Int. Cl.³ G03B 27/62

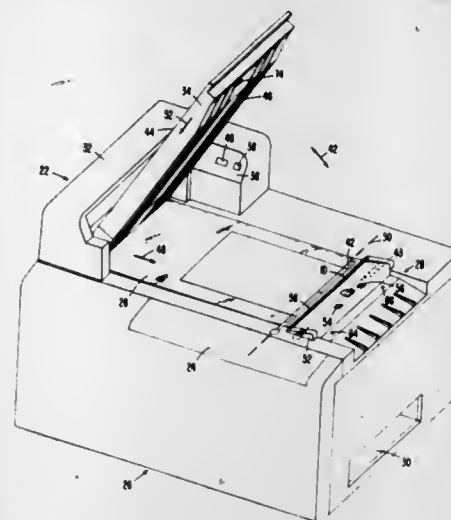
U.S. Cl. 355—75

20 Claims

1. In a copier having a platen on which documents to be copied are placed, a document feeder for registering and moving documents relative to said platen, an exit path for conveying documents ejected from said platen, a sensing device responsive to the movement of a document in said exit path for producing an output signal, and controls responsive to said signals and selectively operable to cause said document feeder to function either in an enabled mode wherein said feeder

automatically registers and moves documents or in a disabled mode wherein said feeder is prevented from positioning and moving documents, an improvement comprising:

- a manual registration means movable between a first position displaced from said platen and a second position wherein a document reference zone is being established on the platen by the manual registration means;



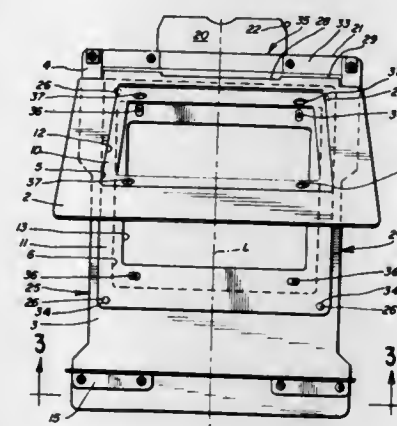
- a position sensing means including the sensing device disposed relative to the exit path and operable to produce output signals; and
- a control means including the controls responsive to the signals and operable to cause establishment of the disabled mode when the plate is in the second position.

4,433,910

TRANSPARENCY HOLDER
Giuseppe Tarsia, Valley Stream, N.Y., assignor to Berkey Photo, Inc., White Plains, N.Y.
Filed Feb. 18, 1982, Ser. No. 349,772
Int. Cl.³ G03B 27/62

U.S. Cl. 355—76

11 Claims



1. A transparency holder comprising carrier means of two opposing apertured plates, said apertures positioned for coaxial alignment with a light beam, mask means of two opposing apertured plates adapted for releasably compressibly holding therebetween a transparency, said mask means adapted to be selectively interposed between said carrier means plates in predetermined locations by positioning means, said mask means apertures positioned for coaxial alignment with the light beam, cassette means adapted to removably receive said carrier means and defining an aperture positioned for coaxial alignment with the light beam, movable wedge means attached to and externally accessible of said cassette means for selectively releasing said compressive hold of said mask means on said transparency, whereby said transparency may be adjustably positioned

in said optical path without removing said carrier means from said cassette means.

4,433,911

METHOD OF EVALUATING MEASURE PRECISION OF PATTERNS AND PHOTOMASK THEREFOR
Shizuo Sawada; Mitsugi Ogura, and Norio Endo, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

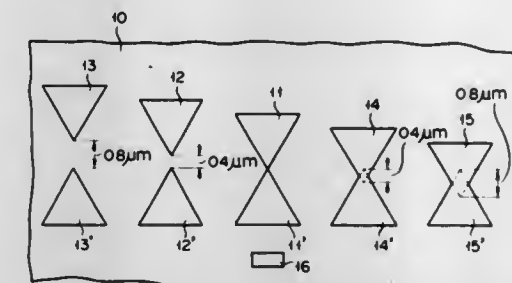
Filed Jun. 23, 1982, Ser. No. 391,297

Claims priority, application Japan, Jun. 30, 1981, 56-101600

Int. Cl.³ G03B 27/28; G01B 11/00

U.S. Cl. 355—125

15 Claims



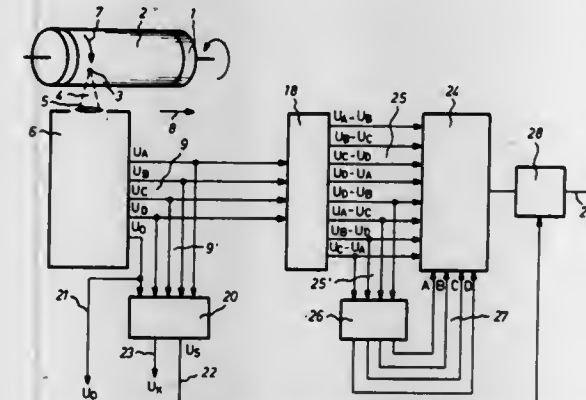
1. A method of evaluating the measure precision of a pattern formed in a substrate comprising:
 - (a) providing a photomask including a first measure precision evaluating pattern having a plurality of pairs of pattern elements, pattern elements of each pair being spaced a predetermined distance from each other and arranged opposite to each other, and a second measure precision evaluating pattern having a plurality of pairs of pattern elements, pattern elements of each pair being arranged opposite to each other and overlapped each other in a predetermined measure to form a constricted portion, said predetermined distance being varied with every pair of pattern elements and said predetermined measure of overlapped area between pattern elements being varied with every pair of pattern elements;
 - (b) transcribing said measure precision evaluating patterns to a substrate; and
 - (c) finding a pair of pattern elements formed in the substrate, which contact each other without overlapping to know the dimensional change from the distance or the measure of overlapped area between pattern elements in the photomask which correspond to said pair of pattern elements found.

4,433,912

METHOD AND A CIRCUIT FOR DETERMINING A CONTOUR IN AN IMAGE
Robert Schwartz, Setauket, N.Y., assignor to Dr. Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany
Filed Jan. 21, 1982, Ser. No. 341,525
Int. Cl.³ G05B 19/405

U.S. Cl. 356—150

12 Claims



1. In a method of determining a contour-defining angle

formed by a contour in an image within a relatively small region thereof with a predetermined direction, the contour being defined by the transition from a light area to a dark area within said region,

- the steps comprising,
 - selecting said region so that said contour passes as closely as possible through a center thereof,
 - subdividing said region into a number of sectors of substantially equal areas distributed substantially symmetrically about said center, and separated from one another by respective separation lines, aid number being an even number and at least four, one of said separation lines coinciding with said predetermined direction,
 - obtaining brightness signals from each of said sectors in dependence of the proportion of the dark-to-light areas extending over each respective sector,
 - generating difference signals from respective oppositely disposed sectors, one of said difference signals being associated with said transition from said light area to said dark area having a value below a maximum value obtained from each of the remaining difference signals, save the difference signal associated with the transition from said dark area to said light area, thereby identifying the sector in which the transition from said light area to said dark area occurs, and
 - determining a first angle-defining quotient of the difference signal obtained, on one hand, from the so identified sector and the sector adjacent thereto as viewed along a prearranged angular direction, and, on the other hand, from one of said difference signals having said maximum value, whereby the contour-defining angle is obtained as the sum of said first angle and a second angle which is subtended between said predetermined direction and said one separation line, as viewed along said prearranged angular direction.

4,433,913

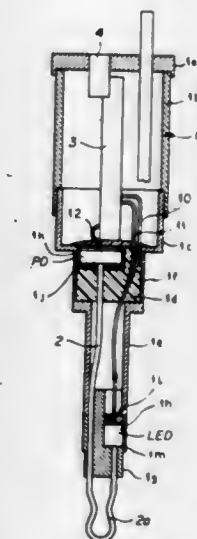
REFRACTIVE INDEX OF A LIQUID REFERRED TO A PREDETERMINED TEMPERATURE
Alan L. Harmer, Plan les Ouares, Switzerland, assignor to Battelle Memorial Institute, Switzerland
Filed Jan. 28, 1982, Ser. No. 343,698

Claims priority, application Switzerland, Jan. 30, 1981, 611/81

Int. Cl.³ G01N 21/43

U.S. Cl. 356—133

5 Claims



1. A device for determining the index of refraction of a fluid reduced to a predetermined reference temperature, comprising:
 - a housing;
 - an optical fiber mounted on said housing and having a sensor portion projecting from said housing and formed with

alternating curvatures for introduction into a fluid whose index of refraction is to be measured;
 a light-intensity detector connected to one end of said optical fiber for measuring the luminous intensity transmitted through said optical fiber; and
 a light source in said housing positioned to lie in thermally conductive relationship with said fluid whereby said source is substantially at the same temperature as said fluid, said source having a temperature coefficient of luminous output such that its luminous output varies inversely with temperature according to a law which compensates the luminous output of said source for variation in the index of refraction of said fluid as a function of the temperature.

4,433,914

EXPOSURE METER

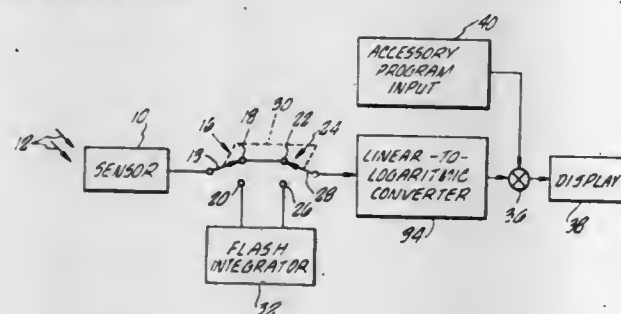
Kenneth J. Curran, Thousand Oaks, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Sep. 14, 1979, Ser. No. 75,709

Int. Cl.³ G01J 1/46

U.S. Cl. 356—223

18 Claims



1. An exposure meter for measuring light from continuous or flashed light sources or both, comprising
 sensor means for generating a signal proportional to the intensity of the light,
 timing means for generating a predetermined time period signal corresponding to a predetermined time period,
 integrator means responsive to the predetermined time period signal and to the sensor means signal for summing the signal from the sensor means for at least one predetermined time period and for providing a signal proportional to the sum,
 logarithmic amplifier means responsive either to the integrator means signal or to the sensor means signal for producing a logarithmic signal that is logarithmically proportional to the signal applied thereto, and
 display means responsive to the logarithmic signal for displaying exposure data related to light continuously falling upon the sensor means during exposure meter operation or light falling upon the sensor means during the at least one predetermined time period respectively.

4,433,915

DUAL-POLARIZATION INTERFEROMETER WITH A SINGLE-MODE WAVEGUIDE

Joel G. Hanse, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 15, 1981, Ser. No. 311,584

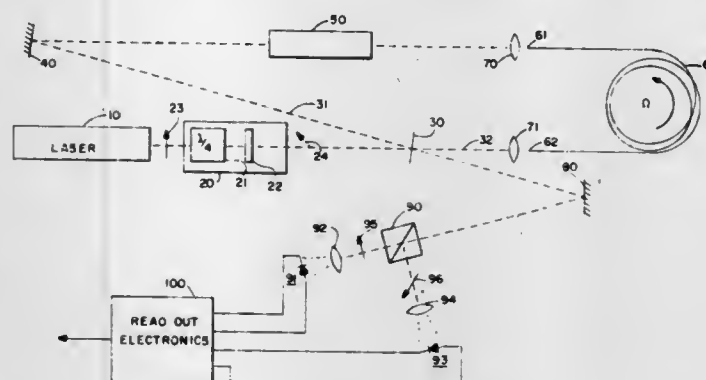
Int. Cl.³ G01C 19/64

U.S. Cl. 356—350

71 Claims

1. An angular rate sensor comprising:
 waveguide means;
 electromagnetic wave generating means capable of generating first and second electromagnetic waves having a common frequency and having first and second polarization states respectively, said electromagnetic wave generating means capable of directing
 (a) a first component of each of said first and second electromagnetic waves through said waveguide means in a first direction so as to travel through said waveguide means

only once, said first components emerging from said waveguide means phase-shifted by a value related to the rate of rotation of said waveguide means, and
 (b) a second component of each of said first and second electromagnetic waves through said waveguide means in a second direction opposite to said first direction so as to travel through said waveguide means only once, said second components emerging from said waveguide means



phase-shifted by a value related to the rate of rotation of said waveguide means; and
 readout means, responsive, to said first and second components of each of said first and second electromagnetic waves emerging from said waveguide means phase-shifted by said rate of rotation of said waveguide means, for providing a signal indicative of the rate of rotation of said waveguide means.

4,433,916

ACOUSTIC RESONATOR HAVING TRANSDUCER PAIRS EXCITED WITH PHASE-DISPLACED ENERGY

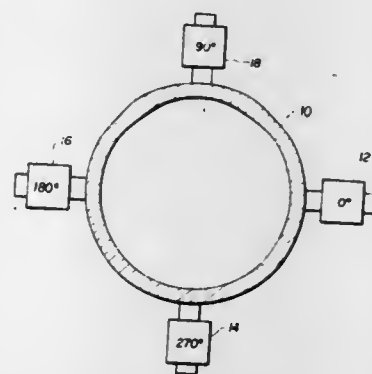
Mark N. Hall, P.O. Box 162, College Place, Wash. 99324

Filed Nov. 2, 1982, Ser. No. 438,444

Int. Cl.³ B01F 11/02

U.S. Cl. 366—114

6 Claims



1. An acoustic resonator apparatus for transmitting acoustic energy from a plurality of acoustic transducer means to a medium passing through a cylindrical shell, comprising:
 a cylindrical shell for containing a medium passing there-through;
 a plurality of pairs of acoustic transducer means mounted on said shell, each said pair being comprised of two transducer means 180° displaced from each other on said shell, and each said pair being displaced 90° on said shell from another pair; and
 means for exciting each pair of transducer means with energy of the same frequency as each other pair but 180° displaced in phase from the energy with which the pair which is 90° displaced on said shell from such pair is excited, whereby relatively efficient coupling from said transducer means to said medium is effected.

4,433,917

RESIN CATALYZATION CONTROL SYSTEMS

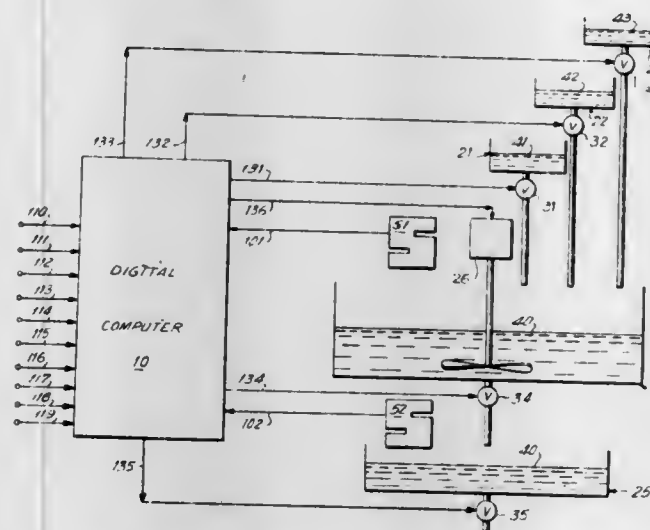
Jack M. Mendel, Chester; Carl C. Bomgardner, Middletown, both of N.Y.; Robert W. Rack, Ramsey, N.J.; Donald G. Scott, Cornwall, and August W. Stritmatter, Sloatsburg, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,357

Int. Cl.³ B01F 3/08, 15/02

U.S. Cl. 366—132

11 Claims



1. An apparatus for preparing a mixture in batches and supplying it to a feed station comprising:
 a mixing tank;
 means for transferring the mixture from the mixing tank to the feed station;
 a first source for supplying a first ingredient of the mixture;
 a second source for supplying a second ingredient of the mixture;
 a first supply valve connecting the first source to the mixing tank;
 a second supply valve connecting the second source to the mixing tank;
 means for providing a mixing tank monitoring signal indicating the actual weight of the contents of the mixing tank;
 means for providing a "start prep" signal to initiate the mixture preparation; and
 logic control means responsive to the "start prep" signal and the mixing tank monitoring signal for opening and closing the first and second supply valves to sequentially add the first and second ingredients to the mixing tank in accordance with precalculated target weights, the control means including first calculator means responsive to the mixing tank monitoring signal for calculating a target weight for the second ingredient on the basis of the weight of the first ingredient actually added to the mixing tank.

4,433,918

ANALOG DISPLAY ELECTRONIC TIMEPIECE WITH MULTI-MODE DISPLAY CAPABILITY

Katsuo Nishimura, and Fukuo Sekiya, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,157

Claims priority, application Japan, Jul. 18, 1980, 55-98326; Oct. 9, 1980, 55-141464; Oct. 13, 1980, 55-141958

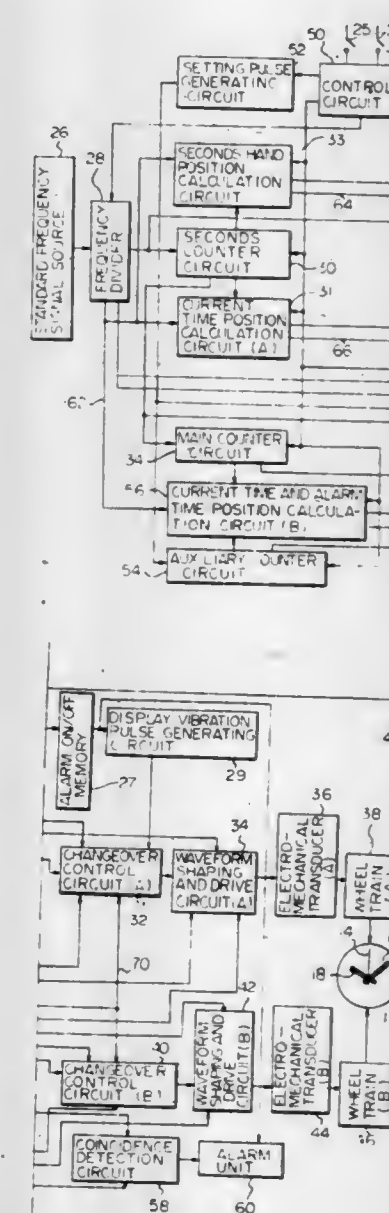
Int. Cl.³ G04B 23/02

U.S. Cl. 368—74

7 Claims

1. An analog display electronic timepiece provided with an alarm function and adapted to selectively indicate current time and a preset alarm time, comprising:
 a standard frequency signal source for providing a standard frequency signal of relatively high frequency;
 a frequency divider circuit responsive to said standard frequency signal for producing a first unit time signal having a period of one second and for producing a second unit

time signal having a period which is an integral multiple of one second;
 first drive circuit means responsive to said second unit time signal for producing a first drive signal;
 a first electromagnetic transducer coupled to be driven by said first drive signal;
 a first wheel train coupled to be driven by said first electromagnetic transducer;
 a minutes hand coupled to said first wheel train to be advanced a predetermined number of times per minute;
 an hours hand coupled to said first wheel train to be rotated thereby;
 second drive circuit means responsive to said first unit time signal for producing a second drive signal;
 a second electromagnetic transducer coupled to be driven by said second drive signal;



a second wheel train coupled to be driven by said second electromagnetic transducer;
 a seconds hand coupled to said second wheel train to be rotated thereby;
 externally operable switch means;
 control circuit means responsive to actuation of said externally operable switch means for producing a plurality of control signals including alarm setting signals for selectively setting said timepiece in a current time mode and in an alarm time mode of operation;
 calculation and counter circuit means for counting and memorizing said second unit time signal and said alarm setting signal, for thereby producing a first rapid advancement signal when said timepiece is changed over from operation in said current time mode to said alarm time mode, and for producing a second rapid advancement signal when said

timepiece is changed over from operation in said alarm time mode to said current time mode, and further for producing an alarm detection signal when the difference between said preset alarm time and current time becomes zero;

alarm means responsive to said alarm detection signal for producing an audible alarm signal;

changeover control circuit means responsive to said control signal from said control circuit means for selectively transferring said second unit time signal to said first drive circuit means during said current time mode and for transferring said first rapid advancement signal to said first drive circuit means when changeover is performed from said current time mode to said alarm time mode, and further for transferring said second rapid advancement signal to said first drive circuit means when changeover is performed from said alarm time mode to said current time mode; and

analog display means including a minutes hand and an hours hand coupled to be rotated by said first electromagnetic transducer and a seconds hand coupled to be rotated by said second electromagnetic transducer, said hours hand and minutes hand being thereby rapidly driven to indicate said preset alarm time when changeover is performed from said current time mode to said alarm time mode and being rapidly driven to indicate current time when changeover is performed from said alarm time mode to said current time mode, with said seconds hand being driven independently from said hours and minutes hands during said mode changeovers;

seconds hand position counter circuit means for counting said first unit time signal and for producing a third rapid advancement signal when said timepiece is changed over from operation in said current time mode to said alarm time mode and for producing a fourth rapid advancement signal when said timepiece is changed over from operation in said alarm time mode to said current time mode in response to said control signals from said control circuit means;

said second driver circuit means being further responsive to said third and fourth rapid advancement signals for producing third and fourth rapid advancement drive signals; whereby said seconds hand is driven to a zero seconds indicating position when changeover is performed from said current time mode to said alarm time mode, and is rapidly driven to a position indicating current time seconds information when changeover is performed from said alarm time mode to said current time mode and is thereafter periodically advanced in response to said first unit time signal;

alarm memory circuit means and display vibration signal generating circuit means;

said alarm memory circuit means being responsive to a predetermined one of said control signals from said control circuit means for being selectively set to a first condition in which an alarm output enabling signal is generated thereby and a second condition in which an alarm output inhibiting signal is generated thereby, said alarm means being responsive to said alarm output enabling signal for generating said audible alarm signal when said coincidence detection is produced, and is inhibited from generating said audible alarm signal by said alarm output inhibiting signal;

said display vibration signal generating circuit means being responsive to said alarm output enabling signal for generating a display vibration signal, said changeover control circuit means being responsive to said control signals for transferring said display vibration signal to be input to said second drive circuit means during said alarm time mode to produce a drive signal therefrom, said second electromagnetic transducer being responsive to said drive signal for rotationally vibrating said second electromagnetic transducer about a fixed position, and said rotational vibration being transmitted by said second wheel train to said seconds hand whereby said seconds hand is rotationally

vibrated about said zero seconds indicating position for thereby providing an indication that said timepiece is in said alarm time mode and in a state in which emission of said audible alarm signal is enabled.

4,433,919

DIFFERENTIAL TIME INTERPOLATOR

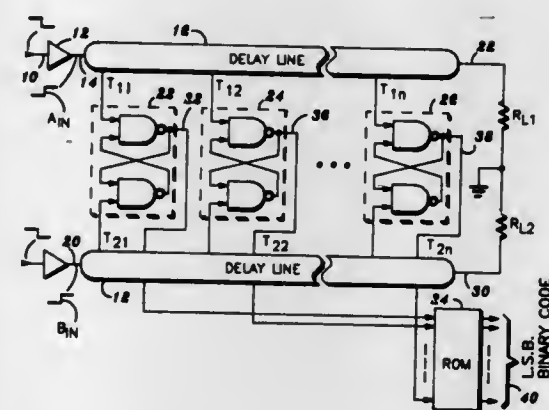
David R. Hoppe, McHenry, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 7, 1982, Ser. No. 414,768

Int. Cl.³ G04F 8/00

U.S. Cl. 368—120

4 Claims



1. A circuit for accurately determining a time between a first occurring and a second occurring signal event comprising:

first means for delaying the first occurring signal event, said first means having an input tap adapted for receiving the first occurring event signal, said first means having a successive series of n output taps, each of said first means of n output taps having a predetermined first time delay with respect to each preceding tap of said first means;

second means for delaying the second occurring signal event, said second means having an input tap adapted for receiving the second occurring event signal, said second means having a successive series of n output taps corresponding to said series of n output taps of said first means, each of said second means series of n output taps having a predetermined second time delay with respect to each preceding tap of said second means, said second predetermined time delay being shorter than said first predetermined time delay;

n means for sensing, each of said n means for sensing having a set, a reset and an output terminal, said set and reset terminals of each of said n sensing means being connected to said corresponding output taps of different ones of said series of n output taps of said first means and said second means, respectively; and

means for converting a one and a zero set in any specific pair of adjacent ones of said n means for sensing to a unique output signal responsive to said specific pair.

4,433,920

ELECTRONIC TIMEPIECE HAVING IMPROVED PRIMARY FREQUENCY DIVIDER RESPONSE CHARACTERISTICS

Fukuo Sekiya, Shigeru Morokawa, and Ryoji Iwakura, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,251

Claims priority, application Japan, Jul. 8, 1980, 55-92861; Jul. 15, 1980, 55-96429; Jul. 18, 1980, 55-98325; Jul. 21, 1980, 55-99567

Int. Cl.³ G04B 17/12

U.S. Cl. 368—201

5 Claims

1. An electronic timepiece powered by a battery, comprising:

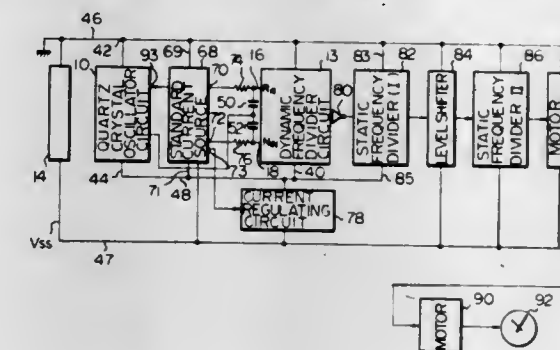
a standard frequency signal source for producing a standard

frequency signal, said standard frequency signal source being provided with a high potential power supply lead and a low potential power supply lead;

first frequency divider circuit means for performing frequency division of said standard frequency signal source to produce an output signal, said first frequency divider circuit means being provided with a high potential power supply lead and a low potential power supply lead and comprising a group of P-channel field-effect transistors each having a gate electrode thereof coupled to receive said standard frequency signal and a group of N-channel field-effect transistors each having a gate electrode thereof coupled to receive said standard frequency signal, said N-channel field-effect transistor group gate electrodes being electrically isolated from said P-channel field-effect transistor group gate electrodes with respect to direct current flow;

second frequency divider circuit means for performing frequency division of said output signal from said first frequency divider circuit means to thereby produce a unit time signal;

drive circuit means coupled to receive said unit time signal for thereby producing a drive signal;



time display means responsive to said drive signal for indicating time information; and

bias circuit means comprising a standard current source for producing first and second bias voltages, said bias circuit means being provided with a high potential power supply lead which is connected in common with said high potential power supply lead of the first frequency divider circuit means, and a low potential power supply lead which is connected in common with said low potential power supply lead of the first frequency divider circuit means, said first bias voltage being applied to the gate electrodes of said P-channel field-effect transistor group to control an operating condition thereof and said second bias voltage being applied to the gate electrodes of said N-channel field-effect transistor group to control an operating condition thereof, said standard current source comprising at least one P-channel field-effect transistor and at least one N-channel field-effect transistor connected in series between said high potential power supply lead and low potential power supply lead of said first frequency divider circuit means.

4,433,921

WATCH CRYSTAL BONDED TO WATCH CASE WITH LOW TEMPERATURE SOLDER MATERIAL

Paul Gogniat, and Eric Loth, both of Bienne, Switzerland, assignors to Montres Rado S.A., Longeau, Switzerland

Filed May 18, 1982, Ser. No. 379,516

Claims priority, application Switzerland, May 22, 1981, 3355/81

Int. Cl.³ G04B 37/00, 39/00

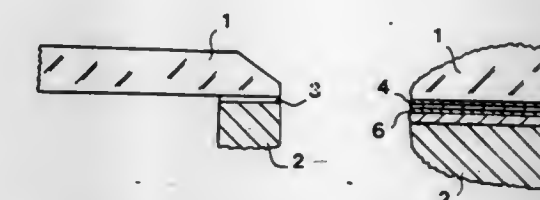
U.S. Cl. 368—294

17 Claims

1. A watchcase comprising a first part made of a transparent material being visible from outside of the case and a second part rigidly attached to the first, a layer of low-temperature metal soldering material attaching said first and second parts formed between said first and second parts, characterized in

that the first part of the case comprises a metal coating applied to that portion of its surface which meets the metal soldering layer, the said metal coating comprising at least three superimposed layers comprising

a first layer located next to the said surface of said first part serving to bond said metal coating thereto and mask the area being soldered,



a second layer superimposed on the first layer to restrain diffusion of said soldering material towards the first part and,

a third layer located next to the said metallic soldering layer to give the latter a purchase on the coating.

4,433,922

CALORIMETER

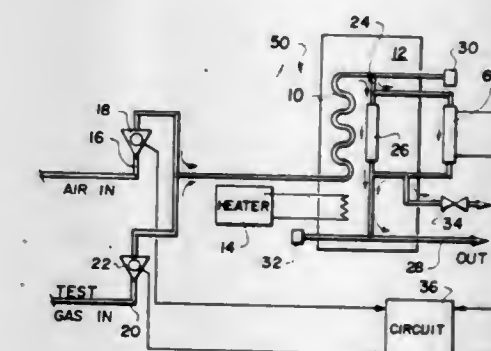
Thomas L. Bohl, Madison; Pocock, Robert E., Highland Heights, and Sharon L. Zimmerlin, Chagrin Falls, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 2, 1982, Ser. No. 394,955

Int. Cl.³ G01N 25/22

U.S. Cl. 374—36

5 Claims



5. A method of continuously monitoring the calorific value of a gas comprising:

supplying the test gas at a constant known flow rate to a catalytic combustion chamber;

supplying an oxygen containing gas to the catalytic burning chamber at a known constant flow rate;

heating the catalytic burning chamber to completely burn the test gas to consume an amount of oxygen and produce a combustion product with remaining oxygen therein;

measuring the amount of remaining oxygen in a combustion product; and

determining the catalytic value of the test gas which is proportional to the amount of oxygen consumed in the catalytic burning chamber which amount of oxygen consumed is proportional to the difference between the known volumetric flow of oxygen into the chamber and the amount of residual oxygen in the combustion product.

4,433,923

OPERATIVE TEMPERATURE SENSING SYSTEM

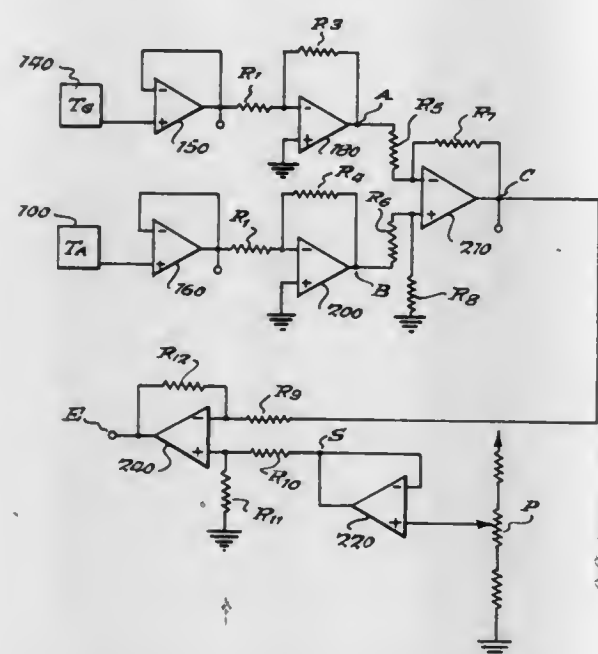
Richard J. Rascati, Guilford, and Larry G. Berglund, Branford, both of Conn., assignors to Morris L. Markel, North Tona-wanda, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,268

Int. Cl.³ G01K 3/14, 13/00

U.S. Cl. 374—112

12 Claims



1. An operative temperature sensing system wherein operative temperature is the uniform temperature of a radiantly black enclosure in which an occupant would exchange the same amount of heat by radiation plus convection as in the actual nonuniform environment, the system comprising:

first temperature sensing means for generating a first signal having a value that is a function of the air temperature within an enclosed space;

a chamber;

second temperature sensing means including said chamber located within said enclosed space, for generating a second signal having a value that is a function of mean radiant temperature;

first signal modifying circuit means for changing the value of said first signal by a first fixed and predetermined amount; second signal modifying circuit means for changing the value of said second signal by a second fixed and predetermined amount;

said first and second fixed and predetermined amounts representing values that are functions of the size and shape of said second temperature sensing means and are so related to each other that their sum is equal to unity; and

circuit means for combining the modified first and second signals to develop an output signal having a value that is a function of operative temperature within the enclosed space.

4,433,924

THERMAL REFERENCE APPARATUS

Thomas G. Quinn, III, Pepperell, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 18, 1981, Ser. No. 303,433

Int. Cl.³ G01J 5/20

U.S. Cl. 374—2

13 Claims

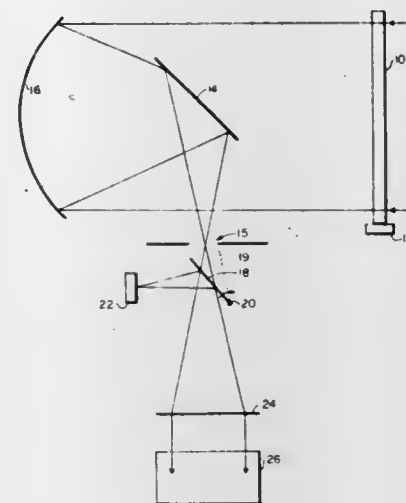
1. Thermal reference apparatus comprising:

A. a housing having a first end and second end;

B. an infrared window mounted in said first end of said housing;

C. thermoelectric temperature control means mounted in proximity with said second end of said housing;

D. a substrate in contiguous relationship with said control means, said substrate facing said window;



E. wherein said control means is used to either heat or cool said substrate;

F. wherein said substrate includes a temperature sensing means; and

G. wherein said window is made from zinc selenide material.

4,433,925

MANUALLY-OPERATED DOT PRINTER FOR POCKET SIZED CALCULATORS

Hitoshi Fujiwara, and Masanao Matsuzawa, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Nov. 10, 1981, Ser. No. 320,046

Int. Cl.³ B41J 3/36

U.S. Cl. 400—88

4 Claims



1. A printer for printing on a recording paper, comprising: feed means for advancing said paper, said feed means including at least two separate feed rollers mounted on a feed shaft;

printing head means, said head means being mounted on said feed shaft for translation relative to said paper for printing a line of characters thereon, said printing head means being movable between said separate feed rollers;

means for translating said printing head means for said printing;

printing means mounted on said printing head means and moving therewith, said printing means being subjected to actuation for printing on said paper when said printing head means is moved relative to said paper.

4,433,926

PRINTER HEAD

Minoru Isobe; Hiroshi Kikuchi; Minoru Teshima, all of Tokyo; Tadasi Kodama, Sakura, and Mitsuo Iwama, Yokosuka, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Continuation of Ser. No. 179,834, Aug. 20, 1980, abandoned.

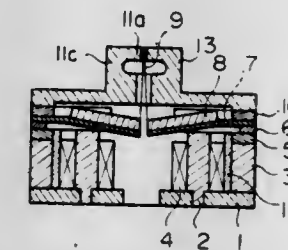
This application Aug. 2, 1982, Ser. No. 404,035

Claims priority, application Japan, Sep. 3, 1979, 54-111700

Int. Cl.³ B41J 3/12

U.S. Cl. 400—124

3 Claims



1. A printer head comprising:

a cylindrical permanent magnet;

a first yoke covering the bottom of said magnet;

n number of electromagnets, each having a center core and a coil wound around the core, positioned in a circle on said first yoke with predetermined angle intervals therebetween;

a disc-shaped spring having an outer ring and n number of projections projecting towards the center of said outer ring;

n number of elongated armatures, each positioned on one of the projections of said disc spring;

n number of print needles, each fixed to one of said armatures perpendicular to the plane of the disc spring wherein each of said needles is straight;

a ring-shaped spacer positioned between said disc spring and said cylindrical permanent magnet;

a second circular yoke fixed on said disc spring for providing a magnetic flux path between the permanent magnet and each of said electromagnets, said second circular yoke having radial slits for receiving said armatures;

a guideframe including a first portion having a thin linear slit for receiving the tops of said print needles wherein said guideframe covers the print needles;

said guideframe having a side hole means in a side wall of the first portion of the guideframe for receiving a tool for aligning the print needles, said tool having a pair of parallel linear arms with projections at the extreme ends thereof such that the arms contact each other at the projections with a spring action, and hold said print needles in a straight line between the parallel arms thereof; and

a cylindrical oil felt means attached on the inner cylindrical surface of said permanent magnet coaxial therewith for providing lubrication between the spring and the core.

4,433,927

ELECTROMAGNET ASSEMBLY FOR MOSAIC PRINTING HEAD AND RELATED MANUFACTURING METHOD

Pier G. Cavallari, Novara, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Feb. 19, 1982, Ser. No. 350,539

Claims priority, application Italy, Feb. 25, 1981, 19958 A/81

Int. Cl.³ B41J 3/12

U.S. Cl. 400—124

3 Claims

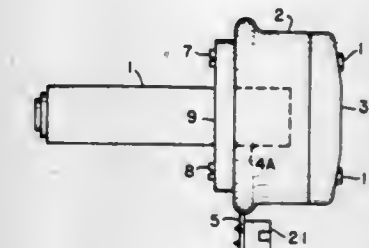
1. An electromagnet assembly for mosaic printing head comprising:

(a) a plurality of separate electromagnets, each one formed by a separate individual core and at least a winding cou-

pled to said core, said winding being supported by a reel provided with electrical connecting pins;

(b) a printed circuit board to which said plurality of electromagnets is fixed by soldering of said pins to said printed circuit board, with exclusion of any other means fixing together said electromagnets;

(c) connection means through which said printed circuit



board may be connected to an external electric circuit; and

(d) insulating plastic means (enclosing) steadily encapsulating as an insert said printed circuit board and said plurality of electromagnets, except said connection means, in a unitary block, said plastic means and said printed circuit board being in lieu of any other mechanical support of said plurality of electromagnets.

4,433,928

ADJUSTABLE COSMETIC WIPER

Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

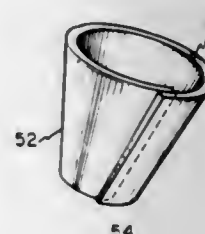
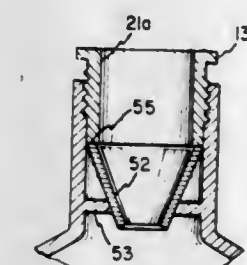
Division of Ser. No. 96,710, Nov. 21, 1979, Pat. No. 4,332,494, which is a continuation-in-part of Ser. No. 857,074, Dec. 5, 1977, Pat. No. 4,194,848. This application May 26, 1982, Ser. No. 382,272

Claims priority, application European Pat. Off., Nov. 30, 1978, 78200323

Int. Cl.³ A46B 17/08

U.S. Cl. 401—122

10 Claims



1. A package comprising:

a. a container having a fluent material therein;

b. a container closure;

c. a wiper having an orifice means adapted to wipe excess fluent material from the applicator, said wiper comprising a truncated cone having a single slit forming portions which overlap each other along the longitudinal axis of said container;

d. means for attaching the cone to permit adjustment of the degree of overlap;

e. an applicator attached to said closure and adapted to be passed through said wiper orifice and immersed in said fluent material when said closure is attached to said container;

f. a calibrated adjusting means to vary the cross sectional area of said orifice.

4,433,929

RECYCLABLE PAPER BINDING MEANS

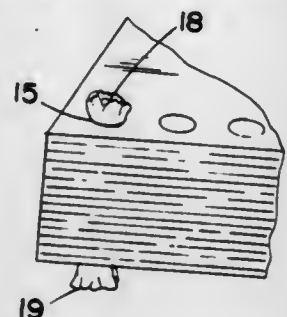
Peter D. Jones, Canabury Square Apts. No. 365 Demont Ave., St. Paul, Minn. 55117

Filed Jul. 2, 1981, Ser. No. 279,786

Int. Cl.³ B42F 3/00

U.S. Cl. 402-14

8 Claims



1. An apparatus for securing together the sheets of a stack of recyclable paper material having openings located therein comprising:

a fastener member rolled into a rigid cylindrical member having a shank with sufficient length to extend through an opening in a stack of sheets of recyclable paper material; retaining means including a collar located on each end of said fastening member to prevent the sheets of the stack of recyclable paper material from slipping off said fastening member; and

said fastening member constructed of a recyclable paper material so that when said sheets of recyclable paper material are recycled said fastening member can be recycled in the same process without forming harmful residue that may damage the recycling apparatus or the recycled products.

7. The method of securing together a stack of papers having a set of openings with a fastener member therein for recyclable use and then after use recycling the stack of papers and the fastener member comprising the steps of:

a. inserting a fastening member of recyclable paper material through the openings in a stack of papers;

b. forming a head on the fastening member of recyclable paper material to prevent the stack of papers from slipping off the fastening member of recyclable paper material; and

c. after use of the recyclable stack of papers simultaneously recycling the stack of papers with the fastening member of recyclable paper material located therein.

4,433,930

STUD ASSEMBLY FOR THIN WALLED PANELS

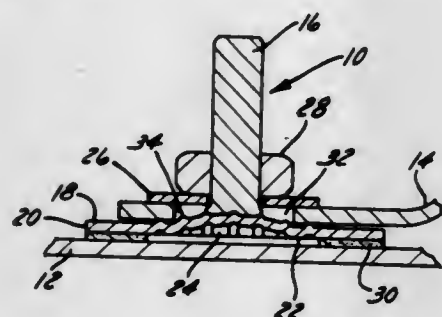
Frank J. Cosenza, San Pedro, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Jul. 30, 1982, Ser. No. 403,833

Int. Cl.³ F16B 5/00

U.S. Cl. 403-12

3 Claims



1. A stud assembly for securing a nonstructural panel to an attachment device comprising:

a base member having an upper and a lower surface;

a threaded shank fixedly attached perpendicular to said

upper surface of said base member, said threaded shank insertable through an aperture in the attachment device, an adhesive means disposed around the outer perimeter of said base member on said lower surface of said base member while leaving the central portion free of adhesive for holding and securing the stud assembly to the nonstructural panel, and

a nut means rotatable along said threaded shank to cause movement of said shank in an axial direction away from the nonstructural panel when said nut is tightened whereby said base member central portion is resiliently deformed without deforming the nonstructural panel.

4,433,931

ADAPTER DEVICE FOR BROOMS OR THE LIKE

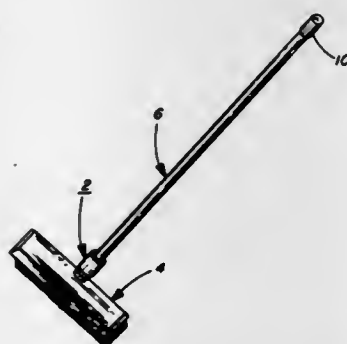
Terrance J. Malish, 2520 Red Fox Pass, Willoughby Hills, and Lawrence A. Somrack, 2397 Somrack Dr., Willoughby, both of Ohio 44094

Filed Dec. 31, 1980, Ser. No. 219,301

Int. Cl.³ F16B 9/00; F16L 41/00

U.S. Cl. 403-194

19 Claims



1. A coupler device of the type for detachably mounting the working end element, such as a broom, brush, mop or the like, to a hollow handle of the type having a passageway therein, said coupling device comprising, an elongated circularly cylindrical body member, said body member being made from a polymeric material including a sleeve portion and a unitary nose portion, said nose portion being adapted for detachable securement within a corresponding socket portion provided in said working end element, a hollow circularly cylindrical sleeve portion made unitary with and extending outwardly away from said nose portion, said sleeve portion having an open end adapted to receive a free end of said handle, said sleeve portion defining a generally circularly cylindrical interior cavity having a unitary interior shoulder portion which extends laterally outwardly from said cavity and adapted for abutting coaxial engagement with the end of said handle, said sleeve portion having a reduced diameter section and an enlarged diameter section defining said shoulder portion, said reduced diameter section being unitarily attached to said nose portion with said sections being disposed in generally concentric alignment with said nose portion, an upstanding post portion made unitary with and extending axially upwardly from said nose portion and adapted to be received in the passageway in said handle, said post portion having an axial bore extending therethrough, said post portion having a diameter and length sufficient to be received in frictional gripping engagement within the passageway in said handle, and with said post portion extending upwardly above the juncture of said nose and sleeve portions and terminating inwardly of the open end of said sleeve portion for holding said handle in secured and supported relation on said shoulder portion.

4,433,932

ROLLER BEARINGS INSTALLED WITHOUT CLEARANCE AND PRELOADED

Manfred Brandenstein, Eussenheim; Rüdiger Hans, Niederwerrn; Peter Horling, Mainberg; Hermann Hetterich, Heldenfeld; Gebhard Pape, Schweinfurt, and Willi Gössmann, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

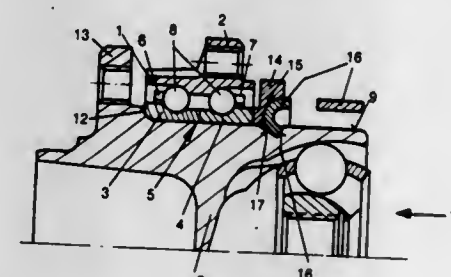
Filed Aug. 10, 1982, Ser. No. 406,907

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132442

Int. Cl.³ B25G 3/00; F16B 9/00; F16L 41/00

U.S. Cl. 403-261

4 Claims



1. A fastening means securing an annular first machine element against axial displacement on an annular second machine element, said second machine element having a shoulder against which the first machine element abuts and an annular groove spaced from said shoulder comprising a first ring member circumscribing the second machine element and having one axial end face confronting and abutting an axial end face of said first machine element and defines an annular pocket, a second one-piece ring made of a deformable material which is initially sleeve-shaped and engages in the annular pocket is deformed in a radial direction as a result of axially applied pressure during assembly into the annular pocket in such a way that a portion thereof engages in the annular groove in the second machine element and secures the two in place.

4,433,933

CONNECTOR FOR FIBER REINFORCED PLASTIC TENSION RODS

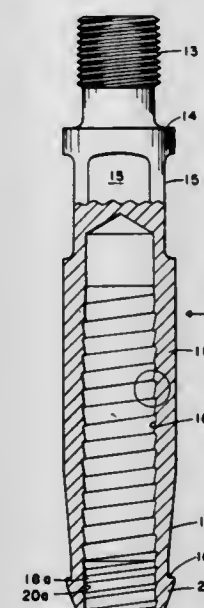
James H. Parsons, Jr., Prosperity; Philippe Hardy-The McLain, Gilbert, and Dominick Tringali, Columbia, all of S.C., assignors to The Shakespeare Company, Columbia, S.C.

Filed Feb. 2, 1982, Ser. No. 345,058

Int. Cl.³ F16B 11/00

U.S. Cl. 403-268

9 Claims



1. A metal connector for the end portion of an FRP rod subjected to longitudinal tension, comprising a tubular body for encasing the rod and having a threaded end portion adapted to be coupled to a like connector, said body having a

continuous wedge-shaped internal helical groove having a surface inclined radially at an angle toward the longitudinal axis of the body, the inner edge of said groove adapted to conform to the outer surface of said rod, and said groove adapted to be filled with bonding material that bonds to the rod but does not adhere to said groove.

4,433,934

PUSH-PULL YOKE-POWER TAKEOFF COUPLING

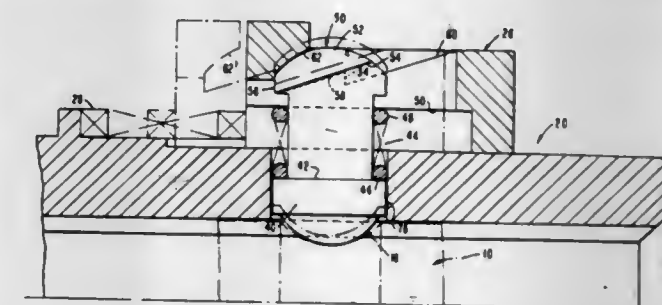
Donald C. Cleveland, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1982, Ser. No. 409,490

Int. Cl.³ F16B 7/00

U.S. Cl. 403-318

5 Claims



1. A shaft coupling locking apparatus comprising a first shaft having longitudinal power transmission features and having a first end with a beveled edge and having a detent receiving means spaced axially from the first end, a shaft sleeve having an axial opening for receiving the shaft, the shaft sleeve having complementary longitudinal power transmission features for cooperating with power transmission features of the shaft to prevent relative rotation and to provide rotary power transmission between the shaft and the sleeve, the sleeve having an opening extending therethrough and having a pin slideable in the opening, collar means positioned on the sleeve and slideably axially thereon, the collar means having clamping means for holding the pin inward in the sleeve in contact with the detent receiving means in the shaft for locking the shaft in the sleeve, and the collar having moving means cooperating with the pin for moving the pin outward with respect to the sleeve for disengaging the pin from the detent receiving means in the shaft, said pin has an outer head with first ramp means and wherein the moving means comprises second ramp means in the collar for cooperating with the first ramp means to move the pin outward with respect to the sleeve, said first and second ramp means slope upward and outward in a direction of an end of the sleeve in which the shaft is received, whereby moving the collar away from that end of the sleeve moves the second ramp means axially, thereby moving the first ramp means in the pin outward with respect to the sleeve.

4,433,935

SIGN BRACKET

Keith A. Main, Howell, and David U. Hillstrom, Novi, both of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Jun. 17, 1981, Ser. No. 274,400

Int. Cl.³ B25G 3/36

U.S. Cl. 403-385

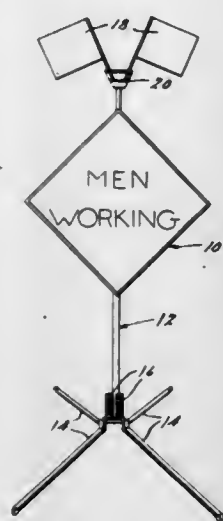
3 Claims

1. A bracket for mounting a sign on a stand, said sign having at least one cross member, said bracket comprising;

a mounting portion for mounting said bracket on said stand, said mounting portion having locking means for locking said bracket onto said stand, and

a sign holding member affixed to said mounting member, said sign holding member forming a horizontal rigid channel having an open end, said sign holding member further having a resilient latch which normally encloses said channel open end and which may be moved away from said open end

thereby permitting said sign cross member to be removed and replaced within said channel



said resilient latch having a first section affixed to said bracket, a second section enclosing said channel open end and a third section forming a projecting flange.

4,433,936

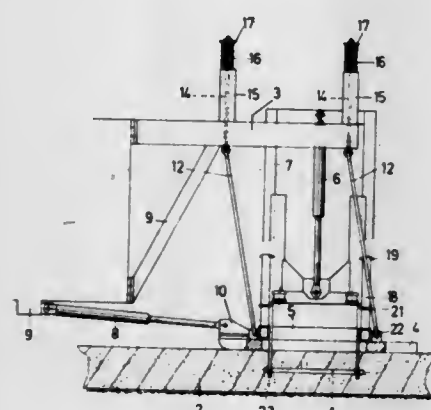
DEVICE FOR DRIVING AND POSITIONING TOWELS INTO CONCRETE SLABS

Andreas Moser, 21, Vrijheidstraat, 2000 Antwerp, Belgium
Filed Oct. 21, 1981, Ser. No. 313,402

Claims priority, application Belgium, Nov. 7, 1980, 202732
Int. Cl.³ E01C 23/04

U.S. Cl. 404—88

10 Claims



1. A device for driving and positioning, by vibration, towels (1) into concrete slabs (2), during the construction of roads, on both sides of joints between said slabs and perpendicularly to said joints, comprising a horizontal beam (5) which is provided with vibrators and with maintaining elements (18) suitable for gripping the towels and which is carried in guides (7) of an independent frame, so as to be vertically movable by displacement means above a joint, in order to drive said towels into a lower position in the still unhardened concrete of the slabs, said device comprising also a lower smoothing plate (4) intended to bear and slide onto the surface of the already compacted concrete slabs (2), said lower plate having openings (26) for the passage of the towels (1) and pressing guides (23) fixed to the horizontal beam (5) during the lowering of said horizontal beam (5), said elements (18) for maintaining the towels (1) being connected to the horizontal beam (5) and to the pressing guides (23) so as to allow the horizontal beam and the pressing guides to move downwardly with respect to the maintaining elements (18) bearing on the lower plate (4), so as to cause the towels (1) to be driven into the still unhardened concrete of the slabs (2).

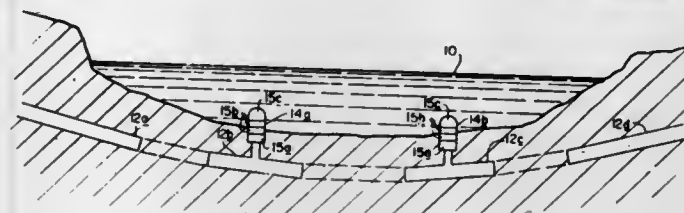
4,433,937 METHOD OF TUNNEL CONSTRUCTION EMPLOYING SUBMERGED CAISSON

J. Vincent Harrington, 19 Dolphin Rd., Groton, Conn. 06340
Filed Mar. 23, 1982, Ser. No. 361,113

Int. Cl.³ E01G 4/04

U.S. Cl. 405—137

14 Claims



1. A method of underwater excavation comprising the steps of:
A. providing a caisson at the floor of a body of water;
B. providing within the caisson at the bottom thereof an open-bottom bell-type work chamber adapted for retention of gases therein;
C. partially filling the chamber with a breathable mixture of gases under a pressure substantially equal to the static water pressure at the depth of the work chamber;
D. providing access from above into the work chamber;
E. excavating vertically into the body floor to form a recess below the caisson while supporting the caisson above the recess floor;
F. lowering the caisson into the recess; and
G. continuing the excavating and lowering steps until the caisson is at the desired depth to commence tunnelling generally horizontally.

4,433,938

METHOD AND APPARATUS FOR LOWERING AND POSITIONING A PIPE LINE ONTO THE BOTTOM OF A DEEP WATER

Bart Boon, Schiedam, Netherlands, assignor to Gusto Engineering B.V., Schiedam, Netherlands

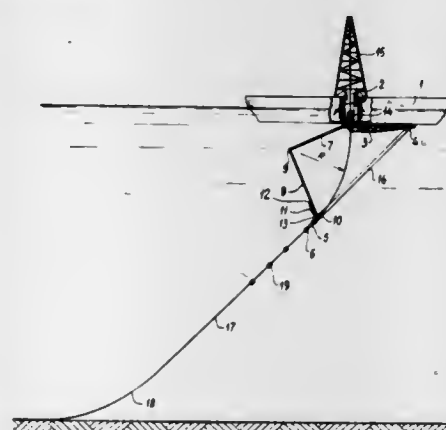
Filed Dec. 14, 1981, Ser. No. 330,513

Claims priority, application Netherlands, Dec. 16, 1980, 8006816

Int. Cl.³ F16L 1/04

U.S. Cl. 405—166

7 Claims



1. In a method for lowering and positioning a pipe line onto the bottom of deep water, comprising assembling pipe line from pipe sections upon a floating ship, said pipe line after reaching the bottom extending upwardly from the bottom along a curved path to an upwardly inclined rectilinear part that extends toward the ship; the improvement comprising exerting tension from said ship directly on a point of the rectilinear part of the pipe line from underneath said ship above the lower curved part, whereby the pipe line part above said point is bent as a result of a bending moment exerted thereon, and directing the last-named part such that the pipe line extends vertically into the ship.

3. In apparatus for lowering and positioning a pipe line onto the bottom of deep water, comprising a floating ship carrying a supply of pipe sections to be connected to the already-assembled pipe line, the pipe line after reaching the bottom extending upwardly from the bottom along a curved path to an upwardly inclined rectilinear part that extends toward the ship; the improvement comprising means for exerting tension from said ship directly on a point of the rectilinear part of the pipe line far underneath said ship above the lower curved part, whereby the pipe line above said point is bent as a result of a bending moment exerted thereon, and means for directing the last-named part such that the pipe line extends vertically into the ship.

4,433,939

MARINE CONDUCTOR BENDING TOOL AND METHOD

Albert M. Regan, Huntington Beach, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 31, 1981, Ser. No. 297,533

Int. Cl.³ E21B 7/12

U.S. Cl. 405—195

13 Claims



1. A method of aligning a marine conduit coupling to a subsea wellhead at the wellhead after the connector is run on the end of the marine conduit to adjacent the subsea wellhead from an overhead platform comprising the steps of:
bending a permanent bend in the lowermost portions of the marine conduit in a determinable manner to align the coupling to the wellhead it is adjacent; and
landing the marine conduit on said wellhead by lowering said conduit while said lowermost portions are bent in said determinable manner.

4,433,940

TETHERED SUBMARINE PRESSURE TRANSFER STORAGE FACILITY FOR LIQUIFIED ENERGY GASES

David B. Harrison, San Mateo, Calif., assignor to Cook Stolo-witz & Frame, Visalia, Calif.

Filed Nov. 16, 1981, Ser. No. 321,385

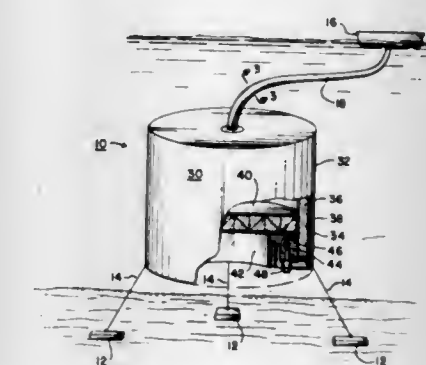
Int. Cl.³ E02D 27/38

U.S. Cl. 405—210

8 Claims

1. An improved offshore submarine storage facility in the ocean and like water bodies for storing liquified energy gases and similar liquid materials under pressure and at cryogenic temperatures, said facility comprising:
two-part insulated submarine storage tank means positionable at selected depth in the water for storing said materials, wherein the two parts thereof move in a slidably sealing

engagement relative to each other to form an insulated compression storage chamber,
said tank means including ambient water pressure transfer means for transferring external ambient water pressure at said selected depth to said materials stored therein,
said facility further including pressure transfer means for increasing pressure applied to said materials stored in said tank means to achieve a total pressure which promotes and aids maintenance of liquid state of said materials,



said tank means further including an extensible, seawater impermeable membrane extending between said two parts to form an enclosed space to seal off seawater from surfaces of said parts which slide relative to each other in sealing engagement, and,
balancing fluid means in said enclosed space at a pressure equalized with ambient seawater pressure for providing further thermal insulation and for isolating said surfaces from contact by seawater throughout the range of slide movement of said two parts.

4,433,941

STRUCTURE FOR OFFSHORE EXPLOITATION

Ben C. Gerwick, Jr., Oakland, Calif., and Stephen J. Hatcher, Duncanville, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

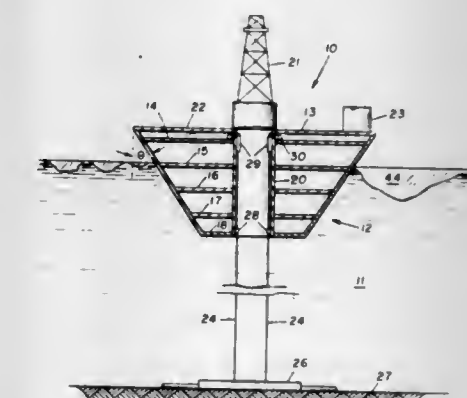
Continuation of Ser. No. 147,998, May 12, 1980, abandoned.

This application Dec. 20, 1982, Ser. No. 451,372

Int. Cl.³ B63B 35/08; E02B 17/00

U.S. Cl. 405—211

10 Claims



1. An offshore structure adapted for operating in a body of water containing floating ice masses at least part of the year, said structure comprising:
a floating hull having downwardly and inwardly sloping sides adapted for breaking said ice masses when contacted thereby;
a conduit extending vertically and centrally through said hull;
mooring means connected to said hull and extending substantially vertically from said conduit to the marine bottom underlying said hull;
means for anchoring said mooring means to said marine bottom directly below said hull; and
means on said hull for tensioning said mooring means and

maintaining said hull downwardly in said body of water at a position below said hull's normal buoyant position when ice mass is not of concern, and for relaxing tension on said mooring means when desirable to rock said hull against an ice mass.

4,433,942

WHARF FENDER

Graeme E. Russell, Bridgeman Downs, and Brian S. Smith, Wavell Heights, both of Australia, assignors to Queensland Rubber Company Pty. Ltd., Australia

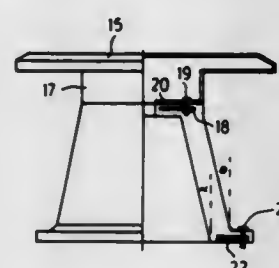
Filed Sep. 8, 1981, Ser. No. 299,680

Claims priority, application Australia, Sep. 25, 1980, PE5755

Int. Cl.³ E02B 3/22; B63B 59/02

U.S. Cl. 405—215

16 Claims



1. A wharf fender assembly comprising: an elongate tubular fender body adapted for attaching to an adjacent wharf; said fender body having a circumferentially continuous sidewall and being of generally increasing width or transverse dimensions from one end to the other end thereby providing a larger end and a smaller end, said fender body being formed from resiliently deformable material; buffer means associated with the fender body for absorbing impact from a ship or other vessel when the fender body is attached to a wharf; and a rigid spacer attached to the fender body at the smaller end thereof which facilitates the attainment of a state of maximum compression of the fender body upon impact, said rigid spacer having an outer diameter about equal to or less than the inner diameter of said fender body at its larger end, whereby said rigid spacer may be collapsed to a point closely adjacent the wharf to attain maximum compression of said fender body upon impact.

4,433,943

METHOD AND APPARATUS FOR FORMING SUBTERRANEAN CONCRETE PILES

Paul C. Pao Chen, 3D Wang Fung Ter., 1st Floor, Tai Hang Rd., Hong Kong, Hong Kong

Filed Feb. 12, 1980, Ser. No. 120,879

Claims priority, application United Kingdom, Feb. 13, 1979, 7905127

Int. Cl.³ E02D 5/34

U.S. Cl. 405—241

3 Claims

1. A method for forming a pile in the ground with a sectional helical auger having a central stem in the form of a tubular member which permits the conveying of concrete forming material and a means for conveying compressed air and water from the top of the auger to the bottom of the auger, said method comprising the steps of: forming a hole in the ground with the helical auger; introducing dry concrete-forming material into the hole in the ground through the tubular member positioned in the hole; conveying water from the top of the auger to the bottom of the auger where the water is mixed with the dry concrete-forming material passing through the tubular member to form concrete; forcefully ejecting the concrete from the tubular member by means of a substantially continu-

ous flow of compressed air supplied to a nozzle that directs the flow of air into the tubular member adjacent the lower open



end thereof; and gradually withdrawing the tubular member from the hole as the hole is filled with concrete.

4,433,944

STRUCTURAL COMPONENTS FOR CONSTRUCTING A WALL

Peter Plica, Munich; Karl Schmöller, Haar, and Gerd Dresch, Munich, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

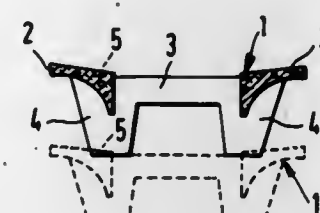
Filed Feb. 17, 1982, Ser. No. 349,457

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106486

Int. Cl.³ E02D 5/00

U.S. Cl. 405—284

15 Claims



1. Structural components having a frame or grid-like structure are used for constructing a sound suppression barrier or the like with each said structural component comprising a pair of horizontally extending laterally spaced elongated runner elements, and connecting elements extend transversely of and interconnect said runner elements, each said runner element has a generally upwardly extending first surface facing toward said first surface on the other said runner element of said pair, a generally horizontally disposed second surface extending from said first surface outwardly away from the other said runner element of said pair, and a downwardly facing third surface extending from the lower end of said first surface to the outer end of said second surface, said third surface has a generally concave curvature extending between said first surface and said second surface with the end of the concavely curved third surface adjacent said second surface being located upwardly from the end of said concavely shaped third surface adjacent the lower end of said first surface so that said concavely shaped third surface faces outwardly away from said concavely shaped third surface of the other said runner element of said pair and also in the downward direction so that sound waves impinging on said concavely shaped third sur-

faces are reflected in the downward direction from said third surfaces and are not directed back toward the source of the sound waves.

4,433,946

DISCHARGE SYSTEM FOR GRAIN HANDLING APPARATUS

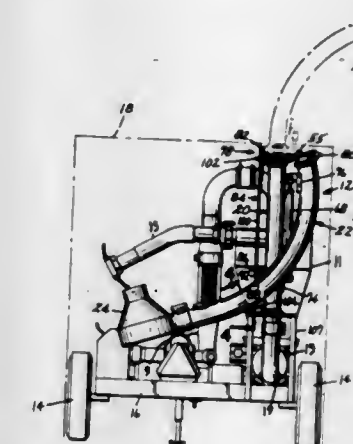
Roy O. Christianson, and Ted T. Christianson, both of Blomkest, Minn., assignors to Christianson Systems, Inc., Blomkest, Minn.

Filed Jul. 21, 1981, Ser. No. 285,465

Int. Cl.³ B65G 67/20

U.S. Cl. 406—43

5 Claims



4,433,945

METHOD AND APPARATUS FOR CONTROLLING A MINE ROOF SUPPORT

Hermann Irresberger, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

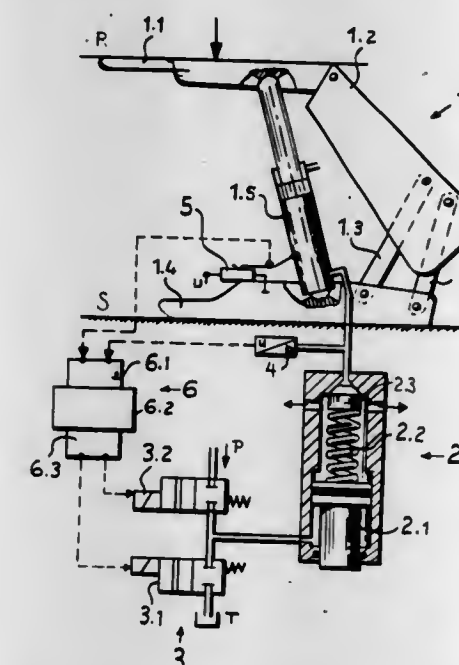
Filed Nov. 12, 1981, Ser. No. 320,712

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042749

Int. Cl.³ E21D 23/16

U.S. Cl. 405—302

6 Claims



1. A method of controlling a mine roof support including a sole plate resting on the sole of a mine gallery, a roof shield engaging the roof of the mine gallery, and pressure fluid-operated extensible and collapsible prop means extending between the sole plate and the roof shield for pressing the latter against the roof of the mine gallery and having at least one elongated cylinder element and a piston reciprocally arranged in said one cylinder element and dividing the latter into two compartments, into one of which pressure fluid is to be fed for extending the prop means, the method comprising the steps of: providing an overpressure valve and connecting said valve with said one compartment, said overpressure valve developing an opening pressure which controls pressure in said one compartment; measuring the inclination of said prop means with respect to the sole plate or measuring the extended length of said prop means; transporting the thus measured value into a control command and transmitting said control command to said overpressure valve to adjust said opening pressure in dependence on the inclination of said prop means with respect to said sole plate or the extended length of said prop means, so that during extension of said prop means to press the roof shield against the roof of the mine gallery further extension of said prop means is automatically stopped when the pressure in said one compartment reaches a controlled opening pressure of said overpressure valve.

1. In a transportable vehicle having a transit profile with a height and width perpendicular to the direction of travel, said vehicle having a discharge spout extending beyond said profile when said spout is in an operational configuration, the combination comprising:

a pair of tubes having proximate first ends, said tubes being axially aligned at said first ends along a first axis to define the operational configuration, means for connecting said first ends, said connecting means including means for pivoting one of said tubes with respect to the other between the operational configuration and a transit configuration, said transit configuration including portions of said tubes passing one another, said pivoting means includes a second axis disposed in a first plane extending generally transversely through said first axis but skewed with respect to a second plane which is perpendicular to said first axis, whereby said tubes are compactly positioned for easy transit.

4,433,947

SLURRY FEED PUMP FOR COAL LIQUEFACTION REACTORS

Adolf Kratzer, Nuremberg, and Horst Dünnebier, Oberasbach, both of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,693

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3117993

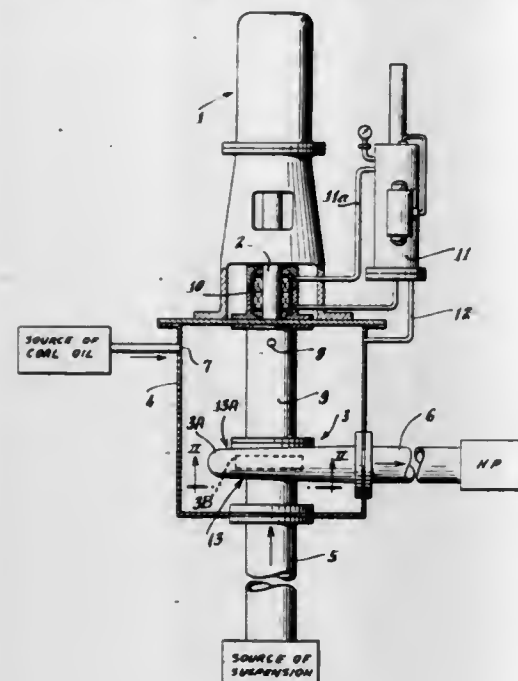
Int. Cl.³ F04B 49/04

U.S. Cl. 406—99

16 Claims

1. Apparatus for conveying a suspension which contains granulated solid particles to a plant, particularly for conveying a highly pressurized and hot suspension of coal particles, oil and a catalyst to a liquefaction reactor, comprising a liquid-filled plenum chamber, a vertical cantilevered centrifugal pump installed in said chamber for operation below first critical speed and having an inlet and an outlet; first conduit means sealingly extending into said chamber and connected with said

inlet to deliver a stream of suspension to said pump; and second conduit means sealingly extending from said chamber and



connected with said outlet to convey pressurized suspension to the plant.

4,433,948

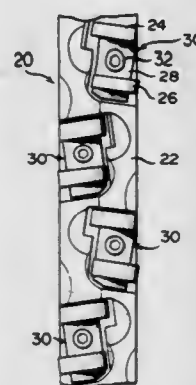
CUTTER FOR A CRANKSHAFT MILLING MACHINE
Kazuo Kodama, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,690

Int. Cl.³ B26D 1/00

U.S. Cl. 407—42

4 Claims



venting the other side of the tip from interfering with the side wall of the shoulder;
a forming tip arranged to machine the side walls of the webs, the shoulders, the rounded corners and the main and crank bearings; and means to fasten said tip sets to the mounting face of said disk.

4,433,949

SPLIT HEAD FASTENER

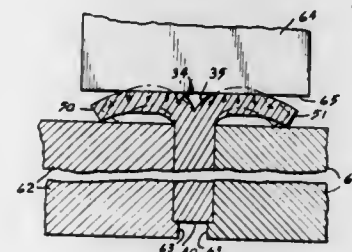
Robert L. Hallock, 7136 NE. 8th Dr., Boca Raton, Fla. 33431

Filed Aug. 31, 1981, Ser. No. 298,223

Int. Cl.³ F16B 15/00

U.S. Cl. 411—477

9 Claims



1. A split head fastener constructed of sheet metal having a predetermined thickness comprising an integrally connected head and shank, said shank having an uppermost portion and a tip, said uppermost portion of said shank having a thickness substantially equal to that of the sheet metal, said head having two substantially identical halves which are integrally connected to said uppermost portion of said shank, said halves of said head being separated by a groove which extends generally transversely with respect to said thickness of said uppermost portion of said shank, each of said halves having at least a portion disposed perpendicular to the elongated axis of said shank and being greater in thickness than one-half the thickness of said uppermost portion of said shank.

4,433,950

SELF-FEEDING APPARATUS AND METHOD

James E. Hanger, and Charles T. Walker, both of Panama City, Fla., assignors to Charles Tillman Walker, Lynn Haven, Fla.

Filed Jun. 29, 1981, Ser. No. 278,858

Int. Cl.³ A47G 21/08

U.S. Cl. 414—9

15 Claims

8. A self-feeding apparatus comprising:
a rotatable table for carrying a plate holding food;
a spoon;
an arm carrying said spoon;
latch means releasing said spoon permitting same to be lowered by gravity into said plate; and

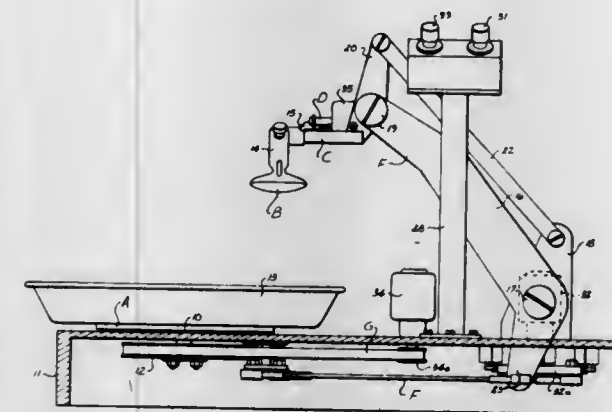
1. A milling cutter for a crankshaft machine for milling a crankshaft having a plurality of main bearings, crank bearings and webs connecting each crank bearing to adjacent main bearings, each end of the bearings having a rounded corner connected to a side wall of a shoulder which, in turn, is connected to a side wall of one of the webs, the milling cutter comprising:

a disk having two end faces and a peripheral mounting face; and

a plurality of tip sets detachably mounted on the mounting face of said disk in a zigzag fashion forming two rows of said tip sets, each row being offset towards either one of end faces of said disk, each of said tip sets comprising:

a generally square-faced tip arranged to machine the main and crank bearings and the rounded corners of the bearings, said square-shaped tip having four rounded corners, one end of each rounded corner being tangent to one side of the tip and the other end thereof crossing another side of the tip and wherein said square-shaped tip is mounted on the mounting face of said disk in such a way that the other end of the rounded corner which is radially and axially outwardly positioned faces sideways thereby pre-

linkage means for progressively lowering said arm after said latch means releases said spoon causing said spoon to



move forwardly or outwardly against said plate for placing food on said spoon.

4,433,951

MODULAR LOADLOCK

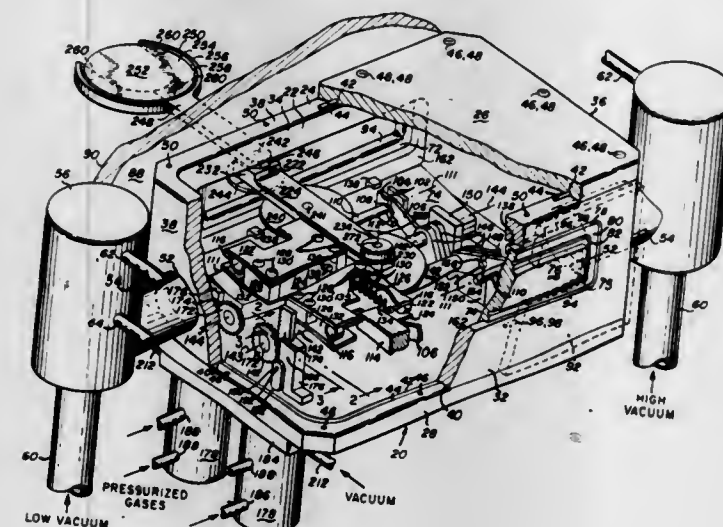
George R. Koch, Los Altos, and Carl T. Petersen, III, Fremont, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Feb. 13, 1981, Ser. No. 234,307

Int. Cl.³ C23C 13/08

U.S. Cl. 414—217

10 Claims



1. A loadlock comprising:
a sealable isolation chamber having walls through which is formed a first aperture for conducting fluids into or out of the chamber, said walls also having formed therethrough a plurality of workpiece transfer apertures for permitting the introduction of a workpiece into the isolation chamber and removal of a workpiece therefrom, said walls about said workpiece transfer aperture being adapted to mate with and to seal to an immediately adjoining wall such as may be part of a processing chamber;
closure means for individually closing and sealing said workpiece transfer apertures including a unitary door adapted to mate with and seal to a substantially planar surface such as may be part of a processing chamber to which the loadlock may be mated and sealed, the door having a substantially planar sealing surface which may be disposed into a workpiece transfer aperture in said walls of the isolation chamber so as to be adjacent to and substantially parallel to a planar surface of a processing chamber to which the loadlock is mated, and sealing surface having a continuous U-shaped trough adapted to receive and retain an O-ring formed therein, said trough being located near said periphery of said planar sealing surface, the door further including a pair of closure lugs projecting from a

side of the door opposite to said sealing surface, said lugs being adapted to receive a rod-shaped door closure pin so as to dispose a longitudinal axis thereof substantially parallel to said sealing surface, said pair of lugs being further adapted to receive a first terminal end of a connecting link, the door including a control link projecting from said side of the door opposite to said sealing surface; and O-ring retained within said U-shaped trough of the door; a roller attached to said control link of the door adjacent to said terminal end of said control link farthest from said sealing surface, the roller being attached to be rotatable about an axis substantially parallel to said axis established for a longitudinal axis of a door closure pin by said closure lugs of the door; a track secured within the isolation chamber, the track being adapted to guide the roller to translate only in a direction essentially perpendicular to a planar surface of a processing chamber or sealing plate to which the door mates and seals, the track being further adapted to restrain the door to be rotatable only about said axis of rotation of the roller attached to said control link of the door; a rod-shaped rotary drive shaft secured within the isolation chamber to be rotatable about an axis substantially parallel to said axis established for a longitudinal axis of a door closure pin by said closure lugs of the door, said axis about which the drive shaft is rotatable also being displaced to a side of said plane of translation of said axis about which the roller rotates; a pair of drive links secured to and projecting outward from the drive shaft, the links being adapted to receive and retain a rod-shaped drive pin to dispose said central longitudinal axis thereof at a distance from and parallel to said axis about which the drive shaft is rotatable, each pair of links being further adapted to receive a second terminal end of a connecting link; a connecting link having a first terminal end adapted to receive a rod-shaped door closure pin, said first terminal end of the link being engaged with said pair of said closure lugs of the door adapted to receive said first terminal end of the connecting link, a second terminal end of the connecting link being adapted to receive a rod-shaped drive pin, said second terminal end of the link being engaged with said terminal ends of the pair of drive links adapted to receive said second terminal end of the connecting link; a door closure pin passing through said pair of closure lugs of the door, said lugs being adapted to receive the door closure pin, the door closure pin also passing through said first terminal end of the connecting link engaged with said pair of closure lugs and adapted to receive the door closure pin; a drive pin passing through said terminal ends of a pair of drive links adapted to receive the drive pin, the drive pin also passing through said second terminal end of the connecting link engaged with the pair of drive links and adapted to receive the drive pin; a coil spring attached at a first terminal end to the door and having a second terminal end secured within the isolation chamber so as to urge the door to translate away from a planar surface of a processing chamber to which the door mates and seals; an L-shaped slide member secured to the door along said side surface thereof from which said closure lugs project and along an edge surface thereof located on an opposite side of the plane of translation of the roller from that on which the rod-shaped rotary drive shaft is located, the slide member being adapted for sliding engagement with a surface of said workpiece transfer aperture formed through said wall of the sealable isolation chamber whereby the door is restrained to translate only in a direction essentially perpendicular to a planar surface of a processing chamber to which the door mates and seals; and rotating drive means for rotating the drive shaft so that the door may be opened and closed, the rotary drive means being operable from outside the chamber;

workpiece transfer means for receiving a workpiece into the isolation chamber through a first open workpiece transfer aperture and for delivering a received workpiece from the isolation chamber through a second open workpiece transfer aperture;

the isolation chamber, the closure means and the workpiece transfer means being constructed such that all said workpiece transfer apertures may be simultaneously closed and sealed with a workpiece present within the isolation chamber whereby a workpiece may be sealed within the loadlock.

4,433,952

TRACKED CRANE FOR LARGE OBJECTS

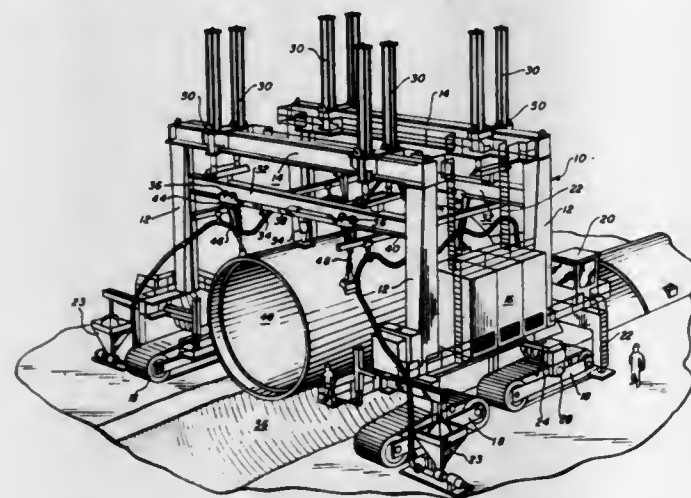
Myron Glickman, Morton Grove, Ill., assignor to Mi-Jack Products, Inc., Hazel Crest, Ill.

Filed Oct. 23, 1981, Ser. No. 314,122

Int. Cl.³ B66C 5/04

U.S. Cl. 414—460

2 Claims



1. A tracked crane for hoisting and moving large objects, which comprises: a frame including side members and top support member means, tracks adjacent each corner of the frame, means for driving said tracks to permit locomotion of the crane, said tracks being attached to the frame by horizontal pivot means, and jack means for elevating said frame and tracks off of the ground, whereby said tracks, when elevated, can be horizontally pivoted into another direction and then lowered to the ground again, to permit said crane to be driven in another direction without turning; said tracks also have vertical pivot means to allow them to pitch as they travel across uneven terrain; said top support member means carries pressure cylinder lifting means, the pressure cylinders of said lifting means carrying vertically movable, generally horizontal stabilizing beam means; trolley means, movable along said stabilizing beam means is provided, said trolley means being adapted for carrying flexible members for connecting to and carrying a load; and means are provided for pressing on the top of the load carried by said crane to prevent bouncing of the load supported by said flexible member, as the crane travels and to hold the load down during its installation as necessary.

4,433,953

INDUSTRIAL ROBOT HAVING A JOINT-FREE ARM

Nils L. Muench, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 360,628, Mar. 22, 1982, abandoned.

This application Jul. 11, 1983, Ser. No. 512,694

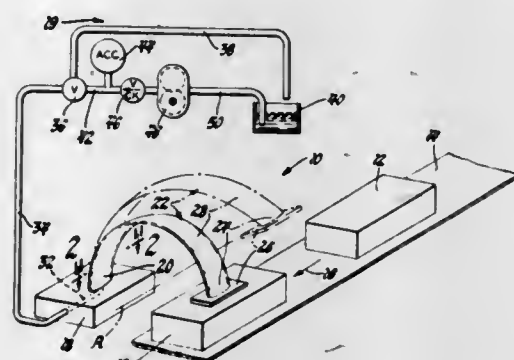
Int. Cl.³ B66C 1/00

U.S. Cl. 414—735

4 Claims

1. A robot adapted to be positioned adjacent a support table for performing work on a series of articles, said robot comprising a base rigidly supporting an arm that includes a generally circular tubular member sealed at its free end and having an opening at its supported end that communicates with the hollow interior of said tubular member, said tubular member being made of a rigid material and having a uniform cross-sectional

configuration; a hydraulic system including a source of pressurized hydraulic fluid connected to said opening at said supported end of said tubular member; a work tool attached to said free end of said tubular member; and valve means between said source of pressurized hydraulic fluid and said opening at said supported end of said tubular member, said valve means having a first position wherein said source of pressurized hydraulic fluid is connected to said opening so as to cause said



free end of said tubular member to move towards longitudinal alignment with said supported end, and having a second position for connecting said opening to atmosphere so as to cause said tubular member to return said free end to its original position; said work tool adapted to move towards and away from said series of articles successively and perform work thereon as said valve means is moved between said first position and said second position.

4,433,954

APPARATUS FOR ROTATING PALLET

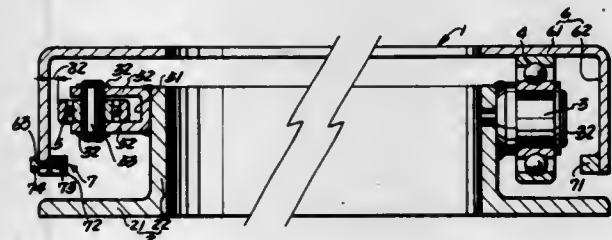
Hiromu Fujita, Kyoto, Japan, assignor to Osaka Taiyu Co., Ltd., Osaka, Japan

Continuation of Ser. No. 147,107, May 6, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,181

Int. Cl.³ B65G 7/00

U.S. Cl. 414—757

4 Claims



1. A portable apparatus for rotating a pallet consisting of an annular under ring having a flat bottom wall, a peripheral wall extending upwardly from the bottom wall forming an L-shaped cross-section, and a plurality of bearings arranged on a circumference on said peripheral wall, some of said plurality being rotatable in a vertical plane and the others being rotatable in a horizontal plane; and an annular upper ring provided over the under ring and supported rotatably on the bearings rotatable in a vertical plane, the annular upper ring having a flat top wall, a peripheral wall projecting downwardly from the top wall positioned close to the bearings rotatable in a horizontal plane, the top wall and the upper ring peripheral wall forming a L-shape cross-section opposite in orientation to that of said under ring and a retaining ring along the lower edge of the peripheral wall of the upper ring projecting toward void space beneath the bearings rotatable in a horizontal plane.

4,433,955

TURBINE ARRANGEMENT

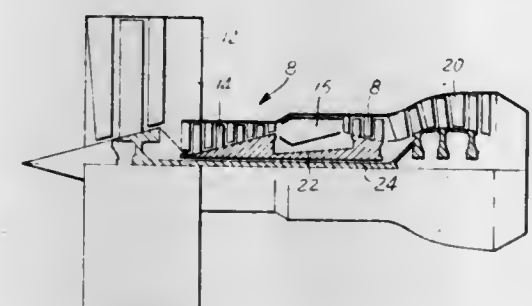
Richard P. Johnston, Morrow, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 26, 1981, Ser. No. 247,682

Int. Cl.³ F01D 1/04

U.S. Cl. 415—1

12 Claims



9. In a method of arranging a gas turbine engine of the type including a combustor effective for generating combustion gases and a turbine effective for receiving said gases for driving a rotor, said turbine including an annular gas flowpath having a forward portion wherein a mean flow streamline slopes away from an engine longitudinal axis in a downstream direction and a plurality of blade rows and vane rows spaced alternately and within said flowpath, said blade rows extending radially outwardly from said rotor, the steps of:

arranging said blade rows and said vane rows within said forward portion of said flowpath for having radial axes tilted forward at an angle less than 90° from said engine longitudinal axis; and

arranging said annular gas flowpath so that said mean flow streamline of said forward portion of said flowpath has an increased slope for increasing efficiency of transfer of energy from said gases to said rotor.

10. In a gas turbine engine including a combustor effective for generating combustion gases and a turbine effective for receiving said gases for driving a rotor, said turbine including an annular gas flowpath having a forward portion wherein a mean flow streamline slopes away from an engine longitudinal axis in a downstream direction and a plurality of blade rows and vane rows spaced alternately and within said flowpath, said blade rows extending radially outwardly from said rotor, an improved turbine comprising:

said blade rows within said forward portion of said flowpath having radial axes tilted forward at an angle less than 90° from said engine longitudinal axis; and said forward portion of said flowpath being arranged so that said mean flow streamline of said gases has an increased slope.

4,433,956

ORTHOPEDIC CORRECTOR AND METHOD OF CORRECTION OF CLASS II MALOCCLUSION

John W. Witzig, 2040 N. Douglas Dr., Golden Valley, Minn. 55422

Continuation-in-part of Ser. No. 287,281, Jul. 27, 1981, abandoned. This application May 3, 1982, Ser. No. 374,440

Int. Cl.³ A61C 7/00

U.S. Cl. 433—7

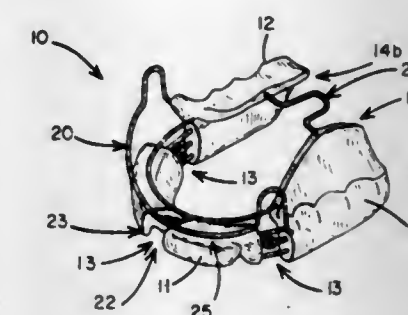
8 Claims

1. An orthopedic appliance for correcting a Class II, Division I, malocclusion comprising:

a. a posterior segment having contoured sides for mating and longitudinally fixed engagement with the interior sides of a person's upper molars;

b. an anterior segment having a contoured leading edge for mating engagement with the inside of the frontal arch of the person's mandible, the leading edge being a ramp which extends angularly outward in a direction from the

bottom of the mandible to the top of the mandibular frontal arch, and



c. an expansion screw assembly connecting the posterior and anterior segment for longitudinally expandable movement between the anterior segment and the posterior segment.

4,433,957

TRANSMISSION GEAR FOR A DENTAL HANDPIECE

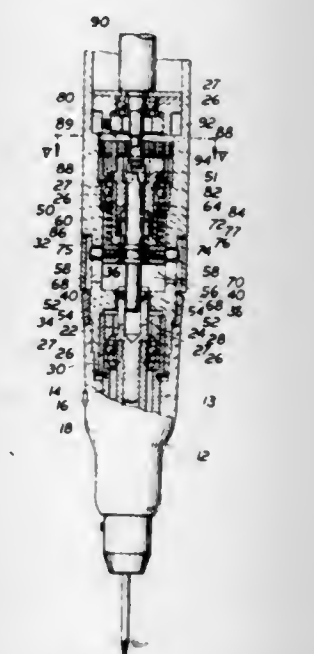
Toshimasa Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Kanuma, Japan

Filed Feb. 22, 1982, Ser. No. 351,313

Int. Cl.³ A61C 1/02

U.S. Cl. 433—105

3 Claims



1. A dental handpiece having a two speed transmission, comprising:

a hollow handle means; a holding sleeve fixedly held in said handle means; cylindrical driven shaft means rotatably journaled in said holding sleeve and having a hollow axial cylindrical recess at the rear end and having a diametrical longitudinal slot therethrough;

said handle means having a peripheral recess around the outside of said handle means at the middle portion thereof and at least one spirally extending guide slot therein opening into the interior of said handle means;

a clutch shaft in the interior of said handle means and axially movable therein, said clutch shaft having a cotter at the forward end extending diametrically through said slidable in said slot in said driven shaft means;

a collar having a radially extending pin thereon and rotatably mounted on said clutch shaft at a middle portion thereof and fixed against axial movement along said clutch shaft and having said pin extending through said spiral slot, said clutch shaft further having first engagement means at the rear end thereof;

a coil spring in said interior of said handle means engaged with said collar urging said collar toward said driven shaft

means; a sleeve means rotatably mounted in a fixed position in the interior of said handle means coaxial with said clutch shaft, said clutch shaft having second engagement means engagable with said sleeve for causing rotation of said clutch shaft with said sleeve means when said clutch shaft is in a forward position and disengaged from said sleeve means when said clutch shaft is in a rearward position;

planet gear means mounted on the rear end of said sleeve means;

a central gear within said planet gear means and engaged therewith;

a motor means on which said central gear is mounted, said central gear having a third engagement means thereon engagable with said first engagement means when said gear shaft is in the rearward position; and an operating ring around the handle means in said recess and engagable with said pin for, when said operating ring is rotated, moving said pin along said spiral groove to move said clutch shaft between the forward and rearward positions.

4,433,958

PERMANENT DENTAL RESTORATIVE MATERIAL

Robert P. Fellman, Langhorne; Marvin J. Hurwitz, Elkins Park; Robert M. Myers, Holland, all of Pa., and Gerald F. Slack, Vincentown, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 305,417, Sep. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 128,010, Mar. 7, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,778

Int. Cl.³ A61K 6/08

U.S. Cl. 433—199

28 Claims

1. Composition useful for preparing permanent dental restorations having high compressive strength, wear resistance and a coefficient of friction of not greater than 0.3 comprising:

(a) about 10 to 60 parts by weight of a liquid monomer system comprised of one or more monoethylenically unsaturated monomers and about 10% to 80% by weight, based on said liquid monomer system, of one or more polyethylenically unsaturated crosslinking monomers, said monomer system, containing at least 70%, by weight of said monomer system, of acrylic monomer;

(b) about 40 to 90 parts by weight of a mixture of (1) organic polymeric particulate substance insoluble in said liquid monomer system selected from the class consisting of poly(ethylene-co-chlorotrifluoroethylene), poly(vinylidene fluoride), nylon and polyacetal and (2) inorganic particulate substance insoluble in said liquid monomer system wherein the weight ratio of the organic particulate substance to inorganic particulate substance is from about 2:1 to about 10:1; and

(c) a free radical initiator system.

23. A method of making permanent dental crowns having high compressive strength, wear resistance and a coefficient of friction of not greater than 0.3 comprising (I) mixing (a) a first component comprising about 10 to 60 parts by weight of a liquid monomer system comprised of one or more monoethylenically unsaturated monomers and about 10% to about 80% by weight, based on said liquid monomer system, of one or more polyethylenically unsaturated crosslinking monomers, said monomer system containing at least about 70%, by weight of said monomer system, of acrylic monomer, with (b) a second component comprising about 40 to 90 parts by weight of a mixture of (1) organic polymeric particulate substance insoluble in said liquid monomer system and selected from the class consisting of poly(ethylene-co-chlorotrifluoroethylene), poly(vinylidene fluoride), nylon and polyacetal and (2) inorganic particulate substance insoluble in said liquid monomer system wherein the weight ratio of the organic particulate substance to the inorganic particulate substance is from about 2:1 to about 10:1, said mixing taking place in the presence of a free radical initiator, (II) allowing the resultant mixture to achieve a suitable viscosity, (III) filling a tooth-shaped preformed mold

or impression tray with the resultant thickened mixture, and (IV) applying the filled mold or tray to the prepared tooth to which the crown is to be affixed, (V) allowing the composition to set, (VI) removing the resultant set crown from the mouth and then from the mold or impression tray, (VII) finishing and polishing the crown, (VIII) filling the crown with dental cement and placing the dental crown on the prepared tooth.

4,433,959

COMPOSITE LAMINATE DENTAL VENEER CONTAINING COLOR SYSTEMS

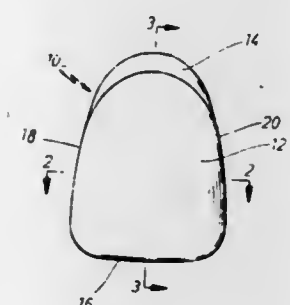
Frank R. Faunce, Jackson, Miss., assignor to JAFF Investment Company, Muncie, Ind.

Filed Mar. 24, 1982, Ser. No. 361,257

Int. Cl.³ A61K 6/08

U.S. Cl. 433—201

16 Claims



1. A composite laminate dental veneer for attachment to the etched labial enamel surfaces of a human tooth, comprising:

(a) an outer lamination composed of stain-resistant, chemical-resistant and erosion-resistant cross-linked polymer material;

(b) an inner lamination composed of a non cross-linked polymer material having the capability of efficient bonding to the etched labial enamel surfaces of human teeth and having the capability of permanent bonding to said outer lamination, said inner and outer laminations defining integral mass, said lamination defining incisal, cervical and marginal edges and conforming to the configuration of the labial surface of said human tooth;

(c) said outer lamination being translucent and having additive color pigments; and

(d) said inner lamination having subtractive color pigments.

4,433,960

EXTRACORONAL DENTAL SPLINT AND SPLINTING METHOD

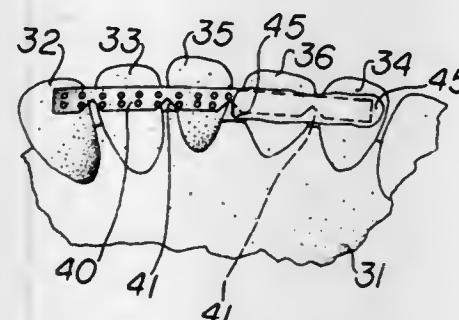
Jon C. Garito, 22 Deering La., East Rockaway, N.Y. 11558, and Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516

Continuation of Ser. No. 282,942, Jul. 13, 1981, abandoned. This application Jun. 9, 1983, Ser. No. 501,054

Int. Cl.³ A61C 5/00

U.S. Cl. 433—215

11 Claims



7. An extracoronar dental splinting procedure for immobilizing one or more intermediate mobile teeth in a continuous row

of at least four teeth without any missing teeth and with at least the end teeth being immobile, comprising the steps of:

a. providing a thin flat substantially straight slightly malleable strip having holes therein and having a length sufficient to span the entire row,

b. without cutting or drilling any of the teeth, fitting the strip to the lingual surfaces of an inner dental arch of the patient so as to overlie the row of at least four teeth including the end immobile teeth and at least one intermediate mobile tooth,

c. without cutting or drilling any of the teeth, applying the strip to the said inner dental arch defined in step b,

d. while holding the strip against the inner dental arch, smoothing a hardenable creamy-type resin or composite material over the entire held strip so as to fill the holes therein and contact the tooth surfaces against which the strip is held, and

e. while still retaining the strip against the inner dental arch, allowing the hardenable material to harden firmly bonding the strip to the said row of immobile and mobile teeth along the inner dental arch and stiffening the strip to stabilize the mobile tooth.

4,433,961

HUMAN KNEE MODEL SUITABLE FOR TEACHING OPERATIVE ARTHROSCOPY AND HAVING REPLACEABLE JOINT

Eugene J. Chandler, 5702 E. Camelback Rd., Phoenix, Ariz. 85018

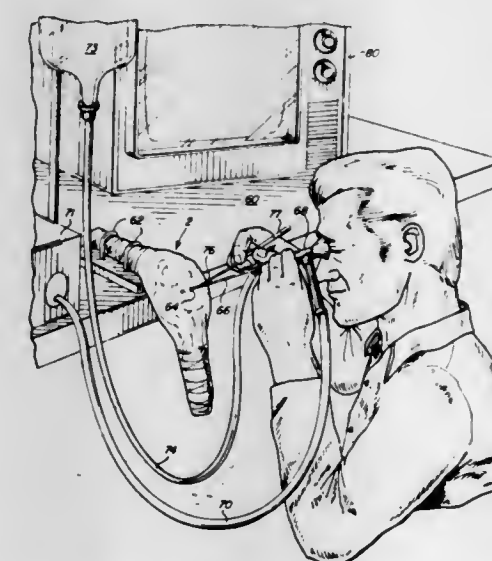
Continuation-in-part of Ser. No. 187,509, Sep. 15, 1980, Pat. No. 4,331,428. This application Apr. 8, 1982, Ser. No. 366,474

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ G09B 23/30

U.S. Cl. 434—274

34 Claims



1. A method of producing a model of the human knee having a replaceable knee joint, the model being suitable for learning and practicing arthroscopic surgical techniques, said method comprising the steps of:

a. providing a bovine leg having femur and tibia bones, the femur and tibia bones having a lower extremity and an upper extremity, respectively, the bovine leg including a knee joint formed between the lower extremity of the femur bone and the upper extremity of the tibia bone;

b. modifying the knee joint of the bovine leg to facilitate the insertion of an arthroscope into the knee joint;

c. severing the bovine femur and tibia bones closely proximate the lower and upper extremities, respectively, thereof while leaving the modified knee joint intact;

d. releasably securing the lower extremity of the severed bovine femur bone to the lower end of an upper support member, and releasably securing the upper extremity of

the severed bovine tibia bone to the upper end of a lower support member;

e. surrounding the modified knee joint and at least the upper and lower ends of the lower and upper support members, respectively, with a synthetic flexible, fluid-impervious covering; and

f. sealing the covering to allow continuous irrigation of the knee joint.

4,433,962

PROCESS FOR MAKING ENVELOPE FOR PROJECTION TELEVISION TUBE

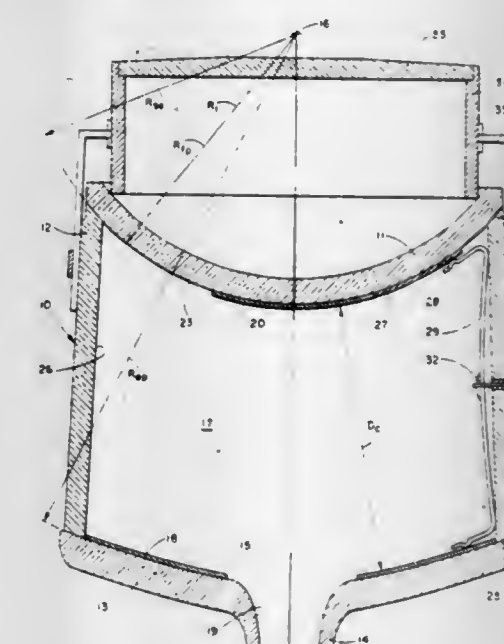
Henry E. Kloss, 174 Brattle St., Cambridge, Mass. 02133

Division of Ser. No. 234,913, Feb. 17, 1981, Pat. No. 4,365,183, which is a continuation of Ser. No. 875,222, Feb. 5, 1978, abandoned. This application Sep. 7, 1982, Ser. No. 415,397

Int. Cl.³ C03B 23/217; H01J 31/00, 29/24

U.S. Cl. 445—6

8 Claims



1. A process for making an envelope for a projection television tube including a tube neck and an end plate adjacent the tube neck; a spherically curved electron beam target spaced from the end plate within the envelope; a reflective surface larger than the target and located adjacent the end plate in concentric relationship with and facing the target surface; a target support member supporting the target surface in the envelope and a hollow cylindrical member extending along the tube axis between the end plate and the target support for maintaining the spacing between the target surface and the reflective surface, comprising the steps of:

(a) providing joint surface areas on the opposite ends of the cylindrical member and the adjacent peripheral areas of the target support member and end plate that lie at least in part on spherically curved surfaces that are concentric with said target and reflective surfaces;

(b) placing the cylindrical member on the end plate and placing the target support with the target surface attached thereto on the cylindrical member so that said joint surface areas lying on said spherically curved surfaces are contiguous;

(c) bonding the end plate, cylindrical member and target support member together by using a high temperature fusible frit between the joint surfaces; heating the cylindrical member, end plate and target support to the fusing temperature of the frit; and cooling the assembly.

4,433,963

CHAIN GUIDE FOR A DERAILLEUR FOR A BICYCLE
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

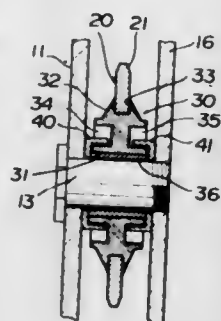
Filed Dec. 22, 1980, Ser. No. 218,803

Claims priority, application Japan, Dec. 29, 1979, 54-184225[U]

Int. Cl.³ F16H 7/22, 11/08

U.S. Cl. 474—80

4 Claims



1. A chain guide for a speed changing derailleur for a bicycle, said chain guide comprising a pulley plate, pulley shafts fixed to said plate, and pulleys supported rotatably to each of said pulley shafts respectively, said pulleys each being provided with an annular pulley toothed member having at its outer periphery a number of teeth and a pulley body having at a central portion thereof a shaft bore fitted onto a said pulley shaft and at the outer periphery a support portion for said tooth member, said pulley toothed member being formed of a wear resistant material, said pulley body being formed of an elastic material and having opposing annular recesses on each side thereof which define between them a portion of said body which has a reduced thickness, said recesses facilitating elastic deformation of said body, said pulley toothed member being coupled with said support portion at said pulley body, whereby said pulley body is elastically deformable enabling said pulley tooth member to be displaceable axially of said pulley shaft and freely rotatable during and after a speed changing movement of said chain guide.

4,433,964

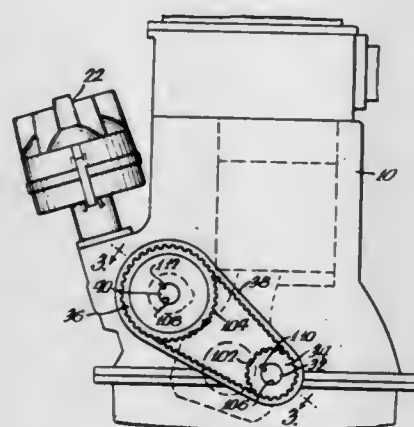
COMPOSITE TIMING GEARS AND PROCESS
Matthew W. Holtzberg, Ringwood, N.J.; Steven J. Henke, Woodridge, and Lawrence D. Spaulding, Naperville, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,290

Int. Cl.³ F16H 55/06

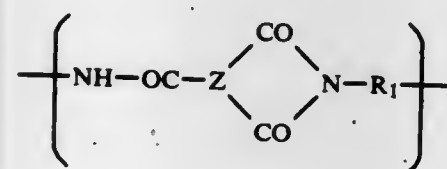
U.S. Cl. 474—152

29 Claims

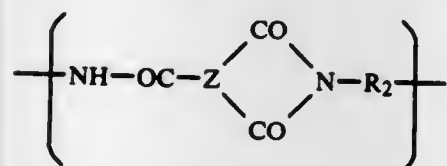


1. Composite timing gears, comprising:
a thermoplastic, amide-imide resinous polymeric crankshaft gear having teeth and defining a hole for snugly receiving a crankshaft;
a thermoplastic amide-imide resinous polymeric camshaft gear having teeth for meshingly engaging and being

driven by said teeth of said crankshaft gear and defining a hole for snugly receiving a camshaft;
each of said gears comprising a reaction product of a trifunctional carboxylic acid compound and at least one diprimary aromatic diamine and comprising at least one of the following moieties:



and



wherein one carbonyl group is meta to and one carbonyl group is para to each amide group and wherein Z is a trivalent benzene ring or lower-alkyl-substituted trivalent benzene ring, R₁ and R₂ are different and are divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms or two divalent aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, —SO₂—, and —S— radicals and wherein said R₁ and R₂ containing units run from about 10 mole percent R₁ containing unit and about 90 mole percent R₂ containing unit to about 90 mole percent R₁ containing unit and about 10 mole percent R₂ containing unit; and

said thermoplastic crankshaft and camshaft gears maintaining their shape and structural integrity at engine operating conditions.

17. A process for forming a composite timing gear for use in an engine, comprising the steps of:
inserting a removable core pin along an axis in a cavity of a mold providing a die to define a generally gear-shaped molding chamber;

injection molding a thermoplastic, amide-imide resinous polymer to form a gear-shaped blank having teeth and a diaphragm covering a hole for receiving a shaft, said injection molding including injecting said amide-imide polymer into said cavity through a sprue at a location generally opposite said core pin along said axis to substantially fill said gear-shaped molding chamber about said core pin and substantially minimize knit lines in said amide-imide gear-shaped blank;

solidifying the shape and polymeric orientation of said amide-imide gear-shaped blank by allowing said amide-imide gear-shaped blank to cool below its plastic deformation temperature;

removing said core pin from said mold;
post curing said amide-imide gear-shaped blank by solid state polymerization to enhance the strength and integrity of said amide-imide gear-shaped blank; and
removing said diaphragm covering said hole to form said composite timing gear.

4,433,965

TORQUE TRANSMISSION BELT MEANS
Yoshiyuki Hattori, Toyooka; Kazuma Matsui, Toyohashi, and Hiroji Kinbara, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

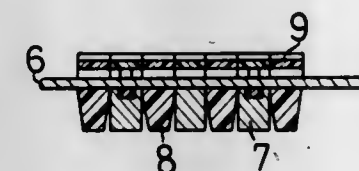
Filed Feb. 23, 1981, Ser. No. 237,261

Claims priority, application Japan, Feb. 25, 1980, 55-23015

Int. Cl.³ F16G 1/00, 1/20

U.S. Cl. 474—201

10 Claims



1. A torque transmission belt extending between a drive pulley and a driven pulley and movable for transmitting a driving force from said drive pulley to said driven pulley, comprising:

a ring extending around said pulleys; and
a series of blocks arranged along said ring and shiftably engaged therewith, said series of blocks being composed of two kinds of blocks alternately arranged along said ring:

one kind of blocks being made of non-compressive material having high strength and being provided with opposed side surfaces which contact said pulleys as the belt moves; and

the other kind of blocks being made of elastic material formed so that the distance between opposed side surfaces facing said one kind of blocks is decreased toward the inside of said ring.

4,433,966

DIAPHRAGM PUMP

Klaus D. Krumm, Bühl, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

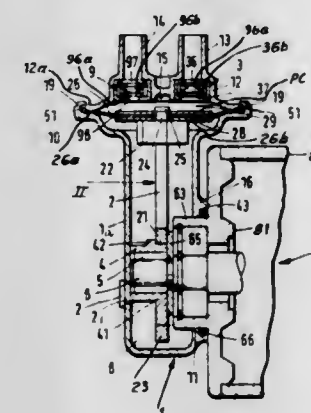
Filed Dec. 2, 1981, Ser. No. 326,564

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046028

Int. Cl.³ F04B 39/02, 21/02; F01B 19/02

U.S. Cl. 417—571

19 Claims



1. In a diaphragm pump, the combination of a housing; a flexible diaphragm installed in said housing and including a central portion having an aperture; and means for flexing said diaphragm, comprising a rotary eccentric in said housing, a one-piece elongated connecting rod having an annular first end portion surrounding said eccentric, a carrier remote from said first end portion and a second end portion extending from said carrier and through the aperture of said central portion, a first substantially disc-shaped biasing element having an opening through which said second end portion extends, and a second substantially disc-shaped biasing element having an opening through which said second end portion extends, said second end portion (10) extending through said second end portion (12).

4,433,967

PUMP IMPELLER

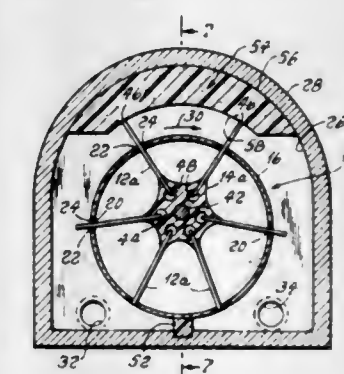
Lawrence B. Craig, 116 Duck Pond Rd., Glen Cove, N.Y. 11542, and Alfred J. Farina, 1939 Anita Ct., Baldwin, N.Y. 11510

Filed May 17, 1982, Ser. No. 378,636

Int. Cl.³ F01C 5/04; F04C 27/00

U.S. Cl. 418—140

3 Claims



1. In an impeller for a centrifugal pump of the type having an operative position rotatably mounted in a pumping chamber in said pump and consisting of an elastomeric hub and plural vanes circumferentially spaced to extend in radial relation from said hub, the improvements to said impeller comprising each vane being of a geometric shape and operatively disposed with a first outer edge thereof moving through a rotative path about the periphery of said pumping chamber and said opposite second inner edge thereof molded in situ in said elastomeric hub with the area of said vane extending between said first and second edges adapted to exert pressure against fluid being pumped during pumping service of said pump, and for each said vane a compartment formed in said hub by the absence of elastomeric material in an area coincident with and extending along the length of said second edge so as to permit unimpeded movement of said second edge in said compartment, whereby in response to changing angular orientations of the vanes in said elastomeric hub the said resulting movement in said second edge by being unimpeded is with minimum stretching and compression in said surrounding elastomeric material of said hub and correspondingly contributes to obviating any rupture in said hub.

4,433,968

ROUND TOP RIMMING MACHINE

Eugene A. Koll, Mounds View, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 15, 1982, Ser. No. 357,837

Int. Cl.³ B29C 17/02

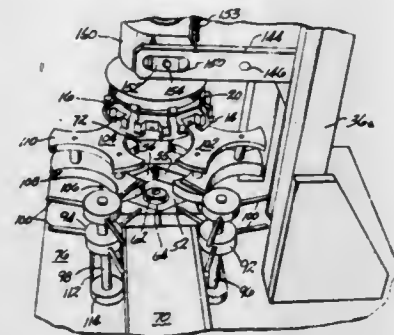
U.S. Cl. 425—392

18 Claims

1. An apparatus for forming a cup edge comprising in combination:

a means for forming the rim of a cup having an annular sidewall and a polygonal base,
means for supporting said cup in register with said means for forming,
means for relatively moving said cup and said means for supporting said cup in register toward said means for

forming to place said rim in contact with said means for forming.



said means for supporting said cup in register including a socket complementary to said polygonal base to prevent rotation of said cup relative to said socket when said cup is seated in said socket.

4,433,969

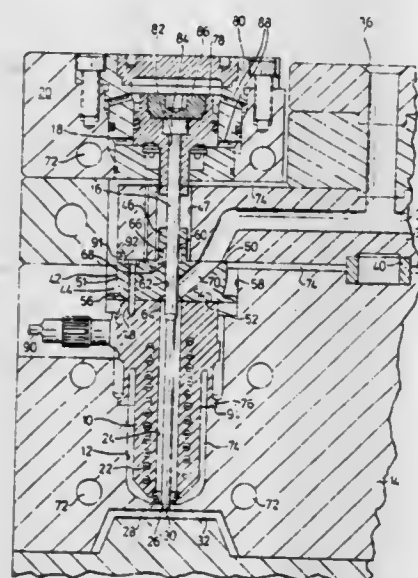
INJECTION MOLDING VALVE PIN BUSHING AND METHOD

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada
Filed Jul. 19, 1982, Ser. No. 399,770

Claims priority, application Canada, Jul. 12, 1982, 407095
Int. Cl.³ B29F 1/03

U.S. Cl. 425-548

7 Claims



1. In a valve gated injection molding system having a heated nozzle seated in a well in a cooled cavity plate, a gate in the cavity plate leading to a cavity, the heated nozzle having a bore extending therethrough from a first surface into alignment with the gate, an elongated valve pin which reciprocates in the bore in the heated nozzle, actuating mechanism for driving the valve pin between open and closed positions, a melt passage which extends through a manifold plate and around the valve pin in the bore in the heated nozzle to convey pressurized melt from a molding machine to the gate, the improvement further comprising:

a valve pin bushing having a main body portion located between the manifold plate and the heated nozzle, the main body portion having first and second opposed surfaces and an outer periphery, a portion of the first surface abutting against the manifold plate and at least a portion of the second surface abutting against the first surface of the heated nozzle, the main body portion of the valve pin bushing having a melt duct which forms a portion of the melt passage which conveys melt to the heated nozzle and a valve pin bore which extends therethrough from the first surface to the second surface, the valve pin bushing bore having an enlarged portion extending to said second surface in alignment with the heated nozzle bore, the valve

pin bushing melt duct joining the valve pin bushing bore at said enlarged portion whereby the pressurized melt flows around the valve pin to the heated nozzle, the pin bushing bore receiving the valve pin therethrough whereby substantial leakage of the pressurized melt is prevented around the reciprocating valve pin with sufficient clearance provided between the valve pin and the manifold plate to avoid misalignment of the valve pin due to thermal expansion of the manifold plate, the valve pin bushing being securely fixed to the heated nozzle with the second surface of the main body portion abutting against the first surface of the heated nozzle and a sufficient portion of the outer periphery of the main body portion of the valve pin bushing being in an abutting relationship with the surrounding cavity plate to laterally locate the valve pin bushing relative to the cavity plate.

4,433,970

METHOD OF HEATING A LIGHTGUIDE PREFORM

Carroll D. Spainhour, Princeton, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

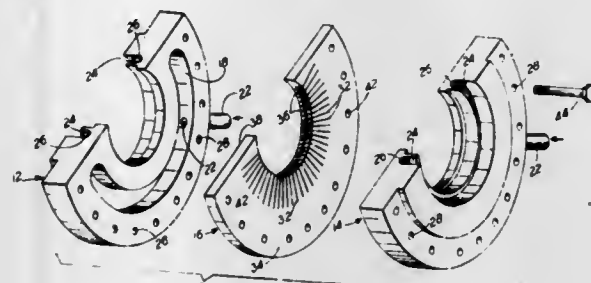
Division of Ser. No. 300,356, Sep. 8, 1981, Pat. No. 4,401,267.

This application Apr. 25, 1983, Ser. No. 488,313

Int. Cl.³ F23M 3/02

U.S. Cl. 431-8

4 Claims



1. A method of heating a lightguide preform, comprising the steps of:
directing first and second gases into first and second plenums, respectively, of a torch, said plenums being separated by a plate;
passing said gases along respective grooves on opposed major surfaces of said plate to the surface of the torch; and
igniting the gases to heat said lightguide preform.

4,433,971

INTEGRATED CARDIOPLEGIA DELIVERY SYSTEM

Erin J. Lindsay, and Jeffrey T. Snyder, both of Dexter, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 30, 1981, Ser. No. 279,174

Int. Cl.³ A61M 1/00, 5/00, 5/16

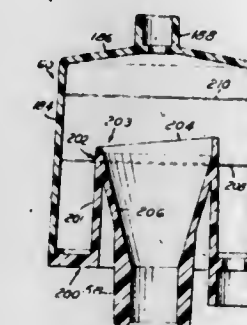
U.S. Cl. 604-122

8 Claims

1. In a cardioplegia system in which cardioplegia medication or a mixture of arterial blood and medication is delivered to the heart of a patient during open heart surgery, and including a cooling medium and apparatus for cooling the cardioplegic fluid flowing to the heart, an improvement in a bubble trap having an inlet connected to the cooling apparatus and an outlet leading to the heart cannula which comprises:

- (a) an upright cylindrical chamber formed of transparent material having a top wall with a connection port, a bottom wall with an outlet port, and upright side walls connecting said top wall and said bottom wall,
- (b) an entrance well supported at the bottom wall extending upwardly into said chamber having an upper overflow rim located between the top and bottom walls and spaced from the side walls of the chamber, said entrance well

having an inlet opening for cardioplegia fluid, said overflow rim of said well being shaped to discharge entering



4,433,972

SANITARY NAPKIN

Amanda Malfitano, 161-77th St., Brooklyn, N.Y. 11209

Filed Jun. 1, 1981, Ser. No. 269,392

Int. Cl.³ A61F 13/16

U.S. Cl. 604-385

5 Claims



1. A sanitary napkin comprising an absorbent pad assembly, including a first absorbent pad for underlying the crotch area of the user, and a second absorbent pad of lesser fluid retention ability and of a size to permit partial penetration of a vaginal orifice disposed on said first pad for immediate contact with the genital area of the user, said second pad conforming generally to the contour of the genital area of the user, said second pad being thicker and wider at its center forming an apex, said first pad being hourglass shaped to assist the penetration of the vaginal orifice by said second pad, and having a width at its narrowest point at the crotch area substantially the same as the width of the widest portion of said second pad.

4,433,973

REUSABLE TUBE CONNECTOR ASSEMBLY

Leonard D. Kurtz, Woodmere, and Joseph M. LiCausi, Port Jefferson Sta., both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Jan. 12, 1982, Ser. No. 338,834

Int. Cl.³ A61M 5/14, 1/02

U.S. Cl. 604-403

11 Claims

1. A mating two-part connector assembly for connecting two tubes or the like which prevents the entry of contaminants in the tubes during use and subsequent reuse of one part of the two part connection assembly, the connector assembly comprising:

- a reusable first connector member including an elongate housing having a distal end and a proximal

end, said elongate housing further having an elongate opening in the proximal end thereof;

a bore through said elongate housing located coaxially with the longitudinal axis of said housing;

an adapter located around said bore on the distal end of said housing, said adapter being sized to secure one of the tubes thereto; and

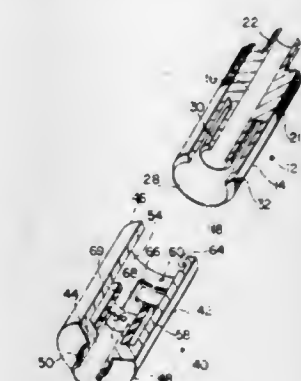
a sterile inner tubing located around said bore and inside of said housing, said inner tubing being spaced inwardly from the proximal end of said housing and also spaced inwardly from the surrounding portion of said housing adjacent thereto;

a reusable second connector member including an elongate housing having a distal end and a proximal end, said elongate housing further having an elongate opening in the proximal end thereof which is sized such that said housing of said second connector member telescopically receives a portion of the proximal end of said housing of said first connector member;

a bore through said elongate housing located coaxially along the longitudinal axis of said housing;

an adapter located around said bore on the distal end of said housing, said adapter being sized to secure the other of the tubes thereto;

a sterile inner tubing located around said bore and inside of said housing, said inner tubing being spaced inwardly



from the proximal end of said housing and also spaced inwardly from the surrounding portion of said housing adjacent thereto; and

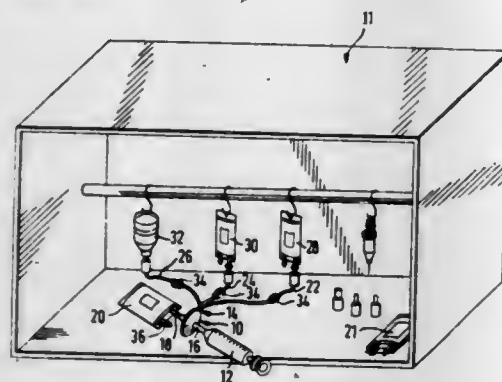
a cover tubing located around said sterile inner tubing of said second housing and extending outwardly beyond the inwardly spaced end of said inner tubing, said cover tubing further being spaced inwardly from the proximal end of said housing and from the surrounding portion of said housing adjacent thereto such that the proximal end of said first housing cannot contact said cover tubing at any insertion angle and said first housing is spaced from said cover tubing after said first and second connector members have been connected, the portion of said cover tubing extending outwardly from said inner tubing being sized to snugly and telescopically receive a portion of said inner tubing of said first housing; and

a connecting means for separably holding said first connector member and said connector member together such that a portion of said first housing is located inside of said second housing and a portion of said first inner tubing is located inside of said cover tubing and is abutting said second inner tubing and such that after disconnection and a subsequent reuse of one of said connector members with a mating connector member, the sterility of said inner tubing of the one of said connector members is maintained.

4,433,974

MIXING SYSTEM FOR PARENTERAL LIQUIDS
 Reinhard Bischof, Baldham, Fed. Rep. of Germany, assignor to
 Baxter Travenol Laboratories, Inc., Deerfield, Ill.
 Filed Jun. 17, 1981, Ser. No. 274,710
 Int. Cl.³ G05D 9/00; A61J 1/00
 U.S. Cl. 604-407

3 Claims



1. A system for preparing parenteral liquid comprising:
 at least a pair of supply containers;
 at least a pair of conduits connected to and communicating

with said respective supply containers each containing different substrates of parental liquid, each conduit having a tube clamp thereon for individually blocking the conduit to permit said substrates to be delivered separately through said conduits,

a multiple valve including an outlet, an inlet/outlet connection, and an inlet to which is attached a connecting piece, said at least two conduits being attached to said connecting piece and communicating with said inlet;
 said multiple valve creating a first flow path between said inlet and said inlet/outlet and a second flow path between said inlet/outlet and said outlet,

a dosing syringe secured to said inlet/outlet connection for a predetermined suction of each of the substrates on a separate basis through said first flow path in a suction stroke of the syringe and for delivery to said outlet through said second flow path of the determined suction of the substrates in a delivery stroke of the syringe;

a flexible mixing container; and

said flexible mixing container; communicating with said outlet; and receiving said separately delivered substrates for mixing;

wherein said system is closed.

CHEMICAL

4,433,975

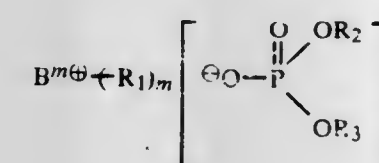
CATIONIC FLUORESCENT WHITENING AGENTS
 Hans R. Meyer, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
 Division of Ser. No. 200,738, Oct. 27, 1980, Pat. No. 4,384,121.
 This application Sep. 22, 1982, Ser. No. 421,202
 Claims priority, application Switzerland, Nov. 1, 1979, 9808/79

Int. Cl.³ C07D 405/04, 413/02

U.S. Cl. 8-648

7 Claims

1. A process of whitening organic material, comprising the step of incorporating in said material or applying to said material a cationic fluorescent whitening agent of the formula



wherein

B is a fluorescent whitening agent selected from the group consisting of 2-furanylbenzimidazoles, 2-azolybenzimidazoles, 2-stilbenylbenzimidazoles and 2,5-(benzimidazolyl)furanes,

m is the number of basic amino groups, and each of R₁, R₂ and R₃ is alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by a non-chromophoric group, or is alkenyl of 2 to 4 carbon atoms which is unsubstituted or substituted by a non-chromophoric group.

4,433,976

PROCESS FOR THE SEMICONTINUOUS DYEING OF TUBULAR KNITTED FABRICS OF CELLULOSE FIBERS WITH AZO DEVELOPING DYE STUFFS

Hans-Ulrich von der Eltz, Frankfurt am Main; Peter Heinisch, Kelkheim, and Hans J. Ballmann, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 288,016, Jul. 29, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 391,858

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028843

Int. Cl.³ D06P 1/12, 3/68

U.S. Cl. 8-555

8 Claims

1. In a process for the even dyeing of a tubular knitted fabric in hose form and consisting of or containing preponderantly cellulose fibers, with at least one water-insoluble azo dyestuff produced on the fiber according to a semicontinuous method, in which the impregnation is performed by applying onto the hose fabric a coupling component under alkaline conditions using the exhaust technique, and the tubular article so treated is then only partially dehydrated and subsequently the development on the dyestuff is effected, wet-on-wet, by slop-padding the textile goods with a developing liquor containing diazo component in the presence of an acid and/or an acid-forming substance, the improvement which comprises incorporating into the acidic developing liquor containing the diazo component capable of being coupled, a combination of a polymeric component selected from the group consisting of homopolymers and copolymers of acrylic acid amide and mixtures thereof, said polymeric component being incorporated in an amount of from 15 to 60 g/l in the form of a 2 to 8% by weight aqueous formulation, and of 2 to 20 g/l of an anionic or non-ionic wetting agent.

4,433,977

SITU PROCESS FOR MAKING MULTIFUNCTIONAL FUEL ADDITIVES
 Robert C. Carrier, Austin, and Billy R. Allen, Bridge City, both of Tex., assignors to Texaco Inc., White Plains, N.Y.
 Filed Sep. 21, 1981, Ser. No. 303,735
 Int. Cl.³ C10L 1/22

U.S. Cl. 44-60

10 Claims

1. An in situ process for making a multifunctional fuel additive comprising reacting from 4.0 to 4.5 moles of at least one N-primary alkylalkylene diamine with one mole of maleic anhydride in a mineral oil reaction diluent at a temperature ranging from ambient to 225° F. and recovering a product containing a primary aliphatic hydrocarbon amino alkylene substituted asparagine; excess N-primary alkylalkylene diamine and said diluent, said product having a by-product succinimides content not in excess of 1.0 weight percent based on weight of asparagine present.

4,433,978

FLUIDIZED BED GASIFICATION ASH REDUCTION AND REMOVAL SYSTEM

Carl E. Schenone, Madison, and Joseph Rosinski, Vanderbilt, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1982, Ser. No. 342,024

Int. Cl.³ C10J 3/72

U.S. Cl. 48-76

24 Claims



1. A fluidized bed gasification system comprising:
 a fluidized bed gasifier for gasifying organic material;
 a crusher apparatus disposed below said gasifier;
 a container disposed below said crusher apparatus for conducting waste material from said gasifier;
 detection means for detecting the level of said waste material in said container; and
 control means responsive to said detection means for controlling the operation of said crusher apparatus.

4,433,979

ABRASION RESISTANT SILICON NITRIDE BASED ARTICLES

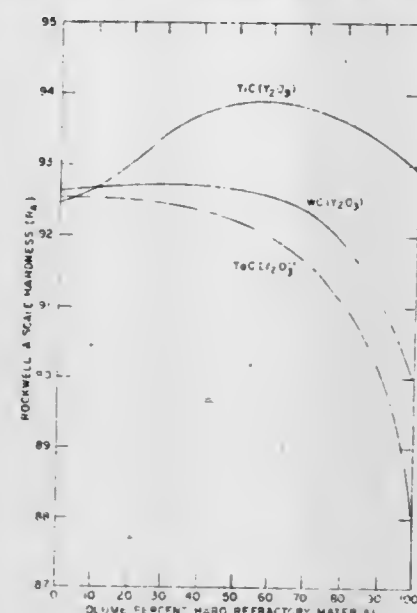
Vinod K. Sarin, Lexington, Mass.; Robert A. Penty, Cape Elizabeth, Me., and Sergej-Tomislav Buljan, Acton, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
 Continuation of Ser. No. 128,070, Mar. 7, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,311
 Int. Cl.³ C04B 31/16

U.S. Cl. 51-307

26 Claims

1. A densified composite ceramic article consisting essentially of particles of hard refractory material uniformly distributed in a two phase matrix, said two phase matrix consisting essentially of a first phase and a second intergranular phase,

said particles of hard refractory material being present in an amount from about 1 to about 60 volume percent of said densified composite ceramic article, said particles of hard refractory material selected from the group consisting of the carbides, nitrides, and mixtures thereof of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum, tungsten, and combinations thereof, said particles having an average size of less than about 20 microns, said first phase consisting essentially of crystalline silicon nitride, said second



intergranular phase consisting essentially of silicon nitride and a densification aid, said densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof, wherein said densification aid comprises from about 1 to about 25 weight percent of said two phase matrix, said densified composite ceramic article having a high density, a high abrasion resistance, a high hardness, a high fracture strength and a resistance to oxidation at temperatures greater than 1200° C.

4,433,980

METHOD OF POLISHING SILICA BASE CERAMICS
Barry G. Koepke, Mound, and Kelly D. McHenry, Eden Prairie, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,501
Int. Cl.³ B24D 3/02

U.S. Cl. 51—308

4 Claims

1. A method of polishing silica based ceramics comprising the step of polishing a silica based ceramic with a strontium carbonate polishing agent.

4,433,981

CO₂ REMOVAL FROM GASEOUS STREAMS
Lynn H. Slauch, and Carl L. Willis, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 235,409, Feb. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 86,012, Oct. 17, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 277,513

Int. Cl.³ B01D 53/04

U.S. Cl. 55—59

8 Claims

1. A process for removing carbon dioxide from a gaseous stream which comprises contacting said stream at a temperature up to about 300° C. with an adsorbent prepared by impregnating a porous alumina with a sodium or potassium oxide or salt decomposable to the oxide and calcining the impregnated alumina at a temperature ranging from about 350° C. to about 850° C.

4,433,982

INPUT HEAD OF A MEASURING OR IDENTIFICATION SYSTEM FOR CHEMICAL AGENTS

Bernhard Odenheimer, Johannes H. Kremer, and Klaus O. Kranich, all of Munster, Fed. Rep. of Germany, assignors to Bruker-Franzen Analytik GmbH, Bremen, Fed. Rep. of Germany

PCT No. PCT/DE81/00043, § 371 Date Nov. 5, 1981, § 102(e) Date Nov. 5, 1981, PCT Pub. No. WO81/02632, PCT Pub. Date Sep. 17, 1981

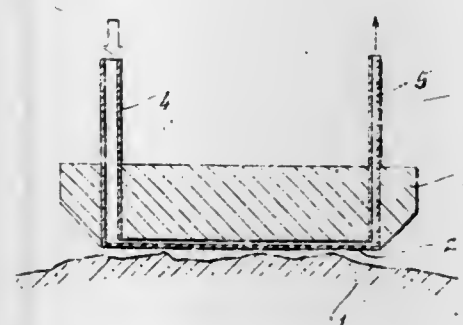
PCT Filed Mar. 10, 1981, Ser. No. 320,959

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009069

Int. Cl.³ B01D 53/22

U.S. Cl. 55—158

22 Claims



1. An input head for a system for actively detecting the presence of chemical agents, said input head comprising:

a thin membrane adapted to be brought into direct contact with a solid surface containing chemical agents, said membrane being formed from a mechanically stable material which when brought into contact with said solid surface causes said chemical agents to be detected to selectively dissolve and to diffuse through said membrane and exit therefrom in a vaporized state;

said membrane including a chemically inert fabric which adequately withstands thermal stresses and mechanical stresses resulting from direct contact with the solid surface, said fabric being thinly and uniformly coated without gaps with a polymerizable paste;

means for directly heating said thin membrane;

means for supplying a carrier gas proximate to the portion of said thin membrane through which said chemical agents exit in said vaporized state for transporting said vaporized chemical agents diffusing through said thin membrane, and

a sample line in fluid communication with said carrier gas for receiving said carrier gas and said vaporized chemical agents being transported therewith.

4,433,983

CALCIUM CHLORIDE DEHYDRATION NOZZLE
Robert A. Hodgson, and Sam J. Martinez, both of Tulsa, Okla., assignors to Maloney-Crawford Corporation, Tulsa, Okla.

Continuation of Ser. No. 194,410, Oct. 6, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,231

Int. Cl.¹ B01D 53/28

U.S. Cl. 55—171

5 Claims

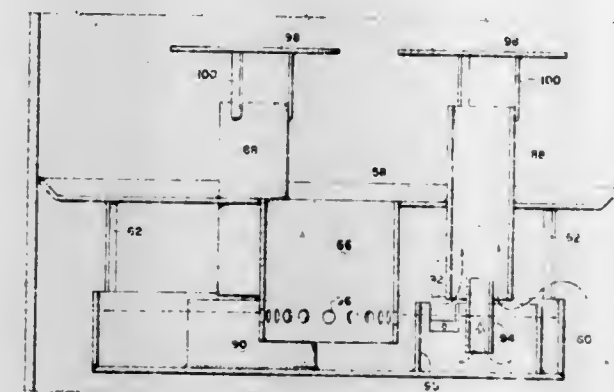
1. An apparatus for separating liquid and associated liquid vapor from a gas stream which is supplied variably at relatively low or high flow rates, comprising a housing with lower, intermediate and upper portions, means to introduce said liquid laden gas into said lower portion, means to withdraw substantially dry gas from said upper portion, means to supply a down flowing liquid dessicant, means to withdraw said dessicant and any fluid separated from said gas from the lower portion of said housing, the intermediate portion comprising:

an upper tray across the interior cross-section of said housing and a lower tray connected thereto in parallel with said upper tray and of a diameter less than the interior of said housing;

means connected to said upper tray enabling liquid dessicant to traverse from said upper to said lower tray;

means in said lower tray to maintain a first liquid level therein;

at least one mixing housing extending from above said first liquid level in said lower tray to slightly above said upper tray including a diverting means connected to an upper portion of said mixing housing to intersect and divert gas and brine as an aid in the separation of liquid from said gas;



a base housing coaxial with and of a larger diameter than said mixing housing, said base housing extending from said lower tray to slightly below a lower end of said mixing housing;

means to meter said liquid from said first liquid level into said base housing;

a conduit means coaxial with and of a smaller diameter than said mixing housing, one end of said conduit means extending at least partially into said mixing housing, the other end positioned above the bottom of said lower tray.

4,433,984

LOW RESIDENCE TIME SOLID-GAS SEPARATION DEVICE AND SYSTEM

Robert J. Gartside, Auburndale, Mass., and Herman N. Wnebecke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Division of Ser. No. 55,148, Jul. 6, 1979, Pat. No. 4,288,235.

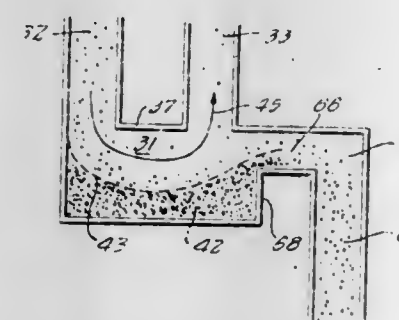
This application Sep. 4, 1981, Ser. No. 299,587

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ B01D 45/06, 50/00

U.S. Cl. 55—196

1 Claim



1. A solids-gas separation system to separate a dilute mixed phase stream of gas and particulate solids into an essentially solids free gas stream, the separation system comprising:

a chamber for rapidly disengaging about 80% of the particulate solids from the incoming dilute mixed phase stream, said chamber having approximately rectilinear or slightly arcuate longitudinal side walls to form a flow path of height H and width W approximately rectangular in cross section, said chamber also having a mixed phase inlet of inside width D_i, a gas outlet, and a solids outlet, said inlet being at one end of the chamber disposed normal to the flow path whose height H is equal to at least D_i or 4 inches, whichever is greater, and whose width W is no less

than 0.75 D_i but no more than 1.25 D_i, said solids outlet being at the opposite end of the chamber and aligned for downflow of discharged solids by gravity, said solids outlet including a first section which is collinear with the flow path and a second section normal to said first section, and aligned for downflow of solids by gravity, said first section further being stepped away from a wall of the chamber opposite the mixed phase inlet, and said gas outlet being disposed intermediate said mixed phase inlet and said solids outlet at a distance no greater than 4 D_i from the inlet as measured between respective centerlines and oriented to effect a 180° change in direction of the gas whereby resultant centrifugal forces direct the solid particles in the incoming stream toward said wall of the chamber opposite to the inlet forming thereat and maintaining an essentially static bed of solids, the surface of the bed defining a curvilinear path extending through a generally circular arc of approximately 90° for the outflow of solids to the solids outlet.

a secondary solids-gas separator, said secondary separator removing essentially all of the residual solids, a first conduit connecting the gas outlet from the chamber to the secondary separator,

a vessel connected to said solids outlet to receive the discharge of solids, said vessel stripping residual gas from the solids using an inert gas,

a second conduit connecting said vessel and the solids outlet, and

pressure balance means to maintain a height of solids in said second conduit to provide a positive seal between the chamber and the vessel.

4,433,985

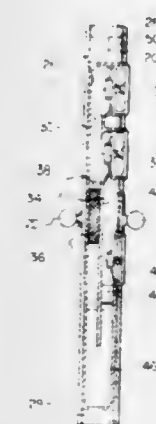
AIR SCRUBBING AND PURIFYING SYSTEM

Terrill A. McGee, 525 S. Ardmore St., Los Angeles, Calif. 90020
Filed Dec. 21, 1981, Ser. No. 332,521

Int. Cl.³ B01D 47/12, 50/00; A62C 35/34

U.S. Cl. 55—217

12 Claims



1. An air scrubbing and purifying system for treating atmospheric air disposed within an enclosed space and contaminated with hazardous products to effect removal of such products from said air, comprising:

air treatment means comprising (a) at least one washing station which includes a liquid medium for washing said contaminated atmospheric air passing therethrough, and (b) at least one purifying station which includes an activated solid medium for the removal of hazardous products from said contaminated atmospheric air passing therethrough;

air moving means comprising (a) electrically actuated intake means for impelling contaminated atmospheric air into and through said air treatment means and (b) electrically actuated discharge means for returning treated air to said enclosed space;

a source of energy connected to said air moving means for energizing said air moving means;

and detector means operably interconnected with said air moving means for sensing hazardous products in contaminated atmospheric air in said enclosed space; whereby said detector means, upon sensing hazardous products in said contaminated atmospheric air in said enclosed space, actuates said air moving means resulting in said contaminated atmospheric air being passed through said at least one washing and said at least one purifying stations and returning to the enclosed space in uncontaminated form that is suitable for human respiration.

4,433,986

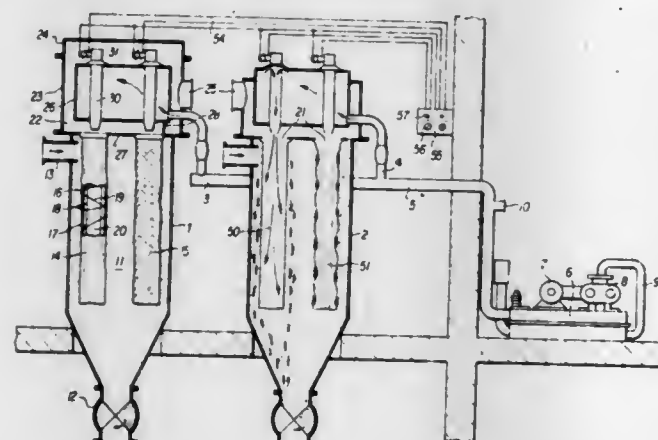
PNEUMATIC DUCT EXTRACTION

Willibald Borst, Uzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland
Continuation of Ser. No. 181,856, Aug. 27, 1980, abandoned,
Division of Ser. No. 923,145, Jul. 10, 1978, Pat. No. 4,247,310.
This application Jan. 15, 1982, Ser. No. 339,629
Claims priority, application Switzerland, Jul. 15, 1977, 8786/77

Int. Cl.³ B01D 46/00

U.S. Cl. 55—272

6 Claims



1. Low pressure dust extraction apparatus comprising a dusty-air chamber having an inlet, a discharge-air chamber having an outlet, a cleaning-air tank for storage of compressed gaseous medium for cleaning an apertured partition supporting a plurality of bag-like fabric filter elements each having an open end, a corresponding plurality of unrestricted free apertures defined by said open ends of said filter elements and the apertures in said partition for the passage of filtered gaseous medium from said dusty-air chamber by way of said filter elements to said discharge-air chamber, means for causing flow of said gaseous medium such that filtered gaseous medium flows out of said discharge-air chamber and dust-laden gaseous medium flows into said dusty-air chamber, a corresponding plurality of controllable cleaning gaseous medium valves communicating with the clean air tank, said valves having delivery means including stationary driving nozzles directed for flow of cleaning gaseous medium by way of said free apertures into said filter elements in a direction the reverse of that of said filtered gas and extending into said discharge-air chamber to the region of said free apertures, said driving nozzles communicating and extending vertically downwards from said cleaning air tank aligned with said apertures and opening a short distance above said apertures, said discharge-air chamber being situated directly above said dusty-air chamber in the close vicinity thereof but vertically spaced thereabove and within said discharge air chamber, the vertical dimension of said cleaning-air tank being at least twice the vertical distance between said cleaning air tank and said free apertures wherein the volume of air of said cleaning air tank is at least equal to the volume of said filter elements, control means for governing the duration of opening of said valves, and said valves being connected to said cleaning-air tank so that the required quantity of cleaning gaseous medium at a predetermined pressure can flow

directly from said tank by way of said delivery means into said filter elements with varying outflow intensity including a shock phase of high intensity but of short duration immediately followed by a rinsing phase of reduced but sustained intensity and of longer duration.

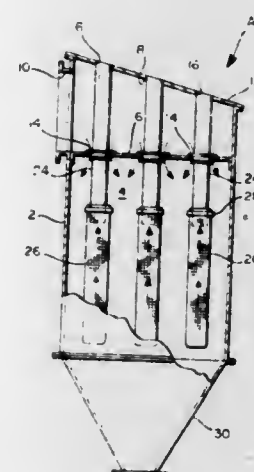
4,433,987

AIR FILTRATION DEVICE

Arthur Lenox, 1390 Valley Rd., Stirling, N.J. 07980
Filed Nov. 20, 1981, Ser. No. 323,380
Int. Cl.³ B01D 50/00

U.S. Cl. 55—319

28 Claims



23. Apparatus for filtering air laden with dust or other particulate matter including:

- (a) a filtering area;
- (b) an air velocity dissipation zone above said filtering area;
- (c) a lower tube sheet mounted above said dissipation zone and forming a partial boundary therewith;
- (d) an air plenum mounted above said lower tube sheet;
- (e) said air plenum including an air inlet for receiving dust laden air;
- (f) an upper tube sheet forming an upper boundary of said air plenum;
- (g) said lower tube sheet including a plurality of holes;
- (h) said upper tube sheet including a plurality of holes vertically aligned with said holes in said lower tube sheet;
- (i) a plurality of clean air outlet tubes having upper end, main body and lower end portions;
- (j) said upper end portions being mounted within said holes in said upper tube sheet;
- (k) said main body portions extending through said holes in said lower tube sheet;
- (l) said lower end portions extending beneath said lower tube sheet and ending in a horizontal plane at the interface between said dissipation zone and said filtering area;
- (m) a plurality of dust bags vertically positioned on said lower end portions of said outlet tubes and extending upwardly to said dissipation zone and positioned substantially within said filtering area;
- (n) means for attaching said dust bags to said lower end portions of said clean air outlet tubes;
- (o) a plurality of openings in said lower tube sheet for directing air flow from said plenum downwardly below said lower tube sheet; and
- (p) diverting means associated with said openings for diverting substantially the entire downward air flow outwardly in a generally horizontal path below said lower tube sheet and against said lower end portion of said outlet tubes; and
- (q) said lower end portions of said outlet tubes extending a substantial distance below said diverting means so that substantially the entire air flow passing outwardly from said diverting means will strike said lower end portions of adjacent outlet tubes above their respective dust bags and

thereby prevent high velocity air from impinging upon said dust bags to reduce damage thereto.

4,433,988

HELMET ADAPTED FOR USE BY HAY FEVER SUFFERERS

Richard H. Hinchliffe, 55 Bridge St., Pershore, Worcestershire, England

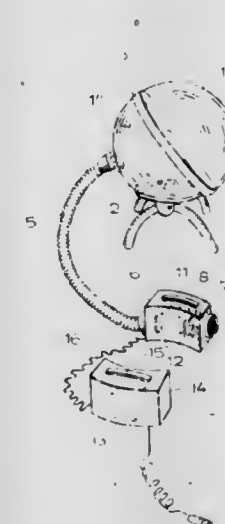
Filed Jul. 30, 1982, Ser. No. 403,320

Claims priority, application United Kingdom, Aug. 7, 1981, 8124182

Int. Cl.³ B01D 50/00

U.S. Cl. 55—357

6 Claims



1. In combination a helmet adapted for use by a hay fever sufferer and portable filter means remote from said helmet constructed and arranged to be carried by the helmet wearer and to supply filtered air to the interior of said helmet for the wearer to breathe, said helmet comprising support means and a hollow globe mounted on said support means formed by two substantially transparent hemispherical sections joined together equatorially of said globe and having an opening at the bottom for entry of the wearer's head into said globe, said globe being adapted substantially to enclose the head and face of the wearer and said support means being adapted to seat on the wearer's shoulders thereby to support said globe from the wearer's shoulders and leaving the wearer free to move his head inside said globe, and said portable filter means comprising a housing, having an air entry, means on said housing whereby said housing can be carried by the helmet wearer, an air supply duct extending from said housing to said globe, and accommodated in said housing at least one filter, an electrically powered motor and a fan driven by said motor which operates to draw air from the atmosphere into said housing through said air entry and cause the air to pass by way of said air supply duct to said globe, said filter being positioned for the air to pass through it before passing into said air supply duct and being adapted to remove pollen, dust and like airborne matter from the air.

4,433,989

AIR SEPARATION WITH MEDIUM PRESSURE ENRICHMENT

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Sep. 13, 1982, Ser. No. 416,980

Int. Cl.³ F25J 3/04

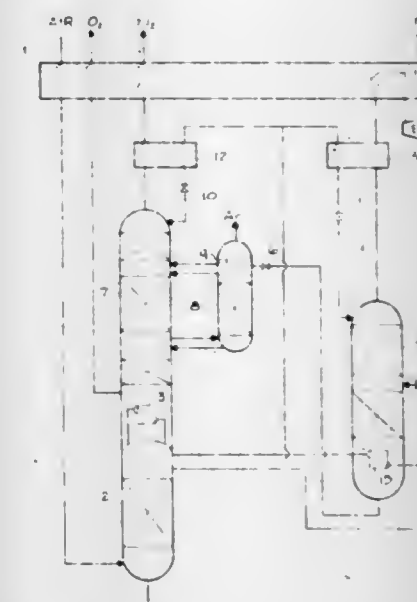
U.S. Cl. 62—13

7 Claims

1. In a process for the subambient distillative separation of a mixture of noncondensable gases comprising distilling the feed mixture at a single supply pressure in at least one refluxed high pressure (HP) distillation column to a nearly pure overhead liquid and an enriched liquid containing the bottom product; further distilling at least one enriched fluid containing the bottom product in a reboiled low pressure (LP) column to nearly pure fluid bottom product and nearly pure gaseous

overhead product including directly injecting at least part of said nearly pure overhead liquid into said LP column as reflux; and causing HP column reflux and LP column reboil by indirect heat exchange between the two columns, the improvement comprising:

- (A) distilling a single supply pressure feed mixture in the HP column;
- (b) providing a medium pressure (MP) distillation column operating at a pressure intermediate to said high and low pressures;



- (c) distilling in the MP column essentially all the enriched liquid containing the bottom product produced by the HP column to a relatively pure gaseous overhead product at medium pressure and a further enriched fluid containing bottom product;
- (d) refluxing the MP column by directly injecting part of said overhead liquid into the upper portion thereof;
- (e) reboiling the MP column by indirect heat exchange with the HP column;
- (f) routing the further enriched fluid obtained in step (b) into the LP column;
- (g) recovering a bottom product from the LP column of up to 99.5% purity.

4,433,990

PROCESS TO RECOVER ARGON FROM OXYGEN-ONLY AIR SEPARATION PLANT

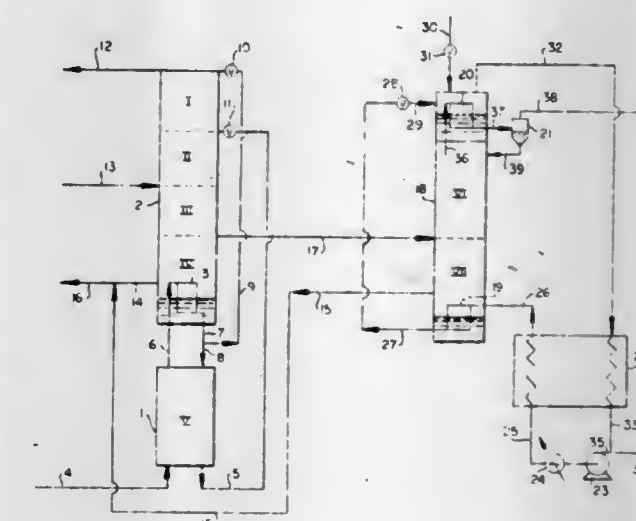
Walter J. Olszewski, Tonawanda, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 8, 1981, Ser. No. 328,631

Int. Cl.³ F25J 3/02

U.S. Cl. 62—22

13 Claims



1. In an existing process for producing oxygen by the separa-

tion of air wherein feed air is introduced to an oxygen production facility comprising a high pressure column in heat exchange relation with a low pressure column wherein vapor and liquid flow countercurrently and contact to effect the separation, the improvement comprising retrofitting said existing process to include argon recovery capability including the steps of:

- (A) withdrawing from the low pressure column a stream having a flow rate of from about 3 to 9 percent of that of the feed air, said stream comprising from about 10 to 18 percent argon, at most about 0.5 percent nitrogen and the remainder primarily oxygen;
- (B) introducing said stream as feed into an argon column having a top condenser and a bottom condenser and which is driven by an independent heat pump circuit comprising the steps of:
 - (1) introducing cooled, compressed heat pump fluid as vapor to a heat exchanger where it is cooled to a high pressure cold condition,
 - (2) introducing said high pressure cold vapor to said bottom condenser where it is condensed to a liquid,
 - (3) expanding the liquid heat pump fluid and introducing it to the top condenser where it is vaporized, and,
 - (4) withdrawing the heat pump fluid as vapor from the argon column and introducing it to said heat exchanger of step (1) where it is warmed;
- (C) separating said feed in said argon column by rectification into an argon-rich fraction and an oxygen-rich fraction,
- (D) withdrawing from said argon column at least a portion of said argon-rich fraction as product crude argon containing at least 96 mole percent argon; and
- (E) withdrawing at least a portion of said oxygen-rich fraction as product oxygen having an oxygen concentration of at least 99 mole percent.

4,433,991

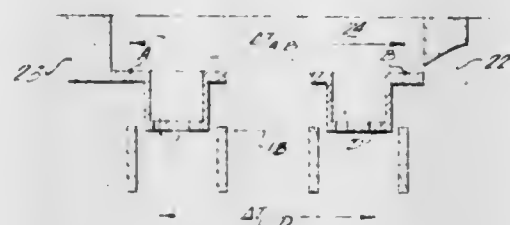
APPARATUS FOR THE MANUFACTURING OF FIBERS
Giuseppe Melan, Besana Brianza, Italy; Pierre Verdet, Aix les Bains, and Christian Besenval, Montmelian, both of France, assignors to Societe Vetrotex Saint-Gobain, Chambéry, France

Division of Ser. No. 207,711, Nov. 17, 1980, Pat. No. 4,328,015.
This application Jan. 8, 1982, Ser. No. 338,582

Claims priority, application France, Nov. 20, 1979, 79 28539
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ C03B 37/025

U.S. Cl. 65—1



1. The apparatus for drawing attenuable material in attenuable condition, such as molten glass, into filaments comprising a glass supply source, a bushing connected thereto, said bushing having a base which is made of a succession of channels and grooves exposed to the ambient, the base of each channel being perforated with orifices; and means for drawing the attenuable material issuing from the orifices, characterized in that the dimensions of the channels and grooves are such that by thermal exchange with at least one cooling means equipped with elements placed opposite the grooves, drops in temperature of at least 20° C. are created between the level of entry P_g of the molten glass in each channel and the base of the latter, or the fiberization level P_f.

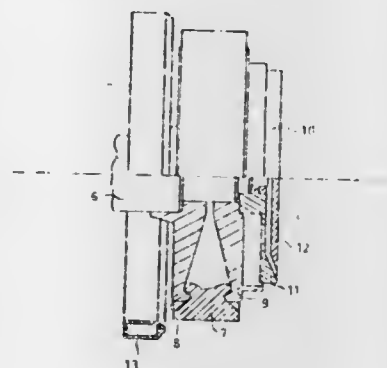
4,433,992 **PROCESS AND APPARATUS FOR FORMING MINERAL FIBERS**

Alain Debouzie, Petite Couronne; Daniel Sainte-Foi, and Yannick Blandin, both of Clermont, all of France, assignors to Isover Saint-Gobain, Paris la Defense, France

Filed Feb. 23, 1982, Ser. No. 351,521
Claims priority, application France, Feb. 24, 1981, 81 03580
Int. Cl.³ C03B 37/05

U.S. Cl. 65—3.1

17 Claims



1. A process for the manufacture of fibers in which the material intended to form the fiber is conducted in the attenuable state onto a centrifuge apparatus comprising several wheels driven in rapid rotation, the material in the form of a voluminous stream being flowed toward the external peripheral surface of a first wheel where it is accelerated and discharged onto a second wheel rotating in the opposite direction of the first, at least a portion of the material adhering to the surface of the said second wheel then being delivered by centrifugal force in the form of fibers, excess material not adhering to the wheel being discharged onto a third wheel rotating in the opposite direction of the second, the peripheral speed of said wheels being between 60-150 m/s, the fibers delivered from the various successive wheels being projected into a rapid gas current transverse to their trajectory, said gas current having a speed sufficient to complete the attenuation of the said fibers and carry them toward a receiving element, and in which a liquid composition for the treatment of the fibers is projected by centrifugation, transversely to the gas current carrying the fibers, in the immediate vicinity of the wheels, under conditions such that drops of the liquid composition of a size sufficient to penetrate the gas current are formed, the speed of the gas current being between 50 and 180 m/s in a region adjoining the periphery of the wheels, the ratio of the speed of the gas current to the peripheral speed of said wheels being between 0.8-1.8.

4,433,993

GLASS SHEET SHAPING AND TEMPERING USING MULTIPLE COOLING STATIONS

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 5, 1982, Ser. No. 375,064
Int. Cl.³ C03B 23/02

U.S. Cl. 65—104

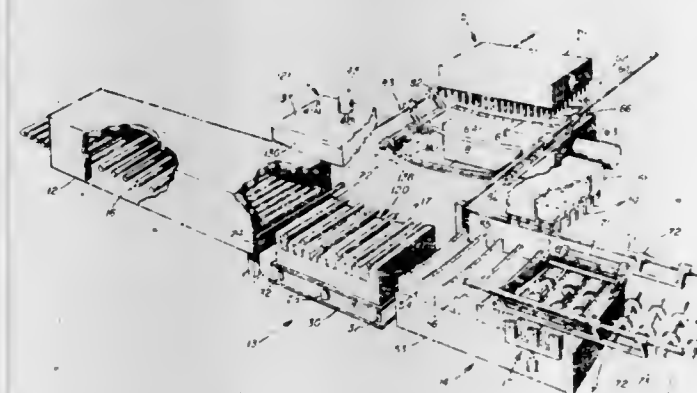
5 Claims

1. An improvement in an apparatus for shaping and tempering glass sheets of the type characterized by an enclosed tunnel-like furnace, a shaping station, an initial glass movement path through said furnace and into said shaping station, a first cooling station along a longitudinal extension parallel to said initial glass movement path, a second cooling station having a glass movement path transverse to said initial glass movement path wherein said first and said second cooling stations include upper and lower plenums each having sets of nozzles extending toward said respective glass movement paths the first cooling station having a first ring-like member for supporting a bent glass sheet between said nozzles and the second cooling having

a second ring-like member for supporting a bent glass sheet between said nozzles, the improvement comprising:

- a means beyond said shaping station for supporting said first ring-like member in cantilever fashion for movement along said longitudinal path including tracks extending longitudinally in flanking relation to said first cooling station; and
- means entirely to one side of said shaping station for supporting said second ring-like member in cantilever fashion for movement along said transverse path comprising tracks extending transversely of said glass movement path in flanking relation to said second cooling station.

3. A method of shaping and tempering glass sheets to produce tempered sheets of different configurations comprising the steps of:



conveying a first sheet through a hot enclosed atmosphere in an initial glass movement path into a shaping station; transferring said first sheet by means of a first ring-like member supported in cantilever fashion to a first cooling station situated along a longitudinal path parallel to said initial glass movement path; conveying a second sheet through said hot enclosed atmosphere in said initial glass movement path into said shaping station; and transferring said second sheet by means of a second ring-like member supported in cantilever fashion to a second cooling station situated along a path transverse to said initial glass movement path.

4,433,994

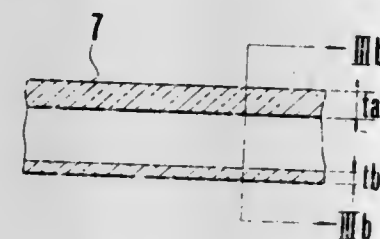
METHOD OF MANUFACTURING CURVED DISCHARGE TUBES

Takashi Fujimura, and Katsuyu Takahashi, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,512
Claims priority, application Japan, Jun. 29, 1980, 55-118306
Int. Cl.³ C03B 23/06

U.S. Cl. 65—110

5 Claims



1. A method of manufacturing a curved discharge tube comprising the steps of preparing a straight tube made of transparent material and having an eccentric longitudinal opening, heating the straight tube and bending said tube into a curved tube with a thicker wall portion of the tube on the outside and a thinner wall portion on the inside.

4,433,995

GLASS MANUFACTURE

Francois Toussaint, Montignies-le-Tilleul, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Feb. 23, 1982, Ser. No. 351,731
Claims priority, application United Kingdom, Feb. 25, 1981, 8105929

Int. Cl.³ C03B 5/027, 5/02
U.S. Cl. 65—135

19 Claims



1. A continuous process of making glass comprising: feeding a vitrifiable batch to a furnace equipped with heating means for melting the batch so as to produce molten glass, and with at least one cathode and at least one anode between which a direct electric current is established in the molten glass, the furnace having a melting end into which the batch is fed and having a delivery end remote from the melting end and from which delivery end molten glass is withdrawn, such that there is a net flow of molten glass in the direction which extends from the melting end to the delivery end, the furnace presenting a melting zone occupied by molten glass and coextensive in height with the molten glass, and in which zone the batch is melted, the melting zone being composed in the vertical direction of an upper half constituting a batch zone and of a lower half, and the melting zone further being composed in the horizontal direction of an upstream half proximate to the melting end and of a downstream half remote from the melting end; and establishing said electric current between at least one cathode located in the upstream half of the batch zone and at least one anode located outside the batch zone.

4,433,996

AMINOSULENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES AS HERBICIDES

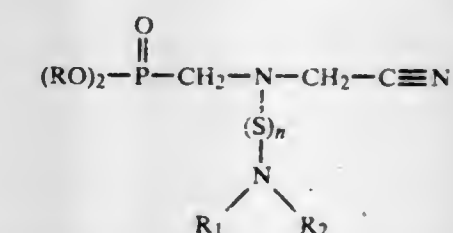
James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 5, 1981, Ser. No. 309,324
Int. Cl.³ A01N 57/22; C07F 9/40

U.S. Cl. 71—087

47 Claims

1. A method of controlling undesired plants which comprises applying to said plants or plant growth medium a herbicidally effective amount of a compound of the formula



wherein n is an integer 1 or 2 and wherein R is selected from the group consisting of phenyl, naphthyl, or biphenyl; or phenyl, naphthyl or biphenyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxy, carbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and wherein R₁ and R₂ are independently selected from the group consisting of hydrogen, cycloalkyl, alkyl, alkyl substi-

- (a) extracting the iron ions from an aqueous solution thereof with an organic solvent containing one or more compounds selected from the group consisting of alkyl phosphoric acid, alkyl or aryl dithio phosphoric acid, carboxylic acid and hydroxime together with a petroleum hydrocarbon as a diluent;
- (b) producing ammonium iron fluoride by stripping the resultant organic solvent from the preceding step by contact with an aqueous solution containing one or more compounds selected from the group of NH_4HF_2 and NH_4F , and
- (c) heating the ammonium iron fluoride in a hydrogen stream to produce metallic iron.

4,434,003

STEEL MAKING METHOD

Ernest S. Geskin, Townhouse #3, Meadow East, Potsdam, N.Y. 13676

Filed Dec. 15, 1980, Ser. No. 216,643

Int. Cl.³ C21B 11/00

U.S. Cl. 75—24

19 Claims

1. A process for producing ferrous metal products from an ore containing iron oxides, said process comprising:
- (a) melting fluxing agents and the iron oxide ore together under oxidizing conditions in a melting furnace to form a molten slag, with little reduction of the iron oxide ore;
- (b) allowing said molten slag to stratify whereby iron oxide-rich slag collects at the bottom of said melting furnace;
- (c) transferring said iron oxide-rich slag from the bottom of said melting furnace to a reduction furnace separate from said melting furnace;
- (d) injecting coal and air into said reduction furnace to form carbon monoxide and to establish reducing conditions within said reduction furnace, thereby reducing the iron oxides to form a molten ferrous metal product; and
- (e) injecting into the molten slag within said reducing furnace, below the surface of the slag, (1) the off-gas from said reduction furnace containing carbon monoxide and (2) air for combustion of said carbon monoxide to form carbon dioxide, thereby establishing said oxidizing conditions within said melting furnace.

4,434,004

METHOD FOR RECOVERY AND RECYCLING OF HEAT FROM HOT GASES IN METALLURGICAL PROCESSING

Gunter Ratschat, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

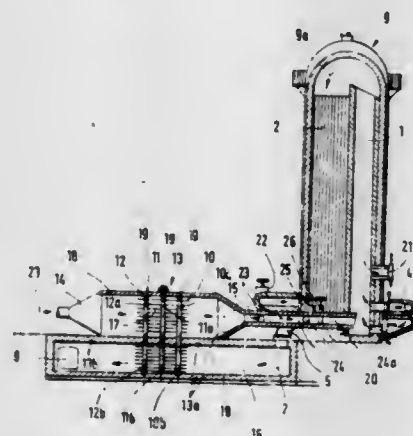
Filed Oct. 23, 1980, Ser. No. 200,002

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952216

Int. Cl.³ C21B 9/14

U.S. Cl. 75—41

5 Claims



1. A method for the recovery of retained heat of fully combusted exhaust gases of an air heater and the recycling of said

retained heat for use in metallurgical processes, comprising the steps of:

- (a) providing a blast furnace and an air heater conventionally connected to said blast furnace;
- (b) providing, in communication with said air heater, a capillary action, heat recuperative device comprising at least one tube having two closed ends, said tubes containing a highly volatile substance;
- (c) fully combusting fuel gas and preheated air in said air heater to thereby provide fully combusted exhaust gases at a temperature of about 250° C.;
- (d) directing said fully combusted exhaust gases of said air heater, at a temperature of about 250° C., past said heat recuperative device;
- (e) transferring a portion of the retained heat of said fully combusted exhaust gases to said heat recuperative device;
- (f) venting, into the atmosphere, said now-cooler, fully combusted, exhaust gases;
- (g) directing fresh gas into heat transferring contact with said heat recuperative device;
- (h) transferring a portion of the heat of said heat recuperative device to said fresh gas to thereby preheat said fresh gas; and
- (i) directing said now preheated fresh gas to said air heater for metallurgical processing use therein.

4,434,005

METHOD OF AND APPARATUS FOR REFINING A MELT CONTAINING SOLID COOLING MATERIAL

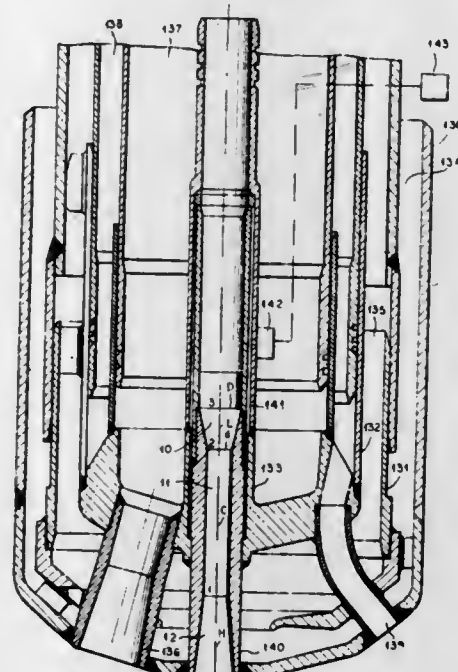
Paul Metz, Luxembourg; François Schleimer, Esch-sur-Alzette; Ferdinand Goedert, Esch-sur-Alzette; Romain Henrion, Esch-sur-Alzette; Henri Klein, Niedercoorn, and Jean-François Liesch, Luxembourg, all of Luxembourg, assignors to Arbed S. A. (Luxembourg), Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 422,844, Sep. 24, 1982, abandoned. This application Nov. 29, 1982, Ser. No. 445,037

Int. Cl.³ C21C 5/32

U.S. Cl. 75—60

6 Claims



1. A method of refining a metal melt in which solid metal tending to cool the melt has been incorporated, comprising the simultaneous steps of:

- (a) directing at least one refining oxygen jet from above onto a slag-covered surface of said melt whereby oxygen is introduced into said melt exclusively from above;
- (b) directing a jet of neutral gas entraining pulverulent carbon vertically against the surface of said melt in an amount sufficient to provide by exothermic oxidation of the carbon sufficient heat to melt the solid metal and prevent cooling of the melt thereby, said carbon-entraining neutral

gas jet being directed into said melt at a velocity of Mach 1.5 to 2.5; and

- (c) injecting neutral gas into said melt through permeable bodies at the bottom thereof in an amount sufficient to prevent foaming of the slag.

4,434,006

FREE CUTTING STEEL CONTAINING CONTROLLED INCLUSIONS AND THE METHOD OF MAKING THE SAME

Tetsuo Kato, Nagoya; Shozo Abeyama, Chita; Atsuyoshi Kimura, Handa; Shigenobu Sekiya, and Sadayuki Nakamura, both of Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

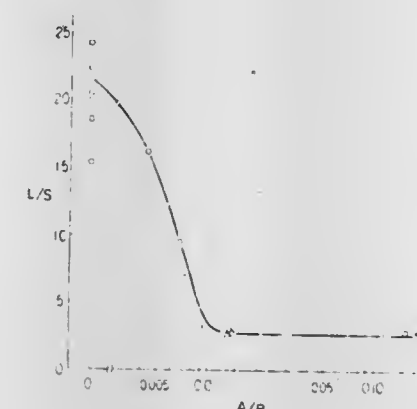
Filed May 14, 1980, Ser. No. 149,939

Claims priority, application Japan, May 17, 1979, 54-59712; May 17, 1979, 54-59713

Int. Cl.³ C22C 33/00

U.S. Cl. 75—123 R

13 Claims



1. A free cutting steel containing controlled inclusions characterized in that the steel contains inclusion A which softens or melts at a temperature below 1000° C. and inclusion B which has a melting point above 1300° C. but exhibits plasticity at a temperature between 900° and 1300° C., the inclusion A and the inclusion B existing in a mutually adhered form, and areal percentage of inclusion A being at least 1% of areal percentage of inclusion B.

10. A free cutting stainless steel containing controlled inclusions characterized in that the steel contains inclusion A which softens or melts at a temperature below 1,000° C. and inclusion B which has a melting point above 1,300° C. but exhibits plasticity at a temperature between 900° and 1,300° C., the inclusion A and the inclusion B existing in a mutually adhered form, and area percentage of inclusion A being at least 1% of area percentage of inclusion B,

said stainless steel having good formability in cold forging characterized in that the steel contains C up to 2.0%, Si up to 2.0%, Mn up to 10%, Cr 10 to 30%, S up to 0.4% and Te up to 0.5%, wherein %Te/%S being at least 0.4, and 0 being up to 0.015% and the balance being substantially Fe, and at least 80% of the sulfide-based inclusion particles in the steel of a length of 2μ or longer have an aspect ratio not higher than 10.

4,434,007

PROCESS FOR REPRODUCIBLY PREPARING UNIFORM DRY INK COMPOSITIONS COMPRISING WATER-SOLUBLE CATIONIC DYESTUFFS

Ronald S. Lenox, East Hempfield Township, Lancaster County, and Moses Sparks, Jr., Manheim Township, Lancaster County, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 4, 1982, Ser. No. 405,261

Int. Cl.³ C09D 11/14

U.S. Cl. 106—26

20 Claims

1. A process for producing a dry ink composition comprising a cationic dye, said process comprising the steps of preparing an organic phase comprising a solution of at least one water-soluble cationic dye and a binder in a suitable organic solvent, said organic phase optionally comprising magnetic particles substantially uniformly suspended therein, said solvent having a boiling point lower than that of water or being capable of forming an azeotrope with water, said azeotrope having a boiling point lower than that of water;
- intermixing said organic phase with an aqueous solution comprising an ionizable salt, sufficient ionizable salt being present to substantially prevent partition of said dye into said aqueous solution, the temperature of said aqueous solution being not less than said boiling point, said solvent being volatilized during intermixing thereby causing a substantially homogeneous solid mixture comprising said dye, binder and optional magnetic particles to precipitate; separating and drying said solid mixture; and pulverizing said solid mixture to obtain a desired particle size range.

4,434,008

SUBSTANTIVE PREPARATION MATERIAL FOR YARNS OR PLIED YARNS

Heinz Dürum; Götz Koerner; Manfred Krakenberg; Hans Rott, and Günter Schmidt, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,462

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115679

Int. Cl.³ C08L 91/06; C09D 3/393; C09G 1/12

U.S. Cl. 106—271

19 Claims

1. A composition for substantively preparing yarns or plied yarns comprising an oil/water dispersion, the water portion of which contains

- (a) from about 5 to 80 weight percent of silicone oil having a viscosity of 500 to 50,000 mm²/sec at 25° C.,
- (b) from about 10 to 80 weight percent of wax with a melting point of not less than about 40° C.,
- (c) from about 1 to 10 weight percent of fatty acids having 6 to 22 carbon atoms,
- (d) from about 0.4 to 12 weight percent of cationic imidazolium salts, and
- (e) from about 0 to 10 weight percent of ethoxylated fatty amines,
- the sum of components (a) to (e) adding up to 100 weight percent.

4,434,009

POLYMER-COATED METALLIC PIGMENTS

Toshiaki Banba, Yamato Koriyama, Japan, assignor to Toyo Aluminium Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,203

Int. Cl.³ C09C 1/62

U.S. Cl. 106—290

15 Claims

1. A metallic pigment for paints comprising metallic pigment particles directly coated with a polymer obtained by polymerizing a monomer having a polymerizable double bond and at least one epoxy radical or a mixture of said monomer and a

comonomer having a polymerizable double bond in the amount of 0.1 to 30 parts by weight in relation to 100 parts by weight of the metallic component in the metallic pigment particles.

4,434,010

ARTICLE AND METHOD FOR FORMING THIN FILM FLAKES AND COATINGS

Gary S. Ash, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,695

Int. Cl.³ C09C 1/64

U.S. Cl. 106—291

7 Claims

1. A collection of optical paint flakes adapted to be added to a liquid medium for producing a predetermined optical response to radiation incident on a surface of a solidified version of said medium, said collection of flakes being produced by forming a symmetrical optical multilayer structure on a flexible web of material which is soluble in at least one predetermined liquid, immersing said flexible web of material with said optical multilayer structure thereon in said predetermined liquid to produce a suspension of individual flakes of said optical multilayer structure in the resulting solution, and separating said flakes from said solution, said symmetrical optical multilayer structure comprising a first optical coating structure formed in an inverted manner on said web, an opaque layer of reflecting material formed on said first optical coating structure, and a second optical coating structure formed in a non-inverted manner on said opaque layer and having the same optical coating design as said first optical coating structure, whereby said flakes have the same optical response to incident radiation regardless of which of said first and second optical coating structures is facing said incident radiation.

4,434,011

METHOD AND APPARATUS FOR RETRIEVING OBJECTS FROM THE GROUND

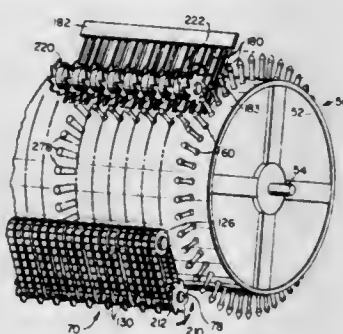
Joseph L. Moore, Abilene, Tex., assignor to Proficient Systems, Inc., Abilene, Tex.

Filed Mar. 15, 1982, Ser. No. 358,382

Int. Cl.³ B65F 3/02; A01B 43/00

U.S. Cl. 134—6

20 Claims



1. In a means for retrieving objects from the ground having a ground engageable rotating drum with a plurality of fingers extending therefrom for receiving the objects therebetween, the improvement comprising:

a plurality of discs rotatably mounted on a shaft and driven in conjunction with the rotation of the drum in a direction opposite that of the drum, said toothed discs positioned adjacent said drum and the ground and assisting in the engagement and movement of objects by the drum and fingers to a collection location.

17. In a means for retrieving objects from the ground having a ground engageable rotating drum with a plurality of resilient fingers circumferentially spaced in rows along the drum length and extending radially therefrom, the improvement comprising:

a row of support fingers positioned approximately one quar-

ter of the length of the drum from the ends thereof, said support fingers including a rigid inner core of a length substantially equal to the length of the resilient fingers and having a resilient covering thereon, whereby a substantial portion of the load of the drum may be carried on said support fingers.

18. A method for retrieving objects from the ground comprising:

rotating a ground engageable drum with a plurality of fingers extending therefrom over the ground for receiving objects therebetween;

positioning a plurality of discs rotatably mounted on a shaft adjacent the drum and fingers and driven in conjunction with the rotation of the drum in a direction opposite that of the drum, the plurality of discs being positioned adjacent the drum and ground level during operation of the retrieving means for assisting in the engagement and movement of objects by the drum and fingers thereon to a collection location;

stripping the objects from engagement between the fingers of the drum; and

collecting the stripped objects for later disposal.

4,434,012

TREATING ARTICLES IN AN ARRAY WITH STREAMS OF A MEDIUM

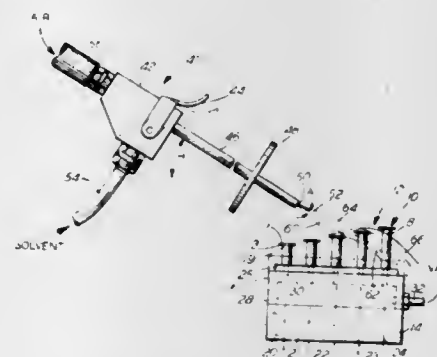
Robert J. Eckert, Oley, and Frederick R. Keene, Jr., Reading, both of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,575

Int. Cl.³ B08B 3/02, 11/02

U.S. Cl. 134—25.4

9 Claims



7. A method of treating surfaces of articles in an array thereof, comprising:

positioning the articles having surfaces to be treated facing upward along a succession of horizontal tiers, a leading tier being at a first elevation and each succeeding tier being parallel to, elevated above and offset horizontally from an immediately preceding tier in stepwise fashion; and

propelling at least one stream of a treating medium upon and at such an angle to the surfaces to be treated that such medium and any dislodged matter is deflected from the respective surfaces without contacting other such surfaces of articles positioned for treatment in the array.

4,434,013

METHOD OF MAKING A SELF-ALIGNED SCHOTTKY METAL SEMI-CONDUCTOR FIELD EFFECT TRANSISTOR WITH BURIED SOURCE AND DRAIN

Izzy Bol, Hawthorne, Calif., assignor to Xerox Corporation, Stamford, Conn.

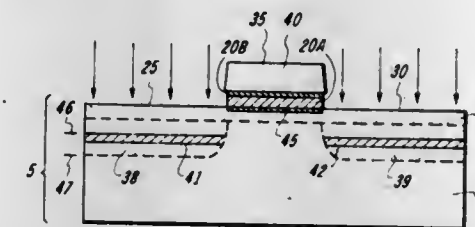
Division of Ser. No. 122,627, Feb. 19, 1980, Pat. No. 4,338,616.

This application Mar. 15, 1982, Ser. No. 358,492

Int. Cl.³ H01L 21/265, 7/34

U.S. Cl. 148—1.5

2 Claims



1. A method of making a high speed, integrated, solid state structure comprising the steps of:

(a) forming along a surface of a substrate of one conductivity type an ion implanted channel layer of the other conductivity type,

(b) annealing said channel layer;

(c) providing a metallic layer over at least a portion of said channel layer,

(d) providing a gate structure of a portion of said metallic layer to define separated source and drain surface area in said ion implanted channel layer,

(e) implanting by high energy ion implantation material of said other conductivity type through said source and drain surface areas to provide heavily doped, buried source and drain areas in said substrate beneath said source and drain surface areas,

(f) laser annealing said buried source and drain areas,

(g) forming by ion implantation high conductivity areas extending through portions of said surface source and drain areas of said other conductivity type from said substrate surface of said buried source and drain areas, and

(h) laser annealing said high conductivity areas.

4,434,014

HIGH STRENGTH WEAR RESISTANT ALUMINIUM ALLOYS AND PROCESS

David M. Smith, Hawthorn East, Australia, assignor to Comalco Limited, Victoria, Australia

Filed Sep. 3, 1981, Ser. No. 299,176

Claims priority, application Australia, Sep. 10, 1980, 5505/80

Int. Cl.³ C22F 1/04; C22C 21/04

U.S. Cl. 148—3

12 Claims



1. An aluminium-silicon alloy consisting essentially of the following composition by weight:

Si	12-15%
Cu	1.5-5.5%
Ni	1.0-3.0%
Mg	0.1-1.0%

-continued

Fe	0.1-1.0%
Mn	0.1-0.8%
Zr	0.01-0.1%
Silicon modifier	0.001-0.1%
Ti	0.01-0.1%
Al	remainder, apart from impurities,

said alloy having an essentially eutectic microstructure containing not more than 10% of primary alpha-aluminium dendrites and being substantially free from intermetallic particles exceeding 10 microns in diameter.

4,434,015

DEVICE AND METHOD FOR CUTTING CIRCULAR PIECE PARTS

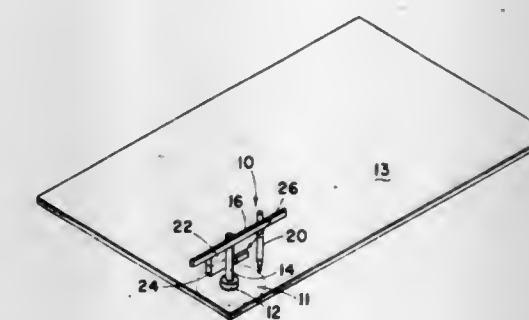
Herbert C. Dyson, 2519 Darlean St., Sulphur, La. 70665

Filed Sep. 28, 1982, Ser. No. 425,662

Int. Cl.³ B23K 7/10

U.S. Cl. 148—9 R

8 Claims



7. A method of cutting circular piece parts from a work piece comprising the steps of:

(a) mounting a shaft at a point corresponding to the center of a piece part;

(b) fixing a cutting means and a means for rotating said cutting means to said shaft;

(c) positioning the cutting means from said shaft relative to the work piece to perform a cutting means from said shaft relative to the work piece to perform a cutting operation;

(d) rotating said cutting means and said means for rotating said cutting means about said point during a cutting operation to develop said circular piece part; and said

(e) fixing step (b) comprises fixing the cutting means from said shaft to cut a circular piece having a diameter of from approximately 5 inches up to approximately 8 feet.

4,434,016

PRECIPITATION HARDENABLE COPPER ALLOY AND PROCESS

Yousef Saleh, West Haven; John F. Breedis, Trumbull, and Jacob Crane, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 18, 1983, Ser. No. 467,697

Int. Cl.³ C22C 9/01, 9/06; C22F 1/08

U.S. Cl. 148—12.7 C

15 Claims

1. A hot workable copper base alloy having improved stress

relaxation resistance when subjected to discontinuous precipitation, said alloy consisting essentially of from about 10% to about 15% by weight nickel, from about 1% to about 3% by weight aluminum, up to about 1% by weight manganese, from about 0.05% to less than about 0.5% by weight magnesium, less than about 0.05% by weight silicon and the balance copper.

7. A process for treating a copper base alloy consisting essentially of from about 10% to about 15% by weight nickel, from about 1% to about 3% by weight aluminum, up to about 1% by weight manganese, from about 0.05% to less than about 0.5% by weight magnesium, less than about 0.05% by weight silicon and the balance copper to provide improved stress relaxation resistance in the presence of a discontinuous type precipitate, said process comprising:

- holding said alloy at a temperature of from about 880° C. to about 980° C.;
- hot working said alloy;
- immediately following said hot working rapidly cooling said alloy;
- cold working said alloy up to a 90% reduction in thickness;
- solution treating said alloy at a metal temperature near or above the solvus of said alloy;
- cold working said alloy up to a 75% reduction in thickness;
- and aging said alloy at a temperature of from about 400° C. to about 550° C.

4,434,017

EXPLOSIVE COMPOSITION

Lindsay K. Smith, South Caulfield, and Michael A. Yabsley, Cheltenham, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Apr. 15, 1981, Ser. No. 254,493

Claims priority, application Australia, Apr. 15, 1980, PE3147
Int. Cl.³ C06B 45/00

U.S. Cl. 149—2

21 Claims

1. A density-stabilized gas-bubble-sensitized melt explosive composition of density not greater than 1.4 g/cc comprising an oxygen releasing salt, a primary fuel material capable of forming an eutectic mixture with the said oxygen releasing salt, a thickening agent, gas bubbles, 0.0 to 3.0 percent by weight of water and 0.05 to 2.0 percent by weight of a surfactant selected from those surfactants which when subjected to a foam stabilization test wherein

- (i) 0.5 percent by weight of said surfactant is added to 10 g of a eutectic composition, consisting of 46.7 percent by weight of ammonium nitrate, 43.6 percent by weight of urea and 9.7 percent by weight of sodium nitrate, in a 10 mm diameter tube;
- (ii) the mixture is heated to 70° C.; and
- (iii) the mixture is shaken for one minute; produces a foam which: after standing for a period of 5 minutes, has a height (f_5) greater than 2 mm; and after standing for a period of 60 minutes, has a ratio (ϕ_5^{60}), of foam height after 60 minutes (f_{60}) to foam height after 5 minutes (f_5), of greater than 0.3.

4,434,018

TIRE RETREADING SYSTEM WITH ENVELOPE PRESSURE

Donaldee Brewer, Muscatine, Iowa, assignor to Bandag, Incorporated, Muscatine, Iowa

Filed Sep. 21, 1981, Ser. No. 304,523

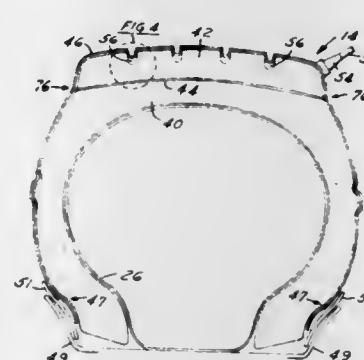
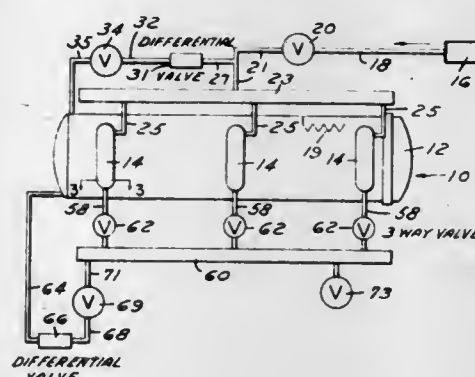
Int. Cl.³ B29H 5/04, 5/16

U.S. Cl. 156—96

12 Claims

1. In a method of retreading a tire casing which includes the steps of applying a precured rubber tread to the periphery of a tire casing, having side walls, with a layer of vulcanizable rubber-base material interposed between the tread and the tire casing, covering the tread and at least the adjacent side walls of the tire casing with a flexible airtight cover, and applying fluid pressure to the interior of a vessel containing the flexible airtight cover, tread and tire casing in order to press the flexible

airtight cover against the assembly of tread and the tire casing, the improvement which comprises supplying fluid pressure from the vessel through a pressure differential check valve to



a cover manifold positioned outside the vessel at a predetermined pressure less than said vessel pressure and supplying fluid pressure to the flexible airtight cover from said cover manifold.

4,434,019

METHOD OF MAKING A POLYMERIC STRIP AND A POWER TRANSMISSION BELT

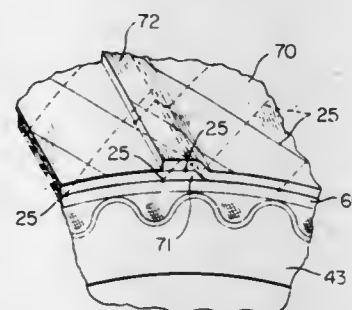
Gerald C. Holloway, Jr., Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed May 15, 1981, Ser. No. 263,963

Int. Cl.³ B29H 7/22

U.S. Cl. 156—137

12 Claims



1. In a method of making a substantially rectangular strip of material having opposed ends and being adapted for use in a power transmission belt construction, said method comprising the steps of providing a mass of uncured formable polymeric matrix material, mixing a plurality of elongate reinforcing fibers throughout said matrix material, forming said mass to define a strip thereof having opposed surfaces, each surface having a pair of opposed side edges and a pair of opposed end edges, aligning said fibers randomly and substantially uniformly throughout said matrix material with their elongate axes in parallel relation, the improvement comprising the steps of adhering a plurality of parallel spaced apart bleeder yarns against at least one of said surfaces so that each edge of said one surface has a plurality of said bleeder yarns extending thereto, said bleeder yarns enabling said strip to be laminated against

associated layer means comprising said belt construction on a common interface with said bleeder yarns along said interface as well as enabling said strip to have said opposed ends disposed in overlapping relation on a common interface therebetween with certain of said bleeder yarns along said interface of said ends, said bleeder yarns being adapted to serve as fluid passages for any fluid present at said interfaces during curing of said strip and its associated layer means.

4,434,020

METHOD OF MANUFACTURE OF WATERBED LINERS

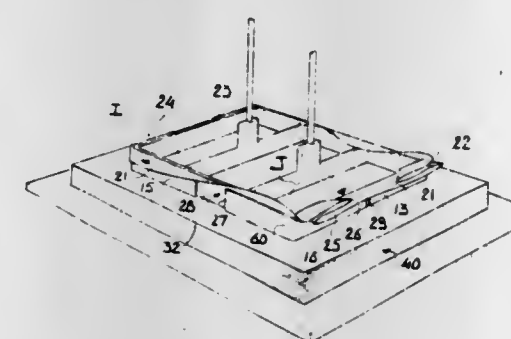
Wolfgang Blaas, Elk Grove Village, Friedrich Bergr, Chicago both of Ill., and Judson D. Wetmore, Huntington Beach, Calif., assignors to Hold-A-Fold, Inc., Chicago, Ill.

Filed Nov. 1, 1982, Ser. No. 438,177

Int. Cl.³ B32B 1/02, 1/10

U.S. Cl. 156—216

5 Claims



1. A method of manufacture of a seamless waterbed safety liner assembly having a plurality of corners comprising the steps of:

- (a) providing a continuous flat sheet of plastic having a floor area delineable therein, margins around said floor area for covering upstanding perimetral walls, and corners in said margins;
- (b) providing a form with perimetral side walls and which substantially delineates said floor area;
- (c) folding said margin corners of said sheet to provide seamless diagonal triangular hospital corner folds in said margins adjacent said corners;
- (d) lapping excess margin plastic into said form;
- (e) placing risers adjacent said corners, said risers having an interior face contacting said plastic and an exterior face;
- (f) reverse lapping said excess margin plastic over at least a portion of the exterior face of said risers; and
- (g) securing said excess margin plastic to the exterior face of said risers, thereby to form corners with said hospital corner fold tips lying on the exterior face of said rigid strips.

4,434,021

REVERSE BUILDING PROCESS FOR THE MANUFACTURE OF COMPLEX-SHAPED VEHICLE FUEL TANKS

Keith D. Robinson, Cedartown, and George P. Smitley, Rome, both of Ga., assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jul. 2, 1982, Ser. No. 394,747

Int. Cl.³ B29C 5/02

U.S. Cl. 156—242

9 Claims

1. A process for the manufacture of a complex-shaped, fabric-reinforced elastomeric fuel tank of the type for installation into a vehicle body cavity comprising the steps of:

- providing complementary female mold sections which, when joined together, substantially duplicate the complex geometry of the cavity, said mold sections having means for locating and mounting tank fittings thereon;

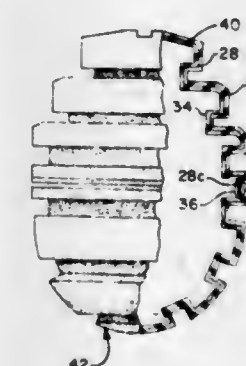
applying a ply of a release material to the surfaces of each mold section;

spray-coating a first ply of a urethane elastomer having 20–70% solids in solution at a rate of 0.1–0.5 gals/min into each mold section;

applying a square-woven 1.5–6.0 oz/sq yd nylon fabric to all areas by first applying fabric patches to the areas of severe complex contour and then applying fabric sheet material to all other areas, cutting the sheet to follow and conform to the contours of the mold;

spray-coating a second ply of urethane elastomer to cover the nylon fabric material;

installing tank fittings on the means provided and securing said fittings in place by suitable pressure applicators;



spray-coating a fuel resistant film over the elastomer to provide barrier to hydrocarbon fuels;

spray-coating a third ply of urethane elastomer onto the barrier film to provide a liner for the tank;

applying an adhesive elastomer to the peripheral edges of the complementary molds;

joining the two mold sections together about their mating peripheral edges and clamping said edges;

applying nylon fabric material and urethane elastomer on the inside of the joined sections at the interface of the peripheral edges to form a splice between the two sections; and

allowing the composite forming the tank to cure into an integral structure.

4,434,022

PROCESS FOR MANUFACTURING COPPER-CLAD LAMINATE

Osao Kamada, Tokyo; Yoshiaki Matsuga, Ibaraki; Masami Watase, Ibaraki; Tadato Kudo, Ibaraki; Hiroyoshi Harada, Ibaraki, and Atsushi Kanazaki, Ibaraki, all of Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

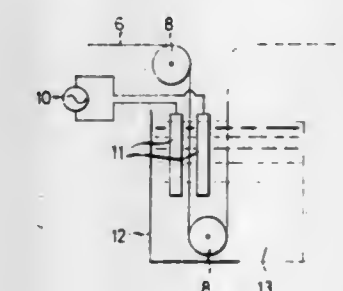
Filed Jul. 8, 1983, Ser. No. 512,047

Claims priority, application Japan, Jul. 8, 1982, 57-119113

Int. Cl.³ C23F 1/00; B44C 1/22; B29C 19/04; C03C 15/00

U.S. Cl. 156—274.6

13 Claims



1. A process for manufacturing a copper-clad laminate which includes a rolled copper foil as a circuit conductive material, comprising the steps of:

preparing a tank filled with an electrolyte in which two parallel electrodes are disposed; introducing a rolled copper foil through a power supply/guide roller into said electrolyte so as to pass between said two electrodes under current supply from a power source to said electrodes and said power supply/guide roller to form an etched layer on surfaces of said rolled copper foil; applying an adhesive on the etched layer of said roller copper foil; and then pressing said rolled copper foil with a substrate made of a synthetic resin impregnated substrate put together to form a copper-clad laminate.

4,434,023

METHOD FOR PRODUCING PLATE HEATER

Kozo Kanamori, Kusatsu; Akio Ishimoto, Kashiwara; Masaaki Konishi; Hitoshi Maita, both of Uji, and Hiroshi Shimoyama, Urawa, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

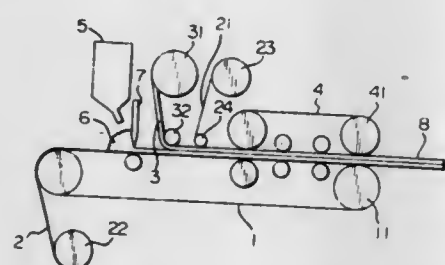
Filed Nov. 25, 1981, Ser. No. 324,853

Claims priority, application Japan, Nov. 29, 1980, 55-168660

Int. Cl.³ B32B 31/12, 5/28

U.S. Cl. 156—307.3

11 Claims



1. A method for producing a plate heater, which comprises preparing a mixture by dispersing electrically conductive fibers in a resin composition comprising a thermosetting resin, a curing agent and a thickener, laminating the resulting mixture to a first sheet-like material capable of being impregnated with said resin composition to thereby impregnate a part of the resin composition in said first sheet-like material, and thickening the resin composition to form a sheet-like preform, laminating a second sheet-like material capable of being impregnated with said resin composition to the mixture-laminated surface of the sheet-like preform, and heating the laminated assembly under pressure to cure the thermosetting resin composition.

4,434,024

DEVICE FOR ASSEMBLING INSULATING GLASS PANES

Peter Lisec, Postfach 21, A-3363 Amstetten-Hausmening (N.O.), Austria

Filed Apr. 5, 1982, Ser. No. 365,266

Claims priority, application Austria, Apr. 3, 1981, 41562/81

Int. Cl.³ B65H 29/20; B32B 31/00

U.S. Cl. 156—556

4 Claims

1. Device for the assembly of insulating glass panes, comprising an upright wall, a plurality of supporting rollers carried by the wall, driven conveying rollers for glass panes adjacent the lower edge of the wall, and a carrier with guide rollers thereon for glass panes movable into or out of the upper zone of the glass pane; the improvement comprising a horizontal beam (6) adjacent the lower edge of the wall, means to raise and lower said beam, lifting cams (8) and guide rollers (9) carried by the beam and engaging between said driven conveying rollers (3); measuring means (16, 17, 18) for detecting the thickness of a glass pane (W_1) with a spacer frame (D) attached thereto, and means responsive to said measuring means for moving said wall backward transverse to the conveying direction and in a direction perpendicular to said wall by a distance

equal to said thickness thereby to permit a further glass pane (W_2) to be advanced by said driven conveying rollers into



overlying relationship with the first-mentioned glass pane (W_1).

4,434,025

CONTROLLING CRYSTALLINITY AND THICKNESS OF MONOCRYSTALLINE LAYER BY USE OF AN ELLIPTICALLY POLARIZED BEAM OF LIGHT

Jean J. Robillard, 46 Arnold Rd., Pelham, Mass. 01002

Filed Jun. 4, 1981, Ser. No. 270,242

Int. Cl.³ C30B 23/02

U.S. Cl. 156—601

10 Claims

1. In a process for preparing a thin film semiconductor of one or more monocrystalline layers of a semiconductor material in an evacuated chamber by epitaxial growth by vapor deposition of at least one monocrystalline layer on an epitaxial substrate, the improvement comprising continuously simultaneously controlling the crystallinity and measuring the thickness of each epitaxial monocrystalline layer during the growth thereof by directing an elliptically polarized beam of light at a low angle of incidence over the surface of the epitaxial substrate where the monocrystalline layer is growing, feeding the reflected beam of light to an analyzer to detect any variation in ellipticity of the reflected beam as a function of the crystallinity and film thickness and controlling the vapor deposition in response to any detected variation until the desired crystallinity and thickness is obtained.

4,434,026

ACID CONCENTRATING AND RECOVERY SYSTEM

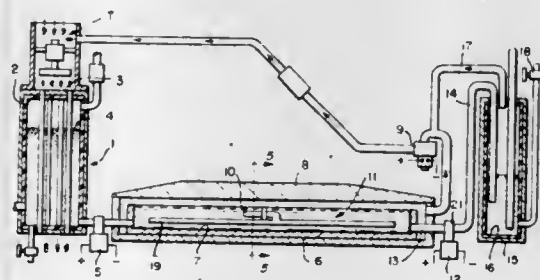
Mack Harris, 4608 W. 25th St., Little Rock, Ark. 72204

Filed Feb. 10, 1982, Ser. No. 347,678

Int. Cl.³ B01D 1/00, 1/02, 1/30

U.S. Cl. 159—1 S

7 Claims



1. System for concentrating and recovering acid comprising in combination:

- a receptacle or storage tank for receiving and containing weak or dilute acid;

- an evaporating pan including a pipe connected to said receptacle or storage tank and a pump whereby acid may be delivered to said evaporating pan;
- a second receptacle or storage tank including a pipe connected to said evaporating pan and a pump whereby concentrated acid may be delivered to said second receptacle or storage tank; and
- an air drier device in the form of a tank containing acid and including an inlet through which a mixture of air, acid, and water vapor may be introduced, and a pipe connecting said air drier device to said tank for weak or dilute acid and to a pump operable to deliver weak acid to the weak acid tank;

wherein the concentration of the acid of said mixture is increased in said air drier device by separation and removal of some water vapor from the mixture and said evaporating pan includes a heat collecting surface as a floor thereof and a lens focus top whereby heat energy from the sun's rays will heat and concentrate the acid therein by developing water vapor which is removed with air.

4,434,027

METHOD FOR THE EVAPORATION OF A LIQUID SOLUTION USING MECHANICAL COMPRESSION

Bastiaan P. Eversdijk, Re Gorredijk, Netherlands, assignor to Stork Friesland B.V., Gorredijk, Netherlands

Continuation of Ser. No. 242,183, Mar. 10, 1981, abandoned.

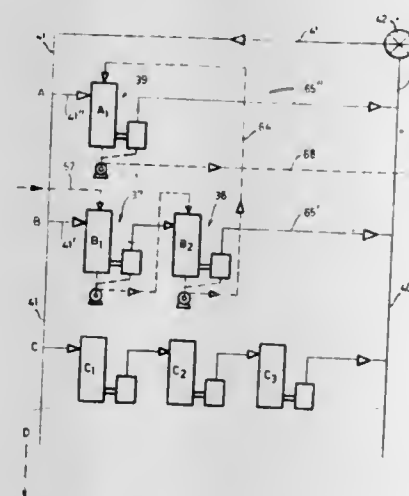
This application Jul. 9, 1982, Ser. No. 396,852

Claims priority, application Netherlands, Mar. 17, 1980, 8001576

Int. Cl.³ B01D 1/26, 1/28

U.S. Cl. 159—47.1

2 Claims



1. The method of evaporating a liquid solution product in an evaporator system to obtain a condensed drier substance therefrom, said system being adapted to deliver treatment vapor at a predetermined temperature and pressure for effecting evaporation and said system having similar multiple stages of similar evaporators with a specified evaporation surface coupled to process the product with the treatment vapor flowing in sequence from previous stages into subsequent stages comprising the steps of, restoring vapor energy consumed in product evaporation in the evaporator system by receiving treatment vapor processed through at least one stage and thereby losing pressure and temperature by mechanically compressing the vapor in a single stage compressor to restore its predetermined temperature and pressure as treatment vapor, serially passing spent vapor from a said previous stage with a high boiling point product into a said subsequent stage having a lowered boiling point product to capture the latent heat of the spent vapor released from the previous stage, thereby to increase the efficiency of obtaining the condensed substance from said product by evaporation, forming a plurality of groups, each group having different numbers of evaporator stages for receiving input treatment vapor and releasing outgoing spent vapor with the evaporator stages in each multiple stage group

connected to process the liquid solution product in series from preceding to subsequent stages with input vapor into the groups comprising the mechanically compressed treatment vapor delivered from the compressor in parallel to all the groups and with output spent vapor provided in parallel from the groups to the compressor as the vapor to be mechanically compressed to provide a like total change in input energy from input to output of each group, and passing the product through the similar evaporator stages in a flow path progressing from the group having the greatest number of evaporator stages to the group having the least number of evaporator stages thereby to produce a larger energy change to the product in the evaporator stages receiving the solution in drier form than in previous evaporation stages.

4,434,028

APPARATUS FOR REMOVING ORGANIC CONTAMINANTS FROM INORGANIC-RICH MINERAL SOLIDS

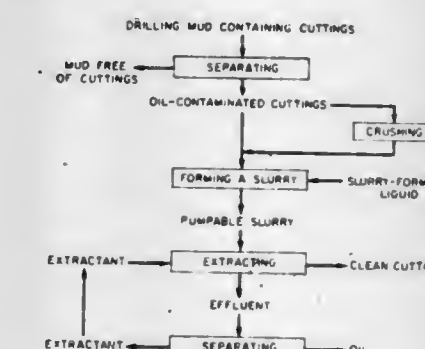
Christopher P. Eppig, Arlington; Bruce M. Putnam, Wayland, and Richard P. de Filippi, Cambridge, all of Mass., assignors to Critical Fluid Systems, Inc., Cambridge, Mass.

Filed Apr. 17, 1981, Ser. No. 255,037

Int. Cl.³ B01D 11/00

U.S. Cl. 196—14.52

17 Claims



1. A system comprising elements arranged, sized and dimensioned for removing organic contaminants including oil from particulate, inorganic-rich mineral solids, including:

- pressure vessel means arranged to effect contact between particulate, inorganic-rich, mineral solids containing an organic contaminant and an extractant for said contaminant, which extractant under ambient conditions is a gas and which throughout said contact is maintained under conditions of pressure and temperature to convert it to a fluidic solvent state for said contaminant;
- extractant supply means for providing said extractant in said fluidic solvent state;
- means, including pressurized fluid supply conduit means and first pressurized fluid withdrawal conduit means, for circulating said extractant in said fluidic solvent state through said pressure vessel means and in contact with said solids so as to form an essentially single-phase primary effluent containing said contaminant;
- means, including second pressurized fluid withdrawal conduit means, for removing residual effluent from said pressure vessel means as an essentially single-phase residual effluent; said first and second pressurized fluid withdrawal conduit means terminating in common in a main pressurized fluid conduit means for combining said residual effluent with said primary effluent;
- depressurizing means in fluid communication with said main pressurized fluid conduit means for depressurizing the resulting combined, essentially single-phase effluent to form two separable phases comprising a vapor phase containing said extractant and a liquid phase containing said contaminant;
- separating means for separating said vapor and liquid phases; and

analyzing said aqueous solution to measure the ratio of the concentration of the chlorate ion to the concentration of the chloride ion;
 comparing in a processing zone said measured ratio with a predetermined value range for said ratio, and where said measured ratio falls outside of the predetermined value range for the ratio, altering the initial feed rate of said alkali metal chloride to said first electrolysis zone; and removing said concentrated alkali metal chlorate solution from said first electrolysis zone to a product solution collection zone.

4,434,034

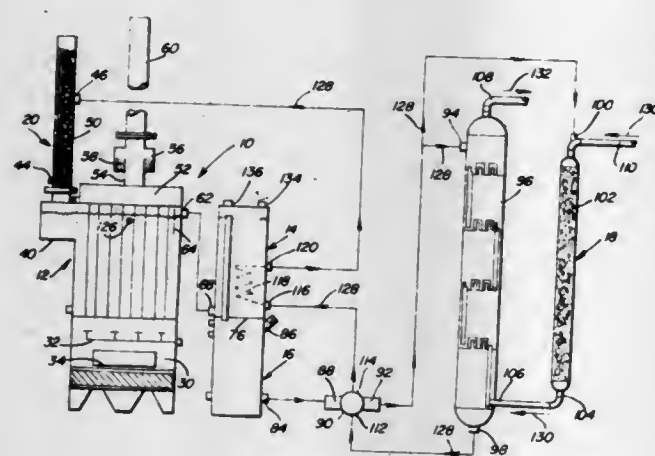
DIRECT FIRED GLYCOL REGENERATOR WITH VERTICAL FLUES

Isaac F. Padilla, Rte. 3, Box 711, Farmington, N. Mex. 87401
 Filed Aug. 23, 1982, Ser. No. 411,084

Int. Cl.³ B01D 3/02

U.S. Cl. 202—153

10 Claims



1. A direct fired liquid desiccant regenerator designed for fuel efficient operation on low pressure gas fuel comprising elements designed, dimensioned and arranged for regenerating a liquid desiccant, including an upstanding hollow reboiler provided with upstanding peripheral sides, a top and a bottom, a plurality of laterally spaced upstanding tubular flues disposed in said reboiler and opening upwardly and downwardly through said top and bottom, a flue plenum chamber disposed over said top into which said tubular flues open and a flue pipe opening upwardly from said plenum chamber, a combustion chamber disposed below said bottom including low pressure gas burner means therein and into which chamber the lower ends of the tubular flues open, an upper portion of said reboiler including a lateral extension, a still column supported and projecting upwardly from said lateral extension and positioned for regenerated liquid desiccant drainage from the lower end of said column into said lateral extension, said reboiler being adapted for operation with a predetermined liquid desiccant level above and below the lower and upper extremities, respectively, of said lateral extension, said reboiler including a scum baffle protected liquid desiccant outlet in an upstanding side thereof remote from said lateral extension and disposed substantially at said level and extending above and below the latter, a heat exchanger tank including a lower level desiccant inlet and an upper overflow type desiccant outlet, said reboiler outlet being communicated with said heat exchanger inlet, a liquid desiccant storage tank including an inlet communicated with said heat exchanger outlet, said tank including an outlet, a contactor tower, including a liquid desiccant inlet with which said storage tank outlet is communicated and further including an outlet communicated with the inlet of a heat exchange coil in said heat exchanger, said heat exchanger coil including an outlet communicated with an inlet for said column, and pump means for pumping dry desiccant from said tank outlet to said contactor tower inlet and wet desiccant from said tower outlet to said heat exchanger coil inlet.

10. A direct fired reboiler comprising means for attachment to a desiccant regenerator system having elements designed,

dimensioned, and arranged for regenerating, a liquid desiccant, said reboiler including upstanding peripheral sides, a top and bottom, a plurality of laterally spaced upstanding tubular flues disposed in said reboiler and opening upwardly and downwardly through said top and bottom, a flue plenum chamber disposed over said top into which said tubular flues open and a flue pipe opening upwardly from said plenum chamber, a combustion chamber disposed below said bottom including low pressure gas burner means therein and into which chamber the lower ends of the tubular flues open, an upper portion of said reboiler including a lateral extension, a still column supported and projecting upwardly from said lateral extension and positioned for regenerated liquid desiccant drainage from the lower end of said column into said lateral extension, said reboiler being adapted for operation with a predetermined liquid desiccant level above and below the lower and upper extremities, respectively, of said lateral extension, said reboiler including a scum baffle protected liquid desiccant outlet in an upstanding side thereof remote from said lateral extension and disposed substantially at said level and extending above and below the latter.

4,434,035

MIXTURES OF AROMATIC-ALIPHATIC KETONES AS PHOTOINITIATORS AND PHOTOPOLYMERIZABLE SYSTEMS CONTAINING THEM

Jürgen Eichler, Weiterstadt; Claus Herz, Heidelberg, and Karl-Heinz Neisius, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany
 Division of Ser. No. 243,119, Mar. 12, 1981, Pat. No. 4,390,453.
 This application Apr. 4, 1983, Ser. No. 481,971

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010148

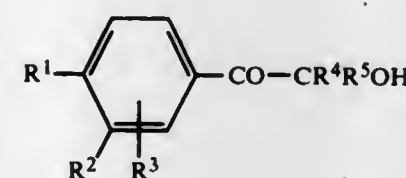
Int. Cl.³ C08F 2/50

U.S. Cl. 204—159.13

13 Claims

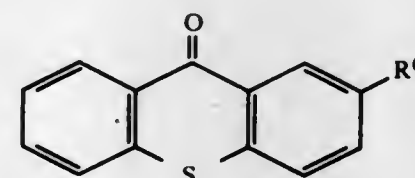
1. A method of photoinitiating a chemical reaction capable of being photoinitiated comprising adding a composition comprising

(A) 0.1 to 99.9 weight % of at least one hydroxyalkylphenone of the formula



wherein R¹ is H, alkyl of 1-4 C atoms or chlorine, R² is H or methyl, R³ is H or methyl, R⁴ is alkyl of 1-6 C atoms and R⁵ is alkyl of 1-6 C atoms, and

(B) 99.9 to 0.1 weight % of at least one 2-alkylthioxanthone of the formula



wherein R⁶ is alkyl of 1-8 C atoms, as photoinitiator to the reaction system for the chemical reaction.

4,434,036

METHOD AND APPARATUS FOR DOPING SEMICONDUCTOR MATERIAL

Konstantin Hoerschmann; Helmold Kausche, both of Munich, and Werner Späth, Holzkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

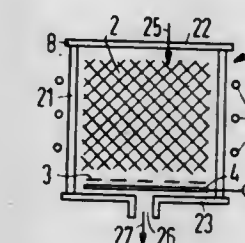
Filed May 3, 1982, Ser. No. 374,415

Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118785

Int. Cl.³ H01L 21/22; H01J 17/00

U.S. Cl. 204—164

16 Claims



1. Method for doping semiconductor material, including a container into which doping material is led and aimed at the semiconductor material by means of an electrical field, which comprises placing a low-pressure plasma containing the doping material in a hydrogen-phosphine mixture in the container, maintaining the low-pressure plasma at a pressure of substantially 8×10^{-4} torr, placing a high-frequency coil around the container, maintaining the frequency of the coil at substantially 4 MHz, and exciting the plasma to lead doping material ions into the semiconductor material by means of the electrical field.

4,434,037

HIGH RATE SPUTTERING SYSTEM AND METHOD

James D. Crank, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 283,764, Jul. 16, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,799

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 R

58 Claims

1. An apparatus for high rate sputtering a selected target material on a substrate in vacuum, comprising:

- (a) a vacuum chamber having an anode, a cathode and means for providing an active plasma therebetween;
- (b) said cathode being moveable within said vacuum chamber through said active plasma at a distance from said substrate, said cathode comprising said selected target material; and
- (c) means for moving said cathode through said active plasma to have a portion of said cathode arranged within said active plasma while another, contiguous portion of said cathode is arranged outside said active plasma.

4,434,038

SPUTTERING METHOD AND APPARATUS UTILIZING IMPROVED ION SOURCE

Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Filed Sep. 15, 1980, Ser. No. 187,140

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 R

167 Claims

1. Sputtering apparatus comprising at least one element to be sputtered; at least one plasma source for generating a plasma from at least one ionizable gas where at least some of the charged particles of the plasma sputter the element, said plasma source including a generator having at least two separate surfaces;

means for generating a magnetic field having lines of force which pass through both of the two cathode surfaces; a generator anode disposed adjacent that portion of the magnetic field between the two cathode surfaces; means for establishing an electric field between the generator anode and the generator cathode where at least portions of the electric and magnetic fields are substantially perpendicular to one another whereby said plasma is formed between the cathode surfaces and ejected away from the generator cathode.

4,434,039

CORROSION PROTECTION SYSTEM FOR HOT WATER TANKS

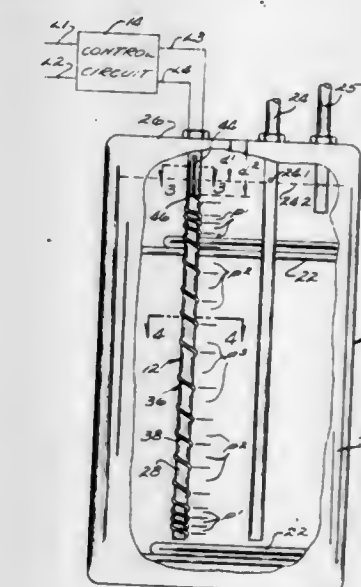
Robert Baboian, Johnston, R.I., and Gardner S. Haynes, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1982, Ser. No. 450,575

Int. Cl.³ C23F 13/00

U.S. Cl. 204—196

9 Claims



1. In a hot water tank comprising, a substantially hollow metal tank having a selected height and an interior surface, the tank being formed at least in part of a corrosively active material, a non-sacrificial anode mounted in the tank and adapted to direct an electrically positive current therefrom to the interior surface when the tank is full of water, an elongated electrically insulative member having first and second end portions, the anode comprising an elongated, electrically conductive member having a portion wound helically about the insulative member from the first to the second end, the helical winding having a smaller pitch adjacent the first and second ends than the pitch intermediate the ends of the insulative member.

4,434,040

VERTICAL-PASS ELECTROTREATING CELL

Edward C. Brendlinger, Pittsfield, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1982, Ser. No. 425,762

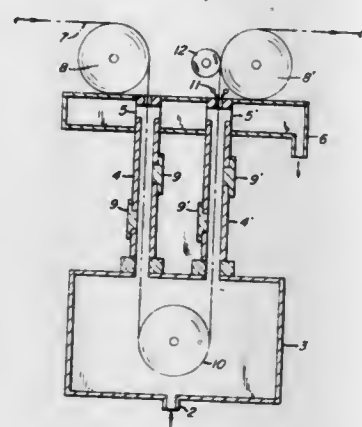
Int. Cl.³ C25D 17/00, 17/10

U.S. Cl. 204—206

5 Claims

1. In an apparatus for the electrotreating of an extended length of metal strip comprising, two tube-like electrolyte corridors for the passage of electrolyte therethrough, said tube-like corridors being supported, with their axes substantially vertical, above an electrolyte tank, an ingress roll over which the strip passes prior to its downward passage into the upper portion of one of said corridors, supported in said tank, a sink-roll around which the strip

passes prior to its entrance into the lower portion of the second of said corridors, an egress roll over which the strip passes after its passage from the upper portion of said second corridor, means for supplying an electrotreating current to said strip, means for flowing electrolyte into the lower portions of said corridors and overflow means for carrying electrolyte from the upper portions of said corridors back to said electrolyte tank, the improvement, in which said means for supplying an electrotreating current include electrodes inserted into



- fluorinated polymer layer containing carboxylic acid functional groups;
- introducing said aqueous solution of potassium chloride into said anode compartment;
 - filling said cathode compartment with a catholyte solution comprised of an aqueous solution of potassium hydroxide having a KOH concentration of up to about 27 percent by weight;
 - impressing an electrolyzing current between said anode and said cathode to produce chlorine gas in said anode compartment and additional KOH in said catholyte solution;
 - slowly increasing the concentration of KOH in said catholyte over a conditioning period of at least 12 hours up to a maximum of about 34 percent by weight of KOH after said cell is started up, whereby said membrane is conditioned; and
 - then operating said cell under normal operating conditions to produce KOH catholyte of the desired concentration.

4,434,042

PLANAR MAGNETRON SPUTTERING APPARATUS
Douglas L. Keith, Santa Clara, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 1, 1982, Ser. No. 353,074
Int. Cl.³ C23C 15/00

U.S. Cl. 204—298

6 Claims

- A magnetron sputtering apparatus comprising
 - a base having a top portion, a bottom portion, and an inner chamber,
 - a support plate including an outer insulative portion for engaging said top portion of said base and an inner electrically conductive portion, said inner electrically conductive portion having a raised pedestal,
 - a first magnet mounted on said raised pedestal and a second, annular magnet mounted about said raised pedestal,
 - a magnet housing mounted on said outer insulative portion and encapsulating said first and second magnets, said housing having a top surface in close proximity to said first and second magnets for supporting a target material,
 - means for supplying a coolant to said inner electrical conductor portion of said support plate within said magnetic housing, and
 - means for applying a voltage to said inner electrically conductive portion of said support plate.

4,434,043

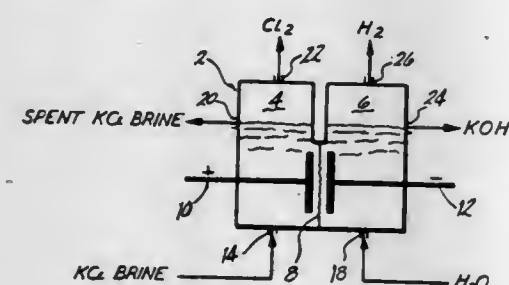
RECOVERY OF CATALYST FROM COAL LIQUEFACTION RESIDUES
Gopal H. Singhal, Houston, and Ramachandra A. Nadkarni, Baytown, both of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 1, 1982, Ser. No. 383,901
Int. Cl.³ C10G 1/06, 1/00

U.S. Cl. 208—10

15 Claims

- In a process for the liquefaction of carbonaceous solids wherein said solids are contacted under liquefaction conditions in a liquefaction zone with molecular hydrogen in the presence of a catalyst containing metal constituents to produce a liquefaction effluent, and said liquefaction effluent is treated to recover hydrocarbon liquids thereby producing a heavy bottoms containing carbonaceous material, insoluble catalyst residues containing said metal constituents and ash, the improvement which comprises:
 - reducing the organic content of said heavy bottoms to produce a heavy bottoms deficient in carbonaceous material and containing said insoluble catalyst residues and said ash;
 - contacting at least a portion of said heavy bottoms deficient in carbonaceous material produced in step (a) with



- A process for conditioning new membranes used for the production of chlorine gas, hydrogen and potassium hydroxide by the electrolysis of an aqueous solution of potassium chloride in an electrolytic cell having an anode compartment containing an anode and a cathode compartment containing a cathode, said process comprising
 - separating said anode compartment from said cathode compartment by a membrane comprised of a laminated structure comprising a first fluorinated polymer layer containing sulfonyl groups in ionizable form and a second

- an aqueous solution of a mineral acid in the presence of an added alcohol and an added oxidizing agent selected from the group consisting of peracids, hydroperoxides and peroxides, thereby extracting said metal constituents from said insoluble catalyst residues into said aqueous solution; and
- using the metal constituents extracted in step (b) as constituents of said catalyst.

4,434,044

METHOD FOR RECOVERING SULFUR OXIDES FROM CO-RICH FLUE GAS

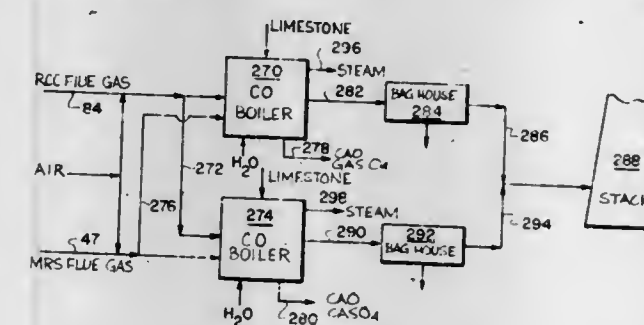
Lloyd E. Busch; Paul W. Walters, and Oliver J. Zandona, all of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.
PCT No. PCT/US81/00648, § 371 Date Sep. 1, 1981, § 102(e) Date Sep. 1, 1981, PCT Pub. No. WO82/04062, PCT Pub. Date Nov. 25, 1982

PCT Filed May 13, 1981, Ser. No. 304,992

Int. Cl.³ C10G 25/00; B01D 53/34

U.S. Cl. 208—91

9 Claims



- A method for removing sulfur oxides from CO-rich flue gas product of regeneration obtained by burning hydrocarbonaceous deposits of thermal and catalytic conversion which comprises combusting a CO rich flue gas comprising sulfur oxides in a CO boiler zone comprising boiler feed water heat exchange zones dispersed in a fluid bed of limestone particle for removing SO₂ from CO combustion products during indirect heat exchange with the boiler feed water in said heat exchange zones to produce high pressure steam, and separately recovering generated high pressure steam and cooled products of CO combustion separated from sulfur oxides from the CO boiler zone.

4,434,045

PROCESS FOR CONVERTING PETROLEUM RESIDUALS

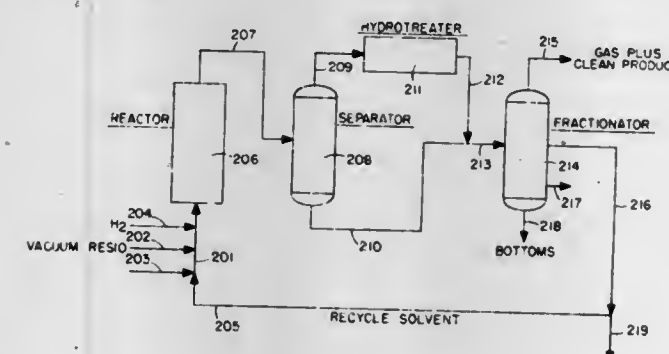
Lonnie W. Vernon, Baytown, and Fritz E. Jacobs, Houston, both of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 4, 1982, Ser. No. 336,977

Int. Cl.³ C10G 47/00

U.S. Cl. 208—107

11 Claims



- A process for converting petroleum residuals comprising the steps of:
 - combining a petroleum residual with a solvent comprising materials selected from the group consisting of paraffinic, aromatic and hydroaromatic materials such that the

- ratio of paraffinic materials to aromatic and hydroaromatic materials is within the range from about 0.1 to about 0.5:1 and at least 0.8 weight percent donatable hydrogen in a concentration sufficient to provide at least 0.4 weight percent donatable hydrogen based on petroleum residual in the initial mixture;
- converting the mixture from step (a) in the presence of molecular hydrogen at a hydrogen partial pressure within the range from about 1500 to about 2500 psig and at a temperature within the range from about 800° to about 850° F. for a nominal holding time within the range from about 30 to about 120 minutes; and
 - recovering a normally liquid product from the conversion step.

4,434,046

PREVENTING PHASE SEPARATION OF DEWAXED OIL
Costandi A. Audeh, Princeton, and David S. Shihabi, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,292

Int. Cl.³ C10G 11/5, 47/16

U.S. Cl. 208—111

6 Claims

- An improved two-step catalytic process for preparing crude oil for transport, the improvement comprising (1) in a first stage contacting at from about 50 to about 500 psig, a LHSV of from about 0.1 to about 2 and a temperature of from about 500° F. to about 800° F., said crude oil with a crystalline aluminosilicate zeolite having a SiO₂ to Al₂O₃ ratio of at least 12, a constraint index of about 1 to 12, and an alpha value no greater than about one, to substantially dewax said crude oil, the contact being made in the absence or presence of added hydrogen and thereafter cooling said substantially dewaxed crude oil in stages in a temperature of from about 210° F. to about 130° F. and (2) in a second stage filtering said cooled and substantially dewaxed oil thereby separating high melting point hydrocarbons and other organic solids therefrom.

4,434,047

CATALYTIC DEWAXING-HYDROTREATING PROCESS
Albert L. Hensley, Jr., Munster; Thomas D. Nevitt, and A. Martin Tait, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1981, Ser. No. 320,862

Int. Cl.³ C10G 47/16, 47/20

U.S. Cl. 208—111

18 Claims

- A process for catalytically dewaxing-hydrotreating hydrocarbon feeds comprising contacting the feed with hydrogen under catalytic dewaxing-hydrotreating conditions in the presence of a catalytic composition comprising (1) a hydrogenating component of improved thermal stability comprising a chromium component, at least one other Group VIB metal component and at least one Group VIII metal component deposited on at least a portion of (2) a support comprising a shape selective zeolitic cracking component.

4,434,048

HYDROTREATING CATALYST AND USE THEREOF
Harvey D. Schindler, Fairlawn, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 363,914, Mar. 31, 1982, Pat. No. 4,414,141, which is a continuation of Ser. No. 208,948, Nov. 21, 1980. This application Apr. 4, 1983, Ser. No. 481,776

Claims priority, application Japan, Apr. 30, 1983, 58-63878

Int. Cl.³ C10G 45/08, 47/10

U.S. Cl. 208—112

8 Claims

- In a process for the hydrotreating of a heavier hydrocarbon containing feedstock having at least 50% thereof boiling above 975° F. in the presence of a hydrotreating catalyst, the improvement comprising:
 - said hydrotreating catalyst being a catalytically effective

amount of nickel and molybdenum supported on an alumina support, said catalyst having a total porosity of at least 0.5 cc/g and a pore size distribution of from 0.25 to 0.40 cc/g of pores with a diameter of less than 250° A., 0.10 to 0.25 cc/g of pores with a diameter of from 250°-500° A., from 0.20 to 0.30 cc/g of pores with a diameter of from 500°-1500° A., from 0.05 to 0.15 cc/g of pores with a diameter of from 1500°-4000° A., and from 0.03 to 0.10 cc/g of pores with a diameter of greater than 4000° A., said catalyst comprised of nickel and molybdenum supported on alumina having been prepared with calcining at a temperature of from 1150° F. to 1300° F.

4,434,049

RESIDUAL OIL FEED PROCESS FOR FLUID CATALYST CRACKING

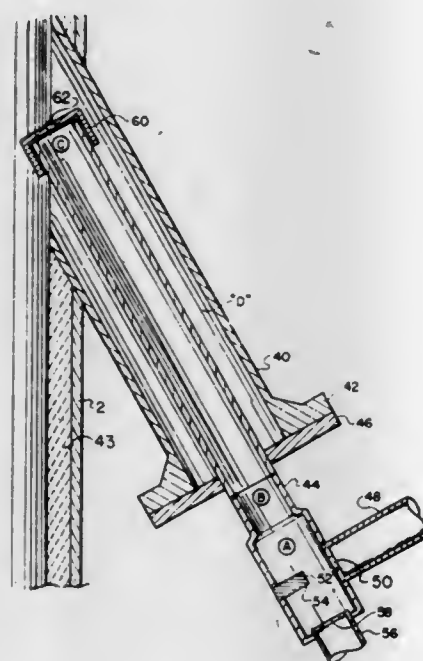
Robert R. Dean, #1 Columbine La., Littleton, Colo. 80123; Jean L. Mauleon, 15656 E. Grand Ave., Aurora, Colo. 80015, and Robert J. Newman, 8586 E. Otero Cir., Englewood, Colo. 80112

Filed Mar. 17, 1982, Ser. No. 359,156

Int. Cl.³ C10G 11/18

U.S. Cl. 208-153

23 Claims



1. In a process for effecting the catalytic conversion of hydrocarbons to produce gasoline, lower and higher boiling hydrocarbons and effect regeneration of catalyst particles used therein to provide high temperature catalyst particles, the improvement for obtaining intimate contact between a high boiling hydrocarbon oil stream and catalyst particles recovered at a temperature of at least 1400° F. which comprises, atomizing said high boiling oil stream with gaseous material in a confined zone external to a riser hydrocarbon conversion zone, passing the atomized oil stream as an oil mist and gaseous material through an elongated confined zone terminating in a restricted diameter opening adjacent the inner surface area of the riser hydrocarbon conversion zone, said restricted diameter opening sized to further atomize said oil mist and provide a preselected spray pattern of high velocity atomized hydrocarbons within said riser zone for intimate contact with upflowing dispersed phase particles of catalyst, and separating a suspension of product hydrocarbons of cracking and catalyst particles following traverse of said riser zone for separate recovery thereof.

4,434,050 POOL CLEANING DEVICE FOR ROLLING OPERATION UNDER POOL COVER

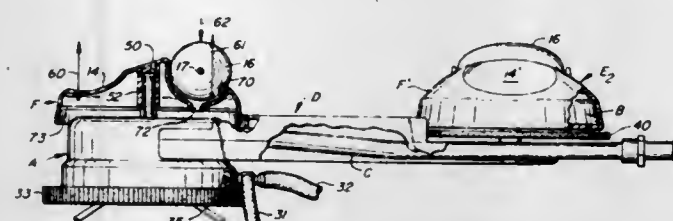
Walter T. Selsted, Cupertino, Calif., assignor to Arneson Products, Inc., Corte Madera, Calif.

Filed Mar. 25, 1982, Ser. No. 362,008

Int. Cl.³ E04H 3/20

U.S. Cl. 210-169

7 Claims



1. In a pool cleaning apparatus having positive buoyancy and propelled motion when positioned in a swimming pool, apparatus for permitting unimpeded motion under a floating pool cover, comprising: at least one inverted caster in overlying arrangement to said pool cleaning apparatus, said caster having a substantially vertical axis for pivotal movement of said caster around said axis at least one of said casters including a ramp to permit said caster to move under obstructions in said cover; and a roller mounted to said caster to permit said pool cleaning apparatus to move under and in contact with said cover.

4,434,051 MULTIPLE VALVE APPARATUS FOR SIMULATED MOVING BED ADSORPTION PROCESSES

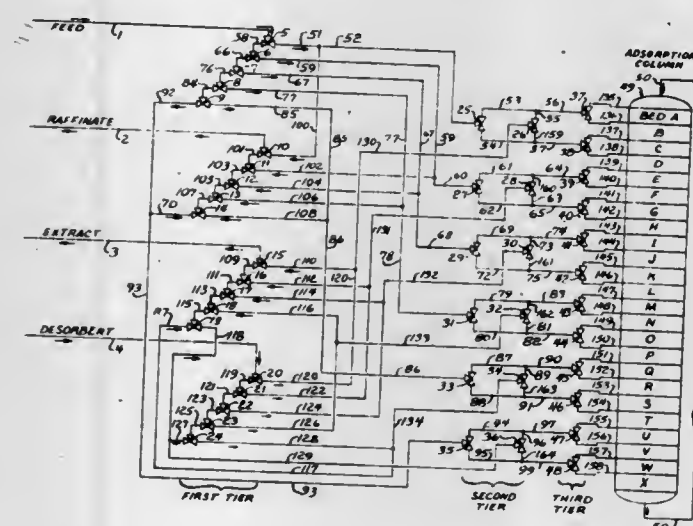
Michael W. Golem, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 7, 1982, Ser. No. 385,590

Int. Cl.³ B01D 15/00

U.S. Cl. 210-264

26 Claims



1. An apparatus for performing a fluid-solids simulated moving-bed contacting process which comprises:
(a) a fixed bed of a particulate material which is retained in a fluid-solids contacting zone and which is divided into a number of adjacent sub-beds;
(b) at least two inlet main process stream conduits and at least two outlet main process stream conduits;
(c) a first tier of multi-port valves, with the first tier of valves comprising a separate set of valves for each of the inlet and outlet process stream conduits, the first valve in each set of valves of said first tier having a port in communication with said associated main process stream conduit, each set of valves of the first tier being arranged such that each but the last valve of the set has one port in communication with a hereinafter characterized downstream second tier of multi-port valves and one port in communication

tion with another valve of the same set, with the last valve of the set having two ports in communication with valves of two different sets of valves of said hereinafter characterized second tier of valves;
(d) a second tier of multi-port valves, with the second tier of valves having a plurality of sets of valves comprising two multi-port valves arranged in-parallel such that each valve of the same set has a port in communication with each of at least two conduits leading to a hereinafter characterized third tier of multi-port valves; and
(e) a third tier of multi-port valves, with each valve of the third tier having at least two ports which are in communication with the fluid-solids contacting zones at points between sub-beds of the contacting zone.

4,434,052

CENTRIFUGAL SEPARATOR

Bruno Mülhaupt, Schlieren, Switzerland, assignor to Escher Wyss Aktiengesellschaft, Zürich, Switzerland

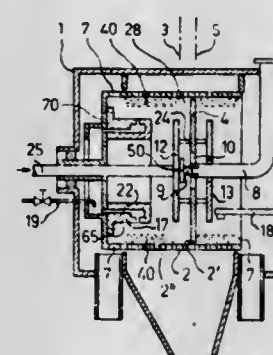
Filed May 17, 1982, Ser. No. 378,833

Claims priority, application Switzerland, Jun. 25, 1981, 4199/81

Int. Cl.³ B01D 33/06

U.S. Cl. 210-376

10 Claims



1. A pusher centrifuge for treatment of a product, especially a suspension comprising:
a housing;
at least one sieve drum having opposed end regions and rotatably mounted in said housing;
a substantially disk-shaped pusher member rotatably arranged within said sieve drum and substantially coaxially positioned with respect to said sieve drum;
said pusher member and said sieve drum being movable to-and-fro relative to one another in the lengthwise direction of the sieve drum between two predetermined deflection points;
said sieve drum having a filter surface at least a portion of which defines a longitudinal section;
said longitudinal section of said sieve drum defines respective sump regions located at opposite sides of said pusher member;
means defining discharge openings for filter cakes formed from the product which is being processed in the centrifugal centrifuge;
said pusher member wipingly contacting said longitudinal section of the filter surface of said sieve drum and serving for the displacement of a filter cake along said sieve drum in the direction towards the discharge openings provided for the filter cakes;
said sieve drum having an imaginary center line;
said deflection points being located to respective sides of said imaginary center line;
a feed pipe for infeding a suspension constituting the product which is to be separated into the sieve drum;
said feed pipe constitutes a sole feed pipe for infeding the suspension;
said feed pipe being arranged substantially coaxially with respect to said sieve drum;

4,434,053

TWO-STAGE FILTER FOR INJECTION MOLDING MACHINE

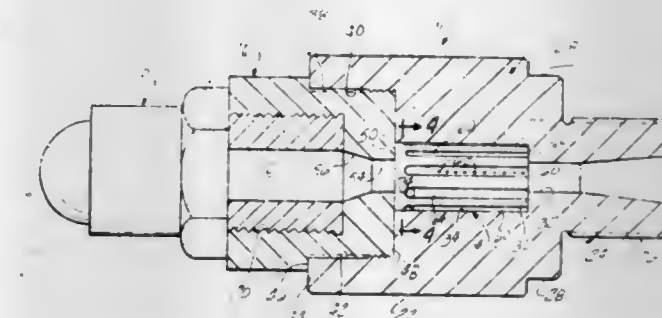
J. M. Osuna-Diaz, 908 Ravine Ter. Ct., Rochester, Mich. 48067

Filed Jul. 6, 1982, Ser. No. 395,635

Int. Cl.³ B01D 35/02

U.S. Cl. 210-446

8 Claims



1. A filter arrangement for an injection molding machine comprising:
a main body having an internal bore formed therein defining a filter cavity;
a filter screen received within said filter cavity;
said filter screen generally cylindrical to be interfit within said filter cavity and wherein said filter cavity is correspondingly cylindrically shaped; said filter screen being formed with at least one filter groove formed into the periphery of said filter screen and extending axially for a portion of the length of said filter screen, and a discharge groove circumferentially spaced from said at least one filtering groove, said discharge groove formed into the periphery of said filter screen and extending axially along a portion of the length of said filter screen, said at least one filter groove and said at least one discharge groove being separated by an axially extending land, said land being radially spaced to form a circumferentially extending clearance space; inlet passage means including an interior inlet passage extending for a portion of the length of said filter screen;
an outlet passage means including at least one discharge groove;
said inlet passage and outlet passage means each in communication with said at least one filter groove, discharge groove, and circumferentially extending clearance space to define a flow path through said filter with filtration occurring by flow therethrough;
and further including a series of through holes extending between said at least one filter groove and said inlet passage, whereby a two-stage filtering action is enabled by flow through said holes into said filter groove thence through said clearance space into said discharge groove; and
wherein said through holes are of larger diameter than the distance across said at least one clearance space, whereby a coarse filtering action is achieved by flow through said large diameter holes into said filter grooves and a fine

filter action achieved by flow from said filter groove through said clearance space and into said discharge groove.

4,434,054

FILTER FOR SEPARATING DISCRETE SOLID ELEMENTS FROM A FLUID STREAM

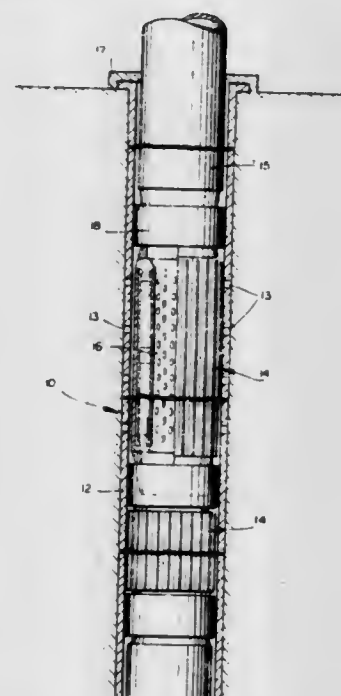
Declan B. Livesey, Calgary, and Petre Toma, Edmonton, both of Canada, assignors to Texaco Canada Resources Ltd., Calgary, Canada

Filed Dec. 20, 1982, Ser. No. 451,709

Int. Cl.³ B01D 39/06, 39/20

U.S. Cl. 210—484

8 Claims



1. A heat resisting filter element for treating a particulate carrying, multi-phase fluid which has been extracted from a subterranean reservoir and which embodies a hot fluid stream into which solid particles of varying sizes from said subterranean reservoir are intermixed, whereby to separate the particulate matter from the hot fluid stream, which filter element includes;

a casing comprising at least two concentrically disposed elongated perforate members which define an annular chamber intermediate adjacent walls thereof, and a central axial flow passage therethrough,

a panel engaging the adjacently disposed common ends of the respective perforate members to define opposed terminal closures to the annular chamber,

port means formed in each respective closure panel being communicated with the said central axial flow passage,

a composite filter bed within said annular chamber and comprised of; a first filter bed section which substantially occupies said annular chamber and is comprised of a mass of randomly disposed fibers which are resistant to thermal deformation, which fibers are sufficiently compressed into said mass to define multitudinous tortuous passages therethrough, and

a second filter bed section comprising a perforate sheath formed of a non-corrosive metal and defining openings therein of a sufficient size to prevent flow of the larger of said solid particles, while allowing the flow of smaller solid particles together with hot fluid into said central axial passage.

4,434,055

TWO PIECE SCREEN FILTER

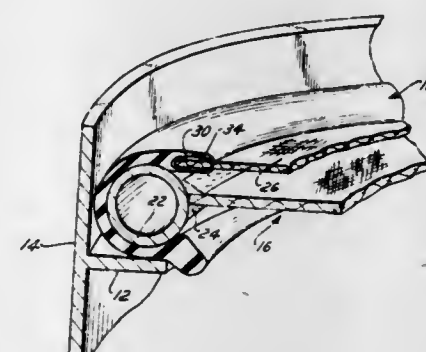
Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,807

Int. Cl.³ B01D 25/04, 39/10

U.S. Cl. 210—489

14 Claims



1. A filter unit comprising:

a first filter including filter media supported by a substantially rigid member about said filter's perimeter;

a second filter including filter media and sleeve means detachably coupled to said rigid member;

said sleeve means being of a resilient material; and wherein said sleeve means is capable of being stretched into a bearing coupling about a portion of said rigid member so as to detachably maintain said second filter adjacent said first filter in a layered relationship.

4,434,056

MULTI-CYLINDER REVERSE OSMOSIS APPARATUS AND METHOD

Bowie G. Keefer, 4324 W. 11th Ave., Vancouver, B.C., Canada

Continuation-in-part of Ser. No. 27,664, Apr. 6, 1979, Pat. No. 4,288,326, which is a continuation-in-part of Ser. No. 886,429,

Mar. 14, 1978, Pat. No. 4,187,173, which is a

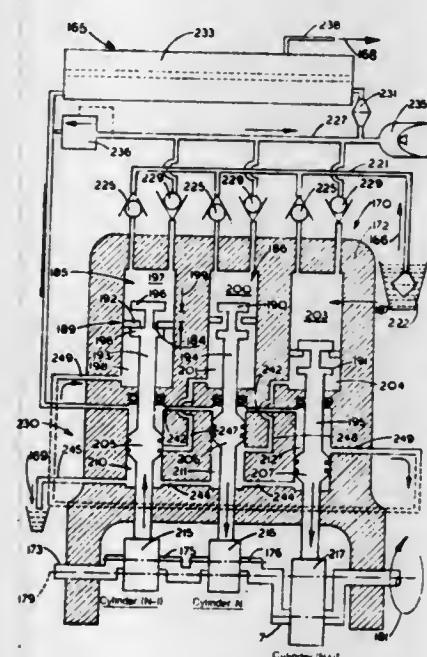
continuation-in-part of Ser. No. 782,540, Mar. 28, 1977, abandoned. This application Apr. 20, 1981, Ser. No. 255,423

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ B01D 31/00, 13/00

U.S. Cl. 210—637

25 Claims



19. A method of membrane separation of a feed fluid into permeate fluid and concentrate fluid fractions which respectively are permeated and rejected by selective membrane

means, the membrane means being exposed to pressurized feed fluid supplied by a reciprocating feed pump having at least three feed cylinders in a cooperating set, each cylinder having a displacer means which is reciprocable within the respective feed cylinder, the displacer means dividing the respective cylinder into a pumping chamber in which, during a pumping stroke, feed fluid is pressurized and an expansion chamber in which concentrate fluid is depressurized, each cylinder having a displacer rod for reciprocating the respective displacer means, each cylinder cooperating with valve means in conduit means which communicate with the membrane means, the valve means including an expansion chamber valve means which controls flow relative to the corresponding expansion chamber; the method, which occurs in each cylinder, including the steps of: inducing feed fluid into a particular pumping chamber and simultaneously exhausting concentrate fluid from a corresponding expansion chamber during an induction stroke, followed by pressurizing the feed fluid in the pumping chamber and simultaneously admitting pressurized concentrate fluid into the corresponding expansion chamber to supplement energy supplied to the displacer means during the pumping stroke, the method being further characterized by:

(a) actuating directly with each displacer rod a valve portion of an associated expansion chamber valve means of each cylinder so as to control flow relative to an expansion chamber of a cylinder other than that directly associated with the displacer rod,

(b) actuating the displacer rods of the cylinders so that actuation of the expansion chamber valve means is phased in such a way that when a particular displacer rod of a particular cylinder reaches an end of each stroke thereof, another displacer rod associated directly with the expansion chamber valve means controlling that particular cylinder is approaching a mid stroke position of said other displacer rod, so that the expansion chamber valve means directly associated with said other displacer rod is entering a closed intermediate position thereof during which no fluid passes therethrough,

(c) permitting initial travel of the displacer rod of each cylinder following beginning of each respective displacer rod stroke while the corresponding expansion chamber valve means controlling that particular cylinder is in the closed intermediate position thereof.

4,434,057

WATER PURIFICATION UTILIZING PLURAL SEMIPERMEABLE MEMBRANE STAGES

Kurt Marquardt, Holzgerlingen, Fed. Rep. of Germany, assignor to Hager & Elsasser GmbH, Stuttgart, Fed. Rep. of Germany

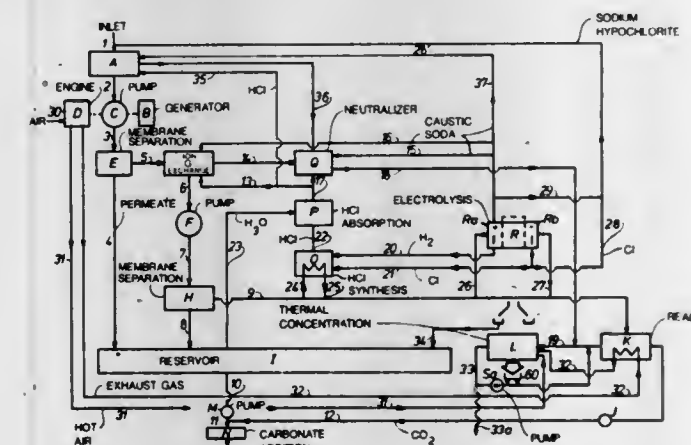
Filed Feb. 11, 1982, Ser. No. 347,684

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105550

Int. Cl.³ B01D 13/00

U.S. Cl. 210—638

27 Claims



1. A water treatment process comprising the steps of: conditioning inflowing raw water to reduce scale forming materials therein;

pressurizing the conditioned water; subjecting the pressurized water to a first membrane separation process to produce a permeate and a concentrate; treating the concentrate from the first membrane separation process to reduce scale forming materials therein; pressurizing the treated concentrate; subjecting the pressurized concentrate to a second membrane separation process to produce a permeate and a concentrate; subjecting the concentrate from the second membrane separation process to a thermal concentration process to produce condensate and carbon dioxide; mixing the permeate produced in the first and second membrane separation process with the condensate from the thermal concentration process; and injecting carbon dioxide produced during the thermal concentration process into the said mixture of permeate and condensate to produce a potable water.

4,434,058

COOLING ARRANGEMENT AND METHOD OF OPERATING THE ARRANGEMENT

Horst W. Emshoff, Mülheim, and Walter Küsebauch, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

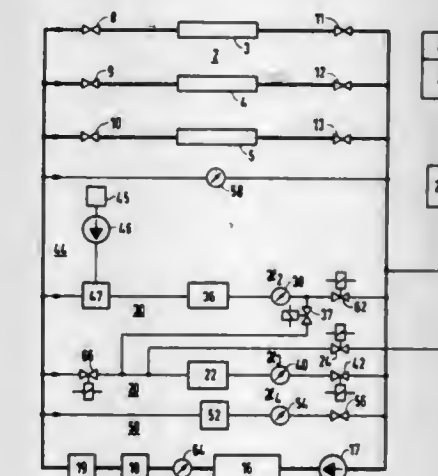
Filed Jul. 17, 1981, Ser. No. 284,497

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027322

Int. Cl.³ B01J 47/14

U.S. Cl. 210—662

5 Claims



5. A method for operating a cooling arrangement including a closed cooling system with deionized cooling water having a main loop; a parallel loop with a mixed bed filter; means for feeding an alkalizer; and an anion exchanger adapted to be connected either in series or parallel with the mixed bed filter, comprising, when starting up, conducting a partial stream of the cooling water through the anion exchanger and the mixed bed filter until the electric conductivity in the main loop and the electric conductivity behind the anion exchanger is reduced to a predetermined low value; and then turning the mixed bed filter off and conducting the partial streams exclusively via the anion exchanger, and feeding alkalizer to the cooling water until the pH value is raised to a predetermined value.

4,434,059

POLYMERS FOR PREVENTION OF FOULING BY IRON OXIDES IN COOLING SYSTEMS

Donald A. Johnson, Bolingbrook, and Baker N. Nimry, Downers Grove, both of Ill.

Continuation of Ser. No. 230,787, Feb. 2, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,498

Int. Cl.³ C02F 5/12

U.S. Cl. 210—701

4 Claims

1. A method for the stabilization of water containing iron and calcium ions said water being utilized in an industrial process cooling system operating at a pH of from 6-11, which comprises adding to the water containing iron and calcium ions an effective amount of a copolymer of acrylic acid and acrylamide having a molecular weight of approximately 10,000 the ratio of acrylic acid to acrylamide being 25:75 on a weight basis.

4,434,060

REMOVAL OF HEAVY METALS CONTENT

David C. Altmansberger; Christina L. Huss, and Haans H. Kroger, all of Gainesville, Fla., assignors to General Electric Company, N.Y.

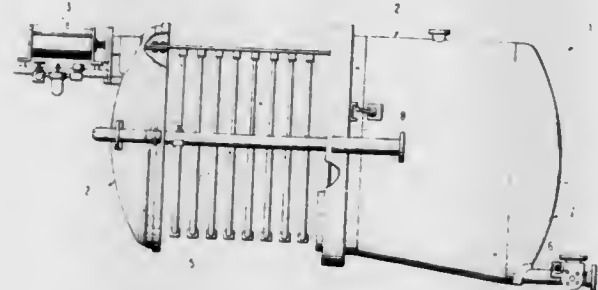
Continuation of Ser. No. 210,194, Nov. 25, 1980, abandoned.

This application Jun. 4, 1982, Ser. No. 385,208

Int. Cl.³ C02F 1/52

U.S. Cl. 210—724

13 Claims



1. A process for reducing the heavy metals content of an aqueous composition containing heavy metal having an atomic weight of at least 55 and including at least one metal from the group of nickel, cadmium, and cobalt; alkali metal hydroxide and alkali metal salts wherein the pH of said aqueous composition is at least about 14 which comprises adding a filter aid to said aqueous composition in an amount of at least about 0.1% by weight based upon the weight of the aqueous composition, and adding lime to the composition in an amount of at least about 0.1% by weight and being sufficient to cause precipitation of said heavy metals and then filtering said composition to thereby reduce the heavy metals content and wherein the amounts of said hydroxide and said salts in the composition after filtering are substantially the same as the initial content thereof prior to filtering.

4,434,061

SOLIDS-LIQUID SEPARATION

Curtis S. McDowell, Allentown, Pa., assignor to Cellu-Craft Inc., New Hyde Park, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,899

Int. Cl.³ B04B 5/00

U.S. Cl. 210—787

37 Claims

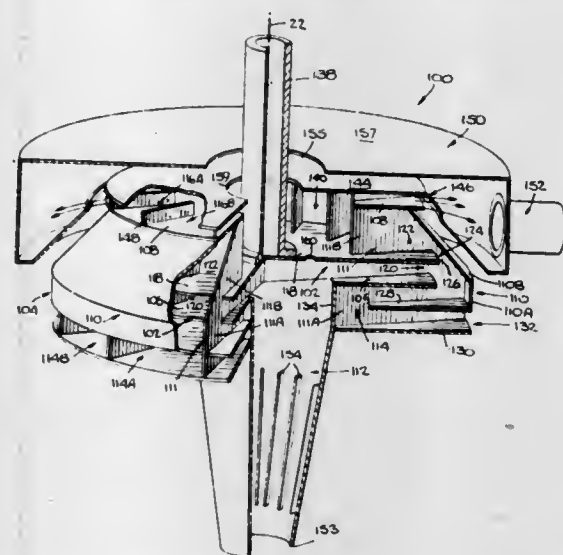
1. Apparatus for continuously separating solids and liquids in

a solids-liquid mixture and continuously removing the separated solids and liquids from the apparatus comprising:

an upstream chamber and a downstream chamber connected in said apparatus for rotation about an axis of rotation; means for introducing mixture into said upstream chamber, said upstream chamber being structured to cause mixture introduced therein to move outwardly from said means for introducing upon rotation of said upstream chamber; means for communicating said upstream chamber and said downstream chamber such that mixture moving outwardly in said upstream chamber during rotation thereof can move into said downstream chamber through said means for communicating;

first means for removing mixture from said upstream chamber and discharging it from the apparatus;

means cooperating with said means for communicating and said first means for causing a major part of the mixture in



the upstream chamber to be removed therefrom through said first means and for causing a minor part of the mixture to be removed therefrom to said downstream chamber through said means for communicating;

said first means causing mixture removed from the upstream chamber substantially to reverse direction before being discharged from the apparatus;

second means for removing liquid from said downstream chamber;

said upstream and downstream chambers, said means for communicating and said first means being operative to provide a region of low turbulence to mixture in the downstream chamber relative to turbulence in the upstream chamber during rotation of said chambers such that liquid is separated from mixture in said downstream chamber and moves toward said second means through which the separated liquid is removed from said downstream chamber.

4,434,062

OIL DISPLACEMENT ENHANCED BY LYOTROPIC LIQUID CRYSTALS IN HIGHLY SALINE MEDIA

Alexis A. Oswald, Mountainside; Helen Huang; John Huang, both of East Brunswick, and Paul Valint, Jr., Woodbridge, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 47,641, Jun. 11, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 222,137

Int. Cl.³ E21B 43/22

U.S. Cl. 252—8.55 D

26 Claims

1. A process for recovering oil from an oil bearing formation in the presence of highly concentrated brine which comprises displacing oil with a middle phase primary displacement liquid containing lamellar liquid crystals which exhibit decreasing viscosities at increasing shear rates and consist essentially of

(a) 0.5 to 10 vol.% of surfactant or combination of surfactants wherein at least one surfactant component is appropriately ethoxylated to obtain a balanced hydrophilic-lipophilic character, and providing a liquid crystalline middle phase containing oil and brine,

(b) 0.1 to 20 vol.% of an oil, and

(c) brine similar to that found in the formation and containing from about 5 to 30 wt.% of inorganic salts having sodium chloride as the major component and salts of divalent metals as minor components, said middle phase liquid containing lamellar liquid crystals being free from alcohol cosurfactant

driving the liquid through the formation, and recovering the displaced oil.

4,434,063

LUBRICANT COMPOSITIONS

Hachiro Kageyama, Kamakura; Tsutomu Moriuchi, Chigasaki, and Yoshiaki Oikawa, Fujisawa, all of Japan, assignors to Kyodo Yushi Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 291,059

Int. Cl.³ C10L 1/54

U.S. Cl. 252—25

6 Claims

1. A lubricant composition comprising not less than 0.1% by weight of at least one calcium ferrite selected from the group consisting of monocalcium ferrite, dicalcium ferrite and hemicalcium ferrite, which is produced by mixing an iron oxide and a calcium compound in a molar ratio of 1:0.5 to 1:2 and fusing them by heating at a temperature of 1200°-1400° C. and contains not more than 5% by weight in total of ferric oxide, silica and alumina as an impurity in admixture with a mineral oil.

4,434,064

GRAPHITE DISPERSION

Tai S. Chao, Olympia Fields; Aubrey C. Smith, Jr., Harvey, and Frederic D. Smies, Homewood, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 4, 1981, Ser. No. 260,531

Int. Cl.³ C10M 1/20, 1/32

U.S. Cl. 252—29

7 Claims

1. A method for improving the yield and stability of a graphite-in-oil dispersion comprising: grinding graphite to form graphite particles having an average diameter in the range from about 2 microns to about 15 microns in the presence of an oxygen-containing atmosphere so that said graphite particles have an oxygen content in the range of about 1% to about 7% of total weight of the graphite particle including oxygen, and dispersing at least a portion of said graphite particles into an oil to form a graphite-in-oil dispersion.

4,434,065

NOVEL ALIPHATIC SULFOSILOXANE-SILICATE COPOLYMERS

Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 249,916, Apr. 1, 1981, Pat. No. 4,354,002.

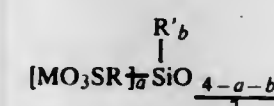
This application Jul. 23, 1982, Ser. No. 401,087

Int. Cl.³ C09K 5/00, 3/00

U.S. Cl. 252—75

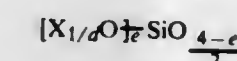
7 Claims

1. An improved inhibited aqueous alcohol composition comprising water, an alcohol, and a corrosion inhibiting amount of a copolymer consisting essentially of about 0.1 to about 99.9 parts by weight of at least one group member derived from silicone sulfonates selected from the group consisting of aliphatic silicone sulfonates having the formula:



wherein M is a monovalent, divalent or trivalent cation; R is a

divalent aliphatic hydrocarbon radical; R' is an alkyl radical of from 1 to about 8 carbon atoms; a has an average value of from 1 to 3; b has an average value of from 0 to 2 and the total average value of a+b is from 1 to 3; and from 0.1 to 99.9 parts by weight of at least one silicate group derived from a water-soluble silicate represented by the formula:



wherein X is a cation that forms a water-soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium, and tetraorganoammonium cations; d is the valence of the cation represented by X and has a value of at least 1, and e has a value from 1 to 3 inclusive, said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

4,434,066

WATER-BASED ENERGY TRANSMITTING FLUID COMPOSITIONS

Walter E. F. Lewis, Stamford, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 221,503, Dec. 30, 1980, abandoned. This application Jan. 25, 1983, Ser. No. 460,872

Int. Cl.³ C10M 3/04, 3/14, 3/26

U.S. Cl. 252—77

20 Claims

1. A water-based energy transmitting fluid having enhanced anti-wear properties which comprises an aqueous composition having a viscosity of at least 10 centistokes at 40° C. which contains up to about 80 percent by weight of water, at least 0.1 percent by weight of a carboxylic acid lubricity agent and a minimally effective amount of an anti-wear additive which comprises the combination of a hydroxyl-substituted aromatic carboxylic acid component and a nitroaromatic compound component.

4,434,067

POWDERED CLEANING COMPOSITION

Thomas J. Malone, LaGrange, Ga., and Mark E. Ragsdale, Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 27, 1981, Ser. No. 286,801

Int. Cl.³ C09K 3/22; C11D 3/04, 17/00

U.S. Cl. 252—88

5 Claims

1. A powdered cleaning composition having a soil substantivity constant greater than 1.5 and consisting essentially of:

(a) about 100 parts by weight particulate urea-formaldehyde polymeric material having an average particle size of from about 10 to about 105 microns in diameter, an oil absorption value of no less than 90, fiber hardness, and a bulk density of at least about 0.2 g/cc;

(b) from about 5 to about 400 parts by weight of an inorganic salt adjuvant selected from sulfates, chlorides, carbonates, bicarbonates, borates, citrates, phosphates, nitrates, metasilicates and mixtures thereof, having an average particle size of from about 45 to about 600 microns in diameter; and

(c) from about 5 to about 400 parts by weight of a fluid consisting essentially of 0 to 100 percent water containing sufficient surfactant to give a surface tension of less than about 40 dynes per centimeter and 100 to 0 percent of a high boiling hydrocarbon solvent.

4,434,068

PROCESS FOR MANUFACTURING DETERGENT SPECKLES

Francois Delwel, Dordrecht, and Roland De Goede, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,790

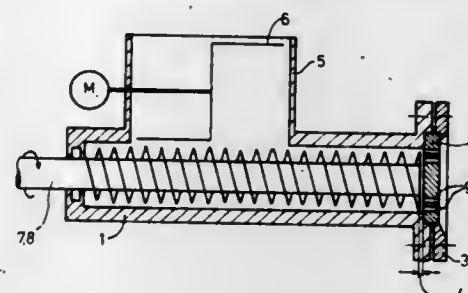
Claims priority, application United Kingdom, Mar. 18, 1981, 8108463

Int. Cl.³ C11D 3/06, 11/02

U.S. Cl. 252—135

5 Claims

1. A process for the production of coloured speckles for use in detergent powders which comprises spraying particulate material with an aqueous solution of colourant characterised in that the solution also comprises a hydratable salt, and the particulate material onto which the solution is sprayed comprises a spray-dried detergent base powder.



whereby the specific granulation work is from 2 to 40 Wh/kg, forcing the rubber-chemicals axially through a nozzle perforat-

ing plate, severing the issuing strands or allowing them to break-off and are then drying them.

4. A product produced by the process of claim 1.

4,434,069

PLASTIC BOTTLE CLEANER

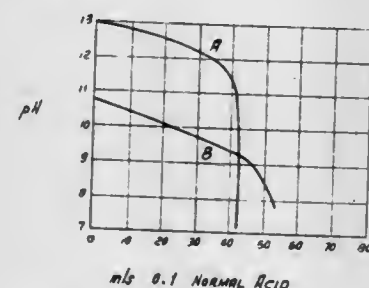
Meredith H. Fairchild, Whittier, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Jul. 28, 1982, Ser. No. 402,778

Int. Cl.³ C11D 7/12, 1/66, 3/10

U.S. Cl. 252—174.14

18 Claims



A - 50 ml of 0.35% Sodium Hydroxide
B - 50 ml of 1.25% Novel Cleaner of Present Invention

1. The process of cleaning a poly carbonate bottle, that includes

- washing the bottle with a composition consisting of an aqueous basic solution containing solute members and relative weight percents consisting of between 84 and 91 weight percent alkali metal carbonate, between 8 and 12 weight percent alkali metal bi-carbonate and about 1 percent low foaming detergent, and
- then rinsing the bottle with water,
- the solution pH being at or below 11.0.

4,434,070

GRANULATE-FORM POWDER AGGLOMERATES OF PULVERULENT RUBBER CHEMICALS AND A PROCESS FOR PRODUCTION

Wolfgang Lindner, Günter Arend, both of Dormagen; Carl-Dieter Barnikel, Cologne, and Günter Frauenkron, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 263,028

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019232

Int. Cl.³ C08C 4/00; B29H 1/10

U.S. Cl. 523—323

6 Claims

1. A process for the production of granulate-form agglomerates comprising mixing the pulverulent rubber chemicals of a maximum primary grain size of 500 μ m with a moistening agent and/or a lubricant and supplying them to a double shaft screw granulator with forced conveyance, in which the spacing between the nozzle plate and the vertically cut screw ends is between 0.1 and 1.0 mm, whereby the compression ratio K_D is between 1:4.5 and 1:2.5 and the ratio of nozzle channel length to nozzle channel diameter is between 2 and 5, and

whereby the specific granulation work is from 2 to 40 Wh/kg, forcing the rubber-chemicals axially through a nozzle perforat-

4,434,072

LIQUID CRYSTAL COMPOSITION

Seiichi Imahori, Masaharu Kaneko, both of Kanagawa; Tetsuo Ozawa, Tokyo; Shuji Imazeki, Ibaraki; Akio Mukoh, Ibaraki, and Mikio Sato, Ibaraki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd. and Hitachi Ltd., both of Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,547

Claims priority, application Japan, Jan. 17, 1981, 56-5749; Jan. 17, 1981, 56-5750

Int. Cl.³ C09K 3/34; C02F 1/13

U.S. Cl. 252—299.1

6 Claims

1. In a liquid crystal composition comprising a host liquid crystal and a pleochroic dye dissolved therein as a guest material, the improvement wherein the pleochroic dye contains an anthraquinone-based dye yielding a magenta color or an orange color, said anthraquinone-based dye being represented by the general formula:

4,434,073

1,3-DIBROMO DIALKYLHYDANTOIN AND OLEFIN OLIGOMER REACTION PRODUCT AS A CATALYST FOR PREPARING ALKENYL DICARBOXYLIC ACID ANHYDRIDE

Justin C. Powell, Fairfax, Va., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,571

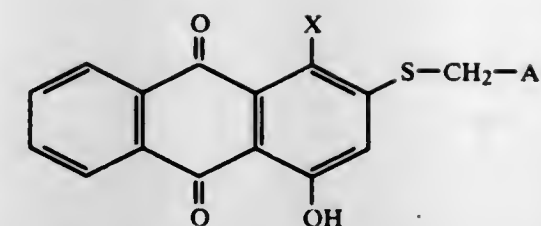
Int. Cl.³ C09K 3/00; C07D 307/60

U.S. Cl. 252—182

20 Claims

1. The method which comprises maintaining a mixture consisting essentially of a 1,3-dibromo dialkylhydantoin and an olefin oligomer of molecular weight M_n of 250–30,000 at 150° C.–300° C. for 0.1–10 hours thereby forming a reaction mixture; and recovering said reaction mixture.

- an olefin oligomer reactant of molecular weight M_n of 250–30,000;
- an unsaturated aliphatic dicarboxylic acid anhydride in amount of 0.5–5 moles per mole of olefin oligomer; and
- as catalyst, 0.5 w %–50 w %, based on said olefin reactant of the reaction product of a 1,3-dibromo dialkylhydantoin and an excess of an olefin oligomer of molecular weight M_n of 250–30,000 thereby forming product alkenyl aliphatic dicarboxylic acid anhydride; and recovering said product alkenyl aliphatic dicarboxylic acid anhydride.



wherein X is an amino group or a hydroxyl group, and Ar is an aryl group which may be substituted by an alkyl group, an alkoxyalkyl group, an aryloxyalkyl group, a cycloalkyl group, an alkoxy group, an alkoxyalkoxy group, an arylalkoxy group, an acyloxy group, an alkoxy carbonyl group, an aryloxy carbonyl group, an aryl group, a halogen atom, a cyano group or a nitro group.

4,434,074

PERHYDROPHENANTHRENE DERIVATIVES, THEIR PREPARATION, AND THEIR USE IN LIQUID-CRYSTALLINE DIELECTRICS AND ELECTRO-OPTICAL DISPLAY ELEMENTS

Wolfgang Sucrow, Paderborn; Hans-Rüdiger Murawski, Lampertheim; Hermann Minas, and Horst Stegemeyer, both of Paderborn, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 8, 1982, Ser. No. 447,822

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148448

Int. Cl.³ C09K 3/34; G02F 1/13; C07C 13/60, 23/44, 43/18, 69/013, 121/46

U.S. Cl. 252—299.62

15 Claims

1. A perhydrophenanthrene of the formula



wherein R_1 is alkyl of 1–10 C atoms and R_2 is alkyl, alkoxy or alkanoyloxy each of 1–10 C atoms, H, Br, Cl or CN.

4,434,074

VOLUME REDUCTION AND ENCAPSULATION PROCESS FOR WATER CONTAINING LOW LEVEL RADIOACTIVE WASTE

Daniel W. Fox, Pittsfield, Mass.; George P. Miller, and Marx E. Weech, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 2, 1981, Ser. No. 250,439

Int. Cl.³ C09K 3/00, 11/04; C21C 19/42

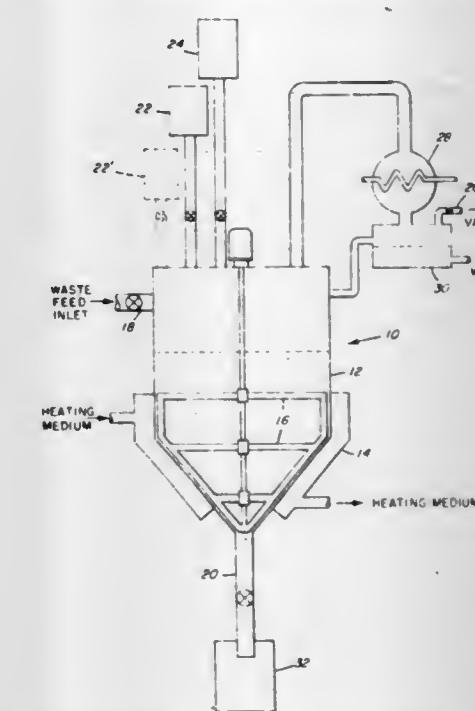
U.S. Cl. 252—628

33 Claims

1. A method of removing water from water-containing waste material and encapsulating the resultant dewatered waste material, consisting essentially of the combination of steps of:

- combining with water and non-volatile waste material a water insoluble polymerizable organic liquid and forming a low boiling azeotropic mixture of said polymerizable liquid with the water, and heating said azeotropic mixture to evaporate the water and polymerizable organic liquid and thereby dewater the waste material; and

b. polymerizing said polymerizable organic liquid dispersed through the dewatered waste material, and forming a



polymer encapsulation about the dewatered waste material.

4,434,075

ANIONICALLY MODIFIED ORGANOPHILIC CLAYS AND THEIR PREPARATION

Wilbur S. Mardis, Trenton, N.J., and Claude M. Finlayson, Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Oct. 19, 1981, Ser. No. 313,033

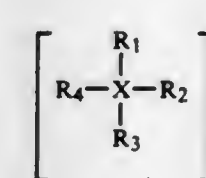
Int. Cl.³ B01J 13/00

U.S. Cl. 252—315.2

17 Claims

1. An organophilic clay gellant comprising the reaction product of:

- a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay;
- an organic anion in an amount ranging from 5 to 100 milliequivalents per 100 grams of said smectite-type clay, 100% active clay basis; and
- an organic cation having the formula



wherein R_1 is selected from the group consisting of a β,γ -unsaturated alkyl group having less than 7 aliphatic carbon atoms, a hydroxyalkyl group having 2 to 6 aliphatic carbon atoms and mixtures thereof, R_2 is a long chain alkyl group having 12 to 60 carbon atoms, R_3 and R_4 are individually selected from the group consisting of a β,γ -unsaturated alkyl group having less than 7 aliphatic carbon atoms, a hydroxyalkyl group having 2 to 6 carbon atoms, an aralkyl group having 1 to 22 carbon atoms in the alkyl portion, an alkyl group having from 1 to 22 carbon atoms and mixtures thereof and X is selected from the group consisting of phosphorous and nitrogen, said organic cation being present in an amount sufficient to at least satisfy the cation exchange capacity of the smectite-type clay and the cationic activity of the organic anion, wherein the cation exchange sites of the smectite-type clay are substituted with the organic cation and wherein

an organic cation-organic anion complex is intercalated with the clay.

4,434,076

CLAY CATION COMPLEXES AND THEIR USE TO INCREASE VISCOSITY OF LIQUID ORGANIC SYSTEMS
Wilbur S. Mardis, Trenton, N.J., and Claude M. Finlayson, Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Oct. 19, 1981, Ser. No. 313,034

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ B01J 13/00

U.S. Cl. 252—315.2

13 Claims

1. An organophilic clay gellant, which comprises: the reaction product of an organic cationic ammonium compound and a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, wherein said organic cationic ammonium compound contains

- a first member selected from the group consisting of a α,γ -unsaturated alkyl group having 6 or less aliphatic carbon atoms, a hydroxyalkyl group having 2 to 6 aliphatic carbon atoms, and mixtures thereof;
- a second member comprising a long chain alkyl group having 12 to 60 carbon atoms and
- a third and fourth member selected from a member of group (a), an aralkyl group having 1 to 22 carbon atoms in the alkyl portion, an alkyl group having 1 to 22 carbon atoms and mixtures thereof; and wherein the amount of said organic cationic ammonium compound is from 90 to 140 milliequivalents per 100 grams of said clay, 100% active clay basis.

4,434,077

LIQUEFIED NORMALLY SOLID POLYOXYALKYLENE COPOLYMERS

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 200,118, Oct. 24, 1980, Pat. No. 4,351,753. This application Aug. 2, 1982, Ser. No. 404,195

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ C08L 63/00; B01F 17/16

U.S. Cl. 252—357

26 Claims

1. The method for preparing a liquid composition suitable for use in flowable pesticides comprising dissolving a normally solid nonionic polyoxyalkylene block or heteric copolymer in an alkylene glycol at a temperature of at least about 70° C., wherein where said nonionic copolymer is a block copolymer, said alkylene glycol has 3 to 5 carbon atoms and where said nonionic copolymer is a heteric copolymer, said alkylene glycol has 2 to 5 carbon atoms.

4,434,078

LIQUEFIED NORMALLY SOLID POLYOXYALKYLENE COPOLYMERS

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 200,118, Oct. 24, 1980, Pat. No. 4,351,753. This application Aug. 2, 1982, Ser. No. 404,196

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ C08L 63/00; B01F 17/16

U.S. Cl. 252—357

13 Claims

1. A liquid composition consisting essentially of a normally solid nonionic polyoxyalkylene block copolymer and at least one alkylene glycol having 3 to 5 carbon atoms.

4,434,079
CONVERSION AND/OR SELECTIVITY OF A ZINC TITANATE CATALYST

Arthur W. Aldag, John H. Kolts, both of Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1982, Ser. No. 365,203

Int. Cl.³ B01J 23/92, 20/20; C07C 5/333

U.S. Cl. 502/22

8 Claims

1. A process for improving the conversion and/or selectivity of a zinc titanate catalyst, the conversion and/or selectivity of which has been at least partially reduced by use in a process which employs reducing conditions, comprising the step of contacting said zinc titanate catalyst with a solution containing zinc and calcining the thus contacted zinc titanate catalyst in the presence of free oxygen at a temperature in the range to about 500° C. to about 1050° C.

2. A process in accordance with claim 1 wherein the concentration of zinc in said zinc solution is in the range of about 0.1 molar to about saturation and wherein said zinc titanate catalyst is contacted with said zinc solution for a time sufficient to permit said zinc solution to penetrate said catalyst granules.

3. A process in accordance with claim 1 wherein the concentration of zinc in said zinc solution is about 1 molar and wherein said zinc titanate catalyst is contacted with said zinc solution for at least about 5 minutes.

4,434,080

DEHYDROGENATION AGENTS BASED ON DERIVATIVES OF SELENIUM AND THEIR USE IN THE DEHYDROGENATION IN THE 1,4 POSITIONS OF STEROIDS

Derek H. R. Barton, and William B. Motherwell, both of Gif-sur-Yvette, France, assignors to Roussel Uclaf, Paris, France

Filed May 18, 1982, Ser. No. 379,434

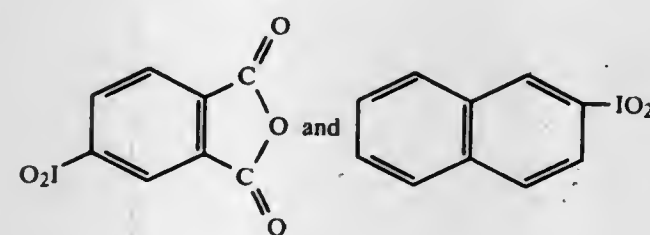
Claims priority, application France, May 19, 1981, 81 09917

Int. Cl.³ B01J 31/04, 31/02

U.S. Cl. 502—152

5 Claims

1. A derivative of selenium selected from the group consisting of diphenyl diselenide, benzene seleninic anhydride, benzene seleninic acid, selenic acid and selenium oxide employed in the presence of an oxidation agent consisting of an oxidized derivative of a possibly substituted iodoaromatic compound selected from the group consisting of iodoxy-benzene, metaxidoxy-benzoic acid,



as a dehydrogenation agent.

4,434,081

TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND HOMO- OR CO-POLYMERIZATION OF α -OLEFIN

Yoshikazu Takahashi, Hikari; Yoichi Sunada, Shinnanyo; Toshiharu Tokuhara, Tokuyama, and Masaru Takitani, Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,403

Claims priority, application Japan, Feb. 13, 1980, 55-16419

Int. Cl.³ C08F 4/64

U.S. Cl. 502—154

1 Claim

1. A titanium trichloride catalytic component prepared by a process comprising the steps of:

- reducing titanium tetrachloride with an organoaluminum compound represented by the general formula $\text{AlR}_n\text{X}_{3-n}$, wherein R represents a hydrocarbon radical

having 1 to 18 carbon atoms, X represents a halogen atom and n is a number represented by the formula $0 < n \leq 3$; treating the resultant reduced solid with an organic ether compound; and reacting the treated solid with titanium tetrachloride; the reducing reaction being carried out in a mixed solvent composed of (1) an aliphatic hydrocarbon and (2) an aromatic hydrocarbon or halogenated aromatic hydrocarbon.

4,434,082

PALLADIUM/HETEROPOLYACID/SURFACTANT CATALYST SYSTEM

Timothy P. Murtha, and Tad K. Shioyama, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1982, Ser. No. 367,825

Int. Cl.³ B01J 31/02

U.S. Cl. 502—164

9 Claims

1. Composition useful for the catalytic oxidation of olefins to carbonyl compounds comprising:

- one or more palladium components;
- one or more heteropolyacid components conforming to the general formula



in which

X is B, Si, Ge, P, As, Se, Te or I;

M is W, Nb, Ta or Re;

m, a, b and z are integers;

x is zero or an integer;

and y is zero or an integer such that

$$6 \leq (y + a + b)/z \leq 12$$

and

$$m + Nx + 6a + 5b + N'y \leq 2z;$$

in which each of N and N' is the number of the group of the periodic table to which X and M respectively belong;

- one or more surfactants selected from the group consisting of: quaternary ammonium salts, alkali metal alkyl sulfates, alkali metal salts of alkanolic acids, alkali metal salts of alkaryl sulfonic acids, and 1-alkyl pyridinium salts; and
- two or more liquid phases comprising an aqueous phase and an organic phase.

4,434,083

PROCESS OF PREPARING A CATALYST COMPONENT AND POLYMERIZATION OF α -OLEFINS WITH SUCH A CATALYST COMPONENT

Lambertus J. M. A. van de Leemput, Echt, and Godefridus A. H. Nooijen, Helden-Panninger, both of Netherlands, assignors to Stamcarbon B.V., Geleen, Netherlands

Filed Aug. 5, 1982, Ser. No. 405,375

Claims priority, application Netherlands, Aug. 6, 1981, 8103704

Int. Cl.³ C08F 4/64, 4/68

U.S. Cl. 502—154

11 Claims

1. A process for preparing a Ziegler-type catalyst for the polymerization of α -olefins, comprising:

- forming a catalyst component by combining a particulate inorganic support with a solution of an organomagnesium compound;
- heating said catalyst component in a non-reducing atmosphere at a temperature of 300°–1000° C.; and
- forming the catalyst by combining the thus heat-treated catalyst component with at least one compound of one or more transition metals selected from the group consisting of titanium and vanadium.

4,434,084

BASE METAL CONDUCTOR CATHODE COATING FOR TANTALUM CAPACITORS

William T. Hicks, Lewiston, N.Y., and William C. Seidel, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 23, 1981, Ser. No. 304,890

Int. Cl.³ H01B 1/02

U.S. Cl. 252—512

7 Claims

1. A metallizing composition for use as a capacitor cathode coating comprising (a) 92–97% by weight of a mixture of 70–95% weight finely divided particles of copper and 30–35% wt. finely divided particles of tin-containing metal, dispersed in a solution of (b) 4–1.5% by wt. of an organic acid flux having an acid number of at least 100 and which is thermally stable to a temperature of at least 230° C., and (c) 4–1.5% by wt. of an organic amine corresponding to the formula



wherein R is independently selected from the group consisting of H, C₁₋₈ alkyl, C₂₋₄ alkenyl and C₁₋₄ hydroxy alkyl, at least one of the R groups being alkyl or hydroxyalkyl in (d) an inert organic medium the total amount of resin in the composition being no greater than 4% by wt.

4,434,085

PERFUME OR COLOGNE CONTAINING 1,2,3,3,5,5-HEXAMETHYL-BICYCLO[2.2.2]-OCT-5-EN-2-OL

William J. Evers, Locust; Braja D. Mookherjee, Holmdel; Anton Van Ouwerkerk, Livingston, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

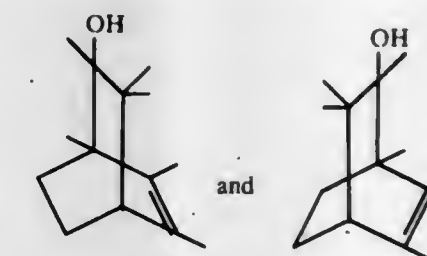
Filed Apr. 26, 1982, Ser. No. 371,930

Int. Cl.³ C11B 9/00; C07C 35/22

U.S. Cl. 252—522 R

1 Claim

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume composition or cologne an aroma augmenting or enhancing quantity of at least one compound having a structure selected from the group consisting of:



4,434,086

PROCESS FOR AUGMENTING OR ENHANCING THE FRESH AIR AROMA OF CLOTHING

Ira D. Hill, Locust; Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel, and Robin K. Wolff, Point Pleasant, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,959

Int. Cl.³ C11B 9/00

U.S. Cl. 252—522 R

3 Claims

1. A synthetic or natural fiber textile having a fresh air aroma and having adsorbed on the textile fibers an aroma augmenting or enhancing composition of matter consisting essentially of:

- (a) from about 0.5 up to about 5% by weight of said aldehyde composition of n-hexanal;

- (b) from about 2 up to about 12% by weight of said aldehyde composition of n-heptanal;
 (c) from about 5 up to about 15% by weight of said aldehyde composition of n-octanal;
 (d) from about 40 up to about 70% by weight of said aldehyde composition of n-nonanal;
 (e) from about 10 up to about 30% by weight of said aldehyde composition of n-decanal;
 (f) from about 0.5 up to about 5% by weight of said aldehyde composition of n-undecanal;
 (g) from about 0.5 up to about 5% by weight of said aldehyde composition of n-dodecanal;
 (h) from about 0.5 up to about 5% by weight of said aldehyde composition of n-tridecanal;
 (i) from about 0 up to about 5% by weight of said aldehyde composition of n-tetradecanal;
 (j) from about 0 up to about 5% by weight of said aldehyde composition of n-pentadecanal.

2. A process for imparting an "air dried cloth" aroma to cloth previously dried using a clothes drier comprising the step of contacting said cloth, prior to drying, with an aroma augmenting or enhancing quantity of a mixture consisting essentially of:

- (a) from about 0.5 up to about 5% by weight of said aldehyde composition of n-hexanal;
 (b) from about 2 up to about 12% by weight of said aldehyde composition of n-heptanal;
 (c) from about 5 up to about 15% by weight of said aldehyde composition of n-octanal;
 (d) from about 40 up to about 70% by weight of said aldehyde composition of n-nonanal;
 (e) from about 10 up to about 30% by weight of said aldehyde composition of n-decanal;
 (f) from about 0.5 up to about 5% by weight of said aldehyde composition of n-undecanal;
 (g) from about 0.5 up to about 5% by weight of said aldehyde composition of n-dodecanal;
 (h) from about 0.5 up to about 5% by weight of said aldehyde composition of n-tridecanal;
 (i) from about 0 up to about 5% by weight of said aldehyde composition of n-tetradecanal;
 (j) from about 0 up to about 5% by weight of said aldehyde composition of n-pentadecanal.

4,434,087

DETERGENT COMPOSITIONS CONTAINING SULPHOSUCCINATE MIXTURES

Jeffrey D. Hampson, and Reginald Billington, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,795

Claims priority, application United Kingdom, Jul. 24, 1981, 8122975

Int. Cl.³ C11D 1/83, 1/12

U.S. Cl. 252-545

13 Claims

1. A foaming detergent composition comprising
 (a) a di(C₈ alkyl) sulphosuccinate;
 (b) a di(C₆ alkyl) sulphosuccinate; and
 (c) one or more anionic non-sulphosuccinate detergent-active agents, and/or one or more nonionic detergent-active agents other than an ethoxylated alcohol or alkyl phenol of the formula:



wherein R is an aliphatic group containing x carbon atoms wherein x is 7 to 21, y is 0 or 1, z is an integer from 6 to 28, and x and z are related by the equation:

$$0.475x - 0.33(z+1) = 0.4 \text{ to } 1.4;$$

all anionic surfactants being present in the form of salts of solubilising cations; the mole ratio of sulphosuccinates (a) to (b) being within the range from 10:1 to 1:10 and the weight

ratio of (a) and (b) to non-sulphosuccinate (c) being within the range of from 1:4 to 20:1.

7. The detergent composition of claim 1, wherein component (c) comprises one or more detergent-active agents selected from the group consisting of alkylbenzene sulphonates; secondary alkane sulphonates; alkyl ether sulphates; primary and secondary alkyl sulphates; alpha-olefin sulphonates; alkyl glyceryl ether sulphonates; fatty acid ester sulphonates; ethoxylated alcohols and alkyl phenols other than specifically excluded in claim 1; propoxylated alcohols and alkyl phenols; amine oxides; betaines; sulphobetaines; and fatty acid mono- and di-lower-alkanolamides.

4,434,088

DETERGENT COMPOSITIONS CONTAINING SULPHOSUCCINATES AND HIGH BLOOM GEL STRENGTH PROTEIN

Reginald Billington, Birkenhead; David J. Edge, Chester, and Peter Winterbotham, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,793

Claims priority, application United Kingdom, Jul. 24, 1981, 8122832

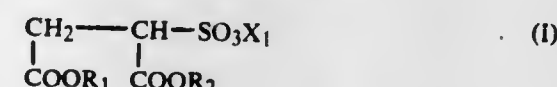
Int. Cl.³ C11D 1/83, 3/26

U.S. Cl. 252-547

10 Claims

1. A detergent composition suitable for dishwashing, which comprises:

- (a) from 2 to 60% by weight of at least one detergent-active dialkyl sulphosuccinate of the formula I:



wherein each of R₁ and R₂, which may be the same or different, is straight-chain or branched chain alkyl group having from 3 to 12 carbon atoms, and X₁ represents a solubilising cation; and

(b) from 5 to 20% by weight, based on total detergent-active material present of at least one substantially water-soluble protein having a Bloom gel strength of at least 50 g.

7. The detergent composition of claim 1, which further comprises at least one anionic and/or nonionic detergent-active agent selected from the group consisting of alkylbenzene sulphonates, secondary alkyl sulphonates, α-olefin sulphonates, alkyl glyceryl ether sulphonates, primary and secondary alkyl sulphates, alkyl ether sulphates, fatty acid ester sulphonates, alcohol ethoxylates and propoxylates, alkyl phenol ethoxylates and propoxylates, alkyl amine oxides, and fatty acid mono- and dialkanolamides.

4,434,089

DETERGENT COMPOSITIONS CONTAINING SULPHOSUCCINATES AND UNDEGRADED PROTEIN

Reginald Billington, Birkenhead; David J. Edge, Saughall, and Peter Winterbotham, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,575

Claims priority, application United Kingdom, Jul. 24, 1981, 8122832

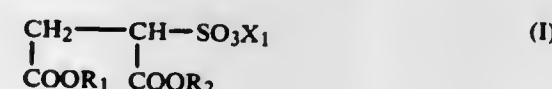
Int. Cl.³ C11D 1/83, 1/12

U.S. Cl. 252-547

9 Claims

1. A detergent composition suitable for dishwashing, which comprises:

- (a) from 2 to 60% by weight of at least one detergent-active dialkyl sulphosuccinate of the formula I:



wherein each of R₁ and R₂, which may be the same or different, is straight-chain or branched chain alkyl group having from 3 to 12 carbon atoms, and X₁ represents a solubilising cation; and

(b) from 5 to 20% by weight, based on total detergent-active material present of at least one substantially water-soluble substantially undegraded protein.

7. The detergent composition of claim 1, which is in liquid form.

4,434,090

DETERGENT COMPOSITIONS CONTAINING SULPHOSUCCINATE MIXTURES

Jeffrey D. Hampson; Reginald Billington, and Ian R. Cox, all of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,829

Claims priority, application United Kingdom, Jul. 24, 1981, 8122975; Oct. 5, 1981, 8130062

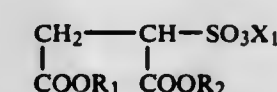
Int. Cl.³ C11D 1/83, 1/12

U.S. Cl. 252-547

23 Claims

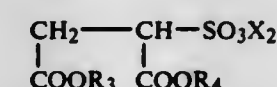
1. A detergent composition comprising

- (a) one or more compounds of the formula I



wherein each of R₁ and R₂, which may be the same or different, represents an alkyl group having from 7 to 9 carbon atoms, and X₁ represents a solubilising monovalent cation or 1/m of a solubilising m-valent cation, and

- (b) one or more compounds of the formula II



wherein one of R₃ and R₄ represents an alkyl group having from 7 to 9 carbon atoms and the other represents an alkyl group having from 3 to 6 carbon atoms, and X₂ represents a solubilising cation which may be the same as or different from X₁ the mole ratio of component (a) to component (b) being within the range from 10:1 to 1:10.

4,434,091

NOVEL SULPHOSUCCINATES AND DETERGENT COMPOSITIONS CONTAINING THEM

Ian R. Cox, and Keith Jones, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

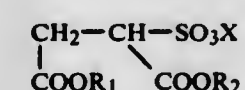
Filed Jul. 22, 1982, Ser. No. 400,794

Int. Cl.³ C11D 1/16; C07C 149/20

U.S. Cl. 252-557

5 Claims

4. In a detergent composition comprising one or more detergent-active materials in admixture or conjunction with one or more detergent adjuncts, the improvement which comprises including as detergent-active material a compound of the formula I



wherein one of R₁ and R₂ represents a C₆ alkyl group and the other represents a C₈ alkyl group, and X represents a monovalent solubilising cation or 1/m of a solubilising m-valent cation.

4,434,092

METHOD FOR PREPARING RADIOACTIVE CONTROL RODS FROM NUCLEAR REACTORS FOR STORAGE OR DISPOSAL

Paul Mary, P.O. Box 230, Niantic, Conn. 06357

Filed Apr. 6, 1981, Ser. No. 251,146

Int. Cl.³ G21F 9/34

U.S. Cl. 252-626

3 Claims



1. The method of preparing radioactive control rods from nuclear reactors for disposal or storage off site comprising cutting off the handle ends of the rods from the blade portions while those rods are submerged in water in a pit, thereby separating the highly radioactive handle end portions of the rods from the less radioactive blade portions, so that the highly radioactive portions and the less radioactive portions may be disposed of separately.

4,434,093

METHODS FOR PREPARATION OF HB₂Ag FREE GAMMA GLOBULINS

Raymond P. Zolton, Somerville; Paul M. Kaplan, Sergeantsville, and John V. Padvelskis, S. Somerville, all of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Jul. 26, 1982, Ser. No. 401,761

Int. Cl.³ A61K 39/12, 39/42, 37/06; C07G 7/00

U.S. Cl. 260-112 B

6 Claims

1. A method for removing substantially all HB₂Ag from a gamma globulin containing body fluid comprising the steps of:
 (a) providing the gamma globulin containing body fluid desired to be purified;
 (b) applying the body fluid to column means containing an effective amount of resin selected from the group consisting of DEAE-Sephadex and QAE-Sephadex;
 (c) eluting the body fluid from the column with a buffer selected from the group consisting of approximately 0.02 M phosphate buffer if the resin selected is QAE-Sephadex and approximately 0.04 M Tris buffer if the resin selected is DEAE-Sephadex or QAE-Sephadex, each buffer adjusted to a pH of approximately 7.5;
 (d) monitoring the column effluent for the presence of protein;
 (e) collecting, responsive to monitoring, the protein containing effluent whereby substantially HB₂Ag free gamma globulin is obtained.

4,434,094

PARTIALLY PURIFIED OSTEOGENIC FACTOR AND PROCESS FOR PREPARING SAME FROM DEMINERALIZED BONE

Saeid Seyedin, Mt. View, and Thomas Thomas, Palo Alto, both of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Apr. 12, 1983, Ser. No. 484,286

Int. Cl.³ C07G 7/00

U.S. Cl. 260-112 R

10 Claims

1. A process for partially purifying an osteogenic factor from particulate demineralized bone comprising:

- (a) extracting nonfibrous proteins from the demineralized

- bone with a liquid dissociative nonfibrous protein extractant;
- (b) contacting the extract of (a) with an anion exchanger at a pH of about 6.8 to about 7.2.
- (c) contacting the unadsorbed fraction of the extract with a cation exchanger at a pH of about 4.5 to about 5.2;
- (d) eluting the adsorbed fraction from the cation exchanger; and
- (e) isolating nonfibrous protein having a molecular weight below about 30,000 daltons from the eluate of (d).

4,434,095

CYCLIC ANALOGUE OF NATURALLY-OCCURRING PHAGOCYTOSIS-STIMULANT PEPTIDE - THREONYL-CYCLO-[N^ε-LYSYL-PROLYL-ARGINYL]

Gunar I. Chipens; Nadezhda I. Veretennikova, and Zeltite A. Atare, all of Riga, U.S.S.R., assignors to Institute Organicheskogo Sintez, Riga, U.S.S.R.

PCT No. PCT/SU80/00060, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02141, PCT Pub. Date Oct. 16, 1980

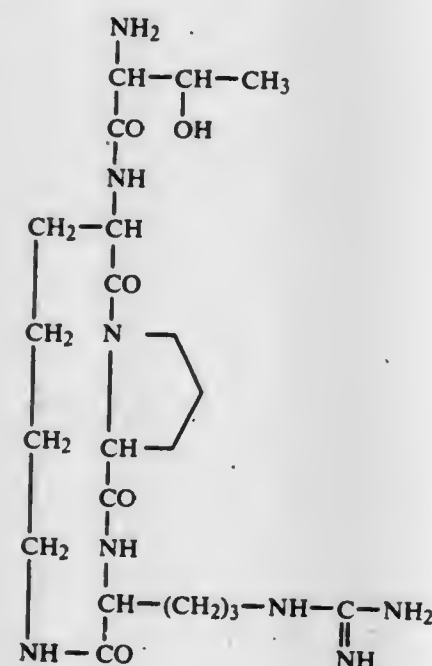
PCT Filed Apr. 2, 1980, Ser. No. 227,055

Claims priority, application U.S.S.R., Feb. 4, 1979, 2744960 Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

2 Claims

1. A cyclic analogue of a naturally-occurring phagocytosis-stimulant peptide—threonyl-cyclo-[N^ε-lysyl-prolyl-arginyl]- of the formula:



4,434,096

SUBSTRATES FOR THE QUANTITATIVE DETERMINATION OF PROTEOLYTIC ENZYMES

Patrick L. Coleman, Ypsilanti, Mich., and John A. Wehrly, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

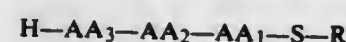
Filed Jun. 30, 1981, Ser. No. 279,161

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

4 Claims

1. Tripeptide thiol ester substrates consisting essentially of compounds having the structure:



wherein

AA₃ is a D-configuration amino acid; and where AA₃ is selected from the group consisting of Val, Pro, Gly, Phe, Ala, Ile, Leu, Glu and Pip; AA₂ is selected from the group consisting of Leu, Pro, Ala, Phe, Val, Tyr, Thr and Pip;

AA₁ is selected from the group consisting of Lys, Arg and Orn; and R is an alkyl group of 1-4 carbon atoms or benzyl; and biologically compatible salts thereof.

4,434,097

PROCESS FOR THE REMOVAL OF THE FORMYL GROUP FROM N-FORMYL PEPTIDES AND ESTERS THEREOF

Vincenzo Giobbio, Turin; Giorgio Ornato; Livio Buracchi, both of Ivrea, and Alberto Mangia, Milan, all of Italy, assignors to Pierrel S.p.A., Naples, Italy

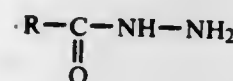
Filed Apr. 26, 1982, Ser. No. 372,216

Claims priority, application Italy, May 13, 1981, 21674 A/81 Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

10 Claims

1. A process for the removal of the formyl group in a compound which contains an N-formyl group of formula NH—CHO and the compound is a peptide containing an ester group and wherein the —NH group of the NH—CHO group is attached to a carbon atom adjacent to the —CONH— grouping of said peptide, which consists of reacting said compound with hydrazine or a substituted hydrazine of formula I:



wherein R is a saturated or unsaturated, linear or branched, substituted or unsubstituted alkyl of 1-5 carbon atoms, or substituted or unsubstituted cycloalkyl or substituted or unsubstituted aryl or an amino group at a pH between 1 and 3.5, keeping the pH constant during the reaction, wherein the N-formyl group is removed while the ester group is not attacked, and isolating the ester of the N-deformylated peptide from the reaction mixture.

4,434,098

SUBSTITUTED BENZOTELLUROPYRONES

Michael R. Detty; Bruce J. Murray, and Jerome H. Perlstein, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

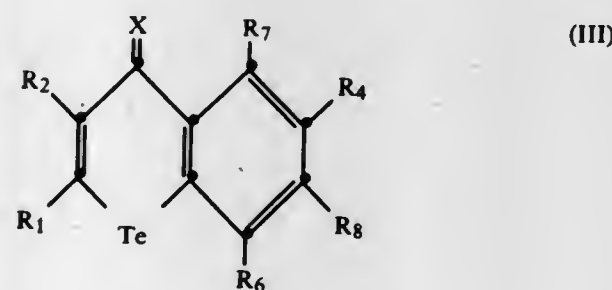
Filed Jul. 1, 1981, Ser. No. 279,300

Int. Cl.³ C07D 345/00

U.S. Cl. 260—239 R

5 Claims

2. A substituted benzotelluropyron compound having the structure:



wherein,

R₁ and R₂ each independently represents hydrogen, alkyl, alkoxy, halogen or aryl, or together with the carbon atoms to which they are attached form a mono- or polycyclic, carbocyclic fused ring structure having 5 to 20 carbon atoms; R₇ and R₈ each independently represents an electron donating group, hydrogen, alkyl or aryl; R₄ and R₆ each independently represents hydrogen, halogen or alkyl; or R₄ and R₇, or R₄ and R₈, together with the carbon atoms to which they are attached, form a mono- or polycyclic, carbocyclic fused ring structure having 5 to 20 carbon atoms; or

R₆ and R₈, together with the carbon atoms to which they are attached, form a mono- or polycyclic, carbocyclic fused ring structure having 5 to 20 carbon atoms; X represents O, S or Se; provided that when R₁ is methyl, at least one of R₂, R₄, R₆, R₇ and R₈ is other than hydrogen.

4,434,099

BETA-LACTAM COMPOUNDS CONTAINING A PROTECTED C-ACETYL GROUP, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Karoly Lempert; Kalman Harsanyi; Gabor Doleschall; Gyula Hornyak; Jozsef Nyitrai, all of Budapest; Karoly Zauer, Szentendre; Jozsef Fetter, Budapest; Gyula Simig, Budapest; Zsuzsanna Gombos nee Visky, Budapest, and Gizella Szalai nee Barta, Vecses, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

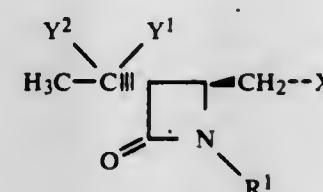
Filed Sep. 11, 1981, Ser. No. 301,883

Claims priority, application Hungary, Sep. 15, 1980, 2263/80 Int. Cl.³ C07D 205/08, 407/04

U.S. Cl. 260—239 A

8 Claims

1. A compound of the formula (VI)



wherein

R¹ is hydrogen, benzyl or benzyl substituted by one or two methoxy groups; X is hydroxyl, halogen, cyano, or an —O—SO₂—R² group, in which R² is lower alkyl or aryl; and Y¹ and Y² together with the carbon atom to which they are attached form together a 1,3-dioxolan-2-yl group or a thio analog thereof.

4,434,100

7(2-THIENYL)DIBENZ[c,e]AZEPINES

Heinz W. Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

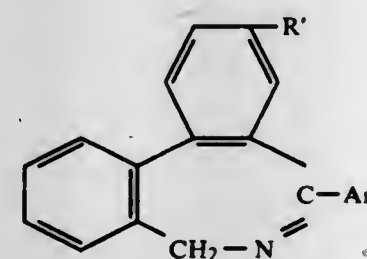
Division of Ser. No. 106,645, Dec. 26, 1979, Pat. No. 4,315,926. This application Nov. 14, 1980, Ser. No. 206,939

Int. Cl.³ C07D 411/04; A61K 31/38

U.S. Cl. 260—330.3

3 Claims

1. A compound having the formula



wherein Ar' is thienyl and R' is fluoro, chloro, bromo or trifluoromethyl; or a pharmaceutically acceptable acid addition salt thereof.

4,434,101

INHIBITORS OF SRS-SYNTHESIS

Noal Cohen, Montclair, and Giuseppe Weber, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

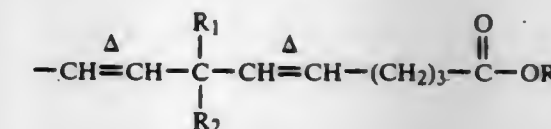
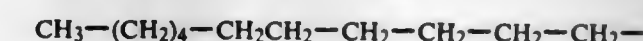
Filed Sep. 14, 1981, Ser. No. 301,614

Int. Cl.³ C11C 3/02; A61K 31/23

U.S. Cl. 260—410.9 R

3 Claims

1. A compound of the formula:



wherein Δ designates a cis configuration, R is hydrogen or lower alkyl; and R₁ and R₂ are hydrogen or methyl with the proviso that where one of R₁ and R₂ is hydrogen the other is methyl, and pharmaceutically acceptable salts thereof where R is hydrogen.

4,434,102

PREPARATION OF MIXTURES OF METHYLITIN TRICHLORIDE AND DIMETHYLITIN DICHLORIDE FROM STANNIC CHLORIDE AND DIMETHYLITIN DICHLORIDE WITHOUT CATALYST AND CONVERSION TO MIXED METHYLITIN MERCAPTIDE STABILIZERS

Gerald Spiegelman, Wayne, and Kwei-Liang Liaw, Wyckoff, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Division of Ser. No. 59,094, Jul. 19, 1979, Pat. No. 4,269,782. This application Jan. 23, 1981, Ser. No. 227,899

Int. Cl.³ C07F 7/22

U.S. Cl. 260—429.7

3 Claims

1. In a process of preparing a mixed methyltin mercaptide stabilizer for vinyl chloride polymers in which the weight proportions of monomethyltin trimercaptide to dimethyltin dimercaptide range from 6:1 to 1:3, comprising the steps of treating a mixture of dimethyltin dichloride and monomethyltin trichloride with a mercaptan and an acid acceptor, and recovering the stabilizer mixture of monomethyltin trimercaptide and dimethyltin dimercaptide, the improvement wherein said mixture of dimethyltin dichloride and monomethyltin trichloride is prepared by heating dimethyltin dichloride with 0.1 to 0.7 molar proportion of stannic chloride in the absence of catalyst, without further purification.

4,434,103

SUBSTITUTED SILICON-OXYGEN-ALUMINUM OLIGOMERS AND PREPARATION THEREOF

Leonard V. Interrante, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,447

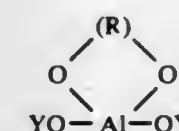
Int. Cl.³ C07F 5/06

U.S. Cl. 260—448 B

4 Claims

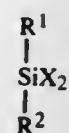
1. A method for making organic solvent soluble aluminum-oxygen-silicon oligomers useful for providing an aluminosilicate coating on a ceramic, metal or metal alloy substrate which comprises

(A) hydrolyzing a chelated aluminum alkoxide of the formula,



with water using M moles of chelated aluminum alkoxide, where M has a value of 2 to 5, per M-1 moles of water, to

produce low molecular weight alkoxy-terminated aluminum-oxygen oligomer,
(B) coreacting the low molecular weight alkoxy terminated aluminum oxygen oligomer of (A) with a sufficient amount of a difunctional organosilane of the formula,



to provide at least one X radical per alkoxy radical of the chelated aluminum oxide oligomer of (A), and
(C) effecting the separation of volatiles from the resulting mixture,
where Y is a monovalent C₍₁₋₁₃₎ hydrocarbon radical, R is selected from polyvalent organic radicals, R¹ and R² are selected from monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals selected from the group consisting of cyanoethyl and trifluoropropyl, and X is an acyloxy, hydroxy or halogen radical.

4,434,104

PREPARATION OF HIGH PURITY DI-LOWER ALKYL NAPHTHALENEDISULFONATES

Shuji Tsuchiya; Hisao Ikeda, and Kenji Suzuki, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,605

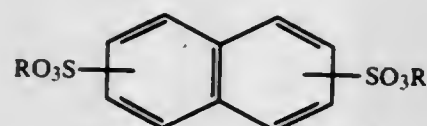
Claims priority, application Japan, Jun. 17, 1981, 56-93372; Jun. 24, 1981, 56-98054

Int. Cl.³ C07C 143/68

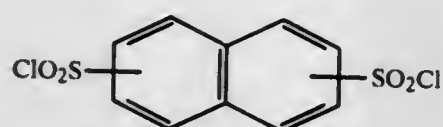
U.S. Cl. 260—456 P

23 Claims

1. In a process for preparing a di-lower alkyl naphthalenedisulfonate of the formula:



wherein R is selected from a methyl group and an ethyl group, said sulfonate groups being in either the 1,5- or 2,6-position,
by reacting a naphthalenedisulfonyl chloride of the formula:



wherein the substituent groups are in either the 1,5- or 2,6-position,
and a stoichiometrically excess amount of an aliphatic alcohol of the formula:

ROH

in the presence of an aqueous alkali solution, the improvement comprising removing water from the reaction system, treating the reaction product with an alkali metal alcoholate of the formula:

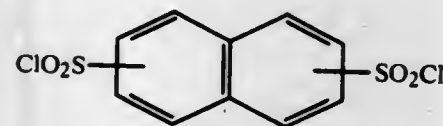
ROM

wherein M is selected from a sodium atom and a potassium atom, in the presence of a solvent and then washing the treated reaction product with water.

10. A process for preparing a di-lower alkyl naphthalenedisulfonate of the formula:



wherein R is selected from a methyl group and an ethyl group, said sulfonate groups being in either the 1,5- or 2,6-position,
comprising adding a naphthalenedisulfonyl chloride of the formula:



and an aqueous alkali solution in portions to a stoichiometrically excess amount of an aliphatic alcohol of the formula:

ROH

wherein each portion of said chloride being added to said aliphatic alcohol prior to the corresponding portion of said aqueous alkali solution, and wherein the chemical equivalent ratio of said alkali to said chloride is maintained below 1.1, and adjusting the chemical equivalent ratio is between 1.0 and 1.2 upon completion of the addition of said portions.

4,434,105

PROCESS FOR THE PREPARATION OF DIALKYL CARBONATES

Hans-Josef Buysch; Heinrich Krimm, and Hans Rudolph, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany.

Continuation of Ser. No. 51,658, Jun. 25, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,912

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748718

Int. Cl.³ C07C 68/00, 69/96

U.S. Cl. 260—463

9 Claims

1. A process for preparing a carbonate which comprises contacting an alkylene oxide having 2 to 8 carbon atoms with an aliphatic or cycloaliphatic alcohol having 1 to 18 carbon atoms selected from the group consisting of methanol, ethanol, propanol, isopropanol, n-butanol, isobutanol, amyl alcohol, cyclohexanol, octanol, decanol, and cyclododecanol and excess carbon dioxide under a partial carbon dioxide pressure of 3 to 500 bars employing excess alcohol to alkylene oxide in the presence of a catalyst which is a thallium catalyst at a temperature of from 70° to 300° C.

4,434,106

PROCESS FOR PREPARING PERFLUOROTRIAZINE ELASTOMERS AND PRECURSORS THEREOF

Robert W. Rosser; Timothy S. Chen, and Chung-Heng Cheng, all of San Jose, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

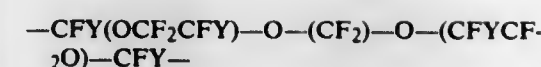
Filed Apr. 6, 1982, Ser. No. 366,025

Int. Cl.³ C07C 123/00, 120/00, 121/43

U.S. Cl. 260—465.5 R

6 Claims

1. In the process for preparing an oligomeric perfluoro(imidoylamidine)dinitrile by reacting an original perfluorodinitrile selected from the group of materials having the formula NC—R—CH wherein R_f is selected from bivalent fluorocarbon radicals of the formula —(C_pF_{2p})—, wherein p is a number from 2 to 18 inclusive, and bivalent oxyfluorocarbon radicals of the formula



wherein Y is F or CF₃, q is a number from 1 to 18 and m and n are each numbers, the sum of which is from 2 to 7 with ammonia, the improvement comprising conducting the reaction in two steps, a first step comprising reacting at least 10 equivalents of liquid ammonia and said original perfluorodinitrile at a temperature of from -60° C. to -33° C. for from 0.1 to 24 hours to yield a perfluorodiamidine and unreacted ammonia, and, following removing at least 99% of said excess ammonia from said perfluorodiamidine, a second step comprising reacting said perfluorodiamidine with from 1.5 to 2.5 equivalents of said original perfluorodinitrile or another perfluorodinitrile selected from the same group of materials for 1 to 72 hours at 0° C. to 70° C. to yield a perfluoro(imidoylamidine)dinitrile.

4,434,107

PROCESS FOR PREPARING AN OPTICALLY ACTIVE P-HYDROXYPHENYLGLYCINE OR A SALT THEREOF

Ichiro Chibata, Suita; Shigeki Yamada, Toyonaka; Chikara Hongo, Osaka, and Ryuzo Yoshioka, Kaizuka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 28, 1982, Ser. No. 392,535

Claims priority, application Japan, Jul. 9, 1981, 56-108008

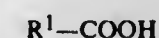
Int. Cl.³ C07C 143/30, 101/72

U.S. Cl. 260—501.12

13 Claims

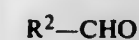
1. A process for preparing an optically active p-hydroxyphenylglycine salt which comprises the steps of:

(a) forming a supersaturated solution of the racemic modification of a p-hydroxyphenylglycine salt selected from the class consisting of p-hydroxyphenylglycine benzenesulfonate, p-hydroxyphenylglycine p-toluenesulfonate, p-hydroxyphenylglycine o-toluenesulfonate, p-hydroxyphenylglycine sulfosalicylate, p-hydroxyphenylglycine p-ethylbenzenesulfonate, p-hydroxyphenylglycine 2-naphthol-6-sulfonate and p-hydroxyphenylglycine β-naphthalenesulfonate in a lower aliphatic acid of the formula:



(I)

wherein R¹ is hydrogen or alkyl having one to 4 carbon atoms, said lower aliphatic acid being present in an amount of about 2 to about 50 g per g of said p-hydroxyphenylglycine salt, said supersaturated solution also containing an aliphatic or aromatic aldehyde of the formula:



(II)

wherein R² is hydrogen; alkyl having one to 6 carbon atoms; alkenyl having 2 to 4 carbon atoms; phenyl; phenyl having at least one substituent selected from the class consisting of hydroxy, nitro, amino and alkoxy of one to 4 carbon atoms; phenylvinyl; oxygen-containing heteromonocyclic group; and hydroxynaphthyl, said aldehyde being present in an amount of 0.001 to 0.5 mole per mole of DL-p-hydroxyphenylglycine salt, and
(b) contacting said supersaturated solution with seed crystals of a desired enantiomer of said p-hydroxyphenylglycine salt at a temperature not lower than 50° C., thereby allowing preferential crystallization of said desired enantiomer to take place from said supersaturated solution with simultaneous racemization of the other enantiomer dissolved therein.

4,434,108

HERBICIDALLY ACTIVE

2-NITRO-5-(2'-CHLORO-4'-TRIFLUOROMETHYL-PHENOXY)PHENYLPHOSPHINIC ACID DERIVATIVES
Ludwig Maler, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

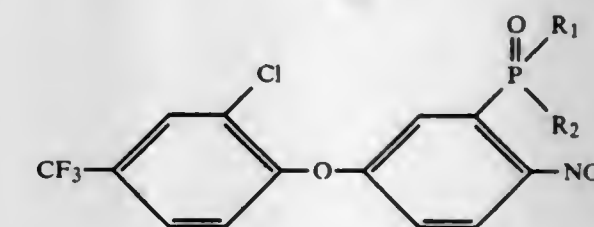
Filed Jul. 6, 1981, Ser. No. 280,388

Claims priority, application Switzerland, Jul. 9, 1980, 5251/80
Int. Cl.³ C07F 9/46

U.S. Cl. 260—951

4 Claims

1. A phosphinic acid derivative of the formula



in which

R₁ is C₁-C₄ alkyl optionally substituted by chlorine, or is phenyl, and
R₂ is hydroxy, C₁-C₄ alkoxy or chlorine.

4,434,109

PHOSPHONOUS ACID MONOESTER-MONOAMIDES
Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,319

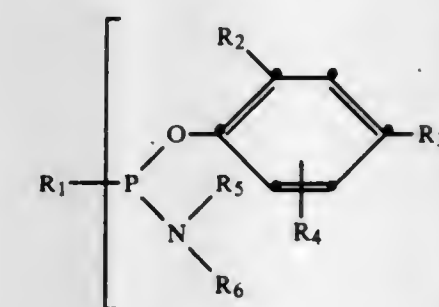
Claims priority, application Switzerland, Jun. 16, 1980, 4617/80

Int. Cl.³ C07F 9/24

U.S. Cl. 260—958

7 Claims

1. A compound of formula I



(I)

in which n is 1, R₁ is C₁-C₁₈ alkyl or phenyl, R₂ is hydrogen or C₁-C₈ alkyl, R₃ is hydrogen or C₁-C₈ alkyl, R₄ is hydrogen or C₁-C₈ alkyl, R₅ and R₆ being independent of one another and representing C₁-C₁₂ alkyl or cyclohexyl.

4,434,110

CARBURETOR, CONTROL APPARATUS AND METHOD FOR INTERNAL COMBUSTION ENGINES

William Highfield, Sacramento, Calif., assignor to Fuel Systems Management, Roseville, Calif.

Filed Mar. 23, 1981, Ser. No. 246,402

Int. Cl.³ F02M 9/12

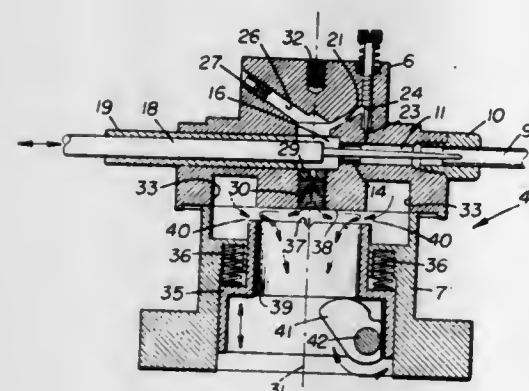
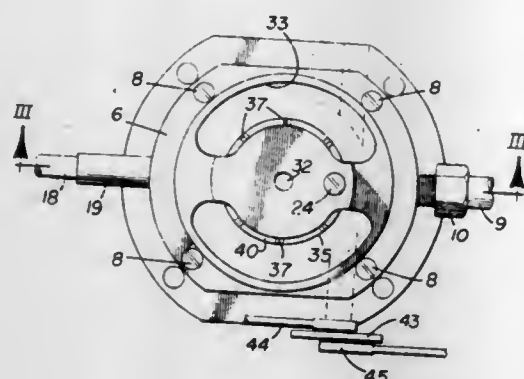
U.S. Cl. 261—36 A

30 Claims

1. A carburetor for an internal combustion engine, comprising:

- a carburetor head having a fuel mixing chamber;
- a fuel inlet conduit in the head for communicating fuel to the fuel mixing chamber;
- means, in the fuel inlet conduit, for metering the fuel entering the fuel mixing chamber;
- an air inlet conduit in the head for communicating air to the fuel mixing chamber;
- means, in the air inlet conduit, for metering the air entering the fuel mixing chamber;

- (f) an expansion chamber in the carburetor head communicating with the mixing chamber in series through a control orifice;
- (g) a carburetor housing attached to the carburetor head and having a throat communicating directly with the expansion chamber, said housing being mountable on an internal combustion engine with the throat in communication with an intake passage thereof;



- (h) an air delivery passage in the carburetor for communicating air to the throat at a location adjacent to an outlet of said expansion chamber;
- (i) an air valve in the carburetor head for metering the air entering the throat from the air delivery passage; and
- (j) means, connected to the carburetor, for moving the air valve with respect to the air delivery passage in correspondence with the fuel metering means.

4,434,111

VARIABLE VENTURI-TYPE CARBURETOR

Mitsuyoshi Teramura; Masatami Takimoto, both of Toyota; Norihiko Nakamura, Mishima; Takaaki Itou, Mishima; Takashi Katou, Mishima; Takeru Yasuda, and Sunao Kitamura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisan Industry Co., Ltd., both of Japan

Filed Aug. 25, 1982, Ser. No. 411,281

Claims priority, application Japan, Feb. 16, 1982, 57-22051

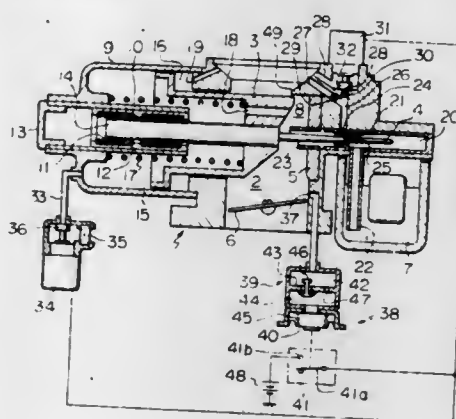
Int. Cl.³ F02M 9/06

U.S. Cl. 261-44 C

13 Claims

1. A variable venturi-type carburetor comprising: an intake passage formed in said carburetor and having an inner wall;
- a casing having therein an interior chamber which extends perpendicular to said intake passage;
- a suction piston movably inserted into said casing and having a tip face which projects into said intake passage and defines a venturi portion, said suction piston dividing the interior chamber of said casing into an atmospheric pressure chamber and a vacuum chamber which is connected to said venturi portion for moving said suction piston in response to a change in the amount of air flowing within said intake passage;

- a throttle valve arranged in said intake passage located downstream of said suction piston;
- a fuel passage having a metering jet therein and being open to said intake passage for feeding fuel into said intake passage;
- a needle fixed onto the tip face of said suction piston and extending through said fuel passage and said metering jet;
- an air bleed passage having an air inlet and an air outlet which is open to said fuel passage, said air inlet being open to the atmosphere;
- an air feed passage having an air inlet and an air outlet which is open to said vacuum chamber, said air inlet being open to the atmosphere;



- first valve means arranged in said air bleed passage for controlling the flow area of said air bleed passage;
- second valve means arranged in said air feed passage for controlling the fluid connection between said vacuum chamber and the atmosphere; and
- means controlling said first valve means and said second valve means in response to a change in the level of load of an engine for reducing the flow area of said air bleed passage and shutting off said air feed passage when the level of load of the engine is lower than a predetermined level and for increasing the flow area of said air bleed passage and opening said air feed passage when the level of load of the engine is higher than the predetermined level.

4,434,112

HEAT TRANSFER SURFACE WITH INCREASED LIQUID TO AIR EVAPORATIVE HEAT EXCHANGE

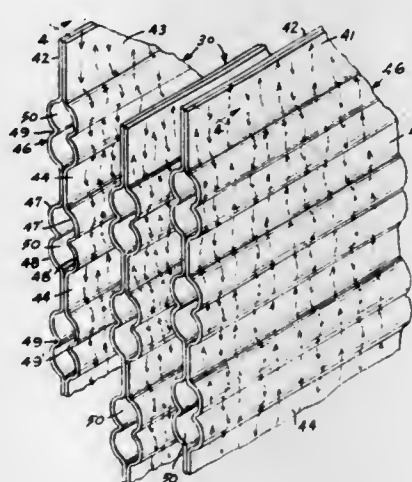
John J. Pollock, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Continuation-in-part of Ser. No. 308,967, Oct. 6, 1981, abandoned. This application Oct. 28, 1982, Ser. No. 437,409

Int. Cl.³ B01F 3/04

U.S. Cl. 261-153

6 Claims



1. A condenser tube assembly, comprising a plurality of

spaced substantially vertical, parallel tube sections, each tube section including a pair of plates connected together along their outer periphery and along spaced horizontal bands within said periphery, facing portions of said plates intermediate said bands being expanded to form parallel tube portions, and connecting portions at alternate ends of said tube portions connecting said tubes in serpentine fashion to provide a unitary tube, the opposite ends of said tubes having free end portions for connection to a source of fluid, to be condensed and for discharge of the condensed fluid, respectively, each of said tubes having upper and lower concave facing portions connected by facing portions spaced relatively closer together, said sections being arranged side by side so that the spaced connected horizontal bands of alternate sections are substantially directly opposite in a horizontal plane to the facing portions spaced relatively closer together of each of said tubes, means for introducing a liquid coolant onto the upper portions of said condenser assembly so that said coolant flows down each tube section by gravity in heat exchange relationship with the fluid to be condensed, and means for introducing a flow of air into said condenser assembly and causing said air to flow upwardly between said tube sections and impinge upon said facing portions.

4,434,113

SPIN CASTING LENSES HAVING REDUCED SPHERICAL ABERRATION

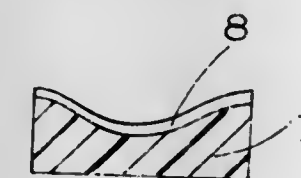
Charles W. Neefe, P.O. Box 429, 811 Scurry St., Big Spring, Tex. 79720

Filed Jul. 13, 1982, Ser. No. 397,845

Int. Cl.³ B29D 11/00

U.S. Cl. 264-2.1

2 Claims



1. Method of making a contact lens having equal convex and concave aspheric surfaces comprising the steps of (a) spin casting a soluble resinous material on a rotating mold of soluble resin having a spherical concave surface to form a layer having a concave aspheric surface produced by the physical forces acting on a rotating liquid, (b) depositing a metal film on the concave aspheric surfaced layer, (c) electroplating a supporting metal layer on the metal film, (d) removing the soluble resinous materials from the metal film, (e) molding a concave resinous aspheric surfaced optical replica against the convex aspheric surface of the metal film, (f) separating the metal film from the resinous optical replica, and (g) spin casting a contact lens on the concave aspheric surface of the resinous optical replica while it is rotating; said contact lens having an equal aspheric curve on the concave and convex lens surfaces.

4,434,114

PRODUCTION OF WRINKLE-FREE PIEZOELECTRIC FILMS BY POLING

Oliver S. Sprout, Jr., Glenside, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 4, 1982, Ser. No. 345,858

Int. Cl.³ H04R 17/00

U.S. Cl. 264-22

15 Claims

1. A process for treating oriented PES film for producing wrinkle-free piezoelectric film comprising applying a high strength dc field to a single or multi-layer of film, at least one layer of which is an oriented PES film, sandwiched between and in contact with resilient conductive rubber liners, at a temperature range of from about room temperature to a temperature just below the melting point of the film, the single or multi-layer with liners being disposed between a single set of

4,434,115

METHOD FOR REMOTE LINING OF SIDE CONNECTIONS

Douglas K. Chick, Elstree, England, assignor to Insituform International, Inc., Channel Islands

Filed Feb. 11, 1982, Ser. No. 348,072

Claims priority, application United Kingdom, Feb. 18, 1981, 8105126

Int. Cl.³ B29C 27/16

U.S. Cl. 264-36

7 Claims



1. A method of lining the interior of a lateral pipe that extends laterally with respect to an elongated substantially horizontal underground pipeline and which lateral pipe opens into the side of said substantially horizontal underground pipeline by means of a side connection opening in said pipeline, which method comprises

- (a) introducing into the interior of said substantially horizontal underground pipeline an elongated liner tube evert ing unit, so that the length direction of the liner tube evert ing unit is aligned with the length direction of the pipeline;
 - (b) from a control point located outside of said horizontal underground pipeline causing said liner tube evert ing unit to move along the interior of said substantially horizontal underground pipeline to a position which is near said side connection opening;
 - (c) from a control point located outside of said horizontal underground pipeline aligning a liner tube evert ing outlet on said liner tube evert ing unit with said side connection opening; and
 - (d) employing a fluid pressure differential to evert a flexible extendible liner tube laterally from said liner tube evert ing unit
- (1) first through said side connection opening, and
 - (2) then progressively along the interior of said lateral pipe.

4,434,116

METHOD FOR MAKING A POROUS FLUORINATED POLYMER STRUCTURE

Michael J. Covitch, Cleveland Hts., Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 26, 1981, Ser. No. 277,884

Int. Cl.³ B29D 27/00

U.S. Cl. 264-49

15 Claims

1. A method for forming a porous, resinous structure comprising the steps of:
 - blending a fluorinated polymer or fluorinated copolymer and a dispersion media;
 - heating the blend to a temperature between the melting point of the dispersion media and the boiling point of the dispersion media;
 - maintaining the temperature until said fluorinated polymer

or fluorinated copolymer at least partially dissolves in said dispersion media thereby forming a dispersion;
forming a desired structure from the blend;
cooling the blend to cause syneresis of droplets of dispersion media within dispersion; and
continuing cooling causing crystallization of substantially all of said droplets; and
removing the droplets to leave pores within the structure.

4,434,117

METHOD FOR PRODUCING A CORDIERITE BODY
Kazuhiro Inoguchi, Okazaki, Tomohiko Nakanishi, Kariya, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

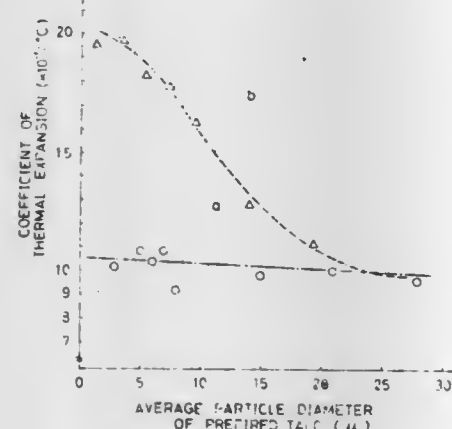
Filed Apr. 2, 1981, Ser. No. 250,150

Claims priority, application Japan, Apr. 4, 1980, 55-45016; Apr. 4, 1980, 55-45017

Int. Cl.³ C04B 35/18

U.S. Cl. 264-56

11 Claims



1. A method for producing a body consisting substantially completely of polycrystalline sintered cordierite said method comprising the successive steps of:

- delaminating a talc stack along the (001) plane thereof into plate-shaped talc particles, each particle having an average particle diameter of about 2.8 to about 30 microns;
- firing the so obtained plate-shaped talc particles;
- mixing and kneading a batch raw material containing the fired plate-shaped talc particles produced in step (b) together with non-plate-shaped particles of another ceramic material selected from the group consisting of aluminum hydroxide, alumina, silica and kaolin and preparing a slurry, provided that the particles of said other ceramic material have an average diameter smaller than that of the fired plate-shaped talc particles;
- anisotatically forming the slurry into a formed body having a predetermined shape while imparting a planar orientation to the plate-shaped talc particles; and thereafter
- drying and firing the thus formed body.

4,434,118

COMPACTING POLYCARBONATE AND COPOLY(CARBONATE/PHOSPHONATE) PARTICLES
Ruey Y. Lin, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 219,567, Dec. 23, 1980, abandoned.

This application Jul. 22, 1982, Ser. No. 400,827

Int. Cl.³ B01J 2/22

U.S. Cl. 264-109

7 Claims

1. A process for producing a polycarbonate particulate product having increased bulk density suitable for plastic shaping comprising mechanically compacting particles of a polycarbonate resin having a bulk density of about 0.1 gm/cm³ using a pressure of from about 100 to about 5000 atmospheres

to produce a polycarbonate product having a bulk density of greater than about 0.9 g/cm³.

4,434,119

METHOD FOR PRODUCING CONCRETE PANELS

John W. Teare, 26 Hollytree Ct., Hamilton, Ohio 45011

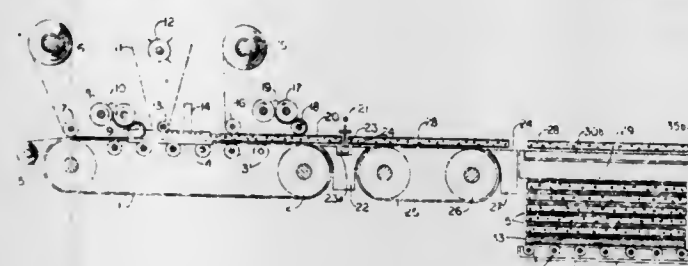
Continuation-in-part of Ser. No. 126,192, Mar. 3, 1980, Pat. No.

4,298,413. This application Oct. 29, 1981, Ser. No. 316,146

Int. Cl.³ B28B 1/14, 1/30, 7/06

U.S. Cl. 264-145

1 Claim



1. A process for producing fabric-reinforced concrete panels which comprises depositing on a moving conveyor belt a web of water-absorbent paper treated with a concrete release agent, depositing on said paper web a continuous strip of uncured, fabric-reinforced concrete, cutting said strip including said paper web into panels, stacking said uncured panels with a layer of said paper web between adjacent panels, curing said stack of panels under non-drying conditions until said panels have hardened, and subsequently subjecting said stack of hardened panels to air drying at ambient conditions whereby moisture from within said stack is dissipated through the wicking action of said layers of paper.

4,434,120

INJECTION MOLDED KNOCKOUT

Charles J. Aloisio, Jr., Chamblee, and Ray R. Cammons, Woodstock, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1981, Ser. No. 309,980

Int. Cl.³ B29F 1/00

U.S. Cl. 264-155

9 Claims



1. A method of making an article by steps comprising introducing fluid polymer or prepolymer material into a cavity, allowing said material to at least partially solidify, and thereafter removing said material from said cavity, characterized in that

a portion of said material flows through one or more gates between a first region of said cavity and a second region of said cavity, whereby the boundary between the resulting first and second regions of the article exclusive of the one or more gates is a weld line formed by the flow front of said material, thereby producing an article having at least one removable piece.

4,434,121

METHOD FOR PRODUCTION OF A HELICAL SPRING FROM A FIBER-REINFORCED PLASTIC

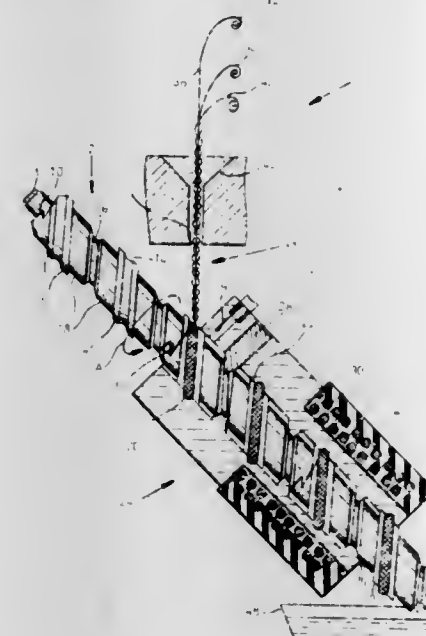
Siegfried Schäper, Wettstetten, Fed. Rep. of Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,590

Int. Cl.³ B29F 3/10

U.S. Cl. 264-174

5 Claims



1. A method of making a helical spring which comprises the steps of:

- rotating an inner cylindrical member formed with an outwardly open helical groove around the axis of said member;
- enclosing said inner member in an outer member formed with an axially extending bore provided with an inwardly open helical groove registering with the outwardly open helical groove to define a closed cross section for a spring to be formed in said grooves;
- feeding a strand of fiber reinforced synthetic resin in a plastically deformable state into said outwardly open groove thereby entraining said strand into said outer member and molding said strand to said cross section between the grooves of said members; and
- axially shifting said members relatively corresponding to the pitch of said grooves during the rotation of said inner member whereby a spring formed from said strand emerges from said outer member on said inner member at an end of said outer member opposite that at which said inner strand was entrained into said outer member.

4,434,122

POLYMER STABILIZATION

Jerry O. Reed; Ronald D. Mathis both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

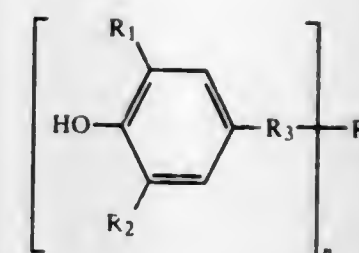
Filed May 11, 1982, Ser. No. 377,233

Int. Cl.³ C08K 100/00

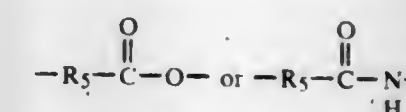
U.S. Cl. 264-211

12 Claims

1. In a process for producing fiber by melt extruding a poly(arylene sulfide) resin having a melt flow of about 50 to about 400, the improvement for reducing gel formation during melt extrusion which comprises incorporating into said resin an effective heat and melt flow stabilizing amount of at least one phenolic amide or ester-based stabilizer having the formula:



where R₁ and R₂ can be an alkyl radical having from 1 to about 6 carbon atoms and R₁ and R₂ can be the same or different radicals; R₃ can be represented by the structure



where R₅ can be any alkylene or alkylidene radical having 1 to about 6 carbon atoms, R₄ can be R₅ or any alkyl radical having 1 to about 20 carbon atoms, and n is 1 when R₄ is an alkyl radical having 1 to about 20 carbon atoms, or n is 2 when R₄ is R₅ which amount is sufficient to retard curing and cross-linking of said resin during melt extrusion and thereby minimize plugging of filters and spinnerets with gel.

4,434,123

METHOD FOR THE PREPARATION OF AN ELECTRIC CONNECTOR

Horiko Katumi, and Noma Hideyuki, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 270,898

Claims priority, application Japan, Jun. 16, 1980, 55-81150; Jun. 16, 1980, 55-81151

Int. Cl.³ B32B 3/26

U.S. Cl. 264-225

6 Claims

1. A method for the preparation of an electrical connector formed of a core rod made of an electrically insulating elastic material and a plurality of annular zones made of a layer of an electrically conductive material adhesively bonded stripe-like around the surface of the core rod which comprises the steps of:

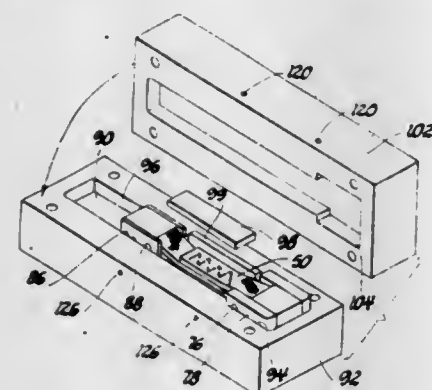
- continuously introducing a strip of film bearing releasable strips of a layer of a conductive material into a tubular mold at a first open end contacting and covering the inner surface of the tubular mold with the striped layer of the conductive material facing inwardly in such a manner that each of the stripes of the layer of conductive material takes the configuration of a substantially closed ring with simultaneous continuous discharge of the film out of the second open end;
- contacting the striped layer of conductive material borne by the film covering the inner surface of the tubular mold with the surface of an electrically insulating core of an elastic rubber continuously introduced into the tubular mold at the first open end to fill the space surrounded by the stripe of film with simultaneous continuous discharge at the second open end at such a velocity that the striped layer of the conductive material borne by the film is released onto the surface of the core when the core and the film are discharged out of the tubular mold;
- removing the core rod and the film together as discharged out of the tubular mold; and
- removing the film from the surface of the core to release the striped annular zones of conductive material transferred and adhesively bonded to the surface of the core.

4,434,124 METHOD FOR MAKING A RESILIENT TIE-DOWN DEVICE

Ralph F. Mantela, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 24, 1983, Ser. No. 469,255
Int. Cl.³ B29C 6/00; B29D 3/02; B29H 3/00
U.S. Cl. 264—229

3 Claims



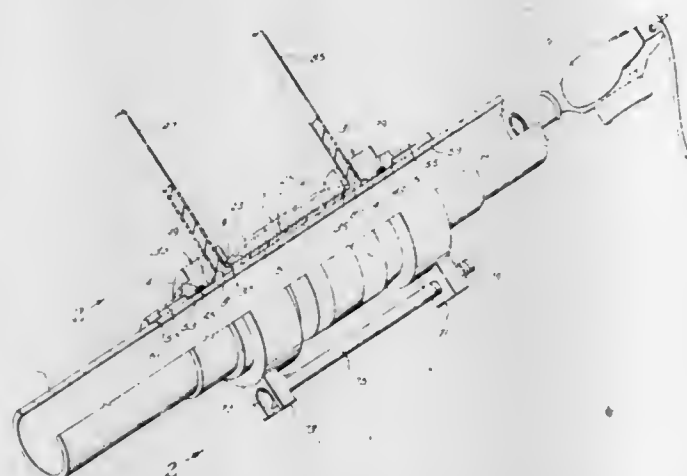
1. A method of making a resilient tie-down device for a restraint system which serves to secure a vehicle to the support platform of a transporter, said method comprising the steps of providing a strap made of a woven material, providing a loop portion at each end of the strap, placing said strap in a mold, connecting one loop portion of said strap to a fixed support member in said mold and connecting the other loop portion of said strap to a movable support member in said mold, closing said mold and injecting elastomeric material therein under pressure so as to cause said movable support member to move away from said fixed support member and place said strap in tension while in said mold, curing said elastomer while said strap is under tension and removing said strap from said mold after said elastomeric material has cured so that said pre-tensioned strap maintains said elastomeric material in compression.

4,434,125 METHOD FOR SECURING A WEAR SLEEVE ABOUT A DRILL PIPE

Gerry R. Lavender, and James O. Chance, Jr., both of Houston, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 12, 1982, Ser. No. 357,782
Int. Cl.³ B29C 5/00
U.S. Cl. 264—262

15 Claims



1. Method of securing a metallic wear sleeve about a metallic drill pipe tube comprising:
positioning the sleeve concentrically about the tube forming an annulus therebetween,
sealing the ends of the annulus,
filling the annulus with liquid exothermically polymerically

setting adhesive plastics material, which is at ambient room temperature when introduced, and allowing the plastics material to heat up and set gradually from the interior to the exterior of the annulus while introducing additional cooler liquid adhesive plastics material to the annulus to make up for setting shrinkage of the thermoset plastics material already in the annulus.

4,434,126 POWDER COATING PROCESS FOR FORMING SOFT FLEXIBLE POLYURETHANE FILM

Charles W. McGary, Jr., Centerville; Vincent J. Pascarella, Dayton; Robert A. Taller; Delmer R. Rhodes, both of Centerville; Paul E. Anglin, Dayton, and Charles W. Daugherty, Xenia, all of Ohio, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 15, 1982, Ser. No. 357,915
Int. Cl.³ B29C 13/00

U.S. Cl. 264—303

20 Claims

1. A process for forming a soft, flexible polyurethane film which consists essentially of:

- fluidizing finely divided particles of a polyurethane prepolymer, said prepolymer having a crystalline melt point in the range of approximately 10° to 45° C.,
- pre-heating a film form to a temperature at which said particles will adhere to said form when in contact therewith,
- immersing said pre-heated form into said fluidized particles such that said particles deposit on said form,
- heating said form to melt said particles such that said particles flow out into a thin, continuous, essentially pin hole free film, and
- removing said film from said form;

wherein said prepolymer comprises the reaction product of an organic polyisocyanate, a crystalline long chain diol having an average molecular weight of approximately 500 to 5000, a polyhydroxy crosslinking agent and an end blocking agent, wherein the resulting polyurethane elastomer has a 100% modulus less than approximately 250 psi and a 300% modulus between 200 and 500 psi.

4,434,127 HEAT CURABLE POLYDIORGANOSILOXANE COMPOSITIONS HAVING ENHANCED RELEASE UPON CURE

Madhu Baile, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 9, 1982, Ser. No. 448,140
Int. Cl.³ B29C 25/00

U.S. Cl. 264—235

16 Claims

13. A method of improving the release of organic peroxide-cured silicone rubber from metal molds, said method comprising,

- mixing with 100 parts by weight of an organic peroxide containing polydiorganosiloxane composition from 0.05 parts by weight to 0.3 parts by weight of a polydiorganosiloxane fluid having the formula $\text{Me}_3\text{SiO}(\text{MeQSiO})_x(\text{MeSiO})_y\text{SiMe}_3$, wherein Me represents the methyl radical, Q represents a carboxyfunctional radical bonded to the silicon atom by an Si—C bond, x has an average value of from 1% to 5% of the value of y, and the average value of the sum of the values of x and y is from about 100 to about 800;
- placing the mixture from (i) in a metal mold,
- subjecting the mixture in the metal mold to heat for an amount of time sufficient to cure said molded mixture, and,
- removing the cured silicone rubber from the mold.

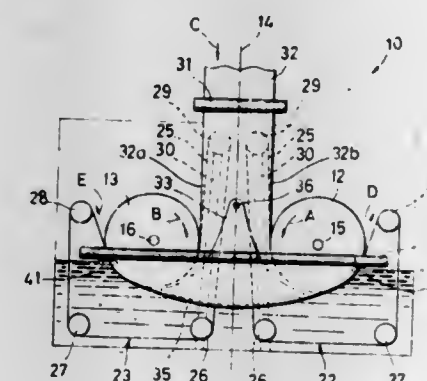
4,434,128 METHOD AND APPARATUS FOR STRETCHING THERMOPLASTIC POLYMER FILMS

Tokio Okada; Shigezo Kojima; Haruhisa Tani; Kazuhiko Kurihara, all of Tokyo, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Nippon Petrochemicals Co., Ltd and Polymer Processing Research Institute, Ltd., both of Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,844
Claims priority, application Japan, Apr. 1, 1981, 56-48797
Int. Cl.³ B29D 7/24

U.S. Cl. 264—560

5 Claims



1. In a method of stretching a thermoplastic polymer film, comprising:

- feeding the film in a longitudinal direction;
 - gripping the film along its opposite selvages;
 - moving the gripped selvages respectively along a pair of divergent arcuate paths lying substantially in the same plane and each extending over a predetermined circumferential range of from approximately a quarter to approximately a half of the full circumference of a circle containing the arcuate path, whereby the film is reversed in its direction of travel while being stretched; and
 - heating the film during its stretching; the improvement which comprises:
- moving, a central web portion of the film between the gripped selvages, over a convex guide surface at the position where the film is reversed in its direction of travel, the convex guide surface having a radius of curvature capable of maintaining the amount of longitudinal movement of the film substantially constant across its width; and
 - providing a layer of a pressurized heating medium between the central web portion and the convex guide surface.

4,434,129 METHOD AND APPARATUS FOR COOLING MOLTEN TUBE

Ajit Bose, Rexdale, Canada, assignor to Leco Inc., Rexdale, Canada

Filed Mar. 29, 1982, Ser. No. 363,280
Int. Cl.³ B29F 3/08

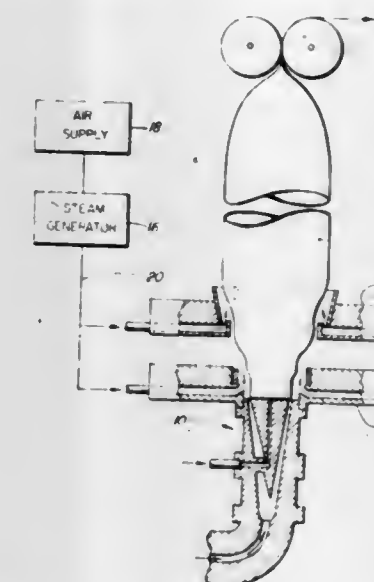
U.S. Cl. 264—557

13 Claims

1. In a method of convection cooling a molten extruded tube produced by a blown-tube process, the improvement comprising cooling said tube by convection by utilizing the heat of evaporation of moisture in steam by bringing said steam into contact with the exterior surface of said molten tube after extrusion of the molten tube from an extrusion die, said steam being permitted to expand prior to, during or subsequent to contact with said molten tube, whereby the latent heat of evaporation cools said molten tube.

8. An apparatus for convection cooling an extruded molten tube comprising air ring means adapted to surround a molten extruded tube produced by a blown-tube process in which a molten tube is extruded from an extrusion die, steam generating means for generating a source of steam, means for operatively associating said steam generating means with said air ring means to feed a stream of steam into said air ring means, said air ring means comprising means for dispensing an annular

flow of steam surrounding the exterior surface of said molten extruded tube and for permitting said steam to expand prior to, during, or subsequent to contact with said molten tube,



whereby said steam is effective to cool said molten tube by convection cooling utilizing the heat of evaporation of said steam.

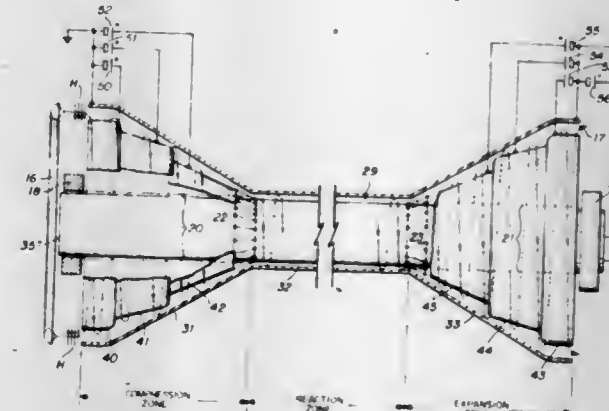
4,434,130 ELECTRON SPACE CHARGE CHANNELING FOR FOCUSING ION BEAMS

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Filed Nov. 3, 1980, Ser. No. 203,134
Int. Cl.³ G21B 1/02

U.S. Cl. 376—107

16 Claims



1. In a fusion reactor, the combination comprising:

- means including coaxial electrodes spaced apart to establish an annular reaction zone with a voltage thereacross to establish a spiral beam of electrons traveling along a common spiral path through an annular reaction zone free from any applied magnetic field to form a cylindrical electron sheath which rotates as a whole about a common sheath axis; and
- means to project oppositely directed beams of fusible ions longitudinally through said electron sheath to force ions in both ion beams into linear paths in a common thin cylindrical zone located where the potential gradient in electron sheath is minimum.

4,434,131

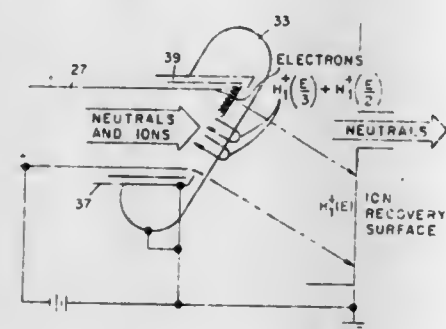
NEUTRAL BEAMLINE WITH IMPROVED ION ENERGY RECOVERY

William K. Dagenhart, Oak Ridge; Halsey H. Haselton, Knoxville; William L. Stirling, and John H. Wheaton, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,641

Int. Cl.³ G21B 1/00

U.S. Cl. 376-130



1. In a neutral particle beam injector system wherein a neutral particle beam is generated and directed along a beamline, including a substantially ground-potential-operated ion source from which ions of a selected isotopic species are accelerated to a desired kinetic energy level along said beamline through a neutralizer, said neutralizer being operated at a selected ion acceleration potential relative to said ion source to provide said desired kinetic energy level and wherein a significant portion of said ions are converted into energetic neutral particles together with electrons, full kinetic energy atomic ions and fractional kinetic energy atomic ions derived from molecular ions of said selected species accelerated into said neutralizer, an ion energy recovery system including a magnetic field generating means for producing a magnetic field (B) transverse to said beamline in a beam exit region at the beam exit end of said neutralizer and of sufficient strength to substantially block electrons from exiting said neutralizer and deflecting said full energy ions from said beamline along a separate path, and at least one ground potential full energy ion charge collector surface disposed in the path of said full energy ions deflected from said beamline for collecting the charge from said full energy ions directed to said ion collector, the improvement in said ion energy recovery system comprising:

an electrically conductive, nonmagnetic, ground potential operated box-like structure surrounding a portion of said beam exit end of said neutralizer and insulatably spaced from said neutralizer, said box-like structure having a downstream end surface disposed transverse to said beam exit end of said neutralizer, said end surface of said box-like structure having an opening in a central region thereof for restricted passage of said neutral particle beam and said full energy ions from said exit region of said neutralizer so that the remaining downstream end surface of said box-like structure produces a strong electric field gradient (E_f) in conjunction with the accelerating voltage applied to said neutralizer which is transverse to said magnetic field (B), thereby forcing said fractional energy ions to be deflected back into said neutralizer and forcing any electrons in said beam exit region between said neutralizer and said end surface of said box-like structure to drift in a direction perpendicular to said electric field (E_f) and said magnetic field (B) within said box-like structure; and an electron collector disposed within said box-like structure, said electron collector surrounding and extending past said exit end of said neutralizer into the drift path of said electrons, said electron collector being disposed in an insulatably spaced relation to said neutralizer and said box-like structure and biased sufficiently positive with

respect to said neutralizer to collect said electrons forced to drift toward said electron collector.

4,434,132

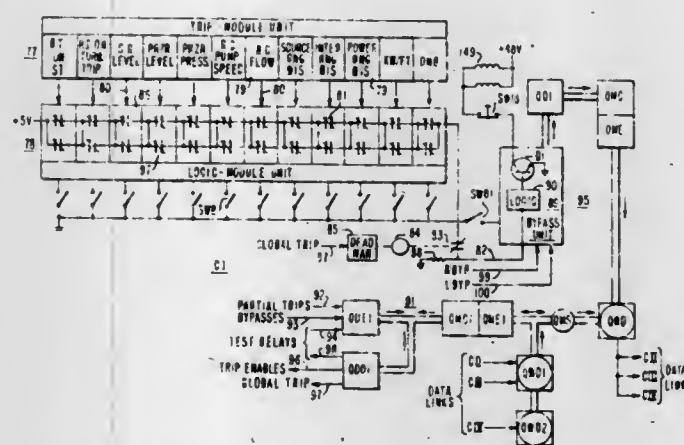
POWER SUPPLY WITH NUCLEAR REACTOR

Bruce M. Cook, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,515

Int. Cl.³ G21C 17/00

U.S. Cl. 376-259



5. Power supply apparatus including a nuclear reactor and components, cooperative with said reactor, for converting the thermal energy generated by said reactor into electrical power, said reactor and said components having a plurality of processes, each process having one or more parameters to be monitored, means, connected to said reactor, when actuated, tripping said reactor, a plurality of monitoring channels for said parameters, each of said channels having a plurality of sensors, each sensor herein called a local sensor, each of said local sensors being connected to said reactor and/or to said components, for sensing a different one of said parameters, first impressing means, connecting to each of said channels, the like sensors, herein called remote sensors, of the other channels, to impress their sensed signals in said each channel, bypassing means in each channel, cooperative with each local sensor of said channel, for bypassing said each local sensor when said local sensor is subject to test or maintenance or is defective or disabled or the like, impressing means in each channel for impressing, in each of the other channels, intelligence of a bypass of a sensor in said last-named each other channel, said bypass being herein referred to as a remote bypass with respect to said each of said other channels, means, connected to said tripping means, and responsive to the sensing of an off-normal parameter by unbypassed local sensor of a channel and an unbypassed remote sensor of the same set in the same channel for actuating said tripping means to trip said reactor, and means, responsive to the bypassing by said first bypassing means of a local sensor of a channel and to intelligence impressed by said impressing means in said channel of the bypass of a remote sensor of the same set as said local sensor for only conditioning said reactor to be tripped.

4,434,133

SYSTEM FOR THE PRODUCTION OF KETENE AND METHYLENE FROM CARBONATE MINERALS

Michael G. Down, Plum Borough; D. Colin Phillips, Monroeville, and Werner S. Emmerich, Churchill Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 26, 1981, Ser. No. 266,671

Int. Cl.³ G21C 15/00

U.S. Cl. 376-323

14 Claims

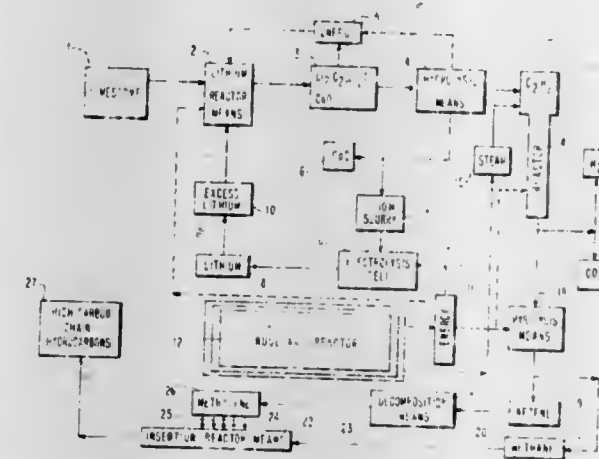
6. A process of converting inorganic carbonate mineral material to organic high carbon chain hydrocarbon material, utilizing nuclear reactor energy, comprising the steps of:

(1) reacting inorganic carbonate mineral material with a stoichiometric excess of molten lithium metal, at a temper-

ature over about 300° C. in the absence of air and moisture, to produce a product mixture comprising lithium salts Li_2C_2 and Li_2O , and then

(2) hydrolyzing the lithium salts produced in step (1), to produce C_2H_2 , and then

(3) catalytically reacting the C_2H_2 produced in step (2), with steam, in the presence of zinc containing catalyst, at between about 250° C. and about 475° C., in a manner effective to provide gases which upon condensation yield CH_3COCH_3 , without producing benzene, and then



(4) pyrolyzing the CH_3COCH_3 produced in step (3), at between about 600° C. and about 800° C., to provide ketene and methane, and then

(5) separating ketene from methane, and then

(6) decomposing the ketene to provide methylene, and then

(7) reacting the methylene with an alkane material, to provide a product which is reacted with additional methylene in a manner effective to cause methylene insertion chain reactions and provide hydrocarbon materials containing at least three carbon atoms; where at least a part of the heat energy required for the pyrolyzing step of step (4) is supplied from a nuclear reactor.

4,434,134

PINNED CERAMIC SUBSTRATE

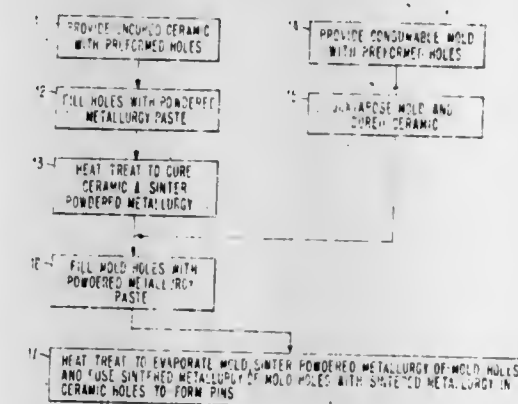
Russell E. Darrow, Endicott; Joseph Funari, Vestal; George S. Kotrch, Endicott, and George C. Phillips, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1981, Ser. No. 252,748

Int. Cl.³ B22F 3/00

U.S. Cl. 419-5

7 Claims



1. A method for making a pinned ceramic substrate having plural pins outwardly extending from at least one predetermined surface thereof, said method comprising the steps of: providing a ceramic substrate having a plurality of first holes to be pinned, said first holes inwardly extending from a predetermined first surface of said substrate, filling said first holes with unsintered powdered metal particles in a temporary non-elastomer paste-like binder, providing a vaporizable carrier having a corresponding

plurality of second holes inwardly extending from a predetermined second surface thereof, juxtaposing said first and second surfaces in a predetermined contacting relationship with each other, each one of said first holes being paired with a mutually exclusive one of said second holes and being in a predetermined registration relationship therewith when said first and second surfaces are in said predetermined contacting relationship, filling said second holes with unsintered powdered metal particles in a temporary non-elastomer paste-like binder, and

providing a heat treatment to sinter said unsintered powdered metal particles of said first and second holes and to evaporate away said binder thereof,

whereby said powdered metal particles in each one of said paired first and second holes is fused to form one of said pins affixed to said substrate and said carrier is evaporated away by said heat treatment,

said binders and said carrier being evaporated away within the temperature range of 250 to 400 degrees C., and said powdered metal particles being sintered at a temperature greater than 400 degrees C., and said ceramic substrate and said powdered metal particles having compatible shrinkage characteristics, and said ceramic substrate and said powdered metal particles having compatible firing and sintering temperatures, respectively.

3. A method for making a pinned ceramic substrate having plural pins outwardly extending from at least one predetermined surface thereof, said method comprising the steps of:

providing a ceramic substrate having a plurality of first holes to be pinned, said first holes inwardly extending from a predetermined first surface of said substrate,

filling said first holes with unsintered powdered metal particles in a temporary non-elastomer paste-like binder,

providing a first heat treatment to sinter said unsintered powdered metal particles of said first holes and to evaporate said binder thereof,

providing a vaporizable carrier having a corresponding plurality of second holes inwardly extending from a predetermined second surface thereof,

juxtaposing said first and second surfaces in a predetermined contacting relationship with each other, each one of said first holes being paired with a mutually exclusive one of said second holes and being in a predetermined registration relationship therewith when said first and second surfaces are in said predetermined contacting relationship,

filling said second holes with unsintered powdered metal particles in a temporary non-elastomer paste-like binder, and

providing a second heat treatment to sinter said unsintered powdered metal particles of said second holes and to evaporate said binder thereof, whereby said powdered metal particles in each one of said paired first and second holes is fused to form one of said pins affixed to said substrate and said carrier is evaporated away by said second heat treatment,

said binders and said carrier being evaporated away within the temperature range of 250 to 400 degrees C., and said powdered metal particles being sintered at a temperature greater than 400 degrees C., and said ceramic substrate and said powdered metal particles having compatible shrinkage characteristics, and said ceramic substrate and said powdered metal particles having compatible firing and sintering temperatures, respectively.

4,434,135

GAS BLACK BURNER

Peter Kleinschmitt; Manfred Voll, both of Hanau, and Richard Engel, Bernheim-Waldof, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

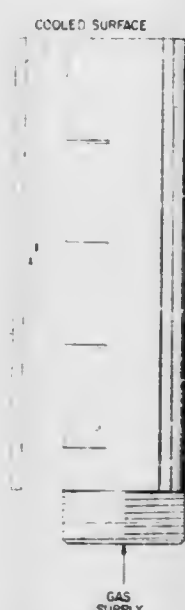
Continuation of Ser. No. 171,204, Jul. 22, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,616

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931907

Int. Cl.³ C09C 1/48

U.S. Cl. 422—150

4 Claims



1. A burner for producing gas black comprising a pipe shaped chamber with circular cross-section provided with at least one means for supplying the operation gas containing the raw material for the carbon black, and a cooled deposition surface, the wall of said chamber having slit shaped openings disposed in parallel to one another and at mutually uniform distances in said wall for discharging said gas into the surrounding air and establishing a carbon black forming diffusion flame, there being present 3 to 8 slits per meter of chamber length, each of said slits at room temperature having a width of 0.4 to 1 mm, the slits being directed against said cooled deposition surface, and the length of each slit shaped opening ranging from 1:36 to 1:2 with respect to the circumference of said chamber, said pipe shaped chamber being formed of a scale resistant material.

4,434,136

TAPERED-BOTTOM BLEACH CAKE FOR SANITATION DOSING DISPENSER

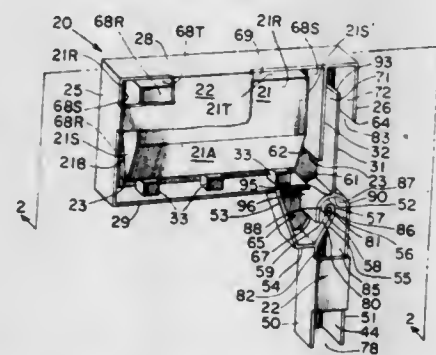
Randolph N. Wilkinson, III; Elmore C. Sneed, both of Cincinnati, and Janet M. Mueller, Miamisburg, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 8, 1982, Ser. No. 355,983

Int. Cl.³ B01D 11/02

U.S. Cl. 422—263

7 Claims



1. A toilet tank dosing dispenser containing a solid cake of water-soluble calcium hypochlorite within a reservoir cake

compartment, said dispenser including means for allowing a dose volume of water to be routed through said reservoir with each dispensing cycle and means for immersing a lowermost portion of the cake to a predetermined depth in said water to facilitate dissolving a portion of said cake for dispensing at a later time; wherein said water level drops below said cake with each dose;

characterized in that:

said cake being substantially completely water-soluble and having a geometric form that is of nonuniform cross-sectional area, as measured along at least a portion of its vertical height, said cross-sectional area generally increasing in the direction of increased vertical height, whereby the amount of cross-sectional area of said lowermost portion immersed in said water increases as said vertical height decreases, said cake and said reservoir cake compartment containing sufficient free space to allow the cake to gravity feed by dissolution into said water; said dosing dispenser providing a substantially uniform concentration of hypochlorite solution for each dispensing cycle for the life of the cake.

4,434,137

METHOD FOR DISSOLVING HARD-TO DISSOLVE NUCLEAR FUELS

Wolfgang Stoll, Hanau, and Wilhelm Ledebrock, Maintal, both of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,453

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951510

Int. Cl.³ C01G 56/00; C01F 15/00

U.S. Cl. 423—6

5 Claims

1. Method for dissolving hard-to-dissolve nuclear fuels selected from the group consisting of ThO₂ and PuO₂ in a nitric acid fission material solution containing fluoride ions, which comprises adding hard-to-dissolve nuclear fuel to a nitric acid fission material solution to dissolve the nuclear fuel in which said solution contains nitric acid and a fluoride complex selected from the group consisting of a U-fluoride complex and a Pu-fluoride complex to provide free fluoride ions in a small catalytically active amount due to small dissociation of fluoride ions from said fluoride complex.

4,434,138

ION EXCHANGE RESINS FOR URANIUM RECOVERY

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,825

Int. Cl.³ C01G 43/00; B01J 39/20, 41/14

U.S. Cl. 423—7

15 Claims

1. A resin composite comprising macroporous particles of ion exchange resin having post-deposited therein at least one hydrous metal oxide selected from the group comprising titania hydrate, zirconia hydrate, hydrated titanium phosphate, and hydrated zirconium phosphate.

4,434,139

METHOD FOR REMOVING ADHERING OR DUST-LIKE DEPOSITS IN SYSTEMS HANDLING URANIUM HEXAFLUORIDE

Walter Bacher, Stutensee, and Eberhard Jacob, Feldafing, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe and Maschinenfabrik Augsburg-Nürnberg AG, Munich, both of, Fed. Rep. of Germany

Filed Mar. 10, 1981, Ser. No. 242,252

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009933

Int. Cl.³ C01G 43/06

U.S. Cl. 423—19

6 Claims

1. A process for removing adhering or dust-like deposits in an apparatus which handles uranium hexafluoride, comprising the steps of:

- reacting said deposits with a gaseous boron halogenide other than boron trifluoride, to form at least one uranium halogenide; and
- reacting said at least one uranium halogenide with a fluorine-containing substance to form uranium hexafluoride.

4,434,140

STRIPPING A SOLUTION CONTAINING MOLYBDENUM AND VANADIUM VALUES

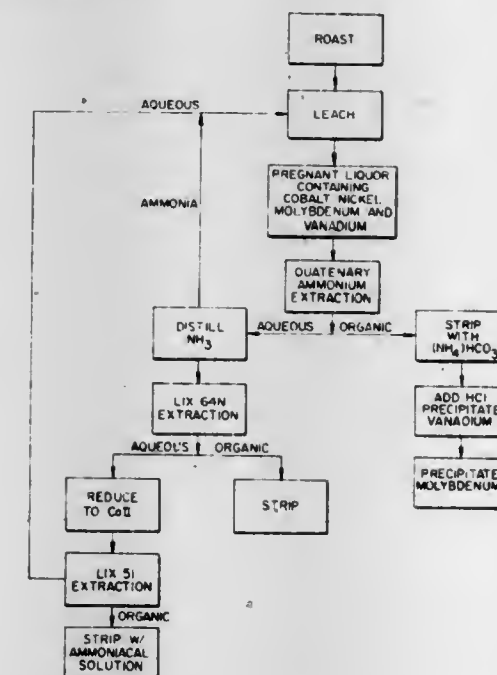
Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,814

Int. Cl.³ C01G 39/00, 31/00

U.S. Cl. 423—54

4 Claims



1. A method of stripping an organic extraction solvent containing molybdenum and vanadium quaternary alkyl ammonium complexes comprising:

contacting said organic extraction solvent with an aqueous stripping solution maintained at a temperature of no more than 50° C., a pH of between 7 and 9, and containing at least 75 grams per liter of a salt of a bicarbonate ion, for a time sufficient to convert said molybdenum and vanadium quaternary alkyl ammonium complexes to aqueous soluble metal complexes; separating said organic extraction solvent and said aqueous stripping solution.

4,434,141

RECOVERY OF COBALT, MOLYBDENUM, NICKEL AND VANADIUM FROM AN AQUEOUS AMMONIA AND AMMONIUM SALT SOLUTION BY COEXTRACTING MOLYBDENUM AND VANADIUM AND SEQUENTIAL EXTRACTION OF NICKEL AND COBALT

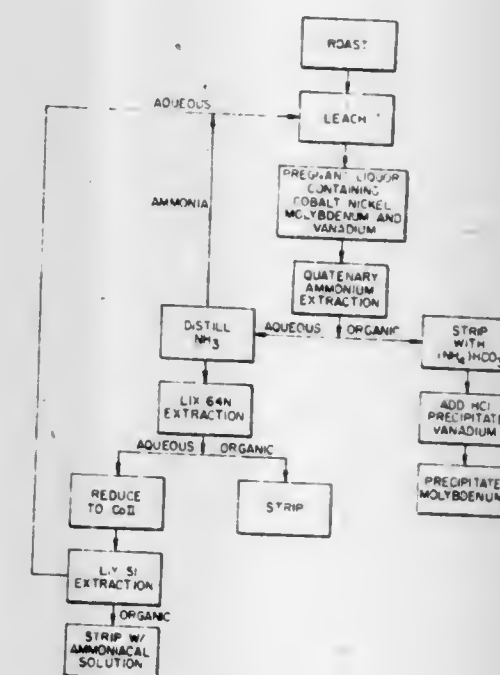
Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 422,987

Int. Cl.³ C01G 39/00, 41/00, 51/00, 31/00

U.S. Cl. 423—54

4 Claims



1. A process for separating the metal values in a pregnant liquor from an ammoniacal ammonium aqueous leach solution containing:

- at least one metal value selected from the group consisting of cobalt and nickel; and
- at least one metal value selected from the group consisting of vanadium and molybdenum;

comprising the steps of:

- transferring said molybdenum and vanadium metal values from said pregnant liquor into a first organic solution by means of a first organic liquid extractant comprising a quaternary ammonium compound;
- stripping said first organic solution with a first aqueous ammonium bicarbonate stripping solution to form an aqueous solution containing said molybdenum and vanadium metal values;
- transferring nickel metal values from said pregnant liquor into a second organic solution by means of an organic nickel extractant comprising an oxime;
- reducing cobalt metal values in said pregnant liquor to divalent cobalt;
- transferring cobalt metal values from said pregnant liquor into a third organic solution by means of an organic cobalt extractant comprising a beta-diketone; and
- stripping each of said second and third organic solutions with aqueous stripping solutions to form a cobalt-containing aqueous solution and a nickel-containing aqueous solution.

4,434,142

METHOD FOR TREATMENT OF ALUMINUM DROSS OXIDES

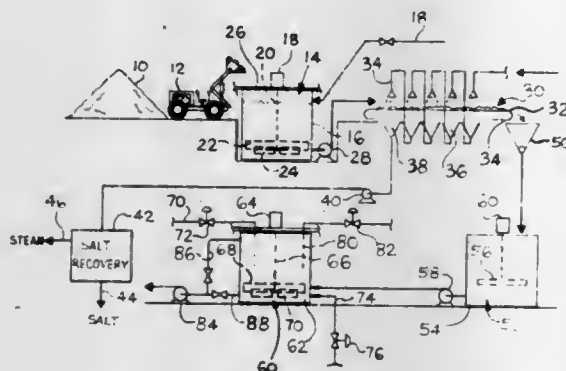
John A. Huckabay, Beaverton, Oreg., assignor to Imperial West Chemical Company, Reno, Nev.

Filed Sep. 28, 1982, Ser. No. 426,200

Int. Cl.³ C01F 7/02

U.S. Cl. 423—111

13 Claims



1. In a method for the treatment of dross aluminum oxides containing from 0.5 to 25 weight percent aluminum metal particles by digestion in water suspension at a solids content from 30 to 80 weight percent, at elevated temperatures from about 175 degrees to 220 degrees F., and under agitation in the presence of a particulate grinding media, the improvement which comprises inhibiting the foaming of the suspension by injecting a purge medium consisting essentially of a gas into said suspension at a rate from 0.0025 to 0.0063 standard cubic feet per minute per gallon of suspension.

4,434,143

CARBONATE ION CONTROL TO PREVENT LOSSES OF VANADIUM IN OXIDATION OF HYDROGEN SULFIDE

Guenther Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,802

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219825

Int. Cl.³ B01D 53/34; C01B 17/05

U.S. Cl. 423—226

5 Claims

1. In a process for the removal of H₂S from a gaseous mixture comprising:

- scrubbing said gaseous mixture with an aqueous alkaline scrubbing agent consisting essentially of five-valent vanadium and anthraquinone disulfonic acid, the absorbed hydrogen sulfide being oxidized to elemental sulfur while five-valent vanadium is reduced to four-valent vanadium; and
- the reduced scrubbing agent is subsequently regenerated for reuse by exposure to an oxygen-containing gas for the reoxidation of the four-valent vanadium, the improvement which comprises adding and maintaining sufficient CO₃²⁻ in the scrubbing agent to prevent precipitation of vanadium values.

4,434,144

ABSORPTION OF CO₂ AND/OR H₂S UTILIZING SOLUTIONS CONTAINING TWO DIFFERENT ACTIVATORS

Giuseppe Giammarco, and Paolo Giammarco, both of San Marco 3242, Palazzo Morolin, Venezia, Italy

Continuation of Ser. No. 91,920, Nov. 7, 1981, abandoned. This application Oct. 9, 1981, Ser. No. 310,256

Claims priority, application Italy, Nov. 16, 1978, 69613 A/78

Int. Cl.³ B01D 53/34, 53/36

U.S. Cl. 423—223

11 Claims

1. A process for removing CO₂ and H₂S from a gaseous mixture by means of an absorbing solution, comprising: circulating said solution between an absorption stage and a

regeneration stage at an elevated temperature, said solution containing a prevailing concentration of a basic substance which essentially effects absorption of CO₂ and H₂S quantitatively, and an activating substance which absorbs CO₂ with greater activity than said basic substance thereby improving absorption efficiency and facilitating CO₂ passage from gaseous phase to liquid phase and back, said absorbing solution containing two different activating substances capable of increasing absorption efficiency of said solution in different and complementary ways, said solution comprising:

- a first activating substance consisting of glycine which absorbs CO₂ with the formation of a carbamate, at a higher rate than other components in said solution, facilitating CO₂ passage into liquid phase;
- a second activating substance consisting of As₂O₃ in an amount of 0.25 moles or less per mole of said first activating substance which essentially enhances decomposition and hydrolysis of said carbamate, thus regenerating said first activating substance (a); and
- an alkali metal carbonate which essentially effects said quantitative absorption of CO₂ introduced by said activating substances (a) and (b).

4,434,145

SIMULTANEOUS SCRUBBING AND OXIDATION OF HYDROGEN SULFIDE USING EXCESS VANADATE

Guenther Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,806

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216158

Int. Cl.³ B01D 53/34; C01B 17/05

U.S. Cl. 423—226

4 Claims

1. In a process for the removal of hydrogen sulfide from a gaseous mixture comprising:

- scrubbing said gaseous mixture with an aqueous alkaline scrubbing solution containing anthraquinone disulfonic acid and five-valent vanadium as the oxidizing agent, whereby the sulfide of the hydrogen sulfide is converted into higher oxidation states with simultaneous reduction of the five-valent vanadium to four-valent vanadium; and
- regenerating the scrubbing solution for reuse in a downstream oxidizer wherein an oxygen-containing gas incompletely reoxidizes the four-valent vanadium to five-valent vanadium, and wherein the pH in the scrubbing solution is less than 9.5,

the improvement comprising employing the five-valent vanadium in a ratio exceeding the stoichiometric ratio for the oxidation of the hydrogen sulfide based on the reduction of total vanadium by one valence state, and wherein the total concentration of the vanadium dissolved in the scrubbing solution is maintained larger than the stoichiometric vanadium concentration for the hydrogen sulfide loading to the extent of at least the content of four-valent vanadium remaining on reoxidation in the steady state of the scrubbing process.

4,434,146

SCRUBBING OF HYDROGEN SULPHIDE USING PH CONTROL TO CONTROL THIOSULFATE FORMATION

Guenther Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,807

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216160

Int. Cl.³ B01D 53/34; C01B 17/05

U.S. Cl. 423—226

9 Claims

1. In a process for the removal of hydrogen sulphide from a gaseous mixture comprising scrubbing said gaseous mixture with an aqueous alkaline scrubbing solution containing an oxidizing agent, whereby the hydrogen sulphide is absorbed

from the scrubbing solution and oxidized principally to sulphur with the formation of minor amounts of SO₄²⁻ and S₂O₃²⁻, the improvement which comprises suppressing the formation of the S₂O₃²⁻ to less than 0.15 gram per liter of scrubbing solution per day, said suppressing being conducted by introducing sufficient amounts of CO₂ into the scrubbing solution to maintain a pH of the scrubbing solution in the range of 8.0 and not higher than 8.4.

4,434,147

SIMULTANEOUS SULFUR OXIDE AND NITROGEN OXIDE CONTROL IN FCC UNITS USING CRACKING CATALYST FINES WITH AMMONIA INJECTION

William L. Dimpfl, Oakland, and William A. Blanton, Woodacre, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 308,689, Oct. 5, 1981, abandoned. This application Jun. 10, 1982, Ser. No. 387,292

Int. Cl.³ C01B 21/00; B01J 8/00

U.S. Cl. 423—235

7 Claims

1. A process for lowering the amount of nitrogen oxides in a flue gas from a regenerator of a fluid catalytic cracking unit in which the circulating inventory of the unit contains at least a particulate cracking catalyst containing at least 20% alumina, a sulfur oxide sorbent, and a sulfur dioxide oxidation promoter, including the steps of:

- lowering the temperature of the flue gas to at least about 850° F.;
- mixing sufficient ammonia or an ammonia generating compound with the flue gas to achieve the desired reduction of said nitrogen oxide;
- passing the flue gas in the presence of oxygen through means for collecting and supporting cracking catalyst fines entrained in the flue gas; and
- controlling the temperature of the flue gas as it passes through said collecting and supporting means to between about 350° F. and about 850° F., whereby the nitrogen oxide in flue gas is reduced as it contacts the supported catalyst in the collecting and supporting means.

4,434,148

WORKING UP OF THE RESIDUAL GASES RESULTING FROM THE PRODUCTION OF CYANURIC CHLORIDE

Gerhard Bach, Frechen; Friedhelm Geiger, Erlensee; Werner Heimberger; Gerd Schreyer, both of Hanau, and Horst Hiltenbrand, Wesseling, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,555

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843383

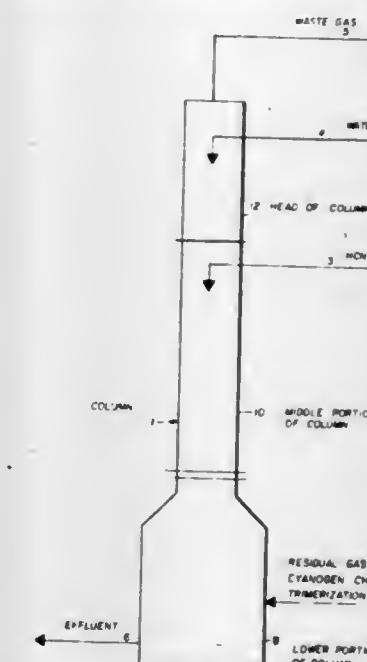
Int. Cl.³ C01B 21/18

U.S. Cl. 423—379

8 Claims

1. A process for working up the chlorine containing residual gases obtained in the production of cyanuric chloride by the trimerization of cyanogen chloride and consisting chiefly of unreacted cyanogen chloride, as well as chlorine, hydrogen chloride and inert gases comprising leading them into the lower portion of a column at 1-5 bar (absolute), reacting the gases in the column with at least the equivalent amount of hydrogen cyanide to form cyanogen chloride, charging water into the upper portion of the column, leading the cyanogen

chloride formed in countercurrent flow to said water, and withdrawing an aqueous solution of cyanogen chloride from



the lower portion of the column and removing the purified waste gas from the upper portion of the column.

4,434,149

ACID MELT TREATMENT TO ACTIVATE CARBON FOR USE AS REDUCTANT

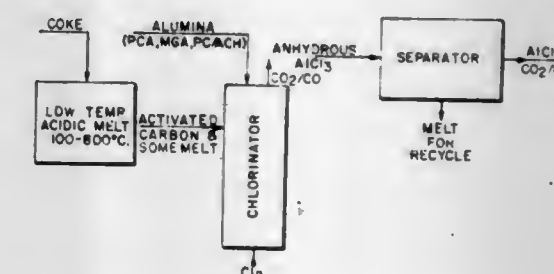
James C. Withers, and Raouf O. Loutfy, both of Tucson, Ariz., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 30, 1982, Ser. No. 412,926

Int. Cl.³ C01F 7/58

U.S. Cl. 423—496

19 Claims



1. A method of activating a solid carbon reductant comprising introducing a solid carbon reductant into a liquid anhydrous acid melt consisting essentially of greater than 50 mole percent aluminum chloride and less than 50 mole percent of at least one other halide salt and separating the carbon solid from the acid melt.

9. A method of producing anhydrous aluminum chloride comprising:

- contacting a carbon solid selected from the group consisting of fully calcined coke and partially calcined coke with a liquid anhydrous acid melt comprising greater than 50 mole percent aluminum chloride and less than 50 mole percent of at least one other halide salt to activate said carbon solid for use as a reductant;
- separating the activated carbon solid from the acid melt;
- chlorinating aluminous material at a temperature of from about 550° C. to about 900° C. for a time period of from about 15 minutes to about 2 hours in the presence of a reductant comprising the activated carbon solid of step (b).

4,434,150

IMMUNOLOGICAL REAGENTS EMPLOYING POLYMERIC BACKBONE POSSESSING REACTIVE FUNCTIONAL GROUPS

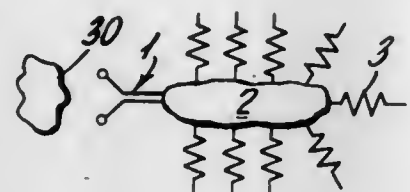
A. R. M. Azad, Stoughton; Stefan J. Kirchanski, Framingham,
and Michael C. Brown, Wayland, all of Mass., assignors to
Ortho Diagnostic Systems, Inc., Raritan, N.J.

Filed Oct. 19, 1981, Ser. No. 313,019

Int. Cl.³ G01N 33/54; A61K 43/00, 49/00

U.S. Cl. 424-1.1

16 Claims



1. An immunological substance detecting reagent comprising:

- (a) an immunological homolog specific for the substance to be detected;
- (b) a water-soluble, substantially noncross-linked and nonprimary amine containing polymer having a net charge not greater than zero; and
- (c) means for attaching substantially only one homolog to each water-soluble polymer.

8. An immunological substance detecting reagent comprising:

- (a) a first immunological homolog specific for the substance to be detected;
- (b) a water-soluble, nonprimary amine containing and substantially noncross-linked polymer having a charge not greater than zero and selected from the group consisting of polyacrylic acid, polymethacrylic acid, polyacrylamide, polyvinylalcohol, polyallyl alcohol, polymer combinations of the foregoing, hydroxyethyl cellulose, hydroxypropyl cellulose, natural water-soluble polymers and synthetic water-soluble polymers; and the polymer further having in association therewith a marker substance selected from the group consisting of nonfluorescent dyes, fluorescent dyes, radioisotopes, electron opaque substances, enzymes, a second immunological homolog of differing specificity than the first homolog and microspheres; and
- (c) means for attaching substantially only one first homolog to each polymer-marker complex.

4,434,151

BIFUNCTIONAL CHELATING AGENTS

Edmund F. Byrne, Alameda, Calif., and Glen L. Tolman, Chelmsford, Mass., assignors to Medi-Physics, Inc., Emeryville, Calif.

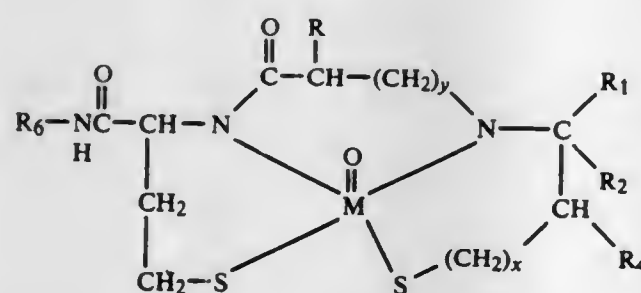
Filed Nov. 8, 1982, Ser. No. 439,960

Int. Cl.³ A61K 43/00, 49/00

U.S. Cl. 424-1.1

13 Claims

1. An anionic chelate of the formula:



wherein R₆ is lower alkyl R₁ and R₂ are individually hydrogen or lower alkyl or taken together form oxo; M is a radioactive metal; R₄ is hydrogen or lower alkyl; x and y are integers from 0 to 2

or a salt of said anionic chelate.

4,434,152

TIME-RELEASE

Tibor Horvath; Agnes Udvady; Agoston David, all of Budapest, and Katalin Marmarosi nee Kellner, Batorbagy, all of Hungary, assignors to CHINOIN Gyogyszer es Vegyszeri Termek Gyara Rt., Budapest, Hungary

Filed Apr. 26, 1982, Ser. No. 372,049

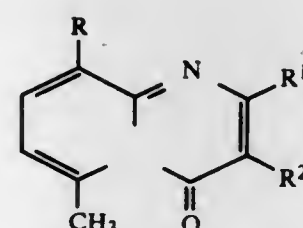
Claims priority, application Hungary, Apr. 28, 1981, 1092

Int. Cl.³ A61K 9/22, 9/24

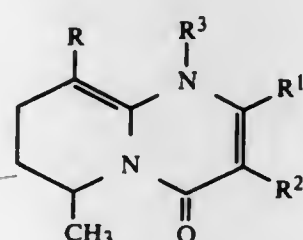
U.S. Cl. 424-19

12 Claims

1. A tablet or dragee core for a time-release pharmaceutical composition, suitable for oral administration, which comprises as active ingredient 50 to 70% by weight of a compound of the formula (I)



or the formula (Ia)



wherein

- R is hydrogen or —CH₂COOH,
- R¹ is hydrogen or alkyl having 1 to 4 carbon atoms,
- R² is alkyl having 1 to 4 carbon atoms, alkoxy carbonyl having 2 to 5 carbon atoms, carbamoyl or ureido,
- R³ is hydrogen or methyl, and the dotted line stands for two hydrogens or another bond, or a pharmaceutically acceptable acid addit ion or quaternary ammonium salt thereof, and which further comprises by weight
- 1% colloidal silicic acid,
- 6.5% hydrophobic colloidal silicic acid,
- 7 to 12% fatty acid,
- 8 to 12% microcrystalline cellulose,
- 4 to 9% polyvinylpyrrolidone-vinyl acetate, and
- 0.5 to 4% of an acid stabilizer selected from the group consisting of betaine in hydrochloric acid tartaric acid and citric acid.

4,434,153

DRUG DELIVERY SYSTEM COMPRISING A RESERVOIR CONTAINING A PLURALITY OF TINY PILLS

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Mar. 22, 1982, Ser. No. 360,477

Int. Cl.³ A61K 9/26, 9/28; A61J 7/00

U.S. Cl. 424-22

2 Claims

1. A device dimensioned and adapted for oral admittance into a gastro intestinal tract environment of use for extended residency into the fluid environment of the stomach as an in vivo reservoir for executing therein a therapeutic program over a prolonged period of time, the device comprising:

- (a) a matrix formed of a pharmaceutically acceptable non-toxic, non-hydrated hydrogel that absorbs and imbibes fluid from the fluid environment of the stomach, expands

and swells exhibiting a 2 to 50 fold volume increase for retaining the device in the stomach over an extended period of time, said hydrogel being a hydrophilic hydrogel that is non cross-linked or a hydrophilic hydrogel cross-linked with acid mobile covalent or ionic bonds, said hydrophilic hydrogel selected from the group consisting of naturally occurring or synthetic polymeric materials and colloids;

(b) a plurality of tiny pills dispersed throughout the matrix, the tiny pills comprising:

- (1) a core of beneficial drug; and,
- (2) a wall formed of a drug release rate controlling fatty acid and wax wall composition that surrounds the core of beneficial drug, and,

(c) wherein, when the device is in the environment of use, the device executes the therapeutic program by delivering drug in the stomach for absorption in the stomach, and for passage into the intestine for absorption in the intestine.

4,434,154

TANNING AND ULTRA-VIOLET SCREENING COMPOSITION HAVING HIGH STABILITY

James E. McShane, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Continuation of Ser. No. 228,403, Jan. 26, 1981, abandoned. This application Apr. 23, 1982, Ser. No. 371,101

Int. Cl.³ A61K 7/44

U.S. Cl. 424-60

6 Claims

1. A cosmetic composition capable of imparting artificial tan to human skin and of at least partially shielding the skin from ultra-violet rays comprising, based on the total weight of the composition:

- (a) 2.5 to 7.5 percent dihydroxy acetone,
- (b) 1.5 to 6 percent octyl dimethyl PABA,
- (c) 80 to 95 percent water,
- (d) 1 to 6 percent oil, and
- (e) 0.1 to 1 percent surfactant,

said composition being an oil in water emulsion, stable after prolonged storage without developing disagreeable odor.

4,434,155

BASIC ALUMINUM BROMIDE COMPOSITIONS AND METHODS USEFUL AS ASTRINGENTS OR ANTI-PERSPIRANTS

John L. Jones, North Plainfield, and Andrew M. Rubino, New Providence, both of N.J., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

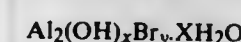
Filed Nov. 9, 1970, Ser. No. 88,206

Int. Cl.² A61K 7/38

U.S. Cl. 424-47

9 Claims

1. A composition useful as an astringent or anti-perspirant comprising a non-toxic dermatologically acceptable nonaqueous solvent and at least five percent by weight of a basic aluminum bromide dissolved in the solvent, said basic aluminum bromide having units of the general formula:



wherein x may be from about 4.8 to 5.1 and y may be from about 0.9 to 1.2 such that x+y=6, and X may vary from about 2.0 to 3.4.

4,434,156

MONOCLONAL ANTIBODIES SPECIFIC FOR THE HUMAN TRANSFERRIN RECEPTOR GLYCOPROTEIN

Ian S. Trowbridge, San Diego, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Oct. 26, 1981, Ser. No. 315,194

Int. Cl.³ C12N 5/02; A61K 39/395

U.S. Cl. 424-85

16 Claims

13. Rodent monoclonal antibodies specific for the transferrin binding site of human transferrin receptor glycoprotein and

which block binding of transferrin to the receptor glycoprotein.

4,434,157

METHOD OF RECOVERING CELL ANTIGEN AND PREPARATION OF FELINE LEUKEMIA VACCINE THEREFROM

Richard G. Olsen, London, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 104,789, Dec. 18, 1979, Pat. No. 4,332,793. This application Apr. 7, 1982, Ser. No. 366,352

Int. Cl.³ A61K 39/12

U.S. Cl. 424-89

13 Claims

1. A method for recovering virus-free, cell-free Feline leukemia associated neoantigen from cells infected with Feline Leukemia virus, which comprises:

- (a) culturing said cells in a serum-containing growth medium;
- (b) transferring and maintaining said cultured cells in a serum-free medium under conditions and for a time adequate to accumulate said neoantigen shed from said cells in said serum-free medium;
- (c) separating said cultured cells from the associated serum-free medium, thereby producing a cell-free, serum-free medium;
- (d) reducing the volume of said cell-free, serum-free medium without substantial loss of said neoantigen therefrom, thereby producing a neoantigen-rich medium; and
- (e) inhibiting protease enzymes in said neoantigen-rich medium.

5. The method of claim 1 or 3 wherein said concentration step (d) includes continuous-flow molecular filtration with a filter having an exclusion size of about 10,000 daltons to produce a neoantigen-containing retentate followed by freezing and lyophilization of said retentate.

12. The neoantigen concentrate produced by the method of claim 5.

4,434,158

CYSTEINE DELIVERY SYSTEM

Alton Meister, New York, and Joanne M. Williamson, Roosevelt Island, both of N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.

Division of Ser. No. 233,564, Feb. 11, 1981, Pat. No. 4,335,210. This application Apr. 15, 1982, Ser. No. 368,903

Int. Cl.³ A61K 37/54, 31/195, 31/425

U.S. Cl. 424-94

1 Claim

1. Method for increasing the glutathione level of an in vivo system which comprises administering to the system L-2-oxothiazolidine-4-carboxylate and subjecting it to the action of 5-oxo-L-proline in the presence of adenosine triphosphate to produce S-carboxy cysteine, decarboxylating S-carboxy cysteine to produce cysteine and metabolizing the latter to glutathione.

4,434,159

PHARMACEUTICAL COMPOSITION FOR INTRARECTAL ADMINISTRATION, AND SUPPOSITORY PREPARED THEREFROM

Kunio Sekine; Yoshiki Suzuki, both of Hino; Gentaro Yamashita, Tachikawa, and Hisao Yamaguchi, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,462

Claims priority, application Japan, Mar. 31, 1980, 55-40368; Mar. 31, 1980, 55-40369

Int. Cl.³ A61K 37/26, 31/725, 31/70, 37/00

U.S. Cl. 424-178

15 Claims

1. A pharmaceutical composition for intrarectal administration comprising a pharmaceutically effective amount of an active ingredient selected from the group consisting of peptide hormones and polysaccharides, which when administered alone to the rectum, is substantially unabsorbable into the

living body through the mucous membrane of the rectum, said composition further containing an absorption aid acting within the rectum in such a way as to induce absorption of said active ingredient through the rectal mucous membrane, said absorption aid being characterized by

- (1) being substantially nontoxic to living organisms, and
- (2) having a molecular weight of from about 100 to about 300, and being selected from the group consisting of ascorbic acid or a pharmaceutically acceptable salt thereof, salicylic acid, an ester thereof at its acidic hydroxyl group, or a pharmaceutically acceptable salt thereof at the carboxyl group and pyroglutamic acid, or a pharmaceutically acceptable salt thereof at the carboxyl group.

4,434,160

NUTRIENT SOLUTION FOR COMPLETE PARENTERAL FEEDING AND FOR INCREASED ENERGY PRODUCTION

Stojan Jeretin, Ljubljana, Yugoslavia; Karl Groke, Eggersdorf, and Horst E. Musil, Graz, both of Austria, assignors to Leopold & Co. Chem. Pharm. Fabrik Gesellschaft m.b.H., Graz, Austria

Filed Jul. 7, 1981, Ser. No. 281,050

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026368

Int. Cl.³ A61K 31/70, 31/185, 31/205

U.S. Cl. 424—180

7 Claims

1. An aqueous fat-free composition for the parenteral feeding and for the treatment of patients in the post-aggression phase in order to ensure an adequate supply of amino-acids consisting essentially of the following mixture:

- (a) glucose or glucose substitutes selected from the group consisting of fructose and sugar alcohols or a mixture of glucose and said glucose substitutes in at least an amount exceeding the normal body's demand and up to 50 parts by weight;
- (b) 0.8–1.2 parts by weight of L-carnitine as an inner salt or as a pharmaceutically tolerated acid addition salt; and
- (c) 25 parts by weight of an amino acid mixture composed of the following amino acids:
 - 0.8–1.05 parts by weight of L-isoleucine
 - 1.4–1.5 parts by weight of L-leucine
 - 1.4–1.65 parts by weight of L-lysine
 - 0.5–1.2 parts by weight of L-methionine
 - 1.25–1.4 parts by weight of L-phenylalanine
 - 0.7–1.05 parts by weight of L-threonine
 - 0.35–0.375 parts by weight of L-tryptophane
 - 1.0–1.5 parts by weight of L-valine
 - 2.0–2.8 parts by weight of L-arginine
 - 1.0–1.5 parts by weight of L-histidine
 - 3.5–4.0 parts by weight of L-alanine
 - 0.35–0.55 parts by weight of L-aspartic acid
 - 0.1 part by weight of L-cysteine
 - 2.0–2.25 parts by weight of L-glutamic acid
 - 1.5–2.3 parts by weight of glycine
 - 0–0.625 part by weight of ornithine
 - 2.2–2.8 parts by weight of L-proline
 - 1.1–1.4 parts by weight of L-serine
 - 0–1.5 parts by weight of L-tyrosine,
 the amino acids L-tyrosine and L-cysteine being present in the solution in the form of their acyl derivatives.

4,434,161

SULFUR AND SILICON-CONTAINING FATTY ACID AMIDES

Sandor Barcza, Mt. Lakes, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

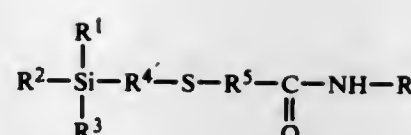
Filed Sep. 29, 1982, Ser. No. 427,606

Int. Cl.³ C07F 7/10

U.S. Cl. 424—184

15 Claims

1. A compound of the formula:



wherein each of

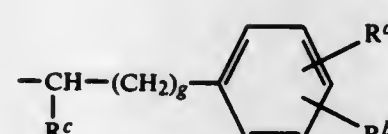
R^1 , R^2 and R^3 is, independently, alkyl having from 1 to 22 carbon atoms, alkenyl having from 2 to 22 carbon atoms, cycloalkyl having from 3 to 20 ring carbon atoms, aryl having from 6 to 14 aromatic ring carbon atoms, or aralkyl having from 6 to 14 aromatic ring carbon atoms and from 1 to 4 carbon atoms in the alkylene portion thereof; or R^2 and R^3 may be joined to form together with the silicon atom a saturated sila-hydrocarbonyl ring having from 4 to 20 ring members,

provided that the total number of carbon atoms in $R^1 + R^2 + R^3$, other than aromatic ring carbon atoms or substituents thereon, is not more than 35,

each of R^4 and R^5 is, independently, an alkylene chain having from 1 to 6 carbon atoms, or a cycloalkylene radical having from 3 to 6 ring carbon atoms;

said cycloalkyl and cycloalkylene radicals may bear from 1 to 4 lower alkyl groups having from 1 to 6 carbon atoms; said aryl radicals, or portions thereof, may bear 1 or 2 halo substituents, each having an atomic weight of from about 19 to 80, or from 1 to 3 lower alkyl or alkoxy radicals each having from 1 to 6 carbon atoms; and

R is of type (a) an aralkyl-type radical of the structure



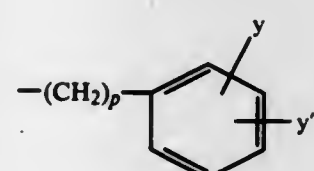
wherein

g is 0, 1 or 2;

R^a is a hydrogen atom, halo having an atomic weight of from about 19 to 127, alkoxy having from 1 to 4 carbon atoms, or alkyl having from 1 to 4 carbon atoms, or trifluoromethyl;

R^b is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and

R^c is subtype (i) a hydrogen atom; subtype (ii) a radical of the structure

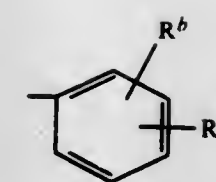


in which

p is 0, 1 or 2, and

y is a hydrogen atom, halo having an atomic weight of from about 19 to 127, alkoxy having from 1 to 4 carbon atoms, or alkyl having from 1 to 4 carbon atoms; and

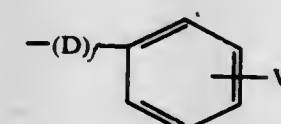
y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or subtype (iii) alkyl having from 1 to 8 carbon atoms; or R is of type (b) a phenyl-type radical of the structure



in which

R^b is as defined above, and

R^a is a hydrogen atom, halo having an atomic weight of from about 19 to 127, alkoxy having from 1 to 4 carbon atoms, or alkyl having from 1 to 4 carbon atoms; or R^a is a radical of the structure R^c :



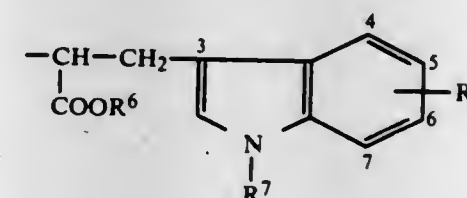
in which

D is $-\text{CH}_2-$ or $-\text{O}-$;

f is 0 or 1; and

W is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; or

R is of type (c) an indolyl radical of the structure:

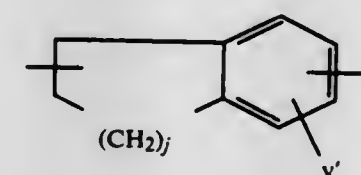


wherein

R^b is as defined above;

R^6 is alkyl having from 1 to 8 carbon atoms or benzyl; and R^7 is a hydrogen atom, alkyl having from 1 to 8 carbon atoms or benzyl; or

R is (d) a benzocycloalkyl nucleus of the structure:



wherein

y and y' are as defined above; and

j is a whole integer of from 1 to 4.

4,434,162

PHOSPHONIC ACID ESTER, PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME AND METHOD OF USING THE SAME

Goro Tsukamoto, Toyonaka; Toshihiko Kohno, Sakai; Koichiro Yoshino, Osaka; Tominori Morita, Nishinomiya; Keizo Ito, Osaka, and Takashi Nose, Nara, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

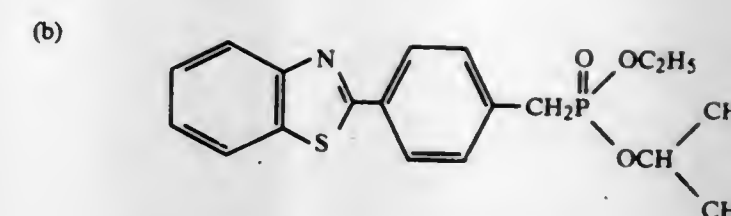
Continuation-in-part of Ser. No. 235,124, Feb. 17, 1981, abandoned. This application Apr. 7, 1982, Ser. No. 366,415

Int. Cl.³ C07D 277/66; A61K 31/425

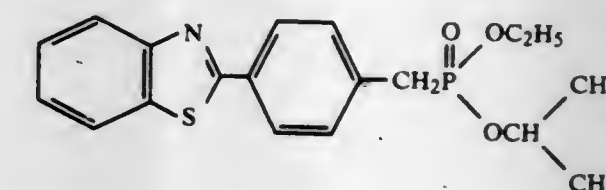
U.S. Cl. 424—200

3 Claims

1. 4-(Benzothiazol-2-yl)benzylphosphonic acid ethyl isopropyl ester having the following formula:



2. A coronary vasodilating composition comprising a therapeutically effective amount of 4-(benzothiazol-2-yl)benzylphosphonic acid ethyl isopropyl ester having the following formula:



and a pharmaceutically acceptable carrier therefor.

4,434,163

WATER-SOLUBLE BENZOTHAZINE DIOXIDE SALTS

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 268,980, Jun. 1, 1981, abandoned. This application Apr. 13, 1982, Ser. No. 367,066

Int. Cl.³ C07D 401/12; A61K 31/54

U.S. Cl. 424—246

5 Claims

1. A water-soluble base salt of an acidic, anti-inflammatory 1,2-benzothiazine, said salt being a member selected from the group consisting of the lysine and arginine salts of N-(2-pyridyl)-2-methyl-4-hydroxy-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide.

5. A method for treating arthritic conditions in a warm-blooded animal, which comprises administering to said animal an effective anti-arthritic amount of a compound as claimed in claim 1.

4,434,164

CRYSTALLINE BENZOTHAZINE DIOXIDE SALTS

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 268,980, Jun. 1, 1981, abandoned. This application Apr. 13, 1982, Ser. No. 367,067

Int. Cl.³ C07D 401/12; A61K 31/54

U.S. Cl. 424—246

8 Claims

1. A water-soluble base salt of an acidic, anti-inflammatory 1,2-benzothiazine, said salt being a member selected from the group consisting of the ethylenediamine, monoethanolamine and diethanolamine salts of N-(2-pyridyl)-2-methyl-4-hydroxy-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide.

7. A method for treating arthritic conditions in a warm-blooded animal, which comprises administering to said animal an effective anti-arthritic amount of a compound as claimed in claim 1.

4,434,165

FUNGICIDAL COMPOSITIONS

Klaus Bohnen, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 22, 1981, Ser. No. 304,484

Claims priority, application Switzerland, Sep. 30, 1980, 7311/80; Jul. 14, 1981, 4611/81

Int. Cl.³ A01N 43/84

U.S. Cl. 424—248.4

3 Claims

1. A fungicidal composition comprising an amount, which is effective as a fungicide, of a combination of compound I cis-4-[3-(p-tert-butyl-phenyl)-2-methylpropyl]-2,6-dimethyl mor-

pholine and compound II 1-tert-butyl-2-(1,2,4-triazol-1-yl)-2-(o,p-dichlorobenzyl)-ethanol, wherein compounds I and II are present in the weight ratio of 2-10:1.

4,434,166

ANIMAL COCCIDIOSIS PREVENTIVE

Ichiro Tanaka, Kodaira; Hiroshi Arato, Kagoshima, and Takaaki Wakabayashi, Kamakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 459,914

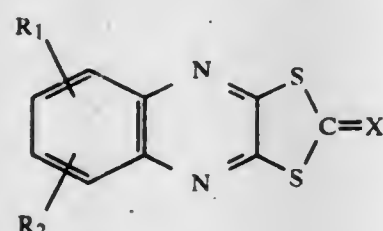
Claims priority, application Japan, Jan. 28, 1982, 57-11020; Nov. 16, 1982, 57-199687

Int. Cl.³ A61K 31/495

U.S. Cl. 424—250

17 Claims

1. A method for treating an animal suffering from animal coccidiosis which comprises administering to said animal a therapeutically effective amount of a composition comprising a quinoxaline compound of the formula:



wherein R₁ and R₂ are the same or different and represent hydrogen, lower alkyl, halogen or lower alkoxy, and X represents oxygen or sulfur.

4,434,167

PYRIMIDYL THIOUREAS USEFUL FOR THE TREATMENT OF HYPERTENSION AND HYPERLIPIDEMIA

Wolfgang Stenzel, Reinbek, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

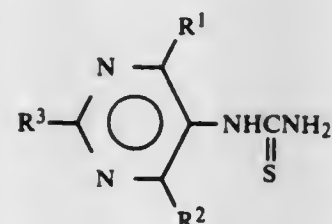
Division of Ser. No. 92,134, Nov. 7, 1979. This application Apr. 24, 1981, Ser. No. 257,444

Int. Cl.³ A61K 31/505

U.S. Cl. 424—251

11 Claims

1. A composition for the treatment of hypertension and/or hyperlipidemia comprising an amount of a compound of the formula



wherein R¹, R², and R³ are individually hydrogen, halogen, linear or branched alkoxy, or linear or branched alkyl, said alkoxy and said alkyl having 1 to 8 carbon atoms each, or pharmaceutically acceptable salts thereof; which is sufficient, when administered to a warm blooded animal, to provide a hypotensive and/or hypolipid effect in said animal, and a pharmaceutically acceptable carrier.

4,434,168

NARCOTIC ANTAGONISTS IN THE THERAPY OF SHOCK

John W. Holaday, Rockville, Md., and Alan I. Faden, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 3,699, Jan. 16, 1979, Pat. No. 4,267,182. This application Mar. 27, 1981, Ser. No. 248,622

Int. Cl.³ A01N 43/42

U.S. Cl. 424—260

18 Claims

1. A method of treating an animal which is suffering from a form of shock selected from the group consisting of neurogenic, spinal and traumatic which comprises administering to said animal a therapeutically effective amount of a narcotic antagonist drug selected from the group consisting of naloxone, naltrexone, nalmorphine, diprenorphine, levallorphan, pentazocine, metazocine, cyclazocine, etazocine, and the pharmaceutically-acceptable acid addition salts thereof.

4,434,169

PHARMACEUTICAL COMPOSITIONS AND METHODS
Bruno P. H. Poschel, and Donald E. Butler, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 3, 1983, Ser. No. 455,396

Int. Cl.³ A61K 31/44

U.S. Cl. 424—263

5 Claims

1. A method for treating memory loss in mammals suffering therefrom which comprises orally administering to said mammals 0.0002 mg to 0.03 mg/kg mammalian body weight of 3-phenoxyphenylpyridine or a pharmaceutically acceptable acid addition salt thereof.

4,434,170

NOR-TROPANE DERIVATIVES, AND THEIR APPLICATION IN THERAPEUTICS

Philippe Dostert, Paris; Thierry Imbert, Noisy, and Bernard Bucher, Marnes la Coquette, all of France, assignors to Delalande S.A., Courbevoie, France

Filed Nov. 4, 1981, Ser. No. 318,244

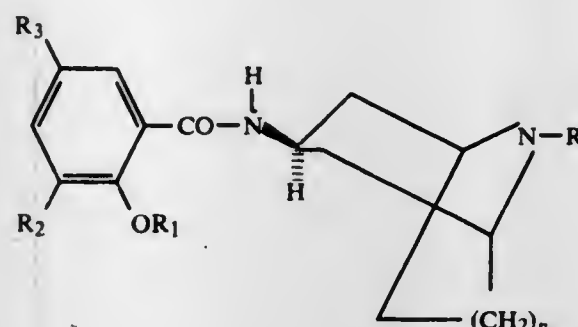
Claims priority, application France, Nov. 7, 1980, 80 23785

Int. Cl.³ A61K 31/46; C07D 451/04

U.S. Cl. 424—265

16 Claims

1. A compound having the formula



wherein n is 1; R is 3-furylmethyl, benzyl or benzyl in which the ring is substituted with one or two halogens, methyl or cyano; R₁ is methyl or ethyl; R₂ is methoxy or ethoxy; R₃ is hydrogen, bromine, methoxy, nitro, acetyl, methylmercapto or ethylmercapto, with the proviso that when the set (R₃, n, R) is (H, 1, benzyl) the set (R₁, R₂) is not (CH₃, OCH₃), and pharmacologically acceptable acid addition salts thereof.

16. An anti-emetic or anti-constipation pharmaceutical composition for treating the digestive system comprising a therapeutically effective amount of a compound as claimed in claim 1, in combination with a pharmaceutically acceptable carrier.

4,434,171

DIBENZAZEPINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND PHARMACEUTICAL METHODS USING THEM

Werner Müller, Glümligen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Nov. 23, 1981, Ser. No. 323,759

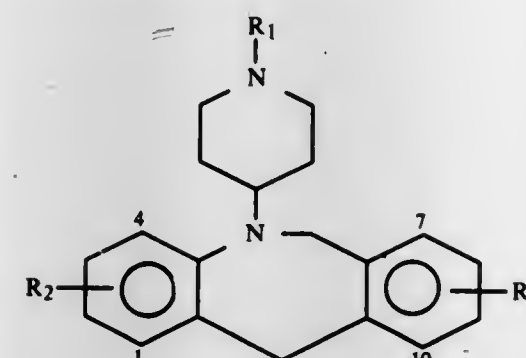
Claims priority, application Switzerland, Nov. 28, 1980, 8829/80

Int. Cl.³ A61K 31/445; C07D 401/04

U.S. Cl. 424—267

8 Claims

1. A compound of formula I



wherein

R₁ is hydrogen, C₁₋₄-alkyl, C₂₋₅-alkyl substituted by cyano, C₇₋₉-phenylalkyl, C₃₋₆-cycloalkyl or C₄₋₇-cycloalkylalkyl, C₂₋₅-hydroxyalkyl or a physiologically acceptable hydrolyzable ester thereof, and

R₂ and R₃ are, independently of each other, hydrogen, halogen, trifluoromethyl, C₁₋₄-alkyl, C₁₋₄-alkoxy or C₁₋₄-alkylthio,

in free base form or in a pharmaceutically acceptable acid addition salt form.

7. A method of inducing or promoting or prolonging sleep or treating psychotic disturbances or depressions, which comprises administering a therapeutically effective amount of a compound of claim 1 in free base form or in a pharmaceutically acceptable acid addition salt form to a subject in need of such treatment.

8. A pharmaceutical composition useful in inducing, promoting or prolonging sleep or in treating psychotic disturbances or depressions comprising a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of claim 1 in free base form or in a pharmaceutically acceptable acid addition salt form.

4,434,172

2-SUBSTITUTED-PHENYL-5-ALKYLTHIAZOLIDINE-4-ONE

Takao Kawasaki, Sayama; Yoshiaki Osaka, Nagareyama; Katsumi Komatsu, Matsudo; Yukiharu Yamaguchi, Tokyo, and Saichi Ono, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,834

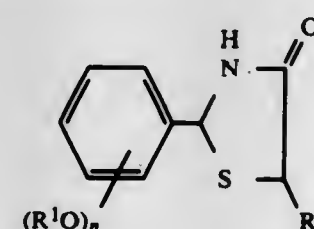
Claims priority, application Japan, Oct. 9, 1980, 55-141239

Int. Cl.³ C07D 277/14; A61K 31/425

U.S. Cl. 424—270

4 Claims

1. A compound of 2-substituted-phenyl-5-alkylthiazolidine-4-one having the formula (I)



wherein R¹ and R² represent respectively a lower alkyl group of 1 to 3 carbon atoms and n denotes an integer of 1 to 3.

4,434,173

BIS-ESTERS OF

4,5-DI(HYDROXYMETHYL)-2-OXO-1,3-DIOXOLE AS ANTIBACTERIAL AGENTS

Willard M. Welch, Jr., Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

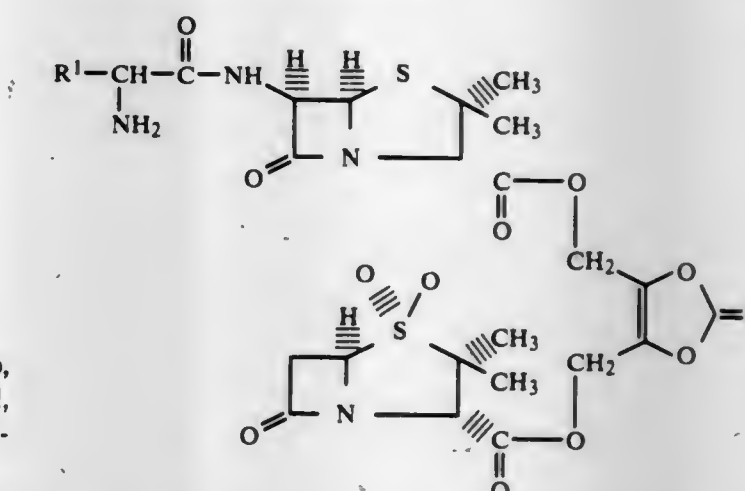
Continuation-in-part of Ser. No. 410,762, Aug. 23, 1982, abandoned. This application Nov. 15, 1982, Ser. No. 441,980

Int. Cl.³ A61K 31/43; C07D 499/32, 317/40, 499/00

U.S. Cl. 424—271

15 Claims

1. A compound of the formula



and the pharmaceutically-acceptable acid-addition salts thereof;

wherein R¹ is selected from the group consisting of phenyl and 4-hydroxyphenyl.

5. A pharmaceutical composition suitable for treating a bacterial infection in a mammalian subject which comprises an antibacterially-effective amount of a compound according to claim 1 and a pharmaceutically-acceptable carrier, in a weight ratio in the range from 1:4 to 4:1.

4,434,174

TREATING CARDIOVASCULAR DISEASES WITH N-(3-PHENOXY-2-HYDROXYPROPYL)BENZIMIDAZOLE-1-ALKANAMINES

Julius Diamond, Mountain Lakes, and Ronald A. Wohl, Morris Plains, both of N.J., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

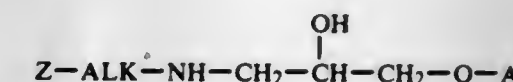
Continuation-in-part of Ser. No. 261,331, May 7, 1981, Pat. No. 4,363,808, which is a continuation-in-part of Ser. No. 120,416, Feb. 11, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,798

Int. Cl.³ A61K 31/415; C07D 401/12, 235/06

U.S. Cl. 424—273 B

19 Claims

1. A compound of the formula:



wherein Z is selected from the group consisting of 1-benzimidazolyl, methyl-1-benzimidazolyl; ALK is alkylene containing 2 to 6 carbon atoms; and A is selected from the group consisting of naphthyl, indenyl, tetrahydronaphthyl, 1-oxo-1,2,3,4-tetrahydro-5-naphthyl, 2,3-dihydroxy-1,2,3,4-tetrahydro-5-naphthyl, indolyl, 2-methylindolyl, 3,4-dihydro-2(1H)-quinolin-5-yl, 5-methylcoumarin-8-yl, cyanopyridyl, carboxypyridyl, carbamoylpyridyl, alkoxycarbonylpyridyl, thiazolyl and 4-morpholino-1,2,5-thiadiazol-3-yl, or a pharmaceutically acceptable acid addition salt thereof.

14. The compound N-[3-(2-chlorophenoxy)-2-hydroxy-

propyl]-benzimidazole-1-ethanamine or a pharmaceutically acceptable acid addition salt thereof.

16. The method of treating a cardiovascular disease state in a mammalian host which comprises administering to said host a non-toxic effective amount of a compound of claims 1 or 14 to alleviate said disease state.

4,434,175

NONSTEROIDAL COMPOUNDS AS

ANTI-INFLAMMATORY AND ANALGESIC AGENTS

James B. Doherty, New Milford; Michael N. Chang, Westfield, and Conrad P. Dorn, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

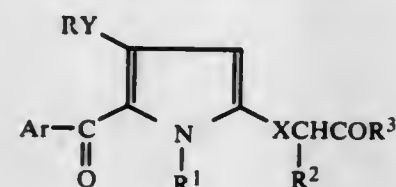
Continuation-in-part of Ser. No. 291,688, Aug. 10, 1981, abandoned. This application May 3, 1982, Ser. No. 373,692

Int. Cl.³ A61K 31/405; C07D 207/36

U.S. Cl. 424—274

12 Claims

1. A compound of the structural formula:



or a pharmaceutically acceptable salt, ester or amide thereof wherein

Ar is

- (a) phenyl or loweralkyl-substituted phenyl;
- (b) halo-loweralkyl-substituted phenyl;
- (c) hydroxy- or loweralkoxy-substituted phenyl;
- (d) halo-substituted phenyl;
- (e) loweralkylthio-substituted phenyl;
- (f) loweralkylsulfinyl-substituted phenyl; or
- (g) loweralkylsulfonyl-substituted phenyl;

R is

- (a) hydrogen;
- (b) loweralkyl;
- (c) lowercycloalkyl;
- (d) lower(cycloalkyl-alkyl);
- (e) loweralkenyl;
- (f) halo-loweralkyl; or
- (g) phenyl- or substituted phenyl-loweralkyl; groups (a)-(g) above being unsubstituted or substituted by lower alkyl, lower alkoxy, halo, cyano, carboxy, sulfoamino, carbamoyl, sulfonyl, sulfinyl, azido, amino, substituted amino, haloloweralkyl, carboxyloweralkyl, carbamoyl-loweralkyl, N-substituted carbamoylloweralkyl or a combination thereof;

R¹ is hydrogen or loweralkyl;R² is hydrogen, loweralkyl or halo; andR³ is

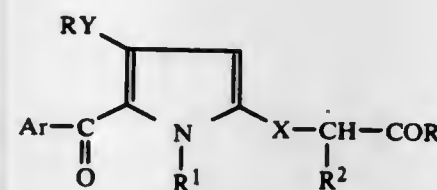
- (a) hydroxy;
- (b) loweralkoxy;
- (c) amino;
- (d) loweralkylamino;
- (e) di(loweralkyl)amino;
- (f) morpholinyl;
- (g) bis(hydroxyloweralkyl)amino;
- (h) loweralkylcyclohexylamino;
- (i) glucosamino;
- (j) lower(alkanoyloxyalkoxy);
- (k) aroyloxyloweralkoxy;
- (l) lower(alkoxycarbonyloxyalkoxy);
- (m) aroyloxycarbonyloxyloweralkoxy;
- (n) tri(loweralkylamino)loweralkoxy;
- (o) lower(alkanoylaminoalkoxy);
- (p) hydroxyloweralkoxy;
- (q) loweralkoxyalkoxy;
- (r) di(loweralkylamino)loweralkoxy;
- (s) N-pyrrolidinyloweralkoxy;
- (t) N-piperidinyloweralkoxy;

(u) N-morpholinyloweralkoxy; or

(v) 4-methyl-1-piperazinyloweralkoxy.

X is $-(CH_2)_0-10-$, $-COCH_2-$ or $-CH_2CO-$; and Y is oxygen, sulfur, sulfinyl, or sulfonyl.

9. A method of treatment of inflammatory conditions, fever and pain which comprises the administration to a mammalian species in need of such treatment an effective amount of a compound of structural formula (I)



or a pharmaceutically acceptable salt, ester or amide thereof wherein

Ar is

- (a) phenyl or loweralkyl-substituted phenyl;
- (b) halo-loweralkyl-substituted phenyl;
- (c) hydroxy- or loweralkoxy-substituted phenyl;
- (d) halo-substituted phenyl;
- (e) loweralkylthio-substituted phenyl;
- (f) loweralkylsulfinyl-substituted phenyl;
- (g) loweralkylsulfonyl-substituted phenyl;

R is

- (a) hydrogen;
- (b) loweralkyl;
- (c) lowercycloalkyl;
- (d) lower(cycloalkyl-alkyl);
- (e) loweralkenyl;
- (f) halo-loweralkyl; or
- (g) phenyl- or substituted phenyl-loweralkyl; groups (a)-(g) above being unsubstituted or substituted by lower alkyl, lower alkoxy, halo, cyano, carboxy, sulfoamino, carbamoyl, sulfonyl, sulfinyl, azido, amino, substituted amino, haloloweralkyl, carboxyloweralkyl, carbamoyl-loweralkyl, N-substituted carbamoylloweralkyl or a combination thereof;

R¹ is hydrogen or loweralkyl;R² is hydrogen, loweralkyl or halo; andR³ is

- (a) hydroxy;
- (b) loweralkoxy;
- (c) amino;
- (d) loweralkylamino;
- (e) di(loweralkyl)amino;
- (f) morpholinyl;
- (g) bis(hydroxyloweralkyl)amino;
- (h) loweralkylcyclohexylamino;
- (i) glucosamino;
- (j) lower(alkanoyloxyalkoxy);
- (k) aroyloxyloweralkoxy;
- (l) lower(alkoxycarbonyloxyalkoxy);
- (m) aroyloxycarbonyloxyloweralkoxy;
- (n) tri(loweralkylamino)loweralkoxy; or
- (o) lower(alkanoylaminoalkoxy);
- (p) hydroxyloweralkoxy;
- (q) loweralkoxyalkoxy;
- (r) di(loweralkylamino)loweralkoxy;
- (s) N-pyrrolidinyloweralkoxy;
- (t) N-piperidinyloweralkoxy;
- (u) N-morpholinyloweralkoxy; or
- (v) 4-methyl-1-piperazinyloweralkoxy.

X is $-(CH_2)_0-10-$, $-COCH_2-$ or $-CH_2CO-$; and Y is oxygen, sulfur, sulfinyl, or sulfonyl.

4,434,176

USE OF

4-(2-BENZOYLOXY-3-TERT-BUTYLAMINOPROPOXY)-2-METHYL-INDOLE FOR INDUCING BETA-ADRENOCEPTOR BLOCKADE

Franz Troxler, Bottmingen, and Fritz Seemann, Ettingen, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland Division of Ser. No. 138,901, Apr. 10, 1980, Pat. No. 4,340,541.

This application May 6, 1982, Ser. No. 375,369

Claims priority, application Switzerland, Aug. 15, 1975, 10714/75

Int. Cl.³ A61K 31/40

U.S. Cl. 424—274

5 Claims

1. A pharmaceutical composition comprising 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole or a pharmaceutically acceptable acid addition salt thereof, useful as a β -adrenoceptor blocker, for treating Angina pectoris, tachycardia or arrhythmia, in association with a pharmaceutically acceptable diluent or carrier.

2. A method of inducing β -adrenoceptor blockage in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole or a pharmaceutically acceptable acid addition salt thereof.

3. A method of treating Angina pectoris in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole or a pharmaceutically acceptable acid addition salt thereof.

4. A method of treating arrhythmia in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole or a pharmaceutically acceptable acid addition salt thereof.

5. A method for treating tachycardia in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole or a pharmaceutically acceptable acid addition salt thereof.

4,434,177

 α -METHYLDOPA-L-ASCORBIC ACID COMPOSITIONS Stanley Vickers, Perkasi, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 139,913, Apr. 14, 1980, Pat. No. 4,321,264.

This application Oct. 28, 1981, Ser. No. 315,696

Int. Cl.³ A61K 31/375

U.S. Cl. 424—280

7 Claims

1. A pharmaceutical composition for treating hypertension wherein the antihypertensively effective component consists essentially of (A) L- α -methyl-3,4-dihydroxyphenylalanine and (B) L-ascorbic acid wherein the weight ratio of (A):(B) is at least about 3:1.

6. A method of treating hypertension in humans by administering an anti-hypertensive effective amount of a claim 1 composition.

4,434,178

ANTIPERSPIRANTS

Hans U. Hostettler, Ariesheim, and Horst Pauling, Bottmingen, both of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Sep. 29, 1981, Ser. No. 306,696

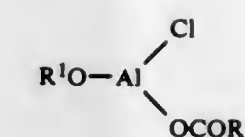
Claims priority, application Switzerland, Oct. 3, 1980, 7403/80

Int. Cl.³ A01N 55/02; A61K 31/28

U.S. Cl. 424—287

14 Claims

1. A compound of the formula

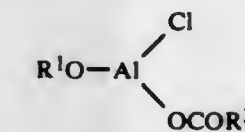


wherein

R¹ is C₁₋₁₈-alkyl, C₂₋₁₈-alkoxyalkyl, phenoxy-C₁₋₆-alkyl, phenyl or phenyl substituted with C₂₋₆-alkoxycarbonyl and

R² is C₁₋₁₅-alkyl; phenyl or phenyl substituted with halogen, C₁₋₄-alkyl, C₁₋₄-alkoxy, C₂₋₆-alkanoyloxy and/or C₂₋₆-alkoxycarbonyl; phenyl-C₁₋₄-alkyl; or pyridyl.

9. An antiperspirant composition comprising an effective amount of at least one compound of the formula



wherein

R¹ is C₁₋₁₈-alkyl, C₂₋₁₈-alkoxyalkyl, phenoxy-C₁₋₆-alkyl, phenyl or phenyl substituted with C₂₋₆-alkoxycarbonyl and

R² is C₁₋₁₅-alkyl; phenyl or phenyl substituted with halogen, C₁₋₄-alkyl, C₁₋₄-alkoxy, C₂₋₆-alkanoyloxy and/or C₂₋₆-alkoxycarbonyl; phenyl-C₁₋₄-alkyl; or pyridyl, as well as carrier material customary in cosmetics or other cosmetically-effective adjuvant.

14. A method for inhibiting transpiration, comprising applying an effective amount of antiperspirant composition according to claim 9, 10, 11, 12 or 13 to the area to be treated.

4,434,179

WOUND-HEALING PROMOTERS

Shinsaku Kobayashi, and Akira Ogiso, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,887

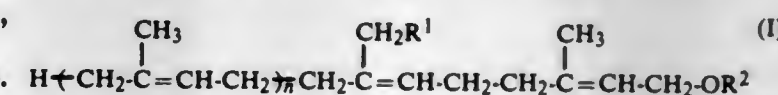
Claims priority, application Japan, Mar. 17, 1981, 56-38327

Int. Cl.³ A61K 31/235, 31/075, 31/045

U.S. Cl. 424—308

37 Claims

1. A method for the external treatment of wounds in humans and other animals, which method comprises applying topically to the site of the wound a compound having the formula (I):



wherein:

R¹ represents a hydroxy group, a C₁₋₈ alkoxy group, a straight or branched C₂₋₁₈ aliphatic acyloxy group, a benzoyloxy group or a cinnamoyloxy group;

R² represents a hydrogen atom, a C₁₋₈ alkyl group, a C₂₋₈ aliphatic acyl group, a benzoyl group or a cinnamoyl group; and

n represents an integer from 1 to 3

in an amount effective to promote healing of the wound.

4,434,180

INSECT CONTROL METHODS WITH ABSCISIC ACID

Saralee N. Visscher, 516 S. 6th Ave., Bozeman, Mont. 59715

Continuation of Ser. No. 133,631, Mar. 27, 1980, filed as

PCT US79/00546, Jul. 27, 1979, published as WO80/00295,

Mar. 6, 1980, §102(e) date Mar. 27, 1980,

abandoned, which is a continuation-in-part of Ser. No.

929,116, Jul. 28, 1978, Pat. No. 4,209,530.

This application Apr. 2, 1982, Ser. No. 364,647

Int. Cl.³ A01N 37/00

U.S. Cl. 424—317

2 Claims

1. A method for the control of houseflies characterized by the steps of applying a reproduction-inhibiting amount of abscisic acid in a concentration of about 6 mg per liter of an

aqueous carrier, to food on which said houseflies feed, thereby reducing the ability of the houseflies to reproduce and thus control proliferation of the houseflies.

2. A method for the control of fruit flies, characterized by the step of applying a reproduction-inhibiting amount of abscisic acid contained in an aqueous carrier in a concentration ranging from at least about 6 mg per liter to about 600 mg per liter directly to eggs of the fruit fly, thereby reducing the ability of the fruit fly to reproduce and thus control proliferation of the fruit flies.

4,434,181 TEAT DIP

George B. Marks, Sr., Hudson, Wis., and D. Michael Fearing, St. Paul, Minn., assignors to Fearing Manufacturing Co., Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 327,795, Dec. 7, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,741
Int. Cl.³ A61K 31/155, 47/00

U.S. Cl. 424—326 8 Claims

1. A liquid teat dip composition having a freezing point not less than about -5° C. and capable, upon application to the teats of an animal, of quickly forming a soft, flexible coating that is substantially dry to the touch and that can readily be washed from the teats by water washing, comprising an effective quantity of a chlorhexidine antiseptic, a water-soluble film-former derived from cellulose in an amount ranging from about 10% to about 20% by weight of the composition, and a liquid vehicle including a volatile alcohol in an amount not less than about 80% by weight of the composition.

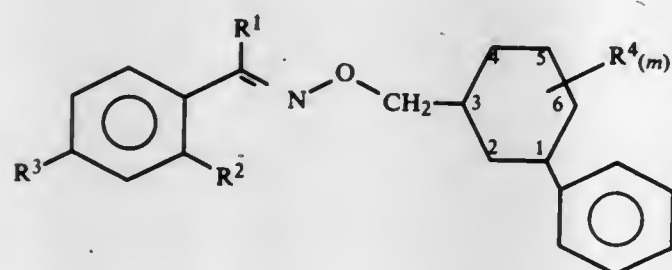
4,434,182 INSECTICIDAL SUBSTITUTED-BIPHENYLMETHYL OXIME ETHERS

Philip A. Cruickshank, Princeton, and Thomas G. Cullen, Plainsboro, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 1, 1982, Ser. No. 438,108
Int. Cl.³ A01N 33/24; C07C 131/00

U.S. Cl. 424—327 9 Claims

1. The E isomer of a compound of the formula



wherein R¹ is isopropyl, cyclopropyl, cyclopropylmethyl, or cyclobutyl; R² is hydrogen, halogen, or alkyl of 1 to 4 carbon atoms; R³ is hydrogen, halogen, straight or branched chain alkyl of 1 to 4 carbon atoms, haloalkyl of 1 or 2 carbon atoms, or the group -OCF₂Z¹Z² wherein Z¹ and Z² are independently hydrogen or fluorine; and R⁴ is alkyl of 1 to 4 carbon atoms and m is 1 or 2, or R⁴ is halogen and m is 2-4; with the proviso that when R¹ is isopropyl, then m is 1 and R⁴ is alkyl and is positioned at the C-2 carbon atom.

7. An insecticidal/acaricidal composition comprising an insecticidal/acaricidal effective amount of the compound of any one of claims 1 to 6 in admixture with a compatible extender or carrier.

9. A method for controlling insects/acarids which comprises applying to the insect/acarid or to a locus where control is desired an insecticidal/acaricidal effective amount of the composition of claim 7.

4,434,183 USE OF HALOPROGIN TO TREAT HERPES LABIALIS

Isaac R. McGraw, Newtown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 27, 1982, Ser. No. 424,120

Int. Cl.³ A61K 31/085, 31/79

U.S. Cl. 424—340 2 Claims
1. A method of treating herpes I infections of the labial area in mammals comprising topically administering to the mammal in need of said treatment an effective amount for treating the herpes I virus of a composition of 3-iodo-2-propynyl 2,4,5-trichlorophenyl ether and at least one pharmaceutically acceptable carrier, wherein the compound is from about 0.01 to about 95% by weight of the composition.

4,434,184 YOGURT SPREAD RESEMBLING CREAM CHEESE

N. Michael Kharrazi, 55 S. La Cumbre Rd., Santa Barbara, Calif. 93105

Filed Dec. 13, 1982, Ser. No. 449,431

Int. Cl.³ A23C 9/12, 19/076, 20/00

U.S. Cl. 426—40 6 Claims

1. The method of making a yogurt spread having the consistency of cream cheese and about 3-10% of the fat content of conventional cream cheese comprising the steps of: utilizing a quantity of liquid milk; heating the milk to a temperature of approximately one hundred and eighty degrees Fahrenheit; cooling the milk to approximately one hundred and seven degrees Fahrenheit; evenly mixing a quantity of yogurt starter culture to the cooled milk and providing sufficient time for the resulting mixture to form yogurt; evenly mixing with the yogurt a brine solution containing about 3% to about 12% of salt in an amount of about one-fourth to about equal by volume of the yogurt; and centrifuging the resulting mixture of yogurt and brine to remove the bulk of whey therefrom to obtain said cream cheese consistency.

4,434,185 METHOD FOR PREVENTING DECAY OF FRUIT

Paul M. Nelson, Riverside, Calif., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 166,944, Jul. 8, 1980, abandoned, and Ser. No. 166,945, Jul. 8, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,080

Int. Cl.³ A23B 7/00, 7/10, 7/16

U.S. Cl. 426—308 3 Claims

1. A method of protecting citrus against strains of penicillium digitatum and penicillium italicum which have become resistant to the antifungal agents sec-butylamine, sodium o-phenylphenol, 2-substituted benzimidazoles and sorbates, without chemically burning the fruit, comprising subjecting the fruit to the following sequential treatment:

- (1) applying to the fruit a coating of a sorbate selected from the class consisting of sorbic acid and potassium sorbate wherein said sorbate is about 2% aqueous solution of potassium sorbate or an equivalent amount of sorbic acid; and
- (2) applying to the sorbate coated fruit a wax containing as active components an additional 2% amount of the sorbate aforesaid and an antifungal agent selected from the class consisting of 1-butyl-carbamoyl-2-benzimidazole, carbamate(benomyl) and 2-(4-thiazolyl)benzimidazole (TBZ).

4,434,186 STABLE AERATED FROZEN FOOD PRODUCT

Nitin Desia, St. Paul; Rory A. M. Delaney, Minnetonka; Peter Brouwer, Plymouth, and Victor T. Huang, Brooklyn Center, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 369,394, Apr. 19, 1982, abandoned. This application Jan. 4, 1983, Ser. No. 455,617
Int. Cl.³ A23G 9/02

U.S. Cl. 426—565 19 Claims

1. In a process for preparing an aerated frozen dessert product, wherein water, fat, protein, emulsifier and stabilizer are blended together to form a mix and said mix is homogenized to form an oil-in-water emulsion which is subsequently whipped under freezing conditions, the improvement which comprises: selecting an edible oil which has an SFI of at least 25 at 70° F.; homogenizing said mix to form an emulsion of fat globules having a particle size wherein the average d_v value is 0.2 to 1.5 microns, and a particle size distribution wherein the ratio of d_{max} to d_v has a quotient in the range from 9 to 14; aging the homogenized mix to crystallize said fat globules prior to said whipping and freezing; and substantially retaining said particle size and particle size distribution after said whipping and freezing.

4,434,187 MEAT CURING COMPOSITION

William S. Chandler, St. Clair; Walter F. Wilkens, Marysville, and John F. Heiss, St. Clair, all of Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Mar. 16, 1982, Ser. No. 358,629
Int. Cl.³ A23B 4/02, 4/14

U.S. Cl. 426—652 14 Claims

1. A substantially uniform free-flowing particulated composition suitable for use in the curing of meat products consisting essentially of controlled amounts of at least one water soluble finely particulated curing constituent, finely particulated water insoluble amorphous, tocopherol absorbent porous silica particles and dl-alpha-tocopherol distributed substantially uniformly on the particles of said curing constituent and distributed on and absorbed in said silica particles.

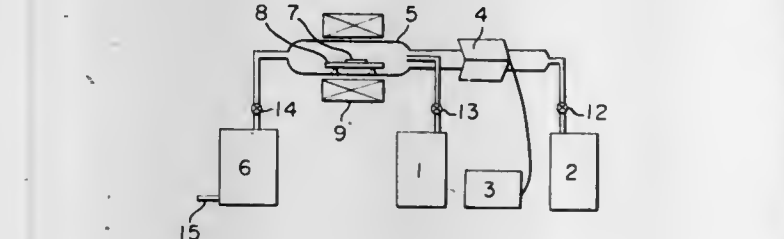
4,434,188 METHOD FOR SYNTHESIZING DIAMOND

Mutsukazu Kamo, Tsuchiura; Seiichi Matsumoto; Yoichiro Sato, both of Sakura, and Nobuo Setaka, Nagareyama, all of Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Nov. 17, 1982, Ser. No. 442,506
Claims priority, application Japan, Dec. 17, 1981, 56-204321; Jun. 24, 1982, 57-109044

Int. Cl.³ B05D 3/14 5 Claims

U.S. Cl. 427—39



1. A method for synthesizing diamond, characterized in that hydrogen gas which has passed through a micro-wave non-electrode discharge and mixed with hydrocarbon gas, or a mixture gas consisting of hydrocarbon and hydrogen after its passing through a micro-wave non-electrode discharge, is introduced onto the surface of a substrate heated to a tempera-

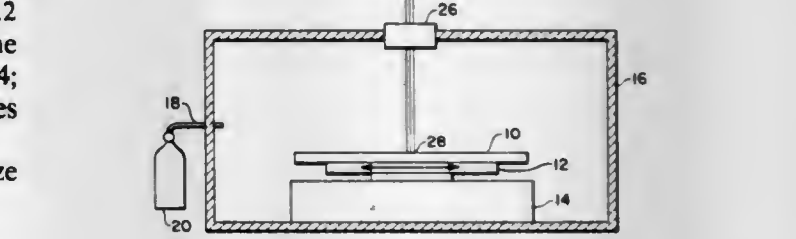
ture of from 300° to 1300° C. to decompose hydrocarbon in its energetically activated state for the diamond deposition.

4,434,189 METHOD AND APPARATUS FOR COATING SUBSTRATES USING A LASER

Isidor Zaplatynsky, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 15, 1982, Ser. No. 358,398
Int. Cl.³ B05D 3/06; C23C 13/08; B05B 5/00

U.S. Cl. 427—53.1 10 Claims



1. A method of forming a protective coating on a substrate of a metal selected from the group consisting of titanium and titanium alloys comprising the steps of positioning said substrate in purified nitrogen gas, focusing a beam of infrared radiation onto a surface of said substrate to rapidly heat a small area on the substrate to a temperature below the melting point of the substrate whereby said nitrogen reacts with the heated titanium in said small area to form initially a solid solution which subsequently forms titanium nitride without melting, and moving said small area along the surface of said substrate to coat the same.

4,434,190 PROCESS FOR PREVENTING FORMATION OF BLACK ICE ON ROADS BY APPLYING A MIXTURE OF SALT AND AQUEOUS FIXATION COMPOSITION ONTO THE ROAD SURFACE

Robert Dubois, and Pierre-Yves Dubois, both of Lutry, Switzerland, assignors to Selfixat, S.A., Geneva, Switzerland

Continuation of Ser. No. 194,952, Oct. 8, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,861
Claims priority, application France, Oct. 11, 1979, 79 25299

Int. Cl.³ B05C 1/16; B05D 5/10 5 Claims

1. Process for preventing the formation of black ice on roads, comprising applying onto the road surface at least one layer of a mixture of at least one salt which lowers the freezing point of water and a fixation composition which comprises an aqueous dispersion of a film-forming polymer or copolymer and at least one water-soluble hydrophobic agent which, in air, becomes insoluble in water, the proportion by weight of hydrophobic agent with respect to the dry extract of the film-forming polymer or copolymer being from 5 to 25%, and the proportion of the fixation composition with respect to the salt being such that the total dry weight of film-forming polymer or copolymer and hydrophobic agent corresponds to from 10 to 120% of the weight of the salt, the process including the steps of applying onto the road surface a first layer of a mixture with a high content of fixation composition and a low content of salt, allowing the water to evaporate, then applying a second layer of a mixture having a high content of salt and a low content of fixation composition, allowing the water to evaporate and finally applying a third layer of a mixture with a high content of fixation composition and a low content of salt.

4,434,191

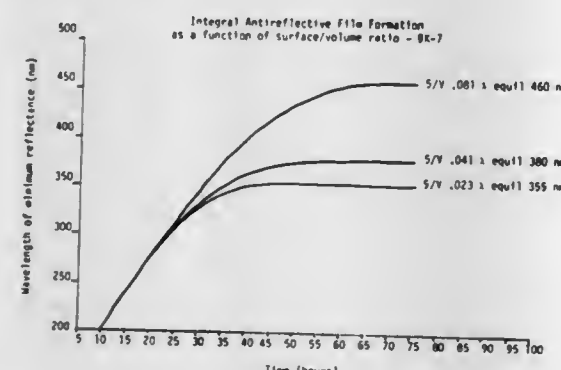
INTEGRAL ANTI-REFLECTIVE SURFACES OF SILICATE GLASSES

Lee M. Cook, Kingston; Karl-Heinz Mader, Clarks Summit, both of Pa., and Roland Schnabel, Hofheim, Fed. Rep. of Germany, assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed Oct. 6, 1981, Ser. No. 309,149

Int. Cl.³ B05D 5/06

U.S. Cl. 427—165



1. In a method of preparing an antireflective surface on a silicate glass surface of a particular silicate glass composition containing at least 5 weight % of alkali metal, comprising treating the silicate surface with an aqueous solution of pH 7.0-8.5 which contains an electrolyte with a dissociation constant at 20° C. greater than 10⁻⁶ and which contains a polyvalent cation, the improvement comprising conducting the treatment step with a ratio of the area of said silicate glass surface to the volume of said aqueous treating solution such that the resultant antireflective surface is substantially uniform and has a predetermined wavelength range of minimum reflectance, and, in order to achieve said predetermined wavelength range, adjusting the duration of the treatment step in accordance with a premeasured dependence, for said particular silicate glass composition, of wavelength of minimum reflectance as a function of said ratio and duration of treatment.

4,434,192

PROCESS FOR MAKING WATER ACTIVATABLE TILES

Solomon Neumann, London, England, assignor to Easy-Do Products Limited, London, England

Continuation of Ser. No. 939,694, Sep. 5, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,182

Claims priority, application United Kingdom, Sep. 13, 1977, 38195/77

Int. Cl.³ B05D 1/32

U.S. Cl. 427—282

6 Claims

1. A process for the manufacture of a water-activatable self-adhering rigid tile product which consists of dispersing in a liquid medium which includes an organic solvent and water a mixture consisting of a hydraulic material, a filler and a water-soluble adhesive to form a dispersion, applying said dispersion to at least a portion of the face of a rigid tile intended to be adhered to a supporting surface, and drying said dispersion on said tile face to evaporate said liquid medium, thereby leaving a water-activatable self-adhering paste which is activatable by immersion in water for less than about 60 seconds.

4,434,193

METHOD FOR RETARDING MASONRY EFFLORESCENCE

Thomas Beckenhauer, 14439 N. 107th, Longmont, Colo. 80501

Filed Sep. 22, 1981, Ser. No. 304,699

Int. Cl.³ A23B 5/00; A23J 1/08

U.S. Cl. 427—299

9 Claims

19 Claims

1. The method of retarding the efflorescence of masonry structures comprising cleaning and washing the masonry to remove existing efflorescence deposits, allowing the masonry structure to dry to at most a damp condition, and thereafter applying to the masonry a coating of an acidic glycol solution at the rate of about one gallon per one hundred square feet to penetrate the masonry and thereby retard efflorescence thereof.

4,434,194

EDGE DAM FOR PAPER COATING APPARATUS AND METHOD

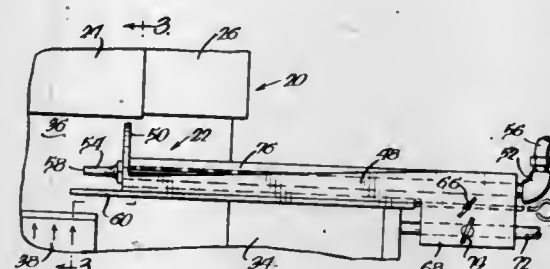
Kenneth W. Gebert, Wisconsin Rapids, and Pat A. Rajski, Stevens Point, both of Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Feb. 22, 1982, Ser. No. 350,758

Int. Cl.³ B05C 5/02

U.S. Cl. 427—356

15 Claims



1. An improved edge dam assembly for an applicator for applying coating liquid to a moving web of paper carried through an application zone, wherein the applicator is of the type having a body defining a chamber therein with an elongate opening to the chamber positionable generally adjacent to and transversely across the web, the chamber receiving coating liquid and directing the same through the opening and into the application zone for being applied onto the web, said edge dam assembly comprising seal means mountable at a side end of the opening and zone inwardly of the side edge of the web and having a passage therethrough in communication with the side end of the zone; means for introducing a gas under pressure through said seal means passage and into the zone to generate at the side end of the zone adjacent to said seal means a pressurized gas barrier pocket which extends inwardly of said seal means and web edge into the zone and is substantially void of coating liquid, whereby coating liquid in the zone is maintained inwardly of said seal means and prevented from leaking therepast; and a plate adjustable to move an end thereof into the side end of the zone a limited distance inwardly of said seal means and between said seal means and the chamber opening thereat to block coating liquid introduced into the zone through the chamber opening thereat from being directed toward said gas barrier pocket to control the inward extent of said gas barrier pocket into the side end of the zone and the extent of an uncoated margin on the web edge.

4,434,195

BONDING SILICONE RUBBER

Olgers Skostins, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 172,874, Jul. 28, 1980, abandoned. This application Feb. 9, 1982, Ser. No. 347,207

Claims priority, application Canada, Jun. 26, 1981, 380714

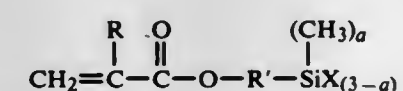
Int. Cl.³ B05D 3/02

U.S. Cl. 427—387

9 Claims

6. A method of bonding silicone rubber to a substrate comprising

- (1) mixing silicone rubber stock of the type comprising 100 parts by weight of silicone rubber base, from 0 to 150 parts by weight of siliceous extending filler with an average particle size of less than 25 micrometres and a surface area of less than 50 m²/g, and from 0.1 to 5 parts by weight of organic peroxide suitable for vulcanizing the silicone rubber base, with sufficient adhesion additive composition consisting essentially of
 - (a) 100 parts by weight of polydiorganosiloxane gum, wherein the organic radicals are selected from the group consisting of methyl, vinyl, phenyl, 3,3,3-trifluoropropyl radicals and mixtures thereof,
 - (b) from 70 to 220 parts by weight of ethylpolysilicate,
 - (c) from 10 to 40 parts by weight of acryloxyalkylsilane of the formula



in which R is selected from the group consisting of hydrogen and methyl radical, R' is an alkylene radical of from 1 to 4 inclusive carbon atoms, X is a radical selected from the group consisting of lower alkoxy radicals of from 1 to 3 inclusive carbon atoms and acetoxy radical, a is from 0 to 2 inclusive, to provide an amount such that (b)+(c) is less than 4 percent by weight of silicone rubber composition, to yield a heat vulcanizable silicone rubber composition,

- (2) forming a combination wherein the silicone rubber composition of (1) contacts a surface of the substrate, and thereafter
- (3) heating the combination to a temperature high enough to vulcanize the silicone rubber composition, producing a vulcanized silicone rubber bonded to the substrate surface.

4,434,196

METHOD OF ACCELERATING THE DRYING OF WET HYDROPHILIC SUBSTRATES

Tibor Robinson, Birsfelden, and Charles Voegtlin, Arisdorf, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Mar. 17, 1982, Ser. No. 359,099

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111392

Int. Cl.³ B05D 3/02

U.S. Cl. 427—389

27 Claims

1. A process for accelerating the drying of a wet hydrophilic fibrous substrate selected from the group consisting of textiles, skins, pelts and leather, which comprises the steps of

- (i) applying to the wet substrate by an exhaust process 0.05 to 1.0 g. per kg. dry weight of substrate of a mixture comprising
 - (A) a cationic agent having affinity for the fibers, and
 - (B) an emulsified paraffinic wax in an aqueous medium, said component (B) being in the form of an aqueous emulsion containing the paraffinic wax and an emulsifying agent suitable for emulsifying said wax, and,
 - (ii) drying the thus-treated substrate.

4,434,197

NON-STICK ENERGY-MODIFYING COOKING LINER AND METHOD OF MAKING SAME

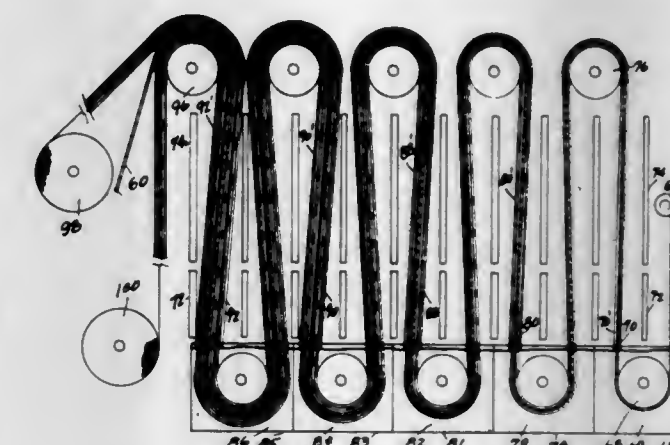
John V. Petriello, Huntington, N.Y., and Michael N. La Torre, North Palm Beach, Fla., assignors to N. F. Industries, Inc., Winston-Salem, N.C.

Filed Aug. 25, 1982, Ser. No. 411,350

Int. Cl.³ B05D 1/36

U.S. Cl. 427—407.1

3 Claims



1. The method of manufacturing a thin, flexible film for use as a cooking aid comprising the steps of:

- (a) forming a first layer of pure polytetrafluoroethylene by depositing a liquid dispersion on a carrier, drying and sintering said liquid dispersion;
- (b) forming a second layer on said first layer by depositing a liquid co-dispersion of polytetrafluoroethylene and a particulate energy-absorbing material, the percent solid content of said particulate energy-absorbing material being between 1% to 20%, drying and sintering said liquid co-dispersion; and
- (c) subsequently, forming a third layer of pure polytetrafluoroethylene on the second layer by depositing a second liquid dispersion, drying and sintering said second liquid dispersion.

4,434,198

DUPLICATING STENCIL

Leslie Clark, New Castle upon Tyne, England, assignor to Roneo Alcatel Limited, Romford, England

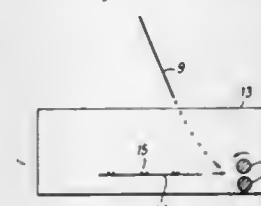
Division of Ser. No. 120,513, Feb. 11, 1980, Pat. No. 4,351,685, which is a continuation of Ser. No. 929,467, Jul. 31, 1978, abandoned. This application Oct. 26, 1981, Ser. No. 314,725

Claims priority, application United Kingdom, Aug. 1, 1977, 32243/77

Int. Cl.³ B32B 31/00; D21F 11/00; B41L 11/06; B05D 5/06

U.S. Cl. 428—43

4 Claims



1. A stencil assembly for use in the formation of duplicating stencils by thermal bonding of an ink-impermeable layer of a master to an electrophotographic image attached to a substrate

and subsequent separation of the substrate and the master such that the image carries away parts of the ink-impermeable layer, said stencil assembly comprising

- (a) a porous base layer,
- (b) an ink-impermeable layer,
- (c) a layer of adhesive detachably attaching said ink-impermeable layer to said base layer,
- (d) said ink-impermeable layer comprising
 - (1) a synthetic resin composition rendered frangible by inclusion therein in suspension of finely divided zinc oxide dispersed throughout said synthetic resin composition.

4,434,199

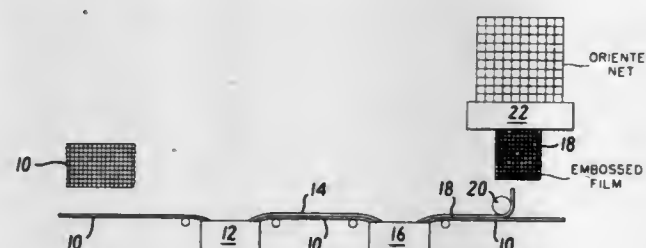
METHOD OF MANUFACTURING A THIN NET AND PRODUCT

Timothy K. Fair, Sr., Blaine, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Sep. 29, 1982, Ser. No. 428,040
Int. Cl.³ B32B 3/10

U.S. Cl. 428—134

7 Claims



1. A process for making a net product comprising the steps of:

- (a) coating a template having a net structure with a first reactant chosen from a first predetermined group of polycondensation reaction polymers, said net structure having integral joints;
- (b) reacting said first reactant coated on said template with a second predetermined polycondensation reaction polymer for forming a polycondensation reaction of the second reaction polymer with said first reactant polymer;
- (c) allowing said polymerized resin coating to set to form a film on said template; and
- (d) stripping the said polymerized resin film from said template.

4,434,200

IMPREGNATED WOVEN FENCING PRODUCT

William G. Fash, Hackensack, N.J., and Delbert A. Davis, Kernersville, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 773,156, Mar. 1, 1977, abandoned, which is a continuation of Ser. No. 355,733, Apr. 30, 1973, abandoned, which is a continuation-in-part of Ser. No. 134,237, Apr. 15, 1971, abandoned. This application Nov. 27, 1978, Ser. No. 963,890

Int. Cl.³ B32B 7/00

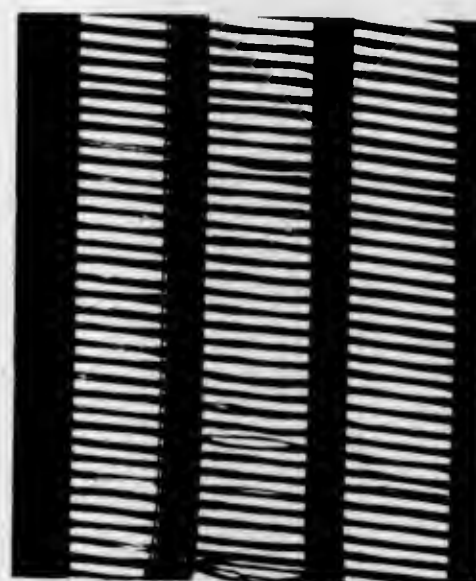
U.S. Cl. 428—257

6 Claims

1. An improved weather-resistant fencing product comprising:

- a length of fabric woven in a predetermined width from strands of tough, elastic, synthetic plastic material, said fabric having a relatively thin elastomeric, weather-resistant coating substantially evenly adhered to the surface of and impregnated into each of said strands thereby encapsulating and adhering said strands to each other to rigidify and support the woven product, and to render said product capable of withstanding sustained periods of direct sunlight, the relative thickness of said coating being no greater than the diameter of each of said strands, said woven fabric having laterally spaced longitudinal bands extending in the warp direction only of relatively tightly

woven warp and uniformly spaced filling strands separated by relatively open longitudinal bands containing only filling strands, said longitudinal bands having a pair of strands exteriorly along each side thereof, said filling strands being bound together in groups of at least two filling strands by said pair of longitudinal strands to form



a plurality of spaced apart filling strand groups extending along the length of said coated fabric, said open bands defining open spaces, the open spaces being free from said elastomeric coating thereby permitting passage of wind through said open spaces without damage to the coated, impregnated fabric while creating air currents.

4,434,201

POROUS PANEL

Bryan E. Humphreys, Carlisle, England, assignor to T.K.S. (Aircraft De-Icing) Limited, Halthwistle, England

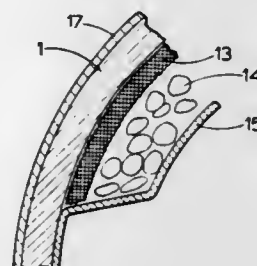
Continuation of Ser. No. 438,697, Nov. 2, 1982, abandoned. This application Jun. 20, 1983, Ser. No. 505,762

Claims priority, application United Kingdom, Nov. 13, 1981, 8134230

Int. Cl.³ B32B 3/10, 3/02, 7/12; B64D 15/08

U.S. Cl. 428—137

22 Claims



1. A porous panel for the distribution of fluid, comprising an outer sheet of porous material over the surface of which the fluid is to be distributed, a backing sheet of microporous material in contact with one side of the outer sheet, and a sheet of fluid impervious material which is spaced from the microporous sheet so that fluid can be introduced into the space between the microporous sheet and the impervious sheet whence it can pass through the porous sheets to the outer surface of the outer sheet, the sheets being secured to one another by adhesive bonding over a region located outwardly of the said space.

4,434,202

SLIDE MEMBER

Satoru Uedaira; Hidetoshi Shimizu; Hidemasa Tamura; Hiromichi Taguchi; Hiroshi Yamanoi, and Yoshimi Makino, all of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,457

Claims priority, application Japan, Nov. 29, 1980, 55-168190

Int. Cl.³ B32B 27/20, 27/36

U.S. Cl. 428—143

7 Claims



1. A slide member having at least one surface against which a traveling magnetic record member is arranged to contact, said slide member comprising a molded polymer composite material composed predominantly of a resinous composition and a granular inorganic filler material dispersed in said resinous composition, said resinous composition containing about 20 to 70% by volume of an unsaturated polyester resin, about 1 to 25% by volume of a thermoplastic resin, and 30 to 70% by volume of a liquid monomer being capable of polymerizing with said unsaturated polyester resin, said granular inorganic filler material having a particle size ranging from 1 to 100 microns and being present in said polymer composite material in an amount of from 40 to 65% by volume for 100% by volume of said resinous composition, said slide member having a surface layer thereof removed so as to expose part of the surface of said granular inorganic filler material.

4,434,203

DIAPHRAGM

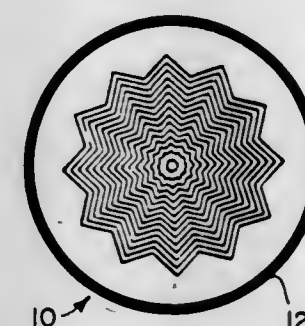
Dennis K. Briefer, Berlin, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed Oct. 27, 1980, Ser. No. 200,790

Int. Cl.³ B32B 3/26, 3/28

U.S. Cl. 428—152

26 Claims



1. A diaphragm that flexes in a direction generally normal to said diaphragm in response to a pressure differential across the diaphragm, comprising: a generally thin diaphragm member formed of a structural material that is substantially inelastic, said diaphragm member including a low energy collapse pattern of wrinkles that extend over a substantial portion of the diaphragm, each of said wrinkles being elongated over a short length in any one direction and having an amplitude greater than the thickness of the diaphragm but not projecting substan-

4,434,204

SPUN-BONDED FABRIC OF PARTIALLY DRAWN POLYPROPYLENE WITH A LOW DRAPING COEFFICIENT

Ludwig Hartman; Ivo Ruzek, and Engelbert Löcher, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

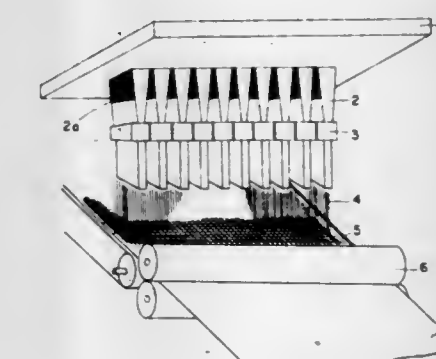
Filed Sep. 10, 1982, Ser. No. 416,700

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151294

Int. Cl.³ D04H 1/58

U.S. Cl. 428—198

6 Claims



1. A spun-bonded fabric having a low draping coefficient, said fabric being comprised of polypropylene fibers which are endlessly spun in the form of a spun-bonded fabric, wherein the polypropylene fibers which comprise said fabric are partially drawn, have a maximum tensile elongation of at least about 200%, and have a fiber shrinkage determined in boiling water of less than about 10%.

4,434,205

ARTIFICIAL LEATHERS

Shigeo Fujii; Tokuzo Ikeda; Takashi Mikami, and Shuji Okano, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

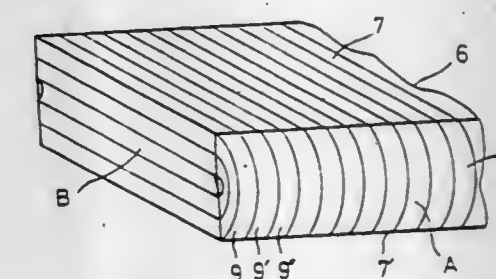
Continuation of Ser. No. 203,772, Nov. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 167,637, Dec. 21, 1979, Pat. No. 4,375,446, and Ser. No. 167,638, Dec. 21, 1979, abandoned. This application Jul. 22, 1982, Ser. No. 401,290

Claims priority, application Japan, Nov. 1, 1979, 54-14044

Int. Cl.³ B32B 7/02

U.S. Cl. 428—218

21 Claims



1. An artificial leather comprising a nonwoven fabric and a polymer filling the interstices of said nonwoven fabric, said nonwoven fabric consisting essentially of stacked and intertwined melt-blown long fibers forming thin intertwined layers

extending between one surface of said nonwoven fabric or a part thereof and the other surface or a part thereof.

4,434,206

SHAPED ARTICLES OF POROUS CARBON FIBERS

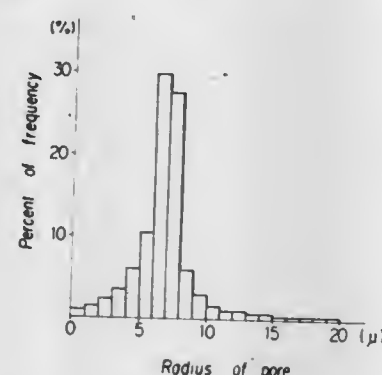
Hiroyuki Fukuda; Hisatsugu Kaji, both of Iwaki, and Hiroto Fujimaki, Kokubunji, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1982, Ser. No. 358,373

Claims priority, application Japan, Apr. 1, 1981, 56-48700

Int. Cl.³ B32B 9/00; D04H 1/58

U.S. Cl. 428—288

10 Claims



1. A shaped article comprised of porous carbon having a porosity of 50 to 85% and a compressive strength of more than 50 kg/cm² wherein the radii of not less than 60% of the total number of the pores of said shaped article are distributed in a range wherein the differences between the upper limit of the pore radius and the lower limit of the pore radius is not more than 20 microns, said shaped articles being prepared by:

- preparing lumps of a mixture of 100 parts by weight of carbonaceous fibers of 3 to 30 microns in diameter and less than 2 mm in length and 20 to 100 parts by weight of a resinous binder selected from the group consisting of phenolic resins and furfuryl alcohol resins;
- crushing the thus prepared mixture;
- adding to 100 parts by weight of the resultant crushed mixture 20 to 100 parts by weight of a granular substance which is soluble in a solvent, and wherein the radii of the particles occupying more than 70% of the weight of said granular substance are distributed in a range wherein the difference between the upper limit of the radius thereof and the lower limit of the radius thereof is not more than 30 microns;
- shaping the thus obtained mixture at an elevated temperature and under pressure;
- immersing the thus shaped mixture into a solvent which is capable of dissolving said granular substance, thereby removing said granular substance from the shaped mixture; and
- baking the thus treated mixture at an elevated temperature, thereby obtaining said shaped articles of porous carbon.

4,434,207

RADIATION HARDENED LIFT-OFF CORRECTION MEDIUM AND PROCESS OF MANUFACTURE

Terence E. Franey, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1982, Ser. No. 419,101

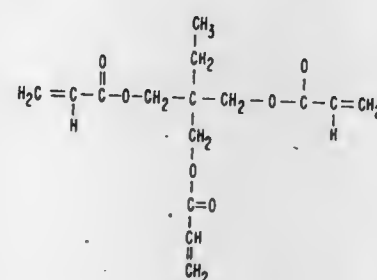
Int. Cl.³ C09J 7/02

U.S. Cl. 428—343

20 Claims

1. A lift-off correction medium having a supporting substrate and a layer of bonding material supported on said substrate,

said bonding material bonding to printed characters upon impact of said supporting substrate to effect lift-off correction,



said bonding material comprising a polymerized triacrylate as a major solid material.

4,434,208

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELF-CROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746.

This application Aug. 30, 1982, Ser. No. 412,476

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.³ B32B 25/02, 27/04

U.S. Cl. 428—378

24 Claims

1. Filamentary material coated with an aqueous adhesive coating composition, comprising:

- A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,
- phenolic aldehyde condensate polymer,
- non-self-crosslinkable elastomeric latex having a gel content of less than 40% and an average particle size of less than around 2000 angstroms present in the coating composition in a predominant amount over the amount of the vinyl pyridine-containing copolymer or terpolymer,
- carboxylated butadiene polymer or carboxylated butadiene-styrene copolymer present in the amount of about 0.5 to about 3 weight percent of the dried solids of the aqueous coating composition,
- and water.

4,434,209
CAPACITOR

Tohru Sasaki; Mitsuru Ohta; Syuuzi Terasaki, and Syozo Kakizaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,958

Claims priority, application Japan, May 19, 1980, 55-66312

Int. Cl.³ B32B 15/08, 27/06; N01G 4/08

U.S. Cl. 428—416

5 Claims

1. A capacitor having layers of dielectric material, at least one of said layers being an oriented plastic film obtained by stretching in at least one direction an unstretched film of a resin composition comprising a mixture of (a) a polyvinylidene fluoride and (b) at least one resin selected from the group consisting of a polycarbonate, a thermoplastic polyester, and a mixture thereof, the weight ratio of (a) to (b) being from 100:0.1 to 100:30 adjacent a metallic electrode layer.

4,434,210

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi; Yoshinobu Ninomiya, Miyagi, and Masashi Somezawa, Sendai, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,726

Claims priority, application Japan, Jul. 3, 1980, 55-90838

Int. Cl.³ H01F 10/02

U.S. Cl. 428—447

3 Claims

1. A magnetic recording medium comprising a magnetic layer in which magnetic or magnetizable powder material surface-treated with a silicon compound having a silanol group and/or a silanol-forming group upon hydrolysis and a double-bond sensitive to radiation and a binder are present therein, said silicon compound having been sufficiently irradiated to form an enhanced binding between the magnetic or magnetizable powder material and the binder, and said silicon compound being bonded to said magnetic or magnetizable powder by a chemical reaction between the silanol group and the surfaces of said powder.

4,434,211

METHOD FOR BONDING CERAMIC TO NOBLE BASED METALS AND PRODUCT

Itzhak Shohar, 50 Shlomo Hamelech St., Tel-Aviv, and Aharon Whiteman, 13 I.L. Perez St., Pethah-Tikvah, both of Israel

Continuation of Ser. No. 171,255, Jul. 22, 1980, abandoned, which is a division of Ser. No. 18,767, Mar. 8, 1979, abandoned.

This application Jan. 14, 1983, Ser. No. 460,918

Int. Cl.³ B22F 3/00, 5/00, 7/00

U.S. Cl. 428—552

7 Claims

6. A composite structure composed of a layer of a noble based metal, a layer of ceramic material and an intermediate layer of a material having a composition of from one to 100% by weight of finely divided particles of a noble metal halide and from zero to 99% by weight of finely divided substantially gold based metal particles formed by the method of sintering said intermediate layer at a predetermined temperature range of between 1700° F. to 1975° F. with said layer of ceramic material fired at between 1600° to 1820°.

4,434,212

DEVICE FOR PROPAGATING MAGNETIC DOMAINS

John M. Robertson; Dirk J. Breed, and Antonius B. Voermans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

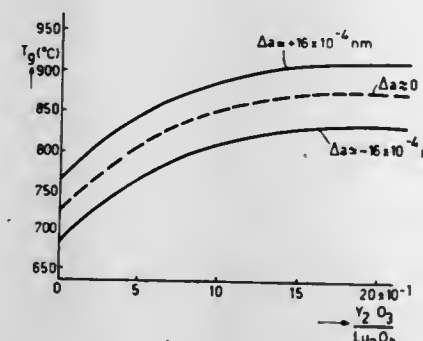
Filed Jul. 8, 1981, Ser. No. 281,270

Claims priority, application Netherlands, Jul. 11, 1980, 8004009

Int. Cl.³ G11C 11/02; C04B 35/50

U.S. Cl. 428—693

7 Claims



1. A device for propagating magnetic domains comprising: a monocrystalline, nonmagnetic substrate having a surface; and a monocrystalline layer of an iron garnet epitaxially provided on the surface of the substrate, said layer having a uniaxial magnetic anisotropy induced substantially by growth; characterized in that at the dodecahedral lattice sites, the iron garnet consists essentially of bismuth and at least one

rare-earth ion, selected from the group consisting of lutetium, thulium, and ytterbium, in amounts which will produce a uniaxial magnetic anisotropy sufficiently high to enable the iron garnet layer to support magnetic domains having diameters of two microns or less.

4,434,213

LITHIUM ANODE

Aaron F. Niles, and Dennis P. Johnson, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed May 13, 1982, Ser. No. 377,821

Int. Cl.³ H01M 6/16

U.S. Cl. 429—3

8 Claims

1. In an improved lithium-organic electrolyte cell having a lithium salt dissolved in said electrolyte and having a separator facing the anode, the improvement which comprises the anode having a body of lithium initially clad with a cladding layer of aluminum-magnesium alloy, the cladding layer laminated to the face of the anode body adjacent to the separator, and a ternary aluminum-magnesium-lithium alloy formed on the surface of the anode body as a result of diffusion between the cladding layer and the anode body.

4,434,214

ALKALINE STORAGE BATTERY

Shogo Suzuki, Yamato, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Japan

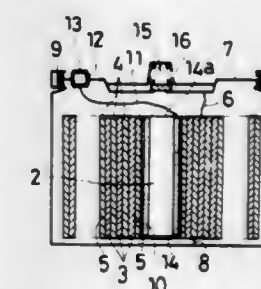
Filed Nov. 5, 1982, Ser. No. 439,425

Claims priority, application Japan, Nov. 16, 1981, 56-182234

Int. Cl.³ H01M 10/34

U.S. Cl. 429—59

6 Claims



1. An alkaline storage battery comprising a container containing a battery element comprising a positive electrode, a negative electrode, a separator and a gas ionizing auxiliary electrode, wherein the gas ionizing electrode is a hollow tube electrode and is located in a center hollow space of a wound battery element and the gas ionizing electrode and the wound battery element are separated by the bag of microporous film interposed therebetween.

4,434,215

BATTERY SEPARATOR

Walter R. Wszolek, Sykesville, and Joseph T. Lundquist, Jr., Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,004

Int. Cl.³ H01M 2/16

U.S. Cl. 429—144

8 Claims

1. A composition suitable for forming a battery separator sheet product comprising a mixture of (a) a copolymer of ethylene and acrylic acid or methacrylic acid, said acid substantially neutralized with an alkali or alkaline earth metal cation and said copolymer having from 10 to 23 mole percent of said acid therein and having a standard load melt index of from 0 to 5; and (b) a copolymer of ethylene and acrylic acid or methacrylic acid, said acid substantially neutralized with an alkali or alkaline earth metal cation and said copolymer having at least about 25 mole percent of acrylic acid therein and having a standard load melt index of from about 10 to 100; the weight ratio of (a) to (b) being from 0.3 to 2.

4,434,216

SOLID STATE ELECTROLYTE

Ashok V. Joshi, Fishkill; Arun D. Jatar, Goshen, both of N.Y., and William P. Shollette, Warminster, Pa., assignors to Rayovac Corporation, Madison, Wis.

Continuation of Ser. No. 200,278, Oct. 24, 1980, abandoned.

This application Dec. 7, 1981, Ser. No. 327,884

Int. Cl.³ H01M 6/18

U.S. Cl. 429—191

13 Claims

1. A solid state electrolyte for use in a solid-state electrochemical cell having a lithium anode comprised in mole percent of about 10 to about 50% iodine moiety, about 8 to about 47% lithium moiety, about 3% to about 16% phosphate moiety, up to about 38% oxygen moiety not inclusive of oxygen contained in the phosphate radical and about 5 to about 30% of at least one moiety selected from the group of calcium and aluminum moieties, said electrolyte being in the form of an interdiffused body of sources of said moieties and said moieties being in stoichiometric relationship metallic to non-metallic.

4,434,217

CHALCOGENIDE PRODUCT

Joseph I. Masters, Lincoln, and Gershon M. Goldberg, Arlington, both of Mass., assignors to GCA Corporation, Bedford, Mass.

Division of Ser. No. 86,198, Oct. 17, 1979, Pat. No. 4,269,935, which is a continuation-in-part of Ser. No. 57,183, Jul. 13, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,714

Int. Cl.³ G03C 5/24

U.S. Cl. 430—9

1 Claim

1. A unitary product comprising, as a substrate, a semiconductor body having a surface on which a micro pattern is to be imposed, a layer of chalcogenide glass material on said surface and, on the outer surface of said chalcogenide glass material, a silver image replicating said pattern, said silver image consisting primarily of metallic silver atoms in a silver halide matrix.

4,434,218

PHOTOSENSITIVE COMPOSITION FOR ELECTROPHOTOGRAPHY

Noriyoshi Tarumi; Akihiko Tamura, and Masakazu Kokiso, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 6,104, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 746,084, Nov. 30, 1976, abandoned.

This application Jun. 3, 1981, Ser. No. 270,115

Int. Cl.³ G03G 5/04

U.S. Cl. 430—96

15 Claims

1. A photosensitive article comprising:

- (1) a conductive substrate; and,
- (2) an uppermost photosensitive layer which is a heat-dried coating of a photosensitive composition comprising an aqueous solution of a water-soluble prepolymer capable of forming a network structure by cross-linking, and a photoconductive compound selected from the group consisting of cadmium sulfide, cadmium selenide, cadmium sulfoselenide, zinc sulfide and zinc selenide.

4,434,219

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER COMPRISING PHOTOCONDUCTIVE POWDER AND A DEIONIZED BINDER RESIN

Fumio Sumino, Kawakaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,629

Claims priority, application Japan, Feb. 24, 1981, 56-25856

Int. Cl.³ G03G 5/10

U.S. Cl. 430—96

6 Claims

6. An electrophotographic photosensitive member including a photoconductive layer which layer comprises photoconductive particles dispersed in a resin binder, said resin binder formed from a material having a tendency to reduce the photoconductive properties of said photoconductive layer under the

influence of heat, light or both, said resin binder being formed by washing the resin binder material in an aqueous solution containing at least one type of ion exchange resin to solubilize any ionic impurities from the surface of said resin binder material, and then separating said binder material from said solution, wherein said electrophotographic photosensitive member is rendered stable against deterioration of its photoconductive properties due to temperature and humidity effects.

4,434,220

ELECTROPHOTOGRAPHIC TONER AND CARRIER

Jerry J. Abbott; Stephen C. Crossan, both of Longmont; Sterritt R. Fuller, Jr., Boulder, and Paul D. Jachimik, Lafayette, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

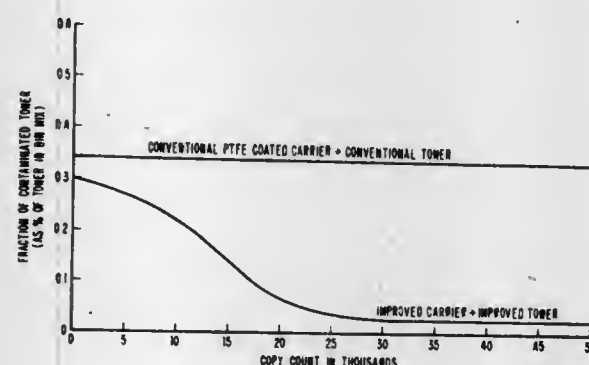
Continuation of Ser. No. 960,138, Nov. 13, 1978, abandoned.

This application Jul. 15, 1982, Ser. No. 398,512

Int. Cl.³ G03G 9/10

U.S. Cl. 430—108

17 Claims



1. A developer mix of toner particles and carrier beads for use in electrostatic copying having magnetic brush development, comprising:

toner particles having a size distribution wherein less than 15% by weight are greater than 16 microns in size, from 7% to 15% by weight are less than 5 microns in size, the remainder being from 5 to 16 microns in size, the particles median size by weight being 8 to 12 microns in size; and carrier beads having a magnetic core and a coating on said core, said coating having a resin system comprised of about 16% to about 20% by weight of polytetrafluoroethylene, about 9% to about 20% by weight fluorinated polyethylene-propylene, and about 59% to about 62% by weight of a poly (amide-imide) which is stable up to at least 600° F., triboelectrically negative, nonspalling, essentially nonwearing, dispersible with respect to the other resin components, and essentially nonfriable.

4,434,221

TONER CONCENTRATION DETECTION BY MEASURING CURRENT CREATED BY TRANSFER OF CARRIER COMPONENT TO NON-IMAGE AREAS OF IMAGE SUPPORT SURFACE

Tateki Oka, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1982, Ser. No. 395,305

Claims priority, application Japan, Jul. 3, 1981, 56-104892

Int. Cl.³ G03G 13/09

U.S. Cl. 430—122

6 Claims

1. A method of controlling toner concentration of an electrically insulative toner forming part of a magnetic developing material in an electrophotographic copying apparatus of a type in which the image region on the surface of an electrostatic latent image support member for supporting thereon an electrostatic latent image having a polarity opposite to the charge polarity of the electrically insulative toner, is developed by a magnetic brush of the magnetic developing material, the developing material being composed of a mixture of a high resis-

4,434,223

IMAGE-FORMING ELEMENT HAVING AN ALUMINUM LAYER ON A TRANSPARENT FILM BASE

Takeo Kohira; Takao Taguchi, both of Chiba; Takeo Sugiura, Tokorozawa, and Takatoshi Ohta, Warabi, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo and Okamoto Chemical Industry Co., Ltd., Saitama, both of, Japan

Filed Dec. 27, 1982, Ser. No. 452,919

Int. Cl.³ G03C 1/78

U.S. Cl. 430—273

16 Claims

1. An image-forming element which comprises a transparent base film, an aluminum film deposited on the base film, and a photosensitive layer formed on the aluminum film and which can be developed with an alkali aqueous solution developer, characterized in that the photosensitive layer comprises (a) 20 to 60% by weight of a copolymer of a vinyl toluene and a monoester of an unsaturated dibasic acid, (b) 10 to 70% by weight of an addition-polymerizable, ethylenically unsaturated monomer which is an acrylate or a methacrylate of a fatty polyhydroxy alcohol having at least two terminal ethylene groups and at least one hydroxyl groups, and (c) 0.5 to 30% by weight of a photopolymerization initiator.

4,434,224

METHOD OF PATTERN FORMATION

Akira Yoshikawa, Higashiyamato; Akitsu Takeda, Tokyo; Osamu Ochi, Sayama; Tomoko Hisaki, Tokyo, and Yoshihiko Mizushima, Fuchu, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

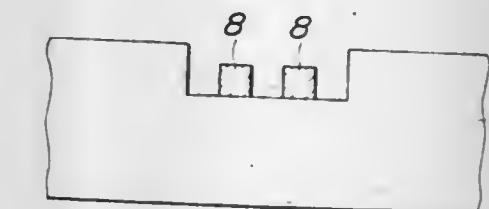
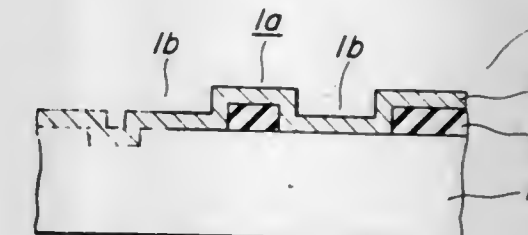
Filed Jan. 29, 1982, Ser. No. 343,908

Claims priority, application Japan, Feb. 6, 1981, 56-16613

Int. Cl.³ G03C 5/00

U.S. Cl. 430—323

18 Claims



1. A method of pattern formation, which comprises the steps of:

- forming an organic polymer resist material layer on the surface of a layer to be worked of a substrate;
- exposing said organic polymer resist material layer with a first exposure pattern which relates to an alignment mark on said substrate;
- developing the exposed organic polymer resist material layer to form a first desired pattern which does not cover said alignment mark;
- applying a heat treatment to the patterned organic polymer resist material layer;
- forming an inorganic resist material layer being a laminate consisting of a selenium-based glass material layer and a silver layer or layer containing silver on the organic polymer resist material layer thus heat-treated so as to cover the whole surface thereof and the whole exposed surface of said layer to be worked of the substrate material;

4,434,222

METHOD OF FORMING INFRARED-SENSITIVE PHOTOCONDUCTORS OF CADMIUM SALT CRYSTALLITES

Mary J. Wegener, San Jose, and Morris Feinleib, Mountain View, both of Calif., assignors to Benson, Inc., San Jose, Calif.

Filed May 15, 1981, Ser. No. 263,953

Int. Cl.³ G03G 5/087

U.S. Cl. 430—135

8 Claims

1. The method for forming a photoconductor having enhanced sensitivity to red and infrared wavelength regions comprising the steps of:

- (a) forming a suspension of cadmium carbonate and sufficient cupric chloride to give up to approximately 2% copper atoms per cadmium atom;
- (b) adding ammonia to said suspension;
- (c) adding hydrogen sulfide gas to convert 50 to 80% of said cadmium carbonate to cadmium sulfide;
- (d) adding sufficient cadmium salt to produce the prescribed percentage of cadmium selenide in step (e) and sufficient copper chloride to the conversion product of step (c) to maintain a level of copper doping in the final product of up to approximately 2% copper atoms per cadmium atom, and a source of ammonia to form a mixed slurry; and
- (e) adding hydrogen selenide gas to the mixed slurry formed in step (d) to form a mixed precipitate including 50–20% cadmium carbonate, 50–80% cadmium sulfide and 0–20% cadmium selenide; and
- (f) calcining the mixed precipitate from step (e) at a temperature and for a time in an inert atmosphere sufficient to remove volatiles, diffuse the copper dopant in the mixture and to form from 0.05 to 2.5% cadmium oxide in a resultant product of crystallites.

exposing said inorganic resist material layer with a second exposure pattern which relates to said alignment mark; developing the exposed inorganic resist material layer to form a second desired pattern which does not cover said alignment mark; etching to remove the organic polymer resist material layer in a region which is not covered with the patterned inorganic resist material layer; applying an etching treatment to said layer to be worked in a region which is not covered with said organic polymer resist material layer; and removing said inorganic and organic polymer resist material layers.

4,434,225

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Sugita; Yasuo Tsuda; Kenji Ito, and Satoru Shimba, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,395

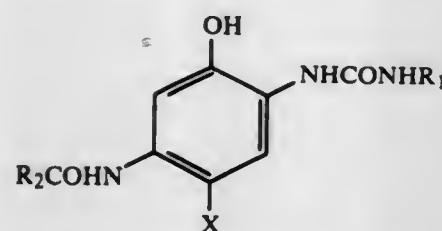
Claims priority, application Japan, Feb. 24, 1982, 57-29556; Feb. 26, 1982, 57-30849; Feb. 27, 1982, 57-31888

Int. Cl.³ G03C 1/40

U.S. Cl. 430—544

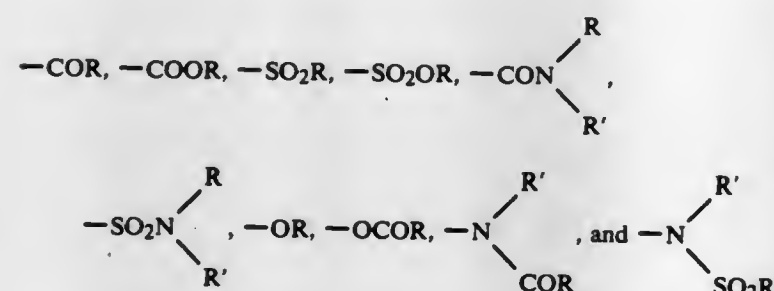
28 Claims

1. A light-sensitive silver halide color photographic material having at least one light-sensitive silver halide emulsion layer on a support, characterized in that said light-sensitive silver halide emulsion layer contains a cyan coupler represented by formula [I] shown below, and wherein at least one of said light-sensitive silver halide emulsion layer and a layer contiguous to said light-sensitive silver halide emulsion layer contains a non-timing type DIR compound:



Formula [I]

wherein X represents a hydrogen atom or a group capable of being eliminated by a coupling reaction with an oxidized product of an aromatic primary amine color developing agent; R₁ represents a naphthyl group or a heterocyclic group (provided that a carbon atom of said heterocyclic group is bonded to the ureido group), or a phenyl group having at least one substituent (with the proviso that when one of said substituents is a cyano at the p-position of said phenyl group relative to the ureido group, the four ortho and meta positions of said phenyl group relative to the ureido group cannot have hydrogen atoms at the same time) selected from the group consisting of a trifluoromethyl, nitro, cyano,



(wherein R represents an aliphatic group or an aromatic group, and R' represents a hydrogen atom, an aliphatic group or an aromatic group); and R₂ represents an aliphatic group or an aromatic group necessary to impart diffusion resistance to the cyan dyes formed from the cyan couplers represented by formula [I] and the cyan dyes to be formed from said cyan coupler.

4,434,226 HIGH ASPECT RATIO SILVER BROMIODIDE EMULSIONS AND PROCESSES FOR THEIR PREPARATION

Herbert S. Wilgus, Conesus, and John A. Haefner, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,905, Dec. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,420 Int. Cl.³ G03L 1/02

U.S. Cl. 430—567

22 Claims



1. A high aspect ratio tabular grain silver halide emulsion comprised of a dispersing medium and silver bromiodide grains, wherein tabular silver bromiodide grains having a thickness of less than 0.3 micron and a diameter of at least 0.6 micron have an average aspect ratio of greater than 8:1 and account for at least 50 percent of the total projected area of said silver bromiodide grains.

4,434,227

IMMUNOASSAY FOR CLASS SPECIFIC IMMUNOGLOBULIN ANTIBODIES

John T. Unger, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,662

Int. Cl.³ G01N 33/54

U.S. Cl. 435—7

21 Claims

1. A method for determining an immunoglobulin antibody of an IgX class in a sample, wherein X is selected from the group consisting of M, A, D and E, comprising:

- (a) treating the sample with an effective amount of anti-IgX;
- (b) contacting the treated sample with a class specific antibody reagent comprising an antigen, for which the immunoglobulin antibody IgX is specific, coated on a solid support; to form an antigen-IgX complex on the solid support;
- (c) removing unbound sample;
- (d) treating the antigen-IgX complex with anti-IgX; and
- (e) determining the anti-IgX bound to the antigen-IgX complex as a measure of IgX in the sample.

4,434,228

IMMOBILIZATION OF BIOLOGICAL MATERIALS IN CONDENSED POLYALKYLENEIMINE POLYMERS

Wayne E. Swann, Columbia, Md., assignor to Genex Corporation, Rockville, Md.

Filed Apr. 20, 1982, Ser. No. 370,242

Int. Cl.³ C12P 13/22, 13/20; C12N 11/08, 11/04

U.S. Cl. 435—108

34 Claims

25. An insolubilized biological material composite comprising a biologically active material immobilized within a condensed polyalkyleneimine polymer, wherein amino groups on the polyalkyleneimine chains are bridged by a polycarboxylic acid.

4,434,229

ENZYME IMMOBILIZATION WITH AN IMMOBILIZING REAGENT IN VAPOR PHASE

Shiro Nankai, Neyagawa; Ken-ichi Nakamura, and Takashi Iijima, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 152,149, May 21, 1980, abandoned.

This application Mar. 16, 1982, Ser. No. 358,791

Claims priority, application Japan, May 21, 1979, 54-62472; Sep. 3, 1979, 54-112569

Int. Cl.³ C12N 11/00, 11/14, 11/06; C12M 1/40

U.S. Cl. 435—174

6 Claims

1. A method for the immobilization of an enzyme which comprises covering the surface of a solid support with an enzyme and, then immobilizing the enzyme on said support by contacting said enzyme with an immobilizing reagent selected from the group consisting of an aldehyde and a polymerized aldehyde provided in the vapor phase to cause an immobilizing reaction.

4,434,230

HUMAN NONSECRETORY PLASMACYTOID CELL LINE

Roy E. Ritts, Jr., Rochester, Minn., assignor to Research Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,277

Int. Cl.³ C12N 5/00, 5/02, 15/00; C12R 1/91

U.S. Cl. 435—240

6 Claims

1. A biologically pure cell culture comprising a continuous human, non-antibody-secreting, plasmacytoid cell line having ATCC deposit number CRL-8083 and clones or subclones thereof.

4,434,231

MEANS FOR EMBEDDING MICROORGANISMS IN A POLYMER MATRIX

Gerard Jung, Montlery, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 136,329, Apr. 1, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,441

Claims priority, application France, Apr. 5, 1979, 79 08597

Int. Cl.³ C12N 1/20

U.S. Cl. 435—253

18 Claims

1. A process for producing a dry, stable, storable, and biologically-active product of microorganisms embedded in matrix of a polymer gel comprising the steps of forming a polymer gel by combining at least one polymer selected from the group of the polysaccharides with a biologically-active microorganism-containing composition and at least partially cross-linking said polymer, said cross-linking embedding said microorganisms in the matrix of said polymer gel; and drying said polymer gel, said drying not converting the microorganisms embedded in said polymer gel to a dormant or latent state.

4,434,232

MEASURING VESSELS ANALYSIS UTILIZING FIXED ENZYME

Takashi Tabara, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jul. 7, 1981, Ser. No. 281,216

Claims priority, application Japan, Jul. 9, 1980, 55-93569

Int. Cl.³ C12M 1/40, 1/34

U.S. Cl. 435—288

15 Claims

1. A measuring vessel for analysis utilizing a fixed enzyme, said vessel comprising an inner wall surface at least a part of which is provided with at least one fixed enzyme, and an impervious bottom member movable substantially vertically within the vessel for locating liquid in the vessel at a predetermined level within the vessel.

4,434,233

METHOD OF TESTING OIL FOR IONIC CONTAMINANTS

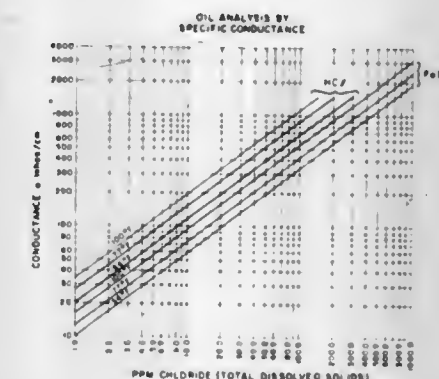
Joseph A. Bzdula, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 3, 1981, Ser. No. 239,920

Int. Cl.³ G01N 27/06

U.S. Cl. 436—60

13 Claims



1. A method of testing oil for ionic contamination which comprises the steps of: isolating a sample of the oil to be tested; mixing the oil sample with an approximately equal weight of distilled water to dissolve ionic contaminants in the oil sample into the distilled water; separating a portion of the water with the ionic contaminants dissolved therein from the oil sample; filtering the separated portion of contaminated water to remove residual oil from this portion of the contaminated water; determining the conductivity of the separated portion of the contaminated water; and comparing the conductivity of the contaminated water to the conductivity of distilled water at the same temperature to determine the overall level of ionic contamination of the oil.

4,434,234

METHOD AND KIT FOR SILVER STAINING SUBSTANCES SUPPORTED IN MATRIX

Lonnie D. Adams, Gobles, and David W. Sammons, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 250,512, Apr. 2, 1981, abandoned. This application Jun. 9, 1982, Ser. No. 386,505

Int. Cl.³ G01N 33/68

U.S. Cl. 436—86

15 Claims

1. A method for silver staining a substance supported in a matrix, comprising: (a) equilibrating said substance in an aqueous silver salt solution; (b) rinsing said substance in water; (c) subjecting said substance to a reducing solution; and (d) immersing said substance in a first, then a second aqueous carbonate or aqueous sulfate salt solution.

4,434,235

METHOD AND APPARATUS FOR DETECTING NITRITE IONS IN FLUIDS

Tavassa Rabi, and Eugen Szekely, both of Beer Sheva, Israel, assignors to Ben Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Jan. 12, 1982, Ser. No. 338,837

Claims priority, application Israel, Jan. 21, 1981, 61951

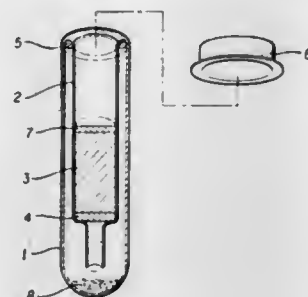
Int. Cl.³ G01N 33/52, 33/84

U.S. Cl. 436—110

13 Claims

1. A method for detecting the presence of nitrite ions in fluids comprising pretreating nitrite containing fluids to en-

hance the detectability of the nitrite ions therein with a nitrite detecting reagent, said pretreatment step comprising passing



said fluid through activated charcoal prior to combination with said nitrite detection reagent.

4,434,236

IMMUNOASSAY WHEREIN LABELED ANTIBODY IS DISPLACED FROM IMMOBILIZED ANALYTE-ANALOGUE

J. William Freytag, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Oct. 20, 1982, Ser. No. 435,454

Int. Cl.³ G01N 33/54, 33/56, 33/58

U.S. Cl. 436—512

10 Claims

1. A method for determining the amount of an analyte in a liquid sample, comprising the following steps:

- (1) contacting a liquid sample suspected of containing analyte with a solid phase having immobilized thereon an analyte-analogue to which there is displaceably bound a labeled, anti-analyte antibody in molar excess over the analyte, wherein the dissociation constant between said antibody and the analyte-analogue is greater than the dissociation constant between said antibody and the analyte, whereby said antibody is displaced from the immobilized analyte-analogue as said antibody forms a complex with the analyte from the liquid sample;
- (2) separating said complex from the solid phase; and
- (3) measuring the amount of said complex which is related to the amount of analyte initially present in the liquid sample.

4,434,237

HUMAN LEUKOCYTIC PYROGEN TEST FOR THE DETECTION OF EXOGENOUS FEVER-PRODUCING SUBSTANCES

Charles A. Dinarello, 133 Mt. Vernon St., Boston, Mass. 02108
Filed Mar. 31, 1982, Ser. No. 363,839

Int. Cl.³ G01N 33/56

U.S. Cl. 436—542

48 Claims

1. A method for determining the pyrogenicity of a substance, comprising the step of:

incubating said substance in the presence of a cell mixture for at least 46 hours at 35° to 39° C., wherein said cell mixture comprises human lymphocytes and human monocytes with a cell ratio of lymphocytes to monocytes of at least 2:1 and a composition with respect to the total of all cells present comprising at least 15% monocytes and no more than 10% granulocytes and wherein said cells have a cell contact ratio of from 0.0 to 0.75.

4,434,238

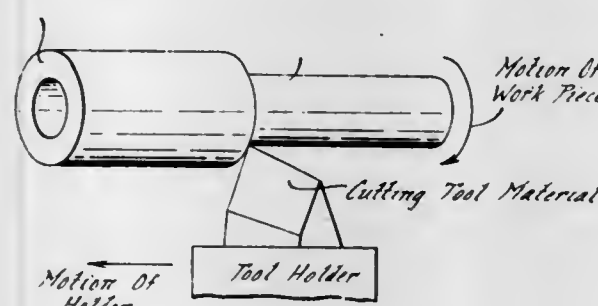
CERAMIC CUTTING TOOL FORMED FROM Si_3N_4 - Y_2O_3 - SiO_2 AND METHOD OF MAKING

Andre Ezis, Grosse Ile; Shyam K. Samanta, Ypsilanti, and Krishnamoorthy Subramanian, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 232,754, Feb. 9, 1981, which is a continuation-in-part of Ser. No. 911,256, May 31, 1978, abandoned. This application Nov. 16, 1981, Ser. No. 321,837
Int. Cl.³ C04B 35/58

U.S. Cl. 501—98

4 Claims



1. A unitary silicon nitride comprising ceramic formed from about 4% to about 12% by weight Y_2O_3 and the remainder consisting of Si_3N_4 and a minor amount of SiO_2 , wherein the Y_2O_3/SiO_2 weight ratio is at least about 1.6 and which has intergranular crystalline secondary phases consisting essentially of $YSiO_2N$, $Y_{10}Si_7N_4O_{23}$ and $Y_2Si_2O_7$, with the $YSiO_2N$ phase comprising at least 25% by volume of said secondary phases.

4,434,239

PROCESS FOR MANUFACTURING CORDIERITE COMPOSITIONS

Pierre C. Aitcin, Sherbrooke, Canada, assignor to Universite De Montreal, Quebec, Canada

Filed Feb. 18, 1983, Ser. No. 467,882

Claims priority, application Canada, Feb. 19, 1982, 396,606

Int. Cl.³ C04B 35/04, 35/18, 35/20

U.S. Cl. 501—118

1 Claim

1. Process for the manufacture of industrial cordierite ceramic units containing from 45 to 68% by weight of silica 16 to 37% by weight of magnesia and 12 to 45% by weight of alumina which comprises

- (a) mixing from 15 to 60% by weight of the non-magnetic fraction of asbestos tailings having a $MgO:SiO_2$ ratio of from 0.8 to 1.25 with 40 to 85% of a kaolin clay by weight and 0 to 10% of alumina;
- (b) shaping said mixture in green unit forms;
- (c) curing said units at room temperature for 24 h then at 110° C. for 24 h;
- (d) firing said cured units at a temperature of from 1350°–1400° C.

4,434,240

RECOVERY OF NOBLE METAL VALUES FROM CARBONYLATION RESIDUES

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,362

Int. Cl.³ B01J 31/40, 23/96; C07C 51/10; C01G 55/00

U.S. Cl. 502—24

10 Claims

1. A process for recovering rhodium from the high molecular weight residues containing organic carbonyl and acetate functions formed in rhodium-lithium catalyzed carbonylation reactions in which esters and ethers are combined with carbon monoxide in the presence of iodides to form anhydrides consisting essentially of:

- (a) separating and concentrating said residue from the carbonylation reaction mixture;

- (b) treating the separated and concentrated residue of (a) with a reagent capable of precipitating a solid containing substantially all the rhodium content of said residue and consisting of at least one member of the group consisting of alkali metal peroxides, alkali metal hydroxides, alkali metal borohydrides, acidified sodium bisulfate and formaldehyde;
- (c) separating substantially all of the precipitated solid of (b).
2. A process of claim 1 further comprising: (d) returning said solid to the carbonylation reaction mixture for reuse.
3. A process of claim 2 wherein said separated solid is treated with an aqueous solution of hydrogen peroxide to concentrate the rhodium values.

4,434,241

CATALYST RECOVERY PROCESS FROM TAR FROM CARBONYLATION REACTIONS

Thomas H. Larkins, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,727

Int. Cl.³ B01J 31/40, 23/96, 27/32; C07C 51/12

U.S. Cl. 502—24

4 Claims

1. A process for the recovery of rhodium, lithium, and iodine values from tar which is generated during carbonylation reactions comprising the steps of:

- (a) vaporizing volatile components from said tar;
 - (b) adding water to the remaining tar and heating the resulting mixture so as to extract corrosion metal ions and lithium ions into the aqueous phase;
 - (c) separating said aqueous phase;
 - (d) drying the resulting tar residue and leaching said residue with acetic acid at reflux temperature so as to remove iodine species, soluble organic polymers, and corrosion metal ions from said residue;
 - (e) burning said residue at a temperature and for a period of time sufficient to remove carbonaceous impurities therefrom; and
 - (f) recycling the rhodium-enriched residue to the reaction process.
2. The process of claim 1 which comprises the additional steps of concentrating the acetic acid leachate and burning the resulting concentrate; scrubbing the off-gas from said burning step with aqueous alkali hydroxide; adding sulfuric acid to the resulting iodide-containing alkali hydroxide solution; and heating the resulting sulfuric acid solution so as to distill and recover HI/I_2 .

4. A process for the recovery of rhodium, lithium, and iodine values from tar which is generated during the carbonylation of methyl acetate to acetic anhydride comprising the steps of:

- (a) vaporizing volatile components from said tar;
- (b) adding water to the remaining tar and heating the resulting mixture so as to extract corrosion metal ions and lithium ions into the aqueous phase;
- (c) separating said aqueous phase;
- (d) evaporating water from said aqueous phase and recycling the resulting lithium-rich residue to the reaction process;
- (e) drying the tar residue from the water extraction step and leaching said residue with acetic acid at reflux temperature so as to remove iodine species, soluble organic polymers, and corrosion metal ions from said residue;
- (f) burning said residue at a temperature and for a period of time sufficient to remove carbonaceous impurities therefrom;
- (g) recycling the rhodium-enriched residue to the reaction process;
- (h) concentrating the acetic acid leachate and burning the resulting concentrate;
- (i) scrubbing the off-gas from said burning step with aqueous alkali hydroxide;
- (j) adding sulfuric acid to the resulting iodide-containing alkali hydroxide solution; and

- (k) heating the resulting sulfuric acid solution so as to distill and recover HI/I_2 .

4,434,242

POLYMERIZATION CATALYST

Paul V. Roling, Spring, Tex.; Richard L. Veazey, East Windsor, and David E. Aylward, Madison, both of N.J., assignors to Cities Service Co., Tulsa, Okla.

Filed Nov. 24, 1982, Ser. No. 444,288

Int. Cl.³ C08F 4/68

U.S. Cl. 502—107

25 Claims

1. A catalyst composition consisting essentially of the product obtained by:

- (1) drying an inorganic oxide having surface hydroxyl groups to form a support that is substantially free of adsorbed water;
- (2) reacting the surface hydroxyl groups of the support with at least a substantially stoichiometric amount of at least one organometallic compound corresponding to the formula $R_xMR'_yR''_z$, wherein M is a metal of Group III of the periodic table, R is an alkyl group containing 1 to 12 carbon atoms, R' and R'' are independently selected from the group consisting of H, Cl, and alkyl and alkoxy groups containing 1 to 12 carbon atoms, x has a value of 1 to 3, and y and z both represent values of 0 to 2, the sum of which is not greater than 3-x;
- (3) reacting the thus-treated support with at least about 0.001 mol, per mol of organometallic compound, of at least one vanadium compound corresponding to a formula selected from $(RO)_nVOX_{3-n}$ and $(RO)_mVX_{4-m}$, in which formulas R represents a C_1 - C_{18} monovalent hydrocarbon radical that is free of aliphatic unsaturation, X is Cl or Br, n has a value of 0 to 3, and m has a value of 0 to 4, and
- (4) reacting the product of step 3 with at least about 0.1 mol, per mol of organometallic compound, of an ether-alcohol corresponding to the formula $R''[OCHR'(CH_2)_nCHR']_mOH$, wherein R and R' are independently selected from the group consisting of hydrogen and alkyl groups containing 1-18 carbon atoms, R'' is a hydrocarbyl group, n has a value of 0 to 16, and m has a value of at least 1.

4,434,243

AQUEOUS TITANATION OF CATALYST SUPPORT CONTAINING CHROMIUM WITH SOLUBILIZED $Ti(OR)_4$

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 9, 1982, Ser. No. 356,582

Int. Cl.³ B01J 21/06, 23/86, 31/12

U.S. Cl. 502—171

14 Claims

1. A method comprising:

- (a) reacting a titanium hydrocarbyloxyde of the formula $Ti(OR)_4$ wherein R is a hydrocarbyl radical, with a polyhydroxy organic compound to give a reaction product, a mole ratio of said polyhydroxy organic compound to said titanium hydrocarbyloxyde being above 2;
- (b) combining the thus formed product with an aqueous solution of a strong acid at a temperature of 30° C. or below to form a water soluble titanium composition, a mole ratio of said titanium hydrocarbyloxyde to said acid being within the range of 0.25:1 to 2:1; and
- (c) combining said water soluble titanium composition while in solution with an inorganic catalyst support and a chromium compound.

4,434,244

MALEIC ANHYDRIDE CATALYST RECYCLE

George E. Kuhlmann, Naperville, and Stephen V. Hoover, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 7, 1982, Ser. No. 385,794

Int. Cl.³ B01J 27/14

U.S. Cl. 502—209

12 Claims

1. In a process for the production of phosphorus-vanadium-oxide catalyst in an organic reaction medium wherein the ratio of phosphorus to a vanadium is in the range of about 1.2:1 to about 1.8:1 the improvement comprising adding H_3PO_4 immediately after the vanadium reduction has terminated and recycling mother liquor comprising at least 15 weight percent ortho xylene remainder being orthophosphoric acid and aliphatic alcohol and thus recovering up to ninety percent of the vanadium.

4,434,245

FLUID PARTICLE COOLING PROCESS AND APPARATUS

David A. Lomas, Arlington Heights, and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

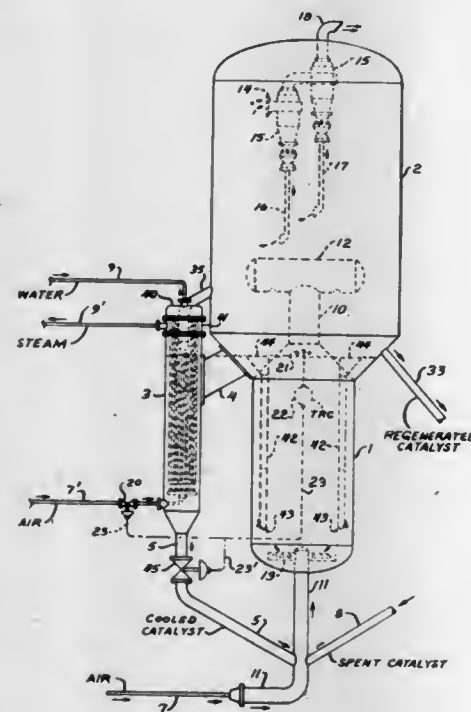
Continuation-in-part of Ser. No. 273,296, Jun. 15, 1981, Pat. No. 4,353,812. This application Aug. 30, 1982, Ser. No. 413,047

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.³ B01J 21/20, 29/38; C10G 11/18; F27B 15/08

U.S. Cl. 502—2

5 Claims



1. A process for the controlled cooling of hot fluidized catalysts which comprises:

- passing spent catalyst having coke deposited thereon, cooled catalyst and regeneration gas containing oxygen to the lowermost portion of a catalytic combustion chamber to oxidize said coke in a relatively dense bed of fluidized catalyst;
- passing said oxidized catalyst upward through said combustion chamber to an uppermost section of said combustion chamber containing catalyst in a relatively dilute phase;
- passing said oxidized catalyst through said uppermost section of said combustion chamber to a surmounted disengagement chamber having a relatively dense phase of catalyst collecting in the lowermost portion of said disengagement chamber;
- passing said catalyst from said lowermost portion of said disengagement chamber to a heat removal zone situated

extrinsic from said combustion and said disengagement chamber;

- cooling said catalyst in said extrinsic heat removal zone by indirect heat exchange against a cooling fluid entered and removed from said extrinsic heat exchange zone;
- fluidizing said catalyst in said heat exchange zone by passage of a fluidizing gas in direct contact with said catalyst being cooled;
- passing said cooled catalyst to said combustion chamber as the cooled catalyst of step (a), wherein said extend of fluidization in step (f) and said temperature of said regeneration system is controlled by the combination of:
 - sensing a temperature in the uppermost section of said combustion chamber having catalyst in said relatively dilute phase;
 - transmitting said sensed temperature to a temperature controller device wherein said temperature is compared with a predetermined desired temperature set point to develop a controller output signal;
 - transmitting said controller output signal to a flow regulation means which regulates the quantity of flow of fluidizing gas in step (f) to said extrinsic heat exchange zone; and
 - transmitting said controller output signal to a flow regulation means which regulates the quantity of flow of cooled catalyst from said extrinsic heat exchange zone to said combustion chamber as said cooled catalyst of step (a).
- The process of claim 1 wherein said cooling fluid of step (e) comprises water.
- The process of claim 4 wherein said water cooling fluid changes from liquid to gas phase while absorbing heat in said heat exchange means.

4,434,246

PROCESS FOR PREPARING ETHYLENE GLYCOL AND LOWER MONOHYDRIC ALCOHOLS FROM SYNGAS USING A NOVEL CATALYST SYSTEM

Leslie H. Simons, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,259

Int. Cl.³ C07C 27/06

U.S. Cl. 518—700

18 Claims

1. A process for preparing ethylene glycol and lower monohydric alcohols from syngas which comprises contacting a mixture of carbon monoxide and hydrogen with a catalyst system comprising a ruthenium-containing compound and a substituted aromatic hydrocarbon compound wherein the substituted aromatic hydrocarbon compound is a member of the group consisting of (1) mononuclear and polynuclear aromatic hydrocarbon compounds substituted on at least one ring carbon atom with an alkyl, alkenyl, cycloalkenyl or cycloalkyl group, and (2) mononuclear and polynuclear aromatic hydrocarbon compounds substituted on at least one ring carbon atom with a halogen atom, the ruthenium-containing compound and the substituted aromatic hydrocarbon compound being dispersed in a low melting quaternary phosphonium bromide, wherein the ruthenium-containing compound, substituted aromatic hydrocarbon and quaternary phosphonium salt are utilized in a mole ratio of ruthenium containing compound 1 to 4 moles, substituted aromatic hydrocarbon 1 to 10 moles and the phosphonium salt 20 to 50 moles, and heating the resulting mixture at a temperature of 150° C. to 350° C. and a pressure of 500 psi to 5500 psi for sufficient time to produce the desired ethylene glycol and monohydric alcohols.

4,434,247

CONTINUOUS PROCESS FOR THE MANUFACTURE OF ETHYLENE GLYCOL

Bernard D. Dombek, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 190,988, Sep. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 91,242, Nov. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,667, Dec. 21, 1978, abandoned, and Ser. No. 971,816, Dec. 21, 1978, abandoned. This application Mar. 16, 1982, Ser. No. 358,703

Int. Cl.³ C07C 27/06

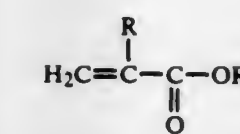
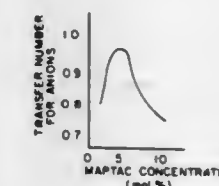
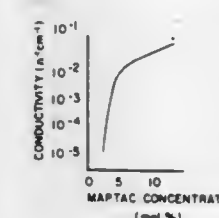
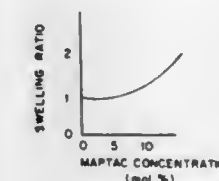
U.S. Cl. 518—700

34 Claims

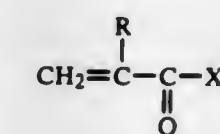
1. The continuous process for making the products methanol, ethylene glycol and ethanol, directly from the reaction of hydrogen and carbon monoxide, which comprises:

- establishing and maintaining within a reaction zone a solvent-containing liquid phase comprising solubilized ruthenium carbonyl complex in which the solvent has a dielectric constant of at least 2, determined at 25° C. or at its melting point, which ever is higher;
- continuously supplying hydrogen and carbon monoxide in said liquid phase;
- maintaining said liquid phase for a sufficient period of time at a temperature and pressure which causes said hydrogen and carbon monoxide to react to produce such products and ethylene glycol further reacts to form ethylene glycol reaction products, said temperature is between about 50° C. and 400° C. and said pressure is between about 500 psia (35.15 kg/cm²) and 15,000 psia (1,054.6 kg/cm²); and
- repeatedly removing said liquid phase from the reaction zone before the concentration of (i) ethylene glycol exceeds 20 wt. % of said liquid phase and (ii) ethylene glycol reaction products exceed 50 wt. % of the total ethylene glycol and ethylene glycol reaction products produced in said liquid phase.

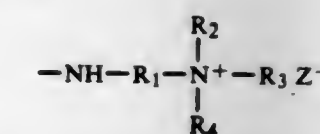
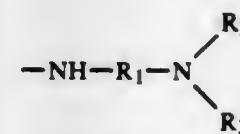
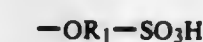
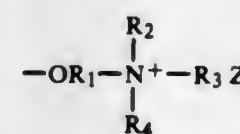
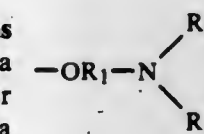
consisting of a hydrophobic acrylic monomer having the formula:



where R is H or CH₃ and R₁ is methyl, ethyl or butyl, and mixtures of two or more of said hydrophobic monomers; (B) a minor, ionogenic acrylic monomer component selected from the group consisting of: (i) acrylic acid; (ii) methacrylic acid; (iii) monomers represented by the formula:



wherein:
R is H or CH₃,
and X is



4,434,248

PROCESS FOR PREPARING ALKANOLS FROM SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,317

Int. Cl.³ C07C 29/15, 27/06

U.S. Cl. 518—700

22 Claims

1. A process for making alkanols which comprises reacting a mixture of CO and H₂ at a pressure of about 500 psig or greater and at a temperature of at least 150° C. in the presence of a catalyst system comprising a ruthenium-containing compound, a material selected from the group consisting of a nickel-containing compound or an iron-containing compound and a quaternary phosphonium salt, in the presence of an inert, oxygenated solvent.

4,434,249

METHOD OF PREPARING ACRYLIC ION-TRANSFER MEMBRANES

Cindy L. Ballestrasse, Seattle, and Robert T. Ruggeri, Kirkland, both of Wash., assignors to Electrochemical Technology Corp., Seattle, Wash.

Filed Jun. 28, 1982, Ser. No. 392,731

Int. Cl.³ B01J 47/12

U.S. Cl. 521—27

22 Claims

1. A process for forming ion-transfer membranes which comprises the following steps in sequence:

- a major, non-ionic component selected from the group

R₁ is alkylene or hydroxyalkylene
R₂, R₃ and R₄ are hydrogen, alkyl, or hydroxyalkyl, and
Z⁻ is a halide, acetate, or methyl sulfate ion; and, (iv) mix-

tures of two or more of said ionogenous acrylic monomers; and
 (C) an organic solvent,
 wherein the concentration of said major, non-ionic component in said solvent is in the range 2.5 to 7.5 molar, and the concentration of said minor, ionogenous component in said solvent is in the range 0.10 to 0.75 molar, and wherein the molar concentration of said ionogenous component is between 3 and 12% of the total monomer content in said reaction mixture;
 depositing a thin film of said reaction mixture on a substrate; and
 heating said deposited film in a substantially oxygen-free environment at a temperature between 55 degrees C. and 80 degrees C.

4,434,250 POROUS TUBING

Erich Kessler, Hoechst, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

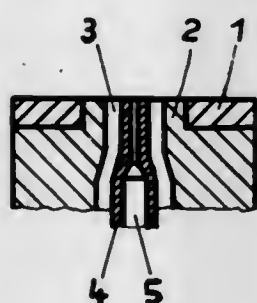
Filed Dec. 29, 1981, Ser. No. 335,393

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049557

Int. Cl.³ B29D 27/00; B29F 3/04

U.S. Cl. 521—64

19 Claims



1. Method for the production of porous tubing, comprising extruding a homogeneous mixture of at least two components, one component a thermoplastic meltable polymer and the other component a liquid inert in relation to the polymer, both components forming a binary system which in liquid aggregate state displays a range of complete miscibility and a range with a miscibility gap, at a temperature above the separation temperature, substantially vertically upwardly without horizontal expansion using an annular slot nozzle and blowing of gas or dosing-in of liquid into the interior of the nozzle, into a bath of a cooling medium, the temperature of said bath being below the separation temperature of the homogeneous mixture, allowing the tubing to solidify, and lixiviating the liquid of the tubing.

15. Porous polymer tubing produced by the method according to claim 1, having a wall thickness between about 0.5 and 2.5 mm and an outer diameter between about 2.5 and 25 mm.

4,434,251

CROSS-LINKED POLYVINYL CHLORIDE RESIN FOAM AND METHOD OF MANUFACTURING THE SAME

Junnosuke Sasajima; Hiroshi Nagai; Kenji Mogi, all of Hiratsuka; Akio Nojiri, and Naonori Shiina, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00128, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03461, PCT Pub. Date Dec. 10, 1981

PCT Filed Jun. 4, 1981, Ser. No. 346,039

Claims priority, application Japan, Jun. 4, 1980, 55-75144

Int. Cl.³ C08J 9/10; B01J 1/10; B29D 27/00

U.S. Cl. 521—75

12 Claims

1. A method of continuously manufacturing a cross-linked polyvinyl chloride resin foam sheet which comprises:
 a first step of mixing polyvinyl chloride resin with a plasti-

cizer, a stabilizer, a cross-linking promoter and a blowing agent comprising substep (a) mixing said polyvinyl chloride resin, said plasticizer and said stabilizer at the gelling temperature of the resin to form a gelated mixture and substep (b) thereafter adding and uniformly admixing a blowing agent to the gelated mixture at a temperature at which said blowing agent does not decompose, and adding said cross-linking promoter so that it is mixed with said polyvinyl chloride resin, plasticizer and stabilizer in substep (a) or is added after said gelated mixture has been formed and admixed in said substep (b), and continuously forming the gelated mixture into a sheet by extruder or calender roll at a temperature at which said blowing agent does not decompose;

a second step of irradiating said sheet with ionizing radiation; and

a third step of thermally foaming the cross-linked sheet to continuously form said foamed sheet.

4,434,252

RIGID POLYVINYL CHLORIDE FOAM

Antoon Dorrestijn, Grevenbicht; Pieter J. Lemstra, Brunssum, and Lambert H. T. Van Unen, Heerlen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 256,668, Apr. 22, 1981, abandoned.

This application Dec. 14, 1982, Ser. No. 449,647

Claims priority, application Netherlands, Apr. 26, 1980, 8002463; Apr. 26, 1980, 8002464

Int. Cl.³ C08J 9/14

U.S. Cl. 521—134

10 Claims

1. New rigid polyvinyl chloride foam having a density of less than 200 kg/m³ and having a uniform, fine-celled cell-structure with closed cells of which at least 95% have a cell diameter of at most 300 μm, consisting of a rigid vinyl chloride homopolymer containing per 100 parts by weight of polyvinyl chloride 0.1–15 parts by weight of a homo- or copolymer of an alkyl methacrylate having an alkyl group of 1–10 carbon atoms having a viscosity of the solution $\eta_{0.1}$ of between 1×10^{-6} and 4×10^{-6} m²/s measured at 293 K in 1,2 dichloro ethylene and foamed by use of a physical blowing agent.

4,434,253

LOW DENSITY CLOSED-CELL FOAMED ARTICLES FROM ETHYLENE COPOLYMER/VINYL OR VINYLIDENE HALIDE BLENDS

John Rys-Sikora, Bel Aire, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del. and Bata Shoe Company, Ontario, Canada

Division of Ser. No. 424,449, Sep. 27, 1982, Pat. No. 4,391,923.

This application Feb. 22, 1983, Ser. No. 468,582

Int. Cl.³ C08J 9/00; C08L 81/00

U.S. Cl. 521—134

16 Claims

1. A closed-cell foamed article comprising a crosslinked blend of

(a) 5 to 95 weight percent based on the blend of a copolymer of

(i) ethylene;

(ii) 1 to 60 weight percent based on copolymer of a softening monomer selected from the group consisting of unsaturated mono- or dicarboxylic acids of 3–20 carbon atoms; esters of said unsaturated mono- or dicarboxylic acids, vinyl esters of saturated carboxylic acids where the acid group has 2–18 carbon atoms, vinyl alkyl ethers wherein the alkyl group has 1–18 carbon atoms, vinyl or vinylidene halides, acrylonitrile, methacrylonitrile, norbornene, alpha olefins of 3–12 carbon atoms and vinyl aromatic compounds; and

(iii) 1 to 30 weight percent based on copolymer of a member of the group consisting of carbon monoxide or sulfur dioxide;

(b) 5 to 95 weight percent of a vinyl or vinylidene halide polymer.

4,434,254

Patent Not Issued For This Number

4,434,255

METHOD OF UTILIZING GLASS FIBERS IN COMPOSITE GASKET STRUCTURES

Clarence W. Charon, Newark, and Kenneth E. Reid, Columbus, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Apr. 21, 1982, Ser. No. 370,654

Int. Cl.³ C08K 9/10

U.S. Cl. 523—209

1 Claim

1. A method of producing a sheet material consisting of clay, glass fibers and a latex resin which comprises:

a. forming a slurry of particulate clay, a latex resin and a surfactant;

b. adjusting the pH of said slurry to form a second slurry and to encapsulate the clay in the resin and in an outer film of the surfactant;

c. adding glass fibers to the second slurry to form a third slurry; and,

d. pressing said third slurry to force said clay through said latex and said film of surfactant to produce a cohesive sheet.

4,434,256

PAINT BINDERS

Gert Dworak, and Werner Staritzbichler, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Continuation of Ser. No. 87,345, Oct. 23, 1979, abandoned. This application Aug. 10, 1982, Ser. No. 406,859

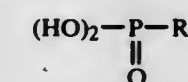
Claims priority, application Austria, Oct. 31, 1978, 7763/78

Int. Cl.³ C08G 59/40; C08L 63/00

U.S. Cl. 523—402

9 Claims

1. Paint binders comprising an aqueous solution formed by the neutralization of the reaction product obtained by slowly adding a polyepoxide containing reactive oxirane groups dissolved in an inert solvent to an aqueous solution of a phosphonic acid, said aqueous solution containing about 0.12 to 1 mole of phosphonic acid per mole of oxirane group, with a base selected from the group consisting of alkali hydroxides, ammonia, aliphatic amines, cycloaliphatic amines, and alkanolamines, said phosphonic acid having the formula



wherein R stands for —CH₂OH, —CH₂—CH₂—OH, —CH=CH₂ or —CH₂—CH=CH₂; said binders having a high degree of cross-linking density.

4,434,257

CEMENT COMPOSITION

Shizuo Narisawa; Yoshito Taira; Yuuji Yoshii, all of Ichihara, and Tomizou Kondou, Kyoto, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 21, 1982, Ser. No. 420,616

Claims priority, application Japan, Sep. 22, 1981, 56-150080

Int. Cl.³ C04B 7/02, 7/35

U.S. Cl. 524—5

8 Claims

1. An improved cement composition which comprises a mixture of a cement composition and an emulsifier comprising an ethylene-vinyl acetate copolymer emulsion containing 1 to 10 parts by weight of a polyvinyl alcohol and 0.1 to 10 parts by weight of a higher fatty acid ester of a polyvalent alcohol having an HLB of 10 or less per 100 parts by weight of the solid resin components of said emulsion, said ethylene-vinyl acetate copolymer emulsion comprising a copolymer having 5 to 40% by weight of an ethylene content, 20 to 95% by weight of a vinyl acetate content and 0 to 50% by weight of a fatty acid vinyl ester other than vinyl acetate, vinyl chloride and a (meth)acrylic acid ester.

4,434,258

ORGANIC ACID CONTAINING FILLED AND PLASTICIZED THERMOPLASTIC COMPOSITIONS BASED ON ETHYLENE INTERPOLYMERS

Frederick G. Schumacher, Wilmington, Del., and Walter Yllo, Carney's Point, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1982, Ser. No. 339,468

Int. Cl.³ C08K 5/09, 5/11, 5/20

U.S. Cl. 524—13

18 Claims

1. A thermoplastic composition consisting essentially of
 (a) from 0 to about 50% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- and dicarboxylic acids of 3 to 5 carbon atoms, salts of said unsaturated acids, and esters of said unsaturated acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being from about 40 to 95% by weight, the comonomer content of said copolymer being from about 5 to about 60% by weight, and the melt index of said copolymer being from 0.1 to about 400, provided that when said copolymer of ethylene is an ethylene/vinyl ester or ethylene/unsaturated mono- or dicarboxylic acid ester copolymer said copolymer can contain up to about 15 percent by weight of carbon monoxide or sulfur dioxide; provided, that when the olefin polymer of paragraph (e) is absent, the amount of ethylene copolymer is at least about 5% by weight;

(b) from 0 to 20 percent by weight of at least one plasticizer selected from the group consisting of processing oils, epoxidized oils, polyesters, polyethers, and polyether esters;

(c) from about 40 to about 90% by weight of filler;

(d) from about 0.05 to about 5% by weight of at least one organic acid or acid derivative selected from the group consisting of saturated mono- and polycarboxylic acids having from 6 to 54 carbon atoms, unsaturated mono- and dicarboxylic acids having from 12 to 20 carbon atoms, alicyclic and aromatic carboxylic acids and mono-, di- and trivalent metal salts, esters and amides of said organic acids, provided that the amount of acid is at least equal to the amount at which concentration a step-wise increase occurs on a plot of tensile elongation at break expressed as a function of acid concentration;

(e) from 0 to about 55% by weight of olefin polymer selected from the group consisting of low density branched polyethylene, high density linear polyethylene, linear copolymers of ethylene and another olefin comonomer, polypropylene and copolymers of propylene and ethylene where

the ethylene content is up to 20% by weight provided, that when the ethylene copolymer of paragraph (a) is absent the amount of olefin polymer is at least about 5% by weight; and
(f) from 0 to about 30% by weight of tackifier.

4,434,259

BASE COATINGS FOR USE ON VACUUM METALLIZED PAPER

Samuel Gold, Watchung; Arthur A. Tracton, Somerville, and Josephine M. Rosenski, North Plainfield, all of N.J., assignors to National Starch and Chemical Corporation, Bridge-water, N.J.

Filed Apr. 26, 1982, Ser. No. 371,897

Int. Cl.³ B05D 3/06; G02B 17/00

U.S. Cl. 524—31

10 Claims

1. A lacquer base coating for paper substrates to be vacuum metallized, which consists essentially of a volatile organic solvent containing about 10–30% by weight of a film-forming coating mixture of:

- about 90–98% by weight of a copolymer of 97.5–99% vinyl acetate and 1–2.5% acrylic acid or a copolymer of 94–97% vinyl acetate and 3–6% monoethyl maleate, with the copolymer percentages totaling 100% by weight; and
- about 2–10% by weight of nitrocellulose resin solids, said resin being soluble in said solvent and having a nitrogen content of about 12% by weight and a viscosity of from about 4–5 seconds in a 25% solution to about 3–4 seconds in a 20% solution of ethyl alcohol/toluene/ethyl acetate (25/55/20 parts by weight), when measured using the Falling Ball method;

said coated substrate characterized by a balanced combination of alkali removability, water-resistance, and block-resistance.

4,434,260

THERMOPLASTIC RESIN SHAPING WITH OLEFIN/MALEIMIDE COPOLYMER LUBRICANT
Heinz Beck, Duren; Werner Holtvoigt, Lobne-Riessel, and Ambar Mukerjee, Nideggen, all of Fed. Rep. of Germany, assignors to Akzona, Inc., Asheville, N.C.
Continuation of Ser. No. 229,428, Jan. 29, 1981, abandoned, which is a continuation of Ser. No. 48,412, Jun. 14, 1979, abandoned. This application Mar. 15, 1982, Ser. No. 357,952
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825962

Int. Cl.³ C08L 27/06, 39/00

U.S. Cl. 524—104

3 Claims

1. In a process for shaping at least one thermoplastic synthetic resin, the improvement comprising shaping the resin in the presence of a lubricant-effective amount of an α -olefin/maleinimide copolymer having an average molecular weight determined by gel permeation chromatography from about 5,000 to about 60,000.

4,434,261

EXTRUDABLE SELF-SUPPORTING HOT MELT ADHESIVE SHEET

Edward G. Brugel, Wilmington, Del., and Walter Yllo, Carneys Point, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1982, Ser. No. 405,756

Int. Cl.³ C08K 5/01, 5/09, 5/11, 5/20

U.S. Cl. 524—109

16 Claims

1. An extrudable self-supporting hot melt adhesive sheet which is nonadhesive at room temperature but is adhesive at about 150° F., is self-supporting at about 200°–350° F. and has a melt index of from about 10 to about 500, said sheet comprising (a) from about 10 to about 50% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- and dicarboxylic acids of 3 to 5 carbon atoms, salts of said unsaturated acids, and esters of said unsatu-

rated acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being from about 40 to about 95% by weight, the comonomer content of said copolymer being from about 5 to about 60% by weight, and the melt index of said copolymer or combination of copolymers being such that would result in a melt index of from about 10 to about 500 for the fully compounded adhesive, provided that when said copolymer of ethylene is an ethylene/vinyl ester or ethylene/unsaturated mono- or dicarboxylic acid ester copolymer said copolymer can contain up to about 15 percent by weight of carbon monoxide or sulfur dioxide; (b) from 2 to about 30 percent by weight of at least one plasticizer selected from the group consisting of processing oils, epoxidized oils, polyesters, polyethers, and polyether esters; (c) from about 20 to about 80% by weight of filler; (d) from 0 to about 10% by weight of at least one additive selected from the group consisting of organic acids, organic acid derivatives and surface active agents.

4,434,262

MELT PROCESSABLE BLEND OF A LOW MOLECULAR WEIGHT LIQUID CRYSTALLINE COMPOUND AND A POLYOLEFIN OR POLYESTER

Alan Buckley, Berkeley Heights; Anthony B. Conciatori, Chatham, and Gordon W. Calundann, N. Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,912

Int. Cl.³ C08K 5/29, 5/06

U.S. Cl. 524—237

29 Claims

1. A melt processable blend comprising a major amount of a melt processable polymer which is not capable of forming an anisotropic melt phase apart from the blend selected from the group consisting of a polyolefin and a polyester and a minor amount of a liquid crystalline compound having a molecular weight of less than about 1000 selected from the group consisting of N,N'-bis(p-methoxybenzylidene)- α , α' -bi-p-toluidine, p-methoxycinnamic acid, N,N'-bis(4-octyloxybenzylidene)-p-phenylenediamine, and mixtures thereof which is capable of forming an anisotropic melt phase apart from the blend at the melt processing temperature of the blend.

4,434,263

HYDROLYTIC STABILITY IMPROVING ADDITIVE
Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1982, Ser. No. 400,186

Int. Cl.³ C08K 3/40, 5/09; C08L 81/00, 81/04

U.S. Cl. 524—322

50 Claims

1. A composition comprising (a) poly(arylene sulfide), (b) glass and (c) alkyl carboxylic acid represented by the formula $R-COOH$ wherein R is an alkyl radical and wherein R has at least 5 carbon atoms.

4,434,264

HIGH CLARITY PROPYLENE POLYMER COMPOSITIONS OF IMPROVED IMPACT STRENGTH
Harold K. Ficker, Wayne, N.J., assignor to El Paso Polyoelins Company, Paramus, N.J.

Filed Mar. 22, 1983, Ser. No. 477,703

Int. Cl.³ C08K 5/09; C08L 23/12

U.S. Cl. 524—323

9 Claims

1. A propylene polymer composition comprising
(a) from about 80 to about 95 wt % of a random copolymer of propylene and ethylene containing from about 1 to about 6 wt % polymerized ethylene, and
(b) from about 5 to about 20 wt % of a linear low density polyethylene copolymer of ethylene and at least one C_4 – C_{18} α olefin comonomer, said copolymer having a density in the range from about 0.910 to about 0.935 gm/cc.

4,434,265

METACYCLOPHANE, SYNTHESIS THEREOF, AND COMPOSITIONS STABILIZED THEREBY
Dwight W. Chasar, Northfield, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

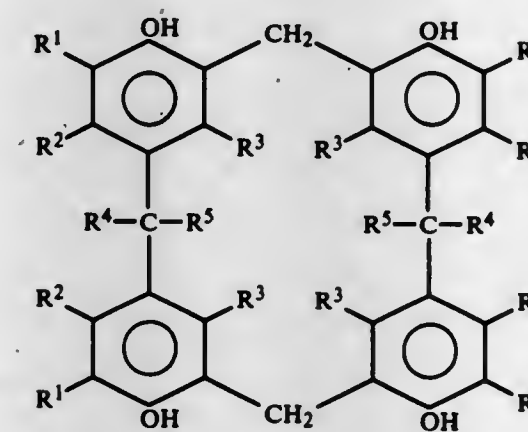
Filed Jun. 15, 1983, Ser. No. 504,755

Int. Cl.³ C07C 39/12, 39/24; C08K 5/13

U.S. Cl. 524—339

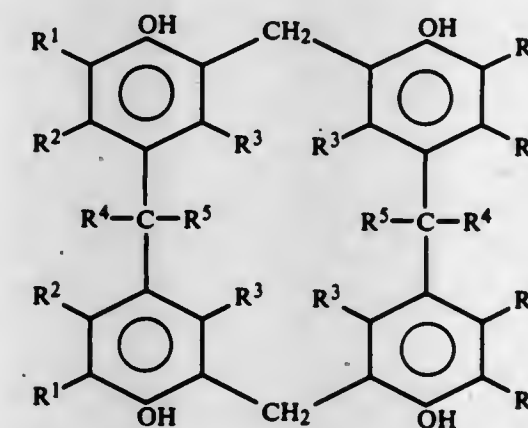
11 Claims

1. The compound metacyclophane represented by the structure



wherein, R^1 , R^2 , R^3 , R^4 and R^5 may each be the same or different and represent halogen; alkyl having from 1 to about 18 carbon atoms; alkoxy having from 1 to about 18 carbon atoms; and, hydrogen; except that R^1 cannot be hydrogen.

6. A composition of matter comprising an organic material subject to degradative attack by oxygen, and an effective amount, sufficient to counter said attack, of a solid reaction product recovered from reacting a 2,2'-disubstituted-bisphenol with paraformaldehyde at a temperature in the range from about 120° C. to about 200° C., at a pressure in the range from about 1 to about 8 atmospheres, in the presence of a mutual solvent for said bisphenol and formaldehyde said compound, metacyclophane, represented by the structure



wherein, R^1 , R^2 , R^3 , R^4 and R^5 may each be the same or different and represent halogen; alkyl having from 1 to about 18 carbon atoms; alkoxy having from 1 to about 18 carbon atoms; and, hydrogen; except that R^1 cannot be hydrogen.

4,434,266

METHOD FOR RUBBER TREATMENT AND THE RUBBER THUS TREATED
Chester D. Trivette, Jr., Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 23, 1982, Ser. No. 424,733

Int. Cl.³ C08L 7/00, 9/00, 13/00

U.S. Cl. 524—425

25 Claims

1. The method of improving the properties of diene rubber comprising treating diene rubber by mastication with from 0.1 to 20 parts by weight per 100 parts diene rubber by weight of (B) a maleic acid half ester which is the product of the reaction of one mole of a mono- or poly-hydric alcohol of the formula $R(OH)_n$ with n moles or less of maleic acid or anhydride,

where R is alkyl of 1–20 carbon atoms, cycloalkyl of 3–20 carbon atoms, aryl of 6–20 carbon atoms or aralkyl or alkaryl of 7–20 carbon atoms, optionally substituted with one or more non-reactive substituents selected from halogen, nitro and alkoxy or carboxy of 1–5 carbon atoms, and n is an integer of from 1–4 at an appropriate temperature above 130° C. for a time of from 0.1 to 20 minutes.

4,434,267

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 159,744, Jun. 16, 1980, Pat. No. 4,349,641, which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Mar. 31, 1982, Ser. No. 364,162

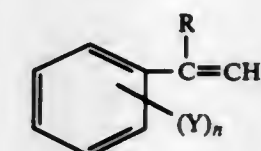
Int. Cl.³ C08L 33/26, 39/08

U.S. Cl. 524—458

6 Claims

1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl α -chloroacrylate, ethyl α -chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

- about 5 mole percent to 100 mole percent of a cationic monomer selected from the group consisting of 2-vinylpyridinium chloride and 2-vinylpyridinium bromide, and
- from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed, said prepolymer moiety of the particles having chemically bonded thereto a cellulose reactive group, said cellulose reactive group being introduced by means of an epihalohydrin.

4,434,268

MANUFACTURE OF POLYMER DISPERSIONS
Andrew Doroszowsky, Marlow, and Victor J. Pavey, Horsham, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 8, 1982, Ser. No. 355,618

Claims priority, application United Kingdom, Mar. 19, 1981, 8108706

Int. Cl.³ C08L 27/14

U.S. Cl. 524—520

9 Claims

1. A water-borne coating composition which comprises a stable dispersion, in an aqueous medium consisting of a mixture of (i) water and (ii) an organic liquid which is dilutable with water to an unlimited extent without the occurrence of any phase separation, of a halogen-containing addition polymer

which is insoluble in the said aqueous medium, the dispersion having been made by dispersing pre-formed particles of the polymer in powder form, of number-average size in the range 0.1-10 microns, in the aqueous medium in the presence of a polymeric dispersant, the dispersant comprising at least one compound which contains in the molecule a hydrophobic polymer chain and groups which are strongly dissociated in the aqueous medium into ionic components, the strongly ionised groups being present in such a proportion as to provide a charge density of from 0.05 to 6.0 milliequivalents per gram of the total dispersant.

4,434,269

CATIONIC SIZING AGENT FOR PAPER AND A PROCESS FOR THE PREPARATION THEREOF

Joachim Probst, Cologne; Günter Kolb, Leverkusen; Peter Mummenhoff, Cologne, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,991

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103917

Int. Cl.³ C08L 79/00

U.S. Cl. 524-538

6 Claims

1. Cationic sizing agents for paper in the form of an aqueous colloid-disperse solution having average particle diameters of from 15 to below 50 nm, said agent being prepared by dissolving a water-soluble cationic, chemically uniformly composed terpolymer compound of:

- from 7 to 40% by weight of N,N-dimethylaminoethyl acrylate and/or methacrylate,
 - from 45 to 80% by weight of styrene, and
 - from 4 to 40% by weight of acrylonitrile
- in an aqueous medium, the total of components (a) to (c) always amounting to 100% by weight and at least 10% of the N,N-dimethylamino groups of the terpolymer being quaternised and the rest being protonated, and emulsifying in the presence of from 10 to 70% by weight, based on the following monomer mixture, of this emulsifier,
- acrylonitrile or methacrylonitrile, in quantities of from 5 to 95% by weight, with
 - C₁-C₁₂-alkyl esters of acrylic acid and/or of methacrylic acid in quantities of from 5 to 95% by weight,
- the total of components (d) and (e) amounting to 100% by weight, and subjecting the emulsion thus obtained to a radically initiated emulsion polymerisation process at temperatures of from 20° to 150° C.

4,434,270

ETHYLENE/PROPYLENE/VINYL ALKYL KETONE POLYMERS

Carl Serres, Naperville, and John G. Schaffhausen, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 6, 1982, Ser. No. 447,447

Int. Cl.³ C10M 3/12; C08F 210/06, 216/30

U.S. Cl. 524-570

16 Claims

1. An amorphous, oil soluble random ethylene/propylene/vinyl alkyl ketone polymer having a mol ratio of ethylene to propylene from about 35:65 to 60:40 with up to 15 parts by weight vinyl alkyl ketone per 100 parts by weight ethylene/propylene and wherein said polymer has an inherent viscosity of from about 0.1 to 2".

4,434,271

GLASS FILLED POLY(P-METHYLSTYRENE)

Frank J. Feeney, East Windsor, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 230,190, Feb. 2, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,986

Int. Cl.³ C08K 7/14, 3/40

U.S. Cl. 524-575

2 Claims

1. A heat stabilized homogeneous thermoplastic composition

consisting essentially of p-methylstyrene homopolymer or copolymer containing at least 90 weight percent polymerized p-methylstyrene and 10 to 1 weight percent of a conjugated diene, in which said p-methyl styrene comprises mixtures of methyl styrenes containing at least 90 weight percent p-methylstyrene, less than 0.1 weight percent o-methylstyrene and the balance m-methylstyrene; and between about 5 percent and about 50 percent, based on the total weight of the composition, of a reinforcing filler which predominantly comprises glass fibers.

4,434,272

WATER-CURABLE, SILANE MODIFIED ALKYL ACRYLATE COPOLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,328,323, which is a continuation-in-part of Ser. No. 70,785,

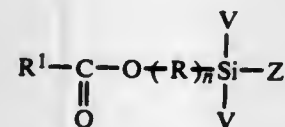
Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Feb. 22, 1982, Ser. No. 351,212

Int. Cl.³ C08L 25/14, 27/22, 33/08, 33/10

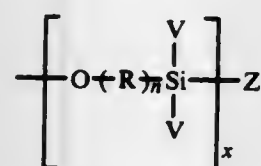
U.S. Cl. 525-100

28 Claims

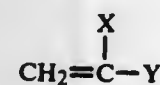
1. A composition of matter comprising a silane of the formula:



or a polysiloxane containing repeating units of the formula:

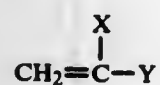


wherein R¹ is a hydrocarbon radical, R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is a hydrolyzable group, n is an integer having a value of 1 to 18 and x is an integer having a value of at least 2; a copolymer of an alkyl acrylate and a monomer having the formula:



wherein X is hydrogen or chlorine, Y is chlorine, a phenyl radical or cyano; and an organo titanate.

13. A water-curable, silane modified copolymer of an alkyl acrylate and a monomer of the formula:



wherein X is hydrogen or chlorine and Y is chlorine, a phenyl radical or cyano, obtained from a composition defined in claim 1.

4,434,273

PERFLUOROKETOVINYL ETHERS AND COPOLYMERS THEREFROM

Ronald E. Uschold, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

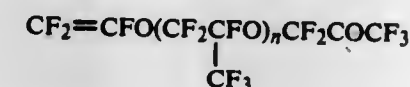
Division of Ser. No. 279,024, Jun. 30, 1981, Pat. No. 4,385,187. This application Sep. 29, 1982, Ser. No. 427,471

Int. Cl.³ C08F 8/04

U.S. Cl. 525-326.2

5 Claims

1. Copolymer of the perfluoroketovinyl ether of the formula



wherein n is an integer 1 to 4 and one or more fluorinated vinyl monomers.

4,434,274

VULCANIZABLE COMPOSITIONS OF HALOGEN AND CARBOXYL CONTAINING ACRYLATE ELASTOMERS, 2,5-DIMERCAPTO-1,3,4-THIADIAZOLE, A GROUP IVA METAL OXIDE OR SALT AND A TETRAALKYL THIURAM SULFIDE

Dane E. Jablonski, Brunswick, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

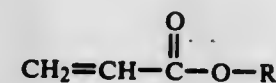
Filed Apr. 12, 1982, Ser. No. 367,633

Int. Cl.³ C08F 8/34, 220/22

U.S. Cl. 525-349

3 Claims

1. A composition comprising (1) an acrylate rubber containing (a) from about 65 percent to about 98 percent by weight of an acrylate of the formula



wherein R is selected from the group consisting of an alkyl radical containing 1 to 10 carbon atoms and an alkoxyalkyl radical containing 2 to about 8 carbon atoms, (b) from about 0.2 percent to about 15 percent by weight of a halogen-containing monomer selected from the group consisting of halogen-containing vinylidene hydrocarbons and halogen-containing vinyl monomers having the halogen group at least two carbon atoms removed from an oxygen atom, (c) from about 0.2 percent to about 10 percent by weight of an unsaturated carboxyl-containing monomer, and (d) up to about 10 percent by weight of a copolymerizable monomer containing a terminal vinylidene group, and (2) a curative consisting essentially of about 0.4 to about 2.0 weight parts of 2,5-dimercapto-1,3,4-thiadiazole, about 0.5 to about 1.5 weight part of a fatty acid salt of lead or tin and about 1.5 to 3.5 weight parts of tetraalkyl thiuram disulfide wherein the alkyl groups contain 1 to 6 carbon atoms, all weights based on 100 weight parts of acrylate rubber.

4,434,275

POLYEPICHLOROHYDRIN ELASTOMERS HAVING IMPROVED RESISTANCE TO SOUR GASOLINE

James E. Longfield, Basking Ridge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 23, 1982, Ser. No. 421,949

Int. Cl.³ C08L 71/02

U.S. Cl. 525-403

11 Claims

1. A vulcanizable mixture comprising a polyepichlorohydrin elastomer and a sour gasoline degradation reducing effective amount of a polythiodiethanol elastomer represented by the formula:



wherein —OG— comprises a copolymer of randomly alternat-

ing structural units selected from: (A) Structural units —OC₂H₄SC₂H₄— (II) and —OR— (III), wherein R represents one or more radicals remaining on removal of two hydroxyl groups from (a) saturated aliphatic linear, branched chain or cyclic diols, or (b) aliphatic linear, branched chain or cyclic diols containing external unsaturation having an allylic hydrogen atom; and (B) structural units [II], [III] and —OR'—, wherein R' represents the radical remaining on removal of two hydroxyl groups from a diphenolic compound; said copolymer comprising structural units selected from (A) and (B) being characterized in that (1) n is an integer sufficient to provide in said copolymer a molecular weight of at least about 2000, (2) the molar ratio of structural units —OC₂H₄SC₂H₄— to —OR—, when the polymer comprises structural units (A), or the molar ratio of structural units —OC₂H₄SC₂H₄— to the total of —OR— and —OR'—, when the polymer comprises structural units (B), being not less than 1:1, and (3) the copolymer contains from about 1 to 10 mole percent of said diol (b), based upon the total of all structural units —OC₂H₄SC₂H₄—, —OR— and —OR'— present in the copolymer.

4,434,276

PROCESS FOR THE CONDENSATION OF POLY(ALKYLENE TEREPHTHALATES)

Gernot Horlbeck, and Horst Heuer, both of Haltern, Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 481,111

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211899

Int. Cl.³ C08G 63/26

U.S. Cl. 525-437

13 Claims

1. A process for further condensing a linear poly(alkylene terephthalate) having a viscosity number of at least 50 cm³/g in the solid phase at an elevated temperature, comprising condensing the poly(alkylene terephthalate) in an inert gas stream at a temperature 25°-65° C. below the melting point of the poly(alkylene terephthalate) and in the presence of 0.5-5% by weight, based on the amount of poly(alkylene terephthalate), of a phosphorous acid ester of the formula P(OR₁)(OR₂)(OR₃) wherein each of R₁, R₂ and R₃ is independently C₁₋₁₂ alkyl, C₆₋₁₀-aryl, C₅₋₁₂-cycloalkyl, or C₆₋₁₀-aryl or C₅₋₁₂-cycloalkyl each substituted by C₁₋₁₂-alkyl, cyclohexyl, phenyl or phenyl-C₁₋₁₂-alkyl, wherein the amount of inert gas passed through the reactor per hour, measured under normal conditions, is 0.5-1.5 times the gross reactor volume.

13. A poly(alkylene terephthalate) produced by the process of claim 1.

4,434,277

POLYOL FOR A POLYURETHANE PREPARED BY REACTING AN EPOXIDE WITH THE REACTION PRODUCT OF A PHENOL, AN AROMATIC AMINE, AN ALDEHYDE AND A DIALKANOLAMINE

Shigeyuki Kozawa; Noboru Hasegawa, and Hiroshi Kawahara, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,835

Int. Cl.³ C08G 65/40

U.S. Cl. 525-507

13 Claims

1. A polyol for the synthesis of a polyurethane prepared by reacting an epoxide with the reaction product obtained by reacting (a) a phenol compound of the formula A—OH, wherein A represents an aromatic ring having at least two reactive sites; (b) an aromatic amine of the formula B—NH₂, wherein B represents an aromatic ring having at least two reactive sites; (c) an aldehyde and (d) a dialkanolamine.

4,434,278

PHOSPHATE ESTERS OF ACRYLATED EPOXIDES
 Ronald J. Skiscim, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,502

Int. Cl.³ C08L 63/00

U.S. Cl. 525—531

16 Claims

1. A radiation curable composition prepared by the process of reacting 1 mole of a polyepoxide having *n* epoxide groups per molecule, wherein *n* has a value of 2–4, with about *n*–1 moles of acrylic acid or methacrylic acid, followed by reacting the resulting product with about 0.5 to 1 mole of phosphoric acid when *n* is 2 and 1 mole of phosphoric acid when *n* is 3 or 4 in the presence of at least about 1.0 equivalent of a hydroxyl group-containing material per mole of phosphoric acid.

4,434,279

HIGH SWELL RESINS

George S. Achorn, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 2, 1982, Ser. No. 403,601

Int. Cl.³ C08F 2/38

U.S. Cl. 526—66

2 Claims

1. In a process comprising (a) polymerizing ethylene in slurry of inert hydrocarbon diluent in the presence of a Ziegler catalyst, having an efficiency of greater than 70,000 grams polyethylene per gram of transition metal in the catalyst, and hydrogen as a molecular weight regulator; (b) venting of ethylene and hydrogen; (c) filtering the resulting polyethylene with active catalyst residues from diluent; and (d) drying said polymer to eliminate traces of diluent; the improvement comprising polymerizing additional ethylene in the presence of filtered polymer from step (c), above, and containing still active catalyst residues but in the absence of hydrogen and then drying the polymer; whereby a polyethylene having an intimate mixture of higher molecular weight polyethylene therein and having a resulting increase in percent swell is formed.

4,434,280

POLYMERIZATION PROCESS USING SURFACE HEAT TREATED SILICA-CONTAINING CATALYST BASE

Max P. McDaniel, and M. Bruce Welch, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 303,302, Sep. 17, 1981, Pat. No. 4,378,306. This application Sep. 29, 1982, Ser. No. 427,255

Int. Cl.³ C08F 4/02, 4/24

U.S. Cl. 526—106

18 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with a catalyst produced by a process comprising:

subjecting a particulate silica-containing material to a heat treatment for a time and at a temperature sufficient to sinter the outside of the particles of said silica-containing material without significantly affecting the inside of the particles, said silica-containing-material either having a chromium compound contained therein during said heat treatment or having a chromium compound added thereto, and activating by a process comprising heating said silica-containing material also containing said chromium compound in an oxygen-containing ambient; and recovering a polymer.

4,434,281

POLYMERIZING OLEFINS WITH A NOVEL CATALYST
 Harold E. Swift, Gibsonia, and Richard W. Lunden, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 227,691, Jan. 23, 1981, Pat. No. 4,376,061. This application Oct. 19, 1982, Ser. No. 434,702

Int. Cl.³ C08F 4/02, 10/00

U.S. Cl. 526—119

39 Claims

1. A process for the polymerization of an olefin which comprises contacting said olefin at elevated temperatures and elevated pressures with an activator and a solid, particulate, catalyst complex prepared by a process comprising reducing TiCl₄, contacting the resultant reduced solid with a complexing agent to obtain a treated solid and contacting the treated solid with TiCl₄ in the presence of silica which has been treated with an alkylaluminum halide.

4,434,282

PROCESS FOR POLYMERIZING OLEFINS

Calvin P. Esneault, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 4, 1982, Ser. No. 432,609

Int. Cl.³ C08F 4/02, 10/00

U.S. Cl. 526—125

17 Claims

1. A process for the polymerization of an α -olefin or mixtures thereof under conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of

(I) a supported catalyst which is the solid, hydrocarbon insoluble reaction product formed by reacting in an inert diluent

(1) the reaction product of

(a) a magnesium component or mixture of such components represented by the formula $MgR_2 \cdot xMeR'_x$, wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, each R' is independently a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, Me is aluminum, zinc or boron, x has a value of from zero to about 10 and x' has a value equal to the valence of Me; with

(b) a sufficient amount of at least one diol having at least six carbon atoms wherein there are from three to about eight carbon atoms between the hydroxyl groups of said diol(s); and wherein the mole ratio of component (1-a) to (1-b) is about 1:1; with

(2) a halide-containing transition metal compound or mixture thereof represented by the formula TmY_nX_z-n wherein Tm is a metal selected from groups IV-B, V-B and VI-B of the Periodic Table of Elements, Y is oxygen or OR'', each X is a halogen, each R'' is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, z has a value equal to the valence of said transition metal, n has a value of from zero to 6 with the value of z–n being from at least 1 up to a value equal to the valence of the transition metal; said halide-containing transition metal being present in a quantity so as to convert substantially all of the substituent groups attached to a magnesium atom in component (1) to a halide group; and

(II) an activating agent therefor wherein components (I) and (II) are

(a) added separately to one or more polymerization reactor(s) or zone(s);

(b) mixed together just prior to addition to one or more polymerization reactor(s) or zone(s); or

(c) reacted together before addition to one or more polymerization reactor(s) or zone(s).

4,434,283

POLYSILOXANE MOLDING COMPOSITIONS

Hans Sattlegger, Odenthal; Karl Schnurrbusch, Leverkusen; Bruno Degen, Bergisch-Gladbach, and Theo Achtenberg, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 165,573, Jul. 2, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,810

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929635

Int. Cl.³ C08G 77/04

U.S. Cl. 528—34

3 Claims

1. In a polysiloxane molding composition which in the presence of water crosslinks to an elastomer and which comprises (A) an α,ω -dihydroxyorganopolysiloxane with a viscosity of about 500 to 2,000,000 cP, (B) a crosslinking agent, and (C) a reinforcing filler,

the improvement which comprises including therein in about 0.1 to 10% by weight a silicon compound containing at least 3 alkoxy groups and employing as the crosslinking agent an alkoxybenzamidodisilane or an alkoxypropionamidodisilane whereby the elastomer ultimately produced exhibits improved direct adhesion to various substances.

4,434,284

POLYURETHANE FORMULATION FOR LARGE SCALE CASTING

Thomas G. Rukavina, Lower Burrell, and Charles R. Coleman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 10, 1982, Ser. No. 376,490

Int. Cl.³ C08G 18/24, 18/06

U.S. Cl. 528—58

7 Claims

1. In a method of reacting an isocyanate compound with a compound containing active hydrogen capable of reacting with the isocyanate in the presence of a catalyst to form a polyurethane, wherein the catalyst is dissolved in the active hydrogen compound at a sufficient temperature to maintain the compound in a liquid phase, which compound is then mixed into the isocyanate at a sufficient temperature to prevent the compound from freezing out of solution, the improvement which comprises mixing the isocyanate into the active hydrogen compound in the absence of the catalyst at a sufficient temperature to maintain a homogeneous single-phase reaction solution, cooling the solution to a minimum temperature above the temperature at which the active hydrogen compound freezes out of the solution, which temperature is below the normal freezing point of the catalyst, and finally adding the catalyst.

4,434,285

POLYPHENYLENE-TYPE POLYMERIC COMPOUND AND PROCESS FOR PRODUCTION THEREOF

Takuma Teshirogi, Yonezawa, Japan, assignor to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,480

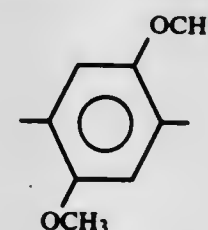
Claims priority, application Japan, Sep. 14, 1981, 56-144026

Int. Cl.³ C08G 61/10, 61/12

U.S. Cl. 528—86

7 Claims

1. Poly(dimethoxyphenylene) composed of recurring structural units of the formula



4,434,286

CURABLE EPOXY RESIN CONTAINING COMPOSITIONS

Allison S. Burhans, Prineville, Oreg., and Orson K. Spurr, Jr., Bridgewater, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 203,440, Nov. 3, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,456

Int. Cl.³ C08G 59/24, 59/26, 59/62

U.S. Cl. 528—297

16 Claims

1. A curable composition comprising a cycloaliphatic epoxide, a polyether polyol having a molecular weight of from about 1000 to that molecular weight which does not form a two-phase system with the epoxide, and a hardener.

4,434,287

CEPHALOSPORIN DERIVATIVES

Robert B. Woodward, Cambridge, Mass., and Hans Bickel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

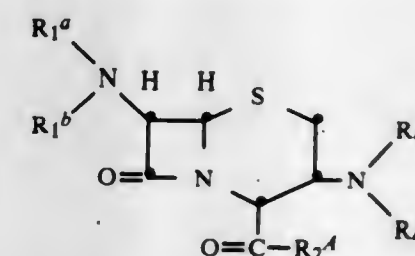
Division of Ser. No. 36,483, May 7, 1979, Pat. No. 4,319,027, which is a continuation of Ser. No. 913,429, Jun. 7, 1978, abandoned, which is a division of Ser. No. 671,193, Feb. 10, 1976, Pat. No. 4,110,533. This application Nov. 19, 1981, Ser. No. 323,147

Int. Cl.³ C07D 501/20; A61K 31/545

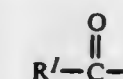
U.S. Cl. 544—16

9 Claims

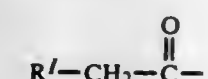
1. A compound of the formula



wherein R₁^a represents an acyl group of the formula



wherein R' represents hydrogen, cyclopentyl, cyclohexyl or cycloheptyl, or such cycloalkyl which is substituted in the 1-position by amino, protected amino, sulfoamino or sulfoamino in the form of an alkali metal salt, or R' represents phenyl, naphthyl or tetrahydronaphthyl, or phenyl, naphthyl or tetrahydronaphthyl substituted by hydroxyl, protected hydroxyl, and/or by halogen, or R' represents 4-isoxazolyl, or R' represents an amino group which is N-substituted by lower alkyl or halogen substituted lower alkyl, or R₁^a represents an acyl group of the formula



wherein R' represents lower alkyl, halogeno-lower alkyl, phenyloxy-lower alkyl, hydroxyphenyloxy-lower alkyl, protected hydroxy-phenyloxy-lower alkyl, halogeno-phenyloxy-lower alkyl, or lower alkyl substituted by amino and/or carboxyl, wherein amino is free or protected and carboxyl is free or protected, or R' represents lower alkenyl, phenyl, hydroxyphenyl, protected hydroxyphenyl, halogeno-phenyl, hydroxyhalogeno-phenyl, protected hydroxy-halogeno-phenyl, amino-lower alkyl-phenyl, protected amino-lower alkyl-phenyl, phenyloxyphenyl, or R' represents pyridyl, pyridinium, thienyl, furyl, imidazolyl or tetrazolyl, or these heterocyclic groups substituted by lower alkyl, amino, protected amino, aminomethyl or protected aminomethyl, or R' represents

lower alkoxy, phenyloxy, hydroxy-phenyloxy, protected hydroxyphenyloxy, halogeno-phenyloxy, lower alkylthio, lower alkenylthio, phenylthio, pyridylthio, 2-imidazolylthio, 1,2,4-triazol-3-ylthio, 1,3,4-triazol-2-ylthio, 1,2,4-thiadiazol-3-ylthio, 1,3,4-thiadiazol-2-ylthio, or 5-tetrazolylthio, and these heterocyclthio groups, substituted by lower alkyl, or R^I represents halogeno, lower alkoxy, carbonyl, cyano, carbamoyl, N-lower alkyl-carbamoyl, N-phenyl-carbamoyl, lower alkanoyl, benzoyl, or azido, or R_1^a represents an acyl group of the formula



wherein R^I represents lower alkyl, phenyl, hydroxyphenyl, protected hydroxyphenyl, halogeno-phenyl, hydroxy-halogenophenyl, protected hydroxy-halogeno-phenyl, furyl, thienyl, or isothiazolyl, and also represents 1,4-cyclohexadienyl, and R'' represents amino, protected amino, guanidinocarbonyl-amino, sulfoamino, sulphoamino in alkalimetal salt-form, azido, carboxyl, carboxyl in alkali-metal salt-form, protected carboxyl, cyano, sulpho, hydroxyl, protected hydroxyl, O-lower alkyl-phosphono, O,O'-di-lower alkylphosphono or halogeno, or R_1^a represents a group of the formula



wherein R^I and R'' each represent halogeno, or lower alkoxy-carbonyl, or R_1^a represents a group of the formula



wherein R^I represents phenyl, hydroxyphenyl, protected hydroxyphenyl, hydroxy-halogeno-phenyl, protected hydroxy-halogeno-phenyl, furyl, thienyl, isothiazolyl or 1,4-cyclohexadienyl, and R'' represents aminomethyl or protected aminomethyl, or R_1^a represents a group of the formula

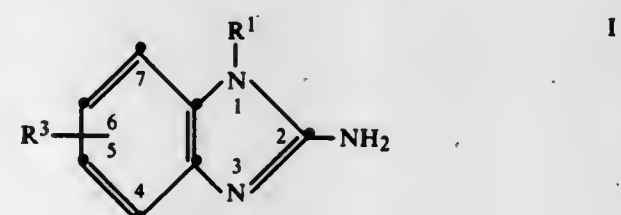


wherein each of the groups R^I , R'' and R''' represents lower alkyl, and R_1^b represents hydrogen, or R_1^a and R_1^b together represent 1-oxo-3-aza-1,4-butylen, such group substituted in the 2-position by a group R^I as defined under formula (A₃) and such group substituted in the 4-position by lower alkyl, R_2^a represents a group which together with the carbonyl grouping $-C(=O)-$ forms a protected esterified carboxyl group, and the group $-N(R_4^a)(R_4^b)$ denotes a secondary amino group, wherein one of the substituents R_4^a and R_4^b represents hydrogen and the other represents lower alkyl, lower alkoxy-lower alkyl, lower alkyl-thio lower alkyl, cyclohexyl-lower alkyl, phenyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl, or furyl, or wherein $-N(R_4^a)(R_4^b)$ denotes a tertiary amino group, wherein each of the substituents R_4^a and R_4^b , independent of each other is lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, cyclohexyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl, or furyl, or wherein R_4^a denotes lower alkyl, and R_4^b denotes lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, cyclohexyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl or

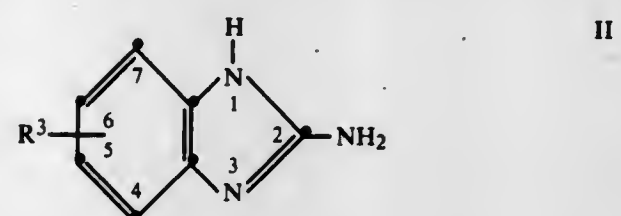
furyl, or wherein R_4^a denotes phenyl-lower alkyl and R_4^b denotes lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, cyclohexyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl, or furyl or wherein $-N(R_4^a)(R_4^b)$ is 1-aziridinyl, [1-pyrrolidinyl, 1-piperidinyl, 1H-2,3,4,5,6,7-hexahydroazepinyl, [4-morpholinyl, 4-thio-morpholinyl,] or 1-piperazinyl, and in which the double bond can be in the 2,3-position or the 3,4-position or a mixture of a compound having the double bond in the 2,3-position and a compound having the double bond in the 3,4-position.

4,434,288
PREPARATION OF SUBSTITUTED 1-THIAZINYL OR 1-THIAZOLYL-2-AMINO BENZIMIDAZOLES
James H. Wikel, II, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 8, 1982, Ser. No. 366,883
Int. Cl.³ C07D 235/30

U.S. Cl. 544-54 8 Claims
1. A process for preparing 1,5(6)-substituted-2-aminobenzimidazoles of the formula I

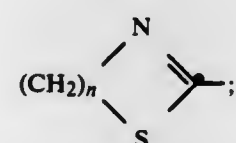


which comprises reacting a tautomeric benzimidazole of the formula II



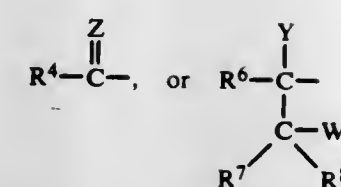
with a second reactant of the formula $X(CH_2)_nNCS$ in the presence of an alkali metal hydroxide or carbonate, water, and a water-miscible nonhydroxylic solvent at a temperature from about 0° C. to about 75° C., wherein

R^1 is



R^2 is C_1-C_5 alkyl, C_3-C_7 cycloalkyl, phenyl, furyl, or thienyl;

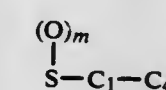
R^3 is at the 5- or 6-position and is hydrazinocarbonyl, carboxy, carboxamido, N-(C_1-C_4 alkyl)carboxamido, hydroxymethyl, cyano, nitro, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 alkylthio, methylsulfonyl, phenylthio, phenylsulfinyl, phenoxy, trifluoromethyl, C_1-C_8 alkoxy-carbonyl, allyloxycarbonyl, propargyloxycarbonyl, (C_3-C_7 cycloalkyl)oxycarbonyl, (C_3-C_7 cycloalkyl)methoxycarbonyl, 1-(C_3-C_7 cycloalkyl)ethoxycarbonyl, benzyloxycarbonyl, α -methylbenzyloxycarbonyl, phenoxycarbonyl, C_1-C_8 alkoxy-carbonylmethyl, 1-(C_1-C_8 alkoxy-carbonyl)-ethyl,



R^4 is hydrogen, C_1-C_7 alkyl, C_3-C_7 cycloalkyl, (C_3-C_7 cycloalkyl)methyl, 1-(C_3-C_7 cycloalkyl)ethyl, thienyl, benzyl, phenyl, or mono-substituted phenyl wherein said substituent is selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, chloro, bromo, iodo, nitro, and trifluoromethyl;

R^6 is hydrogen, C_1-C_7 alkyl, C_3-C_7 cycloalkyl, (C_3-C_7 cycloalkyl)methyl, 1-(C_3-C_7 cycloalkyl)ethyl, phenyl, or mono-substituted phenyl, wherein said phenyl substituent is selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, chloro, bromo, iodo, nitro, and trifluoromethyl;

R^7 and R^8 independently are hydrogen, halo, cyano, hydroxymethyl, nitro,



alkyl, CH_2R^9 , COR^9 , phenyl or mono-substituted phenyl, wherein said phenyl substituent is selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, chloro, bromo, iodo, nitro, and trifluoromethyl;

R^9 is hydroxy, C_1-C_4 alkoxy, C_3-C_6 cycloalkyl- C_1-C_4 alkoxy, or ($O-C_1-C_4$ alkyl) $_pNR^{10}R^{11}$;

R^{10} and R^{11} independently are hydrogen or C_1-C_4 alkyl;

Z is oxygen, C_1-C_4 alkoxyimino, or C_1-C_7 alkylidene;

X is chloro or bromo;

Y is hydrogen and W is hydroxy, or together Y and W form a bond;

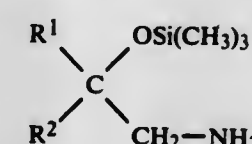
m is 0, 1, or 2;

n is 2 or 3; and

p is 0 or 1.

4,434,289
PROCESS FOR THE PREPARATION OF 2-TRIMETHYLSILOXY-ETHYLAMINES
Kurt Findeisen, Odenthal, and Heinz Ziemann, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jul. 8, 1982, Ser. No. 396,515
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129272

Int. Cl.³ C07F 7/10 16 Claims
U.S. Cl. 546-14
1. A trimethylsiloxy-ethylamine of the formula



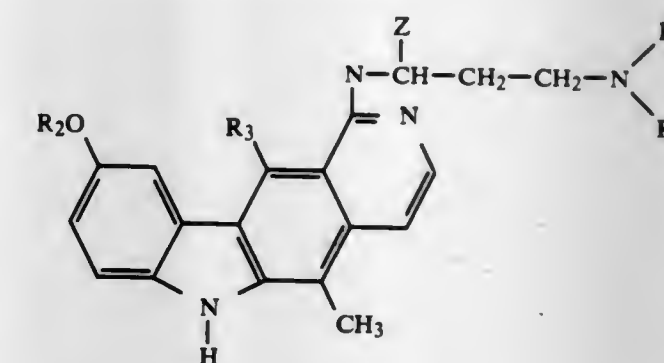
wherein R^1 and R^2 are identical or different and denote hydrogen, alkyl with 1 to 18 carbon atoms, alkenyl with 2 to 12 carbon atoms, cycloalkyl or cycloalkenyl with in each case 3 to 10 carbon atoms or aryl with up to 14 carbon atoms, or together, by linking via at least one methylene group which link can contain an amino or oxo group, represent a 5-membered or 6-membered ring, R^2 being other than hydrogen if R^1 is hydrogen.

4,434,290
PYRIDO (4,3-B) CARBAZOLES SUBSTITUTED IN THE 1 POSITION BY A POLYAMINE CHAIN

Emile Bisagni, Orsay; Claire Ducrocq, Les Ulis-Orsay; Christian Rivalle, Villebon; Pierre Tambourin, Les Ulis-Orsay; Françoise Wendling, Paris; Alain Cuvier, Montlhéry; Luc Montagnier, Le Plessis-Robinson; Jean-Claude Chermann, Elancourt; Jacqueline Gruet, L'Hay-les-Roses, and Rosette Lidereau, Colombes, all of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly sur Seine, France

Continuation of Ser. No. 75,756, Sep. 14, 1979, abandoned. This application May 1, 1981, Ser. No. 259,553
Claims priority, application France, Sep. 21, 1978, 78 27137
Int. Cl.³ C07D 471/04

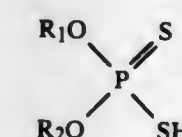
U.S. Cl. 546-70 3 Claims
1. A compound of the formula



wherein Z, R_2 and R_3 are selected from the group consisting of hydrogen and methyl, R_4 and R_5 are selected from the group consisting of hydrogen, methyl and ethyl, and their non-toxic, pharmaceutically acceptable acid addition salts.

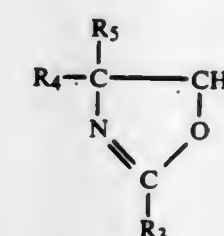
4,434,291
MULTIFUNCTIONAL ADDITIVES FOR LUBRICANTS
Edilberto Colombo, Aicurzio, Italy, assignor to Agip Petroli S.p.A., Rome, Italy
Filed Jun. 4, 1982, Ser. No. 385,081
Claims priority, application Italy, Jun. 26, 1981, 22583 A/81
Int. Cl.³ C07F 9/65

U.S. Cl. 548-116 6 Claims
1. A multifunctional additive for lubricants with antiwear, antioxidant and high antirust power, which is prepared by reacting a O,O'-dialkylidithiophosphoric acid of the formula



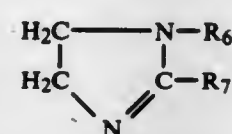
where R_1 and R_2 , which can be the same or different, are alkyl radicals containing from 3 to 20 carbon atoms, with a nitrogenated derivative chosen from:

(a) a substituted 2-oxazoline of the formula



in which
 R_3 is an alkyl group containing from 1 to 30 carbon atoms, and R_4 and R_5 , which can be equal or different, can be hydrogen or an alkyl group containing from 1 to 5 carbon atoms, and

(b) a substituted imidazoline of the formula



where
R₆ and R₇, which can be the same or different and are alkyl groups containing from 1 to 30 carbon atoms.

4,434,292

PROCESS FOR THE PREPARATION OF PYRAZOLE
Ulrich Heinemann; Rudolf Thomas, both of Wuppertal; Reinhard Lantzsch, Leverkusen; Klaus Ditzgen, and Erhard Weber, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,329

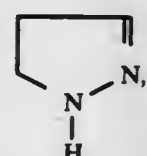
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035395

Int. Cl.³ C07D 231/12

U.S. Cl. 548—373

5 Claims

1. Process for the preparation of pyrazole from hydrazine hydrate and acrolein comprising reacting hydrazine hydrate with acrolein in an organic medium at a temperature between 20°–60° C. and then oxidizing the 2-pyrazoline formed, of the formula



(I)

either directly or after first being isolated, with chlorine or an alkali metal hypochlorite in the presence of water or an aqueous-organic medium at a temperature between 0° and 30° C.

4,434,293

TETRAHYDROTHIOPHENE DERIVATIVES AND METHODS OF PREPARATION

Robert A. Sanchez, La Jolla, Calif., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 116,094, Jan. 28, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,390

Int. Cl.³ C07D 333/32, 333/34, 495/12

U.S. Cl. 549—17

7 Claims

1. Octahydrodithieno (3,4-b:3',4'-e)1,4-dithin.
2. A process for preparing cis-3-hydroxy-4-mercaptotetrahydrothiophene which comprises:
 - (a) treating 1,4-dithiothreitol with a strong inorganic acid; and
 - (b) recovering cis-3-hydroxy-4-mercaptotetrahydrothiophene from the reaction mixture of step (a).

4,434,294

PREPARATION OF α-CYANO-PHENOXY-BENZYL ESTERS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 212,566, Dec. 3, 1980, Pat. No. 4,312,817.

This application Oct. 1, 1981, Ser. No. 307,690

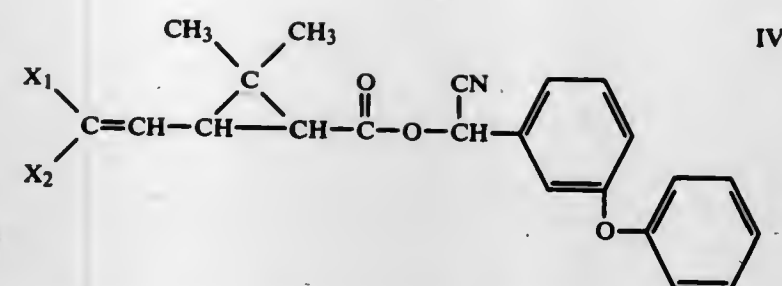
Claims priority, application France, Dec. 17, 1979, 79 30843

Int. Cl.³ C07D 333/32, 307/20; C07C 121/75

U.S. Cl. 549—65

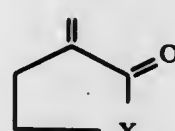
5 Claims

1. A process for the preparation of all stereoisomeric forms of a compound of the formula

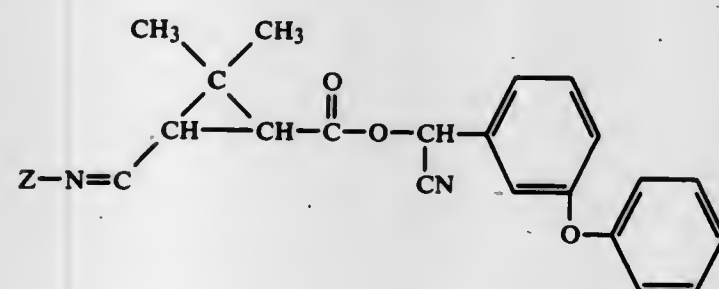


IV

wherein X₁ and X₂ are individually selected from the group consisting of alkyl of 1 to 4 carbon atoms, fluorine, chlorine and bromine or taken together with the carbon atom to which they are attached form a carbon homocycle of 3 to 7 carbon atoms or a heterocycle of the formula

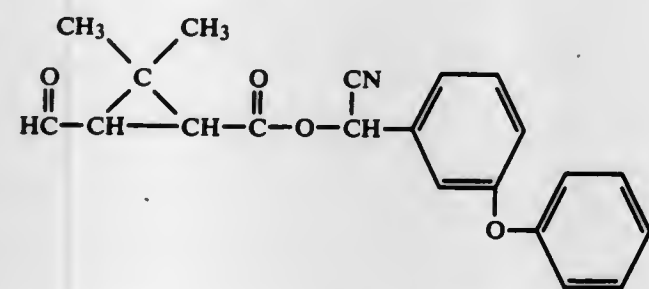


and X is selected from the group consisting of oxygen and sulfur with the acid moiety having the racemic or optically active, cis or trans structure and the alcohol moiety having the (R) or (S) configuration comprising reacting an ester of 3-formylcyclopropane-1-carboxylic acids in their various isomeric forms and mixtures thereof of the formula

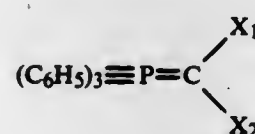


V

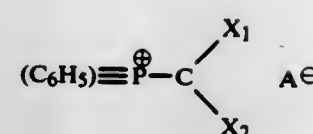
wherein Z is an organic residue of a primary amine of the formula Z—NH₂ and the acid moiety may have the cis or trans configuration with the alcohol moiety having the (S) or the (R) configuration with an acid hydrolysis agent to obtain a compound of the formula



with the same configuration of the starting ester, reacting the latter in an organic solvent with a phosphorane of the formula



resulting from the reaction of a strong base with a compound of the formula



wherein X₁ and X₂ have the above definition and A[⊖] is a mineral acid anion resulting from the reaction of triphenylphosphine and a haloform with a strong base in an organic solvent Y to obtain the compound of formula IV with the same configuration of the starting ester.

4,434,295

ANTI-ATHEROSCLEROTIC 6,7-DIHYDRO-7,7-DISUBSTITUTED-KHELLIN ANALOGS

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

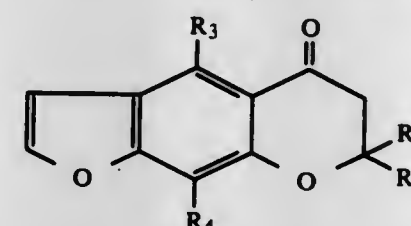
Filed May 17, 1982, Ser. No. 378,701

Int. Cl.³ C07D 311/78

U.S. Cl. 549—344

14 Claims

1. A dihydrofluorochormone of formula I:



I

wherein R₁ and R₂, being the same or different, are individually:

- (a) C₁–C₆ alkyl,
- (b) trifluoromethyl,
- (c) C₅–C₁₀ cycloalkyl with the proviso that the cycloalkyl ring is C₅–C₇,
- (d) C₂–C₈ alkylaminoalkyl,
- (e) C₂–C₈ alkoxyalkyl,
- (f) C₂–C₈ alkylthioalkyl,
- (g) C₂–C₈ alkylsulfonylalkyl,
- (h) C₂–C₈ alkylsulfonylalkyl,
- (i) C₇–C₁₂ phenoxyalkyl optionally substituted on the phenyl ring by one, 2, or 3,
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,
 - (iv) trifluoromethyl,
 - (v) halo which is fluoro, chloro, or bromo, with the proviso that no more than two such substituents are other than alkyl,
- (j) C₇–C₁₂ phenylthioalkyl optionally substituted on the phenyl ring by one, 2, or 3,
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,
 - (iv) trifluoromethyl,
 - (v) halo which is fluoro, chloro, or bromo, with the proviso that no more than two such substituents are other than alkyl,
- (k) phenyl optionally substituted by one, 2, or 3,
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,
 - (iv) trifluoromethyl,
 - (v) halo which is fluoro, chloro, or bromo, with the proviso that no more than two such substituents are other than alkyl,
- (l) C₇–C₁₂ aralkyl optionally substituted on the aromatic ring by one, 2, or 3,
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,

- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,
- (m) 2- or 3-furanyl optionally substituted by
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,
 - (iv) trifluoromethyl,
 - (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,
- (n) 2- or 3-thenyl optionally substituted by
 - (i) hydroxy,
 - (ii) C₁–C₃ alkoxy,
 - (iii) C₁–C₃ alkyl,
 - (iv) trifluoromethyl,
 - (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,
- (o) —CH₂NR₈R₉ wherein R₈ and R₉, being the same or different, are individually,
 - (i) hydrogen,
 - (ii) C₁–C₈ alkyl,
 - (iii) C₅–C₁₀ cycloalkyl,
 - (iv) C₇–C₁₂ aralkyl, or
 - (v) phenyl optionally substituted by one, 2, or 3
 - (a) hydroxy,
 - (b) C₁–C₃ alkoxy,
 - (c) C₁–C₃ alkyl,
 - (d) trifluoromethyl,
 - (e) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl, or wherein R₈ and R₉ are taken together with the nitrogen to form a saturated or unsaturated heterocyclic amine ring selected from the group consisting of thiazolidine, 3-piperidine methanol, 2-piperidine methanol, 3-piperidine ethanol, 2-piperidine ethanol, 1-piperazinepropanol, 4-phenyl-1,2,3,6-tetrahydropyridine, 4-phenylpiperidine, proline, 3-pyrrolidinol, tetrahydrofurfurylamine, 3-pyrrolidine, thiazolidine-4-carboxylic acid, thiomorpholine, morpholine, 2-methylpiperidine, 3-methylpiperidine, 4-methylpiperidine, N-methylpiperazine, and 1-methylhomopiperazine, said heterocyclic amine ring being optionally substituted by C₁–C₄ alkyl, C₂–C₈ alkylthiomethyl, C₂–C₈ alkoxyethyl, C₁–C₄ hydroxymethyl or phenyl; or

wherein R₁ and R₂ are taken together and form a bivalent moiety which is:

- (a) —CH₂—(CH₂)_a—CH₂— wherein the integer "a" is zero to 5;
- (b) —CH₂—(CH₂)_b—X—(CH₂)_c—CH₂— wherein the integer "b" is zero and the integer "c" is zero, one, 2, or 3 or the integer "b" is one and the integer "c" is zero, one, or 2, and wherein X is oxa (—O—), thia (—S—), or —N(R₁₀)— wherein R₁₀ is
 - (i) hydrogen,
 - (ii) C₁–C₈ alkyl,
 - (iii) C₅–C₁₀ cycloalkyl,
 - (iv) C₇–C₁₂ aralkyl, or
 - (v) phenyl optionally substituted by one, 2, or 3
 - (a) hydroxy,
 - (b) C₁–C₃ alkoxy,
 - (c) C₁–C₃ alkyl,
 - (d) trifluoromethyl,
 - (e) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl;

wherein R₃ is hydrogen, or C₁–C₄ alkoxy and R₄ is hydrogen or C₁–C₄ alkoxy, with the provisos that one of R₃ and R₄ is hydrogen only when the other is other than hydrogen and R₃ and R₄ are the same or different.

4,434,296

PROCESS FOR PREPARING INTERMEDIATES FOR ANTIATHEROSCLEROTIC COMPOUNDS

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

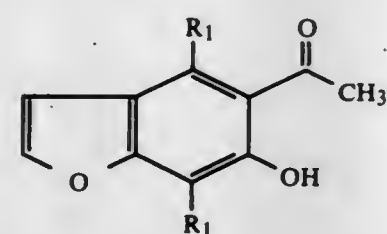
Filed May 17, 1982, Ser. No. 378,687

Int. Cl.³ C07D 307/79

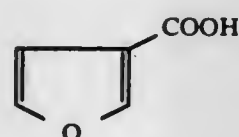
U.S. Cl. 549—471

1 Claim

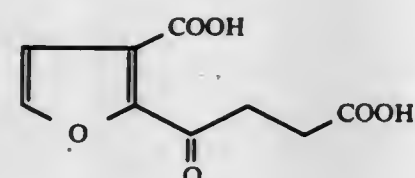
1. A process for preparing a compound of formula XI

wherein R₁ is C₁–C₄ alkyl which comprises:

(1) reaching the lithium dianion of a compound of formula X

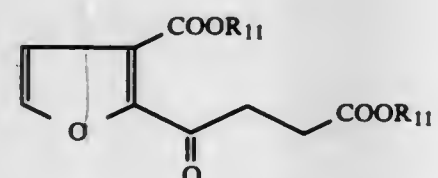
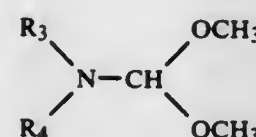


with succinic anhydride;

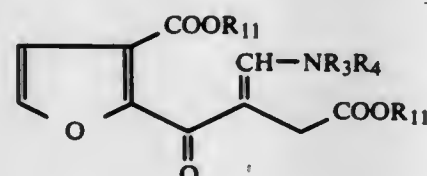
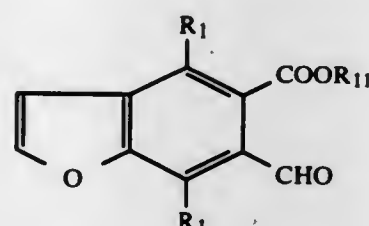
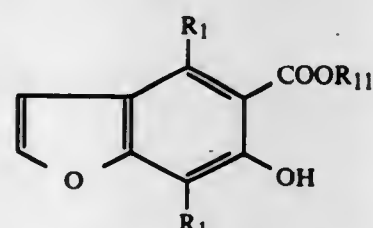
(2) C₁–C₄ alkyl esterifying the resulting formula XII

ketodiacid of step (1);

(3) reacting the resulting formula XIII

ketodiester of step (2), wherein R₁₁ is C₁–C₄ alkyl, with an amide acetal of formula XIVwherein R₃ and R₄, being the same or different, are C₁–C₄ alkyl;

(4) cyclizing of the resulting formula XV

compound of step (3), wherein R₃, R₄, and R₁₁ are as defined above;(5) di-(C₁–C₄)-alkylating the resulting formula XVIbenzofuran of step (4);
XI (6) oxidizing the resulting formula XVIIcompound of step (5), and
X (7) reducing the resulting formula XVIII

XII compound of step (6) to the formula XI compound.

4,434,297

PROCESS FOR THE PREPARATION OF TRIFLUOROETHANOL

Gary W. Astrologes, Hackensack, N.J., assignor to Halocarbon Products Corporation, Hackensack, N.J.

Continuation of Ser. No. 246,831, Mar. 23, 1981, abandoned.

This application Aug. 30, 1982, Ser. No. 413,008

Int. Cl.³ C07C 67/00, 17/10, 29/09

U.S. Cl. 560—236

9 Claims

1. A process for the preparation of 2,2,2-trifluoroethanol which comprises reacting 2-chloro-1,1,1-trifluoroethane with an alkali metal salt of carboxylic acid at least about 130° C. in substantially anhydrous N-methyl-2-pyrrolidone thereby to form the carboxylic acid ester of 2,2,2-trifluoroethanol and alkali metal chloride, reacting the ester with the hydroxide or a basic salt of the alkali metal in water thereby to form 2,2,2-trifluoroethanol and the alkali metal salt of the carboxylic acid and separating the 2,2,2-trifluoroethanol.

9. The process which comprises reacting 2-chloro-1,1,1-trifluoroethane with an alkali metal salt of a carboxylic acid at about 130° to 200° C. in substantially anhydrous N-methyl-2-pyrrolidone thereby to form alkali metal chloride and the carboxylic acid ester of 2,2,2-trifluoroethanol, and separating the ester from the alkali metal chloride.

4,434,298

OXYDEHYDROGENATION OF ISOBUTYRIC ACID AND ITS LOWER ALKYL ESTERS

Ferdinand A. Ruzsala, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

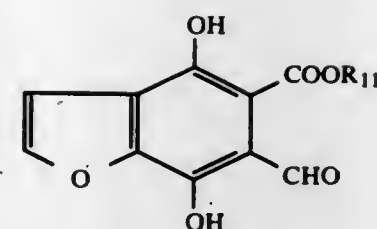
Filed Nov. 9, 1981, Ser. No. 319,172

Int. Cl.³ C07C 51/377, 57/05, 67/317, 69/54

U.S. Cl. 562—599

3 Claims

1. In a process for the catalytic conversion of isobutyric acid or a lower alkyl ester thereof to the corresponding α,β -olefinically unsaturated derivative of oxydehydrogenation wherein a catalyst is contacted with a gaseous feed stream containing said



XVI

XVII

XVIII

acid or ester and molecular oxygen at a temperature between about 300° and 1000° C., the improvement comprising using as catalyst a material having the gram-atom empirical formula $\text{Fe}_a\text{Ti}_b\text{O}_x$ wherein a is b 0.25 to 3, b is 0.25 to 1, and x represents a number determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,434,299

PRODUCTION OF AROMATIC AMINES USING CRYSTALLINE SILICATE CATALYSTS

Clarence D. Chang, Princeton, N.J., and William H. Lang, Richmond, Vt., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,927

Int. Cl.³ C07C 85/06, 85/02

U.S. Cl. 564—396

8 Claims

1. In a process for the production of aromatic amines by reaction of alicyclic alcohols, ketones and mixtures thereof with ammonia in the presence of a catalyst, the improvement which comprises utilizing as a catalyst a crystalline silicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12.

4,434,300

METHANOL AMINATION

Michel Deeba, Emmaus; William J. Amba, Swarthmore, and Robert N. Cochran, West Chester, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 13, 1982, Ser. No. 417,293

Int. Cl.³ C07C 85/06

U.S. Cl. 564—479

8 Claims

1. In a process for producing methylamines by reacting of methanol with ammonia in the presence of a catalyst, the method for improving methanol conversion rates which comprises reacting the methanol and ammonia under conversion conditions in the presence of a crystalline aluminosilicate catalyst which irreversibly adsorbs at least 0.5 millimoles of ammonia per gram of catalyst at about 200° C., has a silicon to aluminum ratio of at least about 2.0, and has a mercury intrusion volume of at least 0.3 cc mercury per gram of catalyst at 60,000 psia.

4,434,301

PRODUCTION OF LOW COLOR REFINED ISOPHORONE

Anthony J. Papa, St. Albans, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 25, 1982, Ser. No. 411,280

Int. Cl.³ C07C 45/85; B01D 3/38

U.S. Cl. 568—366

9 Claims

1. Method of refining crude isophorone made by the vapor phase reaction of acetone over a heterogeneous aldol condensation catalyst which comprises contacting said isophorone with aqueous caustic at a temperature of about 140° C. to about 200° C., washing the treated isophorone with water until the wash water has a pH of about 7 and recovering refined isophorone by a fractional distillation.

4,434,302

PROCESS AND CATALYST FOR PERFORMING HYDROFORMYLATION REACTIONS

Nicolaas A. De Munck, Delft, and Joseph J. F. Scholten, Sittard, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed May 19, 1981, Ser. No. 265,222

Claims priority, application Netherlands, May 28, 1980, 8003059

Int. Cl.³ B01J 31/08, 31/10; C07C 5/24

U.S. Cl. 568—454

8 Claims

1. A process for converting an olefinically unsaturated compound to a mixture of essentially normal and iso-aldehydes

with carbon monoxide and hydrogen at an elevated temperature in the presence of a catalyst comprising a macroreticular organic polymer carrier containing phosphine or phosphite groups that act as ligands for a catalytically organometallic complex, the process comprising the steps of:

- preparing said catalyst by a process comprising the steps of:
 - phosphochlorinating said polymer with phosphorous trichloride in the presence of a borontrifluoride complex, to form chlorophosphonyl groups bound to said polymer;
 - converting the chlorophosphonyl groups bound to said polymer into phosphine or phosphite groups with at least one of an alkyl hydrocarbon compound and an alkali alcoholate;
 - reacting the product of step (ii) with a compound of a transition metal, a complex of a transition metal, or mixture thereof to form a catalytically active organometallic complex;
- converting said olefinically unsaturated compound in the gas phase to a mixture of essentially normal and iso-aldehydes with carbon monoxide and hydrogen at an elevated temperature in the presence of the catalyst prepared in accordance with step (a).

4,434,303

PREPARATION AND USE OF BIS-(1-BROMO-2,3,3-TRICHLORO-2-PROPENYL) ETHER

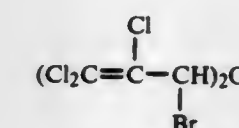
Junichi Saito, and Toyohiko Kume, both of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan Division of Ser. No. 288,443, Jul. 30, 1981, Pat. No. 4,392,929, which is a division of Ser. No. 110,051, Jan. 7, 1980, Pat. No. 4,317,937. This application Jan. 7, 1983, Ser. No. 456,461 Claims priority, application Japan, Jan. 24, 1979, 54-6015

Int. Cl.³ C07C 43/15, 43/17

U.S. Cl. 568—686

1 Claim

1. Bis-(1-bromo-2,3,3-trichloro-2-propenyl) ether of the formula



4,434,304

SYNTHESIS OF TRINITROPHLORGLUCINOL

Albert A. DeFusco, Jr.; Arnold T. Nielsen, and Ronald L. Atkins, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1982, Ser. No. 434,460

Int. Cl.³ C07C 79/30

U.S. Cl. 568—710

4 Claims

1. A method of making trinitrophenylglucitol comprising the steps of: cooling a reaction mixture of phloroglucinol and sulfuric acid; slowly adding to said reaction mixture a solution of nitric acid and sulfuric acid at a rate which maintains a reaction temperature of below 8° C.; and stirring said reaction mixture until precipitate of said trinitrophenylglucitol forms.

4,434,315

PROCESS FOR ISOMERIZING OLEFINS

Bernard Juguin, Rueil-Malmaison, and Jean Miquel, Paris, both of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

Filed May 21, 1982, Ser. No. 380,857

Claims priority, application France, May 21, 1981, 81 10312
Int. Cl.³ C07C 5/23

U.S. Cl. 585—671

12 Claims

1. A process for isomerizing a linear C₄₋₂₀ ethylenic hydrocarbon to a branched C₄₋₂₀ ethylenic hydrocarbon, comprising contacting an olefinic hydrocarbon charge containing said linear C₄₋₂₀ ethylenic hydrocarbon with steam and an isomerization catalyst; wherein said catalyst is an alumina catalyst which further comprises 0.5–10% by weight of silica, and 5 ppm–2% by weight of at least one metal or metal compound, said metal being palladium, chromium, nickel, copper, manganese or silver; and wherein the molar ratio H₂O/hydrocarbons is 0.1–10.

4,434,316

SEPARATION OF ALKENES FROM ALKADIENES

Willie J. Barnette, Orange, Tex., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Mar. 25, 1983, Ser. No. 478,997

Int. Cl.³ C07C 7/00

U.S. Cl. 585—833

6 Claims

1. A process for separating alkenes from a mixture comprising alkenes and alkadienes which process comprises contacting the mixture with hydrogen cyanide in the presence of a zero-valent nickel complex as a catalyst under hydrocyanation conditions at a temperature in the range 40°–200° C. and at a pressure in the range 0.1–5 MPa in the liquid phase, whereby the hydrogen cyanide reacts with at least a portion of the alkadiene present to form the corresponding nitrile and thereafter separating the unreacted alkenes from the nitrile reaction product.

4,434,317

SEPARATION AND RECOVERY OF UNSATURATED HYDROCARBONS BY COPPER (I) COMPLEXES

Gerald Doyle, Whitehouse Station; Roy L. Pruett, New Providence, and David W. Savage, Lebanon, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 6, 1983, Ser. No. 492,225

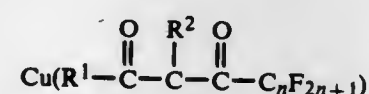
Int. Cl.³ C07C 7/156

U.S. Cl. 585—845

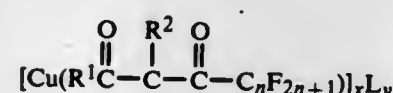
12 Claims

1. A process for separating alkene, alkyne or mixture thereof from a feedstream without copper metal formation which comprises the steps of:

(a) contacting the feedstream with a solution of a cuprous fluorinated acetylacetonate of the formula



where R¹ is C₁–C₆ fluoroalkyl, C₁–C₈ alkyl, C₄–C₆ heretocycle containing O, S, or N or C₆–C₁₀ aryl, R² is H or C₁–C₆ alkyl with the proviso that R¹ and R² together with the carbons to which they are attached may be joined together to form a C₆ ring and n is an integer from 1 to 8, in an organic solvent containing a stabilizing agent at a temperature sufficient to remove at least one of alkene or alkyne by forming a Cu(I) complex of the formula



where R¹, R² and n are defined above, x and y are 1 or 2, and L is alkene or alkyne, said stabilizing agent being characterized by replacing L in the first Cu(I) complex thereby forming a second Cu(I) complex which is stable at temperatures wherein the first Cu(I) complex decomposes through loss of alkene or alkyne,

(b) heating the resulting mixture to a temperature sufficient to decompose the first Cu(I) complex through loss of alkene or alkyne whereby the stabilizing agent replaces alkene or alkyne in said first Cu(I) complex and copper metal formation is prevented by formation of the second Cu(I) complex, and

(c) separating the alkene, alkyne or mixture thereof.

4,434,318

SOLAR CELLS AND METHOD

James F. Gibbons, Palo Alto, Calif., assignor to Sera Solar Corporation, Santa Clara, Calif.

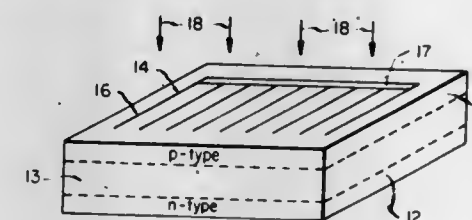
Filed Mar. 25, 1981, Ser. No. 247,611

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.³ H01L 31/06, 31/18

U.S. Cl. 136—258

9 Claims



1. A solar cell comprising n-type and p-type silicon single crystal or polycrystalline collecting semiconductor layers separated by a truly amorphous semiconductor layer that serves as a layer which absorbs the optical energy and generates carriers.

4,434,319

POF CABLE HAVING OUTER PIPE WITH CURVED OFFSET SECTIONS TO ACCOMMODATE EXPANSION OF THE CORE

Yoshiaki Gomi, Kasugai; Takahiro Hirata, Gifu; Michio Takaka, Chiba; Tsuneaki Mohtai, Yachiyo, and Kazuya Akashi, Tokyo, all of Japan, assignors to The Chuba Electric Power Company Inc., Nagoya and The Fujikura Cable Works, Ltd., Tokyo, both of Japan

Filed Aug. 31, 1981, Ser. No. 298,160

Claims priority, application Japan, Sep. 5, 1980, 55-123273; Sep. 5, 1980, 55-123274

Int. Cl.³ H01B 9/06

U.S. Cl. 174—13

9 Claims



1. A POF cable line comprising:
a pipe having a generally constant diameter and containing insulating oil therein;
a cable core within the pipe, said core lying substantially straight in the pipe when the cable line is electrically unloaded, said pipe having at least one curved offset section having a diameter substantially the same as said first mentioned diameter and positioned along the pipe to accommodate longitudinal thermal expansion of said cable core by providing controlled snaking of said cable core with respect to said pipe, said pipe having an inner diameter sufficiently larger than an outer diameter of the cable core to permit said at least one curved offset section to accommodate said longitudinal thermal expansion.

4,434,320

CONTRACTIBLE CONDUIT SEALING CONNECTOR

Gary S. Klein, Bedford Heights, and William J. Herbert, Mantua, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 22, 1982, Ser. No. 350,980

Int. Cl.³ H02G 3/04

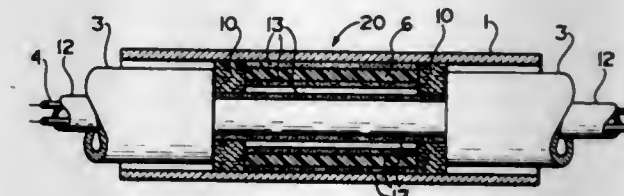
U.S. Cl. 174—23 R

17 Claims

1. An improved connector assembly for connecting the ends of at least two metal conduits together having at least one electrical conductor extending therebetween, said connector of the type comprising a sleeve made from a heat recoverable metallic material having a chamber therewithin enclosed by a wall of the sleeve having an inner and outer surface with at

ELECTRICAL

least a portion of the inner surface facing towards the conductor, said sleeve having openings therein communicating with the chamber that are dimensionally adapted to enable the ends of the conduits to be respectively inserted therethrough into the chamber while the sleeve is in an expanded state and permit a wall of the sleeve surrounding the openings to contract radially inwardly to secure the sleeve to the conduits upon exposure of the sleeve to an amount of heat sufficient to cause the contraction thereof, wherein the improvement is character-



ized by; said chamber having an expandable material disposed therein that is adapted to expand into an expanded material in response to the exposure of the sleeve to the amount of heat sufficient to cause the contraction thereof and to engulf the conductor without damage thereto and fill the chamber sufficiently to provide a barrier against the flow of vapor through the conduits, and said sleeve having stopping means disposed within the chamber to prevent the expandable material from expanding into the ends of the conduits.

4,434,321

MULTILAYER PRINTED CIRCUIT BOARDS

Dennis J. Betts, Goostray, England, assignor to International Computers Limited, Stevenage, England

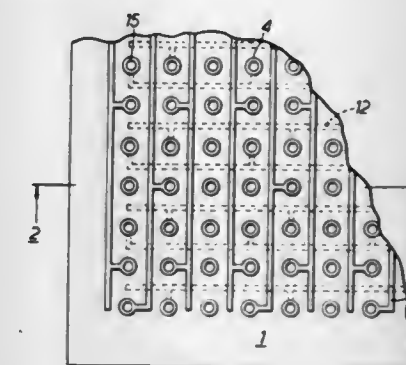
Filed Feb. 9, 1982, Ser. No. 347,312

Claims priority, application United Kingdom, Feb. 9, 1981, 8103918

Int. Cl.³ H05K 1/11

U.S. Cl. 174—68.5

3 Claims



1. A multilayer printed circuit board for forming prototype circuits including:
an insulating substrate;
first and second planar conductive potential distribution layers bonded one on either side of the insulating substrate;
a first insulating layer secured to the first planar conductive layer and supporting a plurality of first spaced parallel conductive tracks on an outer face of the structure;
a second insulating layer secured to the second planar conductive layer and supporting a plurality of second spaced parallel conductive tracks on a further outer face of the structure opposite said one outer face, the second tracks extending perpendicular to said first tracks; and a plurality of conductive through connections extending between said outer faces of the structure and arranged in a pattern of rows and columns in positions located between adjacent conductive tracks, first ones of the conductive through connections being connected only to adjacent ones of said first conductive tracks, second ones of the conductive through connections being connected only to

adjacent ones of said second conductive tracks, third ones of the conductive through connections being connected only to the first planar conductive layer and fourth ones of the conductive through connections being connected only to the second planar conductive layer, whereby desired conductor configurations may be provided by interconnecting selected tracks by conductive links between conductive through connections which are connected to those selected tracks and selectively introducing discontinuities in said tracks and whereby desired potentials for the circuit configurations are distributed through the structure by the first and second conductive layers and the third and fourth conductive through connections respectively.

4,434,322

CODED DATA TRANSMISSION SYSTEM

Philip J. Ferrell, Seattle, Wash., assignor to Racal Data Communications Inc., Miami, Fla.

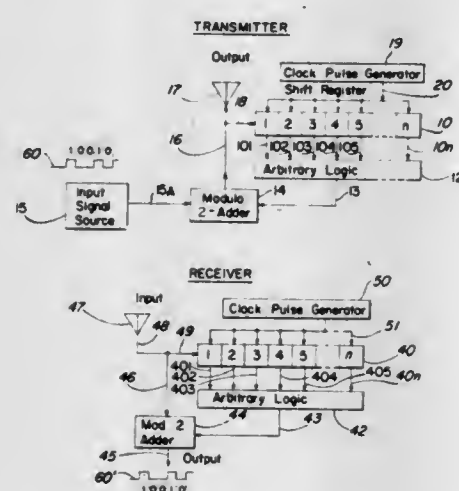
Continuation of Ser. No. 481,021, Aug. 19, 1965, abandoned.

This application Jul. 23, 1981, Ser. No. 286,356

Int. Cl.³ H04L 9/00

U.S. Cl. 178—22.13

40 Claims



35. A data decryption apparatus for decrypting an encrypted information-containing digital data signal which was encrypted for transmission to the data decryption apparatus, comprising:

- a multistage shift register having an input stage and a total of n stages, with n equal to the number of stages in a shift register used for encryption;
- a logic means, having n inputs, each connected a respective one of the n stages of the shift register, for providing on its output the same unique binary output responsive to the condition of the contents of each stage of the shift register, as is provided by an identical logic means used for encrypting the information-containing digital data signal for transmission;
- a modulo-two adder having first and second inputs, and one output;
- means for coupling the encrypted information-containing data signal as received to the input stage of the shift register and to the first input of the modulo-two adder;
- the output of the logic means is connected to the second input of the modulo-two adder and the output of the modulo-two adder comprises the information-containing digital data signal which was encrypted for transmission.

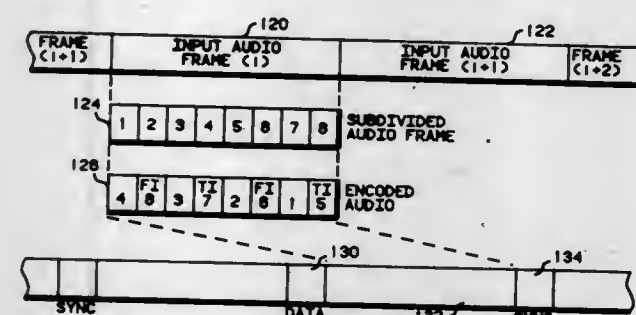
4,434,323
SCRAMBLER KEY CODE SYNCHRONIZER
Stephen N. Levine, Schaumburg; Ezzat A. Dabbish, Buffalo Grove, and John P. Byrns, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1981, Ser. No. 278,251

Int. Cl.³ H04K 1/00

U.S. Cl. 178—22.17

17 Claims



1. In a narrowband privacy communication system for communicating analog information, wherein frames of analog information are partitioned into subframes and subframes are scrambled to permit secure transmission, a key code synchronization method comprising the steps of:

- (a) generating successive digital sequences containing time synchronization information and key synchronization information at a first station;
- (b) scrambling each frame of the analog information such that the scrambling algorithm is derived from the key synchronization information;
- (c) periodically transmitting throughout the scrambled transmission of analog information from the first station the digital sequences distributed between the scrambled frames of the analog information;
- (d) detecting at a second station at least one transmitted digital sequence and the transmitted scrambled analog information;
- (e) descrambling the scrambled analog information utilizing at least one of the digital sequences.

4,434,324

REVERSAL OF CONNECTIONS OF TELEGRAPHIC LINE WIRES UPON DETECTION OF UNWANTED POLARITY OF THE LOOP CURRENT

Giuseppe Boggio, Rivarolo, and Mario Lorenzi, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

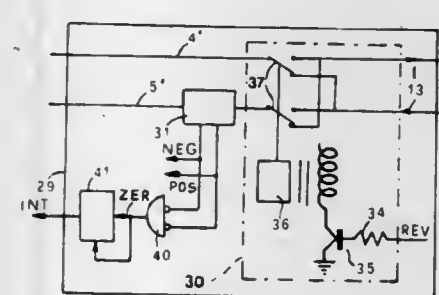
Filed Jan. 27, 1982, Ser. No. 343,311

Claims priority, application Italy, Jan. 30, 1981, 67122 A/81

Int. Cl.³ H04L 25/02

U.S. Cl. 178—69 R

10 Claims



1. A telegraphic communication system with automatic handling of irregularities in the connection of a transmission-reception line of a telegraphic station, the line normally carrying a predetermined current, comprising a polarity detector (31) in series with the line to detect the current polarity, and a device for reversing the connection of the line (30), characterized by checking means (84) operating in dependence upon the detector (31), for carrying out a check on the polarity of the

current in order to cause the reversing device (30) to operate if the result of this check is negative.

4,434,325

VOLUME CONTROL FOR AN AUDIO APPARATUS
Kozo Kobayashi, Kodaira, and Mamoru Minamishima, Higashimurayama, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

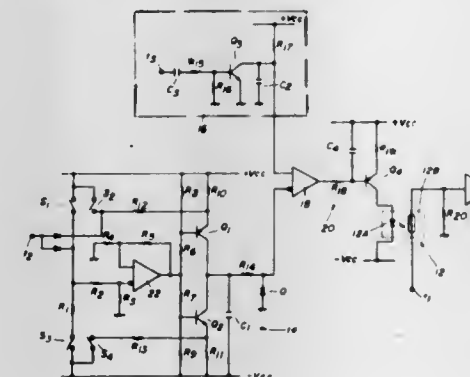
Filed Jul. 9, 1982, Ser. No. 396,772

Claims priority, application Japan, Jul. 16, 1981, 56-104679[U]

Int. Cl.³ H03G 3/02

U.S. Cl. 381—104

5 Claims



1. A volume control for an audio apparatus comprising:
a capacitor charge and discharge circuit having a capacitor charged and discharged by a constant current in response to one of fade-in and fade-out operations;
a function generator to generate a signal having a logarithmic waveform periodically repeated;
control signal generating means to compare a voltage across said capacitor with said logarithmic waveform signal from said function generator to generate a control signal logarithmically varying in accordance with variation in said voltage across said capacitor;
and impedance control means to logarithmically change an impedance of an audio signal line in accordance with said control signal to logarithmically change the level of said audio signal in substance.

4,434,326

CIRCUIT ARRANGEMENT FOR ESTABLISHING AND TERMINATING A DATA CONNECTION

Klaus Koeck, Banknang; Wolfgang Bambach, Oberstenfeld; Gerhard Ruopp, and Frank Mikley, both of Backnang, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,584

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028236

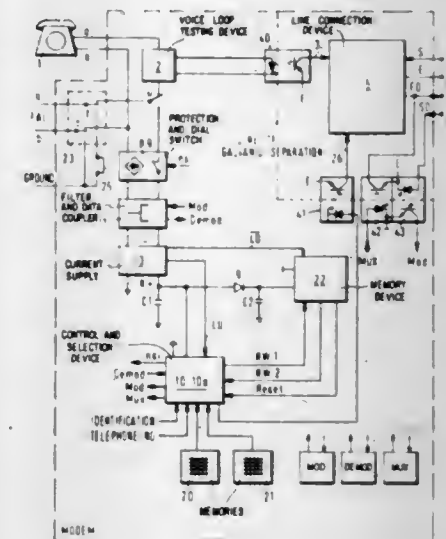
Int. Cl.³ H04M 11/08

U.S. Cl. 179—2 DP

9 Claims

1. In a circuit arrangement for establishing and terminating a connection in a subscriber communication system, the arrangement including a data transmission device arranged to be connected to an associated subscriber line of the system and including a data terminal, a voice loop testing device connectable to the subscriber line, a line connection device supplied with operating voltage by the terminal, and connected to receive signals produced by the voice loop testing device, an automatic dialing device, a current supply connected to receive operating voltage from the subscriber line, a control device connected in the data transmission device and to the automatic dialing device for performing and monitoring the sequence of individual operating states of the data transmission device, and a memory unit connected to the control device for storing a representation of the present operating state of the data transmission device, the improvement wherein: the operating state representations stored in said memory unit are those

required for reestablishment of an existing connection; and said control device constitutes means responsive to a temporary interruption in the supply of operating voltage to said



current supply from the subscriber line for reading out from said memory unit, after such interruption has ended, the representations stored therein and for then reestablishing the connection existing before such interruption.

4,434,327

ELECTRET TRANSDUCER WITH VARIABLE ACTUAL AIR GAP

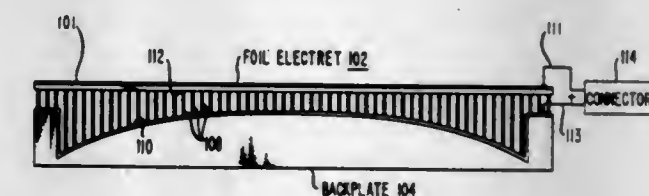
Ilene J. Busch-Vishniac, Highland Park; Robert L. Wallace, Jr., Warren, and James E. West, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 20, 1981, Ser. No. 323,684

Int. Cl.³ H04R 19/00, 19/04

U.S. Cl. 179—111 E

12 Claims



12. An acoustic transducer comprising
a backplate coated with a metal, and
a single foil suspended over said backplate, said foil being substantially parallel to said backplate along the width of said single foil at any point along the length of said single foil, the distance between said single foil and said backplate varying along said length according to a predetermined relationship,
the sensitivity of said acoustic transducer at any point on said single foil being inversely proportional to said distance at said point between said single foil and said backplate for producing a directional response pattern comprising a main lobe and a plurality of sidelobes substantially at a predetermined threshold level, and
said single foil being constantly charged with a direct current bias.

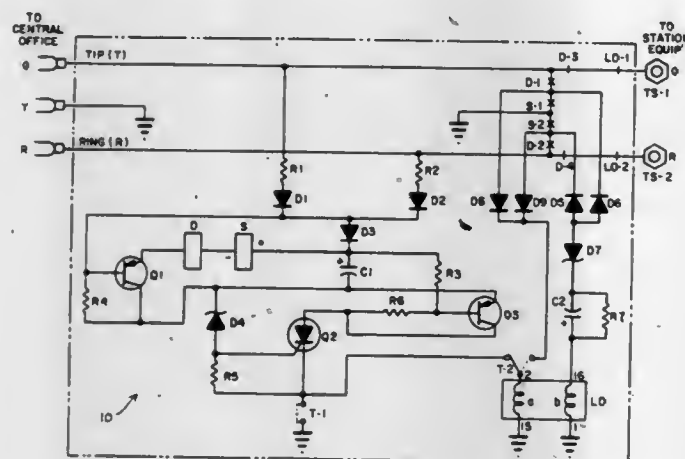
4,434,328

REMOTELY ACTUATED TELEPHONE INSTRUMENT CONNECTION BLOCK HAVING INSTRUMENT LOCKOUT FEATURE

Gary C. Fields, 3825 Delmont Ave., Oakland, Calif. 94605
Filed Jun. 21, 1982, Ser. No. 390,404
Int. Cl.³ H04M 3/16

U.S. Cl. 179—20

14 Claims



1. In a remotely activated loop testing connection block for disconnecting a telephone subscriber's service equipment from a telephone tip and ring line pair during a test interval in response to a first control signal sent from a telephone exchange, an improvement comprising a subscriber's equipment lockout circuit including switching means responsive only to a second control signal sent from said exchange during said test interval for lockingly disconnecting said equipment from said pair and thereafter for lockingly reconnecting said instrument to said pair in response to a subsequently sent restore control signal.

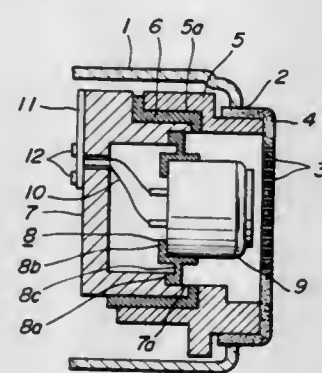
4,434,329

MICROPHONE DEVICE BUILT IN A TAPE RECORDER

Mitsuo Nasu, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed Feb. 12, 1982, Ser. No. 348,339
Claims priority, application Japan, Feb. 19, 1981, 56-22416[U]; Feb. 19, 1981, 56-22417[U]
Int. Cl.³ H04R 1/28

U.S. Cl. 179—121 R

8 Claims



1. A microphone device arranged to be built in a tape recorder, comprising a casing portion of a tape recorder, a face member fixed on the casing portion and having a plurality of sound inlet holes; a first support member located inside the casing portion and supported by the face member for isolating vibrations of relatively low frequency, a second support member located inside the casing portion and supported by the first support member for isolating vibrations of relatively high frequency, and a microphone body supported by the second support member in operative relation to the face member.

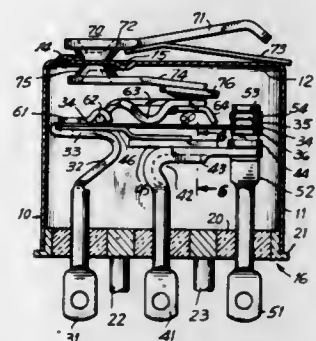
4,434,330

HIGH TEMPERATURE SWITCH

Leo F. Geremia, Wallingford, Conn., assignor to Tri-tech, Inc., Waterbury, Conn.
Filed Apr. 9, 1981, Ser. No. 252,475
Int. Cl.³ H01H 21/04

U.S. Cl. 200—67 DA

22 Claims



1. A switch mechanism for use in a high temperature environment comprising enclosure means defining an interior and an exterior and having a surface on which is formed a flex portion adapted for flex movement; electrodes extending into the interior of the enclosure means; an outer actuator having one end affixed at said flex portion on the exterior of the enclosure means and a remote free end; an inner actuator having one end affixed at said flex portion on the interior of the enclosure means and a remote free end; switch means in contact with the free end of said inner actuator and actuatable between normal and actuated conditions for coupling said electrodes to selectively open and close in response to movement of the outer actuator; and helper spring means coupled to said outer actuator and biasing against said enclosure means when said outer actuator is depressed into an actuated position thereof for biasing said actuators to their position corresponding to the normal condition of said switch means.

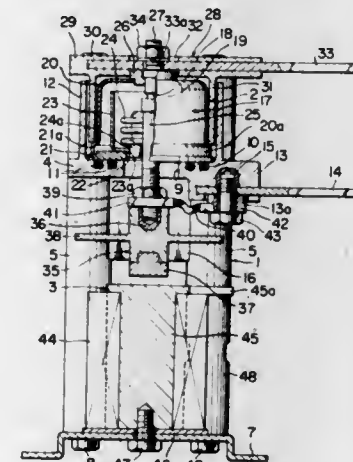
4,434,331

VACUUM POWER INTERRUPTING DEVICE

Shinzo Sakuma, Yokohama; Hifumi Yanagisawa, Sagami-hara; Kazuo Tokuhata, Yamanishi, and Hiroshi Miyagawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Meidensha and Kabushiki Kaisha GEMV AC, both of Tokyo, Japan
Filed Jan. 30, 1981, Ser. No. 230,286
Claims priority, application Japan, Feb. 4, 1980, 55-12181
Int. Cl.³ H01N 33/66

U.S. Cl. 200—144 B

12 Claims



1. A vacuum power interrupting device with a vacuum vessel, the device including a vacuum interrupter comprising a stationary contact rod aligned with a movable contact rod, each said rod having, within the vacuum vessel, a respective electrical contact provided on an end of the associated rod extending into the vacuum vessel, the contact on the movable

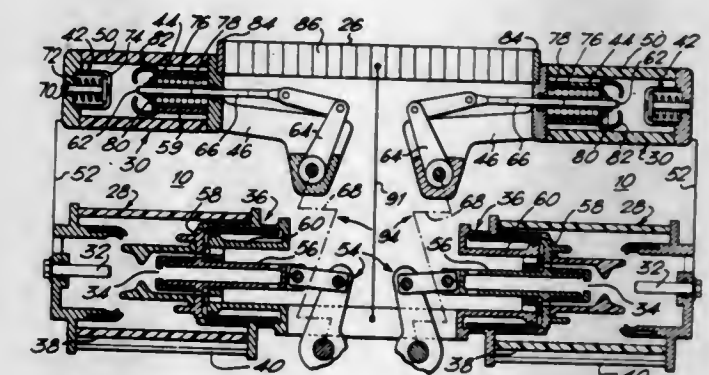
4,434,333

CIRCUIT BREAKER DEVICE

Yutaka Kawasaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jun. 7, 1982, Ser. No. 386,092
Claims priority, application Japan, Sep. 4, 1981, 56-138356
Int. Cl.³ H01H 33/16

U.S. Cl. 200—144 AP

4 Claims



1. A circuit breaker device comprising: a tank filled with an insulating gas;
a pair of main contacts disposed in said tank, connected in series with each other and each having a movable contact and a fixed contact;
a pair of auxiliary contacts disposed in said tank, each having a movable contact and a fixed contact, an end terminal of one of said auxiliary contacts being connected with an end terminal of said series connected main contacts and an end terminal of the other of said auxiliary contacts being connected with the other end terminal of said series connected main contacts, each of said auxiliary contacts including a resistance annularly disposed around said movable contact of said auxiliary contact, said movable contact passing through and electrically contacting the annular resistance;
a resistance, disposed in said tank, connected to the other end terminals of said auxiliary contacts, said resistance including an intermediate tap connected to a juncture point between said main contacts; and
operating means, including an insulated rod connected between said movable contacts of said main and auxiliary contacts, for closing and opening said pairs of main contacts and auxiliary contacts, said operating means cooperating with said pairs of contacts to close said auxiliary contacts before said main contacts.

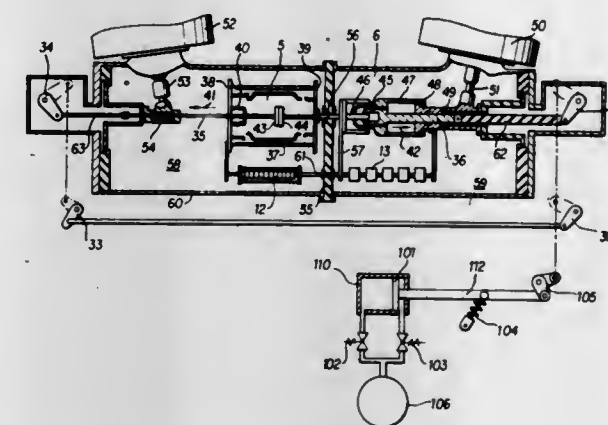
4,434,332

HYBRID-TYPE INTERRUPTING APPARATUS

Satoru Yanabu, Machida, and Tohoru Tamagawa, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan
Filed Aug. 14, 1981, Ser. No. 292,819
Claims priority, application Japan, Aug. 14, 1980, 55-111024
Int. Cl.³ H01H 33/16

U.S. Cl. 200—144 AP

5 Claims



1. A current interrupting apparatus, comprising:
at least one vacuum interrupter means;
at least one gas-blast interrupter means coupled in series with said at least one vacuum interrupter means;
non-linear resistor means coupled in parallel with said vacuum interrupter means;
impedance means coupled in parallel with said at least one gas blast interrupter means;
high frequency current generator means coupled in parallel with the series combination of said at least one vacuum interrupter means and said at least one gas-blast interrupter means; and
energy absorber means coupled in parallel with the series combination of said at least one vacuum interrupter means of said at least one gas-blast interrupter means.

4,434,334

CIRCUIT INTERRUPTER

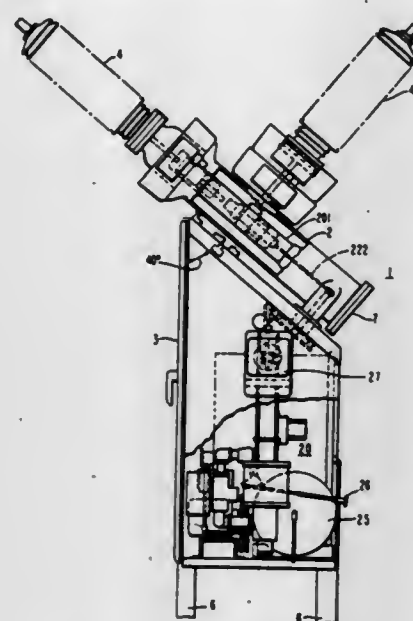
Charles W. Tragesser, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 2, 1980, Ser. No. 193,067
Int. Cl.³ H01H 33/70

U.S. Cl. 200—148 R

6 Claims

1. Circuit interrupter, comprising:
(a) an assembly with an insulating housing containing a compressed insulating gas and separable electrical contacts;
(b) a control means operable to open and close said separable electrical contacts including electrical and mechanical actuating means for operating said separable electrical contact; and
(c) a control housing for supporting said control means and said interrupter assembly such that the interrupter assembly

bly has connected to it a rectilinear bushing means in a parallel relationship with the top of the control housing



and a perpendicular bushing means in a perpendicular relationship with the top of the control housing.

4,434,335

COMPRESSED-GAS CIRCUIT INTERRUPTER WITH A HEATER

Ken-ichi Natsui, and Osamu Koyanagi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

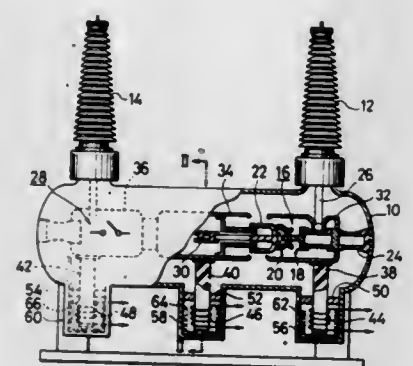
Filed Jan. 28, 1981, Ser. No. 229,064

Claims priority, application Japan, Jan. 28, 1980, 55-7839

Int. Cl.³ H01H 33/57

U.S. Cl. 200—148 E

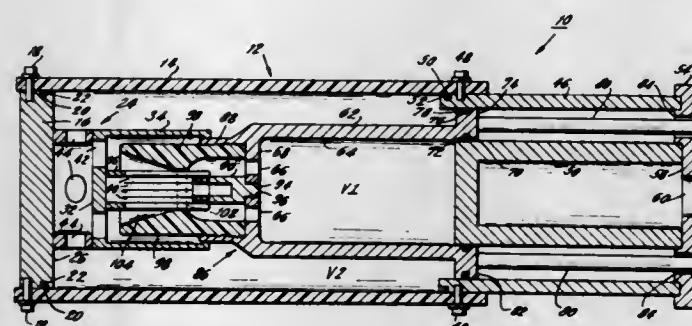
9 Claims



1. A compressed-gas circuit interrupter comprising: a sealed chamber in which a compressed dielectric gas is confined; an arc-extinguishing assemblage disposed interiorly of said chamber for carrying load current; a heat radiation member mounted within said chamber for making a heat exchange with the dielectric gas; a heater disposed at the outside of said chamber; and a heat transfer member connected to said heat radiation member and said heater for transmitting heat generated by said heater to said heat radiation member through heat conduction.

4,434,336
LIQUID SF₆ INTERRUPTER WITH ARC ENERGY DRIVEN PISTON AND CONTACT
Ruben D. Garzon, Malvern, Pa., assignor to Brown Boveri Electric, Inc., Rolling Meadows, Ill.
Filed Aug. 12, 1981, Ser. No. 292,208
Int. Cl.³ H01H 33/88
U.S. Cl. 200—150 G

9 Claims



1. A circuit interrupter, comprising: a housing containing a substantially incompressible dielectric material in the liquid phase at a pressure higher than the pressure immediately surrounding said housing; stationary contact means in said housing; movable contact means in said housing and movable therein between an engaged position, in which it engages said stationary contact means, and a disengaged position, in which it is physically spaced from and electrically isolated from said stationary contact means; stationary piston means in said housing; movable piston means secured to aid movable contact means and having a bore in which said stationary piston means is slidably received; the interior of said bore communicating with a region between said stationary and said movable contact means to cause fluid flow into said region when said movable contact means is displaced from its said engaged position; said movable piston means having a piston member which has a first face exposed to said pressure of said dielectric material in the interior of said housing and having a second face exposed to said lower pressure immediately surrounding said housing; sliding seal means disposed between said movable piston means and said stationary piston means for preventing flow of fluid between the volumes which include said first and second faces during contact interruption; and control means for maintaining said movable contact means in said engaged position to maintain a current there-through, and for releasing said movable contact means to allow it to move from said position engaged toward said disengaged position for interrupting a current flowing through said interrupter.

4,434,337

MERCURY ELECTRODE SWITCH

Otto Becker, Nuremberg, Fed. Rep. of Germany, assignor to W. Günther GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,923

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 8016981[U]

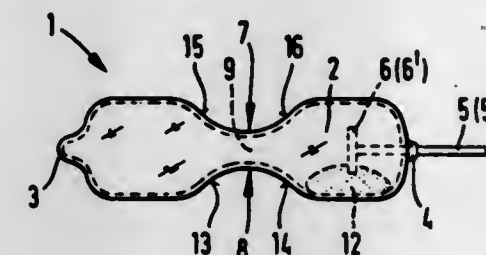
Int. Cl.³ H01H 29/22

U.S. Cl. 200—220

6 Claims

1. In a mercury switch composed of a closed tubular glass envelope and at least one pair of electrodes extending through one end of the envelope and presenting terminals located within the region enclosed by the envelope and adjacent the one end thereof, the improvement wherein said envelope is formed to have two indentations located opposite one another, spaced from the ends of said envelope, and spaced at a greater distance than said terminals from said one end, said indentations projecting toward one another to define, within the region enclosed by said envelope, a gap for the passage of mer-

cury between the ends of such region, and wherein said terminals are spaced apart in the direction of a plane which is dis-



posed between said indentations and which is perpendicular to the direction in which said indentations project.

4,434,338

COIL SPRING SWITCH

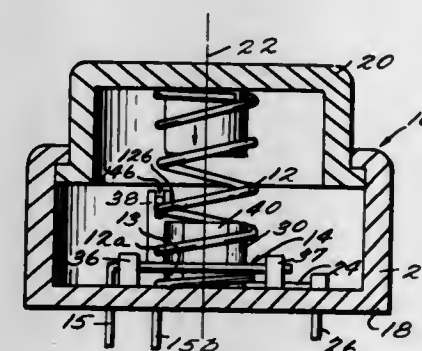
Robert M. Rood, 7164 Victoria Rd., St. Paul, Minn. 55119

Filed Jan. 22, 1982, Ser. No. 341,605

Int. Cl.³ H01H 1/06

U.S. Cl. 200—276

40 Claims



1. A switch comprising: a first contact comprising generally helical conductive compression spring having at least one coil, said coil being displaced from a predetermined expanded position along a predetermined compression path by compression of said spring; at least one second contact comprising a resilient conductive transverse member, adapted for flexing in the direction of said compression path, disposed outwardly of said spring and extending inwardly into said compression path in predetermined relation to said coil expanded position, said compression spring providing the sole significant positional bias in respect of said transverse member and said coil; and means for selectively displacing said coil along said compression path to selectively effect a wiping contact between said transverse member and said coil.

4,434,339

MOUNTING FRAME EQUIPPED WITH DECORATIVE PLATE FOR MOUNTING SWITCH OR THE LIKE

Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 306,821, Sep. 29, 1981, Pat. No. 4,406,936.

This application Sep. 28, 1982, Ser. No. 425,369

Claims priority, application Japan, Oct. 11, 1980, 55-145034[U]; Feb. 20, 1981, 56-23743[U]

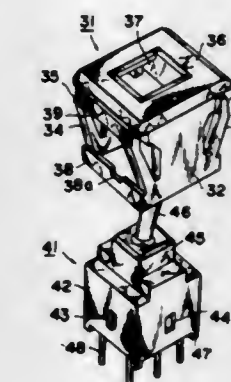
Int. Cl.³ H01H 9/00

U.S. Cl. 200—295

5 Claims

1. A mounting frame (31) for mounting a switch (41) or the like on a panel (49), which comprises: a decorative plate (36) formed with a through-hole (37) to be fitted into an upper sleeve portion (45) of the switch (41); two suspending portions (32, 34) integrally formed with and vertically suspended from the lower end portion on both sides of the decorative plate (36) to clamp a main body portion (42) of the switch (41) therebetween, each sus-

pending portion (32, 34) including a leg portion (32) in the form of a flat plate suspended from the decorative plate (36) and a pair of resilient plates (34) integrally formed with and upwardly extending from both lower end portions of the leg portion (32) to be resiliently deformable in the direction of width of the leg portion whereby the pair of resilient plates is fittable into a fitting hole of the panel (49);



engagement means (38, 38a, 38b, 38c) provided on each suspending portion for engaging with a corresponding engagement portion provided on the main body portion of the switch; and bridges 38 disposed transversely of said resilient plates 34 between the lower portions of said plates; said engagement means being provided on each of bridges (38) and being integrally formed with said leg portions.

4,434,340

SWITCH OPERATING MECHANISM

Masao Kondo, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

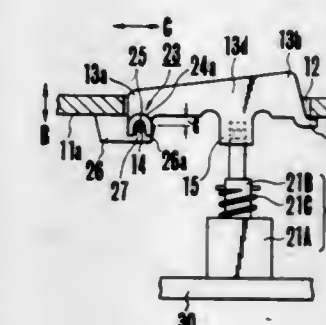
Filed Jul. 29, 1981, Ser. No. 288,194

Claims priority, application Japan, Aug. 13, 1980, 55-113765[U]

Int. Cl.³ H01H 3/04

U.S. Cl. 200—332

13 Claims



1. A switch operating mechanism comprising: a base plate provided with an opening; an operating member pivotably accommodated in said opening; a bearing member projecting from a portion of a bottom surface of a base plate near said opening and overlying said opening; a pair of supporting members with grooves, said supporting members projecting in opposite directions from said operating member, the distance between outer surfaces of said supporting members being larger than the width of said opening; a shaft member located between said bearing member and said bottom surface of said base plate and across said opening for rotatably engaging said grooves of said supporting members when said operating member is mounted; and

an actuator operated by said operating member for actuating a switch mounted on said base plate.

4,434,341

SELECTIVE, LOCALLY DEFINED HEATING OF A BODY
Dennis L. Busby, Papenbuderstr. 25, 2000 Hamburg 76, Fed. Rep. of Germany

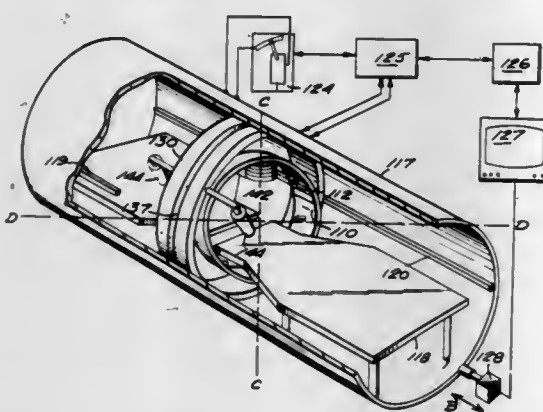
Filed Dec. 11, 1980, Ser. No. 215,445

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006356; Aug. 11, 1980, 3030327

Int. Cl.³ H05B 6/72; A61N 5/02

U.S. Cl. 219—10.55 A

15 Claims



1. Apparatus for the selective, locally defined heating of an object, comprising:

a ring;

a plurality of high-frequency radiation-emitting transmitters for heating an object upon which the radiation therefrom is directed;

means for mounting said transmitters to said ring so that radiation beams emitted by said transmitters intersect each other generally within a common volume generally encompassed by said ring;

a radially-extending electromagnetic coil surrounding at least one of said transmitters and comprising means for facilitating focusing of the radiation emitted by said at least one said transmitter;

means for mounting said ring so that it is pivotal about two perpendicular axes and is reciprocal along a dimension perpendicular to a plane containing said ring;

a plurality of ultrasonic generators;

means for mounting said ultrasonic generators on an inner surface of said ring, each adjacent a transmitter; and control means, responsive to signals from said ultrasonic generators, for positioning said ring.

4,434,342

MICROWAVE HEATING CONTROL AND CALORIMETRIC ANALYSIS

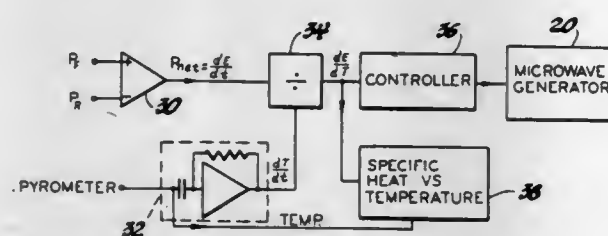
Norman W. Schubring, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1982, Ser. No. 338,636

Int. Cl.³ H05B 6/68

U.S. Cl. 219—10.55 M

3 Claims



1. A method of controlling the input of microwave energy in heat processing of a material that is heatable with microwaves

to produce therein a desired temperature response with time, comprising

subjecting a load of such material to microwave energy at a power level sufficient to commence heating the material while the material is situated in a cavity receptive to microwave radiation,

monitoring the temperature of the material as it is heated by said energy and continually producing an electrical signal indicative of such temperature,

monitoring the microwave power applied to the load and the power reflected from the load and continually producing an electrical signal indicative of the net power absorbed by the load,

continually producing an electrical signal indicative of the rate of change of said net applied power with the change of said temperature by continually using said temperature indicative signal and said net power indicative signal, and employing said rate of change indicative signal in control of the microwave energy input to said load so as to produce therein said temperature response with time.

4,434,343

TURNTABLE FOR MICROWAVE OVEN

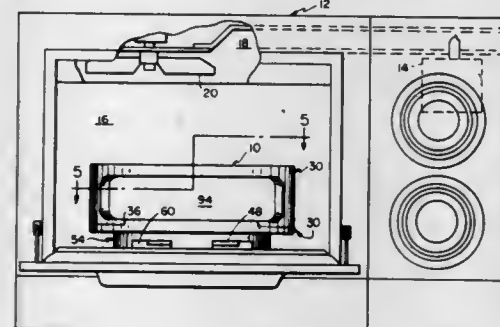
Robert F. Bowen, Burlington, and Thomas J. Martel, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 15, 1982, Ser. No. 339,579

Int. Cl.³ H05B 6/80; A47B 11/00

U.S. Cl. 219—10.55 F

5 Claims



1. A turntable adapted for being positioned in a microwave oven to provide substantially uniform food heating by rotation thereof, comprising:

a microwave transparent platform for supporting food, said platform having a shaft extending downwardly from the middle of the underside thereof;

means for rotating said platform about the axis of said shaft, said rotating means comprising a coil spring and a braking mechanism positioned in substantially the same horizontal plane thereby minimizing the vertical height of said rotating means;

means for shielding said rotating means from microwave energy, said shielding means comprising a metal pan having a metal cover with an aperture therein, said cover extending outwardly from the side wall of said pan to form a lip, said lip extending outwardly for a distance and then downwardly forming a channel to provide a low microwave field region between said side of said pan and the downward region of said lip, said lip further having an annular trough;

spherical bearings positioned in said trough;

an annular keeper positioned over said trough for maintaining substantially equal spacings between said bearings;

said platform being supported by said bearings; and said shaft extending through said aperture for coupling to said rotating means.

4,434,344

SELF-STORING MEAL RACK FOR A MICROWAVE OVEN

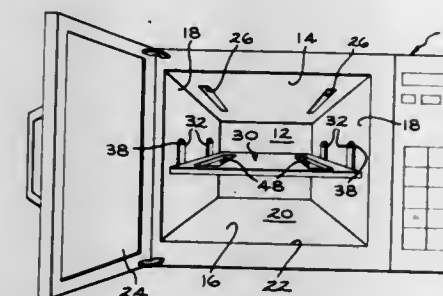
Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 12, 1982, Ser. No. 407,387

Int. Cl.³ H05B 6/80; F24C 15/16

U.S. Cl. 219—10.55 E

3 Claims



1. A microwave oven having a bottom surface, a top surface having waveguide slots, rear walls, side walls, an access opening and an oven door hingedly mounted relative to said access opening between an open and closed position, a self-storing cooking rack comprising:

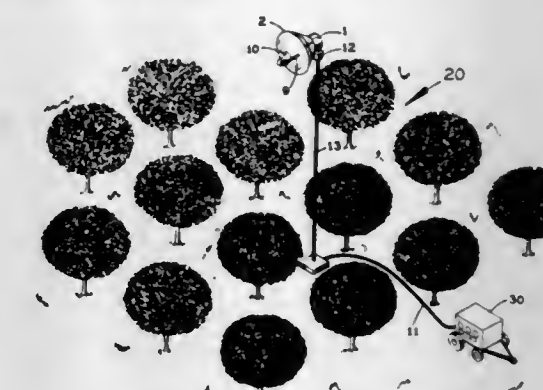
a food rack within said microwave oven;

arms on each side of said rack, each pivotally secured on one end to said rack and on the other end being pivotally secured to the side walls of said microwave oven for allowing movement of said rack between a lower cooking position wherein said rack is spaced from said bottom surface a distance sufficient to provide a cooking area between said rack and said bottom surface, and an upper storage position wherein said rack is positioned adjacent said top surface;

holding means including detent means on said arms dimensioned to engage a first cooperating detent means on said microwave oven side walls for holding said rack in said lower cooking position when said arms are rotated to a position below said side wall pivot and for engaging a second cooperating detent means on said microwave oven side walls for holding said rack in said upper storage position when said arms are rotated to a position above said side wall pivot;

said rack having apertures therein to permit unobstructed propagation of microwave energy to the lower portion of said cavity when said rack is in its upper storage position.

means for conducting said primary energy to said source of microwave energy; and



means for structural support of said directional, directable microwave antenna.

4,434,346

CONTACT DETECTOR

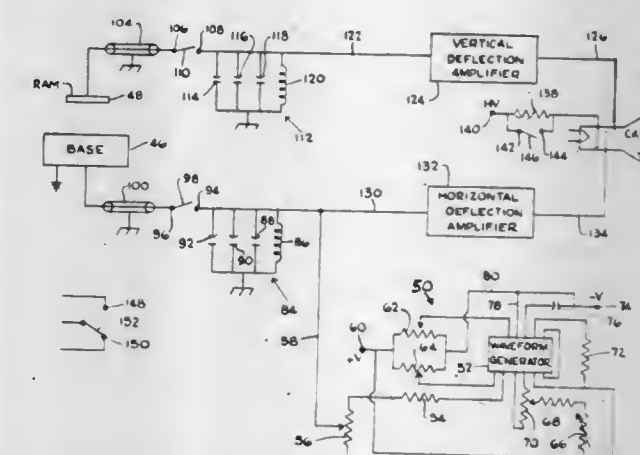
Roger J. Kern, c/o Kern Special Tools Co., Inc., 140 Glen St., New Britain, Conn. 06051

Continuation-in-part of Ser. No. 195,369, Oct. 9, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 404,326

Int. Cl.³ B23P 1/02

U.S. Cl. 219—69 C

21 Claims



1. Apparatus for detecting the point of contact between a workpiece element of electrically conductive material in a machine or measuring device and an electrically conductive element movable relative to and insulated from said workpiece and defining a gap when spaced from said workpiece comprising:

(a) means for generating a time-varying signal having a predetermined amplitude and frequency;

(b) means for applying said signal to one of the elements forming said gap;

(c) means connected to the other of said elements forming said gap for deriving a signal therefrom as a result of the flow of electrical current between said workpiece element and conductive element through said gap; and

(d) means connected to said signal generating means and to said signal deriving means for comparing said applied and derived signals as to amplitude and phase angle and for providing an indication of the comparison with the result that the combination of amplitude difference and a phase difference between said applied and derived signals can indicate the conditions of no contact, gap contamination, vibratory contact, or actual contact, respectively, between said conductive element and said workpiece element.

10. Apparatus according to claim 1, wherein said machine is an electrical discharge machine wherein said conductive element is an electrode movable toward and away from said workpiece element and said workpiece is supported on an

4,434,345

MICROWAVE SYSTEM FOR FROST PROTECTION OF FRUIT TREES

Ralph P. Muscatell, 2007 NE. 20th Ave., Fort Lauderdale, Fla. 33304

Filed Jul. 29, 1982, Ser. No. 403,063

Int. Cl.³ H05B 6/72

U.S. Cl. 219—10.55 R

13 Claims

1. A microwave system for frost protection of fruit trees and plants comprising:

a source of microwave energy;

a directional, directable microwave antenna;

said source of microwave energy and said directional, directable microwave antenna physically forming a unitary assembly;

means for transmitting microwave energy from said source of microwave energy to said microwave antenna;

means for directing said directional, directable microwave antenna;

a source of primary energy;

electrically conductive base connected to earth ground, wherein said signal applying means is connected to said machine base, and wherein said apparatus is connected to an electrical ground which is floating with respect to earth ground.

4,434,347

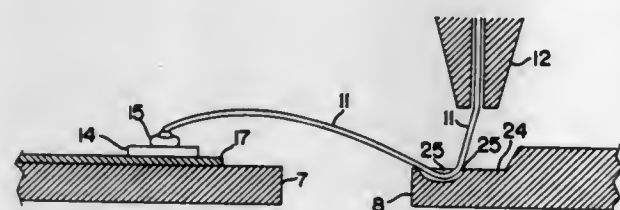
LEAD FRAME WIRE BONDING BY PREHEATING

John A. Kurtz, Gorham, and Donald E. Cousens, Saco, both of Me., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 19, 1981, Ser. No. 294,411
Int. Cl.³ B23K 11/32

U.S. Cl. 219—56.22

38 Claims



1. A method for welding bonding a lead wire or bonding wire held in the capillary bonding tool of a lead wire bonding machine to a die pad of an integrated circuit chip mounted on a lead frame and thereafter weld bonding said lead wire to a metal lead frame finger to provide an electrical lead wire coupling between the circuit chip die pad and the lead frame finger comprising:

- defining a bonding zone for carrying out said method;
- flooded said bonding zone with an inert gas;
- ball bonding the end of said lead wire to a circuit chip die pad at a first temperature below the temperature level at which damage might occur to the circuit chip;
- providing preheating electrode means separate from the bonding tool and positioning said preheating electrode means over the lead frame finger to which the lead wire is to be bonded;
- preheating the lead frame finger to which the lead wire is to be bonded by application of electrical energy through said preheating electrode means while substantially isolating the lead frame finger from electrical or thermal coupling between the lead frame finger and circuit chip, and preheating said lead frame finger to a second temperature above the temperature level at which damage might occur to the circuit chip;
- retracting said preheating electrode means and terminating application of electrical energy to said lead frame finger through the preheating electrode means prior to contact of the lead wire with said lead frame finger;
- contacting the lead wire with the preheated lead frame finger and bonding a section of the lead wire to the preheated lead frame finger;
- and serving said lead wire adjacent said bond at the lead frame finger.

4,434,348

CATHODIC CLEANING OF ALUMINUM TUBE

Gary L. Reid, Fletcher, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

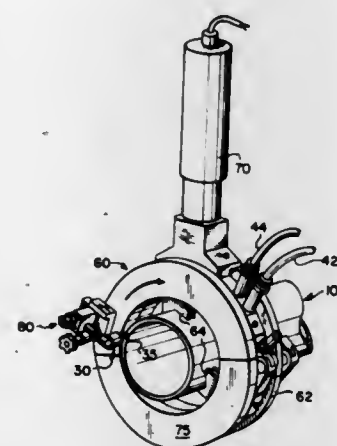
Filed Jan. 18, 1982, Ser. No. 339,927
Int. Cl.³ B23K 9/235

U.S. Cl. 219—61

6 Claims

1. A process for cleaning the edge of a tube prior to welding comprising the steps of positioning an electrode adjacent the root face of the tube and substantially parallel to the longitudinal axis of the tube and causing relative movement between the tube and the electrode while applying direct current between the electrode and the tube such that the electrode is positive

with respect to the tube to cause the entire root face of the tube along with a portion of both the inner and outer surfaces of the



tube adjacent the edge to be cathodically cleaned in a single operation.

4,434,349

LASER BEAM CUTTING MACHINES AND THE LIKE

Akira Tsutsumi, La Mirada, Calif., assignor to Amada Engineering & Service Co., La Mirada, Calif.

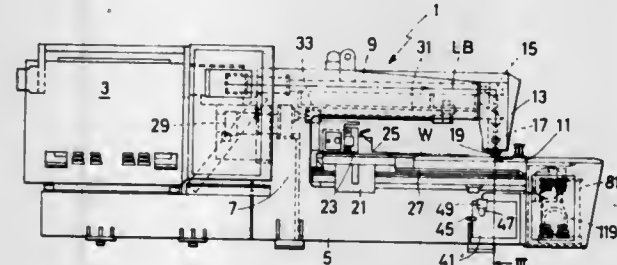
Filed Feb. 4, 1982, Ser. No. 345,680

Claims priority, application Japan, Feb. 6, 1981, 56-14924[U]; Apr. 30, 1981, 56-64351

Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LG

6 Claims



1. Apparatus for cutting a workpiece with heat energy such as laser radiation comprising:
a first filter chamber in which a bucket and an air filter are provided beneath a working area,
a second filter chamber communicating with the first filter chamber, said second filter chamber being provided with a liquid filter and being communicated with a vacuum pump, and
means for introducing fumes into the liquid filter from the first filter chamber through the air filter.

4,434,350

METHOD OF AND DEVICE FOR MANUFACTURING AN INK JET PRINTER

Peter Flisikowski, Hamburg; Werner Jeglinski, Bönningstedt, both of Fed. Rep. of Germany, and Gerardus Jelmorini, Valkenswaard, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,838

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113239

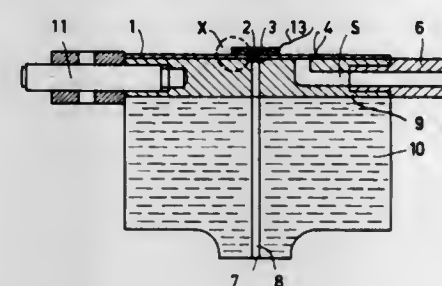
Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LC

8 Claims

1. A method of manufacturing an ink jet printer, comprising at least one jet nozzle whose pressure chamber is recessed in a body and is covered by a metal diaphragm on which there is arranged a drive element for the ejection of ink droplets from the jet nozzle, characterized in that the pressure chamber (2)

and a narrow passage (4) are formed in the body (9) by depression, the narrow passage (4) connecting the pressure chamber (2) to a supply duct (5) for ink, the metal diaphragm (1) being



connected to the body (9) in a vacuumtight manner by energy beam welding for which purpose the energy beam is guided along the edges of the pressure chamber (2) and the narrow passage (4).

4,434,351

METHOD AND SYSTEM FOR DETERMINING WELD QUALITY IN RESISTANCE WELDING

Shuji Nakata, Toyonaka; Yoshio Kawaguchi, Yokohama, and Akira Nishimura, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

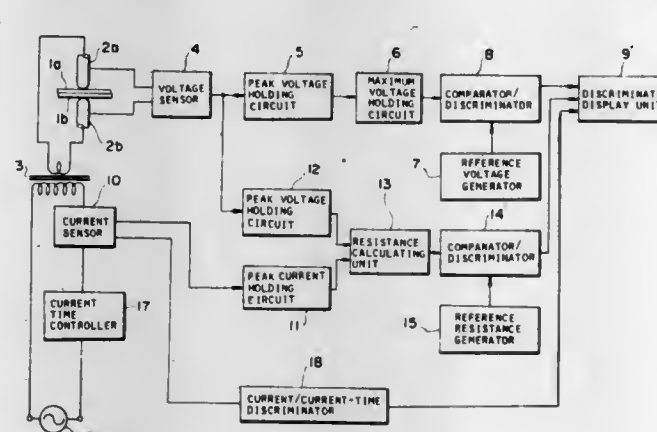
Filed Jun. 1, 1981, Ser. No. 268,887

Claims priority, application Japan, Jun. 2, 1980, 55-72830

Int. Cl.³ B23K 11/24

U.S. Cl. 219—117.1

7 Claims



1. A method of determining weld quality in resistance welding independently of variations in current path geometry due to electrode tip deformation, which comprises the steps of:

- (a) detecting a plurality of values of an electrode voltage applied to the welding electrodes between which the members to be welded are pinched;
 - (b) detecting a plurality of values of an electrode current flowing between the welding electrodes;
 - (c) calculating electrode resistance by dividing the electrode voltage by the electrode current;
 - (d) comparing the calculated electrode resistance immediately before the electrode current is cut off with a predetermined electrode resistance;
 - (e) comparing the maximum value among the detected electrode voltage values with a predetermined reference electrode voltage; and
 - (f) determining that the weld quality is acceptable when both the calculated electrode resistance and the detected maximum electrode voltage lie within the respective allowable ranges,
- whereby the weld quality is determined independently of variations in current path geometry due to deformation or crushing of electrode tips.

4,434,352

ARC WELDING METHOD FOR AUTOMATICALLY REVERSING A WELDING TORCH IN THE WIDTH DIRECTION OF THE GROOVE AT A SET POSITION

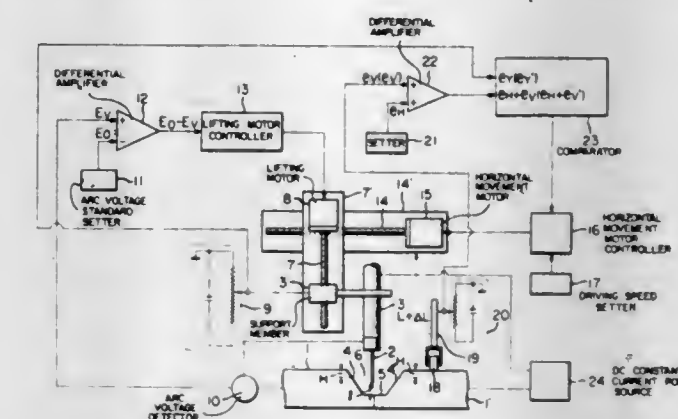
Hirokazu Nomura; Yuji Sugitani, both of Tsu, and Yasuo Suzuki, Hisai, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,202

Int. Cl.³ B23K 9/12

U.S. Cl. 219—125.12

2 Claims



1. In an automatic arc-welding method, which comprises: continuously moving a carriage along the longitudinal direction of a groove formed between objects of welding; fitting a welding torch to said carriage so that said torch is directed substantially vertically to said groove; said torch moving together with said carriage; directing a welding electrode through said torch toward said groove; feeding a welding current to said electrode to produce an arc between the tip of said electrode and said groove to weld said objects of welding together by means of the arc heat along said groove; continuously moving said torch, during travel of said carriage, in the width direction of said groove while continuing welding; continuously detecting a value (E_v) of the arc voltage or arc current of said arc; continuously calculating a deviation ($E_v - E_s$) of the thus detected value (E_v) from a previously set value (E_s) of the arc voltage or arc current; continuously moving said torch vertically up and down, during travel of said carriage, so that said deviation ($E_v - E_s$) becomes null, thereby maintaining the distance between the tip of said electrode and said groove always at a prescribed distance (1) during the movement of said torch in the width direction of said groove; continuously detecting a vertical position of said torch as a value of voltage (e_v) indicated by a potentiometer for each movement of said torch in the width direction of said groove; reversing the direction of movement of said torch in the width direction of said groove at the moment when said value of voltage (e_v) thus detected agrees with a prescribed value of voltage; repeating said movement of said torch in the width direction of said groove, said movement of said torch in the vertical direction and said reversal of the direction of the movement of said torch in the width direction of said groove; on the other hand, continuously moving said torch in the longitudinal direction of said groove, while continuing welding, together with said carriage; thereby reciprocally moving said torch in the width direction of said groove following the face of said groove while maintaining the distance between the tip of said electrode and said groove always at said prescribed distance (1), and, at the same time, moving said torch in the longitudinal direction of said groove so as to weld said objects of welding in the longitudinal direction of said groove; the improvement characterized by: said prescribed value of voltage, for one movement of said torch in the width direction of said groove, for the purpose of reversing the direction of movement of said torch in the width direction of said groove being equal to a

value of the sum ($e_H + e_V$) of a previously set value of voltage (e_H) and a value of voltage (e_V) corresponding to a deviation (ΔL) of the distance between said carriage and said objects of welding from a previously set distance (L).

4,434,353

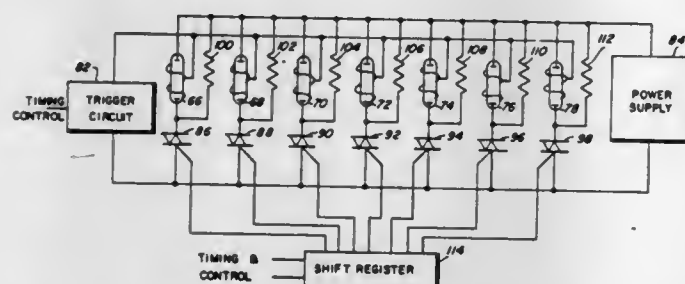
FUSING SYSTEM

Dana G. Marsh, Fairport; David R. Shuey, Webster, and John L. Webb, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1981, Ser. No. 306,985
Int. Cl.³ G03G 15/20; H05B 3/42

U.S. Cl. 219—216

8 Claims



5. An electrophotographic printing machine of the type having a toner powder image formed on a copy sheet, wherein the improved apparatus for fusing the toner powder image to the copy sheet includes:

a plurality of heating elements; and means, responsive to the size of the copy sheet, for energizing selected ones of said plurality of heating elements in an ordered sequence to produce a radiant energy output therefrom corresponding in surface area to substantially about the surface area of the copy sheet to heat the toner powder image on the copy sheet so as to permanently affix the toner powder image thereto.

4,434,354

THERMAL PRINTER

Shinichi Nakata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

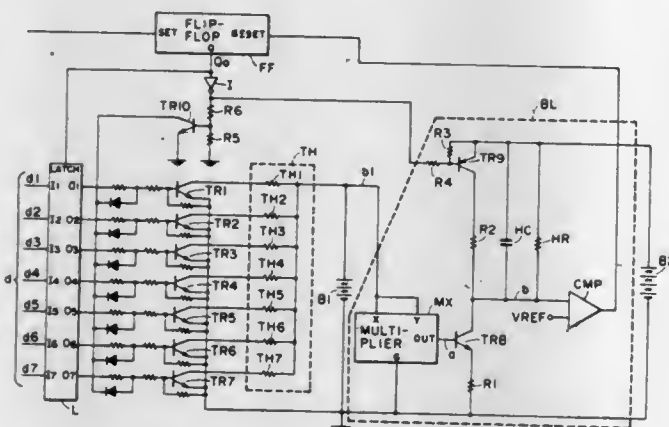
Filed Jan. 11, 1982, Ser. No. 338,378

Claims priority, application Japan, Feb. 3, 1981, 56-14521

Int. Cl.³ H05B 1/00; G01D 15/10

U.S. Cl. 219—216

3 Claims



1. A thermal printer comprising:
a thermal head having a plurality of heating elements;
a first power supply for energizing said heating elements of said thermal head;
a single capacitor for converting the temperature of said thermal head into an electrical signal;
a comparator for comparing said electrical signal from said single capacitor and a reference voltage applied thereto to produce an output signal in response to a variation in voltage of said first power supply; and
control means for controlling a time period of energizing all

of said heating elements of said thermal head in response to the output signal from said comparator.

4,434,355

OFFSET PREVENTION LAYER FOR HEAT ROLLER FIXING DEVICE

Sanji Inagaki; Shinji Takiguchi, both of Toyokawa, and Susumu Tanaka, Hoi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

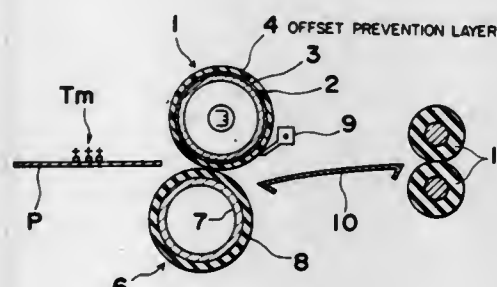
Filed Jul. 15, 1982, Ser. No. 398,700

Claims priority, application Japan, Jul. 17, 1981, 56-112811; May 31, 1982, 57-93868

Int. Cl.³ B21B 27/00; H05B 3/02

U.S. Cl. 219—216

7 Claims



1. A heat roller fixing device for use in an electrophotographic copying apparatus and the like, which comprises a heating roller constituted by an offset prevention layer laminated on an electrically conductive core member and having heating means incorporated therein so as to be driven for rotation by driving means, and a pressure roller constituted by an electrically insulative layer on another electrically conductive core member and held in contact under pressure with the heating roller for simultaneous rotation with said heating roller, thereby to fix a toner image formed on the copy paper onto the copy paper by causing said copy paper carrying said toner image thereon to pass between said heating roller and said pressure roller, said offset prevention layer being composed of fluorine resin containing carbon fibers in a predetermined amount.

4,434,356

REGULATED CURRENT SOURCE FOR THERMAL PRINTHEAD

Timothy P. Craig, Georgetown; John W. Pettit, and Michael R. Timperman, both of Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,346

Int. Cl.³ B41J 3/20

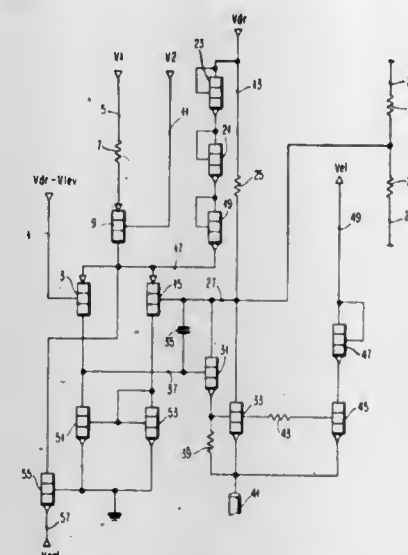
U.S. Cl. 219—216

21 Claims

1. Constant-current drive circuitry comprising:
a voltage-regulator circuit responsive to a variable first voltage to produce a second voltage a fixed amount greater than said first voltage;
a variable-reference voltage circuit responsive to said second voltage to produce a third voltage a fixed amount less than said second voltage;
a current-drive circuit responsive to said second voltage and said third voltage, having a resistance element, and substantially isolating said third voltage from current produced in said current-drive circuit, said current drive circuit having a first point having a voltage set by said third voltage and having a second point having a voltage set by said second voltage, said first point and said second

point being electrically connected across said resistance element to produce a current, and means connecting said

from the medium immediately adjacent said internal surface to prevent heating of the medium in a layer immediately adjacent said internal surface to such a temperature that the medium would foul the internal wall surface.



current as a drive current to a third point connected to said first voltage.

4,434,357

APPARATUS FOR HEATING ELECTRICALLY CONDUCTIVE FLOWABLE MEDIA

David P. Simpson, Chester, and Robert Stirling, Wirral, both of England, assignors to The Electricity Council, England

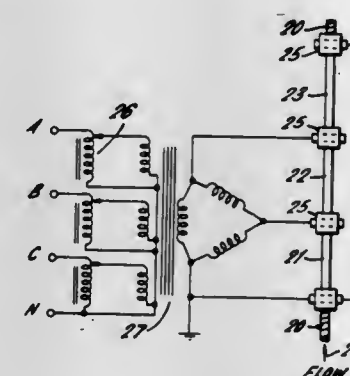
Filed Jan. 13, 1981, Ser. No. 224,855

Claims priority, application United Kingdom, Jan. 21, 1980, 8001996

Int. Cl.³ H05B 3/60; A23L 3/32

U.S. Cl. 219—291

17 Claims



1. Apparatus for heating an electrically conductive flowable medium, comprising pipe means through which the medium can be arranged to flow, the pipe means having an internal surface of a material having an electrical conductivity no greater than that of the medium, at least two electrodes spaced apart along the pipe means and arranged to make electrical contact with medium flowing therethrough, supply means for applying an alternating electrical supply across said electrodes so that alternating current can flow in the medium between the electrodes to heat the medium, and means for cooling the internal wall surface of the pipe means so as to remove heat

4,434,358

AIRCRAFT WINDOW HEAT CONTROLLER WITH SWITCHED IMPEDANCES

Otto L. Apfelbeck, Fort Shawnee, and Joseph M. Urish, Shawnee Township, Lima County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

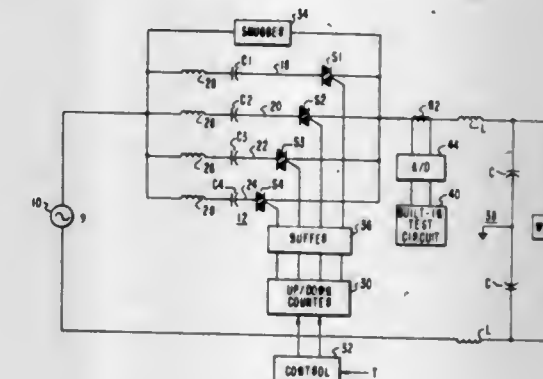
Continuation of Ser. No. 121,073, Feb. 13, 1980, abandoned.

This application May 7, 1982, Ser. No. 376,072

Int. Cl.³ H05B 1/02

U.S. Cl. 219—501

5 Claims



1. An electrical resistance heater controller, for controlling application of power from an AC source to a heating element, comprising:

a plurality of parallel circuit branches, each connected in series with an AC source and a heating element and each comprising a capacitor and gate-controlled solid state switching means in series with each other;
gating means for switching individual ones of said solid state switching means on and off in accordance with a heating element temperature signal so that a variable controlled amount of capacitance is in series between the source and the heating element to maintain the heating element temperature within a predetermined range, said gating means comprising means for switching said solid state switching means on and off substantially at the zero crossing of the AC source voltage waveform.

4,434,359

AUTOMATIC BANK NOTE TRANSACTION APPARATUS

Yoshihiro Watanabe, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1982, Ser. No. 395,311

Claims priority, application Japan, Jul. 10, 1981, 56-107683

Int. Cl.³ G06F 15/30

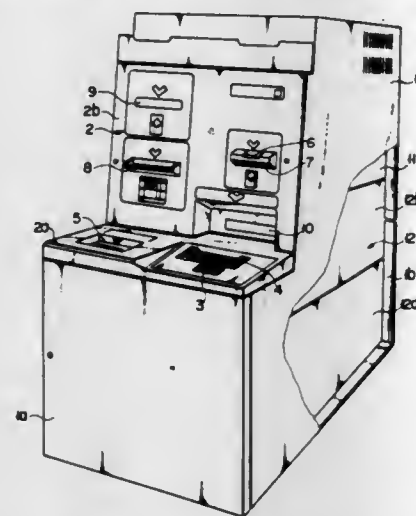
U.S. Cl. 235—379

5 Claims

1. An automatic bank note transaction apparatus comprising:
a housing having a bank note dispensing port and a front door at a front side thereof and a rear door at a rear side thereof;
a first mechanism detachably mounted in said housing through said rear door; and
a second mechanism provided in said housing, adjacent to and detachably mounted on said first mechanism and connected to said bank note dispensing port, said first mechanism including:
safe means disposed at one side of the first mechanism for taking out the bank notes therefrom;
transferring means for transferring the bank notes taken out of said safe means; and
first conveying means disposed between said safe means and said transferring means for transferring the bank notes taken out of said safe means to said transferring means,

said first mechanism being reversible relative to the second mechanism between a first position at which said safe means is near said rear door and a second position at which said safe means is near said front door, and said second mechanism including:

receiving means, opposing said transferring means, for receiving the bank notes from said transferring means; and



second conveying means disposed between said receiving means and said bank note dispensing port, for conveying the bank notes received in the receiving means to said bank note dispensing port, whereby at the first position a maintenance operation for the safe means is performed in a condition where the rear door is opened, and at the second position the maintenance operation is performed in a condition where the front door is opened.

4,434,360

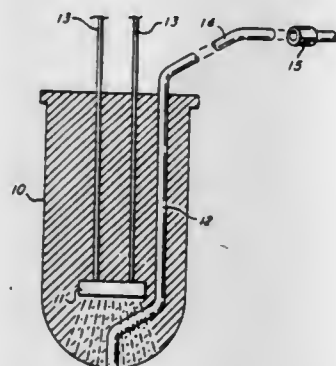
OPTICAL SENSING DEVICE FOR READING BAR CODE OR THE LIKE

Alan H. Woosley, Lubbock, and Billy R. Masten, Shallowater, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 287,838, Jul. 29, 1981, abandoned. This application Sep. 15, 1983, Ser. No. 532,815
Int. Cl.³ G06K 7/10

U.S. Cl. 235-472

5 Claims



1. An optical sensing device for reading data codes, comprising:
a light source affixed within a transparent or translucent package;
a single strand of optical fiber material having a diameter substantially equal to the minimum width of the bars contained in the desired bar code, wherein said package comprises a solid plastic body having a flat end and a rounded end, and wherein said fiber optic strand extends through at least a portion of said body such that one end of said strand is flush with and imbedded in said rounded end of said body to receive light reflected from said codes.

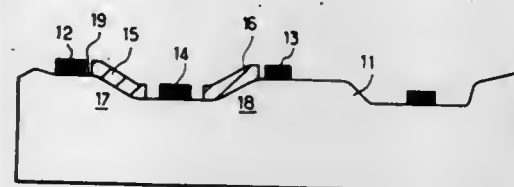
4,434,361 TRANSISTOR INTEGRATED CIRCUIT PROTECTED AGAINST THE ANALYSIS, AND A CARD COMPRISING SUCH A CIRCUIT

Alain Meinguss, Mendon la Foret, and Bernard Despres, Paris, both of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Dec. 1, 1980, Ser. No. 211,968
Claims priority, application France, Nov. 30, 1979, 7929590
Int. Cl.³ G06K 7/06

U.S. Cl. 235-192

4 Claims



1. A transistor integrated circuit having a substrate with at least one integrated transistor formed in said substrate and a plurality of connections to said transistor comprising:
a conduction element on the surface of said substrate connected to an electrode of said transistor, and
a metallic zone on or beneath said surface, electrically isolated from said transistor, said metallic zone positioned with respect to said transistor to make analyses of integrated circuit connections difficult.

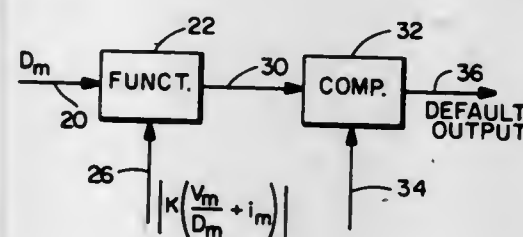
4,434,362 DISPLACEMENT DEPENDENT LOW CONTRAST DEFAULT

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 14, 1981, Ser. No. 311,124
Int. Cl.³ G01J 1/20

U.S. Cl. 250-201

28 Claims



1. Apparatus for producing a low contrast default signal for an auto focus system which system produces a first signal which varies with contrast conditions and a second signal which varies with out-of-focus conditions comprising:
first means producing a third signal of predetermined magnitude;
signal processing means connected to receive the first, second and third signals, the signal processing means operable to modify one of the first and third signals in accordance with the second signal to produce a fourth signal which varies with the second signal and to compare the fourth signal with the other of the first and third signals to produce the low contrast default signal.

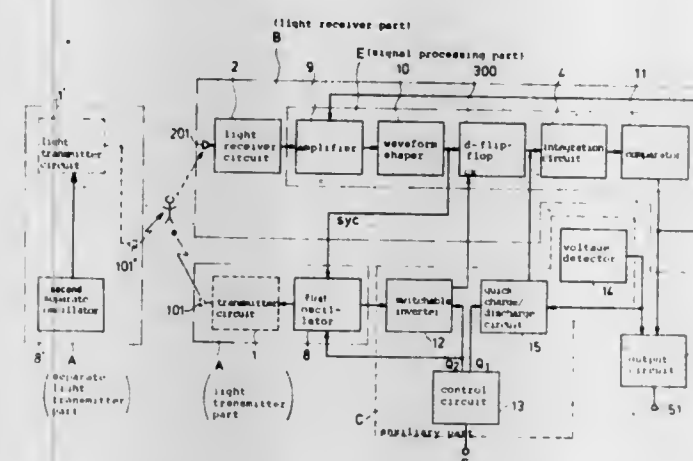
4,434,363 PHOTOELECTRIC SWITCHING APPARATUS

Yuki Yorifuji, Hirakata; Seiichi Uyama, Katano; Katsuhiko Fukutake, Matsuzaka, and Masaharu Miyazaki, Mie, all of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed May 11, 1981, Ser. No. 262,772
Int. Cl.³ H01J 40/14

U.S. Cl. 250-214 B.

6 Claims



1. A photoelectric switching apparatus comprising:
a light transmitter part comprising a first built in oscillator and a detachable light transmitter circuit which is driven by said first oscillator when said light transmitter is connected to said first oscillator and a detachable light emitter for emitting light in response to signal received from said light transmitter circuit,
a light receiver part comprising at least a photoelectric transducer for converting a light signal incident thereon to a converted electric signal and a signal processing part for processing the signal based on said converted electric signal,
an auxiliary part for controlling operation of said light transmitter part and said light receiver part,
a second oscillator which is separate from said light transmitter part and can be connected to said light transmitter circuit when said light transmitter circuit and said light emitter together are detached from said first oscillator, said signal processing circuit comprising a d-flip-flop which reads input data based on said converted electric signal by utilizing an output signal of said first oscillator as its clock pulse, received through a switchable inverter, said first oscillator issuing an output signal which is substantially synchronous with said converted electric signal to said d-flip-flop by utilizing a signal based on said converted electric signal when said light transmitter circuit and said light emitter are detached from said first oscillator, and
said first oscillator issuing an output signal which drives said light transmitter circuit, to said d-flip-flop when said light transmitter is connected to said first oscillator.

4,434,364 METHOD AND APPARATUS FOR UNDERWATER DETECTION OF HYDROCARBONS

Aderbal C. Correa; John S. Gergely, both of Ponca City, Okla., and Andrew J. Blanchard, College Station, Tex., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 216,137, Dec. 15, 1980, Pat. No. 4,394,573.
This application Jan. 3, 1982, Ser. No. 454,959

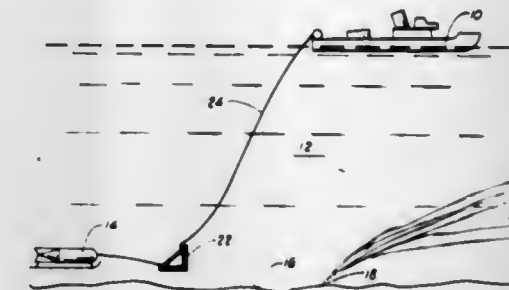
Int. Cl.³ G01V 5/00

U.S. Cl. 250-253

7 Claims

1. A method for detecting presence of hydrocarbons within a body of water comprising:
moving an instrument platform through said body of water at a preselected distance above the water bottom;
generating light energy and directing said light energy from

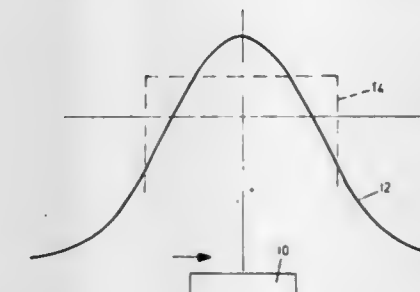
said instrument platform toward a selected area within the body of water;
detecting the backscattered light energy at said selected area within a defined spatial resolution cell in the body of water;



deriving the differential absorption within said resolution cell; and
providing a data readout of said differential absorption as an indication of hydrocarbon presence.

4,434,365
RADIOMETRIC METHODS AND MEANS
Rolf C. Bohme, Kyalami, and Max M. Lazerson, Northcliff, both of South Africa, assignors to General Mining Union Corporation Limited, Johannesburg, South Africa
Filed Nov. 28, 1980, Ser. No. 211,098
Claims priority, application South Africa, Dec. 21, 1979, 79/6989; Jul. 15, 1980, 80/4251
Int. Cl.³ G01V 5/00; G01N 23/00; G21C 11/00
U.S. Cl. 250-255

15 Claims



1. A method of measuring radio-active emissions from moving radio-active material including the steps of locating a radiation detector having a receptor surface adjacent to the path of the material, shielding the detector by locating a first radiation shield of a first material around at least a portion of the detector leaving the receptor surface of the detector unshielded, further shielding the shielded portion of the detector by locating a second radiation shield of a second material which is inherently less radiation emissive than the material of the first shield between at least a portion of the material of the first shield and the detector, the first and second shields being effective as radiation shields against the same type of radiation, moving the material to be measured for radio-active emissions past the unshielded receptor surface of the detector and measuring the emissions from the material by means connected to the detector.

4,434,366
APPARATUS FOR MEASURING COATING THICKNESS
Jerry J. Spong, Tonawanda; John E. Tiebor, Williamsville, and Boris N. Ivasyuk, Tonawanda, all of N.Y., assignors to Twin City International, Inc., Amherst, N.Y.
Filed Aug. 9, 1982, Ser. No. 406,358
Int. Cl.³ G01N 23/00

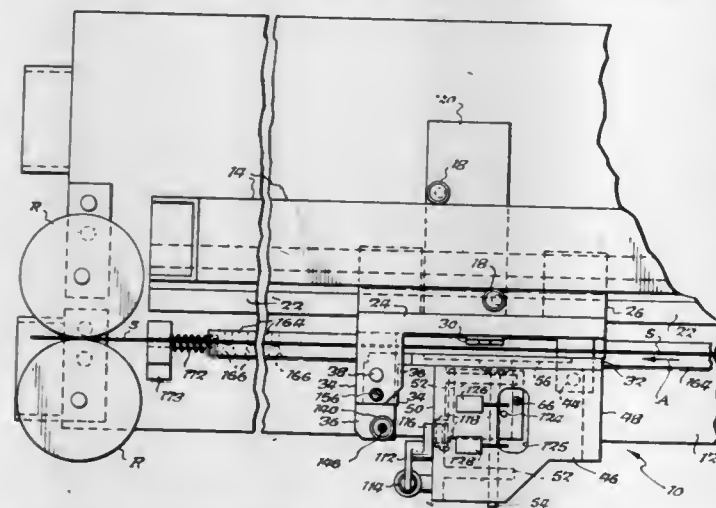
U.S. Cl. 250-308

22 Claims

1. Apparatus for measuring coating thicknesses on selected areas of a strip-type material of a step and repeat coating sys-

tem having a dwell period and a motion period the apparatus comprising:

a thickness measuring probe supported for movement at least along a translational axis to a measuring position with respect to the strip-type material during the dwell period of the coating system and movable away therefrom to a



second position during the motion period of the coating system;
means responsive to a dwell period signal for moving said probe to said measuring position; and
said probe is normally constrained against movement parallel to the axis of movement of the strip-type material.

4,434,367

ELECTRON MICROSCOPE

Akira Yonezawa, Fussa, Japan, assignor to International Precision Incorporated, Tokyo, Japan

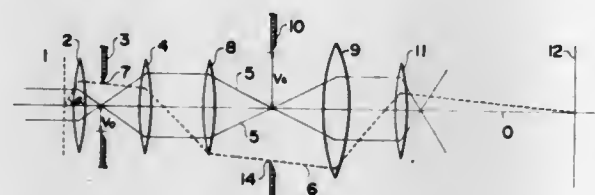
Filed Jul. 28, 1981, Ser. No. 287,788

Claims priority, application Japan, Jul. 28, 1980, 55-102352

Int. Cl.³ H01J 37/09, 37/26

U.S. Cl. 250—311

4 Claims



1. An electron microscope comprising an objective lens, at least one intermediate lens disposed backward of said objective lens, a projector lens disposed backward of said intermediate lens, and a movable aperture element disposed at a selected position between a principal plane of the intermediate lens located closest to said objective lens and a principal plane of said projector lens, wherein a first crossover is produced at the back focal plane of the objective lens, and the electron beam diverging from said first crossover is again focused at a plane of said movable aperture element to produce a second crossover by setting magnetic excitation of said intermediate lens at an appropriate level, to thereby restrict the divergence angle of the electron beam scattered by a specimen.

4,434,368
METHOD OF MEASURING THE REDUCING POWER OF GASES OVER THE CHARGE IN A BLAST FURNACE

Jean Liesch, Esch; Nico Reiff, Luxembourg; Vlasta Relmen, Esch; Romain Schmit, Esch; Arthur Schummer, Esch; Jo Simon, Esch, and Paul Tonteling, Esch, all of Luxembourg, assignors to ARBED, S.A., Luxembourg, Luxembourg

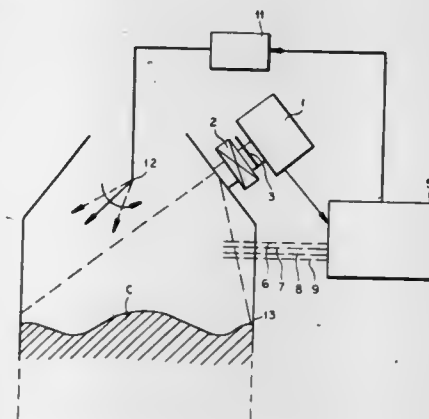
Filed Dec. 22, 1981, Ser. No. 333,260

Claims priority, application Luxembourg, Dec. 24, 1980, 83 035

Int. Cl.³ C21B 7/24

U.S. Cl. 250—339

3 Claims



1. A method of determining the reducing power of gases liberated at the top of the charge of an industrial furnace, said method comprising the steps of:

continuously scanning over a multiplicity of detection points distributed over the entire upper surface of said charge energy radiated in a wavelength range of 1 to 6 microns by excited molecules of the compounds CO₂, CO, H₂, and CH₄, and forming outputs corresponding to the energy radiated at each of said points by said compounds;

forming from said outputs an energy image of the energy radiated at said points in said range;

converting said energy image into respective specific images for said compounds by isolating from said energy image for each detection point a particular radiant energy emitted in said range by the respective compound;

calculating the concentration of each of said compounds at each of said points from the intensity of the respective specific image; and

deriving the reducing power at each of said detection points from the respective concentrations of said compounds thereat.

4,434,369

RADIOGRAPHIC CAMERA

Israel Metal, New York, N.Y., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 2, 1981, Ser. No. 222,182

Int. Cl.³ G01T 1/20

U.S. Cl. 250—363 S

4 Claims

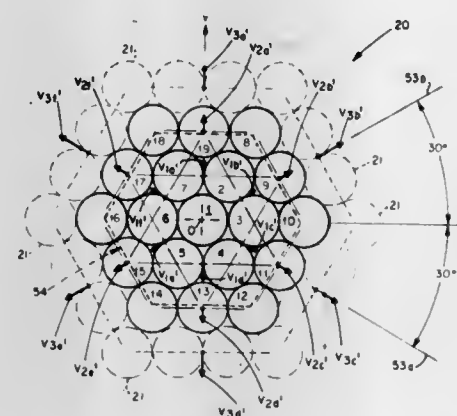
1. A radiographic camera, comprising:

(a) a scintillator;

(b) a plurality of photodetector means disposed at different, progressively increasing, predetermined distances from a reference point on the scintillator to a distal point adjacent the outer periphery of a nominal field of view of the camera, each one of such plurality of photodetector means producing a position signal representative of the distance between a point of impingement of radiation on the scintillator and such one of the photodetector means;

(c) means, responsive to the position signals, for producing an extrapolated correction signal representative of the distance between the point of impingement and a point further than the distal point and beyond the nominal field of view of the camera; and

(d) means, responsive to the position signals and the correction signal, for producing a pair of location signals indicating the position of the point of impingement relative to the reference point.



4,434,370

SELF-POWERED RADIATION DETECTOR WITH IMPROVED EMITTER

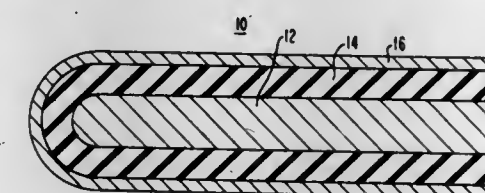
Norman P. Goldstein, Murrysville, Pa., and William H. Todd, Elmira Heights, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 4, 1980, Ser. No. 213,691

Int. Cl.³ G01T 1/22

U.S. Cl. 250—370

3 Claims



1. A gamma responsive self-powered radiation detector which comprises an elongated center wire emitter, insulating means about the emitter wire, and a collector electrode coaxial about the emitter and insulating means, which emitter wire is an alloy of lead as the major constituent with a sufficient atom percent addition of one of the group of aluminum, copper, nickel, platinum, or zinc so as to form an alloy with a melting point significantly greater than that of lead, which alloy retains the superior gamma response, high density and ductility of the lead major constituent.

4,434,371

ELECTRON BEAM BLANKING APPARATUS AND METHOD

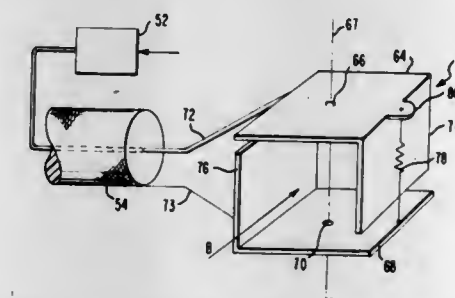
Wolfgang Knauer, Malibu, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 4, 1982, Ser. No. 354,846

Int. Cl.³ G21K 1/08

U.S. Cl. 250—396 R

12 Claims



1. A beam deflection apparatus for deflecting a charged

particle beam as the beam moves along a beam path, said apparatus comprising:

upper and lower conductors respectively positioned along the beam path with respect to the travel of particles along the beam path, said upper and lower conductors each being configured and positioned to pass the charged particle beam along its path;

first and second capacitive deflection plates positioned respectively on laterally opposite sides of the beam path; resistive connection means connected between said upper and lower conductors;

said upper conductor being connected to said first capacitive deflection plate and said lower conductor being connected to said second capacitive deflection plate; and

means for connecting electrical deflection energy to said upper and lower conductors for causing a continuous circuit through said upper and lower conductors and said resistive connection means for providing magnetic deflection of the charged particle beam and for charging up said first and second capacitive deflection plates for electrostatic deflection of the charged particle beam.

4,434,372

METHOD AND APPARATUS FOR WIDE ANGLE BEAM SCANNING TO INTERNALLY IRRADIATE HOLLOW OBJECTS

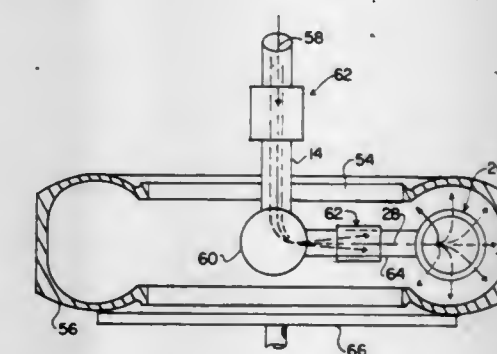
Marshall Cleland, Huntington Station, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Filed Jan. 20, 1982, Ser. No. 340,915

Int. Cl.³ G01K 1/08; H01J 3/14

U.S. Cl. 250—400

20 Claims



1. Wide angle beam scanning apparatus for internally irradiating hollow objects with a beam of charged particles comprising

particle accelerator means for producing a beam of charged particles; and

scanning deflection means configured to be disposed within an object to be irradiated for receiving said beam along a beam axis and deflecting said beam from said beam axis to scan said beam through an angle of deflection greater than 90° from said axis whereby the inner surface of the object can be irradiated with charged particles.

4,434,373

NEUTRON SHIELDING

Richard Christ, August-Bebel-Strasse 20, 6454 Bruchköbel, Fed. Rep. of Germany, and Hartmut Kroll, Gausstrasse 6, 6450 Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 206,675, Nov. 13, 1980, abandoned.

This application Sep. 30, 1982, Ser. No. 431,100

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 7932528[U]

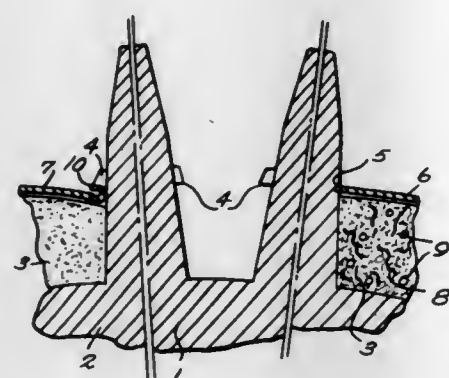
Int. Cl.³ G21F 5/00

U.S. Cl. 250—506.1

7 Claims

1. A container suitable for the conveyance and/or storage of radioactive materials which produce gamma and neutron radiation emissions and noteworthy residual heat, said container comprising, in combination, a container body having shielding

means for gamma-radiation, bar-shaped cooling fins extending from the exterior surface of said container, at least some of said cooling fins having bosses extending from the sides thereof and



neutron shielding means in the form of resilient elastic molded bodies, with a said body removably disposed between an adjacent pair of cooling fins and removably held in place by said bosses on the exterior of said container.

4,434,374

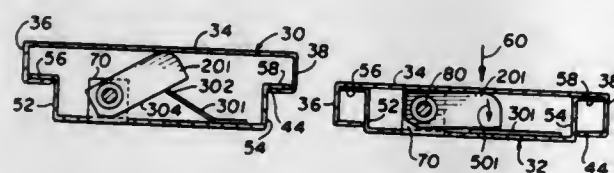
DEVICE FOR GENERATING ELECTRICITY BY PEDESTRIAN AND VEHICULAR TRAFFIC

Roy L. Lundgren, 1360 NE. 48 Ct., Ft. Lauderdale, Fla. 33334
PCT No. PCT/US81/01235, § 371 Date Sep. 14, 1981, § 102(e)
Date Sep. 14, 1981, PCT Pub. No. WO83/01158, PCT Pub.
Date Mar. 31, 1983

PCT Filed Sep. 14, 1981, Ser. No. 309,276
Int. Cl.³ F04B 9/14, 35/06

U.S. Cl. 290-1 R

3 Claims



1. A device for generating electricity by utilizing the weight of pedestrian and vehicular traffic flow and to recoup energy from the traffic flow comprising:

- a base having a generally channel-formed member defining a base web and spaced upstanding walls of equal height each terminating at outwardly directed flanges and a frame portion extending outwardly from said spaced upstanding walls;
- a plurality of spaced apart, parallel support means formed from and integral with said base web and perpendicular thereto, each said support means having an aperture therein, said apertures in coaxial alignment;
- a shaft means for transmitting torque rotatably mounted in said apertures;
- a tread plate having at least a first and a second angled member, each angled member having a downwardly extending portion and a horizontally extending portion, said horizontally extending portions being in overlapping relation with respect to one another, said first and second angled members operably connected to said frame portion;
- said tread plate operably engaged with said base for relative vertical movement therebetween;
- rocker arm means in tangential engagement with said tread plate for following movement of said tread plate;
- biasing means for biasing said rocker arm means upwardly

into engagement with said tread plate, said biasing means connected to said base web;
one-way clutch means for movably connecting said rocker arm means to said shaft means, said clutch means engaging said shaft means upon downward movement of said rocker arm means causing rotation of said shaft means and disengaging said shaft means upon upward movement of said rocker arm means;
energy means for storing or converting mechanical energy to electrical energy;
connecting means for connecting said shaft means to said energy means, said connecting means storing energy insufficient to activate said energy means until said energy means is activated.

4,434,375

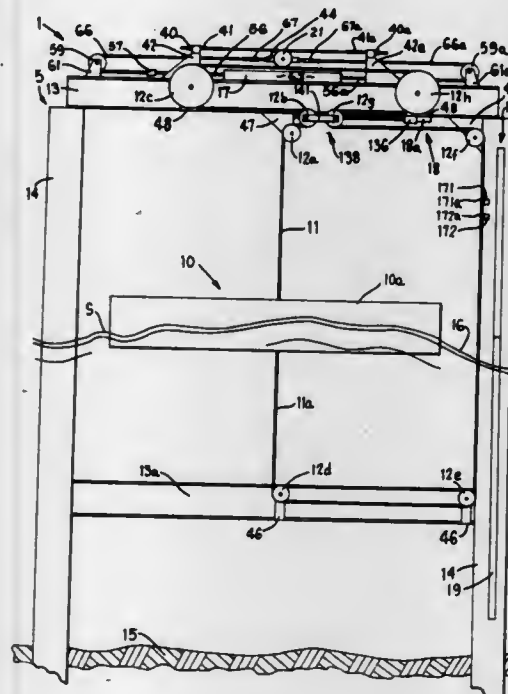
WAVE ENERGY CONVERTER

Robert N. Taylor, 211 Chapel Hill Dr., Battle Creek, Mich. 49015

Filed Jun. 30, 1982, Ser. No. 393,853
Int. Cl.³ F03B 13/12

U.S. Cl. 290-53

9 Claims



1. A wave energy converter for harnessing energy from waves on the surface of a body of water, comprising:
a frame fixed on and upstanding from the bottom of the body of water;
a weighted float located to ride up and down with said waves adjacent said frame;
a load at least in part mounted on said frame;
means defining a closed loop connection between said float and load, said closed loop connection including alternately tensionable cables extending up and down from said float and having remote ends fixed with respect to said frame, guide pulley means on said frame guiding said cables from said float to said remote ends, and traveler means movable with respect to said frame and carrying direction change pulleys bending both said cables adjacent their fixed ends for multiplying the force applied to said traveler means by said cables, said load being connected to said traveler means for actuation thereby.

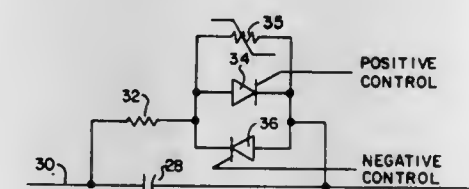
4,434,376

METHOD AND MEANS FOR DAMPING SUBSYNCHRONOUS OSCILLATIONS AND DC OFFSET IN AN AC POWER SYSTEM

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Division of Ser. No. 59,994, Jul. 23, 1979, Pat. No. 4,292,545, and a continuation-in-part of Ser. No. 30,691, Apr. 16, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,688
Int. Cl.³ G05F 1/12

U.S. Cl. 307-102

12 Claims



1. The method of damping subsynchronous oscillations and DC offset in an AC power system comprising the steps of measuring the half-cycle time period of line waves in said power system, comparing said measured half-cycle to a desired half-cycle time period, and dissipating said line waves in resistive means in measured half-cycles which are longer than said desired half-cycle time period to the extent said measured half-cycles exceed said desired half-cycle time period.

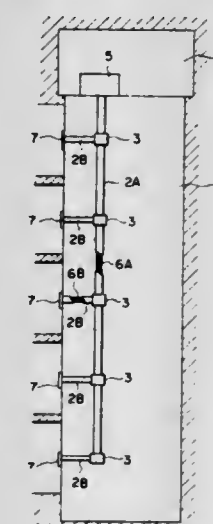
4,434,377

ELECTRIC POWER-FEEDING STRUCTURE

Eiji Shima, Oota; Hiroshi Den, Yotsukaido, and Takeo Kuroki, Funabashi, all of Japan, assignors to FEPS International, Ltd. and The Fujikura Cable Works, Ltd., both of Tokyo, Japan
Filed Jun. 16, 1982, Ser. No. 389,088
Int. Cl.³ H05K 7/06; H02B 1/08

U.S. Cl. 307-147

9 Claims



1. An electric power-feeding structure for use in a fixed power-feeding system for operation of an electrically powered

elevator in which an electric power is fed from an electric power-supply terminal to electric power-receiving portions located at different floors through a main feeder line and, in turn, through branch feeder lines branched from the main feeder line, comprising:

- (a) a main feeder assembly connected to an electric power supply-terminal, said main feeder assembly comprising a plurality of main line sections successively arranged vertically and a plurality of junction means respectively interposed between respective mutually adjacent main line sections and connecting the respective mutually adjacent main line sections therethrough;
- said plurality of main line sections each comprising at least one flat type cable which comprises an outer jacket and a plurality of insulated core conductors arranged in parallel in a substantially coplanar relationship and covered by said outer jacket, said plurality of insulated core conductors each comprising a plurality of element conductors covered by a sheath of an insulating material;
- said at least one flat type cable having at least one end provided with a flat connector means electrically connected thereto;
- said flat connector means having electric connector portions which are arranged in a row,
- said plurality of junction means each comprising at least one printed circuit board having, on at least one surface thereof, a predetermined pattern circuit,
- said at least one printed circuit board having a first connecting portion for detachably connecting thereto the flat connector means of the flat type cable of a main line section and a second connecting portion for detachably connecting thereto the flat connector means of the flat type cable of an adjacent main line section to said main line section;
- said first connecting portion being electrically connected to said second connecting portion through said predetermined pattern circuit;
- said at least one printed circuit board having at least one third connecting portion being electrically connected to said first and second connecting portions through said predetermined pattern circuit;

and

- (b) a plurality of branch feeder lines respectively connected to a plurality of electric power-receiving portions located at different floors,
- said plurality of electric power-receiving portions each comprising at least one terminal equipment;
- each branch feeder line comprising at least one feeder cable;
- said at least one feeder cable having its one end connected to said at least one terminal equipment and having the other end provided with a flat connector means electrically connected thereto;
- said flat connecting means to the other end of the feeder cable being detachably connected to the third connecting portion of the printed circuit board.

4,434,378

D.C. POWER MONITOR

Howard K. Ballentine, Jr., Clearwater, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Nov. 6, 1981, Ser. No. 318,742

Int. Cl.³ H03K 5/153; G01R 17/02, 19/165

U.S. Cl. 307-350

4 Claims

1. A circuit for monitoring a D.C. voltage level and for generating a signal in the event said voltage falls below a desired level by a predetermined percentage comprising:

- a two leg resistive network comprised of voltage dividers in each leg and connected at a juncture with a tap for the voltage to be monitored, the ratio of resistance values of

support layer having a surface bonded to the other surface of said piezoelectric layer.

4,434,385

DISCHARGE LAMP DEVICE

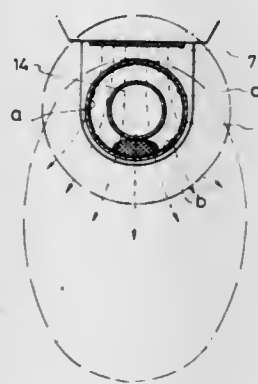
Makoto Touho, Yawata; Shigeaki Wada, Osaka, and Minoru Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 23, 1981, Ser. No. 276,455

Claims priority, application Japan, Jun. 30, 1980, 55-89391; Jun. 30, 1980, 55-89395; Jan. 17, 1981, 56-5430

Int. Cl.³ H01J 1/50; F21V 9/16; F21M 3/14; H01R 39/00
U.S. Cl. 313-161

31 Claims



1. A discharge lamp device including a lamp mounted to a socket means and having a coating of fluorescent material on the inside surface, said device comprising means for biasing a discharging zone generated inside said lamp to an area of a certain angle of rotation about the axis of the lamp, and means for shifting said biased discharging zone in circumferential directions with respect to the lamp axis, said biasing means comprising a magnetic field applied from the exterior to said lamp for rendering the magnitude of magnetism to be nonuniform in the section of the lamp, said biasing means further comprising a space separator disposed inside said lamp.

4,434,386

PROCESS AND APPARATUS FOR FORMING LAMP CAPSULES

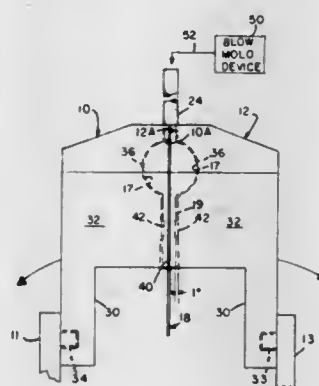
Gary E. Lowe, Salem, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,785

Int. Cl.³ H01J 9/00; C03B 9/00, 11/00

U.S. Cl. 313-331

12 Claims



9. A lamp capsule comprising: a glass bulb having press seal at one end, and a lead assembly sealed through said press seal, said bulb and press seal being formed from a hollow glass blank by; applying heat to the glass bulb so that it is in a molten state; inserting the lead assembly into the glass blank at one end thereof;

press sealing the glass blank at one end thereof to seal the lead assembly therein; and substantially simultaneously with said sealing step, blow molding the glass blank to form the bulb portion of the lamp capsule, said blow molding resulting in a knit line about the surface of said bulb portion.

4,434,387

DC ISOLATED RF TRANSITION FOR CATHODE-DRIVEN CROSSED-FIELD AMPLIFIER

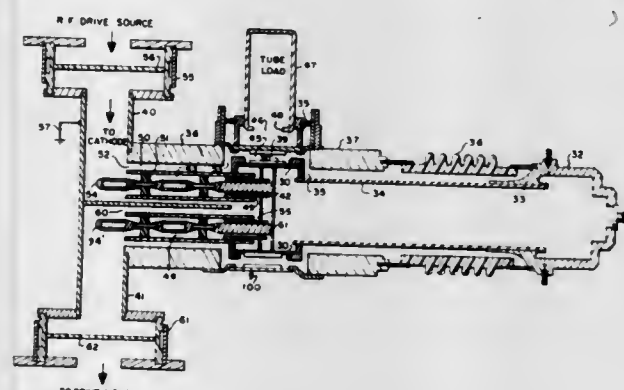
George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 6, 1981, Ser. No. 280,406

Int. Cl.³ H01J 25/34

U.S. Cl. 315-39.3

8 Claims



1. A radio frequency coupler for coupling to the cathode of a tube comprising: a tube having a cathode comprising a slow wave structure; means for coupling radio frequency energy into said cathode slow wave structure; said coupling means comprising a waveguide and a radio frequency probe inserted into said waveguide; means directly connecting electrically said probe to said cathode so that said probe is at the same direct-current potential as said cathode, said connecting means comprising the center conductor of a coaxial transmission line, said transmission line comprised of a first and second outer conductor coaxial with said center conductor, said first outer conductor being at ground potential, said second outer conductor being directly connected to said cathode and at said cathode potential, a radio frequency choke comprised of said first and second outer conductors electrically connecting said first and second outer conductors to each other by a low impedance at said radio frequency; a vacuum chamber means containing said probe, said probe connecting means, and said cathode; said probe being electrically isolated from said waveguide to withstand a direct-current voltage applied through said cathode to said probe.

4,434,388

ELECTRICAL LIGHTING CONTROLLER

LeRoy J. Carver, 7296 Claircrest Dr., Dayton, Ohio 45424, and John K. Penrod, 2111 Lakeman Dr., Bellbrook, Ohio 45305

Filed Sep. 3, 1981, Ser. No. 298,918

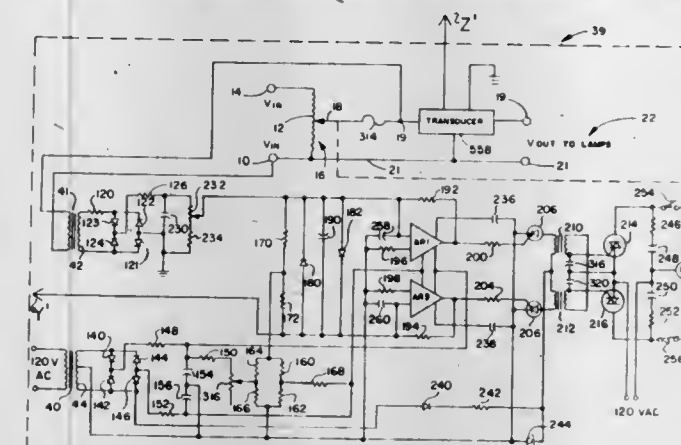
Int. Cl.³ G05F 1/00; H05B 37/02, 39/04, 41/36

U.S. Cl. 315-307

29 Claims

1. A controller for electrically controlling the amount of voltage to an electrical lighting load comprising: a variable transformer having means for connecting said transformer winding to an electrical power source; means for connecting the output of said transformer to said lighting load; motor means for changing the number of turns of said transformer winding for changing the voltage of the output of said transformer to said lighting load; and,

means for controlling said motor means in the form of an electronic circuit comprising means for maintaining said winding at a high voltage output level for a predetermined period of time with circuit means for allowing said high output voltage to decrease to a lower output voltage of



said transformer after said prescribed period of time wherein said circuit means comprises at least in part a control means in the form of a bi-directional ramping circuit that increases the voltage when an extra load is sensed in a more rapid manner than the decrease in voltage from the high voltage.

4,434,389

MOTOR WITH REDUNDANT WINDINGS

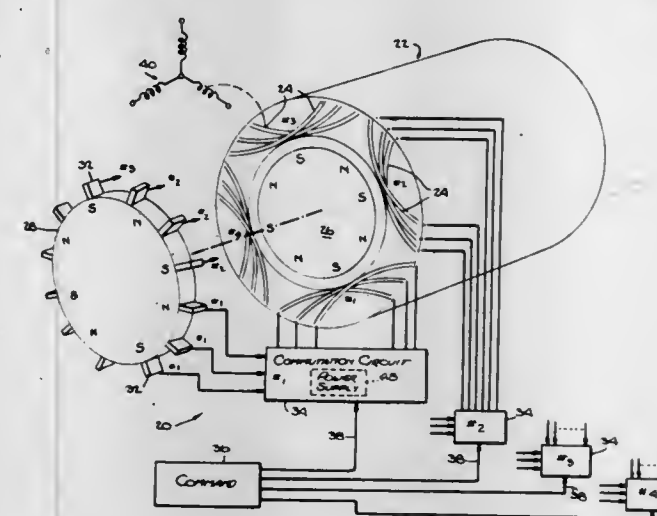
Lawrence W. Langley, Christiansburg, and Roger B. Bross, Radford, both of Va., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Oct. 28, 1980, Ser. No. 201,478

Int. Cl.³ H02K 29/00

U.S. Cl. 318-254

3 Claims



1. A DC electric servomotor comprising: a pair of relatively movable members, one being the stator and the other being the rotor of said electric servomotor; said stator including at least two non-overlapping sets of distributed, non-overlapping redundant windings spaced apart for minimal magnetic coupling therebetween, each of said windings being independently energizable to produce a reversible magnetic field for rotating said rotor in either direction; said redundant winding being mounted on said stator such that torque summing is achieved from the torques generated by the individual ones of said redundant windings; and a separate commutation circuit for each set of redundant windings, said commutation circuits each being connected to a different one of said sets of redundant windings to produce the moveable magnetic field from a DC power supply for causing rotation of said rotor.

4,434,390

MOTOR CONTROL APPARATUS WITH PARALLEL INPUT, SERIAL OUTPUT SIGNAL CONDITIONING MEANS

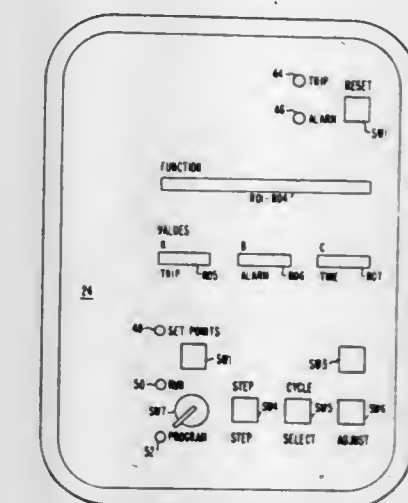
Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1982, Ser. No. 339,603

Int. Cl.³ H02P 3/00

U.S. Cl. 318-473

6 Claims



1. A motor controller, comprising: (a) digital control means electrically interconnected with a source of motor power and with an electric motor for conducting said power to said motor and for interrupting said power in response to a predetermined condition; (b) a plurality of resistance temperature detector means for providing a multiplicity of analog signals one of which is indicative of the existence of said predetermined condition; (c) a plurality of signal conditioning means each of which is interconnected with one of said resistance temperature detector means for converting the resistance value of said resistance temperature detector means to an analog voltage signal which is temperature related; (d) first multiplexer means interconnected at the input thereof in parallel with each of said signal conditioning means for converting said parallel analog voltage signal to serial analog voltage signals; (e) analog to digital conversion means interconnected at the input thereof with said first multiplexer means for receiving said serial analog voltage signals and for providing at the output thereof parallel digital signals representative of said input analog voltage signals; and (f) second multiplexer means interconnected with said analog to digital conversion means for converting said parallel digital signals to a serial train of signals, said digital train of signals being provided to said digital control means for providing a digital indication of said predetermined condition to said digital control means.

4,434,391

CAPACITIVE FEEDBACK TRANSDUCER AND CLOSED LOOP INSTRUMENT METER MECHANISM

Harold L. Swartz, Glendale; Randal A. Atkeisson, Phoenix; Rodney A. Carter, Phoenix, and Russell C. Parker, Phoenix, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,541

Int. Cl.³ G05B 6/02

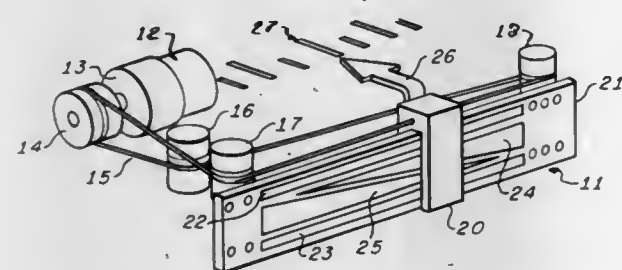
U.S. Cl. 318-662

12 Claims

1. A flight instrument for physically displaying command signals to a pilot, comprising: a case, servomotor means coupled to said case and responsive to said command signals for providing rotational displacement;

a capacitive transducer having at least first and second variable capacitors responsive to the rotational displacement of said servomotor means for providing feedback signals to said servomotor means, including:

- a substrate mounted on said case;
- a first tapered conductive plate disposed on said substrate;
- a second tapered conductive plate disposed on said substrate and substantially coextensive with said first conductive plate;
- conductive means mounted to slide parallel to said substrate in response to the rotational displacement of said servomotor means in operative relationship with said first and second tapered conductive plates; and
- means for coupling said sliding conductive means to ground;



bridge circuit means for providing output signals proportional to the difference in capacitance of said first and second variable capacitors including:

- first rectifying means and first resistance means which are coupled to said first variable capacitor;
- second rectifying means, oppositely poled to said first rectifying means, and second resistance means coupled to said second variable capacitor;
- means for applying an alternating current to said first and second rectifying means; and
- capacitive filter means coupled between ground and said first and second resistance means; and
- a pointer coupled to said sliding conductive means, for providing the pilot with a visual display corresponding to said command signals.

4,434,392

CIRCUIT ARRANGEMENT FOR CONTROLLING THE COMMUTATION IN A STEPPING MOTOR

Georg Brasseur, Vienna, Austria, assignor to Friedmann & Maier Aktiengesellschaft, Austria

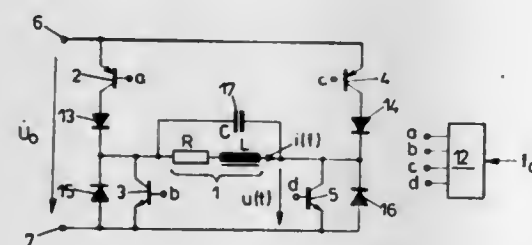
Filed Jul. 7, 1981, Ser. No. 281,116

Claims priority, application Austria, Jul. 10, 1980, A 3611/80

Int. Cl.³ G05B 19/40

U.S. Cl. 318—696

7 Claims



1. A circuit arrangement for controlling commutation of a stepping motor comprising:
 - a four arm bridge circuit defining a bridge diagonal and having first, second, third and fourth switching transistors, one transistor being in circuit in each arm, said first and second transistors being in adjacent arms on one side of said diagonal and said third and fourth transistors being in adjacent arms on the other side of said diagonal, said transistors being adapted to be switched by signals from a

logic circuit for controlling the commutation of said stepping motor;

- means for coupling a winding of said stepping motor across said bridge diagonal;
- a capacitor coupled across said bridge diagonal so as to be in parallel circuit with said stepping motor winding and from a resonant circuit with an effective inductance of said winding; and
- a decoupling diode in series with each of said first and third transistors.

4,434,393

INDUCTION MOTOR CONTROL SYSTEM

Katsuo Kobari, Tachikawa; Hiroshi Ishida, Hamura, and Naoto Ota, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Kawasaki, Japan

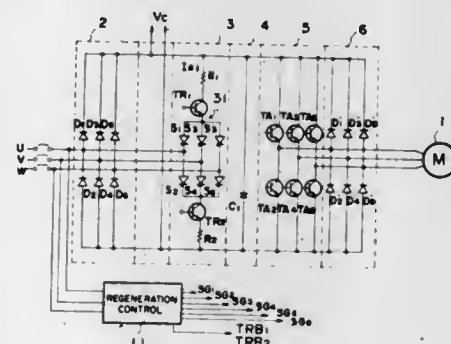
Filed Jun. 16, 1982, Ser. No. 388,926

Claims priority, application Japan, Jun. 16, 1981, 56-92795

Int. Cl.³ H02P 7/62; H02M 5/458

U.S. Cl. 318—757

3 Claims



1. An induction motor control system, for controlling the actual speed of an induction motor in accordance with a commanded speed, the system having a braking mode in which a regenerative current is generated, and comprising:
 - a rectifier connectable to an AC power supply for converting alternating current into direct current;
 - a transistor inverter including a plurality of transistors operatively connected to receive the direct current and connectable to the induction motor, for converting the direct current into three-phase AC signals for driving the induction motor and having a voltage and frequency in conformance with a deviation between the commanded speed and the actual speed of the induction motor;
 - an inverter control circuit operatively connected to the transistor inverter, for providing switching signals for controlling the switching action of the plurality of transistors comprising the transistor inverter;
 - a regenerative circuit connectable to the AC power supply including a plurality of switching elements, the regenerative circuit being connected in parallel with the transistor inverter for controlling the flow of the regenerative current during braking;
 - a smoothing capacitor operably connected in parallel with the transistor inverter and to receive the direct current;
 - a regeneration control circuit connectable to the AC power supply and operatively connected to the regenerative circuit, for controlling the regenerative circuit switching elements; and
 - detecting means operatively connected to the smoothing capacitor, and between the inverter control circuit and the transistor inverter for detecting one of the magnitude of the smoothing capacitor voltage and the magnitude of the regenerative current, for temporarily disabling the transistor inverter when the one of the magnitude of said smoothing capacitor voltage and said regenerative current exceeds a predetermined value, and for enabling the transistor inverter when the one of the magnitude of said smoothing capacitor voltage and said regenerative current drops below said predetermined value.

4,434,394

CIRCUIT FOR CONTROLLING MULTIPLE RATED MOTORS

Walter J. Kellogg, Brighton Township, Beaver County, Pa.; Arden L. Scott, La Crescenta, and Samuel K. Seneadza, Carson, both of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

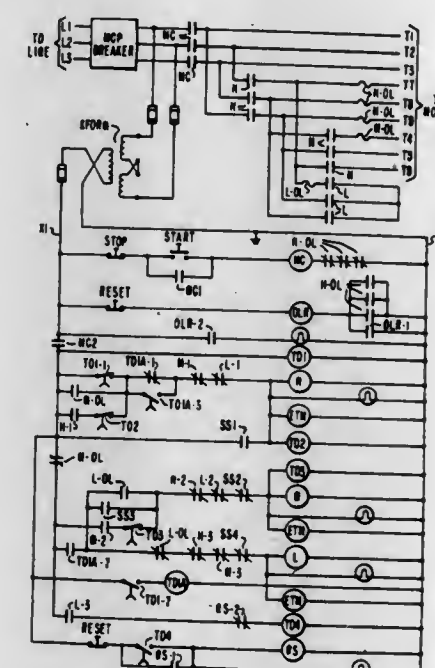
Continuation of Ser. No. 178,047, Aug. 14, 1980, abandoned.

This application Oct. 8, 1982, Ser. No. 433,494

Int. Cl.³ H02P 1/26

U.S. Cl. 318—771

3 Claims



1. A circuit for controlling a multi-rated motor, comprising:
 - a high torque contactor for connecting electrical power to the windings of a multi-rated motor such that the windings are first connected in a Δ -delta configuration;
 - (b) a first timer means electrically connected to the high torque contactor and a low torque contactor for de-energizing the high torque contactor and energizing the low torque contactor to change the connection of electrical power to the windings such that the windings are connected to a γ -wye configuration after a predetermined time interval;
 - (c) a low torque overload means connected to the low torque contactor and the γ -wye connected windings for causing the low torque contactor to de-energize and energize a medium torque contactor to change the connection of electrical power to the windings such that the windings are connected in a γ - Δ -partial wye, partial delta configuration if the current in the windings exceed a predetermined current level;
 - (d) a medium torque monitoring means for causing the windings to be switched back to a wye configuration after operating a predetermined time in the partial wye, partial delta configuration;
 - (e) a medium torque overload means connected to the medium torque contactor and the γ - Δ partial wye, partial delta, windings for de-energizing the medium torque contactor and energizing the high torque contactor to change the connection of electrical power to the windings such that the windings are connected in a Δ -delta configuration if the current in the windings exceed a predetermined current level;
 - (f) a high torque monitoring means for causing the windings to be switched back to a partial wye, partial delta configuration after operating a predetermined time in the delta configuration; and
 - (g) high torque overload means connected to the high torque contactor and the Δ -delta connected windings for causing the disconnection of electrical power to the windings if the current in the windings exceed a predetermined current level.

4,434,395

SOLAR CELL POWER SUPPLY CIRCUIT

Masayuki Higuchi, Ueno, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

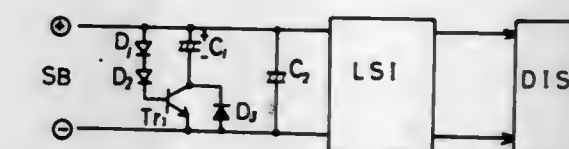
Filed Feb. 25, 1982, Ser. No. 352,154

Claims priority, application Japan, Feb. 25, 1981, 56-27387; Feb. 25, 1981, 56-27388; Mar. 30, 1981, 56-47957

Int. Cl.³ H02J 9/00

U.S. Cl. 320—1

7 Claims



1. A solar cell power supply circuit comprising:
 - a solar cell or cells;
 - a first back-up capacitor connected to said solar cells;
 - first circuit means for deciding whether the electromotive force developed by said solar cells lies within a range of operation for a load of said solar cells;
 - second circuit means responsive to said first circuit means for charging said first back-up capacitor when the electromotive force of said solar cells is over said range of operation for said load; and
 - a second back-up capacitor for supplementing the operation of said first back-up capacitor when only a minimum of incident light is available for said solar cells.

4,434,396

POWER LINE TRANSIENT SUPPRESSION CIRCUIT

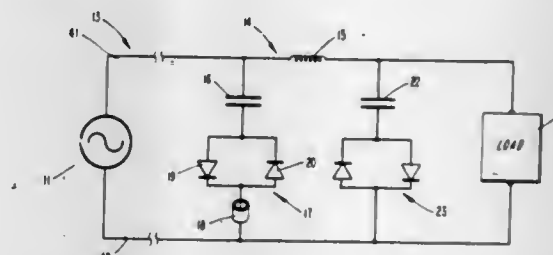
Herbert R. Montague, 75 Clifton Blvd., Binghamton, N.Y. 13903

Filed Nov. 2, 1981, Ser. No. 317,236

Int. Cl.³ H02H 1/04

U.S. Cl. 323—230

15 Claims



10. A low pass filter circuit for substantially preventing pulse transients from being coupled between a power source and a load comprising a series branch containing an inductor, a shunt branch containing in series a capacitor, a bi-directional breakdown device having a predetermined threshold conduction level with a dead band, and a magnetic core inductively coupled to the branch.

4,434,397

REMOTE LOAD CURRENT SENSOR

Conrad E. Nelson, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,084

Int. Cl.³ C01R 27/04

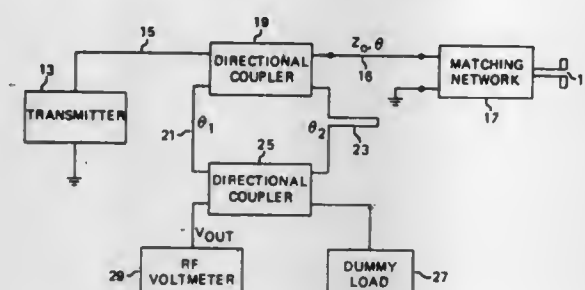
U.S. Cl. 324—58 R

7 Claims

1. Measurement apparatus for determining the amplitude and phase of an RF load parameter in a remote load element coupled to its power source through a transmission line of characteristic impedance Z_0 and a load matching network of known characteristics, comprising:
 - (a) a first directional coupler interposed in said transmission line between the power source and load matching net-

work, said coupler providing first and second output signals respectively proportional to the incident and reflected voltages V_i and V_r at the input to said matching network;

- (b) first and second transmission line elements connected to receive said coupler output signals, said transmission line elements being of different phase lengths so as to introduce a relative phase shift of predetermined magnitude as between the first and second output signals;



- (c) a second directional coupler having as inputs thereto said first and second output signals as respectively coupled through said first and second transmission line elements and providing a voltage output V_o proportional to the V_i and V_r signals combined in the phase relationship predetermined by said transmission line elements; and
- (d) means for measuring the amplitude and phase of a voltage output of said second directional coupler thereby to obtain a measure of the desired parameter in said remote load element.

4,434,398

POROUS PASSAGE MEANS AND METHOD FOR PARTICLE ANALYZING SYSTEMS

Robert H. Berg, Elmhurst, and Richard F. Karuhn, Downers Grove, both of Ill., assignors to Particle Data, Inc., Elmhurst, Ill.

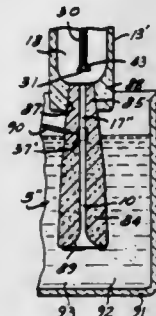
Division of Ser. No. 907,010, May 18, 1978, Pat. No. 4,290,011.

This application May 15, 1981, Ser. No. 264,199

Int. Cl.³ G01N 27/00

U.S. Cl. 324-71.4

14 Claims



1. Apparatus for controlling the presentation of particles in fluid suspension to a sensing zone to facilitate particle parameter determination in a particle analysis system of a type responsive to electrical signals generated by particles passing through the sensing zone, comprising:

means defining an elongate passage for transporting the particles in suspension therethrough for sensing zone presentation at a downstream end of the passage;

said passage means comprising a porous wall;

means for supplying particle-containing fluid to an entrance into said passage, and for supplying sheathing fluid to said porous wall outwardly relative to said passage;

and means for effecting differential pressure for causing a particle-containing stream to traverse said passage from said entrance to said downstream end and for causing movement of said sheathing fluid through said porous wall into sheathing relation to said particle-containing stream.

4,434,399 ELECTRON-OPTICAL WIDE BAND SIGNAL MEASUREMENT SYSTEM

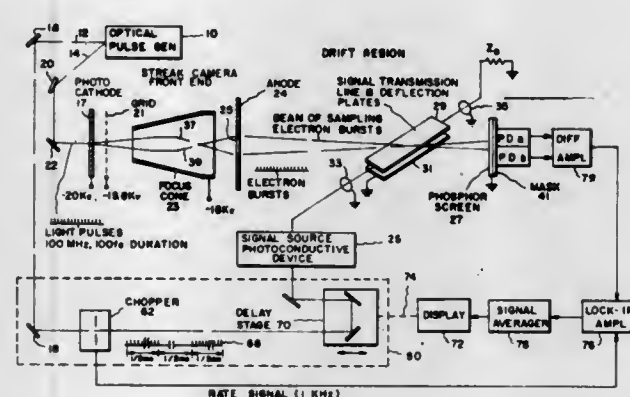
Gerard Mourou, Rochester, N.Y.; Janis A. Valdmann, Columbus, Ind., and Steven L. Williamson, Henrietta, N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed May 14, 1982, Ser. No. 378,379

Int. Cl.³ G01R 31/00

U.S. Cl. 324-96

20 Claims



1. A system for the measurement of an electrical signal with picosecond resolution which comprises means for generating a train of optical pulses having subpicosecond durations, means responsive to the pulses for generating a beam of sampling electron bursts, means for electron-optically sampling successively occurring portions of said signal with successive ones of said electron bursts, and means responsive to the output of said sampling means for providing a display of said signal.

4,434,400

CIRCUIT FOR SUPERVISING AN ELECTRONIC ELECTRICITY METER

Mathis Halder, Baar; Jakob Widmer, Zug, and Jacob De Vries, Allenwinden, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

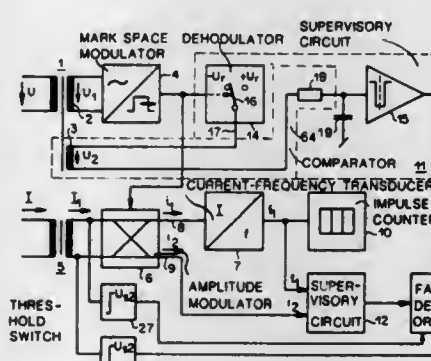
Filed Apr. 27, 1981, Ser. No. 257,915

Claims priority, application Switzerland, May 2, 1980, 3427/80

Int. Cl.³ G01R 1/36; G08B 23/00

U.S. Cl. 324-110

19 Claims



1. In an electronic energy consumption meter having an alternating voltage input and an alternating current input, voltage-measurement means for forming a first signal proportional to said alternating voltage input, current measurement means including a current transformer having secondary winding means, for forming a second signal proportional to said alternating current input, mark-space modulator means controlled by one of said signals generating a substantially rectangular waveform, amplitude modulator means including a polarity switch and having a first and a second output and being controlled by the other of said signals for modulating said substantially rectangular waveform, current-frequency transducer means being coupled to said secondary winding means of said current transformer through said polarity switch and

being coupled to said amplitude modulator means and generating impulses, and impulse counter means for counting the impulses generated by said current-frequency transducer means,

- in combination,
- first supervisory circuit means coupled to, and supervising, said mark-space modulator means,
- second supervisory circuit means coupled to, and supervising, at least said current-frequency transducer means, said second supervisory circuit means including comparison means for comparing at least a value derived from the output frequency of said current frequency transducer means with at least a parameter derived from the current flowing in said secondary output of said amplitude modulator means, and
- fault indicator means coupled to the output of each of said supervisory circuit means for indicating a fault in said meter.

4,434,401

APPARATUS FOR TESTING SEMICONDUCTOR DEVICES AND CAPACITORS

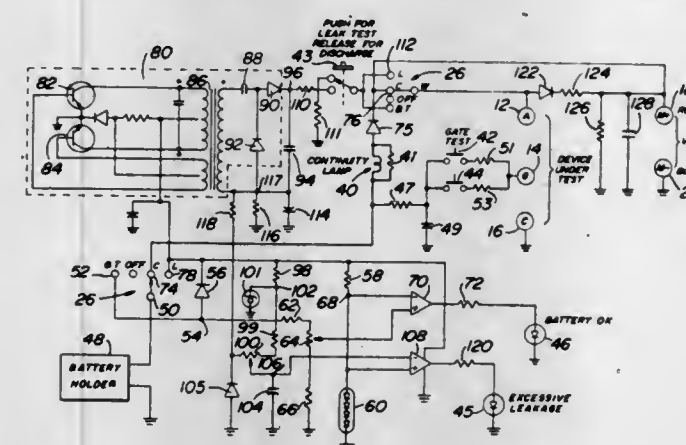
Robert A. York, Mechanicsburg, Pa., assignor to Flight Systems, Inc., Mechanicsburg, Pa.

Filed May 4, 1981, Ser. No. 260,467

Int. Cl.³ G01R 31/02

U.S. Cl. 324-158 SC

16 Claims



1. Apparatus for testing semiconductor devices in both the conducting and non-conducting states, comprising:

- (a) first circuit means for testing the continuity of a semiconductor device in a polarity in which the semiconductor device is normally conducting;
- (b) a battery source of direct current at a relatively low voltage of under approximately 24 volts, said relatively low voltage being applied to the first circuit means;
- (c) means for providing a signal whenever the first means determines that the semiconductor device is in a conducting state;
- (d) second circuit means for testing for leakage current flow through a semiconductor device connected in a polarity in which the semiconductor device is normally non-conducting;
- (e) a dc to dc converter for boosting the relatively low voltage dc to a relatively high voltage dc of approximately 200 volts, said relatively high voltage dc being applied to the second circuit means;
- (f) means for providing a signal whenever the second circuit means determines that there is excessive leakage current flow through the semiconductor device; and
- (g) switch means for selecting between the first circuit means and the second circuit means;

4,434,402 ELECTRICAL EQUIPMENT

Michael J. Lane, Mablethorpe, England, assignor to Smiths Industries Public Limited Company, London, England

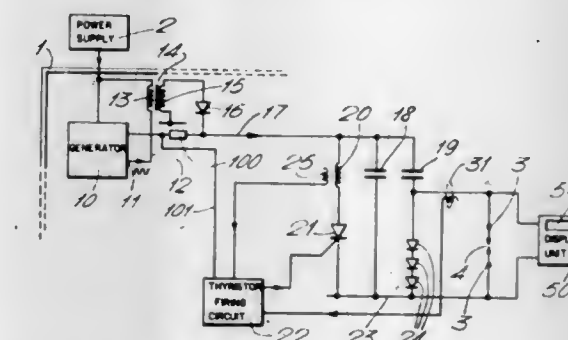
Filed Aug. 10, 1981, Ser. No. 291,692

Claims priority, application United Kingdom, Aug. 23, 1980, 8027514

Int. Cl.³ G01R 31/024, 31/22

U.S. Cl. 324-393

9 Claims



6. Equipment for testing operation of electrical igniters, comprising: capacitive means; means connecting said capacitive means with said igniter; a voltage source that increases the voltage across said capacitive means; means for automatically applying a voltage developed across said capacitive means to said igniter at predetermined intervals; the equipment automatically applying the same voltage across said igniter repeatedly for a predetermined number of times if breakdown occurs; and display means that provides a representation of the voltage at which said repeated breakdown occurs.

4,434,403

UNIVERSAL RESET CIRCUIT FOR DIGITAL CIRCUITRY

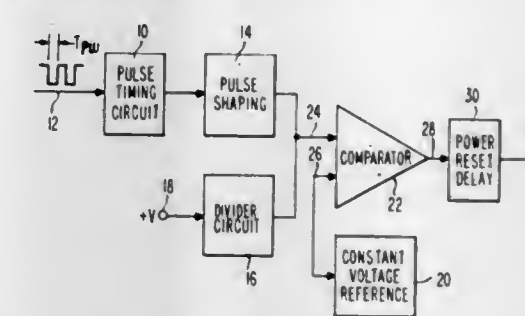
Gerald W. Chang, San Pedro, Dominican Republic, assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 24, 1981, Ser. No. 295,423

Int. Cl.³ H03K 5/24, 5/153

U.S. Cl. 328-120

10 Claims



1. A universal reset circuit for digital circuitry which monitors clock pulses and DC voltage and provides a reset command when detecting a low DC voltage or a missing clock pulse comprising:

- a constant voltage means for providing a stable reference voltage;
- a pulse timing means receiving said clock pulses for providing an output voltage level above said reference voltage when a regular clock pulse is received and allowing its output voltage to fall below said reference voltage when a clock pulse does not appear within a set time interval generating a low output pulse;
- a divider means connected across the DC voltage for producing a test voltage which is less than said reference voltage when a low DC voltage condition is experienced;
- a comparator which compares a combined input from said bridge means and said pulse timing means with said constant voltage means such that said comparator output will be high unless a missing clock pulse is detected which will produce a negative reset pulse or, unless a low DC voltage

is detected which will produce a low output from said comparator.

4,434,404 A.C. COUPLED VIDEO AMPLIFIER WITH FAST PULSE RECOVERY

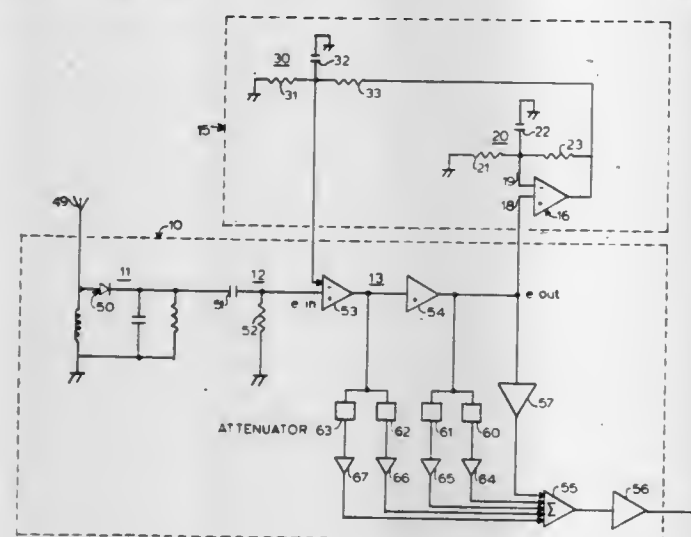
Victor K. Fay, Sunnyvale, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 6, 1981, Ser. No. 241,296

Int. Cl.³ H03F 1/34

U.S. Cl. 330—85

2 Claims



1. In a multistage amplifier for alternating current signals the improvement for decreasing the pulse recovery time comprising:

a negative feedback loop disposed between the output of one and the input of any previous of the stages of said amplifier, said feedback loop comprising means for limiting the feedback signal to a selected amplitude whereby signals applied to the feedback loop above said selected amplitude make the feedback loop inoperative, said feedback loop including two frequency dependent filters having together the transfer function of

$$\frac{p^2}{p^2 + 2ap + w_0^2}$$

wherein $p=j\omega$ in radians/sec., and w_0 is $2\pi f$ where f is the frequency.

4,434,405 MULTIPLE AMPLIFIER INTERCONNECTION FOR OPTIMAL SENSITIVITY

Michael J. Gans, Monmouth Beach Township, Monmouth County, and William W. Snell, Jr., Middletown Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 19, 1982, Ser. No. 369,497

Int. Cl.³ H03F 1/26, 3/68

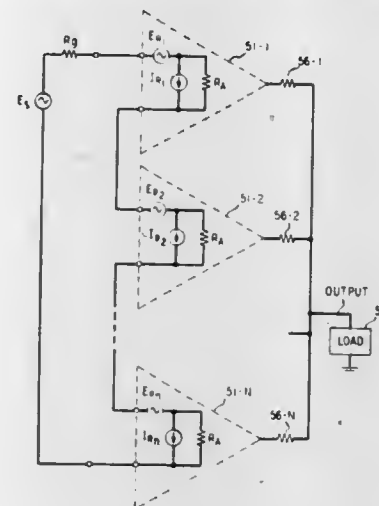
U.S. Cl. 330—149

4 Claims

1. A low noise circuit for providing amplified electrical signals comprising

a source of electrical signals including a predetermined source resistance R_g characterized in that a plurality of N like amplifiers are connected together, each

amplifier includes a predetermined rms noise voltage E_R and a predetermined rms noise current I_R ; and



the plurality of N like amplifiers are connected in series, where N is substantially equal to the quantity $(I_R R_g)/E_R$, for R_g greater than E_R/I_R .

4,434,406 LAMP HOUSING ASSEMBLY PRIMARILY FOR THE LAMP OF A RUBIDIUM FREQUENCY STANDARD

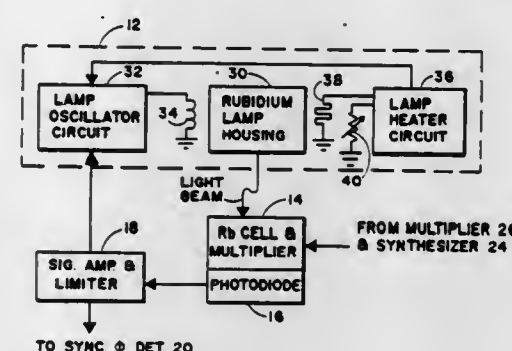
William R. Fowks, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 10, 1981, Ser. No. 291,606

Int. Cl.³ H03L 7/26

U.S. Cl. 331—3

15 Claims



12. An improved lamp assembly for igniting a discharge in a rubidium lamp in a rubidium vapor cell frequency standard of the type used for stabilizing a frequency source by tracking it to hyperfine resonance of a rubidium vapor cell resonator optically pumped by a rubidium light beam generated by said rubidium lamp, and having a photodiode for detecting resonance; the lamp assembly comprising:

a field coil in proximity to said lamp, means for generating a periodic signal through said coil, and means for heating said lamp to a selected operating temperature, said heating means having first and second heat generating devices connected in series for distributing said lamp heating function between said devices and around substantially the entire periphery of said lamp.

4,434,407 PRESETTING CIRCUIT FOR THE VOLTAGE-CONTROLLED OSCILLATOR OF A PHASE LOCK LOOP

Daniel J. Healey, III, and Steven Morrison, both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 6, 1981, Ser. No. 251,554

Int. Cl.³ H03L 7/12, 7/16

U.S. Cl. 331—4

7 Claims

4,434,408 OSCILLATOR HAVING CAPACITOR CHARGING AND DISCHARGING CONTROLLED BY NON-SATURATING SWITCHES

Yasuharu Baba, Atsugi, and Masashi Takeda, Isehara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

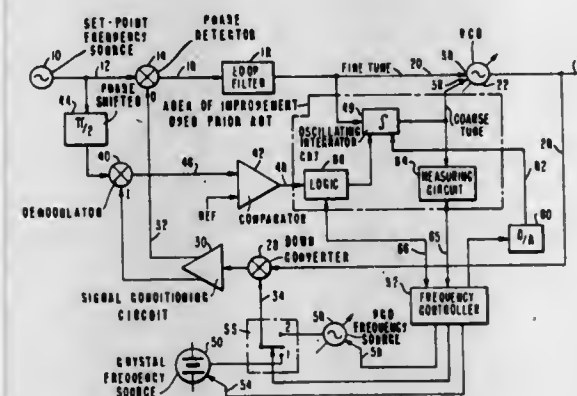
Filed Mar. 10, 1981, Ser. No. 242,395

Claims priority, application Japan, Mar. 11, 1980, 55-30551

Int. Cl.³ H03K 3/023, 3/282

U.S. Cl. 331—111

6 Claims

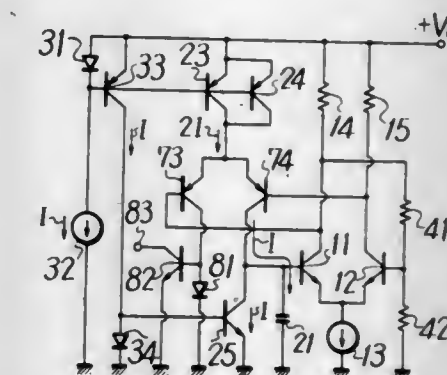


1. A phase lock loop circuit operative to switch rapidly between predetermined output frequency signals as governed by a reference frequency signal and a preset signal which are both set to a new level for each desired change in output frequency signal, the desired change in output frequency signals being, at times, greater than the operational frequency bandwidth of said phase lock loop circuit, said phase lock loop circuit including: a voltage controlled oscillator (VCO) governed by a tuning signal to generate the output frequency signal of said phase lock loop circuit; means for operating on a said output frequency signal by said reference frequency signal to generate a feedback frequency signal; a phase detector for generating a phase error signal representative of the phase difference between said feedback frequency signal and a set-point frequency signal; a loop filter for filtering said phase error signal and means for detecting a phase lock condition of said phase lock loop circuit and for generating a phase lock signal indicative thereof; and wherein the improvement comprises a circuit for generating said tuning signal for controlling the output frequency signal of said VCO, said generating circuit including:

an amplifier circuit having an input for coupling said preset signal to said generating circuit;

an integrator circuit having its output coupled to the input of said amplifier circuit through a feedback path, the output signal generated by said integrator circuit being said tuning signal for said VCO; and

switching means operative in a first state momentarily to render said integrator circuit responsive to said amplifier circuit to preset the output signal of said integrator circuit proportional to said preset signal applied to the input of said amplifier circuit, said switching means operative in a second state to render said integrator circuit responsive to a reference signal which controls the rate of the output signal of said integrator circuit from its preset level in a direction to cause phase lock of said loop circuit, said switching means operative in a phase lock state as governed by said phase lock signal to render said integrator circuit responsive to said filtered phase error signal, whereby said loop circuit becomes closed to maintain the phase lock condition thereof.



1. An oscillator comprising:

- a DC voltage source;
- a differential amplifier having a hysteresis characteristic and consisting of first and second transistors, each having input and output electrodes, a feedback circuit connected between said output electrode of said first transistor and said input electrode of said second transistor, and first and second loads connected between the output electrodes of said first and second transistors and said DC voltage source, respectively;
- a capacitor means connected between the input electrode of said first transistor and a reference point;
- current source means connected to said DC voltage source and having a main current path producing a predetermined constant current;
- current sink means having a main current path connected between the input electrode of said first transistor and said reference point and substantially one-half of said predetermined constant current flowing through said current sink means;
- first current switching means connected between the main current path of said current source means and the connection point of said capacitor means with the input electrode of said first transistor and controlled by an output signal of the output electrode of said second transistor; and
- second current switching means connected between the main current path of said current source means and said reference point through a third load and controlled by an output signal of the output electrode of said first transistor, thereby to produce an output pulse signal across said third load.

4,434,409 DIELECTRIC WAVEGUIDE PHASE SHIFTER

Jerome J. Green, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 11, 1981, Ser. No. 272,809

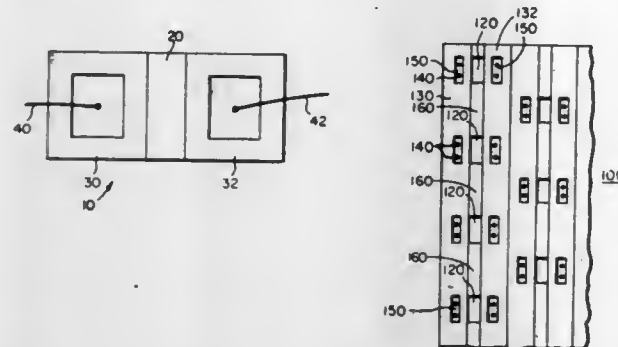
Int. Cl.³ H01P 1/195

U.S. Cl. 333—24.1

28 Claims

1. In combination: means providing a dielectric waveguide having an input port and output port, comprising a dielectric and a ferrimagnetic toroid disposed adjacent to said dielectric, for confining an applied electromagnetic wave substantially in the dielectric as such electromagnetic propagates through the dielectric; and means for passing a current through said toroid to provide a

magnetic field in a portion of said toroid and to provide, in response thereto, a selectable amount of phase shift to the



applied electromagnetic wave propagating through said dielectric.

4,434,410

COAXIAL RESONATOR

Hideyuki Miyake, Matsubara, and Tosiaki Nakamura, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

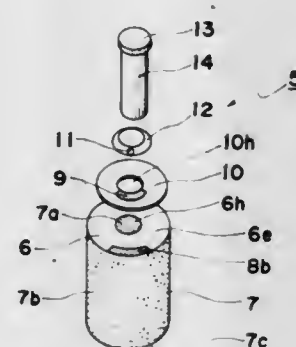
Filed Jul. 16, 1982, Ser. No. 399,135

Claims priority, application Japan, Jul. 23, 1981, 56-115742

Int. Cl.³ H01P 7/04, 1/202

U.S. Cl. 333-224

5 Claims



1. A coaxial resonator which comprises:
 - a coaxial resonator main body including a cylindrical dielectric member, an electrode layer continuously formed over an inner peripheral surface, an outer peripheral surface and one end face of said dielectric member, and a stator electrode formed on the other end face of said dielectric member not formed with said electrode layer, and
 - a rotor member of a dielectric material rotatably held in close contact with said the other end face of said coaxial resonator main body on which said stator electrode is formed, and provided with a rotor electrode confronting said stator electrode,
 - said coaxial resonator being arranged to vary capacity between said stator electrode and said rotor electrode by rotating said rotor member.

4,434,411

TEMPERATURE-SENSITIVE SWITCH

Philip M. Anderson, III, Chatham, N.J.; James E. Kearney, New Hyde Park, N.Y., and Scott E. Gordon, Morristown, N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Mar. 10, 1982, Ser. No. 356,710

Int. Cl.³ H01H 61/013

U.S. Cl. 335-208

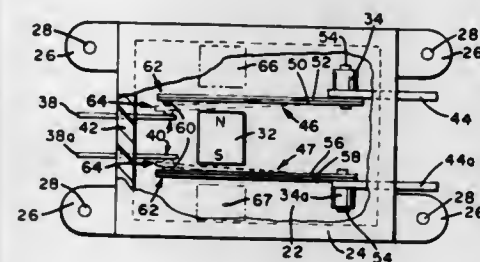
12 Claims

1. A temperature-sensitive switch, comprising:
 - base means for mounting said temperature-sensitive switch;
 - a resilient movable cantilever carrying a first contact member, said cantilever being composed of amorphous ferromagnetic material having a Curie point, wherein said amorphous ferromagnetic material consists essentially of a composition

defined by the formula $M_x M'_y a Z_y$, where M is at least one metal selected from the group consisting of Fe and Co, M' is at least one alloying metal selected from the group consisting of Ni, Ti, V, Cr, Mn, Zr, Nb, Mo, Hf, Ta, W, Zn, Al, and Cu, Z is at least one metalloid element selected from the group consisting of B, Si, C and P, x, a, and y are in atomic percent and range from about 70-85, 0-12 and 15-30, respectively, and the sum $x+a+y$ equals 100;

a second contact member disposed adjacent said first contact member for at least intermittently establishing electrical contact with said first contact member;

said first contact member being connected to first terminal means, and



said second contact member being connected to second terminal means;

gripping means for supporting the cantilever and electrically connecting it to said first terminal means;

support means for supporting said second terminal means; and

magnet means associated with and adapted to bias said cantilever to a first position that establishes electrical continuity between said first and second contact members said cantilever being transformed from a ferromagnetic phase to a paramagnetic phase when its temperature exceeds the Curie point, whereby said cantilever assumes a second position in which said electrical continuity is interrupted.

4,434,412

CONTACTLESS, ELECTRIC CONTROL-HANDLE

Geurt J. Ruumpol, Wilp, Netherlands, assignor to Inductive Control Systems B.V., Ede, Netherlands

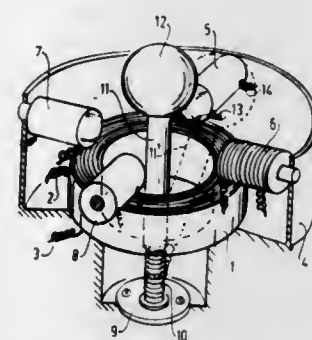
Filed Apr. 17, 1981, Ser. No. 255,292

Claims priority, application Netherlands, May 12, 1980, 8002727

Int. Cl.³ H01F 21/06

U.S. Cl. 336-134

4 Claims



1. A contactless electric control device comprising:
 - a generally annular field coil presenting an open central region and including means connecting it to an alternating current source for producing an alternating magnetic field whose instantaneous lines of magnetic flux extend longitudinally through said open central region;
 - a plurality of inductive pick-ups disposed in coplanar relation in spaced relation to one end of said field coil, the plane containing said pick-ups being perpendicular to the longitudinal axis of said open central region of the field coil, said longitudinal axis being the axis of said field coil and each pick-up including a core extending radially with

respect to such longitudinal axis with the inner end of each such core being disposed radially beyond such open central region, said cores being angularly spaced within said plane around said longitudinal axis, each pick-up also including a winding on its core and opposed pairs of such windings being connected in series; and

movable core means projecting at least in part longitudinally into said central region generally along said longitudinal axis and in radially inwardly spaced relation to said field coil for affecting said alternating magnetic field such that there is a linear relation between displacement of said core means and output signals produced by said opposed pairs of windings.

4,434,413

ELECTRICAL CIRCUIT BREAKER MODULE

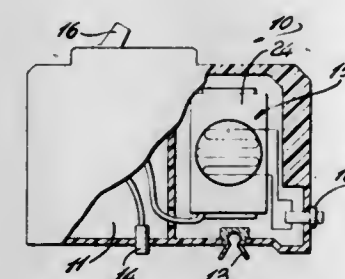
Jean-Marc Pelletier, St-Louis de Terrebonne, and Yvon Dion, McMasterville, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Oct. 20, 1981, Ser. No. 313,214

Int. Cl.³ H01H 71/16

U.S. Cl. 337-71

11 Claims



1. In combination with an electrical circuit-breaker module of the narrow modular type connectable in stacked relationship with a plurality of said modules in an electrical distribution panel, each said module being associated with a respective electrical distribution branch circuit and wherein circuit interruption means is provided in each module for interrupting its associated electrical distribution branch circuit upon the occurrence of predetermined overload and fault currents on said branch circuit, the improvement comprising a controlled switch means mounted in at least one of said modules without altering the thickness of said module in a vertical plane and the depth thereof, said controlled switch means being connected in series with said circuit interruption means and being operable by command means exteriorly of said module to assume an open or closed contact condition.

4,434,414

SNAP-ACTING THERMAL RELAY

Lon E. Bell, and William P. Gruber, both of Altadena, Calif., assignors to Technar, Inc., Arcadia, Calif.

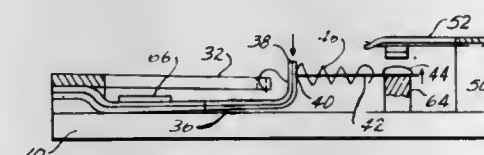
Continuation-in-part of Ser. No. 174,916, Aug. 4, 1980. This

application Mar. 31, 1981, Ser. No. 249,383

Int. Cl.³ H01H 61/04

U.S. Cl. 337-102

10 Claims



1. A snap-acting switching device comprising a fulcrum member, a switch arm pivotally supported on the fulcrum member, spaced stop means including at least one switch contact forming a gap receiving the switch arm for limiting rotation of the switch arm relative to the fulcrum, a tension spring having one end connected to the switch arm on one side

of the fulcrum, means anchoring the other end of the spring on the opposite side of the fulcrum, a cantilever supported thermal-responsive element that moves with changes in temperature, and means connected with the moving end of the thermal-responsive element for moving the fulcrum relative to the tension spring to either side of the centerline of the spring with heating and cooling of the thermal-responsive element.

4,434,415

ELECTRICAL CONTROL MODULE FOR A CURRENT-LIMITING FUSE

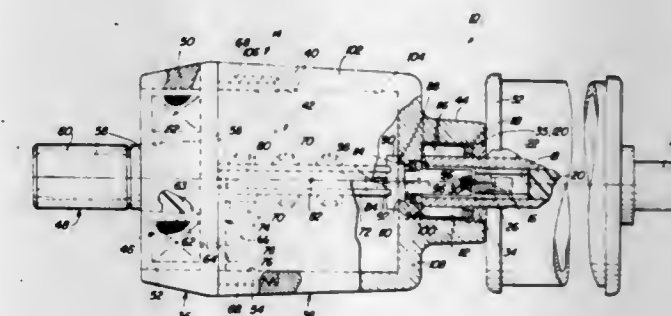
John M. Jarosz, Skokie, and William R. Panas, Glenview, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Nov. 5, 1982, Ser. No. 439,443

Int. Cl.³ H01H 85/20

U.S. Cl. 337-186

17 Claims



1. An electrical control module connectable to an interrupting module having a normally closed, power-cartridge-operated switch in shunt with a fusible element, one side of both the switch and the fusible element being connectable to one side of a protected circuit, which control module comprises:

- a conductive housing having a closed cavity which is capable of surrounding an electrical control circuit and acting as an environmental shield and Faraday cage thereof;
- means for supporting the control circuit in the cavity and for transmitting output signals therefrom to the exterior of the housing;
- first means for connecting the housing to the other side of the protected circuit;
- second means for connecting the housing to the interrupting module so that the housing is electrically continuous with the other side of both the switch and the fusible element and so that the output signals of the control circuit are applied to the power cartridge by the supporting and transmitting means; and
- means on the exterior of the housing for sensing the condition of the current of the protected circuit and for providing signals representative thereof to an input of the control circuit.

4,434,416

THERMISTORS, AND A METHOD OF THEIR FABRICATION

Milton Schonberger, 1 Century Tower, Ft. Lee, N.J. 07024

Filed Jun. 22, 1983, Ser. No. 506,805

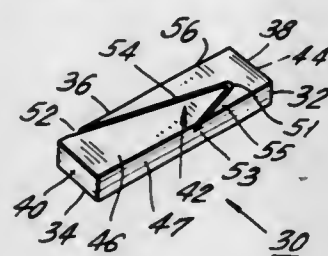
Int. Cl.³ H01C 1/142, 7/18, 17/24

U.S. Cl. 338-22 R

29 Claims

1. A thermistor, or the like electric component, comprising a wafer-like piece of ceramic thermistor ware, or the like, having two large area opposite surfaces, the piece of thermistor ware having two spaced apart opposite edges; a layer of electric contact material covering at least one of the surfaces of the piece; and
- a contact defining score mark extending completely through the layer of contact material and completely across the piece between its opposite edges for defining two separate

contacts from the layer of contact material on the piece; the contact defining score mark having an open geometric



shape other than a straight line extending between the edges of the piece.

4,434,417

LIQUID-COOLED POWER RESISTOR AND USE THEREOF

Conrad Beriger, Aarau; Ladislav Kucera, Gebenstorf; Paul Schneider, Untersiggenthal, and Günther Spittaler, Fislisbach, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

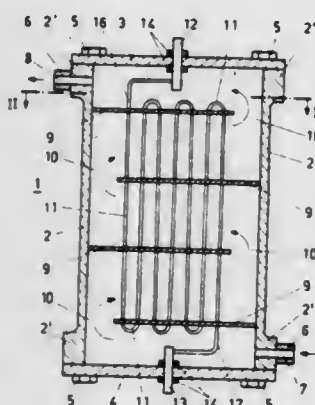
Filed May 3, 1982, Ser. No. 374,145

Claims priority, application Switzerland, May 21, 1981, 3322/81

Int. Cl.³ H01C 1/08

U.S. Cl. 338—53

7 Claims



1. A liquid-cooled power resistor, comprising: means defining a closed housing; at least one resistive conductor arranged in said closed housing; at least two diaphragms fixed within said closed housing; said diaphragms possessing holes for the passage of said resistive conductor therethrough, in order to thus form holding means for said resistive conductor; said diaphragms being fixed within said closed housing so as to obturate only a portion of the cross-section of the closed housing, in order to thereby form free cross-sections; said closed housing containing a cooling liquid and being provided with means for flowing said cooling liquid through said housing; said free cross-sections formed by means of said diaphragms in the closed housing being open for the throughflow of said cooling liquid therethrough and being staggered with respect to one another in order to deflect cooling liquid; and said resistive conductor being located directly in said cooling liquid within said closed housing.

4,434,418 ULTRASENSITIVE APPARATUS AND METHOD FOR DETECTING CHANGE IN FLUID FLOW CONDITIONS IN RELIEF FLOWLINES ASSOCIATED WITH A CHEMICAL OR REFINERY COMPLEX

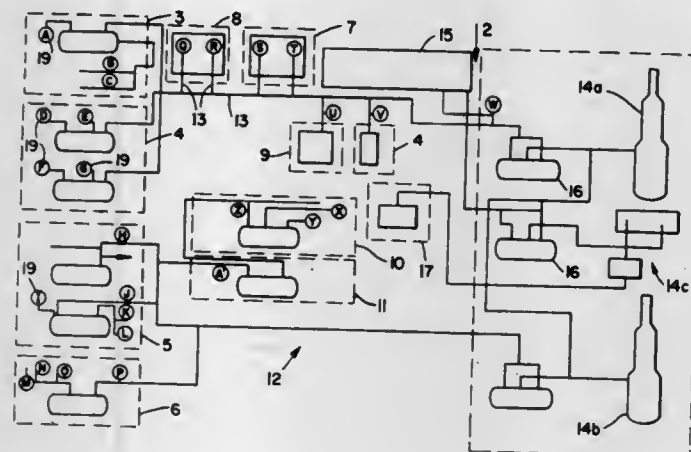
Stephen F. Streib, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 5, 1980, Ser. No. 184,560

Int. Cl.³ G08B 21/00; G01F 1/68

U.S. Cl. 340—606

9 Claims



1. Method of providing detection of fluid flow in a series of relief flowlines of a relief-flare system associated with process units of a chemical or refinery complex whereby sources of relief discharge therein can be pinpointed comprising:

- (a) positioning heat flux sensing transducer-meter means exterior of but in heat conducting contact in at least one of said flowlines while maintaining integrity of said at least one flowline intact;
- (b) monitoring change in fluid flow in said at least one flowline, by generating a transient cascaded output signal proportional to transient variation in heat flux detected exterior of said at least one flowline at said transducer-meter; and
- (c) indicating the occurrence of said transient cascaded signal output so as to pinpoint location of relief discharge from one or more associated process units of said chemical or refinery complex.

4,434,419

CURSOR CONTROL CIRCUIT FOR PLURAL DISPLAYS FOR USE IN A WORD PROCESSING SYSTEM

Robert A. Couper, Sunnyvale, and Terrance L. Lillie, Palo Alto, both of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 12, 1980, Ser. No. 177,328

Int. Cl.³ G09G 1/00

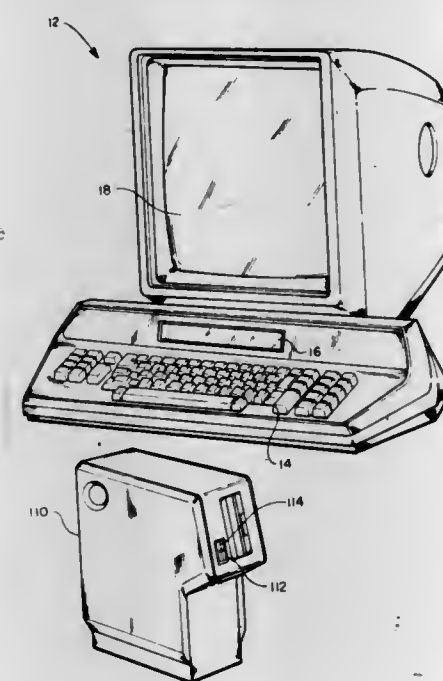
U.S. Cl. 340—717

22 Claims

1. In a word processing system of the type having a keyboard for entering alphanumeric data, a system for cursor control, comprising:

- (a) a first display means for displaying a plurality of lines of alphanumeric text;
- (b) a first display control circuit means coupled between said keyboard and said first display means for controlling the information exhibited on said first display means;
- (c) said first display control circuit means including first cursor control circuit means for causing visual marking of a predetermined number of alphanumeric characters exhibited on said first display means, said first cursor control circuit means being actuated by said keyboard;
- (d) a second display means for displaying a predetermined number of alphanumeric characters being at least part of the number of characters exhibitable on one of said plurality of lines of said first display means; and
- (e) a second display control circuit means coupled between

said keyboard and said second display means for controlling the information exhibited on said second display means, said second display control circuit means including second cursor control circuit means for causing visual



marking on said second display means of those marked predetermined alphanumeric characters on said first display means which are exhibited on said second display means.

4,434,420

INTERLINE SPACING ADJUSTMENT CIRCUIT IN A SCANNING CRT VISUAL DISPLAY SYSTEM

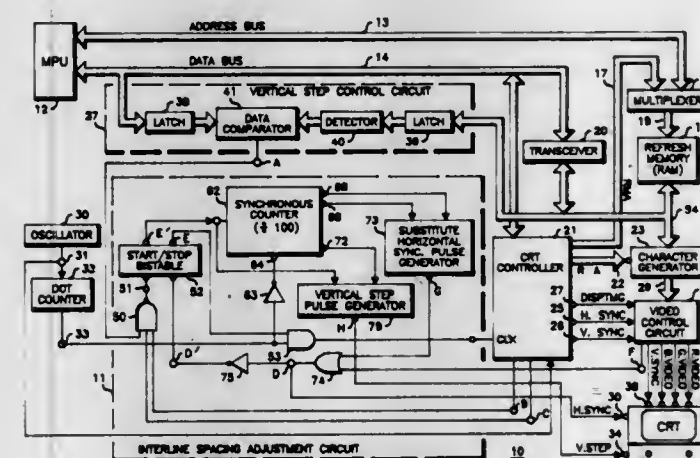
Joseph Bujalski, Roselle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1982, Ser. No. 390,588

Int. Cl.³ G09G 1/16

U.S. Cl. 340—724

12 Claims



1. A scanning CRT visual display system in which sequential horizontal visual display lines having predetermined vertical interline spacings between are selectively provided, said display system comprising:

- a CRT controlled circuit means for providing vertical and horizontal sync pulses for controlling CRT electron beam sweeping which produces said sequential horizontal visual display lines that together form a composite visual display frame;
- clock means coupled to said CRT controller circuit means for providing thereto fixed frequency clock timing pulses which determine the occurrence of said vertical and horizontal sync pulses; and
- a CRT display station means, which includes a CRT for receiving said vertical and horizontal sync pulses, as well

as video information signals, and providing said composite visual display frame in accordance therewith; the improvement comprising an adjustable vertical spacing horizontal interline control circuit comprising the combination of;

terminal means for receiving a vertical step control signal indicative of a desired increase in the normal vertical interline spacing between sequential horizontal scan lines; gate means coupled between said clock means and said controller circuit means and also coupled to said terminal means for selectively preventing, for a predetermined time, said clock pulses from being received by said controller circuit means in response to at least the occurrence of said step control signal thereby effectively halting the operation of said controller circuit means;

counter means coupled to said terminal means and said clock means for effectively counting said clock pulses during the time that said clock pulses are prevented from being received by said controller circuit means and for providing at least one substitute horizontal sync pulse in response to said counter means attaining a predetermined count of said clock pulses; and

signal combiner means coupled to said controller circuit means and said counter means for effectively combining said controller circuit means horizontal output sync pulses and said substitute horizontal sync pulses to provide a composite horizontal sync control signal which is coupled to said CRT display station means for control of said CRT visual display, whereby during the implementation of an increase in the normal vertical spacing between sequential horizontal display lines, horizontal sync pulses are effectively continuously provided even though the time required for implementing the increased vertical spacing may exceed the retrace time normally provided between sequential horizontal visual display lines.

4,434,421

METHOD FOR DIGITAL DATA TRANSMISSION WITH BIT-ECHOED ARBITRATION

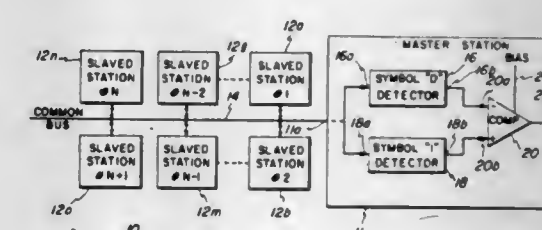
Lewin T. Baker; Sanjay K. Bose, both of Schenectady, N.Y., and Paul G. Huber, West Warwick, R.I., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,495

Int. Cl.³ H04Q 3/00

U.S. Cl. 340—825.51

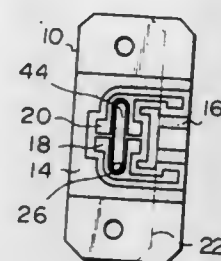
16 Claims



1. A method for arbitration of contended digital data communications in a system having a master data station and a plurality of slaved data stations interconnected by a single common data transmission medium, with each data station being capable of transmitting and receiving data via the single common medium, comprising the steps of:

- (a) transmitting from at least two random ones of the plurality of slaved stations and only over the common medium, a bit of a binary data message during an initial portion of a bit time interval;
- (b) simultaneously detecting at the master station either of the binary states transmitted by any of the transmitting slaved stations during the initial portion of the bit time interval;
- (c) selecting one of the received binary states;
- (d) transmitting only over the common medium from the master station to all of the plurality of slaved stations during a response portion, subsequent to the initial portion, of the bit time interval, an echo of the binary state selected in step (c);

surface thereof at least two flat and thin separate detection electrodes, and
a second layer of an insulating material which is engaged with said detection electrodes at one surface thereof,



said first and second insulator layers being formed with aligned slots which extend throughout the insulator layers and the detection electrodes to allow ink droplets to pass there-through.

4,434,429

INFORMATION RECORDING MEMBER AND METHOD OF FABRICATING THE SAME

Motoyasu Terao, Tokyo; Shinkichi Horigome, Tachikawa; Munehisa Mitsuya, Hachioji; Sakae Ota, Yokohama, and Kazuo Shigematsu, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

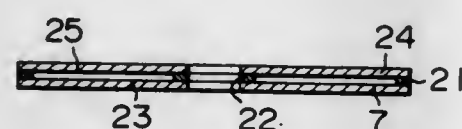
Filed Oct. 15, 1981, Ser. No. 311,888

Claims priority, application Japan, Oct. 15, 1980, 55-142911

Int. Cl.³ G01G 15/34; G01D 15/10

U.S. Cl. 346—135.1

40 Claims



1. An information recording member comprising:
a substrate; and

a thin film formed on said substrate with or without an intermediate layer therebetween, said thin film being irradiated with a recording beam to make an aperture or recess in said thin film, said thin film being a thin crystalline film, said thin crystalline film having a composition expressed by a general formula $Se_xTe_yM_z$, where x , y and z are given by the formulae $0.02 \leq x \leq 0.35$, $0.50 \leq y \leq 0.98$ and $0 \leq z \leq 0.45$, respectively, and M indicates at least one element selected from the group consisting of Sb, Bi, S, Si, Ge, Sn, Pb, Al, Ga, In, Tl, Zn, Cd, Au, Ag, Cu, Ni, Pd, Rh, Cr, Mo, W, and Ta, whereby oxidation of Te is sufficiently decreased, as compared with a thin film not containing Se_x , to provide a recording member having good stability.

4,434,430

INK JET PRINTER HEAD

Haruhiko Koto, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of Japan

Continuation-in-part of Ser. No. 189,461, Sep. 22, 1980, Pat. No. 4,364,066. This application May 28, 1982, Ser. No. 383,368

Claims priority, application Japan, Sep. 21, 1979, 54-121621

Int. Cl.³ G01D 15/18

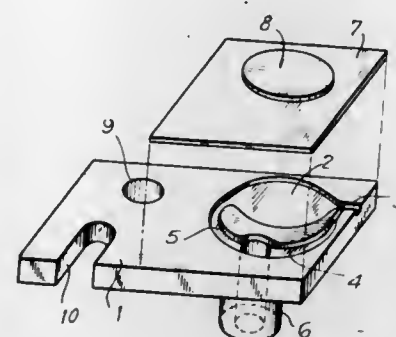
U.S. Cl. 346—140 R

26 Claims

6. An ink jet printer head for a printer for ejecting liquid ink onto a recording medium, comprising:

a first substrate having a substantially planar surface and a second substrate having a cooperating substantially planar surface, the planar surfaces cooperating to define at least one nozzle, pressure chamber and passageway therebetween; and

a piezoelectric element bonded to one of the first and second substrates,



said first and second substrates formed from a thermoplastic material with the cooperating substantially planar surfaces permanently coupled together for forming the at least one nozzle, pressure chamber and passageway.

4,434,431

MULTILEVEL IMAGE PRINTING DEVICE

Tetsuo Ohkubo; Yoshio Arai, and Hiroyuki Kataoka, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

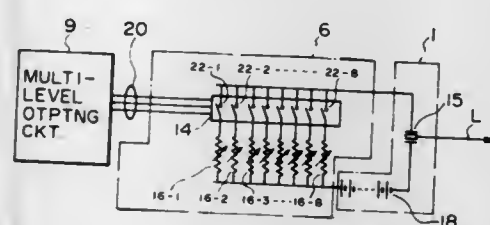
Filed Jun. 10, 1981, Ser. No. 272,232

Claims priority, application Japan, Jun. 13, 1980, 55-79053

Int. Cl.³ G01D 15/14

U.S. Cl. 346—154

8 Claims



1. A multilevel image printing device comprising:

a multilevel image outputting circuit for outputting a digital image signal indicative of a specific density level of said image, said specific density level being one of at least three possible discrete density levels;

a multilevel image signal to laser beam conversion circuit for converting said digital image signal into a laser beam having a specific intensity level corresponding to said specific density level of said image;

a laser beam source driven by said multilevel image signal to laser beam conversion circuit;

said laser beam source outputting a laser beam modulated with at least three gradations corresponding to said at least three possible discrete density levels of said image;

a photoconductive surface; and

means for scanning the modulated laser beam onto said photoconductive surface.

4,434,432

UNIVERSAL IMAGE CODER AND CONTROLLER FOR MULTICOLOR ELECTROLYTIC PRINTING

Jack R. Dailey, Endicott; Harry C. Kuntzleman, Newark Valley, both of N.Y.; Charles S. Ng, Charlotte, N.C., and John W. Pike, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,777

Int. Cl.³ G01D 15/06

U.S. Cl. 346—154

14 Claims

1. Apparatus for controlling a plurality of output nodes by selectively providing at each output node, one of a number of predetermined unique pulses in response to the receipt of information from an external source defining the desired state of

each output node at a particular instant of time, each of said pulses being one in an matrix thereof, said matrix having a predetermined number of amplitude and duration increments, said control apparatus comprising:

(a) bus means, connected to receive the output of said source, for conveying input information on the desired state of said output nodes from said source to said control apparatus;

(b) code expansion means, connected to said bus means, for expanding information received from said bus means into a local format of m coded words of k bits each, there being one such word for each output node, each of said words being formed of bit groups, one group for each of said pulse duration increments, said bits of each group defining any one of said pulse amplitude increments;

(c) storage means having a plurality of accessible cells, connected to said code expansion means, for receiving and storing therein all of said coded words, one bit of each word per cell;

(d) a plurality of scanning register means, one for each duration increment of said pulses, each having a predefined bit pattern stored therein and connected, respectively, one to

4,434,433

ENHANCEMENT MODE JFET DYNAMIC MEMORY

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, Japan

Continuation of Ser. No. 878,441, Feb. 16, 1978, abandoned.

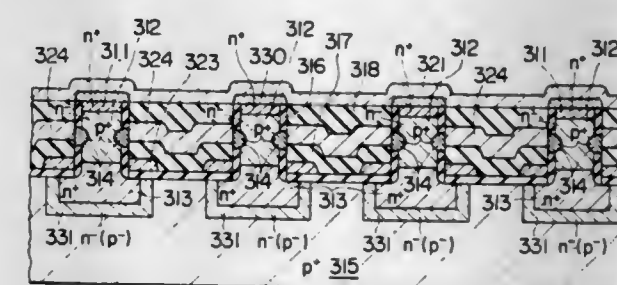
This application Aug. 4, 1980, Ser. No. 174,724

Claims priority, application Japan, Feb. 21, 1977, 52-18465; Feb. 26, 1977, 52-20653; Mar. 30, 1977, 52-35956; Mar. 31, 1977, 52-36304; Apr. 2, 1977, 52-37905; Jul. 11, 1977, 52-83226

Int. Cl.³ H01L 27/10, 27/12, 29/80; G11C 11/40

U.S. Cl. 357—22

2 Claims



1. A semiconductor memory cell device formed in a semiconductor body and including at least one memory cell which comprises:

a first semiconductor region of a first conductivity type having a low resistivity;

a second semiconductor region of a second conductivity type opposite to said first conductivity type surrounding at least a portion of said first semiconductor region;

a third semiconductor region of said first conductivity type having a high resistivity and disposed on said first semiconductor region;

a fourth semiconductor region of said first conductivity type having a low resistivity and disposed on said third semiconductor region;

gate means disposed adjacent to said third semiconductor region between said first and fourth semiconductor regions for controlling the potential distribution in said third semiconductor region;

an insulating layer formed on said fourth semiconductor region;

a conductive electrode formed on said insulating layer, said fourth semiconductor region, said insulating layer and said conductive electrode forming a capacitor;

means for conducting being electrically connected to said first semiconductor region;

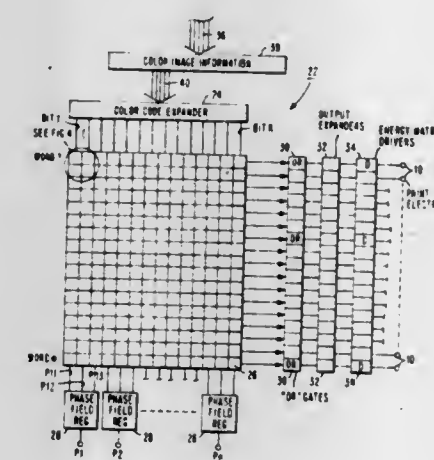
said third semiconductor region having such impurity doping characteristics and dimensions that enable said potential distribution to form a potential barrier for charge carriers transporting between said first and fourth semiconductor regions by the influence of said gate means and that render the height of said potential barrier which approaches pinch-off to be controllable also by the voltage between said first and fourth semiconductor regions;

said semiconductor body having at least one recessed portion adjacent to said third semiconductor region, and said gate means is at least partially formed in said recess;

said memory cell device further comprising: an insulating region filling said recess;

said conducting means including a fifth semiconductor region of said first conductivity type and of a low resistivity, and a metallic region embedded in said insulating region in said recess at least partially contacting said fifth semiconductor region;

one of said first region and said fourth region being provided in a surface of said semiconductor body, and the other being provided within said semiconductor body in a substantially vertical position relative to said surface of the semiconductor body.



each and the same group of storage means cells for each of said words stored therein, for scanning said storage means cells with said predefined bit pattern;

(e) logic circuit means connected to receive the output of said storage means cells for logically comparing the bits stored therein to said bit patterns of said scanning register means and for producing an output that is a logical combination of each storage cell bit and the corresponding bit of said predefined scanning register bit pattern;

(f) output node circuit means, connected between said logic circuit means and said output nodes, for receiving the output of said logic circuit means and for responsively converting said output to the appropriate amplitude increment for each of said output nodes; and

(g) timing circuit means connected to said bus means, said code expansion means, said storage means and said scanning register means for causing said bus means to shift said external source information into said code expansion means, for causing said expanded local coded words to be shifted from said code expansion means to said storage means and for causing said scanning register means to sequentially scan, by group, said cells of said storage means with which they are associated.

4,434,440

FM/TV TRANSMISSION SYSTEM

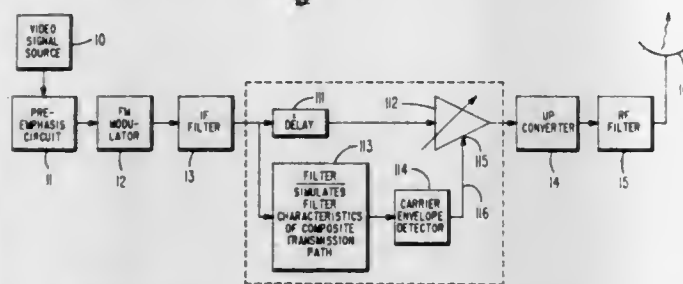
Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1981, Ser. No. 324,585

Int. Cl.³ H04N 5/38

U.S. Cl. 358—186

7 Claims



1. In a frequency modulated television (FM/TV) transmitter for transmitting an FM/TV signal over a transmission path having certain bandpass characteristics to at least one receiver having a demodulator, an improved automatic gain control (AGC) system at said transmitter and comprising:

simulating means responsive to said FM/TV signal generated at said transmitter for simulating the bandpass characteristics of said transmission path to produce a simulated FM/TV signal as it would appear at said receiver in the absence of an AGC system;

means responsive to said simulated FM/TV signal to produce a control signal when said FM/TV signal exhibits certain characteristics which will cause the input signal to the receiver demodulator to drop below a predetermined threshold level; and

variable gain amplifying means responsive to said FM/TV signal generated at said transmitter and to said control signal to amplify said FM/TV signal when said simulated FM/TV signal outputted from said simulating means exhibits said certain characteristics.

4,434,441

METHOD FOR DRIVING A CHARGE INJECTION DEVICE

Hiroyuki Ishizaki, Akashi; Yoshiki Tsujino, Kakogawa, and Masaji Dohi, Kobe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

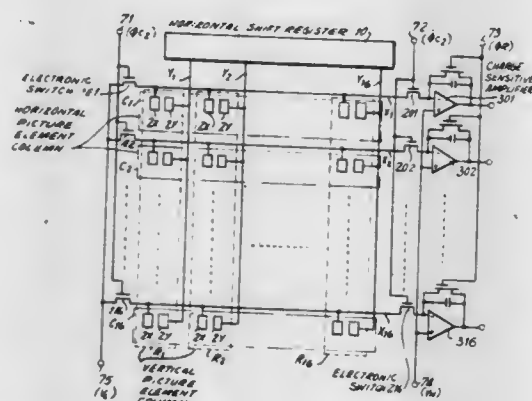
Filed Nov. 23, 1981, Ser. No. 324,070

Claims priority, application Japan, Nov. 27, 1980, 55-167828

Int. Cl.³ H04N 3/14

U.S. Cl. 358—213

6 Claims



1. A method for driving a charge injection device having picture elements, each consisting of a storing electrode and a detecting electrode, arranged in the form of a matrix on a semiconductor substrate, the storing electrodes of the picture elements being connected in common for each column or row and the detecting electrodes being connected in common for each row or column, said charge injection device having a basic operation sequence essentially containing each operation

of charge storing, readout and injection, said method comprising the steps of sequentially

applying the basic operation sequence for each picture element which is considered as the readout unit with a constant time delay; and

inserting the specified charge holding period between the readout period and the injection period.

4,434,442

AUTOMATIC REVERSE SYSTEM FOR TAPE RECORDER

Klaus Kommos, Wetzlar-Naunheim, and Heinz Schütte, Wetzlar, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

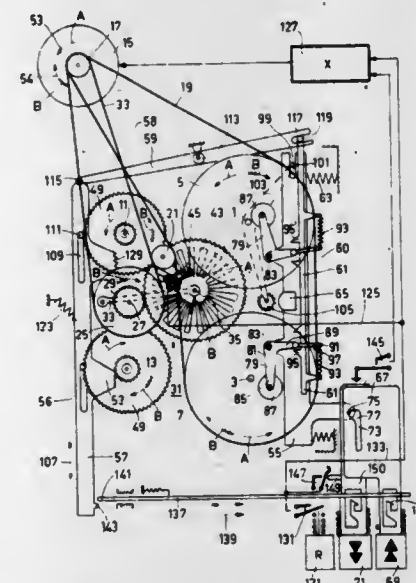
Filed Aug. 19, 1981, Ser. No. 294,265

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032807

Int. Cl.³ G11B 15/14

U.S. Cl. 360—74.2

13 Claims



1. An automatic reversing drive system for a tape recorder, comprising

a drive motor,

two winding mandrels for tape reels, and a respective winding gear associated with each mandrel,

a pivotal transmission whose pivotal position is dependent on the direction of rotation of said motor, arranged for alternately engaging one or the other of said mandrel winding gears for driving the mandrel by the drive motor, two driven capstans for respective transport of tape in one direction or the opposite direction,

at least one pivotal lever,

a control plate having two fixed end positions arranged for pivoting said lever,

a pressure roller arranged responsive to pivoting of said lever for selective engagement with one of said capstans for driving the tape in one direction of tape movement, and

a pressure roller arranged for alternate engagement with the other capstan for driving the tape in the opposite direction of tape movement,

characterized in that said control plate is linearly movable between said end positions and comprises a respective switching portion associated with each winding gear, arranged such that during reversal of direction of motor rotation and associated pivotal movement of the transmission, during which reversal the previously driven winding gear is stopped and the previously stationary winding gear is set in motion, said control plate is shifted by the winding gear which has been set in motion, and

said system comprises means for pivoting said at least one lever in response to shifting of the control plate arranged so that the pressure roller associated with the capstan for

tape movement in the direction of the winding gear set in motion is positioned against that capstan, and the other pressure roller is pivoted away from the other capstan.

4,434,443

TAPE RECORDER

Kobun Yoshida, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

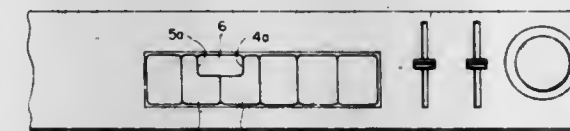
Filed Jul. 24, 1981, Ser. No. 286,488

Claims priority, application Japan, Jul. 25, 1980, 55-101318

Int. Cl.³ G11B 15/48

U.S. Cl. 360—74.4

7 Claims



1. A tape recorder comprising: a fast-forward button; a rewind button; an inter-music detector activating button arranged immediately adjacent to both said fast-forward button and said rewind button, wherein both said inter-music detector activating button and a selected one of said fast-forward button and said rewind button are actuatable simultaneously with one finger; and means for locking an inter-music detector activating function of said inter-music detector activating button upon actuation of one of said fast-forward button and said rewind button and for releasing said inter-music detector function upon release of said one of said fast-forward button and said rewind button.

4,434,444

TAPE CASSETTE LOADING DEVICE FOR CASSETTE TAPE RECORDER

Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

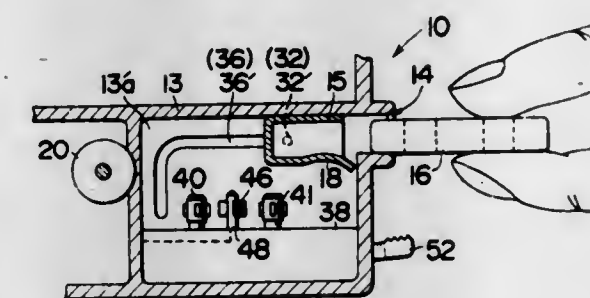
Filed Dec. 29, 1980, Ser. No. 220,729

Claims priority, application Japan, Feb. 8, 1980, 55-14315; Feb. 8, 1980, 55-14316; Feb. 8, 1980, 55-14317

Int. Cl.³ G11B 15/18, 15/66

U.S. Cl. 360—96.5

16 Claims



1. A tape cassette loading device comprising:

a cassette holder for receiving and retaining a tape cassette and movable between a first position in which the cassette is inserted into the cassette holder and a second position in which the cassette is in operative engagement with a tape drive;

a holder drive mechanism and first means (32) for connecting said holder drive mechanism to said cassette holder for moving it between said first position and said second position;

a brushless motor including a rotary shaft and second means for connecting said motor and rotary shaft to said holder drive mechanism for driving same, said motor being capable of initiating rotation in response to an external starting drive applied to said rotary shaft and being capable of

stopping in response to an external braking effort being applied to said rotary shaft;

said cassette holder being movable from said first position toward said second position upon receipt of said tape cassette and said first connecting means transmitting said movement to said holder drive mechanism to develop said external starting drive;

said second connecting means transmitting said external starting drive to said rotary shaft and motor;

said motor and said holder drive mechanism cooperating to complete the movement of said cassette holder to said second position;

means for stopping said holder drive mechanism when said cassette holder reaches said second position and being effective to apply a braking effort to said rotary shaft of said motor to stop said motor;

means for moving said cassette holder from said second position toward said first position for imparting said external starting drive in the form of a mechanical force to rotate said rotary shaft and thereby actuate said motor; and

said motor and drive mechanism cooperating to complete the movement of said cassette holder to said first position.

4,434,445

MAGNETIC HEAD FOR HIGH TRACK DENSITY

Alfred Van Herk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

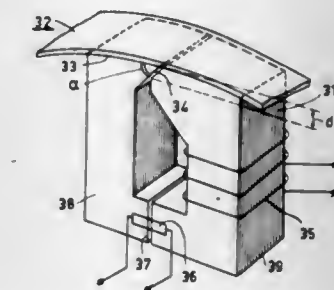
Filed Nov. 2, 1981, Ser. No. 317,105

Claims priority, application Netherlands, Nov. 13, 1980, 8006193

Int. Cl.³ G11B 5/25

U.S. Cl. 360—121

2 Claims



1. A magnetic head (31) for writing and/or reading information in parallel tracks on a magnetic recording medium (32) with high track density, comprising a magnetic core which includes two oppositely located parts (38, 39) enclosing a transducing gap (34) between them, around which core an electric winding (35) is provided, the head (31) further comprising means for reducing side fringing effects, characterized in that the reducing means includes the gap having a depth d which is of the order of magnitude of the longest wavelength on the recording medium (32), and also having a slope α oriented relative to the surface (33) facing the recording medium (32) such that $\alpha \leq 45^\circ$.

4,434,446

MAGNETIC HEAD

Naohiko Toshimitsu, Saitama, Japan, assignor to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of Saitama, Japan

Continuation of Ser. No. 156,216, Jun. 3, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,758

Claims priority, application Japan, Jun. 11, 1979, 54-73647

Int. Cl.³ G11B 5/12

U.S. Cl. 360—125

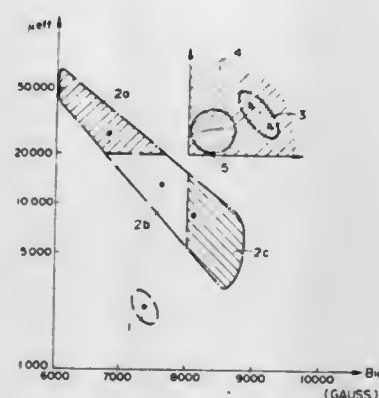
4 Claims

1. A magnetic head, comprising:

a first core half made of high hardness permalloy having magnetic flux density of at least 8,000 gauss;

a second core half disposed with respect to said first core

half at the side where a recording medium in motion enters said magnetic head, said second core half being made of high hardness permalloy having magnetic permeability of at least 20,000; and



a winding wound around at least a portion of at least one of said core halves.

4,434,447

CASSETTE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

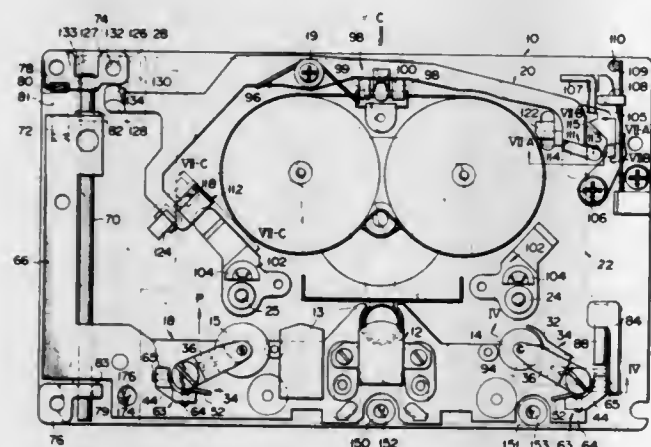
Filed Sep. 16, 1981, Ser. No. 302,811

Claims priority, application Japan, Sep. 25, 1980, 55-133165

Int. Cl.³ G11B 00/00, 15/04

U.S. Cl. 360-137

10 Claims



1. In a cassette tape recorder comprising a kangaroo pocket type cassette holder for receiving a cassette having an erroneous erasure preventing lug which is removable to produce a hole in the cassette, the cassette holder being movable between an inserted position and an eject position; an eject lever rotatably mounted on a base board and which is rotatable to an eject mode to eject a cassette from the tape recorder; and an erroneous erasure preventing lever provided with a feeler member insertible into a hole in a cassette produced by the removal of the erroneous erasure preventing lug of the cassette, said erroneous erasure preventing lever being rotatably mounted on the base board;

the improvement wherein:

said cassette holder is integrally provided with at least one engagement member; and

said eject lever is a multi-function eject lever which includes a single eject lever having at least two of the following three members integrally formed thereon:

at least one guide pin member integrally formed on said single eject lever for pushing a cassette toward the heads of the tape recorder by engagement with a corresponding guide hole formed in the cassette holder;

at least one lock member integrally formed on said single eject lever and engageable with said at least one engagement member of the cassette holder to lock the cassette

holder in an inserted position when the cassette holder is moved to the inserted position from an eject position; and a cam integrally formed on said single eject lever and which, when the feeler member of the erroneous erasure preventing lever is inserted into said hole in the cassette which is produced by the removal of the erroneous erasure preventing lug, and when the single eject lever is rotated for the eject mode, is pressed against the erroneous erasure preventing lever to cause rotation of the erroneous erasure preventing lever in such a direction as to cause removal of the feeler member from said hole in the cassette which is produced by the removal of the erroneous erasure preventing lug, thereby permitting free removal of the cassette from the cassette holder.

4,434,448

NON-CONTAMINATING TRANSFORMER OIL PUMP, STATIC ARRESTER, AND CONTROL CIRCUIT

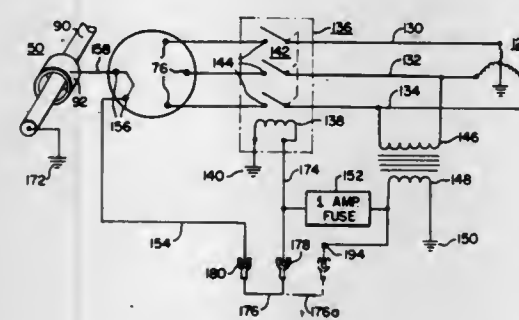
Clifford J. Bell, Mt. Pleasant Township, Delaware County, and Ramsis S. Girgis, Muncie, both of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 19, 1982, Ser. No. 399,507

Int. Cl.³ H02H 7/08

U.S. Cl. 361-23

10 Claims



1. A motor-pump unit for circulating a fluid, comprising:
 - (a) a housing having a motor portion and a pump portion including a motor and a pump respectively;
 - (b) a rotatable, electrically conductive shaft extending between the motor and the pump;
 - (c) first and second sleeve bearings mounted on the shaft for rotation in the housing;
 - (d) each bearing having a sleeve surface disposed radially adjacent to and in contact with the periphery of the shaft;
 - (e) at least one of the bearings including the bearing constructed of non-electrically conductive material including a recess in the surface thereof;
 - (f) detecting means for detecting bearing wear including an electrically conductive contact ring in the recess to effect an electrical connection between the contact ring through the shaft upon a predetermined displacement of the shaft due to wear of the bearing sleeve;
 - (g) means electrically connecting the shaft to ground;
 - (h) a ground source of electrical energy at a predetermined voltage and including electrical conductor means leading to the motor;
 - (i) a circuit breaker in the electrical conductor means and comprising an actuating coil having a first end connected to ground and having another end;
 - (j) a circuit leading from the grounded source of electrical energy to the electrically conductive contact ring;
 - (k) the circuit including a circuit interrupter having a predetermined breakdown rating and including a branch conductor connected between the other end of the actuating coil and the downstream end of the circuit interrupter;
- whereby static electricity buildup is prevented on the moving parts of the motor portions and pump portions and a trip circuit is provided for the motor portions.

4,434,449

PROTECTOR UNIT FOR TELECOMMUNICATIONS CIRCUITS

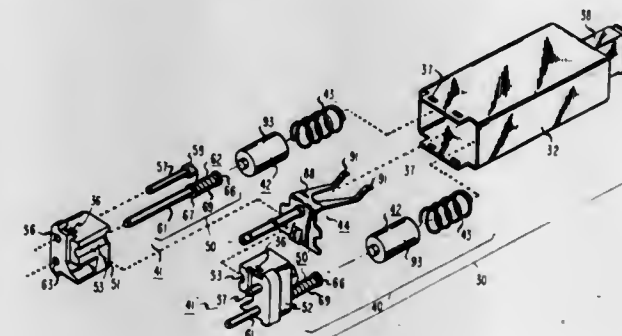
Larry W. Dickey, Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1982, Ser. No. 383,230

Int. Cl.³ H02H 9/06

U.S. Cl. 361-124

4 Claims



1. An electrical protector unit for protecting a circuit having first and second conductors against excessive current increases and voltage surges, said protector assembly comprises:
 - a dielectric housing for supporting the unit;
 - a grounding structure;
 - a dielectric base structure;
 - two input and two output conductive elements arranged in pairs and supported in said dielectric base structure;
 - first and second current responsive means for sensing said excessive current increases in said first and second conductors, respectively, and diverting said excessive current increases to said ground structure, said first and second current-responsive means being supported on said dielectric base structure, each current-responsive means including a resistance wire in direct electrical series with a pair of associated input and output conductive elements; and
 - means for conducting voltage surges in either of said conductors to said ground structure
- characterized in that

said dielectric base structure consists of a first base half and a second base half, each base half supporting a pair of input and output conductive elements and one of said current responsive means, said first and second base halves held in mated position theretogether by said dielectric housing.

4,434,450

CONTROLLED FLUX CONTACTOR

Ronald E. Gareis, Charlottesville, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 21, 1981, Ser. No. 332,731

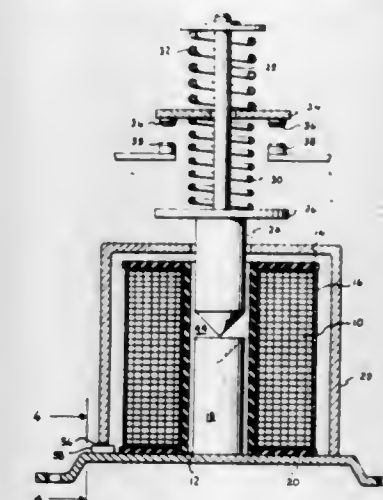
Int. Cl.³ H01H 47/32

U.S. Cl. 361-152

3 Claims

1. In an electromagnetic contactor assembly of the type including an electrically energizable actuating coil for inducing magnetic flux in a magnetic core member, a contact carrying moveable armature forming a part of the flux path for the core member, the armature being moved between a first rest position and a second energized position upon energization of the coil with a force proportional to the magnitude of flux in the core member, the improvement comprising:
 - a Hall effect sensor for sensing the magnitude of flux in the core member and for producing a signal representative of said flux; and
 - electrical circuit means for energizing the actuating coil, said circuit means being responsive to said signal from said Hall effect sensor for varying the electrical energization of the coil in a manner to adjust the magnitude of flux in the core member to a predetermined value and including a controllable current source for connecting the actuating coil to a DC voltage source and a linear amplifier having a first input terminal connected for receiving said signal

from said Hall effect sensor and a second output terminal connected for receiving a signal representative of said predetermined value of flux in the core member, said amplifier being connected for providing a signal to control



conduction of said current source in a manner tending to minimize any difference between said signal from said Hall effect sensor and said signal representative of said predetermined value of flux.

4,434,451

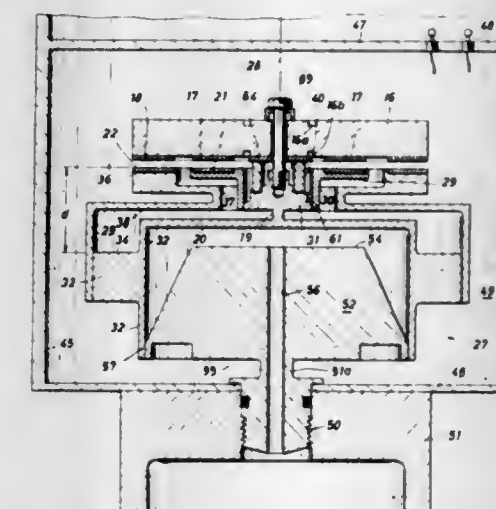
PRESSURE SENSORS

Leroy C. Delatorre, 10 Crestwood, Sugarland, Tex. 77478
Division of Ser. No. 89,162, Oct. 29, 1979, Pat. No. 4,322,775.
This application Aug. 3, 1981, Ser. No. 289,483

Int. Cl.³ H01G 7/00, 5/34

U.S. Cl. 361-283

21 Claims



14. A capacitor device for use in measuring pressure comprising:
 - housing means defining an enclosed pressure chamber wherein one wall of said chamber is a cylindrically shaped displaceable diaphragm having a central axis,
 - first support means attached to said one wall and aligned with said central axis,
 - said first support means including an upper support member, at least two annular capacitor plate means disposed concentrically on said upper support member with respect to said central axis,
 - said first support means including a lower support member disposed between said upper support member and said one wall,
 - annular capacitor plate means disposed on said lower support member in a capacitance relationship to one of said annular capacitor plate means on said upper support member to define a reference capacitor means,
 - second support means attached to said housing means,

said second support means including a second support member disposed between said upper support member and said one wall,
annular capacitor plate means disposed on said second support member in a relationship to the other of said capacitor plate means on said upper support member to define a measurement capacitor means.

4,434,452

METALLIZED FILM CAPACITOR

Takeshi Hamabe, Nishinomiya; Hidekazu Wada, Takaoka; Mikio Naruse, Takaoka, and Toshiyuki Nishimori, Takaoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

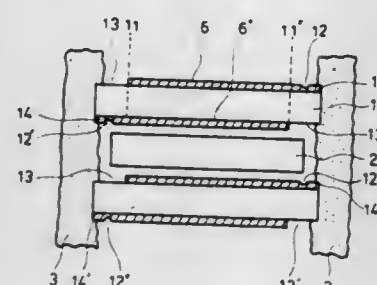
Filed Jan. 15, 1981, Ser. No. 225,440

Claims priority, application Japan, Jan. 18, 1980, 55-4871

Int. Cl.³ H01G 1/015, 1/14, 1/17, 7/00

U.S. Cl. 361-304

12 Claims



1. A metallized film capacitor comprising:

- a number of first insulating foil film segments coated with metal layers on both surfaces thereof, said metal layers with a same pattern on same sides of said first insulating foil film segments constituting a first group of electrode segments electrically separated from each other, and said metal layers with another same pattern on the other sides of said same sides of said first insulating foil film segments constituting a second group of electrode segments electrically separated from each other,
- a number of second insulating foil film segments, each one thereof being disposed between each one of said first insulating foil film segments in a stacked form, and
- a first and a second metal contact layers respectively disposed in contact with said first and second electrode segment groups at side edges thereof forming a first fusing portion at said side edges,
- said metal electrode layers each including a second fusing portion formed as an integral fusing portion extending along and adjacent and substantially parallel to said first and said second metal contact layers,
- said first fusing portion and said second fusing portion forming a series connection with each other, and
- at least one of said first fusing portion and said second fusing portion being electrically cut off, when dielectric breakdown occurs between respective pairs of confronting metal electrodes layers on said first insulating foil film segments, such that the breakdown electrically separates at least one metal electrode layer of one pair among said respective pairs of the confronting metal electrode layers from the respective electrode segment group among said first and said second electrode segment groups.

4,434,453

GLARE-ELIMINATING TASK LIGHTING FIXTURE

James Campbell, 50 Grove Street Extension, Sewickley, Pa. 15143

Filed Jun. 1, 1982, Ser. No. 384,651

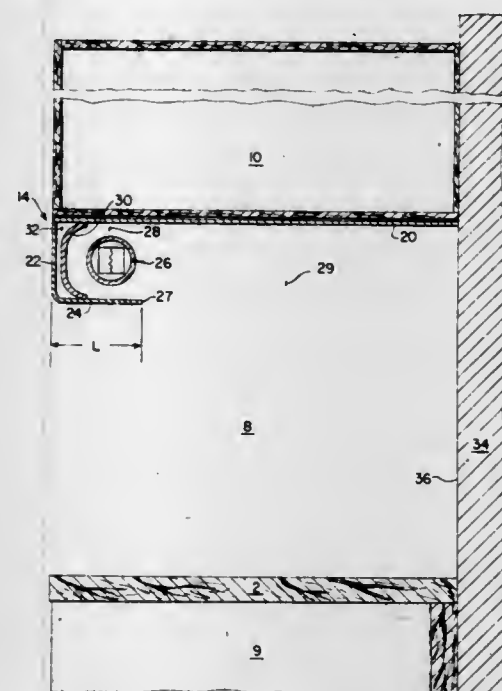
Int. Cl.³ A61G 13/00

U.S. Cl. 362-33

19 Claims

- 1. A task lighting fixture comprising a substantially light opaque upper wall,

a front wall depending from said upper wall,
a re-entrant, lower wall projecting generally inwardly from said front wall in spaced underlying relationship with respect to said upper wall,
at least one light source receiving recess defined between said walls, and



said lower wall being of sufficient length that when said fixture is hung with said lower wall in a generally horizontal position, no significant portion of the light emitted by a light source disposed in said recess is projected directly downwardly to a work station underlying said fixture.

4,434,454

ACTIVE LIGHTING SYSTEM INCLUDING LIGHT CONTROL KEYBOARD

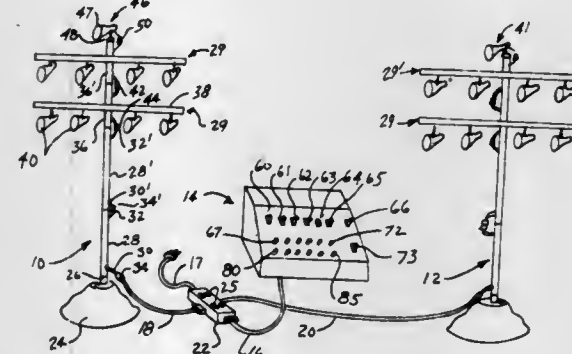
J. Michael Day, 18515 Allendale, Saratoga, Calif. 95070

Filed Feb. 6, 1981, Ser. No. 231,960

Int. Cl.³ F21V 19/00

U.S. Cl. 362-238

6 Claims



- 1. An active stage lighting system of the type used to accompany musical performances and the like comprising a plurality of multicolored spotlights;
support means for supporting said spotlights at selected elevations and for allowing said spotlights to be aimed in selected directions, said support means including a base, one or more tubular riser segments, and one or more spotlight carrying modules, all of which may be interconnected to form a single unit, said riser segments and said spotlight carrying modules being provided with lengths of multi wired electrical cable, the respective ends of which include electrical connectors such that when the several cables are connected together, electrical circuits are completed between said keyboard unit and said spotlights, all

of the length of each said electrical cable being contained within a corresponding riser segment and the connectors attached to each end thereof being disposed within and affixed to the end portions of the riser segment such that when one riser segment is mated with another, the corresponding connectors are also mated together.

4,434,455

DIFFERENTIAL LIGHT EMISSION TRANSLUCENT LIGHT BOWL AND CAP

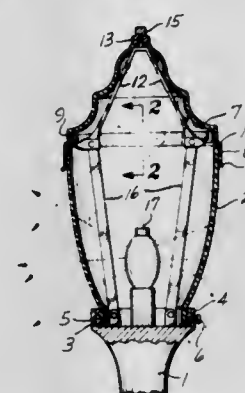
William H. Merritt, 3812 - 32nd Ave. West, Seattle, Wash. 98199

Filed May 1, 1981, Ser. No. 259,404

Int. Cl.³ F21V 7/00

U.S. Cl. 362-307

1 Claim



- 1. A lighting device adapted to be mounted on a lamppost, comprising a light source, and an enclosure composed of a lower bowl portion in the shape of an upwardly flaring body of circular cross section enclosing said light source and having an open upper end located a substantial distance above said light source and a generally conical cap separate from said lower bowl portion and having its base closing the upper end of said lower bowl portion, said light source projecting light rays to the inner surface of said generally conical cap without obstruction, said bowl and said cap being made of the same kind of plastic material having the same color characteristics, the plastic material of said lower bowl portion containing pigment so that said lower bowl portion is highly translucent but not transparent and the material of said cap containing a much greater proportion of the same pigment as in the lower bowl portion material so that said cap is slightly translucent, much less translucent than the material of said lower bowl portion, thereby effecting transmission of a much greater portion of the light emanating from said light source through said lower bowl portion than through said cap and effecting reflection downward from the interior of said generally conical cap of light projected upward from said light source to pass through the wall of said lower bowl portion, for producing a strong downward illumination and a faint upward illumination.

4,434,456

LUMINAIRE BIRDSHIELD

Carl D. Taylor, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,809

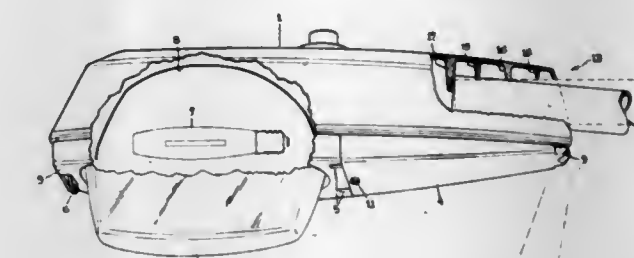
Int. Cl.³ F21V 17/00

U.S. Cl. 362-374

6 Claims

- 1. A luminaire comprising a housing having slipfitter accommodating a range of pipe sizes as support entering through the back and a birdshield closing off the back end,
said birdshield comprising a substantially flat piece of moderately stiff and resilient material cut to a pattern fitting into the rear of the luminaire housing and having a hole therethrough proportioned to receive a size of pipe accommodated in said slipfitter,
and means holding said birdshield captive in said luminaire comprising bent-out tabs on each side of said piece retained to the piece along their top edge and leaning for-

ward relative to the plane of the piece, said tabs being disposed to fold in under hook means in said housing and



then snap out and engage the hook means when the birdshield is inserted up into the luminaire.

4,434,457

NONSATURATING ELECTRONIC BALLAST FOR GAS DISCHARGE TUBES

Guido Arena-Ochoa, Colina de la Ilusion #49, Fraccionamiento Bulevares, Edo.d, Mexico

Filed Oct. 27, 1981, Ser. No. 315,421

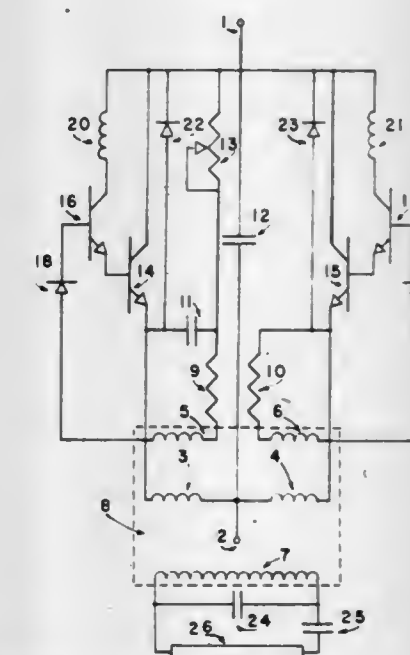
Claims priority, application Mexico, Oct. 27, 1980, 184492

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ H02M 7/537

U.S. Cl. 363-133

6 Claims



- 1. A pulse generator circuit comprising first and second terminals connectable to a unidirectional power source;
a transformer having a nonsaturating core and five magnetically coupled windings on said core including first and second primary windings and first, second and third secondary windings,
one end of each of said primary windings being connected to said first terminal,
said first and second secondary windings having substantially the same number of turns;
said third secondary winding being connectable to a load device;
first feedback circuit means for providing negative feedback comprising
a first signal transistor having its collector connected to said second terminal;
a resistor;

a capacitor;
 a first forward biased slow-recovery diode connected to the base of said first signal transistor and to one end of said first secondary winding; and
 a first power transistor having its base connected to the emitter of said first signal transistor, having its emitter connected through said capacitor and said first resistor to the other end of said first secondary winding, and having its collector connected to said second terminal; and
 second feedback circuit means for alternately providing positive and negative feedback comprising
 a second signal transistor having its collector connected to said second terminal;
 a second resistor;
 a second slow recovery diode connected to the base of said second signal transistor and to one end of said second secondary winding; and
 a second power transistor having its base connected to the emitter of said second signal transistor, having its emitter connected through said second resistor to the opposite end of said second secondary winding, and having its collector connected to said second terminal.

4,434,458

AUXILIARY CHANNEL FOR DIRECT DIGITAL CONTROL SYSTEM

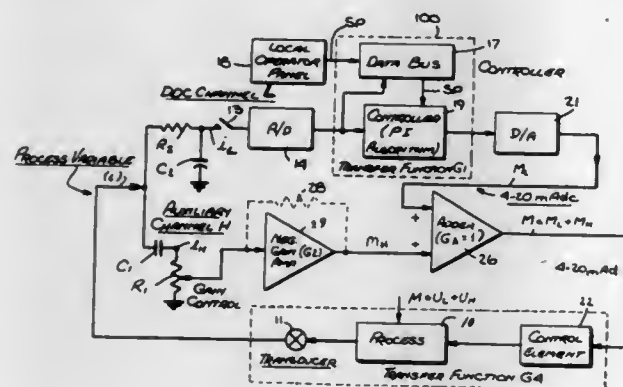
Masahiro Kazahaya, Southampton, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 16, 1981, Ser. No. 305,036

Int. Cl.³ G05B 21/02; G06F 15/46

U.S. Cl. 364-138

8 Claims



1. In combination with a direct digital control system provided with a digital computer common to a plurality of process control loops, each having a transducer sensing a respective process variable to produce an input analog signal dependent thereon, and a final control element to correct the process and responsive to an output analog signal derived from the output of the computer in which each process variable is compared with a set point, the input analog signals from the transducers being sequentially applied to the input of the computer at a relatively slow sampling rate through an analog-to-digital converter; an auxiliary channel associated with a selected loop included in the system to expand its frequency response beyond the response dictated by the slow sampling rate, said auxiliary channel comprising means responsive only to the high-frequency component of the analog input signal from the selected loop to produce an output analog signal proportional thereto which is combined in an adder with the output analog signal derived from the computer to produce a composite signal which is applied to the final control element to effect correction of the process throughout the full range of slow and rapid process changes.

4,434,459 DATA PROCESSING SYSTEM HAVING INSTRUCTION RESPONSIVE APPARATUS FOR BOTH A BASIC AND AN EXTENDED INSTRUCTION SET

Charles J. Holland, Northboro; Steven Wallach, Framingham, and Carl J. Alsing, Hopkington, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1980, Ser. No. 143,982

Int. Cl.³ G06F 9/00

U.S. Cl. 364-200

8 Claims

1. A data processing system having a processor unit which includes means for supplying instructions and a main memory containing a plurality of segment storage regions, said system including
 a plurality of segment identification registers each associated with one of said segment storage regions and capable of storing a 32-bit double word which points to a memory management table related to said region, said segment identification registers being located externally of said main memory;
 accumulator storage means for storing a starting address of a block of double words stored in main memory;
 instruction decode means connected to said instruction supplying means and responsive to an instruction therefrom requiring the storage of said block of data words into said segment identification registers for providing selected control signals;
 means connected to said instruction decode means, to said accumulator storage means, to said main memory and to said segment identification registers and responsive to said selected control signals for accessing the first word of said block of double words at said starting address in said main memory and for loading the double words in said block into said plurality of memory management registers, said double words being loaded sequentially into said registers in a preselected order.

4,434,460

HIERARCHICAL COMPUTER SYSTEM FOR GENERATING SELECTIVE OUTPUT SIGNALS IN RESPONSE TO RECEIVED INPUT SIGNALS

Karl-Gunnar Drakenborn, Alvsjo; Mats A. Enser, Lidings; Kurt G. E. Grebner, Stocksund, and Erik I. Wallmark, Lidings, all of Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

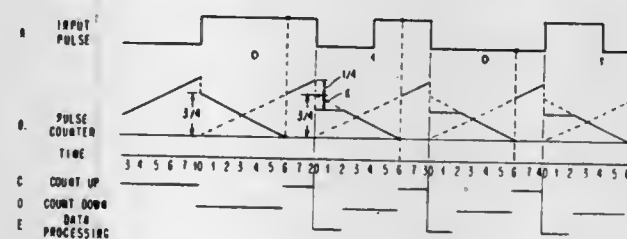
Filed Jun. 18, 1980, Ser. No. 160,760

Claims priority, application Sweden, Jun. 18, 1979, 79053500

Int. Cl.³ G06F 3/04

U.S. Cl. 364-200

7 Claims



1. A computer system wherein a microcomputer comprising an arithmetic unit and a plurality of registers is connected to a signal source and a computer, said microcomputer is programmed for decoding an input signal from said signal source composing the decoded signal into a message, and transmitting the message to said computer, the improvement comprising:
 said microcomputer comprising means for detecting the change in level of the input signal;
 said microcomputer comprising means for decrementing which is operatively connected to a first of said registers and responsive to said detecting means, wherein said decrementing means decrements the contents of said first

register from a first predetermined value commencing $n+1$ clock cycles after the input signal changes level, whereby n clock cycles are available to the microcomputer to compose said message;
 said microcomputer unit further comprising a means for loading said first register with a second predetermined value from a second of said registers when said first register means reaches zero, a means responsive to the detection means for incrementing said first register, said second predetermined value is incremented until the input signal again changes level, and means responsive to the detection means to generate a new first predetermined value and a new second predetermined value from the final incremented value in said first register.

4,434,461

MICROPROCESSOR WITH DUPLICATE REGISTERS FOR PROCESSING INTERRUPTS

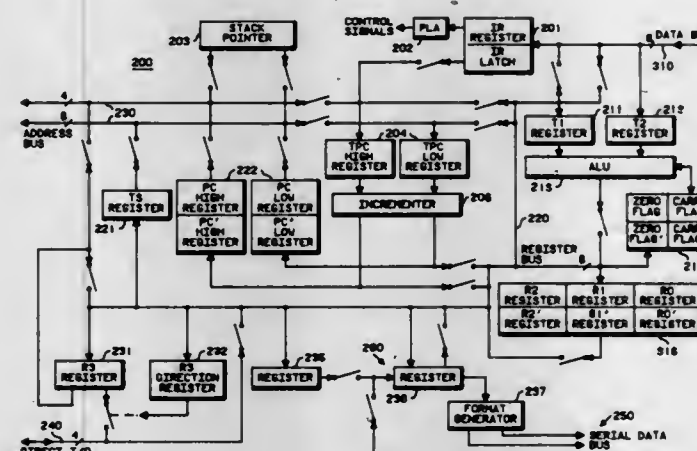
Larry C. Puhl, Sleepy Hollow, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,302

Int. Cl.³ G06F 9/46, 7/14

U.S. Cl. 364-200

9 Claims



1. An improved microcomputer coupled to at least one interrupt signal from a signal source and a clock signal from a signal source, said microcomputer having at least one input signal and at least one output signal and including clock and interrupt control logic coupled to the clock and interrupt signals, respectively, said microcomputer comprising:
 data bus means having a plurality of data bus lines for carrying binary signals;
 instruction register means having a plurality of signals and being connected directly to the data bus lines for receiving signals therefrom;
 programmable logic means coupled to the instruction register means for providing a plurality of control signals in response to the instruction register means signals;
 register bus means having a plurality of register bus lines for carrying binary signals;
 means for intercoupling the register bus lines and data bus lines in response to predetermined ones of the programmable logic means control signals;
 address bus means having a plurality of address bus lines for carrying binary signals;
 program counter register means having a plurality of signals and further including duplicate program counter register means coupled in parallel therewith and having a plurality of signals, said program counter register means being switchably connected to the address bus lines in response to predetermined ones of the programmable logic means control signals for applying signals thereto, and said duplicate program counter register means being switchably connected to the address bus lines in place of the program counter register means in response to the interrupt signal; incrementing means;
 temporary program counter register means having a plural-

ity of signals, said temporary program counter register means switchably connected to the address bus lines or register bus lines in response to predetermined ones of the programmable logic means control signals for receiving signals from the address bus lines and register bus lines, said incrementing means coupled to the temporary program counter register means for incrementing the temporary program counter register means signals in response to predetermined ones of the programmable logic means control signals and applying the incremented temporary program counter register means signals to the program counter register means and the duplicate program counter register means, said incremented temporary program counter register means signals further being switchably connected to the register bus lines in response to predetermined ones of the programmable logic means control signals;

a plurality of general purpose register means each having a plurality of signals and duplicate general purpose register means coupled in parallel therewith and having a plurality of signals, each general purpose register means switchably connected to the register bus lines in response to predetermined ones of the programmable logic means control signals for applying signals to the register bus lines and directly connected to the register bus lines for receiving signals from the register bus lines in response to predetermined ones of the programmable logic means control signals, and each duplicate general purpose register means switchably connected to the register bus lines in place of its corresponding general purpose register means in response to the interrupt signal; and

first and second flip-flop means each storing corresponding condition signals and having duplicate flip-flop means coupled in parallel therewith, the condition signals being coupled to arithmetic logic means, and said duplicate flip-flop means being switchably coupled in place of the corresponding first and second flip-flop means in response to the interrupt signal;

arithmetic logic means having first and second register means each having a plurality of signals, the first register means being directly connected to the data bus lines for receiving signals therefrom and the second register means being directly connected to the register bus lines for receiving signals therefrom, said arithmetic logic means combining the first and second register means signals according to predetermined combinatorial functions selected by corresponding predetermined ones of the programmable logic means control signals and storing predetermined binary states of the condition signals in the first and second flip-flop means depending on the condition of said combined first and second register means signals, and said combined first and second register means signals further being switchably applied to the register bus lines in response to a predetermined one of the programmable logic means control signals.

4,434,462

OFF-CHIP ACCESS FOR PSUEDO-MICROPROGRAMMING IN MICROPROCESSOR

Karl M. Gutttag, and Jerry R. Vanaken, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1980, Ser. No. 210,107

Int. Cl.³ G06F 9/30, 13/06

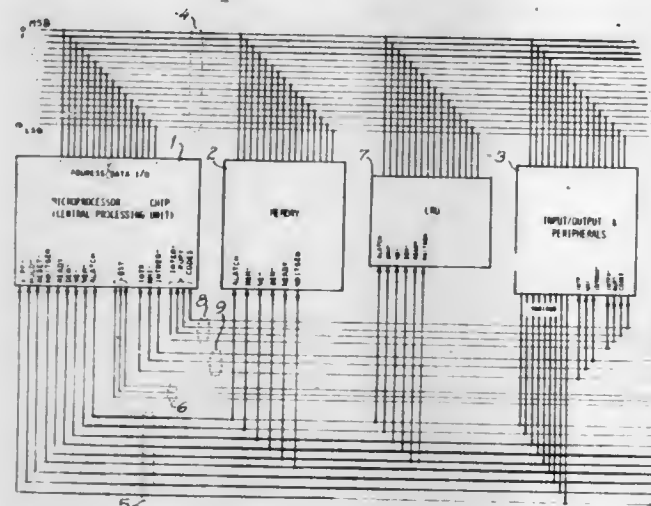
U.S. Cl. 364-200

11 Claims

1. A microprocessor comprising:
 a main memory containing a plurality of locations defined by an address space, the main memory having an address input, a data output and a control input,
 a central processing unit in a semiconductor unit separate from said main memory, said central processing unit including an arithmetic logic unit, a plurality of registers, a program counter, an instruction register for receiving

program instructions addressed by said program counter for execution by the central processing unit, such program instructions being of a predetermined instruction set as stored in said main memory, and control means responsive to the program instructions of said instruction set in said instruction register to produce a plurality of controls for defining the operation of the central processing unit and for generating memory controls,

bus means connecting terminals of the central processing unit to the address input and data output of said main memory to transfer addresses from the program counter of the central processing unit to said main memory and to transfer instructions from said main memory to the central processing unit, the number of bits of said program counter and said bus means for such addresses defining the size of said address space, said bus means also transferring said memory controls from said control means to said control input of said main memory,



a first storage means containing sequences of program instructions in a plurality of memory locations defined by a first set of addresses, and means coupling addresses from said program counter to the first storage means to fetch instructions while disabling said main memory by said memory controls whereby the first set may overlap said address space,

a separate second storage means containing sequences of program instructions in a plurality of memory locations defined by a second set of addresses, and means coupling addresses from said program counter to the second storage means to fetch instructions while disabling said main memory by said memory controls, whereby the second set may overlap said address space,

and means initiated by the control means in response to predetermined program instructions, for transferring sequences of program instructions from such first or second storage means to said instruction register, such sequences being instructions of said instruction set.

4,434,463

MULTIPROCESSOR TOPOLOGY WITH PLURAL BASES FOR DIRECTLY AND INDIRECTLY COUPLING ADDRESSES AND RELAY STATIONS

Jean-Paul Quinquis, rue de Cornic, Perros Guirec, France 22700, and Michel A. Devault, 22, rue de Bourgogne, Lannion, France (22300)

Filed Nov. 26, 1980, Ser. No. 210,819

Claims priority, application France, Nov. 30, 1979, PV 7929571

Int. Cl.³ G06F 15/16

U.S. Cl. 364-200

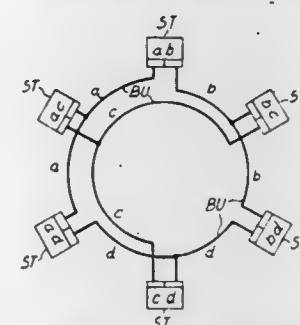
6 Claims

1. A multiprocessor system comprising: a plurality of P buses having addresses from 1 to P, P being an integer at least equal to 4;
- a plurality of P (P-1)/2 stations, each including a processor and connected to a pair of connecting buses, the bus pair

being different for each processor station and each bus being connected to (P-1) processor stations, means for connecting each processor station directly by its connecting bus pair to 2 (P-2) other processor stations and for connecting each processor station indirectly to (P-2) (P-3)/2 other processor stations through one single processor station acting as a relay station;

the buses being respectively assigned single address words; each processor station being assigned an address formed by the grouping in any order the single address words of the two buses forming the pair of connecting buses for the particular processor station;

means in a calling processor station for transmitting to an addressee processor station data and the two address words assigned to said address processor station;



means in a processor station for respectively deriving first and second responses in response to receipt by the processor of the two address words being the address of (a) said processor station formed by the same two address words, and (b) the address of said processor station and the two address words having only a single address word in common,

said processor station including means respectively responsive to the first and second responses for activating the processor station to function as the addressee processor station and as a relay processor station, the processor station, when functioning as a relay station, including means for connecting together the two buses of the pair of connecting buses thereof.

4,434,464

MEMORY PROTECTION SYSTEM FOR EFFECTING ALTERATION OF PROTECTION INFORMATION WITHOUT INTERVENTION OF CONTROL PROGRAM

Hitoshi Suzuki, Owariasahi; Shigekatsu Takahashi, Ayase, and Yoshiki Fujioka, Owariasahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

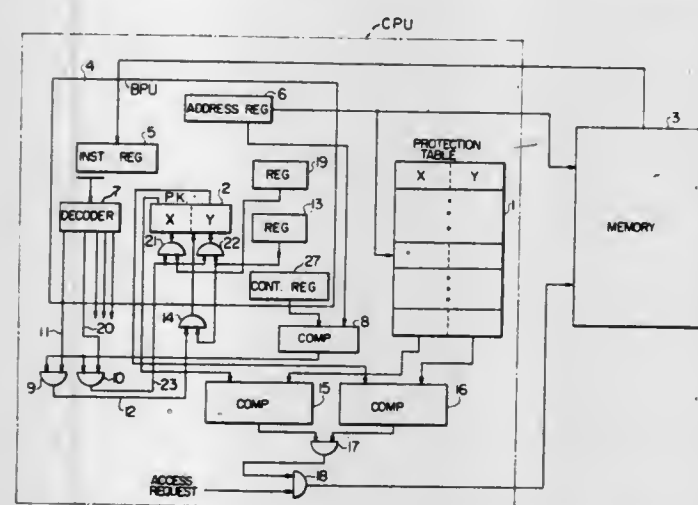
Filed Mar. 31, 1981, Ser. No. 249,500

Claims priority, application Japan, Apr. 1, 1980, 55-42126

Int. Cl.³ G06F 9/46

U.S. Cl. 364-200

12 Claims



1. A memory protection system for use in a data processing

system including a main memory having a plurality of memory areas accessed by respective memory addresses and a program implemented processor for accessing said main memory by application of selected addresses thereto, comprising:

first storage means for storing therein first predetermined protection information for each of the respective memory areas of said main memory;

second storage means for storing therein second predetermined protection information for a selected program to be performed by said processor;

first detecting means for detecting that an instruction to be executed by said processor is a predetermined instruction;

second detecting means for detecting that an address for access to said main memory specified by said predetermined instruction is a predetermined address;

determining means connected to said first and second storage means for collating the first protection information stored in said first storage means corresponding to one of the memory areas accessible by an address stored at said predetermined address in said main memory with the second protection information stored in said second storage means, thereby to determine whether the memory access is to be allowed or inhibited; and

altering means responsive to outputs of said first and second detecting means for altering the second protection information stored in said second storage means, when said first detecting means detects that an instruction to be executed is a predetermined instruction and said second detecting means detects that the address specified by the predetermined instruction is a predetermined address.

4,434,465

SHARED MICROINSTRUCTION STATES IN CONTROL ROM ADDRESSING FOR A MICROCODED SINGLE CHIP MICROCOMPUTER

Kevin C. McDonough; John W. Hayn, and Jeffrey D. Bellay, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,981

Int. Cl.³ G06F 9/22

U.S. Cl. 364-200

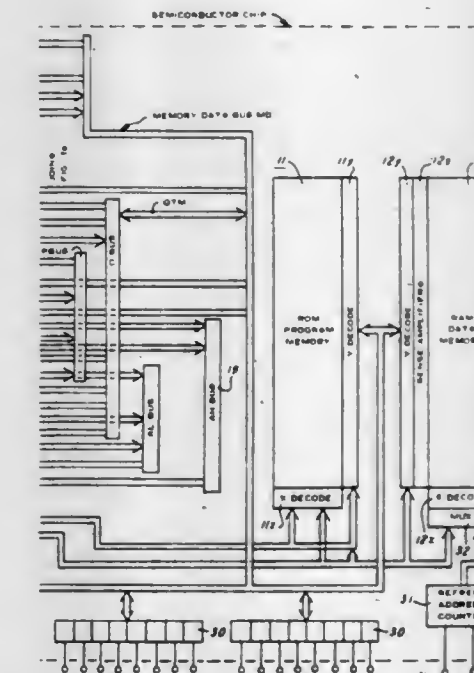
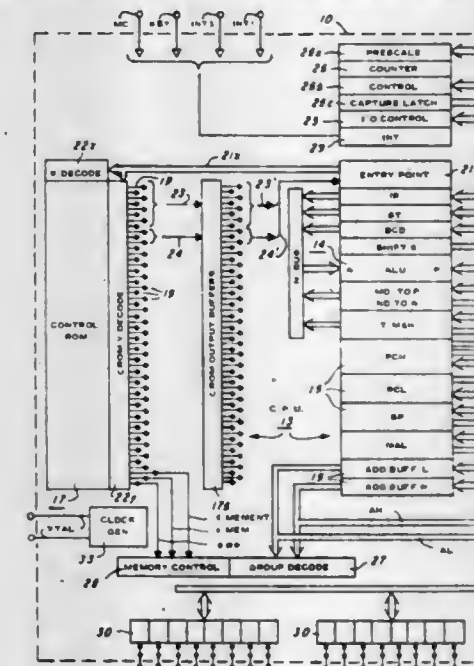
9 Claims

1. A microprocessor device comprising: a semiconductor integrated circuit having an arithmetic/logic unit, a plurality of registers for storing data and memory addresses, busses for interconnecting the arithmetic/logic unit and the registers, means for providing instruction words to an instruction register, and control means having a control means output which is connected to said arithmetic/logic unit, said busses, and said registers, said control means for generating commands for controlling operation of the arithmetic/logic unit and accessing the busses and registers in response to said instruction words applied to an input of the control means from the instruction register; and clocking means coupled to said arithmetic/logic unit, said registers, said busses and said control means for defining repetitive microcode state times, all within the integrated circuit,

and wherein the control means includes a read-only-array having an address input and a multi-bit microcode command output connected to said control means output, the control means including means for producing a multi-bit microcode command at said control means output during each microcode state time, and the control means includes addressing means receiving said instruction word from said input and applying sequences of addresses to said address input, one address in each microcode state time, said sequences being selected by said instruction word whereby each sequence defines an operation which is determined by such instruction word, and each sequence including a plurality of microcode states,

said addressing means providing said sequences of addresses in response to said instruction word in the instruction register whereby said addressing means for each said sequences selects the addresses of a first subset of micro-

code states, which defines the instruction operand mode, from a first set of microcode states which defines a plurality of operand addressing modes, and then selects the addresses of a second subset of microcode states, which defines the arithmetic/logic function of the instruction,



from a second set of microcode states defining a plurality of arithmetic/logic functions, a plurality of the addresses of the subsets of the first set sharing a single address which defines a single microcode state, the operand addressing modes providing alternative methods of selecting operands for application to inputs of the arithmetic/logic unit.

4,434,466

APPARATUS FOR CONTROLLING THE ACCESS OF PROCESSORS AT A DATA LINE

Paul Friedli, Zurich, and Hans G. Süss, Udligenswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Oct. 13, 1981, Ser. No. 310,589

Claims priority, application Switzerland, Oct. 20, 1980, 7797/80

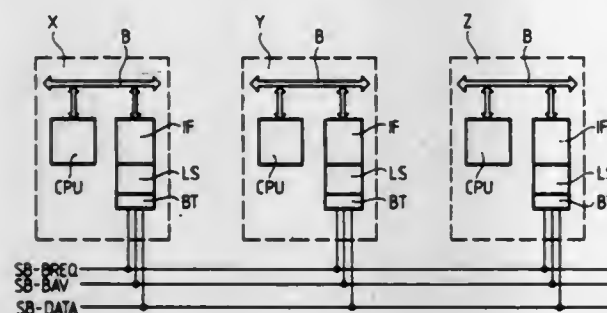
Int. Cl.³ G06F 15/00

U.S. Cl. 364-200

4 Claims

1. An apparatus for controlling the access of microprocessors at a data line, comprising: a plurality of microprocessors;
- a data line;

an input-output interface component provided for each microprocessor for connecting each related microprocessor with the data line;
 each input-output interface component reading an access request of its related microprocessor;
 a respective logic switching circuit operatively connected with the input-output interface component of the related microprocessor;
 said logic switching circuit having a request output delivering a signal representative of the access request;
 each said logic switching circuit having a priority counter and a priority output signalling a priority with respect to the access of the related microprocessor;
 a single first line for all of said logic switching circuits;



a single second line for all of said logic switching circuits;
 a respective first bus driver for each logic switching circuit for connecting the request outputs of each of said logic switching circuits with each single first line;
 a respective second bus driver for each logic switching circuit for connecting the priority outputs of each of said logic switching circuits with said single second line; and
 each said logic switching circuit containing a first reading input coupled with the first bus driver for receiving a signal representative of the signal state of the single first line and a second reading input coupled with the second bus driver for receiving a signal representative of the signal state of the single second line.

4,434,467

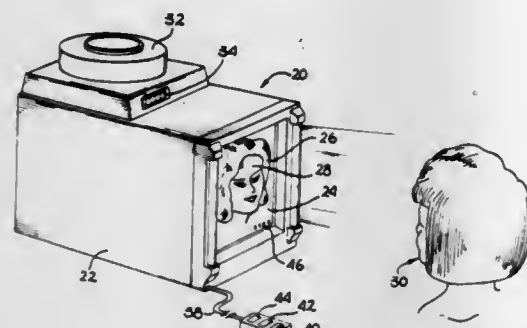
HAIR COLORING CALCULATOR

Dale Scott, 71925 Kempton, Rancho Mirage, Calif. 92270
 Continuation-in-part of Ser. No. 29,575, Apr. 12, 1979, Pat. No. 4,258,478, which is a continuation-in-part of Ser. No. 904,237, May 9, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 248,825

Int. Cl.³ G06F 15/20

U.S. Cl. 364-400

19 Claims



1. An apparatus for designating hair coloring products which will change an existing hair color to a new hair color, comprising:
 keyboard means for entering designations representative of an existing and a new hair color;
 electronic means responsive to said keyboard means for converting said designations of the existing hair color into

a first coded signal and for converting said designations of the new hair color into a second coded signal;
 storage means for storing a plurality of formulations of hair coloring products which will change any of a plurality of existing hair colors to any of a plurality of new hair colors;
 output means responsive to said first and second coded signals for obtaining the formulation from said storage means corresponding to said first and second coded signals, whereby the hair coloring products which will change the existing hair color to the new hair color will be provided.

4,434,468

AUTOMATIC POSITION CONTROL FOR A VEHICLE SEAT

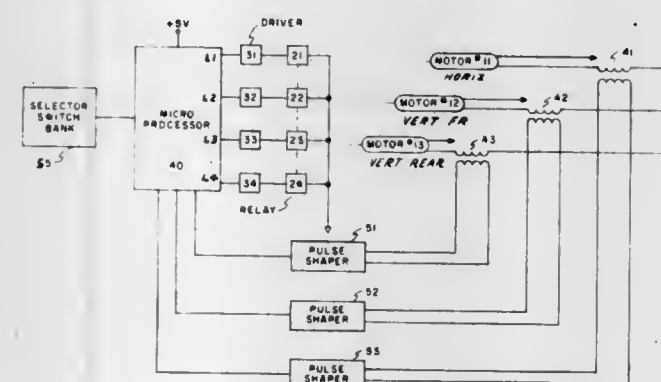
Gary R. Caddick, Lake Orion, and Philip Q. Guest, Jr., Birmingham, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 84,108, Oct. 12, 1979. This application Jul. 23, 1981, Ser. No. 286,236

Int. Cl.³ A47C 1/02; G06F 15/20

U.S. Cl. 364-424

5 Claims



1. Apparatus for controlling the position of a vehicle seat within a powered seat mechanism, said apparatus including a reversible motor rotatable to drive said seat in either of two opposite directions within a travel path of limited extent, means for producing digital signals during rotation of the motor representative of the position of the seat within said travel path, logic and signal storage means including memory means receptive of said digital signals for storing therein data representative of the actual position of the seat within said travel path, manually selective position control means for setting said memory means to store data representative of a desired position within said travel path for said seat, position recall means manually actuable to signal said logic and storage means to initiate rotation of the motor to drive said seat toward the desired position, said signal producing means operative during rotation of said motor to produce signals for transmission to said memory means to control the drive of the seat to the desired position, and in which said memory means has the capacity for storing at least 2n digital signals where n is equal to the number of digital signals produced during the drive of the seat through the extent of the travel path in one direction.

4,434,469

AUTOMATIC SPEED CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Kouichi Suzuki, and Kazuyuki Mori, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 15, 1981, Ser. No. 225,370

Claims priority, application Japan, Jan. 18, 1980, 55-3655

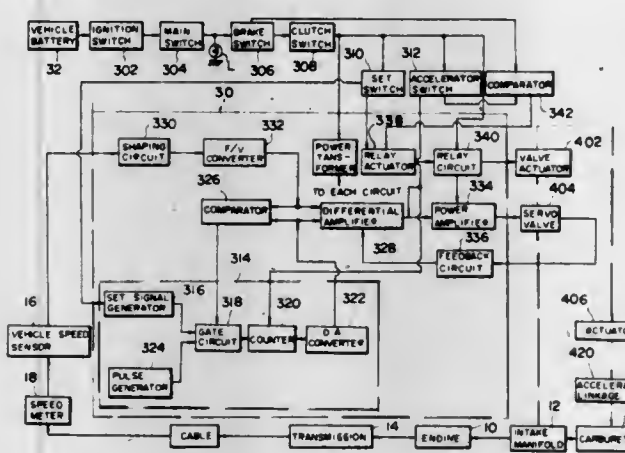
Int. Cl.³ B60K 31/00

U.S. Cl. 364-426

16 Claims

1. An automatic speed control system for an automotive vehicle comprising:

a vehicle speed sensor for determining a vehicle speed and generating a sensor signal having a value indicative of the determined vehicle speed;
 first means including presetting means for presetting a desired vehicle cruise speed to drive the vehicle at the preset cruise speed, said presetting means being manually operative for presetting said cruise speed as it is operated;
 second means having an operative and an inoperative condition, said second means manually operable, independently of said first means, for resetting the preset cruise speed in said first means and for changing the preset value in said presetting means, said second means accelerating the vehicle at a predetermined rate while it is in its operative condition, said second means activating said first means in response to said second means attaining said inoperative



condition thereby to change the preset value in said first means to a current vehicle speed determined when said second means attains said inoperative condition;
 a power circuit for supplying electric power to said first and second means while the system is operating;
 third means, responsive to a decelerating operation of the vehicle for generating an interruption signal for interrupting the operation of said control system; and
 fourth means, connected between said power circuit and said first means and associated with said second and third means, for cutting off the electric connection between said power circuit and said first means in order to make said control system inoperative in response to said interruption signal when said second means is in its operative condition.

4,434,470

SPEED MEASUREMENT SYSTEM WITH MEANS FOR CALCULATING THE EXACT TIME PERIOD OF A KNOWN QUANTITY OF SPEED PULSES

Robert C. Thomas, John A. Hornbuckle, and Richard J. Fatka, all of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 9, 1981, Ser. No. 232,615

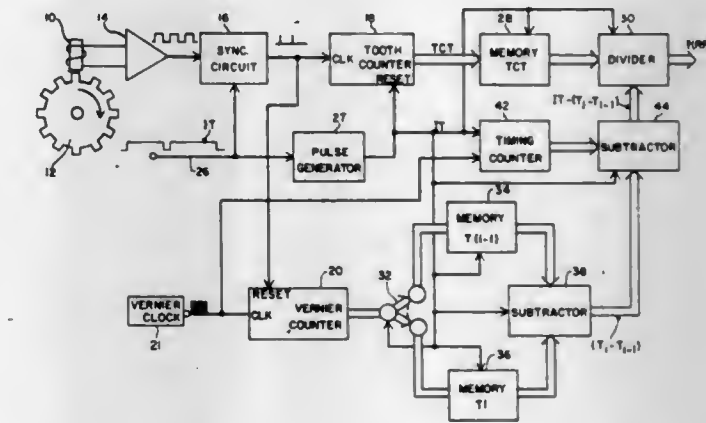
Int. Cl.³ G01P 3/481; G01B 7/14; G06F 15/20

U.S. Cl. 364-565

8 Claims

4. A speed measurement system for measuring rotational speed of a rotating member including a high speed clock and means producing a sampling pulse, said system comprising:
 means rotatable in proportion to the rotational speed of said rotating member producing signal proportional to the speed of said rotating member,
 a synchronizing circuit connected to receive said signal and to convert said signal to a series of sharp reset pulses of the same frequency as said signal,
 first and second counters connected to said synchronizing circuit and said high speed clock, respectively, such that the initiation of said sampling pulse enables said synchronizing circuit to output reset pulses to said first and second counters, receipt of each of said reset pulses by said second counter causing said counter to be reset to zero and

begin counting high speed counts anew, and said first counter counts said reset pulses,
 first and second memory means connected to said second counter with said first memory means connected to accumulate and hold clock counts occurring between the initiation of said sampling pulse and the previous reset pulse and said second memory means connected to accumulate and hold clock counts occurring between the termination of said sampling pulse and the previous reset pulse,
 first subtractor circuit means connected to said first and second memory means producing an output representing the difference in counts contained in said first and second memory means,



a divider circuit connected to said first counter and means responsive to the termination of said sampling pulse to transfer the counts of said first counter to said divider circuit,
 third counter means providing a count of the number of clock pulse counts during said sampling pulse,
 second subtractor circuit means subtracting the output of said first subtractor circuit from the output of said third counter means, and
 means connecting the output of said second subtractor circuit means to said divider circuit such that upon termination of said sampling pulse the output of said first counter is divided by the output of said second subtractor circuit means to produce a digital signal representing rotational speed of said rotating member.

4,434,471

TEXT PROCESSING DEVICE

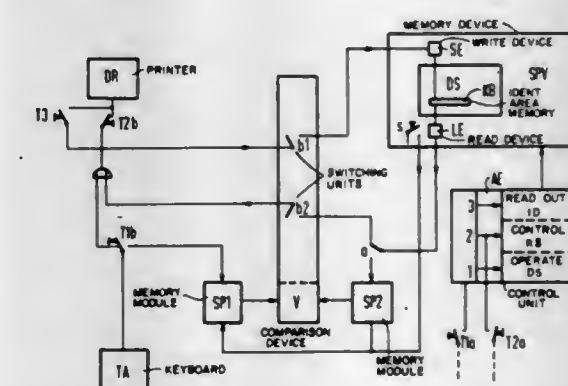
Eugen Hildinger, deceased, late of Soecking, Fed. Rep. of Germany (by Marianne Hildinger, heir), assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
 Filed Jul. 25, 1979, Ser. No. 60,418

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838063

Int. Cl.³ G06F 13/04

U.S. Cl. 364-900

2 Claims



1. In a text processing device for utilization with a text-proc-

essing typewriter having a data memory device into which information may be entered by means of the keyboard of the typewriter, and stored for subsequent operational control thereby of a data output device, such as the printer device of the typewriter;

the combination of a comparison device having switching means for selectively controlling and completing the connections between the typewriter keyboard, printer device, and memory device including a data memory having a memory area for containing identification data, a keyboard means for supplying identification data, from such area, to the input of the comparison device, means including said switching means for supplying identification data, manually input from the keyboard, to another input of the comparison device, said comparison device in the presence of coincidence of the compared identification data, effecting actuation of said switching means for completing connection between the memory device and the text processing typewriter

a control unit for said memory device for locating and evaluating data located in said identification area of said data memory, said switching means controlled by the control unit and by the read unit of said memory device as a function of the scanning position in the data memory thereof, for switching the output of said read unit over from the data output device to the comparison device upon the existence of a matching identification area in said data memory, and means for supplying data to said comparison device comprising respective memory registers which are preconnected to the comparison device, one of said memory registers receiving identification data from said data memory and the other of said memory registers receiving identification data manually input from said keyboard,

and further comprising a hand actuatable switching unit for further operation of the control unit for locating an identification area and for switching on or off the data output device.

4,434,472

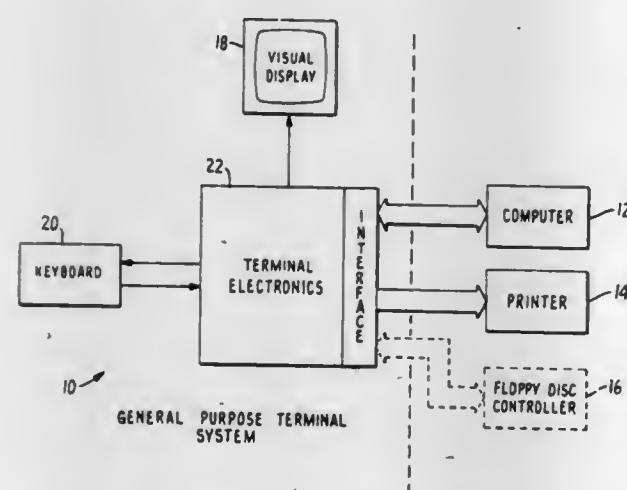
GENERAL PURPOSE DATA TERMINAL SYSTEM WITH DISPLAY LINE REFRESHING AND KEYBOARD SCANNING USING PULSEWIDTH MODULATION
Lee Kachun, Fremont, Calif., assignor to Falco Data Products, Sunnyvale, Calif.

Filed Dec. 29, 1980, Ser. No. 220,279

Int. Cl.³ G06F 3/02, 3/153

U.S. Cl. 364-900

12 Claims



1. Apparatus for line-by-line refreshing of a visual display, of the type used in a visual display system and included in a general purpose terminal to display visual information, the visual display system including, character and video generator means to convert display data into visual display information, a data bus, an address bus, visual display means responsive to the visual display information for displaying the visual display

information, and clock and synchronizing means for controlling the conversion and display of the display data in the character and video generator means and in the visual display means, wherein the visual information is displayed display-line-by-display-line to form the visual display, and wherein each line has a corresponding sequence of display data, the line-by-line refreshing apparatus comprising:

addressable memory means responsive to a first and second set of addresses for storing the sequences of display data corresponding to each of the display lines of the visual display during a write cycle and at addresses specified in the first set of addresses, and for supplying display data to the character and video generator means during a refresh cycle, which data are supplied from address locations that are specified in the second set of addresses;

first temporary storage and incrementing means connected to the data bus and to the addressable memory means for generating the second set of addresses, wherein the first temporary storage and incrementing means receive a starting address on the data bus for the sequence of display data corresponding to the display line to be refreshed and increment the starting address to form the second set of addresses, which second set includes the addresses for the data within the sequence of display data for the display line being refreshed; and

microprocessor means for supplying the sequences of display data and the first set of addresses to the addressable memory means via the data and address buses respectively during the write cycle, for maintaining a starting address table in which is arranged the starting addresses for each sequence of display data for each line of the visual display in the order in which each line is to be refreshed in the visual display means, and for supplying each starting address by way of the data bus to the first temporary storage and incrementing means during the refresh cycle, in accordance with the table, to refresh the visual display on a line-by-line basis and in real time.

4,434,473

METHOD AND DEVICE FOR STORING LOGIC REPRESENTATIONS OF PROCESS STATES
Ugon Michel, Plaisir, and Robert Herve, Versailles, both of France, assignors to Cii/Honeywell Bull (Societe Anonyme), Paris, France

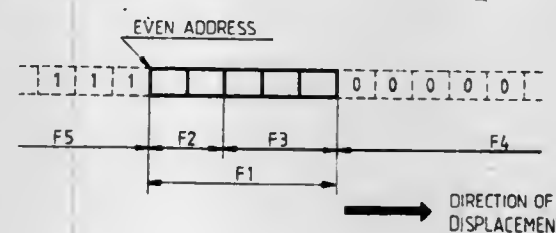
Filed Mar. 12, 1981, Ser. No. 242,922

Claims priority, application France, Apr. 9, 1980, 80 07913

Int. Cl.³ G06F 11/00

U.S. Cl. 364-900

14 Claims



1. A device for storing data representative of a state of a process capable of assuming different possible states, each process state being represented by a sequence of binary bits in a predetermined pattern, comprising a memory having a plurality of storage locations, each storage location having an address and the memory being initially unwritten such that the contents of storage locations following an initial address are all in a first logic state; means for addressing the memory; and means for writing data into the memory at locations selected by the addressing means, the writing means including means for writing data representative of an initial process state at consecutive storage locations beginning at the initial address and for thereafter writing subsequent data into the memory beginning at a successive address following the initial address such that a portion of previously written data comprises the

subsequent data and for writing into previously unwritten storage locations between the initial address and the successive address such that the contents of storage locations between the initial address and successive address are all in a second logic state opposite to the first logic state, the contents of all locations following the subsequent data being in the first logic state.

4,434,474

SINGLE PIN TIME-SHARING FOR SERIALY INPUTTING AND OUTPUTTING DATA FROM STATE MACHINE REGISTER APPARATUS

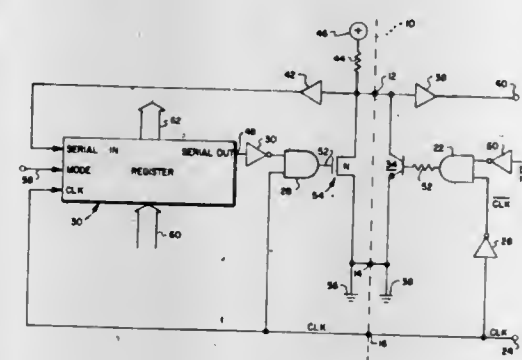
David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 15, 1981, Ser. No. 264,177

Int. Cl.³ G11C 11/40; H04L 7/02

U.S. Cl. 364-900

7 Claims



1. Apparatus for inputting data to and outputting data from a register through single terminal means relative a reference potential comprising, in combination:

single terminal means;

first means for supplying a clock signal having first and second logic states;

second means, connected to said first means and to said single terminal means for supplying input data bits to the single terminal means only when the clock signal is in the first logic state;

unitary register means having a plurality of a data bit storage stage, including serial data input means connected to said single terminal means, and independent serial data output means and clock means;

third means, connected between said serial data output means and said single terminal means and also connected to said first means, for supplying serial output data bits to said single terminal means when said clock signal is in the second logic state, the bits of the input and output data being supplied to said single terminal means in an interleaved fashion.

4,434,475

METHOD OF ENTERING CRITERIA FOR SELECTING RECORDS OF SPATIALLY RELATED DATA STORED IN AN INTERACTIVE TEXT PROCESSING SYSTEM

Rex A. McCaskill, John W. McInroy, and Paul D. Waldo, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,303

Int. Cl.³ G06F 3/153

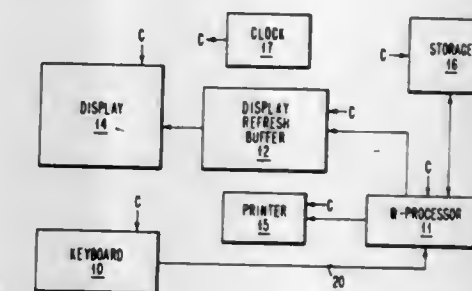
U.S. Cl. 364-900

6 Claims

1. In an interactive text processing system having a display device, a keyboard and a microprocessor including a memory for storing (1) programs; (2) conventional text data in one format; and (3) files of spatially related text type data in second format, where each said file of said spatially related text type data comprises a plurality of vector formatted multi-field records including one header record for defining each of said fields, and a plurality of data records and where said display device includes a display screen having a cursor positionable

by cursor move keys on said keyboard and a display format buffer for storing displayed data in said first format while said data is displayed on said screen and where a predetermined portion of a vector formatted record stored in said memory in said second format is converted from said second format to said first format prior to transfer to said display device for display as a line of text data on said screen and reconverted from said first format to said second format after transfer from said display device back to said memory for storage, an improved method for interactively entering field related selection criteria into said system to permit said system to identify each said data record in said predetermined file which meets said entered selection criteria, said method comprising the steps of:

- entering into said system through said keyboard an indication of said predetermined file from which said system is to identify said data records in accordance with said selection criteria to be entered by said operator;
- converting a first portion of said header record for said predetermined file identified in step (a) from said second format to said first format;
- transferring said first portion to said display buffer after being converted to said first format in step (b);
- displaying on said display device said first portion of said header record that was converted in step (b) and a predetermined number of qualifying rows with said cursor positioned at a predetermined position in the first row of said qualifying rows;
- moving said cursor horizontally by operation of one of said cursor move keys from said predetermined position established in step (d) to a first field position corresponding to the first said selection criterium to be entered;



- entering said first selection criterium through said keyboard into said system to update said display buffer to also display said first selection criterium in said first row;
 - moving said cursor vertically to the next said qualifying row by operation of another said cursor move key and horizontally in said next said qualifying row by said one key to a next said field position corresponding to the next said selection criterium to be entered;
 - entering said next said selection criterium through said keyboard into said system to update said display buffer to also display said next said selection criterium entered in said next said qualifying row;
 - repeating steps (g) and (h) until said selection criteria have been entered into each of said displayed predetermined number of qualifying rows;
 - activating said another said cursor move key to move said cursor vertically to a line on said display device following the last said row of said predetermined number of rows to cause said system to automatically update said display buffer to display one additional qualifying row for entry of further selection criterium by said operator; and
 - transferring said entered selection criteria from said display buffer to said memory after entry of all said selection criteria including the step of converting said entered criteria to said second format prior to storage in said memory;
- to permit said system to identify each said record in said predetermined file by comparing each said entered criterium with the data stored in the corresponding field of each said record.

4,434,476

MAGNETIC BUBBLE MEMORY DEVICE AND METHOD FOR OPERATING THE SAME

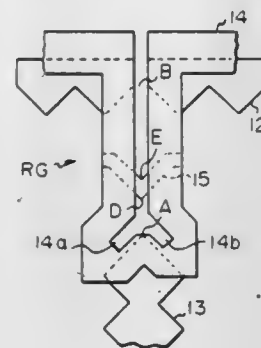
Kazuo Matsuda; Makoto Ohashi, both of Kawasaki; Yoshio Satoh, Yokohama; Tsutomu Miyashita, and Kazunari Komenou, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1982, Ser. No. 408,849

Claims priority, application Japan, Aug. 17, 1981, 56-127710; Aug. 17, 1981, 56-127711

Int. Cl.³ G11C 19/08

U.S. Cl. 365—12



1. A magnetic bubble memory device comprising a magnetic layer including a first region with an easy axis of magnetization extending in a certain direction, and a second region surrounding said first region and having an easy axis of magnetization substantially perpendicular to that of the first region, said first region defining a plurality of bubble propagation patterns, and
- a replicate gate including a stretch conductor pattern, to which an electric current is applied so as to stretch a bubble between said propagation patterns, and a cutting pattern formed in said second region between said propagation patterns and adapted to lower the bubble collapse field so as to cut the stretched magnetic domain.

4,434,477

MECHANICALLY ADDRESSED OPTICAL MEMORY

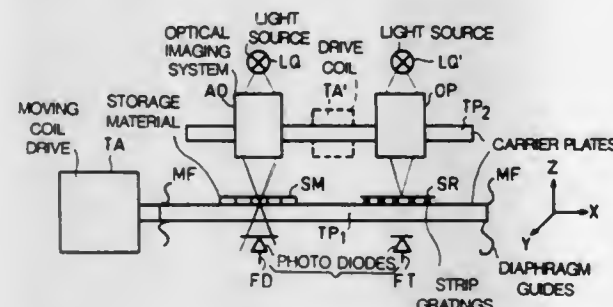
Ingolf Sander, and Bernhard Hill, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 883,497, Mar. 6, 1978. This application Nov. 13, 1979, Ser. No. 93,335

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710166

Int. Cl.³ G11C 13/04

U.S. Cl. 365—120



27. An apparatus for optical storage or retrieval of information comprising a memory for storing information in a form which can be read by a beam of radiation, means for producing from a beam of radiation a spot on said memory for reading said information stored therein or for writing information thereon, means for supporting said memory and said spot producing means for movement relative to each other so that given locations on said memory can be addressed by said spot, and means for determining the position of said memory relative

to said spot producing means, said determining means including two optical gratings oriented perpendicular to each other, said gratings being coupled to said memory for movement therewith, and means for detecting variations in the brightness of light passing through said gratings upon movement thereof and generating therefrom pulses representative of the distance moved.

4,434,478

PROGRAMMING FLOATING GATE DEVICES

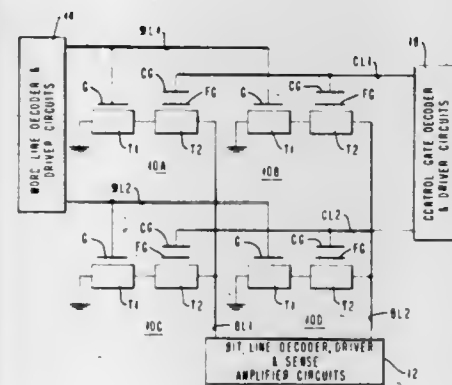
Herbert C. Cook, Georgia, and Ronald R. Troutman, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,479

Int. Cl.³ G11C 11/40

U.S. Cl. 365—185

17 Claims



17. A memory cell comprising a semiconductor substrate having spaced apart source and drain regions, a control gate, a floating gate insulated from said control gate and from said substrate so as to form a capacitive coupling factor therewith, said floating gate having a floating gate voltage-current characteristic wherein said current is maximum at a given floating gate voltage, means for applying a voltage to said control gate providing substantially said given voltage to said floating gate, and means for increasing said control gate voltage at a rate substantially equal to the decrease in voltage on said floating gate caused by current flow to said floating gate divided by said capacitive coupling factor.

4,434,479

NONVOLATILE MEMORY SENSING SYSTEM

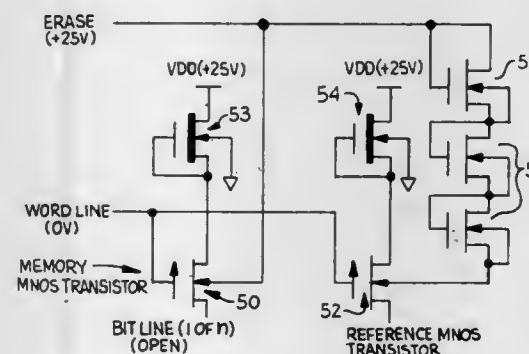
Yung J. Chen, Weston, Mass., and Eden Y. C. Mel, Huntington Beach, Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 2, 1981, Ser. No. 317,007

Int. Cl.³ G11C 11/40

U.S. Cl. 365—210

7 Claims



1. In a memory system comprising a nonvolatile memory transistor array, a self-tracking sensing apparatus comprising:

means to select a nonvolatile memory transistor to be sensed within the array; a reference nonvolatile transistor wherein the reference transistor is substantially identical to the memory transistors in the memory array; means to program the threshold voltage of the reference transistor to a lower level than that of an identically programmed memory transistors; and means to compare the programmed state of the memory transistor with the programmed state of the reference transistor.

4,434,480

AUTOMATIC LOADING APPARATUS

Akira Fukumitsu, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

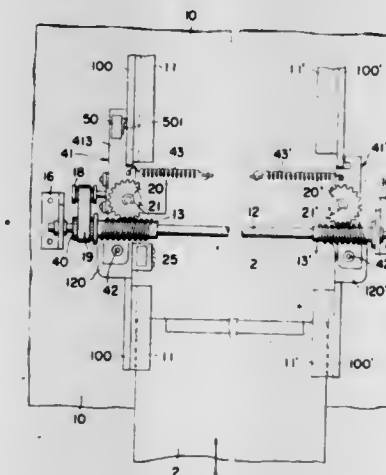
Filed Sep. 23, 1981, Ser. No. 304,886

Claims priority, application Japan, Oct. 2, 1980, 55-138138

Int. Cl.³ G11B 17/04

U.S. Cl. 369—77.2

3 Claims



1. In an apparatus for loading a disc recorded with information in a player of the type wherein a caddy containing said disc is inserted into the player along guide means, locking means is provided in said player for arresting the inserted disc, an empty caddy is withdrawn from said player leaving the arrested disc, and the information recorded on an arrested disc is then reproduced, the improvement comprising an electric motor, means connected to said motor for moving said caddy within said player, a first switch disposed to be actuated by said caddy when the same is mounted on said guide means, said first switch causing rotation of an electric motor in a direction which causes said moving means to insert said caddy into said player, a second switch mounted on said locking means to be actuated by said caddy when the same engages said locking means, said second switch causing rotation of said motor in a reverse direction which causes said moving means to withdraw said caddy from said player, and a third switch which is operated when said caddy is withdrawn from said player a predetermined distance for stopping said motor.

4,434,481

TRAVELING WAVE SURFACE ACOUSTIC WAVE TRANSDUCER

Minoru Toda, Princeton Junction, N.J., and Eiji Shima, Hachioji, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,936

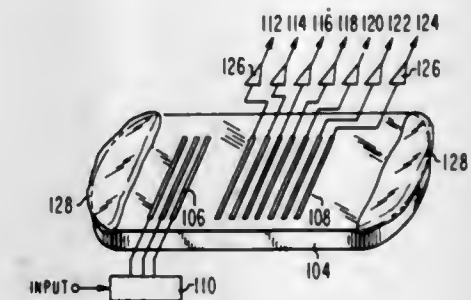
Int. Cl.³ G11B 3/00; H04R 17/04

U.S. Cl. 369—132

25 Claims

1. A surface acoustic wave device comprising: a support having a surface for supporting the propagation of surface acoustic waves; a traveling wave surface acoustic wave transducer including a plurality of electrode fingers arranged in an array on said surface of said support, said array being provided such

that each electrode finger is equally spaced from adjacent electrode fingers, said spacing effecting a periodicity, P; and a driver delay line including a plurality of taps, each of said electrode fingers being connected to respective ones of



said plurality of taps, said driver delay line having an input end coupled to a source of signals and a termination end; said signals from said source being coupled to said electrode fingers such that a surface acoustic wave propagates along said surface of said support in substantially one direction.

4,434,482

TONE ARM PICK UP SYSTEM

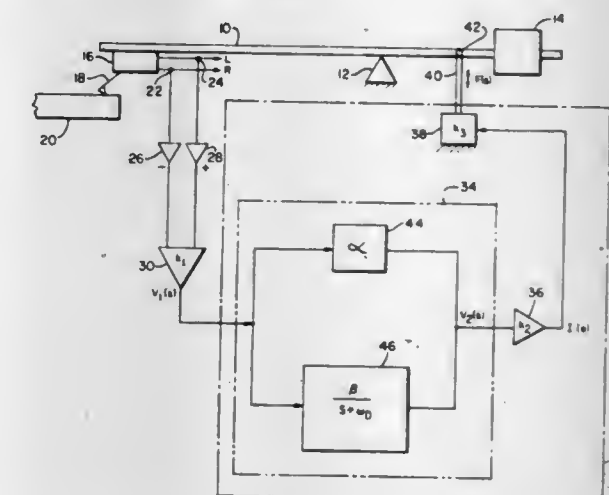
James M. Kates, Andover, Mass., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed May 29, 1979, Ser. No. 43,353

Int. Cl.³ G11B 3/10

U.S. Cl. 369—230

13 Claims



1. In a warp-compensating system for use in a record player, which system comprises a pivotable tone arm carrying a stylus of predetermined compliance adapted to track the grooves of a record, and means responsive to the velocity of said stylus relative to said tone arm to provide a corresponding velocity signal,

the improvement comprising a compensation network for generating an output signal responsively to said velocity signal, and

torque means coupled to said tone arm and responsive to said output signal for varying the tracking force applied to said record by said stylus,

said network and torque means being selected such that said output signal and the response of said torque means to said output signal modify at least the effective mass of said tone arm and stylus to provide to said tone arm and stylus a predetermined resonance quality factor and a resonant frequency between the upper limit of the normal record warp frequency range and at least the normal lower limit of the audio frequency range for such records.

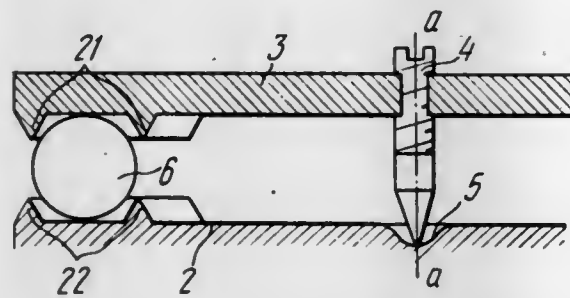
4,434,483 TONE ARM

Vladimir F. Vinogradov, ulitsa Gorkogo, 135, kv.17, Riga, U.S.S.R.

Filed Nov. 27, 1981, Ser. No. 325,586
Int. Cl.³ G11B 17/02, 21/16, 3/10

U.S. Cl. 369—255

8 Claims



1. A tone arm comprising: a lever installed in a manner allowing rotation thereof about vertical and horizontal geometrical axes; a pickup cartridge secured on an end of said lever; means for setting the tracking force of said pickup cartridge; a movable base integral with said lever; a fixed base arranged opposite said movable base and designed to be attached to a panel of an electric record player; a spherical thrust bearing in one of said bases; a vertical pivot with a pointed portion interacting with said spherical thrust bearing in one base, its other end being secured on said other base; a guiding element in one of said bases; a ball arranged between said bases, said ball cooperating with said guiding element in one of the bases and making contact with the second base at a point of contact; said vertical geometrical axis of rotation of said lever being extended through a point of interaction between said pointed portion of said pivot and said spherical thrust bearing; said horizontal geometrical axis of rotation of said lever being formed by a straight line passing through said point of interaction between said pivot and the spherical thrust bearing, and through said point of contact.

4,434,484

STABILIZER FOR RECORD DISCS

Yoshihiko Iwata, Machida, Japan, assignor to Kabushiki Kaisha Audio-Technica, Tokyo, Japan

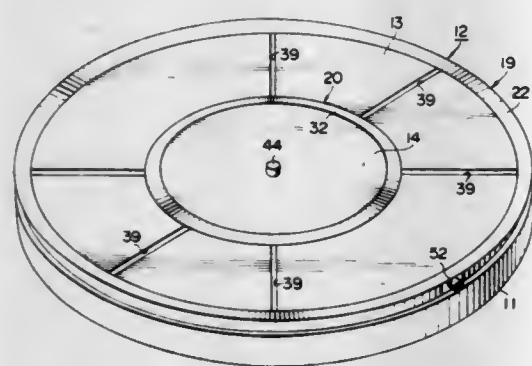
Filed May 26, 1982, Ser. No. 382,173

Claims priority, application Japan, May 26, 1981, 56-80645

Int. Cl.³ G11B 3/62, 17/02

U.S. Cl. 369—271

7 Claims



1. A record disc stabilizer adapted to be detachably placed on the turntable of a record player for holding a record disc placed thereon attracted thereto for securement; comprising a disc body having a central bore through which a centering spindle on the turntable extends and having an axial length which is less than the length of the centering spindle, the disc body being centrally formed with an air chamber therein and also having a through-opening formed therein one end of which opens into the outer peripheral end face

of the disc body and the other end of which opens into the air chamber;
a valve unit mounted in the through-opening of the disc body adjacent to its outer peripheral end face for selectively connecting the air chamber with a source of negative pressure such as vacuum pump or opening the air chamber to the atmosphere;
an annular elastic outer seal having its one end disposed in close contact with the outer peripheral edge of the record disc and its other end mounted in the upper surface of the disc body adjacent to its outer periphery;
an annular elastic inner seal having its one end disposed in close contact with the surface of the record disc adjacent to the center thereof and its other end mounted in the upper surface of the disc body adjacent to the center thereof, the outer and the inner seal cooperating with the record disc and the upper surface of the disc body to define an air tight space therebetween;
and an air passage for providing a communication between the air chamber and the air space.

4,434,485

DROP AND INSERT CHANNEL BANK WITH REDUCED CHANNEL UNITS

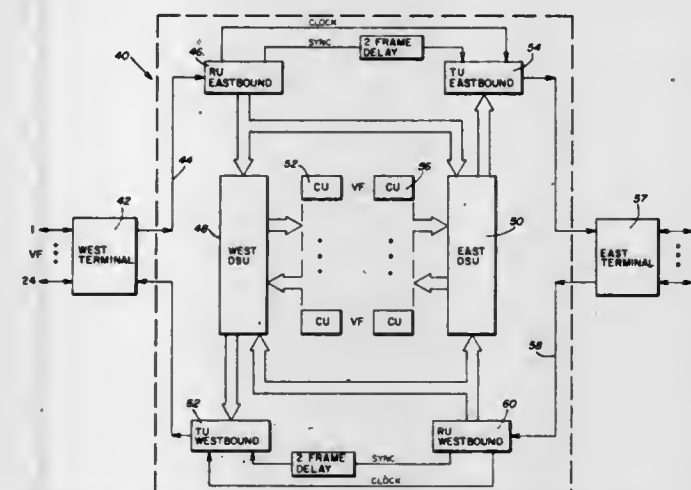
Charles E. Huffman, and Stephen R. Southerland, both of Plano, Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1980, Ser. No. 206,497

Int. Cl.³ H04Q 11/04

U.S. Cl. 370—55

16 Claims



7. A channel bank for a transmission system carrying a plurality of multiplexed digital channels on a transmission medium between a pair of terminals, comprising:

receiver means connected to said transmission medium for receiving said channels and comprising demultiplexer means demultiplexing data from said transmission medium into Y buses of X channels each and outputting Y data buses and X channel strobes;

switching means connected to said receiver means for receiving said Y data buses and said X channel strobes, comprising:

N sets of selectors, each set comprising a 1 of X selectors, a 1 of Y selector, and a user controlled channel selector for choosing the 1 of X and 1 of Y selections; and means connecting said X channel strobes to said 1 of X selector in each of said N sets, and connecting said Y data buses to said 1 of Y selector in each of said N sets, each set outputting a single channel strobe and the data from one of said Y buses as respectively chosen by each said channel selector; and

N channel units each connected to the output of a respective one of said N selector sets.

4,434,486

SELF-SWITCHED DATA PORT IN-BAND SIGNALING PROTOCOL

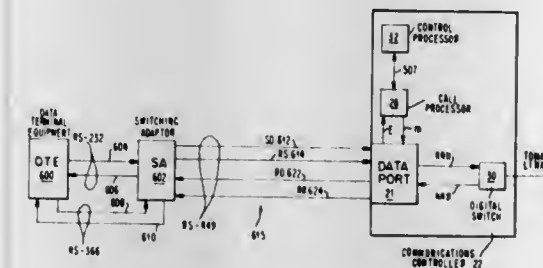
Robert P. Barner, Jr., Rockville; Joseph M. Bensadon, Germantown, both of Md.; Jacques A. Besseyre, Cagnes, France, and Harold G. Markey, Raleigh, N.C., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,938

Int. Cl.³ H04J 3/12

U.S. Cl. 370—110.1

30 Claims



21. A method for controlling self-switched data port in-band signaling for a TDMA communications controller, for selectively transferring data signals through a data port between a data terminal equipment (DTE) and a TDMA digital switch in said communications controller or transferring control signals between said DTE and a call processor in said communications controller, said DTE including means for selectively outputting dial pulse control signals or data signals on a send data (SD) line connected thereto to said data port and outputting a request-to-send signal on a request-to-send (RS) line connected thereto to said data port, comprising the steps of:

storing in a status register having an input connected to said call processor in said communications controller, a status word output therefrom including a call connection signaling bit, for indicating when said data port is alternately in a call connection state or a data traffic state;
maintaining said E lead input to said call processor in a low state when said RS line is in a low state representing a quiescent state for said data port;
raising an E lead input to said call processor to a high state when said RS line is entering a high state and said signaling bit is in a low state representing said DTE initiating a call request to said data port;
raising said signaling bit to a high state by said call processor, in response to said E lead input, outputting a status word to said status register;
disabling a transmit buffer in response to said high state of said signaling bit, preventing information input on said SD line from being transmitted to said digital switch;
passing call connection dialing pulses from said SD line as E lead input signals to said call processor;
whereby said SD line from said DTE to said data port is selectively switched from a data transfer line connected to said digital switch, to an in-band call connection dial pulse control line connected to said call processor.

4,434,487

DISK FORMAT FOR SECONDARY STORAGE SYSTEM

Barry L. Robinson; Mark A. Parenti; Richard F. Lary, and Edward A. Gardner, all of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 5, 1981, Ser. No. 308,771

Int. Cl.³ G06F 11/10

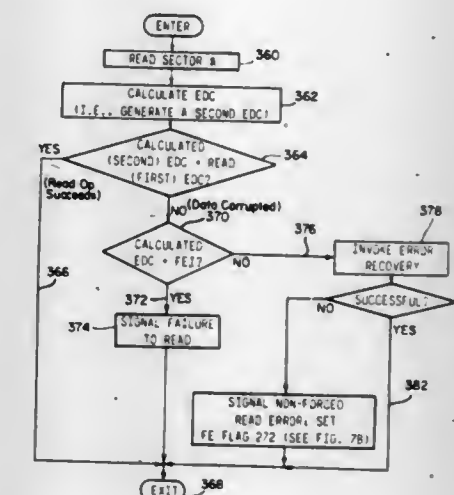
U.S. Cl. 371—10

18 Claims

1. In a secondary storage subsystem (2) for a data processing system (10), wherein data is recorded on a mass storage medium (5) and the smallest addressable unit of the medium is a sector (9), each sector including a header field for recording address information and a data field for recording data to be associated with and stored at such address, the improvement comprising:

means (4, FIG. 13C-392) for writing in each sector a predetermined code, termed the forced error indicator, when

the data being recorded in the data field is known to be logically corrupted and the medium underlying the sector is not known to be defective; and



means (4, FIG. 13B-374) for providing a signal, termed a forced error signal, responsive to detection of the forced error indicator during a read operation.

4,434,488

LOGIC ANALYZER FOR A MULTIPLEXED DIGITAL BUS

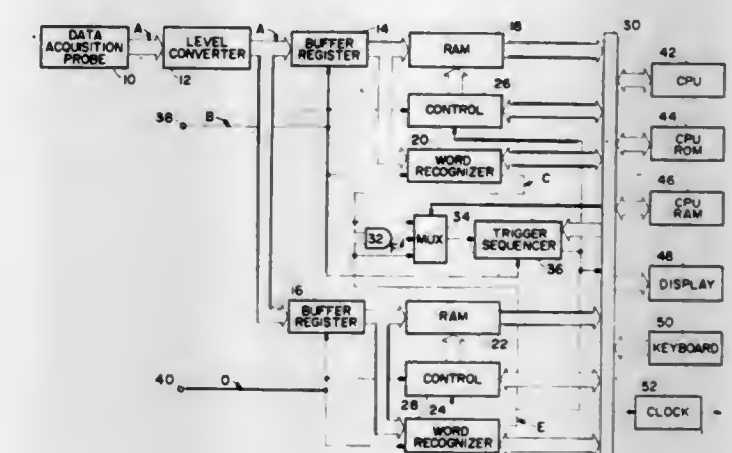
Steven R. Palmquist, Beaverton; David D. Chapman, Portland, and Gerd H. Hoeren, Lake Oswego, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 8, 1981, Ser. No. 271,345

Int. Cl.³ G09G 1/08

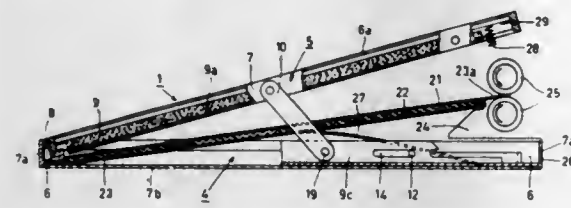
U.S. Cl. 371—15

6 Claims



1. A logic analyzer for measuring first and second logic signals transmitted in a time-sharing manner, comprising:
single input means for receiving both said first and second logic signals in sequence;
first memory means coupled to said input means for storing only said first logic signal in accordance with a first strobe signal synchronized with said first logic signal;
second memory means coupled to said input means for storing only said second logic signal in accordance with a second strobe signal synchronized with said second logic signal; and
control means for controlling write and read operating modes and selection of memory addresses of said first and second memory means.

defining a storage space therebetween in which an X-ray film can be situated;
 a locking mechanism which defines the positions of the lid and the bottom when the cassette is either opened or closed; and
 bottom spring means for retaining the X-ray film in a fixed position with respect to the bottom and the lid when the cassette is closed, and for releasing the X-ray film for transport from the cassette when the cassette is opened; characterized in that:



the cassette further comprises a bottom pressure plate on which X-ray film bears, said bottom pressure plate having dimensions smaller than the dimensions of the X-ray film, an edge region of the X-ray film remaining free to be engaged by transport means;
 the bottom spring means brings the X-ray film and the bottom pressure plate to a transport position when the cassette is opened; and
 the lid comprises a lid pressure plate and intensifier screen attached thereto, and a lid spring for disengaging the X-ray film and bottom pressure plate from the lid pressure plate and intensifier screen when the cassette is opened.

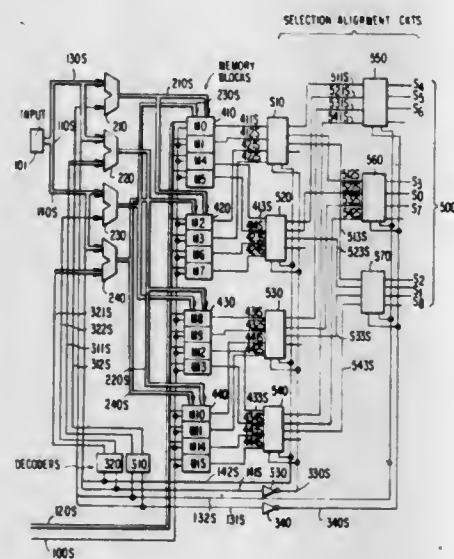
4,434,502

MEMORY SYSTEM HANDLING A PLURALITY OF BITS AS A UNIT TO BE PROCESSED

Takeshi Arakawa, and Hiroki Ikeda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
 Filed Apr. 3, 1981, Ser. No. 250,784
 Int. Cl.³ G06F 15/20

U.S. Cl. 382-41

5 Claims



1. A memory system for outputting a desired block of data to be displayed on a screen composed of a center bit and bits adjacent to said center bit in response to an address corresponding to said center bit, comprising:

four major memory blocks for storing data to be displayed, each major memory block having a plurality of minor memory blocks containing a plurality of bits, data to be stored in said memory system being divided into four portions, each portion having a plurality of bits and being stored in a respective one of said four major memory blocks;

addressing means operatively coupled to memory inputs of each of said four major memory blocks and receiving said address corresponding to said center bit for producing

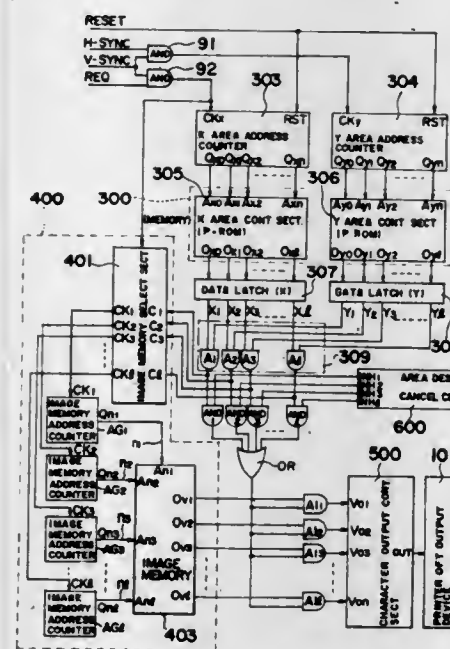
four addresses for accessing four minor memory blocks adjacent to each other and belonging respectively to said four major memory blocks in response to said address corresponding to said center bit, said four addresses being applied to said four major memory blocks;
 means for reading all data stored in the accessed four minor memory blocks out of said four major memory blocks in response to said four addresses; and
 means for arranging said data read out from said accessed four minor memory blocks to produce said desired block and discarding remaining bits.

4,434,503

IMAGE INFORMATION OUTPUT APPARATUS

Atsuyuki Tanaka, Shinshiro; Hiroaki Kojima, Toyokawa; Shozo Kaieda, Toyokawa; Tokuji Kakiuchi, Toyokawa; Nobuaki Nishioka, Toyokawa; Yukio Tadauchi, and Hidekazu Nakagami, both of Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Filed Jul. 29, 1980, Ser. No. 173,497
 Claims priority, application Japan, Jul. 31, 1979, 54-98005
 Int. Cl.³ G09G 1/16; G06K 9/00

U.S. Cl. 382-48
 5 Claims



1. An image information output apparatus which is arranged to display patterns of characters and figures as a whole by dividing an image forming plane defined in an X direction and a Y direction into an X-Y matrix configuration having predetermined image units and to generate binary image signals which are used for image formation, each of said image signals respectively corresponding to one of said image units, said image information output apparatus comprising:

a first setting means for setting conditions for a binary "0" or a binary "1" with respect to each of said image units, said first setting means traversing said image forming plane in said X direction;

a second setting means for setting conditions for a binary "0" or a binary "1" with respect to each of said image units, said second setting means traversing said image forming plane in said Y direction;

a means for continuously generating output timing signals in a main scanning direction which corresponds to said X direction;

an AND means operatively connected to said first and second means and said means for generating output timing signals for calculating the logical AND product of two signals set by said first and second setting means so as to output a signal at every generation of said output timing signal;

a means for storing image signals; and

a means operatively connected to said means for storing image signals for outputting said stored image signals, one

image unit by one image unit, every time said output signal of said AND means becomes equal to a binary "1".

4,434,504

CHANNELING AND DECODE CIRCUIT FOR AIRBORNE RADIO-TELEPHONE SYSTEMS

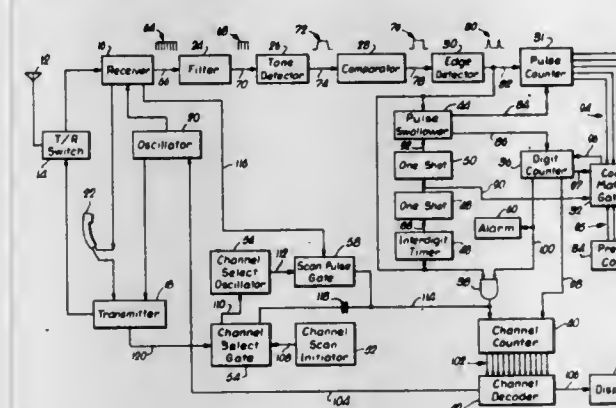
Dennis L. Fredrickson, Leawood, Kans., assignor to Frederickson Communications, Inc., Lenexa, Kans.

Filed Jun. 10, 1982, Ser. No. 387,234

Int. Cl.³ H04B 1/00, 7/00; H04Q 7/00

U.S. Cl. 455-32

8 Claims



1. In an air-to-ground radio-telephone system having a ground-based transceiver adapted for transmitting to an airborne transceiver a calling signal in the nature of a sequence of pulses representing an address designation followed by a channel designation each encoded in accordance with a predetermined code, improved means in said airborne transceiver for detecting and decoding said address and channel designations comprising:

means for receiving said calling signal transmitted by said ground-based receiver;

frequency selective filter means coupled with said receiving means for passing only portions of said calling signal of substantially a single predetermined frequency;

detector means coupled with said filter means for providing an electrical output in the nature of pulses corresponding to occurrence of only said portions of said calling signal of substantially said single frequency;

means for counting the leading and trailing edges of those of said pulses representing said address designation;

means for counting the leading and trailing edges of those of said pulses representing said channel designation for subsequent setting of said airborne transceiver to an operating channel identified by said channel designation;

means for comparing the count of said edges of said address designation with a preset address designation count representation maintained within said airborne transceiver for sensing the existence or absence of a match therebetween; and

means for enabling said edge counting means for said channel designation only after the existence of a match between said edge count for said address designation and said preset address designation has been sensed.

4,434,505

INTERFERENCE CANCELLING SYSTEM FOR A MOBILE SUBSCRIBER ACCESS COMMUNICATIONS SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 1, 1982, Ser. No. 445,800

Int. Cl.³ H04B 15/00

U.S. Cl. 455-50

14 Claims

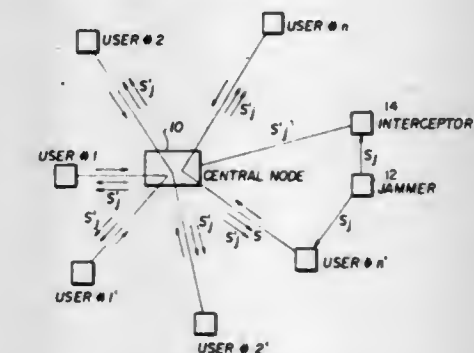
1. A method of eliminating undesired signals including intentional interference or jamming signals in a mobile subscriber access communications system wherein a plurality of mobile subscriber communication terminals selectively respectively

transmit and receive desired signals from one another via a central station which receives and retransmits the desired signals to said terminals in respective signal channels and wherein said terminals additionally receive said undesired signals directly from an interfering signal source in said signal channels, comprising the steps of:

intercepting said undesired signals;

transmitting the intercepted undesired signals to said central station;

relaying the intercepted undesired signals from said central station to said terminals in a separate channel relative to the respective signal channels;



receiving and respectively providing the relayed undesired signal contained in said separate channel and the desired signal plus the directly transmitted undesired signal contained in the signal channel;

adjusting the amplitude and time position of the relayed undesired signal so that it is equal to and coincident in time with the directly transmitted undesired signal; and

differentiating the adjusted and directly transmitted undesired signals whereby they cancel one another leaving the desired signal free of said undesired signal.

4,434,506

CIRCUIT ARRANGEMENT FOR PROTECTING A CONTROL CHANNEL FROM JAMMING WAVES IN A RADIO COMMUNICATION SYSTEM

Ryuhei Fujiwara; Tomokazu Kai, and Hidetoshi Nakahara, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

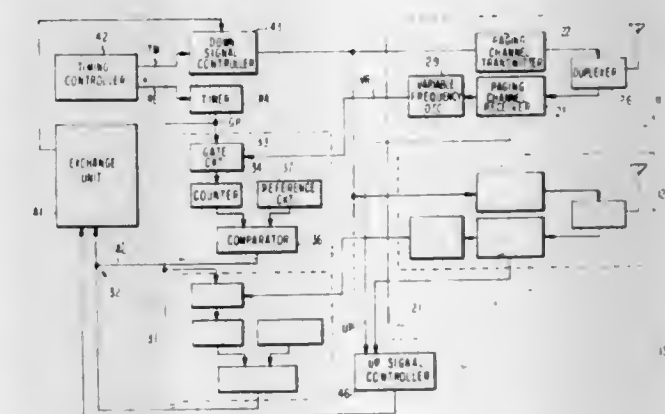
Filed Dec. 21, 1981, Ser. No. 332,775

Claims priority, application Japan, Dec. 23, 1980, 55-181366; Dec. 23, 1980, 55-181367

Int. Cl.³ H04B 1/00, 7/00

U.S. Cl. 455-53

4 Claims



1. A circuit arrangement for use in a control station of a radio communication system comprising a plurality of substations each of which is communicable with said control station through radio channels comprising a control channel and a plurality of speech channels, said control channel comprising a down and an up control channel, said down channel being for

supplying said substations with a set of control signals produced in said control station and comprising first and second control signals among which said second control signals are for requesting said substations not to answer said second control signals, said first control signals being for requesting selected ones of said substations to produce answer signals with time intervals left between said answer signals, said up control channel being for successively transmitting the answer signals to said control station from said selected substations, said circuit arrangement comprising:

defining means for defining each time interval between two adjacent answer signals to produce a gate pulse lasting during a first predetermined period when said each time interval is not shorter than said first predetermined period; and

measuring means coupled to said defining means and said second control channel for measuring the intensity of electric field of said up control channel during said first predetermined period to detect occurrence of jamming waves in said up control channel.

4,434,507

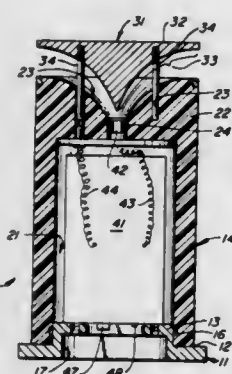
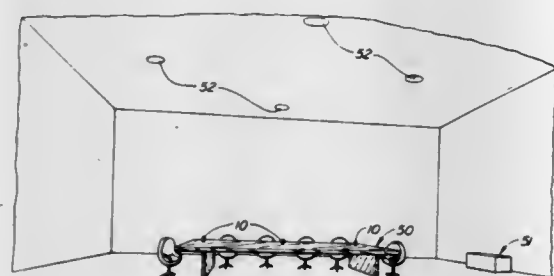
FREE STANDING TRANSMITTING MICROPHONE
Elmer L. Thomas, Placentia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1982, Ser. No. 413,325

Int. Cl.³ H04B 1/034

U.S. Cl. 455-95

7 Claims



1. A free standing, transmitting microphone assembly comprising:

- a base member;
- means in said base member for supporting a miniature radio transmitter including a power supply;
- a hollow housing member removably supported on said base member and enclosing said transmitter;
- a conductive top member removably supported on said housing member;
- means in the interior of said housing member for supporting a microphone;
- said housing member and said top member being formed with complimentary acoustic pathway openings for directing acoustic energy toward said microphone from locations generally horizontal with respect to said housing member and top member;
- said top member being formed with respect to said means for supporting said microphone in said housing member to substantially prevent acoustic energy from travelling to

said microphone from generally vertically above said top member;

means for accommodating a connection between said microphone and said transmitter; and

electrically conductive means for accommodating a connection between said transmitter and said conductive top member whereby said top member is electrically energized to function as a radiating antenna for said transmitter.

4,434,508

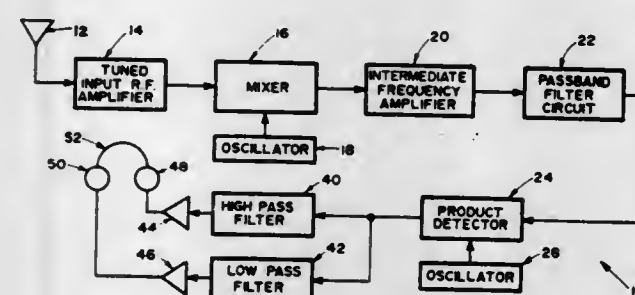
RADIO RECEIVER WITH AUDIO SELECTIVITY
Robert C. Sommer, Alexandria, Va., assignor to American Systems Corporation, Annandale, Va.

Filed Nov. 3, 1981, Ser. No. 317,913

Int. Cl.³ H04B 1/12

U.S. Cl. 455-306

6 Claims



1. A system for detecting a desired signal on a desired channel accompanied by a plurality of undesired signals on a plurality of adjacent channels, each signal comprising a carrier signal with information modulated thereon, each of said carrier signals being of different frequency, comprising:

- (a) means for supplying the desired and undesired signals
- (b) oscillator means for generating an oscillation signal having a frequency at or near the carrier frequency of said signal;
- (c) bandpass means responsive to said supplying means for providing an output composite signal comprising said desired signal and undesired signal components attenuated with respect to said desired signal;
- (d) mixer means for heterodyning said composite signal and the output of said oscillator means to produce a mixer output signal, said output signal being the heterodyne products of said oscillator signal with said desired signal and said undesired signal components, respectively, the product of said oscillator signal and said desired signal occupying a desired range of frequencies in the audio range;
- (e) first filter means having a first cutoff frequency for receiving the output of said mixer means and passing signals whose frequency is below said first cutoff frequency;
- (f) second filter means having a second cutoff frequency for receiving the output of said mixer means and passing signals whose frequency is above said second cutoff frequency, said first and second cutoff frequencies being substantially near the center of said desired range;
- (g) first coupling means for passing the output of said first filter means as a first audio signal containing signals with frequencies below said desired range with amplitudes greater than signals above said desired range;
- (h) second coupling means for passing the output of said second filter means as a second audio signal containing signals with frequencies above said desired range with amplitudes greater than signals with frequencies below said desired range;
- (i) transducer means for providing said first audio signal to one ear of a listener and said second audio signal to the other ear of said listener.

4,434,509

TRANSISTORIZED RADIO RECEIVER COMBINATION WITH MALE POWER INPUT AND FEMALE POWER OUTPUT CONNECTIONS

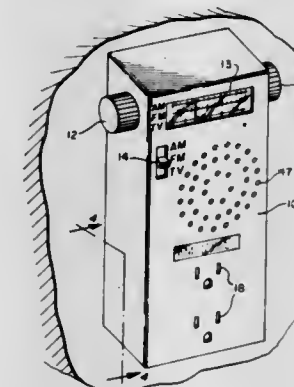
William J. Schrepel, Alexandria, Va., assignor to PBS Associates, Alexandria, Va.

Filed Aug. 24, 1982, Ser. No. 410,903

Int. Cl.³ H04B 1/08, 1/16

U.S. Cl. 455-343

4 Claims



1. A portable lightweight transistorized radio receiver, housed in a plastic casing having a front and a rear, at least two axially spaced male A.C. power input terminals mounted on said rear and at least two female axially spaced A.C. power output terminals mounted on said front and aligned with said terminals on the rear, said radio receiver comprising a 3 band station indicator and a selector switch for FM/AM/TV-FM Mode, said radio receiver being mounted in an upper region of the casing, a step down transformer mounted in the lower region of the casing and electrically connected to a diode and a filter choke in series with a D.C. power input of said receiver, said input terminals each comprising three prongs including a grounding prong, said output terminals each comprising three slots including a grounded slot for receiving these prongs of a male A.C. power input plug of an electrical household appliance including a grounding prong, one of said input terminals being electrically connected to the primary of the transformer and another of said input terminals electrically connected to an output terminal.

4,434,510

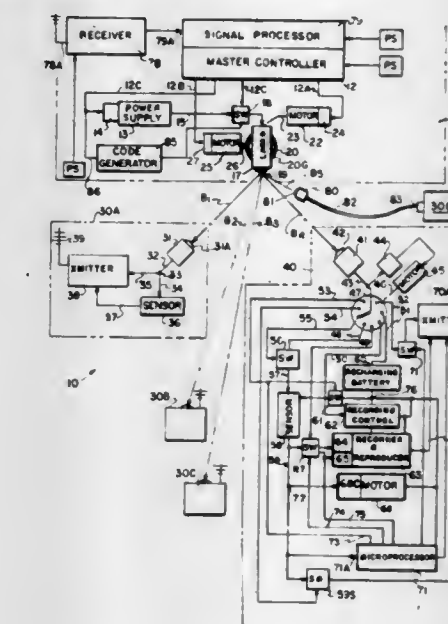
COMMUNICATION SYSTEM AND METHOD
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Mar. 10, 1978, Ser. No. 885,268

Int. Cl.³ H04B 9/00

U.S. Cl. 455-603

10 Claims



1. A communication system comprising:
a central data receiving station,
first means at said central data receiving station for generating an intense radiant energy beam,
an out-station located remote from said central data station,
second means for directing radiant energy from said beam generating means at said central station to said out-station,
third means at said out-station for receiving radiation from said first means,
fourth means connected to said third means including a sensor and means for converting said radiation received from said central data station to electrical energy,
means for applying said electrical energy to power said sensor so as to cause said sensor to sense a variable phenomenon existing in the vicinity of said out-station and to generate an information signal which is indicative of the condition of said varying phenomenon,
fifth means at said out-station for short wave transmitting said information signal to said central data receiving station, said fifth means being connected to receive a portion of the electrical energy converted from radiation received from said central station and to power said fifth means to cause it to transmit information signals generated by said sensor to said central data receiving station, and
sixth means at said central data receiving station for processing information defined by said information signals.

DESIGNS

FEBRUARY 28, 1984

272,769

CYCLIST'S VENTED HELMET

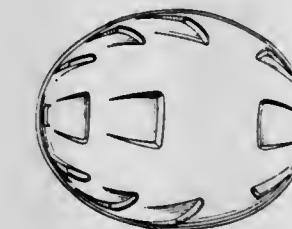
James G. Sundahl, Irvine, and Lester V. Broersma, Bellflower, both of Calif., assignors to Bell Helmets Inc., Norwalk, Calif.

Filed Jul. 6, 1982, Ser. No. 395,824

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-231



272,771

LOW CUT ATHLETIC SHOE

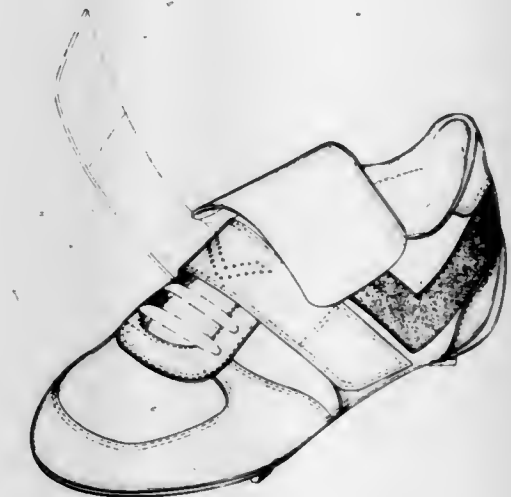
Roberto Muller Feigelstock, Scarsdale, N.Y., assignor to Pony International, Inc., Secaucus, N.J.

Filed Jun. 17, 1982, Ser. No. 389,335

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-311



272,770

CYCLIST'S VENTED HELMET WITH VISOR

James G. Sundahl, 18 Princeton, Irvine, Calif. 97214, and Lester V. Broersma, 9621 Rose St., Bellflower, Calif. 90706

Continuation-in-part of Ser. No. 395,824, Jul. 6, 1982. This application Oct. 25, 1982, Ser. No. 436,527

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-232



272,772

CLEATED SHOE SOLE

Noboru Kohno, Nishinomiya, Japan, assignor to Mizuno Corporation, Osaka, Japan

Filed Mar. 29, 1982, Ser. No. 362,658

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-320



272,773

BELT-ATTACHED BEVERAGE HOLSTER FOR BOTTLES AND CANS

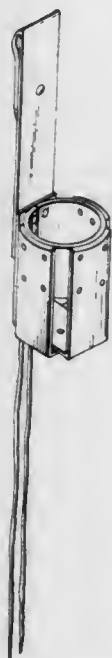
Kenneth A. Weissenburger, 46 Leaman Pl., Lynbrook, N.Y. 11563

Filed Aug. 21, 1981, Ser. No. 294,903

Term of patent 14 years

Int. Cl. D02-99

U.S. Cl. D2-400



272,775

BELT-ATTACHED BEVERAGE HOLSTER FOR BOTTLES AND CANS

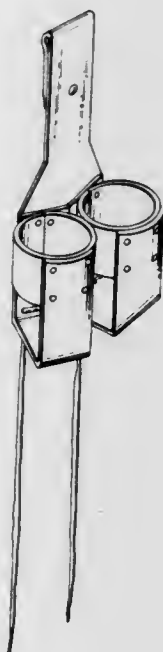
Kenneth A. Weissenburger, 46 Leaman Pl., Lynbrook, N.Y. 11563

Filed Aug. 21, 1981, Ser. No. 294,905

Term of patent 14 years

Int. Cl. D02-99

U.S. Cl. D2-400



272,774

BELT-ATTACHED BEVERAGE HOLSTER FOR BOTTLES AND CANS

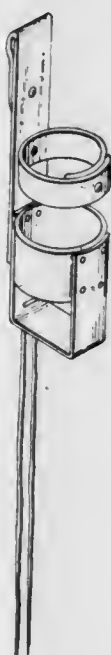
Kenneth A. Weissenburger, 46 Leaman Pl., Lynbrook, N.Y. 11563

Filed Aug. 21, 1981, Ser. No. 294,904

Term of patent 14 years

Int. Cl. D02-99

U.S. Cl. D2-400



272,776

ATTACHE CASE

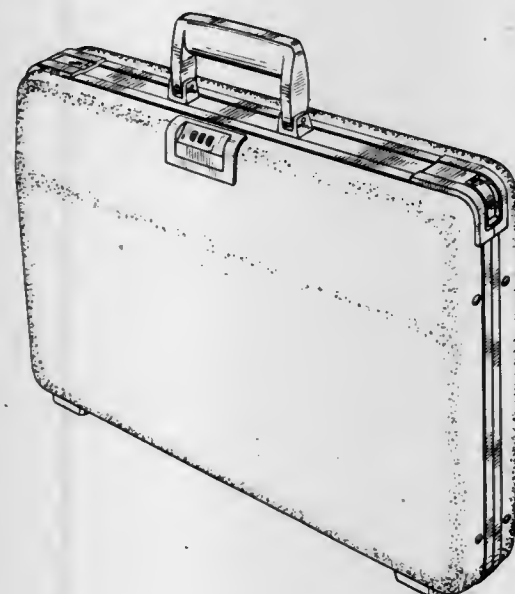
Joseph Y. Pelavin, North Bergen, N.J., and Edward M. Stolarz, Yorktown Heights, N.Y., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Mar. 3, 1982, Ser. No. 354,279

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-76



272,777

CHAIR

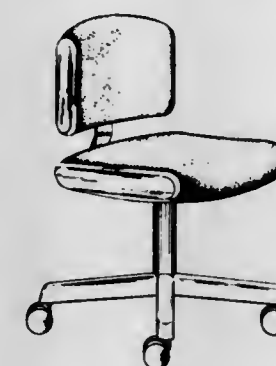
M. Richard Schultz, Bartow, Pa., assignor to Stow/Davis Furniture Company, Grand Rapids, Mich.

Filed Mar. 12, 1981, Ser. No. 243,207

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-30



272,778

CHAIR

Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024

Filed Nov. 9, 1981, Ser. No. 319,550

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-31



272,779

CHAIR

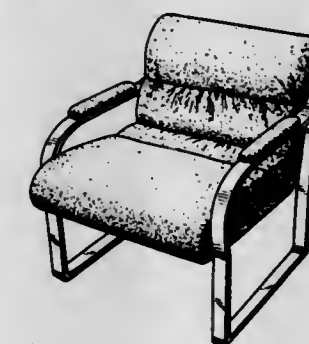
O. B. Solie, and G. Ronald Sonnenleiter, both of Rockford, Ill., assignors to Simmons Universal Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,357

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-69



272,780

CHAIR

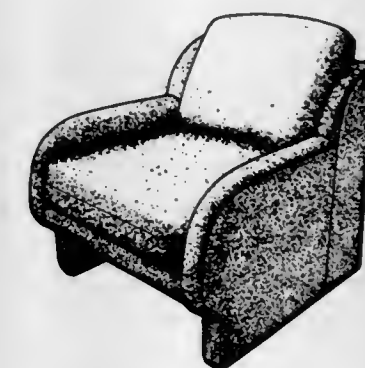
O. B. Solie, and G. Ronald Sonnenleiter, both of Rockford, Ill., assignors to Simmons Universal Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,396

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-71



272,781

CHAIR OR SIMILAR ARTICLE

Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland

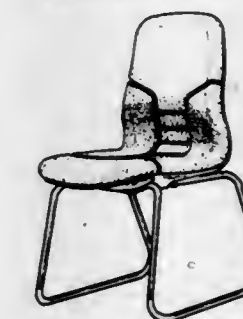
Filed Dec. 28, 1981, Ser. No. 336,070

Claims priority, application Hague, Sep. 7, 1981, DMA/000087

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-75



272,782

DISPLAY FIXTURE

Robert N. Shelton, 12 Orchard St., Leominster, Mass. 01453
 Filed May 16, 1980, Ser. No. 150,535

Term of patent 14 years
 Int. Cl. D06—06

U.S. Cl. D6—85



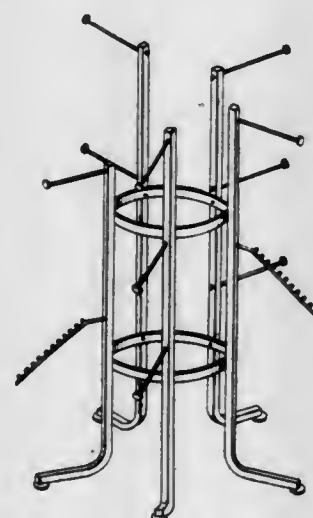
272,783

GARMENT DISPLAY RACK

Daniel E. Gelles, 215 Lexington Ave., New York, N.Y. 10016
 Filed Jul. 7, 1981, Ser. No. 281,092

Term of patent 14 years
 Int. Cl. D06—04

U.S. Cl. D6—85



272,784

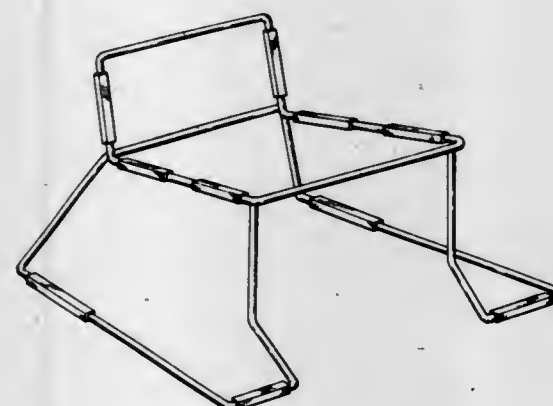
SPEAKER STAND

Robert E. Williams, Jr., Memphis, Tenn., assignor to Omni R & D, Inc., Memphis, Tenn.

Filed Oct. 22, 1981, Ser. No. 313,788

Term of patent 14 years
 Int. Cl. D06—06

U.S. Cl. D6—85



272,785

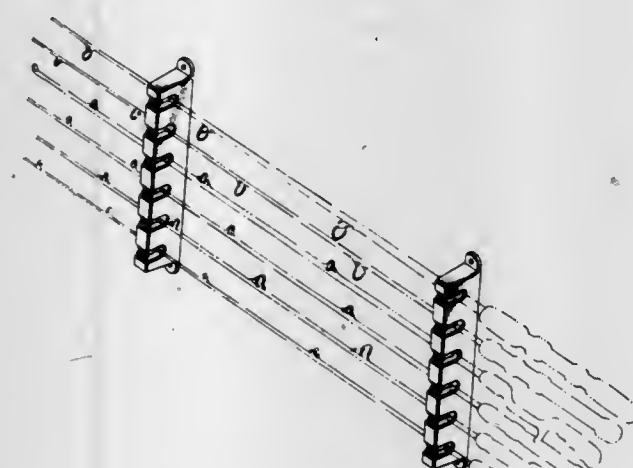
SET OF BRACKETS FOR MOUNTING ON A WALL FOR SUPPORTING HORIZONTALLY ORIENTED FISHING RODS

James T. Rumbaugh, Spirit Lake, Iowa, assignor to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jan. 4, 1982, Ser. No. 337,090

Term of patent 14 years
 Int. Cl. D6—04; D8—08

U.S. Cl. D6—114



272,786

COMBINED SKI AND POLE RACK

Paul R. McCuiston, 45 Ardmore, Hermosa Beach, Calif. 90254
 Filed Dec. 7, 1981, Ser. No. 328,196

Term of patent 14 years
 Int. Cl. D6—06

U.S. Cl. D6—125



272,787

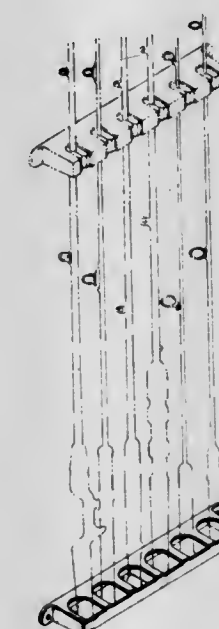
BRACKET FOR MOUNTING ON A WALL FOR SUPPORTING THE BUTT ENDS OF VERTICALLY ORIENTED FISHING RODS

James T. Rumbaugh, Spirit Lake, Iowa, assignor to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jan. 4, 1982, Ser. No. 336,882

Term of patent 14 years
 Int. Cl. D6—04; D8—08

U.S. Cl. D6—125



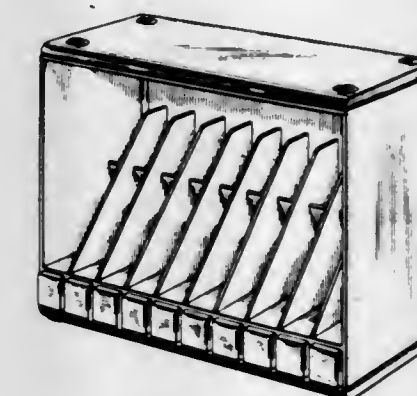
272,789

TAPE RACK

Giotto Stoppino, via Argelati, 30 a, 20143 Milano, Italy
 Filed Sep. 9, 1981, Ser. No. 300,513

Claims priority, application Italy, Jul. 13, 1981, 22331/81[U]
 Term of patent 14 years
 Int. Cl. D06—04

U.S. Cl. D6—189

272,790
RUG

Sally G. Irish, R.F.D. 2, Box 172A, Marshall, Va. 22115
 Filed Aug. 17, 1981, Ser. No. 293,327

Term of patent 14 years
 Int. Cl. D6—11

U.S. Cl. D6—210



272,788

SUPPORT STAND FOR WORKS OF ART

George Churley, 174 Merry Robin Rd., Troy, Ohio 45373

Filed Mar. 23, 1981, Ser. No. 246,734

Term of patent 14 years
 Int. Cl. D6—99

U.S. Cl. D6—176



272,791

SIMULATIVE PICTURE FRAME

Jeanette D. Brobakken, 3515 Owasso St., Apt. 302, St. Paul, Minn. 55112

Filed Apr. 9, 1981, Ser. No. 252,370

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-234



272,793

MUG

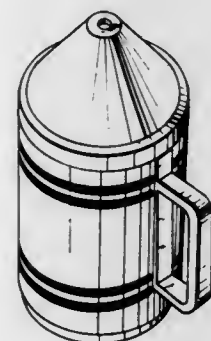
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 18, 1982, Ser. No. 350,134

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-5



272,792

COMBINED GARMENT FORM AND HANGER THEREFOR

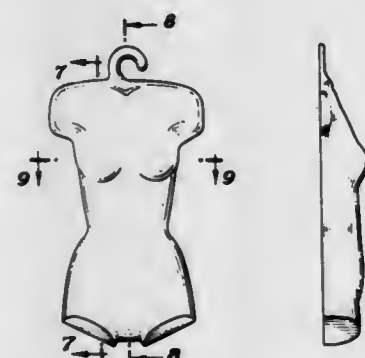
Robert S. Marx, 11775 Exposition Blvd., Los Angeles, Calif. 90064

Filed Jun. 7, 1982, Ser. No. 385,432

Term of patent 14 years

Int. Cl. D6-08; D7-05

U.S. Cl. D6-248



272,794

BEVERAGE CUP

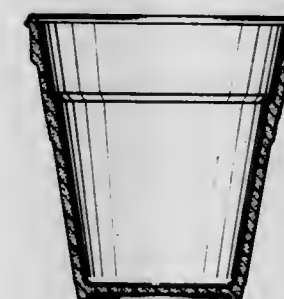
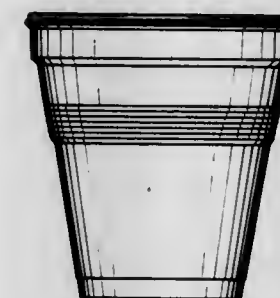
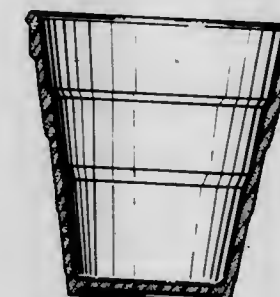
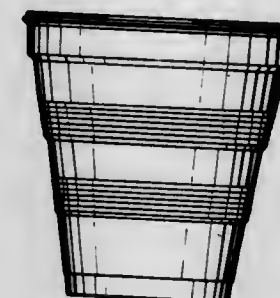
Kenneth B. Dart, Okemos, Mich., assignor to Dart Container Corporation, Mason, Mich.

Filed Jun. 22, 1981, Ser. No. 276,020

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-6



272,795

ICE-BUCKET

Ambrogio Pozzi, Gallarate, Italy, assignor to F. Lli Guzzini S.p.A., Recanati, Italy

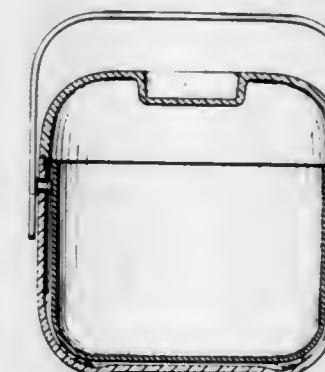
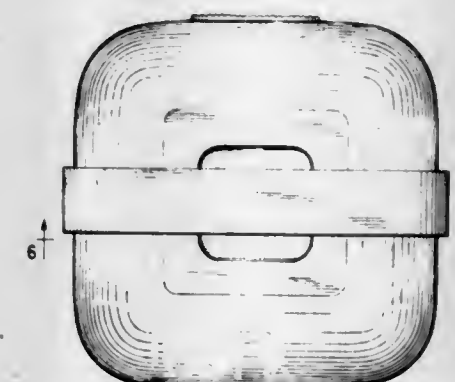
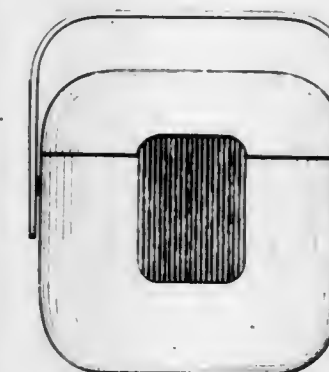
Filed Mar. 30, 1981, Ser. No. 248,891

Claims priority, application Italy, Sep. 29, 1980, 22951/80[U]

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-78



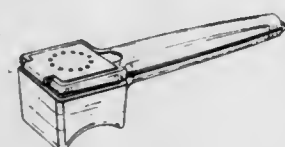
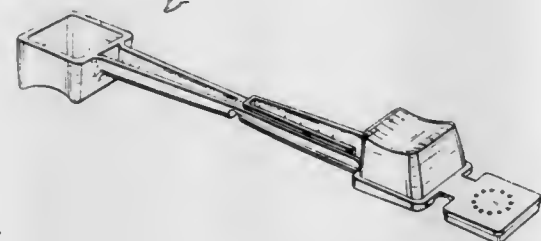
272,796

COMBINED CORN BUTTERER AND SALT DISPENSER
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 3, 1981, Ser. No. 289,270
Term of patent 14 years

Int. Cl. D07-04

U.S. Cl. D7-99

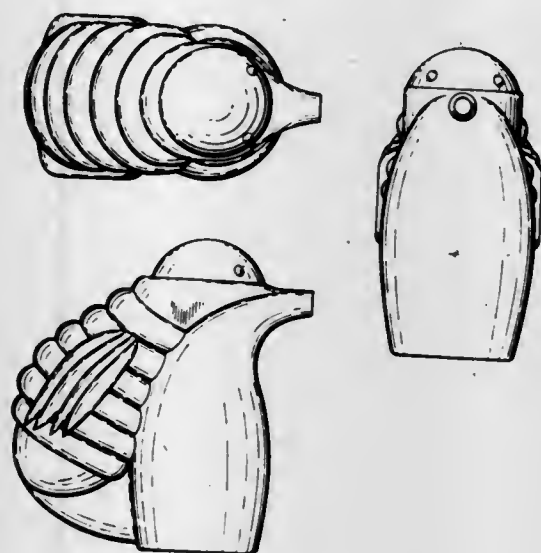


272,797

SERVING DISPENSER FOR HONEY OR THE LIKE
Priscilla D. Silva, 7706 Yeazell Rd., Longbranch, Wash. 98351

Filed Apr. 12, 1982, Ser. No. 330,034
U.S. Cl. D7-302

U.S. Cl. D7-302



272,798

SLIDING HAMMER

Jerry L. York, 1821 Alan-A-Dale, Arlington, Tex. 76013

Filed Jan. 29, 1982, Ser. No. 343,776
Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D8-1



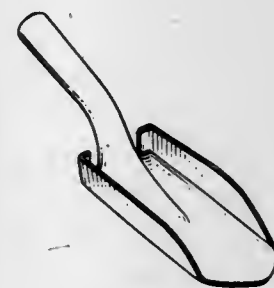
272,799

SHOVEL BLADE

Paul D. Pluss, 3617 Valley Vista Rd., Bonita, Calif. 92002

Filed Apr. 16, 1982, Ser. No. 369,245
U.S. Cl. D8-10

U.S. Cl. D8-10



272,800

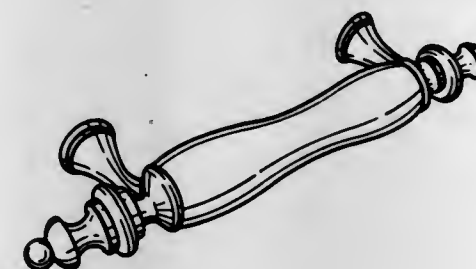
PULL

Valentin Pawlow, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Dec. 21, 1981, Ser. No. 333,034
Term of patent 14 years

Int. Cl. D8-06

U.S. Cl. D8-318



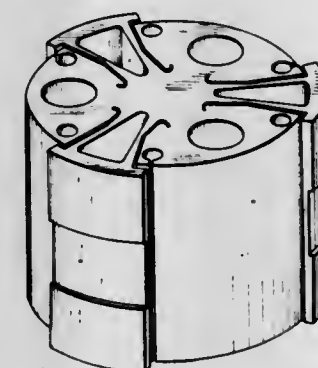
272,801

FLEXURE HINGE FOR GYROSCOPES OR THE LIKE
Shri A. Kumar, Parsippany; Bo Ljung, and James G. Koper, both of Wayne, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 22, 1981, Ser. No. 275,804
Term of patent 14 years

Int. Cl. D8-06

U.S. Cl. D8-325



272,802

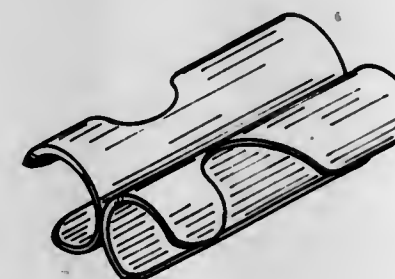
PENLIGHT HOLDER

Dennis P. Dall-Winther, R.R. #4, Mason City, Iowa 50401

Filed Feb. 22, 1982, Ser. No. 350,428
Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-396



272,803

PACKAGING CONTAINER FOR RAZORS

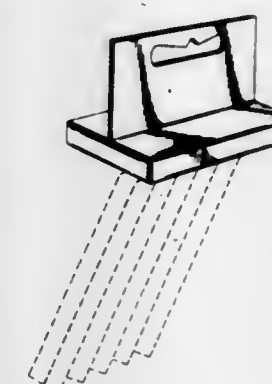
Richard D. Richards, Liphook, England, assignor to Wilkinson Sword, Limited, England

Filed May 28, 1981, Ser. No. 270,690
Claims priority, application United Kingdom, Dec. 5, 1980, 997931

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-342



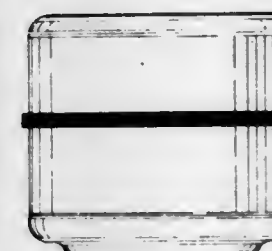
272,804

JAR, OR SIMILAR ARTICLE

Morris Braun, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.

Filed Jan. 18, 1982, Ser. No. 339,907
U.S. Cl. D9-353

U.S. Cl. D9-353



272,805

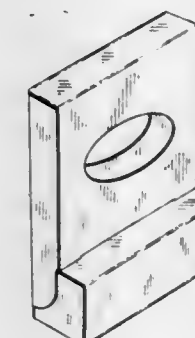
CONTAINER FOR A PIZZA KIT

Dell E. Johnsen, Kearney, Mo., assignor to Della, Inc., Kansas City, Mo.

Filed Oct. 15, 1981, Ser. No. 311,529
Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-415



272,806

PACKAGING CONTAINER

Binns Handy, West Henrietta, and David O. Chase, Skaneateles, both of N.Y., assignors to Lenox Incorporated, Lawrenceville, N.J.

Filed May 26, 1981, Ser. No. 267,268
Term of patent 14 years
Int. Cl. D9-03

U.S. Cl. D9-416



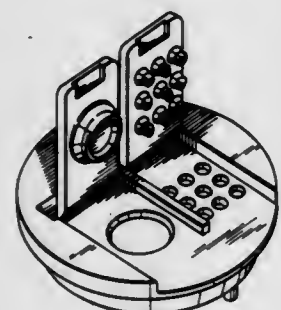
272,807

DISPENSING CLOSURE PLUG

Gerald F. Ruhl, Greenville, Ohio, assignor to Repicap Products, Inc., Greenville, Ohio

Filed Sep. 8, 1981, Ser. No. 299,890
Term of patent years
Int. Cl. D9-07

U.S. Cl. D9-449



272,808

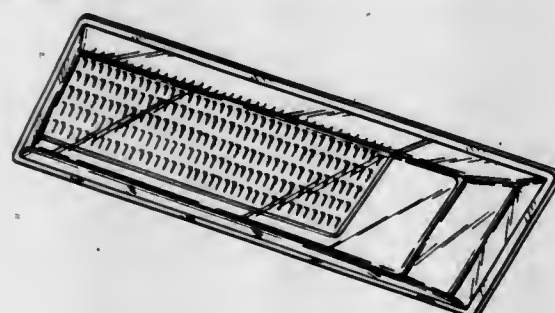
SIDE REFLECTOR FOR AUTOMOBILE

Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,360
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12271

Term of patent 14 years
Int. Cl. D10-06; D26-06

U.S. Cl. D10-111



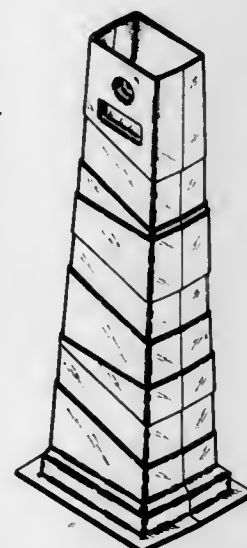
272,809

TRAFFIC CONTROL MARKER

James A. Bent, 5002 Churchill, Westminster, Calif. 92683, and Bruce C. Bent, 11791 Paseo Bonita, Los Alamitos, Calif. 90720

Filed Feb. 18, 1982, Ser. No. 349,727
Term of patent 14 years
Int. Cl. D10-06

U.S. Cl. D10-109



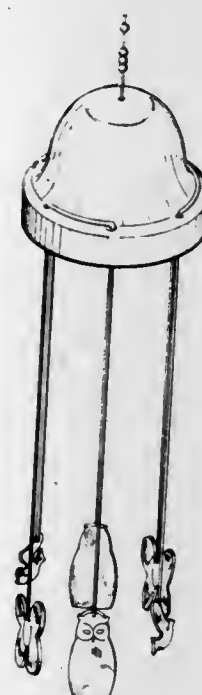
272,810

WIND CHIME

Vern Stilson, 4006 Main St., Erie, Pa. 16511
Filed Oct. 10, 1980, Ser. No. 196,106

Term of patent 14 years
Int. Cl. D10-06

U.S. Cl. D10-116



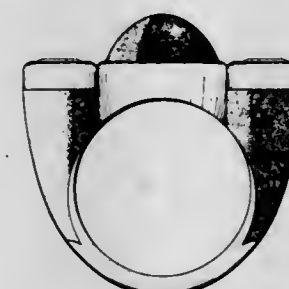
272,811

RING

Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein

Filed Oct. 9, 1981, Ser. No. 310,322
Claims priority, application Italy, Apr. 13, 1981, 35737/81[U]
Term of patent 14 years
Int. Cl. D11-01

U.S. Cl. D11-34



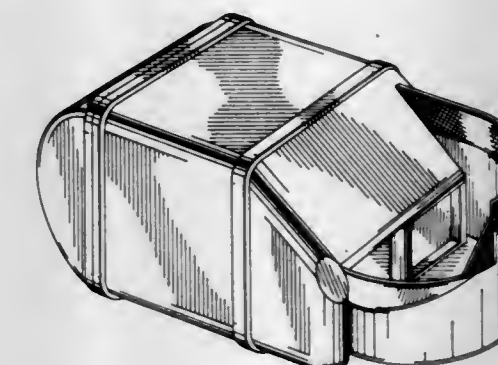
272,813

REFUSE TRUCK BODY

John W. Pickrell, Scottsdale, Ariz., assignor to Government Innovators, Inc., Phoenix, Ariz.

Filed Mar. 12, 1981, Ser. No. 243,080
Term of patent 14 years
Int. Cl. D12-13

U.S. Cl. D12-15



272,814

BICYCLE NOISE MAKER

Dwight L. Darling, 67 Church St., Brockville, Ontario, Canada
Filed Jun. 8, 1981, Ser. No. 271,093

Claims priority, application Canada, May 27, 1981, 27-05-81-8
Term of patent 14 years
Int. Cl. D12-11

U.S. Cl. D12-114



272,815

TIRE FOR A VEHICLE WHEEL

Kenji Hatakenaka, Kobe, Japan, assignor to Dunlop Limited, London, England

Filed Aug. 20, 1981, Ser. No. 294,621
Claims priority, application Japan, Feb. 26, 1981, 56-7839
Term of patent 14 years
Int. Cl. D12-15

U.S. Cl. D12-146



272,812

MOSQUITO FIGURE

Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakano-ku, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,738
Term of patent 14 years
Int. Cl. D11-02

U.S. Cl. D11-162

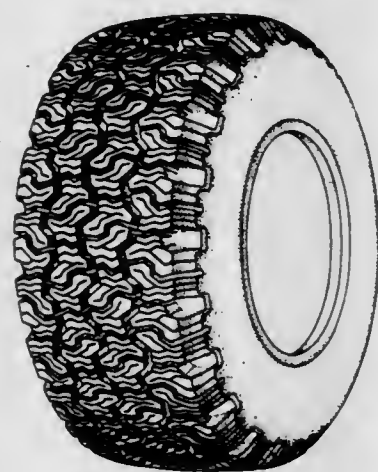


272,816
TIRE

Carl D. Birkel, Tallmadge, Ohio, and David A. Wright, Louisville, Colo., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 28, 1981, Ser. No. 315,847
Term of patent 14 years
Int. Cl. D12-15

U.S. Cl. D12-147



272,817

VEHICLE SIDE RAIL

Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Jun. 15, 1981, Ser. No. 274,024
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-155



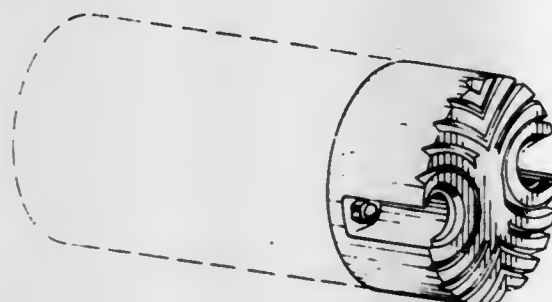
272,818

VOLTAGE REGULATOR HOUSING FOR END MOUNTING ON A GENERATOR

Frank D. Worsham, 61 Highland Ave., Concord, N.C. 28205

Filed Aug. 31, 1981, Ser. No. 297,754
Term of patent 14 years
Int. Cl. D13-02

U.S. Cl. D13-11



272,819

CONTROL SYSTEM MODULE FOR MOUNTING IN A CONTROL PANEL

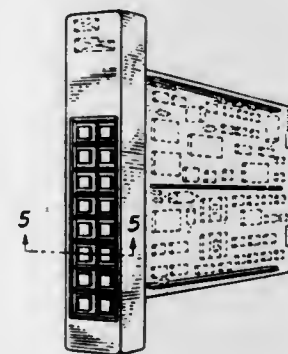
Thomas R. Bean, Concord Township; Edward F. Stockmaster, Mentor, and George S. Whaley, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 30, 1981, Ser. No. 258,982

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-12



272,820

90° CABLE STRAIN RELIEF AND ELECTRICAL CONNECTOR COVER

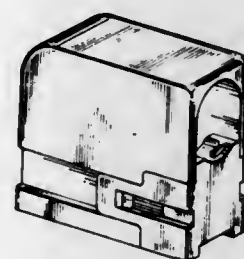
Pete Cosmos, and Earl W. McCleerey, both of Mechanicsburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 28, 1981, Ser. No. 306,842

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-24



272,821

AIR SWITCH

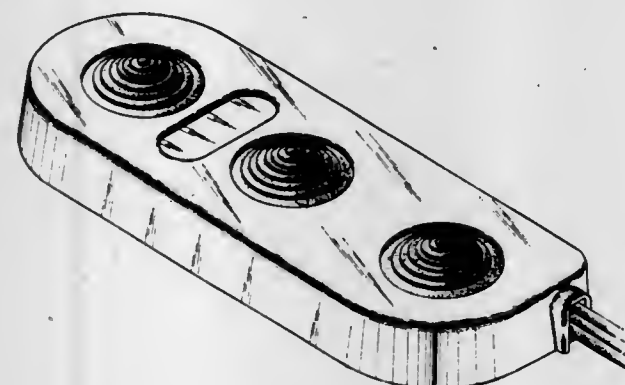
Charles M. Perethian, Santa Margarita, Calif., assignor to California Cooperage, San Luis Obispo, Calif.

Filed Sep. 25, 1981, Ser. No. 305,615

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-12



272,822
SWITCH

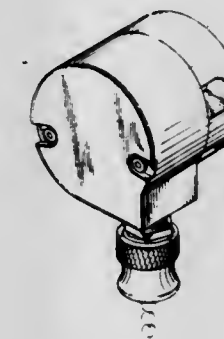
Wolfgang F. Bienwald, Melville, and David B. Balaban, Douglaston, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Oct. 7, 1981, Ser. No. 309,316

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-32



272,823

TONE GENERATOR MOUTHPIECE CONSOLE

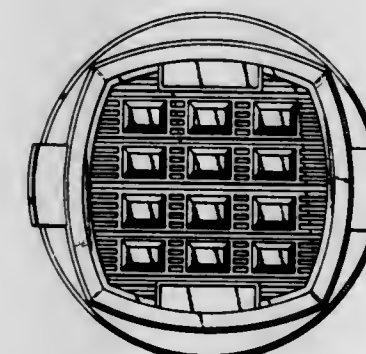
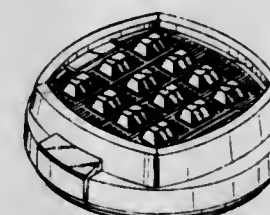
Kenichi Fukunaga, San Jose, Calif., assignor to Buscom Systems, Inc., Santa Clara, Calif.

Filed Nov. 9, 1981, Ser. No. 319,564

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-66



272,824

RADIO APPARATUS

Michael J. McGourty, Littleport, England, assignor to Pye (Electronic Products) Limited, Cambridge, England

Division of Ser. No. 10,878, Feb. 9, 1979, Pat. No. Des. 264,969.

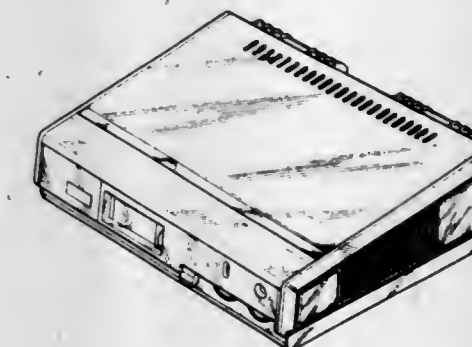
This application Mar. 1, 1982, Ser. No. 353,700

Claims priority, application United Kingdom, Aug. 11, 1978, 985888; Aug. 11, 1978, 985889

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-71



272,825

SKID STEER LOADER

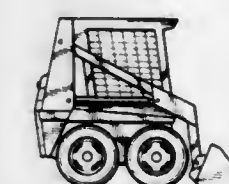
Gary L. Cochran; Gary D. Stromberg; James E. Dawson, all of Burlington, Iowa; Ralph C. Lanphere, Racine, Wis., and Maurice Klee, Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Oct. 26, 1981, Ser. No. 314,895

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-25



272,826

SKID STEER LOADER

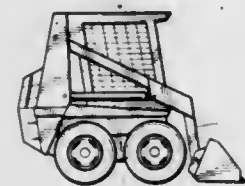
Gary L. Cochran; Gary D. Stromberg; James E. Dawson, all of Burlington, Iowa; Ralph C. Lanphere, Racine, Wis., and Maurice Klee, Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Oct. 26, 1981, Ser. No. 314,904

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-25



272,827

DETACHABLE BUTT GRILL FOR GRAPPLE ARCH

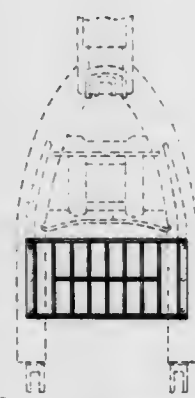
Ronald Sapelak, Belmont, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 17, 1981, Ser. No. 275,087

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-28



272,828

CHUCK

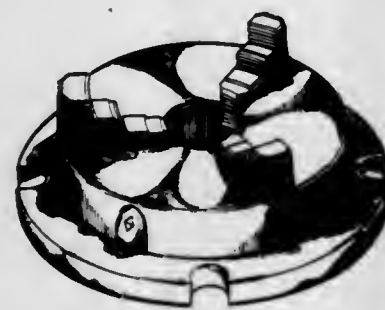
Hisao Negoro, 335 Oaza-Okubo Kumatori-cho, Sennan-gun, Osaka, Japan

Filed May 22, 1981, Ser. No. 266,377

Term of patent 14 years

Int. Cl. D15-09

U.S. Cl. D15-140



272,829

CAMERA

Takaharu Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

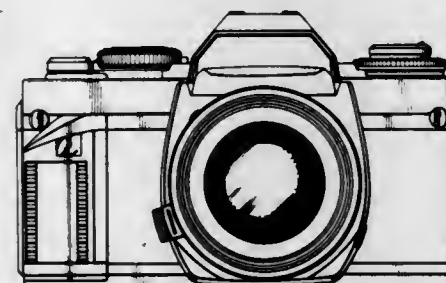
Filed Nov. 19, 1981, Ser. No. 323,030

Claims priority, application Japan, May 22, 1981, 56-22040

Term of patent 14 years

Int. Cl. D16-01

U.S. Cl. D16-8



272,830

ORIGINAL FEEDER FOR COPYING MACHINE

Kunio Hara, Chiba, and Shigeki Yasutani, Kashiwa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

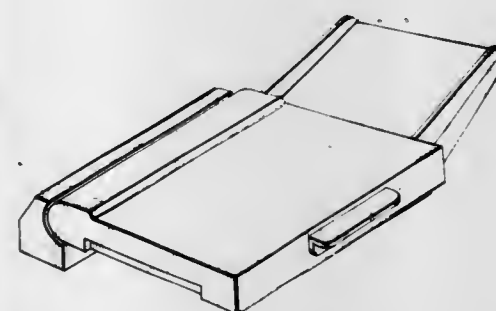
Filed Jul. 16, 1981, Ser. No. 284,134

Claims priority, application Japan, Jan. 19, 1981, 56-1003

Term of patent 14 years

Int. Cl. D16-03

U.S. Cl. D16-32



272,831

TYPEWRITER

Mitsuru Iseki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

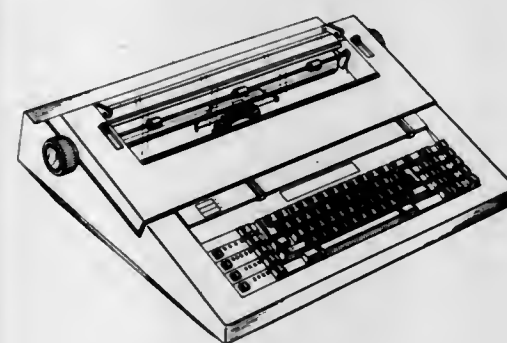
Filed May 21, 1982, Ser. No. 380,567

Claims priority, application Japan, Jan. 22, 1982, 57-2396

Term of patent 14 years

Int. Cl. D18-01

U.S. Cl. D18-1



272,832

FOUNTAIN PEN

Jean G. Malamoud, Saint-Jorioz, France, assignor to S. T. DuPont, Paris, France

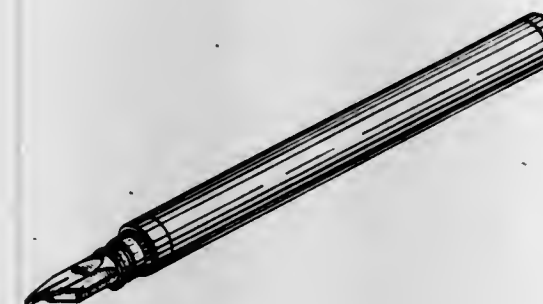
Filed Aug. 8, 1980, Ser. No. 176,446

Claims priority, application France, Feb. 20, 1980, 800443

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-51



272,834

TEMPLATE ORGANIZER STAND

William H. Moore, 212 Redwood Dr., Elk Grove Village, Ill. 60007

Filed Sep. 18, 1981, Ser. No. 303,350

U.S. Cl. D19-75



272,835

LOWER HOUSING FOR A CONTROL UNIT FOR A VIDEO GAME

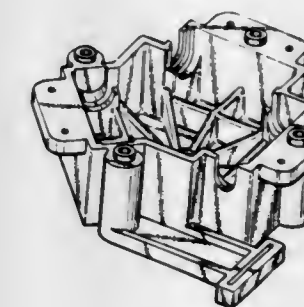
Gerald J. Lichac, Santa Cruz, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Nov. 9, 1981, Ser. No. 319,020

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-48



272,833

DISPLAY SURFACE OF THE DRUG EFFECT ON BRAIN CAPILLARY BLOOD FLOW AND NERVE IMPULSE TRANSMISSION DEMONSTRATOR

Daniel van Assche, 69 rue des Vosges, Buschwiller, France; Claude Birgy, 4/7 Weihermattstrasse, CH-4410 Liestal, Switzerland; Armin Kessler, 17 Im Rehwechel, CH-4102 Binningen, Switzerland, and Gernot Gmelin, 35/7 Fraumattstrasse, CH-4410 Liestal, Switzerland

Continuation-in-part of Ser. No. 9,700, Feb. 5, 1979, abandoned.

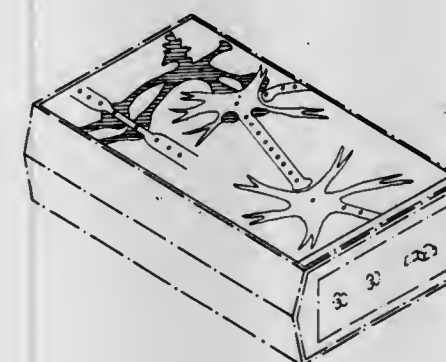
This application Nov. 4, 1981, Ser. No. 318,215

Claims priority, application United Kingdom, Aug. 3, 1978, 32169/78

Term of patent 14 years

Int. Cl. D19-07

U.S. Cl. D19-62



272,836

MAGNETIC DISC SPINNING TOY

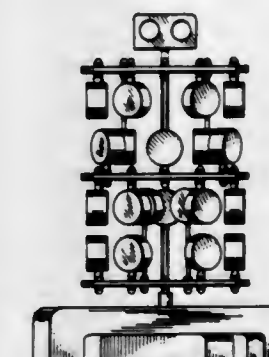
Milton E. B. Lenk, Rte. 5, Box 636, Oklahoma City, Okla. 73108

Filed Sep. 11, 1981, Ser. No. 301,168

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-59

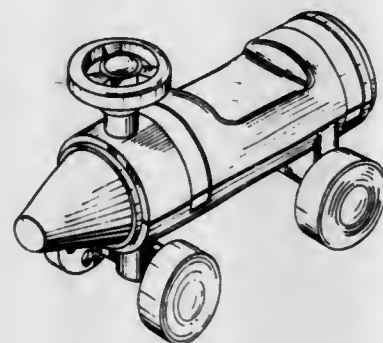


272,837
RIDE-ON TOY

Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Dec. 3, 1981, Ser. No. 327,121
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-71

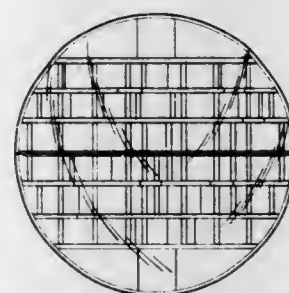


272,840
PUZZLE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,687
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-104

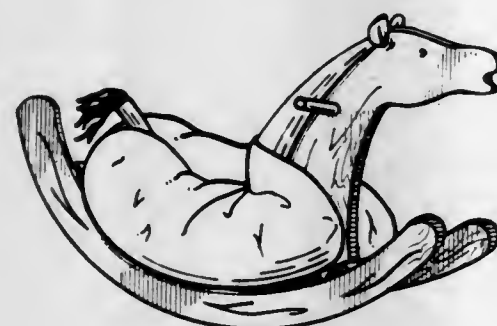


272,838
TOY ROCKING HORSE

Timothy A. O'Connell, 12625 W. Atlantic Pl., Lakewood, Colo. 80228

Filed Jul. 6, 1981, Ser. No. 280,376
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-75

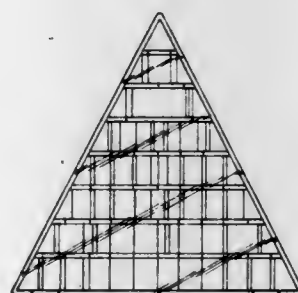


272,841
PUZZLE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,688
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-104

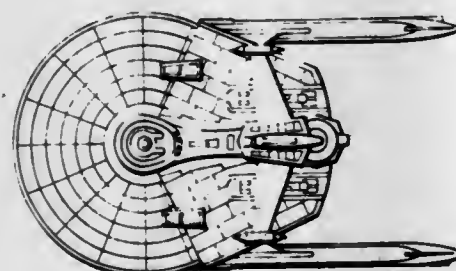


272,839
TOY SPACESHIP

Joseph R. Jennings, Studio City, and Michael Minor, Los Angeles, both of Calif., assignors to Paramount Pictures Corporation, New York, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,983
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-87

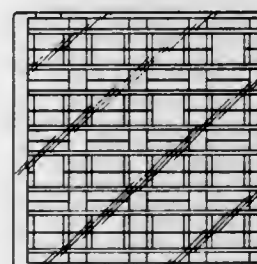


272,842
PUZZLE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,689
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-104



272,843
DOLL

Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 18, 1982, Ser. No. 349,987
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-171

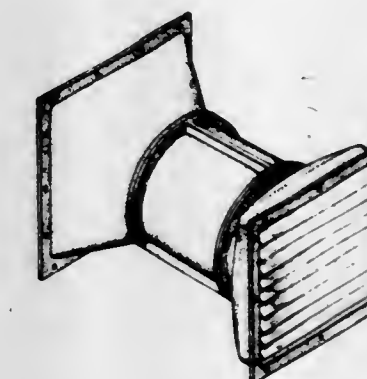


272,846
FAN HOUSING FOR GRAIN DRYERS

Robert J. McVicker, and Wilford R. Mann, both of Niles, Mich., assignors to AAA Associates, Inc., Niles, Mich.

Filed Aug. 10, 1981, Ser. No. 291,225
Term of patent 14 years
Int. Cl. D23-04

U.S. Cl. D23-139



272,844
DIESEL FUEL WARMER

Gordon L. Kelling, Minnetonka, Minn., assignor to Phillips Temro, Inc., Eden Prairie, Minn.

Filed Mar. 30, 1981, Ser. No. 249,076
Term of patent 14 years
Int. Cl. D23-03

U.S. Cl. D23-77

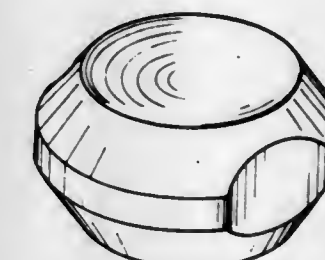


272,847
CERAMIC BRIQUETTE FOR A COOKING GRILL

Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,192
Term of patent 14 years
Int. Cl. D23-05

U.S. Cl. D23-166

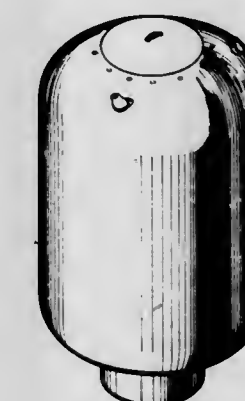


272,845
SOLID FUEL STOVE

David Wolfe, Brockwood Park, Bramdean near Alresford, Hampshire, England (S0240LQ)

Filed Apr. 6, 1981, Ser. No. 251,307
Term of patent 14 years
Int. Cl. D23-03

U.S. Cl. D23-97

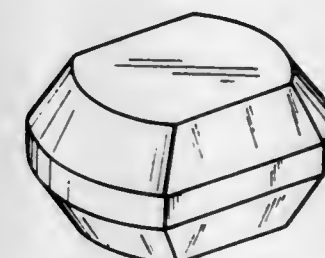


272,848
CERAMIC BRIQUETTE FOR A COOKING GRILL

Walter Koziol, Russell, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Dec. 16, 1981, Ser. No. 331,194
Term of patent 14 years
Int. Cl. D23-05

U.S. Cl. D23-166



272,849

ENDOSCOPE AND AN ACCOMPANYING EYEPIECE

Roger P. Bel, Massy, and Martial E. Hascoet, Paris, both of France, assignors to Metallisations et Traitements Optiques M.T.O., Massy, France

Filed Sep. 30, 1981, Ser. No. 307,221

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—18



272,850

DRIP CHAMBER SPIKE

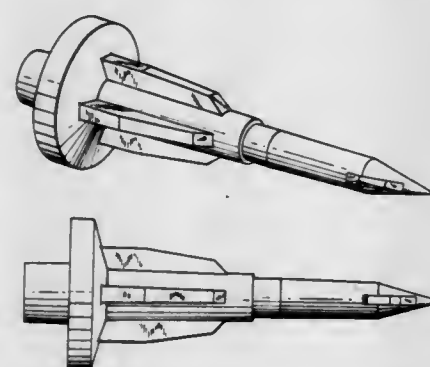
Lee K. Kulle, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 3, 1981, Ser. No. 289,684

Term of patent 14 years

Int. Cl. D24—04, 02

U.S. Cl. D24—24



272,851

LINEAR ANASTOMOSIS STAPLER

David T. Green, Norwalk; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

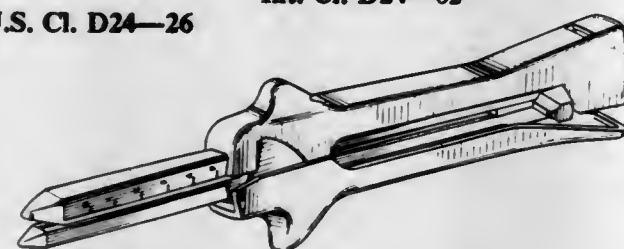
Filed Jun. 3, 1981, Ser. No. 270,274

Claims priority, application Australia, Jan. 9, 1981, 83,124; Jan. 9, 1981, 83,125; Canada, May 12, 1981, 12-05-81-4

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—26



272,852

LINEAR ANASTOMOSIS STAPLER

David T. Green, Norwalk; Paul O. Rawson, Easton, and Richard Yagami, Bridgewater, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

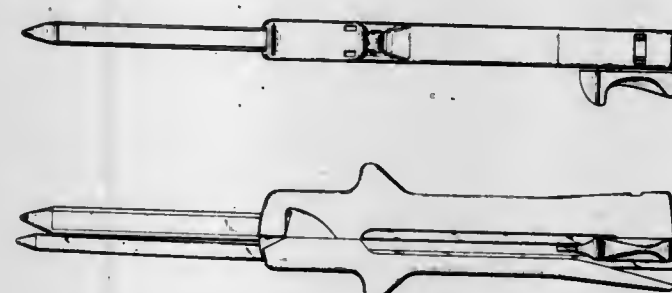
Filed Jun. 3, 1981, Ser. No. 270,278

Claims priority, application Australia, Dec. 19, 1980, 82,883; Dec. 19, 1980, 82,884; Canada, May 12, 1981, 12-05-81-4

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—26



272,853

TIBIAL RESECTION GUIDE

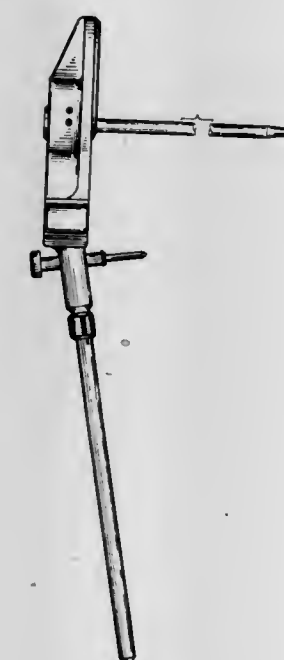
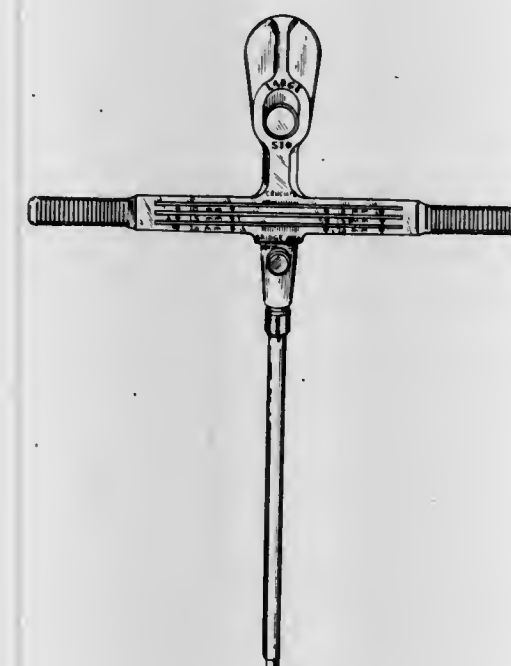
Frederick F. Buechel, 112 Orange Ave., Irvington, N.J. 07111; Michael J. Pappas, 61 Gould Pl., Caldwell, N.J. 07006, and Paul A. Witte, 157 N. Main St., New Hope, Pa. 18938

Filed Dec. 31, 1981, Ser. No. 336,044

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—26



272,854

DISTAL FEMORAL RESECTION GUIDE

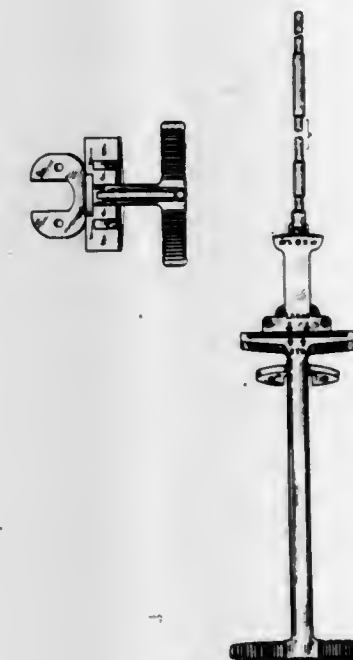
Paul A. Witte, 157 N. Main St., New Hope, Pa. 18938; Frederick F. Buechel, 112 Orange Ave., Irvington, N.J. 07111, and Michael J. Pappas, 61 Gould Pl., Caldwell, N.J. 07006

Filed Dec. 31, 1981, Ser. No. 336,045

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—26



272,855

BIOPSY FORCEPS

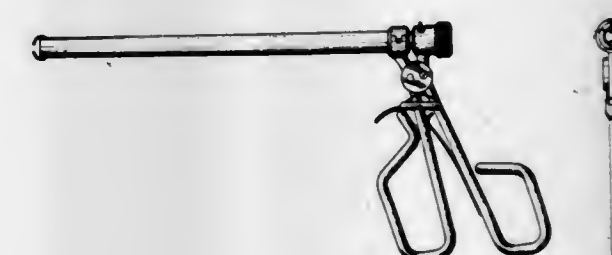
Roger P. Bel, Massy; Martial E. Hascoet, Paris, and Michel M. Regnier, Ris Orangis, all of France, assignors to Metallisations et Traitements Optiques M.T.O., Massy, France

Filed Sep. 30, 1981, Ser. No. 307,219

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—28



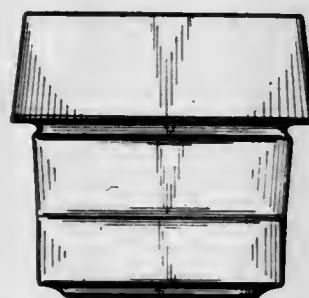
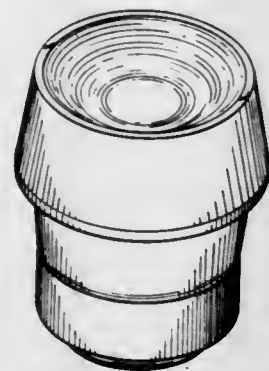
272,856

STOPPER FOR TEST TUBES AND THE LIKE

Edward P. Percarpio, North Haledon, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Feb. 16, 1982, Ser. No. 349,337

U.S. Cl. D24—99



272,858

LIGHT FIXTURE

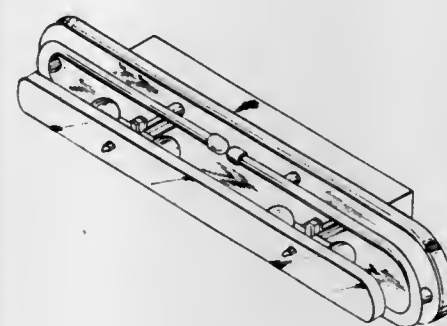
James J. Palka, Arlington Heights, Ill., assignor to Pace Industries Inc., Chicago, Ill.

Filed Oct. 5, 1981, Ser. No. 308,445

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—80



272,857

SAFETY CLAMP FOR LADDERS

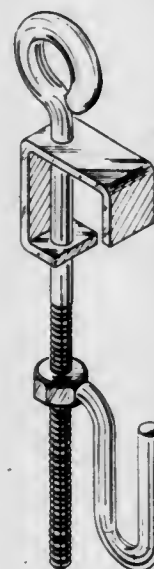
Kant F. Leach, 4395 S. Galapago St., Englewood, Colo. 80110

Filed Nov. 30, 1981, Ser. No. 325,779

Term of patent 14 years

Int. Cl. D6—99; D8—08

U.S. Cl. D25—68



272,859

LIGHTER

Giovanni Bulgari, Rome, Italy, assignor to Anthos S.A., Geneva, Switzerland

Filed Dec. 18, 1981, Ser. No. 332,329

Claims priority, application 07281981, Jul. 28, 1981, DM/000 887

Term of patent 14 years

Int. Cl. D27—05

U.S. Cl. D27—42



272,860

NECK CUSHIONING PAD FOR SINK EDGE

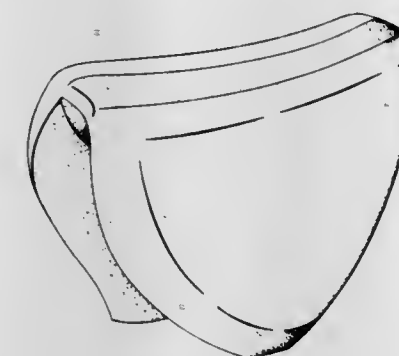
Lillian Swatzell, Homer, Ak., assignor to Lilaud Products, Coeur d'Alene, Id.

Filed Aug. 19, 1981, Ser. No. 294,289

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—20



272,861

CLIP FOR SECURING HAIRPIECE TO NATURAL HAIR

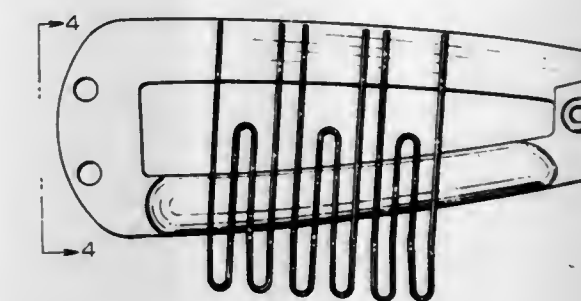
Peter A. Incando, 8907 Valley Blvd., Rosemead, Calif. 91770

Filed Feb. 1, 1982, Ser. No. 344,373

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—93



272,862

ENGINE WASHING AND CLEANING APPARATUS

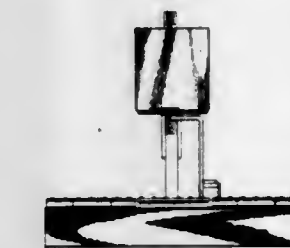
Bero Burghard, and Helmut Schauer, both of 1243 Dorion St., Montreal, Quebec, Canada (H2K 4A2)

Filed Apr. 30, 1981, Ser. No. 259,244

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D32—4



272,863

MOBILE MATERIAL DELIVERY CART

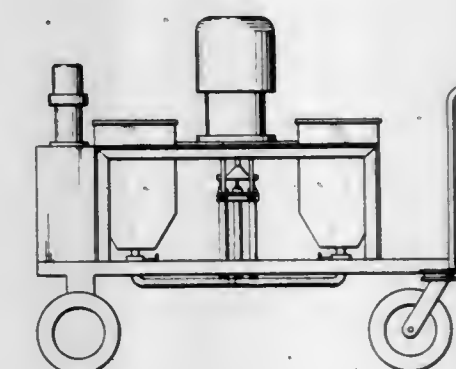
Sam D. McMullen, Houston, Tex., assignor to Matcote Company, Inc., Houston, Tex.

Filed Sep. 14, 1981, Ser. No. 302,136

Term of patent 14 years

Int. Cl. D12—02

U.S. Cl. D34—17



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TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

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Ingemann, Ole, 4,433,793, Cl. 220-276.000.
- Abbondante, Thomas S.: See—
Sellet, Frederick; George, Guerino F.; and Abbondante, Thomas S., 4,433,899, Cl. 350-307.000.
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Unger, John T., 4,434,227, Cl. 435-7.000.
- Abe, Hiromichi: See—
Kojima, Masaaki; Suzuki, Takayuki; and Abe, Hiromichi, 4,433,897, Cl. 350-252.000.
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Amano, Matsuo; Teranishi, Takao; Mouri, Yasunori; Abe, Osamu; and Sasayama, Takao, 4,433,650, Cl. 123-179.00G.
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Colombo, Edilberto, 4,434,291, Cl. 548-116.000.
- Aida Engineering, Ltd.: See—
Nakano, Koji; and Katanaga, Kenji, 4,433,465, Cl. 29-415.000.
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Deeba, Michel; Amb, William J.; and Cochran, Robert N., 4,434,300, Cl. 564-479.000.
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Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
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Hashimoto, Nobuyuki; and Hattori, Takemi, 4,433,708, Cl. 141-114.000.
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Gomi, Yoshiaki; Hirata, Takahiro; Takaoka, Michio; Mohtai, Tsuneaki; and Akashi, Kazuya, 4,434,319, Cl. 174-13.000.
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Kessler, Erich, 4,434,250, Cl. 521-64.000.
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Beck, Heinz; Holtvoigt, Werner; and Mukerjee, Ambar, 4,434,260, Cl. 524-104.000.
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Nicholson, Charles B., 4,434,055, Cl. 210-489.000.
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Stoll, Wolfgang; and Ledebink, Wilhelm, 4,434,137, Cl. 423-6.000.
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Hagelberg, Allen C.; and Allardt, Clark E., 4,433,606, Cl. 89-1.812.
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Salmon, Joe E.; Strother, Fleetwood E.; and Crawford, James R., 4,433,454, Cl. 19-55.00R.
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Holland, Charles J.; Wallach, Steven; and Alsing, Carl J., 4,434,459, Cl. 364-200.000.
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Urquhart, John; and Theeuwes, Felix, 4,434,153, Cl. 424-22.000.
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Tsutsumi, Akira, 4,434,349, Cl. 219-121.0LG.
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Longfield, James E., 4,434,275, Cl. 525-403.000.
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Sanchez, Robert A., 4,434,293, Cl. 549-17.000.
- American Laser Corporation: See—
Chaffee, Edwin G., 4,434,493, Cl. 372-86.000.
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DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.
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Sommer, Robert C., 4,434,508, Cl. 455-306.000.
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Crank, James D., 4,434,037, Cl. 204-192.00R.
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Tomizawa, Fumio; and Aoshika, Masayuki, 4,434,495, Cl. 373-76.000.
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Ohkubo, Tetsuo; Arai, Yoshio; and Kataoka, Hiroyuki, 4,434,431, Cl. 346-154.000.
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Tanaka, Ichiro; Arato, Hiroshi; and Wakabayashi, Takaaki, 4,434,166, Cl. 424-250.000.
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Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Henrion, Romain; Klein, Henri; and Liesch, Jean-Francois, 4,434,005, Cl. 75-60.000.
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Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schumacher, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Archard, Thornton N. J.: See—
Erlam, David P.; and Archard, Thornton N. J., 4,433,788, Cl. 211-26.000.
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Puech, Claude; Papuchon, Michel; and Arditty, Herve, 4,433,895, Cl. 350-96.130.
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Linder, Wolfgang; Arend, Gunter; Barnikel, Carl-Dieter; and Frauenkron, Gunter, 4,434,070, Cl. 523-323.000.
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Courvoisier, Guy; and Arieh, Simon, 4,433,494, Cl. 36-119.000.
- Arlotte, Thomas F.: See—
Rollins, Key; Key, Anthony N.; and Arlotte, Thomas F., 4,433,745, Cl. 180-118.000.
- Armour Pharmaceutical Company: See—
Jones, John L.; and Rubino, Andrew M., 4,434,155, Cl. 424-47.000.
- Armstrong World Industries, Inc.: See—
Lenox, Ronald S.; and Sparks, Moses, Jr., 4,434,007, Cl. 106-26.000.
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Selsted, Walter T., 4,434,050, Cl. 210-169.000.
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Sidman, Kenneth R.; and Arons, Irving J., 4,433,439, Cl. 2-161.00R.
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Kozawa, Shigeyuki; Hasegawa, Noboru; and Kawahara, Hiroshi, 4,434,277, Cl. 525-507.000.
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Kurihara, Shigeru; and Ohashi, Hiroyuki, 4,434,029, Cl. 203-42.000.
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Inoguchi, Kazuhiro; Nakanishi, Tomohiko; and Asano, Mitsuru, 4,434,117, Cl. 264-56.000.
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Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,434,044, Cl. 208-91.000.
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Bichon, Daniel, 4,433,688, Cl. 128-335.500.
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Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., 4,434,095, Cl. 260-112.50R.
- Atkeisson, Randal A.: See—
Swartz, Harold L.; Atkeisson, Randal A.; Carter, Rodney A.; and Parker, Russell C., 4,434,391, Cl. 318-662.000.
- Atkins, Ronald L.: See—
DeFusco, Albert A., Jr.; Nielsen, Arnold T.; and Atkins, Ronald L., 4,434,304, Cl. 568-710.000.
- Atlantic Richfield Company: See—
Achorn, George S., 4,434,279, Cl. 526-66.000.
- Chao, Tai S.; Smith, Aubrey C., Jr.; and Smies, Frederic D., 4,434,064, Cl. 252-29.000.
- Miller, Richard F., 4,434,307, Cl. 585-4.000.
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Schaper, Siegfried, 4,434,121, Cl. 264-174.000.
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Rolling, Paul V.; Vezzey, Richard L.; and Aylward, David E., 4,434,242, Cl. 502-107.000.
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- B.F. Goodrich Company, The: See—
Chasar, Dwight W., 4,434,265, Cl. 524-339.000.
- Jablonski, Dane E., 4,434,274, Cl. 525-349.000.
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Brown, Jack M.; and Miller, Terrance S., 4,433,570, Cl. 73-12.000.
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Bohl, Thomas L.; Pocock, Robert E.; and Zimmerlin, Sharon L., 4,433,922, Cl. 374-36.000.
- Zadiraka, Allan J., 4,433,646, Cl. 122-504.200.
- Baboian, Robert; and Haynes, Gardner S., to Texas Instruments Incorporated. Corrosion protection system for hot water tanks. 4,434,039, Cl. 204-196.000.
- Bach, Gerhard; Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Hillenbrand, Horst, to Degussa Aktiengesellschaft. Working up of the residual gases resulting from the production of cyanuric chloride. 4,434,148, Cl. 423-379.000.
- Bacher, Walter; and Jacob, Eberhard, to Kernforschungszentrum Karlsruhe GmbH; and Maschinenfabrik Augsburg-Nürnberg AG. Method for removing adhering or dust-like deposits in systems handling uranium hexafluoride. 4,434,139, Cl. 423-19.000.
- Badra, Sami A. Ankle protector. 4,433,682, Cl. 128-153.000.
- Baggio, Giorgio, to Nordica S.p.A. Closure device particularly for ski boots. 4,433,456, Cl. 24-68.05K.
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- Bairen, Donald J.; and Lucas, Thomas M. Collapsible sportsman's stool. 4,433,870, Cl. 297-16.000.
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Baker, John R., 4,433,702, Cl. 137-527.600.
- Bowyer, Michael L., 4,433,725, Cl. 166-65.00R.
- Baker, John E.: See—
Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., 4,433,561, Cl. 66-148.000.
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Preston, Dan C., Jr.; and Kim, Yung J., 4,433,726, Cl. 166-118.000.
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- Balaban, Alvin R.: See—
Steckler, Steven A.; and Balaban, Alvin R., 4,434,439, Cl. 358-174.000.
- Baldwin, Maynard M.; and Wyant, Robert E., to Battelle Development Corporation. Process for making symmetrical alkanediols and the bis-ethers thereof. 4,434,032, Cl. 204-72.000.
- Ballentine, Howard K., Jr., to Paradyne Corporation. D.C. Power monitor. 4,434,378, Cl. 307-350.000.
- Ballestrasse, Cindy L.; and Ruggeri, Robert T., to Electrochemical Technology Corp. Method of preparing acrylic ion-transfer membranes. 4,434,249, Cl. 521-27.000.
- Ballmann, Hans J.: See—
von der Eltz, Hans-Ulrich; Heinisch, Peter; and Ballmann, Hans J., 4,433,976, Cl. 8-555.000.
- Bally Manufacturing Corporation: See—
Hooker, Donald E.; and Tojza, Roman A., 4,433,844, Cl. 273-143.00R.
- Bambach, Wolfgang: See—
Koeck, Klaus; Bambach, Wolfgang; Ruopp, Gerhard; and Mikley, Frank, 4,434,326, Cl. 179-2.0DP.
- Ban, Jung J.: See—
Kim, Bill S.; and Ban, Jung J., 4,433,841, Cl. 273-338.000.
- Banba, Toshiaki, to Toyo Aluminium Kabushiki Kaisha. Polymer-coated metallic pigments. 4,434,009, Cl. 106-290.000.
- Bandag, Incorporated: See—
Brewer, Donaldee, 4,434,018, Cl. 156-96.000.
- Barbano, Normand, to GTE Products Corporation. Multiple ring dipole array. 4,434,425, Cl. 343-797.000.
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- Barcza, Sandor, to Sandoz, Inc. Sulfur and silicon-containing fatty acid amides. 4,434,161, Cl. 424-184.000.
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- Barnette, Willie J., to Du Pont de Nemours, E. I., and Company. Separation of alkenes from alkadienes. 4,434,316, Cl. 585-833.000.
- Barnikel, Carl-Dieter: See—
Linder, Wolfgang; Arend, Gunter; Barnikel, Carl-Dieter; and Frauenkron, Gunter, 4,434,070, Cl. 523-323.000.
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Hoelderich, Wolfgang; Moss, Wolf D.; and Schwarzmann, Matthias, 4,434,314, Cl. 585-640.000.
- BASF Wyandotte Corporation: See—
Davis, Paul; and Wilson, Joe C., 4,434,065, Cl. 252-75.000.
- Kaneko, Thomas M., 4,434,077, Cl. 252-357.000.
- Kaneko, Thomas M., 4,434,078, Cl. 252-357.000.
- Bata Shoe Company: See—
Rys-Sikora, John, 4,434,253, Cl. 521-134.000.
- Battelle Development Corporation: See—
Baldwin, Maynard M.; and Wyant, Robert E., 4,434,032, Cl. 204-72.000.
- Battelle Memorial Institute: See—
Harmer, Alan L., 4,433,913, Cl. 356-133.000.
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Lee, John M.; and Bauman, William C., 4,434,138, Cl. 423-7.000.
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Probst, Joachim; Kolb, Gunter; Mummehoff, Peter; and Baumgen, Heinz, 4,434,269, Cl. 524-538.000.
- Baxter Travenol Laboratories, Inc.: See—
Bischof, Reinhard, 4,433,974, Cl. 604-407.000.
- Bayer Aktiengesellschaft: See—
Buysch, Hans-Josef; Krimm, Heinrich; and Rudolph, Hans, 4,434,105, Cl. 260-463.000.
- Findeisen, Kurt; and Ziemann, Heinz, 4,434,289, Cl. 546-14.000.
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Beriger, Conrad; Kucera, Ladislav; Schneider, Paul; and Spittaler, Gunther, 4,434,417, Cl. 338-53.000.
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Edwards, Thomas M.; Kelley, James O.; and Beard, Michael D., 4,433,884, Cl. 312-256.000.
- Beck, Alfred E.; and Cushing, Richard D., to Circle Machine Co., Inc. Rotary sprayers for applying uniform coats to conveyor supported work. 4,433,640, Cl. 118-323.000.
- Beck, Heinz; Holtvoigt, Werner; and Mukerjee, Ambar, to Akzona, Inc. Thermoplastic resin shaping with olefin/maleimide copolymer lubricant. 4,434,260, Cl. 524-104.000.
- Becka, Michael M.; and Bennett, George, to International Shoe Machine Corporation. Transferring successive workpieces to and from a work station. 4,433,632, Cl. 112-262.300.
- Beckenhauer, Thomas. Method for retarding masonry efflorescence. 4,434,193, Cl. 427-299.000.
- Becker, Otto, to W. Gunther GmbH. Mercury electrode switch. 4,434,337, Cl. 200-220.000.
- Beckim, Kenneth A., to PPG Industries, Inc. Apparatus for and method of applying a pattern upon a substrate. 4,433,623, Cl. 101-123.000.
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- Bell, Lon E.; and Gruber, William P., to Technar, Inc. Snap-acting thermal relay. 4,434,414, Cl. 337-102.000.
- Bell Telephone Laboratories, Incorporated: See—
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- Dickey, Larry W., 4,434,449, Cl. 361-124.000.
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McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., 4,434,465, Cl. 364-200.000.
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Becka, Michael M.; and Bennett, George, 4,433,632, Cl. 112-262.300.
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Barner, Robert P., Jr.; Bensadon, Joseph M.; Besseyre, Jacques A.; and Markey, Harold G., 4,434,486, Cl. 370-110.100.
- Benson, Inc.: See—
Wegener, Mary J.; and Feinleib, Morris, 4,434,222, Cl. 430-135.000.
- Berg, Robert H.; and Karuhn, Richard F., to Particle Data, Inc. Porous passage means and method for particle analyzing systems. 4,434,398, Cl. 324-71.400.
- Bergl, Friedrich: See—
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- Berglund, Larry G.: See—
Rascati, Richard J.; and Berglund, Larry G., 4,433,923, Cl. 374-112.000.
- Bergwerksverband GmbH: See—
Irresberger, Hermann, 4,433,945, Cl. 405-302.000.
- Beriger, Conrad; Kucera, Ladislav; Schneider, Paul; and Spittaler, Gunther, to BBC Brown, Boveri & Company Limited. Liquid-cooled power resistor and use thereof. 4,434,417, Cl. 338-53.000.
- Berkey Photo, Inc.: See—
Tarsia, Giuseppe, 4,433,907, Cl. 355-55.000.
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- Berlex Laboratories, Inc.: See—
Diamond, Julius; and Wohl, Ronald A., 4,434,174, Cl. 424-273.00B.
- Bernabe, Vincent, Jr.: See—
Mentzer, William R.; and Bernabe, Vincent, Jr., 4,433,515, Cl. 52-115.000.
- Berry, Robert L.: See—
Ko, Wen-Chuang; and Berry, Robert L., 4,433,471, Cl. 29-578.000.
- Bert, Georges, to Thomson-CSF. Inverter using low-threshold-voltage field-effect transistors and a switching diode, formed as an integrated circuit. 4,434,379, Cl. 307-448.000.
- Bertini, Millo. Target pigeon. 4,433,842, Cl. 273-363.000.
- Bertrand, Rene. Machine for cutting curbstones, sidewalks and the like. 4,433,871, Cl. 299-41.000.
- Besenal, Christian: See—
Melan, Giuseppe; Verdet, Pierre; and Besenal, Christian, 4,433,991, Cl. 65-1.000.
- Besseyre, Jacques A.: See—
Barner, Robert P., Jr.; Bensadon, Joseph M.; Besseyre, Jacques A.; and Markey, Harold G., 4,434,486, Cl. 370-110.100.
- Best, David W.; and Russell, Jeffrey D., to Rockwell International Corporation. Single pin time-sharing for serially inputting and outputting data from state machine register apparatus. 4,434,474, Cl. 364-900.000.
- Betts, Dennis J., to International Computers Limited. Multilayer printed circuit boards. 4,434,321, Cl. 174-68.500.
- Betts, Max W., to Courtaulds Limited. Presser foot for a knitting machine. 4,433,560, Cl. 66-64.000.
- Bhattacharya, Somnath; Hu, Shih-Ming; Koopman, Nicholas G.; and Oldakowski, Chester C., to International Business Machines Corporation. Solder mound formation on substrates. 4,434,434, Cl. 357-71.000.
- Biaggi, Armando, to Sulzer Brothers Limited. Spacer grid for supporting rod-shaped members. 4,433,721, Cl. 165-162.000.
- BICC Public Limited Company: See—
Erlam, David P.; and Archard, Thornton N. J., 4,433,788, Cl. 211-26.000.
- Bichon, Daniel, to Assut S.A. Method of coating a catgut suture. 4,433,688, Cl. 128-335.500.
- Bickel, Hans: See—
Woodward, Robert B.; and Bickel, Hans, 4,434,287, Cl. 544-16.000.
- Bickman, Bernard F., to Honeywell Inc. Moving torque coil oscillatory drive member. 4,433,691, Cl. 128-660.000.
- Bienz, Hans, to Stoffel Seals Corporation. Hangtag with a link serving as a fastening device. 4,433,498, Cl. 40-2.00R.
- Bighley, Alexandria D.: See—
Maravelas, William S., Jr.; Bighley, Alexandria D.; and Calabrese, Marco A., 4,433,880, Cl. 312-3.000.
- Billington, Reginald; Edge, David J.; and Winterbotham, Peter, to Lever Brothers Company. Detergent compositions containing sulphosuccinates and high bloom gel strength protein. 4,434,088, Cl. 252-547.000.
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Hampson, Jeffrey D.; and Billington, Reginald, 4,434,087, Cl. 252-545.000.
- Hampson, Jeffrey D.; Billington, Reginald; and Cox, Ian R., 4,434,090, Cl. 252-547.000.

- BioResearch Inc.: See—
Kurtz, Leonard D.; and LiCausi, Joseph M., 4,433,973, Cl. 604-403.000.
- Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Civier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, to Agence Nationale de Valorisation de la Recherche. Pyrido (4,3-B) carbazoles substituted in the 1 position by a polyamine chain. 4,434,290, Cl. 546-70.000.
- Bischof, Reinhard, to Baxter Travenol Laboratories, Inc. Mixing system for parenteral liquids. 4,433,974, Cl. 604-407.000.
- Blaas, Wolfgang; Bergl, Friedrich; and Wetmore, Judson D., to Hold-A-Fold, Inc. Method of manufacture of waterbed liners. 4,434,020, Cl. 156-216.000.
- Black, Charles E. Flexible surveyor's marker. 4,433,490, Cl. 33-293.000.
- Black & Decker Inc.: See—
Chaconas, Peter C., 4,433,589, Cl. 74-325.000.
- Blackwell, Jennings P., to Phillips Petroleum Company. Hydrolytic stability improving additive. 4,434,263, Cl. 524-322.000.
- Blanchard, Andrew J.: See—
Correa, Aderbal C.; Gergely, John S.; and Blanchard, Andrew J., 4,434,364, Cl. 250-253.000.
- Blandin, Yannick: See—
Debouzie, Alain; Sainte-Foi, Daniel; and Blandin, Yannick, 4,433,992, Cl. 65-3.100.
- Blanton, William A.: See—
Dimpfl, William L.; and Blanton, William A., 4,434,147, Cl. 423-235.000.
- Blaser, Richard F. Fueling system for internal combustion engine. 4,433,660, Cl. 123-266.000.
- Blaul, Ronald L., to Trigent, Inc. High pressure parts washer. 4,433,698, Cl. 134-56.00R.
- Blum, Walter: See—
Abt, Reinhold; Blum, Walter; and Bordovsky, Jaromir, 4,433,613, Cl. 91-358.00R.
- Blyth, Geoffrey C., to Marconi Instruments Limited. Automatic test systems. 4,434,489, Cl. 371-29.000.
- Bobechko, Kevin A. Self-adjusting spinal scoliosis fusion hook. 4,433,676, Cl. 128-69.000.
- Bocchini, William R.: See—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.
- Boender, Carl H.; and Zigterman, Roger M., to Wallpapers Galore, Inc. Storage and display system for rolls of decorative wall covering. 4,433,883, Cl. 312-234.100.
- Boggio, Giuseppe; and Lorenzi, Mario, to Ing. C. Olivetti & C., S.p.A. Reversal of connections of telegraphic line wires upon detection of unwanted polarity of the loop current. 4,434,324, Cl. 178-69.00R.
- Bogossian, Armen: See—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.
- Bohl, Thomas L.; Pocock, Robert E.; and Zimmerlin, Sharon L., to Babcock & Wilcox Company, The. Calorimeter. 4,433,922, Cl. 374-36.000.
- Bohman, Carl E., to Sperry Corporation. Metal detector apparatus. 4,433,528, Cl. 56-10.200.
- Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation Limited. Radiometric methods and means. 4,434,365, Cl. 250-255.000.
- Bohnen, Klaus, to Hoffmann-La Roche Inc. Fungicidal compositions. 4,434,165, Cl. 424-248.400.
- Bol, Izya, to Xerox Corporation. Method of making a self-aligned Schottky metal semi-conductor field effect transistor with buried source and drain. 4,434,013, Cl. 148-1.500.
- Bolding, Charles N.; and Hastings, Paul D. Conduit bending and support device. 4,433,821, Cl. 248-65.000.
- Bom, Cornelis J. G.: See—
van der Lely, Ary; and Bom, Cornelis J. G., 4,433,734, Cl. 172-68.000.
- Bomgardner, Carl C.: See—
Mendel, Jack M.; Bomgardner, Carl C.; Rack, Robert W.; Scott, Donald G.; and Stritmater, August W., 4,433,917, Cl. 366-132.000.
- Bonneau, Hilaire, to Pratt & Whitney Aircraft of Canada Limited. Sound suppressor liner. 4,433,751, Cl. 181-213.000.
- Boon, Bart, to Gusto Engineering B.V. Method and apparatus for lowering and positioning a pipe line onto the bottom of a deep water. 4,433,938, Cl. 405-166.000.
- Bor, Mubor es Cipolpari: See—
Keszei, Jenő; Varga, László; and Donath, Jenő, 4,433,485, Cl. 33-3.00R.
- Bordovsky, Jaromir: See—
Abt, Reinhold; Blum, Walter; and Bordovsky, Jaromir, 4,433,613, Cl. 91-358.00R.
- Borg-Warner Corporation: See—
Smirl, Richard L., 4,433,594, Cl. 74-689.000.
- Borst, Williband, to Gebrüder Buehler AG. Pneumatic duct extraction. 4,433,986, Cl. 55-272.000.
- Bosch & Pierburg System oHG: See—
Hartel, Gunter; Schurfeld, Armin; and Jordan, Wolfgang, 4,433,661, Cl. 123-339.000.
- Bose, Ajit, to Leco Inc. Method and apparatus for cooling molten tube. 4,434,129, Cl. 264-557.000.
- Bose, Sanjay K.: See—
Baker, Lewin T.; Bose, Sanjay K.; and Huber, Paul G., 4,434,421, Cl. 340-825.510.
- Bott, John A. Vehicle article carrier. 4,433,804, Cl. 224-321.000.
- Bouygues: See—
Richard, Pierre, 4,433,525, Cl. 52-741.000.
- Bowen, Robert F.; and Martel, Thomas J., to Raytheon Company. Turntable for microwave oven. 4,434,343, Cl. 219-10.55F.
- Bowyer, Michael L., to Baker International Corporation. Adjustable spacer with rotational lock. 4,433,725, Cl. 166-65.00R.
- Boyce, William A., to Macaster Controls, Inc. Vehicle alignment apparatus and methods. 4,433,489, Cl. 33-203.180.
- Bozec, Laurent: See—
Layotte, Pierre-Claude; and Bozec, Laurent, 4,433,736, Cl. 173-94.000.
- Brader, Walter H., Jr.: See—
Larkin, John M.; and Brader, Walter H., Jr., 4,434,309, Cl. 585-10.000.
- Brady, Welby D., to Temp-Control Corporation. Pipe freezing device. 4,433,556, Cl. 62-293.000.
- Brake, Bobby G.: See—
Chatterji, Jiten; Brake, Bobby G.; and Tinsley, John M., 4,433,731, Cl. 166-293.000.
- Brandenstein, Manfred; Hans, Ruiger; Horling, Peter; Hetterich, Hermann; Pape, Gebhard; and Gossmann, Willi, to SKF Kugellagerfabriken GmbH. Roller bearings installed without clearance and pre-loaded. 4,433,932, Cl. 403-261.000.
- Brandenstein, Manfred: See—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,433,768, Cl. 192-98.000.
- Walter, Lothar; Brandenstein, Manfred; Ernst, Horst M.; and Olschewski, Armin, 4,433,875, Cl. 308-6.00R.
- Brandhurst Company Limited: See—
Williams, Anthony P.; and Carter, Ralph G., 4,433,574, Cl. 73-200.000.
- Brasseur, Georg, to Friedmann & Maier Aktiengesellschaft. Circuit arrangement for controlling the commutation in a stepping motor. 4,434,392, Cl. 318-696.000.
- Breed, Dirk J.: See—
Robertson, John M.; Breed, Dirk J.; and Voermans, Antonius B., 4,434,212, Cl. 428-693.000.
- Breidis, John F.: See—
Saleh, Yousef; Breidis, John F.; and Crane, Jacob, 4,434,016, Cl. 148-12.70C.
- Brendlinger, Edward C., to United States Steel Corporation. Vertical-pass electrotreating cell. 4,434,040, Cl. 204-206.000.
- Bresin, Elias H., to Bresin, Elias H.; and Sanders, David, a part interest. Thermostatically-regulated arrangement for and method of switching power to a heating/cooling system, and methods of installing and retrofitting the arrangement at an electrical outlet box. 4,433,718, Cl. 165-12.000.
- Brewer, Donald, to Bandag, Incorporated. Tire retreading system with envelope pressure. 4,434,018, Cl. 156-96.000.
- Bricco, Larry J., to Laminations Corporation. Multi-ply paper target. 4,433,843, Cl. 273-407.000.
- Briefer, Dennis K., to Seira Systems, Inc. Diaphragm. 4,434,203, Cl. 428-152.000.
- British Hovercraft Corporation Ltd.: See—
Rollins, Kay; Key, Anthony N.; and Arlotte, Thomas F., 4,433,745, Cl. 180-118.000.
- Brooks, Kenneth E., Jr. Fragrance or the like dispenser, particularly for automobiles. 4,433,796, Cl. 222-135.000.
- Brooks, Ralf M.: See—
Osmera, Miroslav S.; Brooks, Ralf M.; and Kim, Sung-Soon, 4,433,902, Cl. 354-10.000.
- Bross, Roger B.: See—
Langley, Lawrence W.; and Bross, Roger B., 4,434,389, Cl. 318-254.000.
- Brouwer, Peter: See—
Desia, Nitin; Delaney, Rory A. M.; Brouwer, Peter; and Huang, Victor T., 4,434,186, Cl. 426-565.000.
- Brown, Bobby L., to Mar-Kay Plastics, Inc. Blow molded dynamite tube. 4,433,625, Cl. 102-331.000.
- Brown Boveri Electric, Inc.: See—
Garzon, Ruben D., 4,434,336, Cl. 200-150.00G.
- Brown, George L. Modular, stackable, suspendable drawer cabinet. 4,433,882, Cl. 312-111.000.
- Brown, Jack M.; and Miller, Terrance S., to B & W Engineering Corporation. Mechanical shock machine. 4,433,570, Cl. 73-12.000.
- Brown, Michael C.: See—
Azad, A. R. M.; Kirchanski, Stefan J.; and Brown, Michael C., 4,434,150, Cl. 424-1.100.
- Brown, William H. Application for spraying liquid chemical onto drill pipe. 4,433,639, Cl. 118-316.000.
- Brugel, Edward G.; and Yllo, Walter, to Du Pont de Nemours, E. I., and Company. Extrudable self-supporting hot melt adhesive sheet. 4,434,261, Cl. 524-109.000.
- Brüker-Franzen Analytik GmbH: See—
Oderheimer, Bernhard; Kremer, Johannes H.; and Kranich, Klaus O., 4,433,982, Cl. 55-158.000.
- Brunelle, Dennis S.: See—
Bailey, Timothy F.; and Brunelle, Dennis S., 4,433,476, Cl. 29-752.000.
- Brunswick Corporation: See—
Fitzner, Arthur O., 4,433,668, Cl. 123-597.000.

- Bucher, Bernard: See—
Dostert, Philippe; Imbert, Thierry; and Bucher, Bernard, 4,434,170, Cl. 424-265.000.
- Buckley, Alan; Conciatori, Anthony B.; and Calundann, Gordon W., to Celanese Corporation. Melt processable blend of a low molecular weight liquid crystalline compound and a polyolefin or polyester. 4,434,262, Cl. 524-237.000.
- Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., to Vectra International Corporation. Microencapsulated cholesteric liquid crystal temperature measuring device for determining the temperature of non-planar or planar surfaces. 4,433,637, Cl. 116-207.000.
- Bujalski, Joseph, to Motorola, Inc. Interline spacing adjustment circuit in a scanning CRT visual display system. 4,434,420, Cl. 340-724.000.
- Buljan, Sergej-Tomislav: See—
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,433,979, Cl. 51-307.000.
- Bunger, Richard E. Fence tensioning device. 4,433,831, Cl. 256-39.000.
- Buracchi, Livio: See—
Giobbio, Vincenzo; Ornato, Giorgio; Buracchi, Livio; and Mangia, Alberto, 4,434,097, Cl. 260-112.50R.
- Burgio, Antonio, to Fiat Auto S.p.A. Precombustion chamber for internal combustion engines with compression-ignition. 4,433,659, Cl. 123-256.000.
- Burhans, Allison S.; and Spurr, Orson K., Jr., to Union Carbide Corporation. Curable epoxy resin containing compositions. 4,434,286, Cl. 528-297.000.
- Burke, Roger M.; DeSatnick, Allen H.; and Honkanen, George P., to Acufex Microsurgical, Inc. Microsurgical scissors. 4,433,687, Cl. 128-318.000.
- Burlingame, Glen E.: See—
Cook, Steven F.; and Burlingame, Glen E., 4,433,787, Cl. 211-5.000.
- Burlington Industries, Inc.: See—
Fash, William G.; and Davis, Delbert A., 4,434,200, Cl. 428-257.000.
- Burroughs Corporation: See—
Chang, Gerald W., 4,434,403, Cl. 328-120.000.
- Busby, Dennis L. Selective, locally defined heating of a body. 4,434,341, Cl. 219-10.55A.
- Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., to Ashland Oil, Inc. Method for recovering sulfur oxides from CO-rich flue gas. 4,434,044, Cl. 208-91.000.
- Busch-Vishniac, Ilene J.; Wallace, Robert L., Jr.; and West, James E., to Bell Telephone Laboratories, Incorporated. Electret transducer with variable actual air gap. 4,434,327, Cl. 179-111.00E.
- Buss, Waldeen C.; and Hughes, Thomas R., to Chevron Research Company. Conversion of alkylcyclopentanes to aromatics. 4,434,311, Cl. 585-444.000.
- Butler, Donald E.: See—
Poschel, Bruno P. H.; and Butler, Donald E., 4,434,169, Cl. 424-263.000.
- Butts, Douglas E., to Inland Enterprises, Inc. Metallurgical lance. 4,433,832, Cl. 266-87.000.
- Buyisch, Hans-Josef; Krimm, Heinrich; and Rudolph, Hans, to Bayer Aktiengesellschaft. Process for the preparation of dialkyl carbonates. 4,434,105, Cl. 260-463.000.
- Byrd, Franklin D. Can top lid holder. 4,433,864, Cl. 294-27.00H.
- Byrne, Edmund F.; and Tolman, Glen L., to Medi-Physics, Inc. Bifunctional chelating agents. 4,434,151, Cl. 424-1.100.
- Byrns, John P.: See—
Levine, Stephen N.; Dabbish, Ezzat A.; and Byrns, John P., 4,434,323, Cl. 178-22.170.
- Bzdula, Joseph A., to Carrier Corporation. Method of testing oil for ionic contaminants. 4,434,233, Cl. 436-60.000.
- C. R. Bard, Inc.: See—
Allen, Douglas, Jr.; and Flam, Eric, 4,434,254, Cl. 523-105.000.
- C. Van der Lely N.V.: See—
van der Lely, Ary; and Bom, Cornelis J. G., 4,433,734, Cl. 172-68.000.
- Caddick, Gary R.; and Guest, Philip Q., Jr., to International Telephone and Telegraph Corporation. Automatic position control for a vehicle seat. 4,434,468, Cl. 364-424.000.
- Caggiano, Nurmi. Paint can receptacle and the like. 4,433,822, Cl. 248-210.000.
- Calabrese, Marco A.: See—
Maravelas, William S., Jr.; Bighley, Alexandria D.; and Calabrese, Marco A., 4,433,880, Cl. 312-3.000.
- Calkins, George B.: See—
Sarnoff, Stanley J.; Malooley, Rudolph S.; Calkins, George B.; and Tarello, William R., 4,433,684, Cl. 128-203.210.
- Callera, Joseph: See—
Dunnrowicz, Clarence J.; and Callera, Joseph, 4,434,384, Cl. 310-325.000.
- Callihan, Clayton D., to Louisiana State University Board of Supervisors. Process for the refrigeration of an enclosure. 4,433,553, Cl. 62-94.000.
- Calmar, Inc.: See—
Corsette, Douglas F., 4,433,799, Cl. 222-309.000.
- Calundann, Gordon W.: See—
Buckley, Alan; Conciatori, Anthony B.; and Calundann, Gordon W., 4,434,262, Cl. 524-237.000.
- Cammons, Ray R.: See—
Aloisio, Charles J., Jr.; and Cammons, Ray R., 4,434,120, Cl. 264-155.000.
- Campbell, Ira J., to Westinghouse Electric Corp. Lifting system for a turbine disc. 4,433,830, Cl. 254-264.000.
- Campbell, James. Glare-eliminating task lighting fixture. 4,434,453, Cl. 362-33.000.
- Canon Denshi Kabushiki Kaisha: See—
Toshimitsu, Naohiko, 4,434,446, Cl. 360-125.000.
- Canon Kabushiki Kaisha: See—
Nakata, Shinichi, 4,434,354, Cl. 219-216.000.
- Omi, Kokichi; and Kuroda, Yasuo, 4,433,908, Cl. 355-68.000.
- Sekimura, Nobuyuki, 4,433,900, Cl. 350-331.00R.
- Sumino, Fumio, 4,434,219, Cl. 430-96.000.
- Toshimitsu, Naohiko, 4,434,446, Cl. 360-125.000.
- Caputo, William R.; and Husson, Alan L., to Westinghouse Electric Corp. Elevator system. 4,433,756, Cl. 187-29.00R.
- Caray, Andre, to Valeo S.A. Torsion damping device for a clutch plate. 4,433,771, Cl. 192-106.200.
- Carl Freudenberg, Firma: See—
Hartman, Ludwig; Ruzek, Ivo; and Locher, Engelbert, 4,434,204, Cl. 428-198.000.
- Carletta, Giuseppe, to Murtas, Eugenio. Automobile window regulator. 4,433,508, Cl. 49-348.000.
- Carlson, Gustaf B.: See—
Mellon, Timothy; and Carlson, Gustaf B., 4,433,712, Cl. 160-122.000.
- Carmillet, Roger: See—
Loizeau, Pierre; and Carmillet, Roger, 4,433,770, Cl. 192-106.200.
- Carrier Corporation: See—
Bzdula, Joseph A., 4,434,233, Cl. 436-60.000.
- Carrier, Robert C.; and Allen, Billy R., to Texaco Inc. Situ process for making multifunctional fuel additives. 4,433,977, Cl. 44-60.000.
- Carrington, Alfred C. Aerodynamic device. 4,433,819, Cl. 244-12.200.
- Carstensen, Walter H.: See—
Edwards, Ralston G., Jr.; Walkden, John R. B.; Carstensen, Walter H.; Murphy, Gregory E.; and Lisi, John E., 4,433,776, Cl. 198-779.000.
- Carter, Ralph G.: See—
Williams, Anthony P.; and Carter, Ralph G., 4,433,574, Cl. 73-200.000.
- Carter, Rodney A.: See—
Swartz, Harold L.; Atkeisson, Randal A.; Carter, Rodney A.; and Parker, Russell C., 4,434,391, Cl. 318-662.000.
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- Cassari, James W.; Rollings, Robert W.; and Youngfleish, Frank C., to Elco Corporation. Connector mounting for integrated circuit chip packages. 4,433,886, Cl. 339-14.00R.
- Caudy, Don W.; Hackman, Donald J.; Myers, John R.; and Hoffman, Robert T., to United States of America, Navy. Controlled gas generator system. 4,433,633, Cl. 114-54.000.
- Cavallari, Pier G., to Honeywell Information Systems Italia. Electromagnet assembly for mosaic printing head and related manufacturing method. 4,433,927, Cl. 400-124.000.
- Cech, Miloslav; Kuda, Vladimir; and Vasicek, Vladimir, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Picking channel for a jet loom. 4,433,705, Cl. 139-435.000.
- Celanese Corporation: See—
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- Skiscim, Ronald J., 4,434,278, Cl. 525-531.000.
- Cellu-Craft Inc.: See—
McDowell, Curtis S., 4,434,061, Cl. 210-787.000.
- Centrifugal Piston Expander, Inc.: See—
Dibrell, Edwin W., 4,433,551, Cl. 62-87.000.
- Chaconas, Peter C., to Black & Decker Inc. Gear reduction arrangement for variable speed power driven tool. 4,433,589, Cl. 74-325.000.
- Chaffee, Edwin G., to American Laser Corporation. Argon-ion gas laser cathode construction. 4,434,493, Cl. 372-86.000.
- Challenger Caribbean Corporation: See—
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- Challenger Products Corporation: See—
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- Chalmers, Edward L., II; and Everest, David C., III, to Lange International S.A. Buckle, notably for ski boots. 4,433,457, Cl. 24-68.05K.
- Champion International Corporation: See—
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- Champion Spark Plug Company: See—
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- Chance, James O., Jr.: See—
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- Chandler, William S.; Wilkens, Walter F.; and Heiss, John F., to Diamond Crystal Salt Company. Meat curing composition. 4,434,187, Cl. 426-652.000.
- Chang, Clarence D.; and Lang, William H., to Mobil Oil Corporation. Production of aromatic amines using crystalline silicate catalysts. 4,434,299, Cl. 564-396.000.
- Chang, Gerald W., to Burroughs Corporation. Universal reset circuit for digital circuitry. 4,434,403, Cl. 328-120.000.
- Chang, Michael N.: See—
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- Chang, Yan P. Thermal power plants and heat exchangers for use therewith. 4,433,545, Cl. 60-678.000.
- Chao, Tai S.; Smith, Aubrey C., Jr.; and Smies, Frederic D., to Atlantic Richfield Company. Graphite dispersion. 4,434,064, Cl. 252-29.000.

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Palmquist, Steven R.; Chapman, David D.; and Hoeren, Gerd H., 4,434,488, Cl. 371-15.000.
- Charnley, John, to Charnley Surgical Inventions Limited. Trimming aid, 4,433,686, Cl. 128-303.00R.
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Charnley, John, 4,433,686, Cl. 128-303.00R.
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- Chasar, Dwight W., to B.F. Goodrich Company, The. Metacyclopentane, synthesis thereof, and compositions stabilized thereby, 4,434,265, Cl. 524-339.000.
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Muller, Hans-Jürgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Ortwin, 4,433,662, Cl. 123-438.000.
- Chemische Werke Huels Aktiengesellschaft: See—
Horlbeck, Gernot; and Heuer, Horst, 4,434,276, Cl. 525-437.000.
- Kampf, Wolfgang, 4,434,310, Cl. 585-377.000.
- Chen, Timothy S.: See—
Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,434,106, Cl. 260-465.50R.
- Chen, Yung J.; and Mei, Eden Y. C., to McDonnell Douglas Corporation. Nonvolatile memory sensing system, 4,434,479, Cl. 365-210.000.
- Cheng, Chen-Yen; and Cheng, Sing-Wang. Parallel contact distillative freezing process for separating volatile mixtures and apparatuses for use therein, 4,433,558, Cl. 62-537.000.
- Cheng, Chung-Heng: See—
Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,434,106, Cl. 260-465.50R.
- Cheng, Sing-Wang: See—
Cheng, Chen-Yen; and Cheng, Sing-Wang, 4,433,558, Cl. 62-537.000.
- Chermann, Jean-Claude: See—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Civiér, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Cheron, Jacques: See—
Rojey, Alexandre; and Cheron, Jacques, 4,433,554, Cl. 62-112.000.
- Cherry, Raymond L.; Pfeiffer, Gene F.; and Maes, Randall P., to TASA Products Limited. Portable, remote environmental control system, 4,433,719, Cl. 165-26.000.
- Chevron Research Company: See—
Buss, Waldeen C.; and Hughes, Thomas R., 4,434,311, Cl. 585-444.000.
- Dimpfi, William L.; and Blanton, William A., 4,434,147, Cl. 423-235.000.
- Farnham, Robert A., 4,433,707, Cl. 141-1.000.
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- Streib, Stephen F., 4,434,418, Cl. 340-606.000.
- Thomas, Elmer L., 4,434,507, Cl. 455-95.000.
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Romero, Richard A.; and Schmidt, Michael J., 4,433,846, Cl. 277-9.000.
- Chick, Douglas K., to Insituform International, Inc. Method for remote lining of side connections, 4,434,115, Cl. 264-36.000.
- Chikaraishi, Takayo, to Nissan Motor Company, Limited. Structure for preventing vertical movement of a sliding door, 4,433,507, Cl. 49-213.000.
- CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt.: See—
Horvath, Tibor; Udvardy, Agnes; David, Agoston; and Marmarosi nee Kellner, Katalin, 4,434,152, Cl. 424-19.000.
- Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., to Institute Organicheskogo Sintez. Cyclic analogue of naturally-occurring phagocytosis-stimulant peptide - threonyl-cyclo-[N⁶-lysyl-prolyl-arginyl], 4,434,095, Cl. 260-112.50R.
- Cho, Frederick Y.; and Williams, Dylan F., to Motorola Inc. Temperature stable surface acoustic wave device, 4,434,383, Cl. 310-313.00R.
- Christ, Richard; and Kroll, Hartmut. Neutron shielding, 4,434,373, Cl. 250-506.100.
- Christianson, Roy O.; and Christianson, Ted T., to Christianson Systems, Inc. Discharge system for grain handling apparatus, 4,433,946, Cl. 406-43.000.
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Christianson, Roy O.; and Christianson, Ted T., 4,433,946, Cl. 406-43.000.
- Christianson, Ted T.: See—
Christianson, Roy O.; and Christianson, Ted T., 4,433,946, Cl. 406-43.000.
- Chuba Electric Power Company Inc., The: See—
Gomi, Yoshiaki; Hirata, Takahiro; Takaoka, Michio; Mohtai, Tsuneaki; and Akashi, Kazuya, 4,434,319, Cl. 174-13.000.
- Ciba-Geigy Corporation: See—
Gschwend, Heinz W., 4,434,100, Cl. 260-330.300.
- Maier, Ludwig, 4,434,108, Cl. 260-951.000.
- Meyer, Hans R., 4,433,975, Cl. 8-648.000.
- Rasberger, Michael, 4,434,109, Cl. 260-958.000.
- Rempfier, Hermann; and For, Werner, 4,433,998, Cl. 71-94.000.
- Woodward, Robert B.; and Bickel, Hans, 4,434,287, Cl. 544-16.000.
- Cii/Honeywell Bull (Societe Anonyme): See—
Michel, Ugon; and Herve, Robert, 4,434,473, Cl. 364-900.000.
- Circle Machine Co., Inc.: See—
Beck, Alfred E.; and Cushing, Richard D., 4,433,640, Cl. 118-323.000.
- Cities Service Co.: See—
Röling, Paul V.; Veazey, Richard L.; and Aylward, David E., 4,434,242, Cl. 502-107.000.
- Citizen Watch Company Limited: See—
Nishimura, Katsuo; and Sekiya, Fukuo, 4,433,918, Cl. 368-74.000.
- Sekiya, Fukuo; Morokawa, Shigeru; and Iwakura, Ryoji, 4,433,920, Cl. 368-201.000.
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Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Civiér, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Clarion Co., Ltd.: See—
Watanabe, Tadaaki; and Tanaka, Yoshio, 4,433,588, Cl. 74-10.330.
- Clark, Leslie, to Roneo Alcatel Limited. Duplicating stencil, 4,434,198, Cl. 428-43.000.
- Clark, Otho A. Sprayer trailer, tillage implement and hitch for attaching implement to trailer, 4,433,735, Cl. 172-443.000.
- Clarke, Frederick; Lorenzi, Donald E.; and Schaefer, Edward F., to Magnaflex Corporation. Atmosphere control for photographic pipeline inspection, 4,434,427, Cl. 346-33.00P.
- Cleland, Marshall, to Radiation Dynamics, Inc. Method and apparatus for wide angle beam scanning to internally irradiate hollow objects, 4,434,372, Cl. 250-400.000.
- Cleveland, Donald C., to Rockwell International Corporation. Push-pull yoke-power takeoff coupling, 4,433,934, Cl. 403-318.000.
- Cline, Warren K.; and Owens, William F., to Olin Corporation. Wrapper for smoking articles and method, 4,433,697, Cl. 131-365.000.
- Coast, John B., to Coast Machinery, Inc. Tracked, amphibious vehicle with track securement and guide means, 4,433,634, Cl. 114-270.000.
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Coast, John B., 4,433,634, Cl. 114-270.000.
- Cochran, Robert N.: See—
Deeba, Michel; Ambs, William J.; and Cochran, Robert N., 4,434,300, Cl. 564-479.000.
- Coffel, Jerome F., to Honeywell Inc. Beacon-receiver for command guided missiles, 4,433,818, Cl. 244-3.130.
- Cognevich, Michael L.: See—
Spiegelman, Stanley R.; Salton, Robert B.; Beer, Robert W.; Malandra, Louis J.; and Cognevich, Michael L., 4,433,828, Cl. 254-29.00A.
- Cohen, I. Kelman. Prosthesis formed by inner and outer inflatable containers, 4,433,440, Cl. 3-36.000.
- Cohen, Noal; and Weber, Giuseppe, to Hoffmann-La Roche Inc. Inhibitors of SRS-synthesis, 4,434,101, Cl. 260-410.90R.
- Colanzi, Franco, to RIV-SKF Officine Di Villar Perosa SpA. Support assembly for vehicle wheels, 4,433,877, Cl. 308-191.000.
- Coleman, Charles R.: See—
Rukavina, Thomas G.; and Coleman, Charles R., 4,434,284, Cl. 528-58.000.
- Coleman, Patrick L.; and Wehrly, John A., to Du Pont de Nemours, E. I., and Company. Substrates for the quantitative determination of proteolytic enzymes, 4,434,096, Cl. 260-112.50R.
- Collagen Corporation: See—
Seyedin, Saïd; and Thomas, Thomas, 4,434,094, Cl. 260-112.00R.
- Colombo, Edilberto, to Agip Petroli S.p.A. Multifunctional additives for lubricants, 4,434,291, Cl. 548-116.000.
- Colt Industries Operating Corp.: See—
Tatro, Henry J., 4,433,610, Cl. 89-148.000.
- Coltene AG: See—
Schmid, Alfred, Jr.; Müller, Hans; and Jaeklin, Alexander P., 4,433,779, Cl. 206-220.000.
- Comalco Limited: See—
Smith, David M., 4,434,014, Cl. 148-3.000.
- Combustion Engineering, Inc.: See—
Bailey, Timothy F.; and Brunelle, Dennis S., 4,433,476, Cl. 29-752.000.
- Commander Electrical Equipment, Inc.: See—
Gregory, George D., 4,433,891, Cl. 339-217.00R.
- Compagnie Generale de Geophysique: See—
Layotte, Pierre-Claude; and Bozec, Laurent, 4,433,736, Cl. 173-94.000.
- Comparetto, John E. Bone elongation or shortening method, 4,433,681, Cl. 128-92.00E.
- Conciatori, Anthony B.: See—
Buckley, Alan; Conciatori, Anthony B.; and Calundann, Gordon W., 4,434,262, Cl. 524-237.000.
- Conoco Inc.: See—
Correa, Aderbal C.; Gergely, John S.; and Blanchard, Andrew J., 4,434,364, Cl. 250-253.000.
- Joosten, Michael W., 4,433,582, Cl. 73-788.000.
- Consolidated Papers, Inc.: See—
Gebert, Kenneth W.; and Rajski, Pat A., 4,434,194, Cl. 427-356.000.
- Conwed Corporation: See—
Fair, Timothy K., Sr., 4,434,199, Cl. 428-134.000.

- Cook, Bruce M., to Westinghouse Electric Corp. Power supply with nuclear reactor, 4,434,132, Cl. 376-259.000.
- Cook, Herbert C.; and Troutman, Ronald R., to International Business Machines Corporation. Programming floating gate devices, 4,434,478, Cl. 365-185.000.
- Cook, Lee M.; Mader, Karl-Heinz; and Schnabel, Roland, to Schott Glass Technologies, Inc. Integral anti-reflective surfaces of silicate glasses, 4,434,191, Cl. 427-165.000.
- Cook, Steven F.; and Burlingame, Glen E. Coin operated bicycle locking rack, 4,433,787, Cl. 211-5.000.
- Cook Stolorow & Frame: See—
Harrison, David B., 4,433,940, Cl. 405-210.000.
- Cookerly, Jack C.: See—
Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., 4,433,601, Cl. 84-1.030.
- Coons, Robert R.: See—
Prokop, Josef F.; Coons, Robert R.; and Mylander, Richard H., 4,433,762, Cl. 192-4.00A.
- Corah Limited: See—
Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., 4,433,561, Cl. 66-148.000.
- Cornelius, Walter; Kosek, Thomas P.; and Klomp, Edward D., to General Motors Corporation. Low emission combustor, 4,433,540, Cl. 60-39.511.
- Cornell Research Foundation: See—
Meister, Alton; and Williamson, Joanne M., 4,434,158, Cl. 424-94.000.
- Correa, Aderbal C.; Gergely, John S.; and Blanchard, Andrew J., to Conoco Inc. Method and apparatus for underwater detection of hydrocarbons, 4,434,364, Cl. 250-253.000.
- Corsette, Douglas F., to Calmar, Inc. Liquid dispensing pump arrangement with selective stroke restriction, 4,433,799, Cl. 222-309.000.
- Cosenza, Frank J., to Rexnord Inc. Stud assembly for thin walled panels, 4,433,930, Cl. 403-12.000.
- Couper, Robert A.; and Lillie, Terrance L., to Pitney Bowes Inc. Cursor control circuit for plural displays for use in a word processing system, 4,434,419, Cl. 340-717.000.
- Courtauld Limited: See—
Betts, Max W., 4,433,560, Cl. 66-64.000.
- Courvoisier, Guy; and Arie, Simon, to Lange International S.A. Article of clothing or accessory intended to adapt itself closely to a part of the human body and a process for adapting this article or accessory to this part of the human body, 4,433,494, Cl. 36-119.000.
- Cousens, Donald E.: See—
Kurtz, John A.; and Cousens, Donald E., 4,434,347, Cl. 219-56.220.
- Covitch, Michael J., to Diamond Shamrock Corporation. Method for making a porous fluorinated polymer structure, 4,434,116, Cl. 264-49.000.
- Cox, Bruce M.; and Stephenson, Stanley V., to Halliburton Company. Polymer flood mixing apparatus and method, 4,433,701, Cl. 137-101.190.
- Cox, Ian R.; and Jones, Keith, to Lever Brothers Company. Novel sulphosuccinates and detergent compositions containing them, 4,434,091, Cl. 252-557.000.
- Cox, Ian R.: See—
Hampson, Jeffrey D.; Billington, Reginald; and Cox, Ian R., 4,434,090, Cl. 252-547.000.
- CPG Products Corp.: See—
Pelavin, Joseph Y., 4,433,760, Cl. 190-115.000.
- Craig, Lawrence B.; and Farina, Alfred J. Pump impeller, 4,433,967, Cl. 418-140.000.
- Craig, Timothy P.; Pettit, John W.; and Timperman, Michael R., to International Business Machines Corporation. Regulated current source for thermal printhead, 4,434,356, Cl. 219-216.000.
- Crane, Jacob: See—
Saleh, Yousef; Breedis, John F.; and Crane, Jacob, 4,434,016, Cl. 148-12.70C.
- Crank, James D., to Ampex Corporation. High rate sputtering system and method, 4,434,037, Cl. 204-192.00R.
- Crawford, James R.: See—
Salmon, Joe E.; Strother, Fleetwood E.; and Crawford, James R., 4,433,454, Cl. 19-55.00R.
- Critical Fluid Systems, Inc.: See—
Eppig, Christopher P.; Putnam, Bruce M.; and de Filippi, Richard P., 4,434,028, Cl. 196-14.520.
- Crompton, Edward E., Jr. Vehicle sway damper, 4,433,865, Cl. 296-1.00S.
- Crossan, Stephen C.: See—
Abbott, Jerry J.; Crossan, Stephen C.; Fuller, Sterritt R., Jr.; and Jachimik, Paul D., 4,434,220, Cl. 430-108.000.
- Crossman, Richard L., to Goodyear Aerospace Corporation. Brake adjuster having a rod drawn through a draw ring, 4,433,758, Cl. 188-196.00R.
- Crouch, Ronald A. Dual warning parking aid, 4,433,636, Cl. 116-28.00R.
- Cruikshank, Philip A.; and Cullen, Thomas G., to FMC Corporation. Insecticidal substituted-biphenylmethyl oxime ethers, 4,434,182, Cl. 424-327.000.
- Cullen, Thomas G.: See—
Cruikshank, Philip A.; and Cullen, Thomas G., 4,434,182, Cl. 424-327.000.
- Cunningham, Byron H. Oil storage tank extinguisher, 4,433,733, Cl. 169-49.000.
- Curran, Kenneth J., to Vivitar Corporation. Exposure meter, 4,433,914, Cl. 356-223.000.
- Cushing, Richard D.: See—
Beck, Alfred E.; and Cushing, Richard D., 4,433,640, Cl. 118-323.000.
- Custom Oilfield Products, Inc.: See—
Redmon, Billy L.; and Forester, Buford G., 4,433,827, Cl. 251-191.000.
- Dabbish, Ezzat A.: See—
Levine, Stephen N.; Dabbish, Ezzat A.; and Byrns, John P., 4,434,323, Cl. 178-22.170.
- Dagenhart, William K.; Haselton, Halsey H.; Stirling, William L.; and Wheaton, John H., to United States of America, Energy. Neutral beamline with improved ion energy recovery, 4,434,131, Cl. 376-130.000.
- D'Agnolo, Armando, to Officine Savio S.p.A. Tube which can be axially stacked, 4,433,815, Cl. 242-118.000.
- Daido Tokushuko Kabushiki Kaisha: See—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; Sekiya, Shigenobu; and Nakamura, Sadayuki, 4,434,006, Cl. 75-123.00R.
- Dailey, Jack R.; Kuntzleman, Harry C.; Ng, Charles S.; and Pike, John W., to International Business Machines Corporation. Universal image coder and controller for multicolor electrolytic printing, 4,434,432, Cl. 346-154.000.
- Daimler-Benz Aktiengesellschaft: See—
Abt, Reinhold; Blum, Walter; and Bordovsky, Jaromir, 4,433,613, Cl. 91-358.00R.
- Dainippon Ink and Chemicals, Inc.: See—
Teshirogi, Takuma, 4,434,285, Cl. 528-86.000.
- Danfoss A/S: See—
Thorsen, Niels P., 4,433,555, Cl. 62-154.000.
- Darnall, Larry N., to FMC Corporation. Suspended loop ammunition magazine, 4,433,609, Cl. 89-34.000.
- Darrichard, Louis D.; and Plaisant, Jacques, to Valeo. Glass fibre yarns and other goods, and method of manufacture, 4,433,535, Cl. 57-229.000.
- Darrow, Russell E.; Funari, Joseph; Kotrch, George S.; and Phillips, George C., to International Business Machines Corporation. Pinned ceramic substrate, 4,434,134, Cl. 419-5.000.
- Data General Corporation: See—
Holland, Charles J.; Wallach, Steven; and Alsing, Carl J., 4,434,459, Cl. 364-200.000.
- Datapoint Corporation: See—
Witten, Franklin H.; and Kline, Sherman S., 4,433,881, Cl. 312-107.500.
- Daugherty, Charles W.: See—
McGary, Charles W., Jr.; Pascarella, Vincent J.; Taller, Robert A.; Rhodes, Delmer R.; Anglin, Paul E.; and Daugherty, Charles W., 4,434,126, Cl. 264-303.000.
- David, Agoston: See—
Horvath, Tibor; Udvardy, Agnes; David, Agoston; and Marmarosi nee Kellner, Katalin, 4,434,152, Cl. 424-19.000.
- Davies, Hywel R.: See—
Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., 4,433,561, Cl. 66-148.000.
- Davis, Delbert A.: See—
Fash, William G.; and Davis, Delbert A., 4,434,200, Cl. 428-257.000.
- Davis, Paul; and Wilson, Joe C., to BASF Wyandotte Corporation. Novel aliphatic sulfoxiloxane-silicate copolymers, 4,434,065, Cl. 252-75.000.
- Dawn Designs, Inc.: See—
Payne, Rex E., Jr.; and Hoffman, Ronald R., 4,433,869, Cl. 297-5.000.
- Dawson, Michael L.: See—
Hochwitz, Lynn E.; Schaefer, Daniel W.; and Dawson, Michael L., 4,433,868, Cl. 296-190.000.
- Day, David R.: See—
McElroy, Lucian G.; and Day, David R., 4,433,450, Cl. 15-316.00R.
- Day, J. Michael. Active lighting system including light control keyboard, 4,434,454, Cl. 362-238.000.
- Dayco Corporation: See—
Hollaway, Gerald C., Jr., 4,434,019, Cl. 156-137.000.
- dbx, Inc.: See—
Welland, David R., 4,434,380, Cl. 307-491.000.
- DeAmicis, Ferdinando. Portable cooking implement, 4,433,671, Cl. 126-9.00R.
- Dean, Robert R.; Mauleon, Jean L.; and Newman, Robert J. Residual oil feed process for fluid catalyst cracking, 4,434,049, Cl. 208-153.000.
- Debouzie, Alain; Sainte-Foi, Daniel; and Blandin, Yannick, to Isover Saint-Gobain. Process and apparatus for forming mineral fibers, 4,433,992, Cl. 65-3.100.
- Deck the Halls, Inc.: See—
Maravelas, William S., Jr.; Bighley, Alexandria D.; and Calabrese, Marco A., 4,433,880, Cl. 312-3.000.
- Decuq, Guy, to Verdol S.A. Mechanical cording and heal system controlled by pulleys, 4,433,704, Cl. 139-66.00R.
- Deeba, Michel; Ambs, William J.; and Cochran, Robert N., to Air Products and Chemicals, Inc. Methanol amination, 4,434,300, Cl. 564-479.000.
- Deere & Company: See—
Anstey, Henry D.; Meiers, Gerald F.; and Koning, Richard W., 4,433,619, Cl. 100-40.000.
- Giani, Angel, 4,433,533, Cl. 56-341.000.
- Hauser, Herbert J., Jr., 4,433,616, Cl. 92-190.000.
- McCunn, Myron L., 4,433,532, Cl. 56-320.200.

- de Filippi, Richard P.: See—
Eppig, Christopher P.; Putnam, Bruce M.; and de Filippi, Richard P., 4,434,028, Cl. 196-14.520.
- DeFusco, Albert A., Jr.; Nielsen, Arnold T.; and Atkins, Ronald L., to United States of America, Navy. Synthesis of trinitrophenol. 4,434,304, Cl. 568-710.000.
- Degen, Bruno: See—
Sattlegger, Hans; Schnurrbusch, Karl; Degen, Bruno; and Achtenberg, Theo, 4,434,283, Cl. 528-34.000.
- DeGeorge, Richard M.: See—
Kenol, Claude J.; and DeGeorge, Richard M., 4,434,422, Cl. 343-5.05C.
- De Goede, Roland: See—
Delwel, Francois; and De Goede, Roland, 4,434,068, Cl. 525-135.000.
- DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, to American Standard Inc. Self-contained flow through sewage waste disposal system. 4,433,443, Cl. 4-317.000.
- Degussa Aktiengesellschaft: See—
Bach, Gerhard; Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Hillenbrand, Horst, 4,434,148, Cl. 423-379.000.
- Kleinschmit, Peter; Voll, Manfred; and Engel, Richard, 4,434,135, Cl. 422-150.000.
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Molina, Jorge W., 4,433,459, Cl. 24-613.000.
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Halder, Mathis; Widmer, Jakob; and De Vries, Jacob, 4,434,400, Cl. 324-110.000.
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DuVal, Alvin J., 4,433,463, Cl. 29-239.000.
- Dietrich, Rodney J. P. Building component, method of construction and wall formed thereby. 4,433,521, Cl. 52-302.000.
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Pelletier, Jean-Marc; and Dion, Yvon, 4,434,413, Cl. 337-71.000.
- Ditgens, Klaus: See—
Heinemann, Ulrich; Thomas, Rudolf; Lantzsich, Reinhard; Ditgens, Klaus; and Weber, Erhard, 4,434,292, Cl. 548-373.000.
- Dr. Ing. Rudolf Hell GmbH: See—
Schwartz, Robert, 4,433,912, Cl. 356-150.000.
- Doherty, James B.; Chang, Michael N.; and Dorn, Conrad P., to Merck & Co., Inc. Nonsteroidal compounds as anti-inflammatory and analgesic agents. 4,434,175, Cl. 424-274.000.
- Dohet, Pierre E. Panel structure. 4,433,700, Cl. 135-97.000.
- Dohi, Masaji: See—
Ishizaki, Hiroyuki; Tsujino, Yoshiki; and Dohi, Masaji, 4,434,441, Cl. 358-213.000.
- Doleschall, Gabor: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
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- Dominion Engineering Works Limited: See—
Scuccato, Serge L.; and Shaver, Marvin B., 4,433,769, Cl. 192-0.098.
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Keszei, Jeno; Varga, Laszlo; and Donath, Jeno, 4,433,485, Cl. 33-3.00R.
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Doherty, James B.; Chang, Michael N.; and Dorn, Conrad P., 4,434,175, Cl. 424-274.000.
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Pontes, Virgil M.; and Young, Lawrence C., 4,433,814, Cl. 242-72.100.
- Dow Chemical Company, The: See—
Esneault, Calvin P., 4,434,282, Cl. 526-125.000.
- Lee, John M.; and Bauman, William C., 4,434,138, Cl. 423-7.000.
- Dow Corning Corporation: See—
Baile, Madhu, 4,434,127, Cl. 264-236.000.
- Skostins, Olgerts, 4,434,195, Cl. 427-387.000.
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Plica, Peter; Schmoller, Karl; and Dresp, Gerd, 4,433,944, Cl. 405-284.000.
- Driver, Gary R.; and Herman, Richard J., to NL Industries, Inc. Well-head connector with release mechanism. 4,433,859, Cl. 285-34.000.
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Dubois, Robert; and Dubois, Pierre-Yves, 4,434,190, Cl. 427-136.000.
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- Dunford, James M.: See—
Shih, Kelvin; Pochert, Kurt A.; and Dunford, James M., 4,433,576, Cl. 73-204.000.
- Dunneber, Horst: See—
Kratzer, Adolf; and Dunneber, Horst, 4,433,947, Cl. 406-99.000.
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- Ramsey, Harold E.; and Fischer, Edward E., 4,433,527, Cl. 53-548.000.
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Plica, Peter; Schmoller, Karl; and Dresp, Gerd, 4,433,944, Cl. 405-284.000.
- Dyson, Herbert C. Device and method for cutting circular piece parts. 4,434,015, Cl. 148-9.00R.
- E.C.H. Will (GmbH & Co.): See—
Jendrusch, Paul, 4,433,773, Cl. 198-467.000.
- Earl, Jeffrey P.: See—
Jones, Larren F.; and Earl, Jeffrey P., 4,433,496, Cl. 37-141.00R.
- Eastman Kodak Company: See—
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,434,098, Cl. 260-239.00R.
- Larkins, Thomas H., Jr., 4,434,241, Cl. 502-24.000.
- Wilgus, Herbert S.; and Haefner, John A., 4,434,226, Cl. 430-567.000.
- Easy-Do Products Limited: See—
Neumann, Solomon, 4,434,192, Cl. 427-282.000.
- Eaton Corporation: See—
Goscenski, Edward J., Jr., 4,433,764, Cl. 192-18.00R.
- Green, Edward A., 4,433,591, Cl. 74-479.000.
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Horike, Masanori; and Ebi, Yutaka, 4,434,428, Cl. 346-75.000.
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- Edge, David J.: See—
Billington, Reginald; Edge, David J.; and Winterbotham, Peter, 4,434,088, Cl. 252-547.000.
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- Edwards, Thomas M.; Kelley, James O.; and Beard, Michael D., to Herman Miller, Inc. Work surface support system. 4,433,884, Cl. 312-256.000.
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- Eicken, Heinz T.: See—
Eisermann, Armin; Eicken, Heinz T.; and Geiger, Diethard, 4,433,772, Cl. 194-59.000.
- Eisai Co., Ltd.: See—
Tanaka, Ichiro; Arato, Hiroshi; and Wakabayashi, Takaaki, 4,434,166, Cl. 424-250.000.
- Eisenberg, James: See—
Van Wyk, Richard; and Eisenberg, James, 4,433,621, Cl. 101-11.000.
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Ficker, Harold K., 4,434,264, Cl. 524-323.000.
- Elco Corporation: See—
Cassarly, James W.; Rollings, Robert W.; and Youngfleish, Frank C., 4,433,886, Cl. 339-14.00R.
- Electric Power Research Institute, Inc.: See—
Hemmat, Naim, 4,433,474, Cl. 29-605.000.
- Hingorani, Narain G., 4,434,376, Cl. 307-102.000.
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Simpson, David P.; and Stirling, Robert, 4,434,357, Cl. 219-291.000.
- Electrochemical Technology Corp.: See—
Ballestrasse, Cindy L.; and Ruggeri, Robert T., 4,434,249, Cl. 521-27.000.
- Electronique Marcel Dassault: See—
Meinguss, Alain; and Despres, Bernard, 4,434,361, Cl. 235-192.000.
- Eli Lilly and Company: See—
Wikel, James H., II, 4,434,288, Cl. 544-54.000.
- Ellis, David E.: See—
Benard, David J.; Pchelkin, Nicholas R.; McDermott, William E.; Ellis, David E.; and Miller, George W., 4,434,492, Cl. 372-59.000.
- Ellis, Karen E. Greeting card. 4,433,780, Cl. 206-232.000.
- Ellman, Alan G.: See—
Garito, Jon C.; and Ellman, Alan G., 4,433,960, Cl. 433-215.000.
- Elms, Robert T., to Westinghouse Electric Corp. Motor control apparatus with parallel input, serial output signal conditioning means. 4,434,390, Cl. 318-473.000.
- Emmerich, Werner S.: See—
Down, Michael G.; Phillips, D. Colin; and Emmerich, Werner S., 4,434,133, Cl. 376-323.000.
- Emshoff, Horst W.; and Kusebauch, Walter, to Siemens Aktiengesellschaft. Cooling arrangement and method of operating the arrangement. 4,434,058, Cl. 210-662.000.
- Endo, Hiroshi: See—
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,433,669, Cl. 123-620.000.
- Endo, Norio: See—
Sawada, Shizuo; Ogura, Mitsugi; and Endo, Norio, 4,433,911, Cl. 355-125.000.
- Energy Profiles, Inc.: See—
Salisbury, Winfield W., 4,434,130, Cl. 376-107.000.
- Engelbreton, Harold J.: See—
Ott, Paul W.; Engelbreton, Harold J.; LaHue, Philip M.; and Van Steenwyk, Brett H., 4,433,491, Cl. 33-302.000.
- Engel, Richard: See—
Kleinschmit, Peter; Voll, Manfred; and Engel, Richard, 4,434,135, Cl. 422-150.000.
- Enser, Mats A.: See—
Drakenborn, Karl-Gunnar; Enser, Mats A.; Grebner, Kurt G. E.; and Wallmark, Erik I., 4,434,460, Cl. 364-200.000.
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- Epson Corporation: See—
Fujiwara, Hitoshi; and Matsuzawa, Masanao, 4,433,925, Cl. 400-88.000.
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- Erlam, David P.; and Archard, Thornton N. J., to BICC Public Limited Company. Enclosures for electrical and electronic equipment. 4,433,788, Cl. 211-26.000.
- Ernst, Horst M.: See—
Walter, Lothar; Brandenstein, Manfred; Ernst, Horst M.; and Olschewski, Armin, 4,433,875, Cl. 308-6.00R.
- Escher Wyss Aktiengesellschaft: See—
Mulhaupt, Bruno, 4,434,052, Cl. 210-376.000.
- ESCO Corporation: See—
Jones, Larren F.; and Earl, Jeffrey P., 4,433,496, Cl. 37-141.00R.
- Esneault, Calvin P., to Dow Chemical Company. The Process for polymerizing olefins. 4,434,282, Cl. 526-125.000.
- Esser, Fred: See—
Pietzsch, Herbert; Lachner, Walter; Hofmann, Karlheinz; Potzsch, Erich; and Esser, Fred, 4,434,494, Cl. 373-18.000.
- Etablissement Public de diffusion dit "Telediffusion de France": See—
Motsch, Roger; Roussel, Francoise; and Lolivier, Germain, 4,434,499, Cl. 375-122.000.
- Everest, David C., III: See—
Chalmers, Edward L., II; and Everest, David C., III, 4,433,457, Cl. 24-68.05K.
- Evers, William J.; Mookherjee, Braja D.; Van Ouwkerk, Anton; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Perfume or cologne containing 1,2,3,3,5,6-hexamethyl-bicyclo[2.2.2]-oct-5-en-2-ol. 4,434,085, Cl. 252-522.00R.
- Eversdijk, Bastiaan P., to Stork Friesland B.V. Method for the evaporation of a liquid solution using mechanical compression. 4,434,027, Cl. 159-47.100.
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Nord, Keith W., 4,433,526, Cl. 53-244.000.
- Exxon Research and Engineering Company: See—
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,434,317, Cl. 585-845.000.
- Horowitz, Hugh H.; Horowitz, Harold S.; and Longo, John M., 4,434,031, Cl. 204-59.00R.
- Langer, Arthur W., Jr., 4,434,312, Cl. 585-523.000.
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- Vernon, Lonnie W.; and Jacobs, Fritz E., 4,434,045, Cl. 208-107.000.
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- Faden, Alan I.: See—
Holaday, John W.; and Faden, Alan I., 4,434,168, Cl. 424-260.000.
- Fair, Timothy K., Sr., to Conwed Corporation. Method of manufacturing a thin net and product. 4,434,199, Cl. 428-134.000.
- Fairbairn, Leroy W.; and Waldron, Clifford R., to Bendix Corporation. The Method of making an electrical contact. 4,433,482, Cl. 29-882.000.
- Fairchild Camera & Instrument Corporation: See—
Ko, Wen-Chuang; and Berry, Robert L., 4,433,471, Cl. 29-578.000.
- Kurtz, John A.; and Cousens, Donald E., 4,434,347, Cl. 219-56.220.

- Fairchild, Meredith H., to Purex Corporation. Plastic bottle cleaner. 4,434,069, Cl. 252-174.140.
- Falco Data Products: See—
Kachun, Lee, 4,434,472, Cl. 364-900.000.
- Farina, Alfred J.: See—
Craig, Lawrence B.; and Farina, Alfred J., 4,433,967, Cl. 418-140.000.
- Farnham, Robert A., to Chevron Research Company. Method and apparatus for level loading of vessels using catalyst oriented packing. 4,433,707, Cl. 141-1.000.
- Farr, Glyn P. R., to Lucas Industries Limited. Control valve assembly. 4,433,873, Cl. 303-24.00A.
- Fash, William G.; and Davis, Delbert A., to Burlington Industries, Inc. Impregnated woven fencing product. 4,434,200, Cl. 428-257.000.
- Fatka, Richard J.: See—
Thomas, Robert C.; Hornbuckle, John A.; and Fatka, Richard J., 4,434,470, Cl. 364-565.000.
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- Fay, Victor K., to Itek Corporation. A.C. Coupled video amplifier with fast pulse recovery. 4,434,404, Cl. 330-85.000.
- Fearing, D. Michael: See—
Marks, George B., Sr.; and Fearing, D. Michael, 4,434,181, Cl. 424-326.000.
- Fearing Manufacturing Co., Inc.: See—
Marks, George B., Sr.; and Fearing, D. Michael, 4,434,181, Cl. 424-326.000.
- Federal Paper Board Co., Inc.: See—
Ganz, Robert H.; and Manizza, Guelfo A., 4,433,806, Cl. 229-40.000.
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- Maio, Patrick S.; and Lee, John F., 4,433,778, Cl. 206-45.250.
- Feeney, Frank J., to Mobil Oil Corporation. Glass filled poly(p-methylstyrene). 4,434,271, Cl. 524-575.000.
- Feinleib, Morris: See—
Wegener, Mary J.; and Feinleib, Morris, 4,434,222, Cl. 430-135.000.
- Fellman, Robert P.; Hurwitz, Marvin J.; Myers, Robert M.; and Slack, Gerald F., to Rohm and Haas Company. Permanent dental restorative material. 4,433,958, Cl. 433-199.000.
- FEPS International, Ltd.: See—
Shima, Eiji; Den, Hiroshi; and Kuroki, Takeo, 4,434,377, Cl. 307-147.000.
- Ferrell, Philip J., to Racal Data Communications Inc. Coded data transmission system. 4,434,322, Cl. 178-22.130.
- Fetter, Jozsef: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Fiat Auto S.p.A.: See—
Burgio, Antonio, 4,433,659, Cl. 123-256.000.
- Ficker, Harold K., to El Paso Polyoelens Company. High clarity propylene polymer compositions of improved impact strength. 4,434,264, Cl. 524-323.000.
- Fields, Gary C. Remotely actuated telephone instrument connection block having instrument lockout feature. 4,434,328, Cl. 179-20.000.
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- Figgie International Inc.: See—
Giorgini, Eugene A.; and Sullivan, John L., 4,433,685, Cl. 128-204.260.
- Findeisen, Kurt; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Process for the preparation of 2-trimethylsilyloxy-ethylamines. 4,434,289, Cl. 546-14.000.
- Finlayson, Claude M.: See—
Mardis, Wilbur S.; and Finlayson, Claude M., 4,434,075, Cl. 252-315.200.
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- Firey, Joseph C. Torque leveller. 4,433,547, Cl. 60-711.000.
- Fischer, Edward E.: See—
Ramsey, Harold E.; and Fischer, Edward E., 4,433,527, Cl. 53-548.000.
- Fischer & Porter Company: See—
Kazahaya, Masahiro, 4,434,458, Cl. 364-138.000.
- Fissler Gesellschaft mit beschränkter Haftung: See—
Horn, Walter, 4,433,579, Cl. 73-715.000.
- Fitzner, Arthur O., to Brunswick Corporation. Capacitor discharge ignition system having a charging control means. 4,433,668, Cl. 123-597.000.
- Fitzpatrick, James J. Steam boilers. 4,433,644, Cl. 122-114.000.
- Flam, Eric: See—
Allen, Douglas, Jr.; and Flam, Eric, 4,434,254, Cl. 523-105.000.
- Flight Systems, Inc.: See—
York, Robert A., 4,434,401, Cl. 324-158.00C.
- Flisikowski, Peter; Jeglinski, Werner; and Jelmorini, Gerardus, to U.S. Philips Corporation. Method of and device for manufacturing an ink jet printer. 4,434,350, Cl. 219-121.0LC.
- Fluidyne Engineering Corporation: See—
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- Darmall, Larry N., 4,433,609, Cl. 89-34.000.
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- Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., to Majik-Ironers, Inc. Iron and ironing board support. 4,433,497, Cl. 38-107.000.
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- Fowks, William R., to Rockwell International Corporation. Lamp housing assembly primarily for the lamp of a rubidium frequency standard. 4,434,406, Cl. 331-3.000.
- Fox, Daniel W.; Miller, George P.; and Weech, Marx E., to General Electric Company. Volume reduction and encapsulation process for water containing low level radioactive waste. 4,434,074, Cl. 252-628.000.
- Frane, Terence E., to International Business Machines Corporation. Radiation hardened lift-off correction medium and process of manufacture. 4,434,207, Cl. 428-343.000.
- Frank, Robert G., to PPG Industries, Inc. Glass sheet shaping and tempering using multiple cooling stations. 4,433,993, Cl. 65-104.000.
- Frano, Francis G. Self retained plastic cable guide and door stop. 4,433,452, Cl. 16-2.000.
- Fraser, Charles E. O. Method and apparatus for the support of animals. 4,433,643, Cl. 119-103.000.
- Frauenkron, Gunter: See—
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- Frazier, Gary A., to Texas Instruments Incorporated. Coaxial optical fiber connector. 4,433,896, Cl. 350-96.210.
- Frederickson Communications, Inc.: See—
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- Freitag, J. William, to Du Pont de Nemours, E. I., and Company. Immunoassay wherein labeled antibody is displaced from immobilized analyte-analogue. 4,434,236, Cl. 436-512.000.
- Frick Company: See—
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- Frick, Georg; Reiff, Harro; and Kirsch, Alois, to Karl Mengele & Sohne. Gate shears, saw and milling tool on common carriage. 4,433,467, Cl. 29-565.000.
- Fricker, Siegfried. Wall panel alignment system. 4,433,516, Cl. 52-126.300.
- Friedli, Paul; and Suss, Hans G., to Inventio AG. Apparatus for controlling the access of processors at a data line. 4,434,466, Cl. 364-200.000.
- Friedmann & Maier Aktiengesellschaft: See—
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- Frient, John A.: See—
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- Fritz, Adolf R., to Robert Bosch GmbH. Engine ignition system. 4,433,670, Cl. 123-644.000.
- Fueglister, Alfred. Heat exchanger having pipe coils supported in support plates. 4,433,722, Cl. 165-162.000.
- Fuel Systems Management: See—
Highfield, William, 4,434,110, Cl. 261-36.00A.
- Fuji Kogyo Kabushiki Kaisha: See—
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- Fuji Photo Film Co., Ltd.: See—
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- Fuji Xerox Co., Ltd.: See—
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- Fujikura Cable Works, Ltd., The: See—
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- Shima, Eiji; Den, Hiroshi; and Kuroki, Takeo, 4,434,377, Cl. 307-147.000.
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- Fujimoto, Makoto, to Matsushita Electric Industrial Co., Ltd. Solid state color imaging apparatus. 4,434,435, Cl. 358-44.000.
- Fujimura, Takashi; and Takahashi, Katsuyu, to Hitachi, Ltd. Method of manufacturing curved discharge tubes. 4,433,994, Cl. 65-110.000.

- Fujioka, Yoshiaki: See—
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- Fujita, Hiromu, to Osaka Taiyu Co., Ltd. Apparatus for rotating pallet. 4,433,954, Cl. 414-757.000.
- Fujitsu Fanuc Limited: See—
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- Matsuda, Kazuo; Ohashi, Makoto; Satoh, Yoshio; Miyashita, Tsutomu; and Komenou, Kazunari, 4,434,476, Cl. 365-12.000.
- Fujiwara, Hitoshi; and Matsuzawa, Masanao, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Manually-operated dot printer for pocket sized calculators. 4,433,925, Cl. 400-88.000.
- Fujiwara, Ryuei; Kai, Tomokazu; and Nakahara, Hidetoshi, to Nippon Electric Co., Ltd. Circuit arrangement for protecting a control channel from jamming waves in a radio communication system. 4,434,506, Cl. 455-53.000.
- Fukuda, Hiroyuki; Kaji, Hisatsugu; and Fujimaki, Hiroto, to Kureha Kagaku Kogyo Kabushiki Kaisha. Shaped articles of porous carbon fibers. 4,434,206, Cl. 428-288.000.
- Fukuhara, Seiichi: See—
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- Fukumitsu, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic loading apparatus. 4,434,480, Cl. 369-77.200.
- Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, to Sanden Corporation. Scroll manufacturing tool. 4,433,564, Cl. 72-146.000.
- Fukutake, Katsuhiko: See—
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- Fuller, Sterritt R., Jr.: See—
Abbott, Jerry J.; Crossan, Stephen C.; Fuller, Sterritt R., Jr.; and Jachimik, Paul D., 4,434,220, Cl. 430-108.000.
- Funari, Joseph: See—
Darrow, Russell E.; Funari, Joseph; Kotrch, George S.; and Phillips, George C., 4,434,134, Cl. 419-5.000.
- Furukawa Denchi Kabushiki Kaisha: See—
Suzuki, Shogo, 4,434,214, Cl. 429-59.000.
- Furukawa Electric Co., Ltd., The: See—
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- Furuse, Takao: See—
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- Gaglione, Stanley; and O'Hare, James A., to United States of America, Army. Phased array element with polarization control. 4,434,426, Cl. 343-372.000.
- Galia, Karl. Metered quantity dispensing valve. 4,433,797, Cl. 222-207.000.
- Gammill, Ronald B., to Upjohn Company. The Anti-atherosclerotic 6,7-dihydro-7,7-disubstituted-khellin analogs. 4,434,295, Cl. 549-344.000.
- Gammill, Ronald B., to Upjohn Company. The Process for preparing intermediates for antiatherosclerotic compounds. 4,434,296, Cl. 549-471.000.
- Gans, Michael J.; and Snell, William W., Jr., to Bell Telephone Laboratories, Incorporated. Multiple amplifier interconnection for optimal sensitivity. 4,434,405, Cl. 330-149.000.
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- Gareis, Ronald E., to General Electric Company. Controlled flux contactor. 4,434,450, Cl. 361-152.000.
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- Garrett Corporation, The: See—
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- Gartside, Robert J.; and Woebecke, Herman N., to Stone & Webster Engineering Corp. Low residence time solid-gas separation device and system. 4,433,984, Cl. 55-196.000.
- Garzon, Ruben D., to Brown Boveri Electric, Inc. Liquid SF₆ interrupter with arc energy driven piston and contact. 4,434,336, Cl. 200-150.000.
- Gaughan, Edmund J.: See—
Mahoney, Martin D.; Gaughan, Edmund J.; Pallos, Ferenc M.; and Lam, Hsiao-Ling, 4,434,000, Cl. 71-103.000.
- GCA Corporation: See—
Masters, Joseph I.; and Goldberg, Gershon M., 4,434,217, Cl. 430-9.000.
- Gebert, Kenneth W.; and Rajski, Pat A., to Consolidated Papers, Inc. Edge dam for paper coating apparatus and method. 4,434,194, Cl. 427-356.000.
- Gebrueder Buehler AG: See—
Borst, Williband, 4,433,986, Cl. 55-272.000.
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- Geiger, Friedhelm: See—
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- Gellert, Jobst U. Injection molding valve pin bushing and method. 4,433,969, Cl. 425-548.000.
- General Clutch Corp.: See—
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,433,765, Cl. 192-41.00S.
- General Dynamics, Pomona Division: See—
Hagelberg, Allen C.; and Allardt, Clark E., 4,433,606, Cl. 89-1.812.
- General Electric Company: See—
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- Baker, Lewin T.; Bose, Sanjay K.; and Huber, Paul G., 4,434,421, Cl. 340-825.510.
- Dills, Raymond L., 4,434,344, Cl. 219-10.55E.
- Fox, Daniel W.; Miller, George P.; and Weech, Marx E., 4,434,074, Cl. 252-628.000.
- Gareis, Ronald E., 4,434,450, Cl. 361-152.000.
- Interrante, Leonard V., 4,434,103, Cl. 260-448.00B.
- Johnston, Richard P., 4,433,955, Cl. 415-1.000.
- Koenig, Fredrick, 4,433,466, Cl. 29-564.600.
- Nelson, Conrad E., 4,434,397, Cl. 324-58.00R.
- Rosa, Hugh E.; and Slaterpryce, Allen A., 4,433,595, Cl. 74-813.00L.
- Ryckman, William D., Jr., 4,433,741, Cl. 177-199.000.
- Taylor, Carl D., 4,434,456, Cl. 362-374.000.
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Bohme, Rolf C.; and Lazerson, Max M., 4,434,365, Cl. 250-255.000.
- General Motors Corporation: See—
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- Mantela, Ralph F., 4,434,124, Cl. 264-229.000.
- Muench, Nils L., 4,433,953, Cl. 414-735.000.
- Parker, Donald L.; and Hogg, Hubert, 4,433,872, Cl. 303-22.00A.
- Perry, William H.; Stewart, David C.; and Waterworth, Geoffrey, 4,433,867, Cl. 296-146.000.
- Roush, Roy W., Jr., 4,433,629, Cl. 105-222.000.
- Schubring, Norman W., 4,434,342, Cl. 219-10.55M.
- Shih, Kelvin; Pochert, Kurt A.; and Dunford, James M., 4,433,576, Cl. 73-204.000.
- Sundeen, Arthur R., 4,433,572, Cl. 73-116.000.
- Taylor, Edward F.; and O'Kane, James C., 4,433,858, Cl. 280-802.000.
- Warwick, Edward H.; and Parker, Donald L., 4,433,757, Cl. 188-1.110.
- Winger, James L., 4,433,888, Cl. 339-91.00R.
- Genex Corporation: See—
Swann, Wayne E., 4,434,228, Cl. 435-108.000.
- Geo. A. Hormel & Company: See—
Leining, Lyndon R.; and Simonson, Kent L., 4,433,453, Cl. 17-21.000.
- George, Guerino F.: See—
Sellet, Frederick; George, Guerino F.; and Abbondante, Thomas S., 4,433,899, Cl. 350-307.000.
- Geremia, Leo F., to Tri-tech, Inc. High temperature switch. 4,434,330, Cl. 200-67.00A.
- Gergely, John S.: See—
Correa, Aderbal C.; Gergely, John S.; and Blanchard, Andrew J., 4,434,364, Cl. 250-253.000.
- Gerwick, Ben C., Jr.; and Hatcher, Stephen J., to Mobil Oil Corporation. Structure for offshore exploitation. 4,433,941, Cl. 405-211.000.
- Geskin, Ernest S. Steel making method. 4,434,003, Cl. 75-24.000.
- Giammarco, Giuseppe; and Giammarco, Paolo. Absorption of CO₂ and/or H₂S utilizing solutions containing two different activators. 4,434,144, Cl. 423-223.000.
- Giammarco, Paolo: See—
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- Giani, Angel, to Deere & Company. Cylindrical baler with automatic steering system. 4,433,533, Cl. 56-341.000.
- Gibbons, James F., to Sera Solar Corporation. Solar cells and method. 4,434,318, Cl. 136-258.000.
- Gibilisco, Kenneth J., to Merck & Co., Inc. Convertible child resistant closure. 4,433,789, Cl. 215-220.000.
- Gibson Associates, Inc.: See—
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- Gibson, Royal H., to Gibson Associates, Inc. Tamper-proof closure. 4,433,790, Cl. 215-246.000.
- Giebel, Gerhard: See—
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- Gilder, Timothy W.: See—
Wharton, Rodney; and Gilder, Timothy W., 4,433,813, Cl. 241-21.000.
- Gilleland, Frank W., to Owens-Corning Fiberglass Corporation. Solar collector having resilient and adjustable mounting means. 4,433,674, Cl. 126-450.000.
- Ginzburg, Vladimir B.: See—
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- Giobbio, Vincenzo; Ornato, Giorgio; Buracchi, Livio; and Mangia, Alberto, to Pierrel S.p.A. Process for the removal of the formyl group from N-formyl peptides and esters thereof. 4,434,097, Cl. 260-112.50R.
- Giorgini, Eugene A.; and Sullivan, John L., to Figgie International Inc. Pressure demand regulator with automatic shut-off. 4,433,685, Cl. 128-204.260.
- Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-self-crosslinkable elastomer for use with filamentary materials. 4,434,208, Cl. 428-378.000.
- Girgis, Ramsis S.: See—
Bell, Clifford J.; and Girgis, Ramsis S., 4,434,448, Cl. 361-23.000.
- Glaverbel: See—
Toussaint, Francois, 4,433,995, Cl. 65-135.000.
- Glickman, Myron, to Mi-Jack Products, Inc. Tracked crane for large objects. 4,433,952, Cl. 414-460.000.
- Godfrey, Thomas E., to Milliken Research Corporation. Flow controller. 4,433,811, Cl. 239-74.000.
- Goedert, Ferdinand: See—
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- Goes In Center, Kate; and Scheil, Francis J., to International Business Machines Corporation. Pivoting reference edge. 4,433,909, Cl. 355-75.000.
- Gogniat, Paul; and Loth, Eric, to Montres Rado S.A. Watch crystal bonded to watch case with low temperature solder material. 4,433,921, Cl. 368-294.000.
- Gold, Samuel; Tracton, Arthur A.; and Rosenski, Josephine M., to National Starch and Chemical Corporation. Base coatings for use on vacuum metallized paper. 4,434,259, Cl. 524-31.000.
- Goldberg, Gershon M.: See—
Masters, Joseph I.; and Goldberg, Gershon M., 4,434,217, Cl. 430-9.000.
- Goldstein, Norman P.; and Todt, William H., to Westinghouse Electric Corp. Self-powered radiation detector with improved emitter. 4,434,370, Cl. 250-370.000.
- Goldwater, Sam: See—
Kleykamp, Gayheart C.; Goldwater, Sam; and Salsbery, Charles L., 4,434,436, Cl. 358-118.000.
- Golem, Michael W., to UOP Inc. Multiple valve apparatus for simulated moving bed adsorption processes. 4,434,051, Cl. 210-264.000.
- Gombos nee Visky, Zsuzsanna: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Gomi, Yoshiaki; Hirata, Takahiro; Takaoka, Michio; Mohtai, Tsuneaki; and Akashi, Kazuya, to Chuba Electric Power Company Inc., The; and Fujiura Cable Works, Ltd., The. POF Cable having outer pipe with curved offset sections to accommodate expansion of the core. 4,434,319, Cl. 174-13.000.
- Goodman, Alvin M., to RCA Corporation. Method of forming a self aligned aluminum polycrystalline silicon line. 4,433,469, Cl. 29-571.000.
- Goodyear Aerospace Corporation: See—
Crossman, Richard L., 4,433,758, Cl. 188-196.00R.
- Robinson, Keith D.; and Smitley, George P., 4,434,021, Cl. 156-242.000.
- Gordon, Donald W. Exercise structure and ball game. 4,433,838, Cl. 272-65.000.
- Gordon, Robert L.; and Smith, John G., to International Paper Company. Pourable, recloseable lid. 4,433,808, Cl. 229-43.000.
- Gordon, Scott E.: See—
Anderson, Philip M., III; Kearney, James E.; and Gordon, Scott E., 4,434,411, Cl. 335-208.000.
- Gorling, Karl G.: See—
Edstrom, John O.; and Gorling, Karl G., 4,434,001, Cl. 75-3.000.
- Goscenski, Edward J., Jr., to Eaton Corporation. Clutch-brake assembly. 4,433,764, Cl. 192-18.00R.
- Gossmann, Willi: See—
Brandenstein, Manfred; Hans, Ruiger; Horling, Peter; Hetterich, Hermann; Pape, Gebhard; and Gossmann, Willi, 4,433,932, Cl. 403-261.000.
- Gottlieb, Saul, to Gottlieb, Simon. Hot water heating system. 4,433,810, Cl. 237-8.00R.
- Gottlieb, Simon: See—
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- Graham, John F. Textile spinning machines. 4,433,538, Cl. 57-328.000.
- Grebner, Kurt G. E.: See—
Drakenborn, Karl-Gunnar; Enser, Mats A.; Grebner, Kurt G. E.; and Wallmark, Erik I., 4,434,460, Cl. 364-200.000.
- Green, Edward A., to Eaton Corporation. Remote control system. 4,433,591, Cl. 74-479.000.
- Green, Jerome J., to Raytheon Company. Dielectric waveguide phase shifter. 4,434,409, Cl. 333-24.100.
- Green, Philip S.; and Taenzer, Jon C., to Siemens AG. Compact ultrasound apparatus for medical examination. 4,433,690, Cl. 128-660.000.
- Gregory, George D., to Challenger Caribbean Corporation; Challenger Products Corporation; and Commander Electrical Equipment, Inc. Support for current carrying member. 4,433,891, Cl. 339-217.00R.
- Griffiths, George E. Cleaning waste from beneath machinery. 4,433,455, Cl. 19-107.000.
- Grime, Thomas E., to Champion Spark Plug Company. Paint spray attachment. 4,433,812, Cl. 239-290.000.
- Grimmer, George G.: See—
Raulins, George M.; and Grimmer, George G., 4,433,862, Cl. 285-350.000.
- Grimstad, Ronald N., to Kohler Co. Flush valve attachment system. 4,433,446, Cl. 4-378.000.
- Groke, Karl: See—
Jeretin, Stojan; Groke, Karl; and Musil, Horst E., 4,434,160, Cl. 424-180.000.
- Grover, Mark D.; and Shaffer, Thomas C. Log raiser. 4,433,829, Cl. 254-131.000.
- Gruber, William P.: See—
Bell, Lon E.; and Gruber, William P., 4,434,414, Cl. 337-102.000.
- Gruest, Jacqueline: See—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Civier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruest, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Grumman Aerospace Corporation: See—
Mead, Albert R., 4,433,567, Cl. 72-342.000.
- Gschwend, Heinz W., to Ciba-Geigy Corporation. 7(2-Thienyl)dibenz[c,e]azepines. 4,434,100, Cl. 260-330.300.
- GTE Laboratories, Inc.: See—
Sarin, Vinod K., 4,433,739, Cl. 175-410.000.
- Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,433,979, Cl. 51-307.000.
- GTE Products Corporation: See—
Barbano, Normand, 4,434,425, Cl. 343-797.000.
- Lowe, Gary E., 4,434,386, Cl. 313-331.000.
- GTI Corporation: See—
Anderson, Gary W.; and Stake, Dennis G., 4,433,622, Cl. 101-40.000.
- Gucwa, Paul R.: See—
Sydansk, Robert D.; and Gucwa, Paul R., 4,433,728, Cl. 166-270.000.
- Guest, Philip Q., Jr.: See—
Caddick, Gary R.; and Guest, Philip Q., Jr., 4,434,468, Cl. 364-424.000.
- Gulf Research & Development Company: See—
Swift, Harold E.; and Lunden, Richard W., 4,434,281, Cl. 526-119.000.
- Gunter, Franz-Josef, to Walther & Cie. Aktiengesellschaft. Rescue system on high-rise buildings. 4,433,752, Cl. 182-82.000.
- Gustafson, Inc.: See—
Risdal, Norton W., 4,433,587, Cl. 73-863.540.
- Gusto Engineering B.V.: See—
Boon, Bart, 4,433,938, Cl. 405-166.000.
- Gutleber, Frank S., to United States of America, Army. Interference cancelling system for a mobile subscriber access communications system. 4,434,505, Cl. 455-50.000.
- Guttag, Karl M.; and Vanaken, Jerry R., to Texas Instruments Incorporated. Off-chip access for pseudo-microprogramming in microprocessor. 4,434,462, Cl. 364-200.000.
- Habel, George: See—
Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Ortwin, 4,433,662, Cl. 123-438.000.
- Hachiro, Nobuaki: See—
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,433,614, Cl. 91-376.00R.
- Hackman, Donald J.: See—
Caudy, Don W.; Hackman, Donald J.; Myers, John R.; and Hoffman, Robert T., 4,433,633, Cl. 114-54.000.
- Haefner, John A.: See—
Wilgus, Herbert S.; and Haefner, John A., 4,434,226, Cl. 430-567.000.
- Hagelberg, Allen C.; and Allardt, Clark E., to General Dynamics, Pomona Division. Tandem rocket launcher. 4,433,606, Cl. 89-1.812.
- Hager & Elsasser GmbH: See—
Marquardt, Kurt, 4,434,057, Cl. 210-638.000.
- Hagiwara, Taro, to Nissan Motor Co., Ltd. Structure for mounting functional parts on a closable member of a vehicle. 4,433,866, Cl. 296-76.000.
- Halcon SD Group, Inc., The: See—
Pugach, Joseph, 4,434,240, Cl. 502-24.000.
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- Hale, Robert R.; and McDougal, Allan R., to United States of America, National Aeronautics and Space Administration. Solar energy modulator. 4,433,672, Cl. 126-419.000.
- Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., to Norlin Industries, Inc. Orchestral accompaniment techniques. 4,433,601, Cl. 84-1.030.
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- Hall, Mark N. Acoustic resonator having transducer pairs excited with phase-displaced energy. 4,433,916, Cl. 366-114.000.
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- Halliburton Company: See—
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- Hallock, Robert L. Split head fastener. 4,433,949, Cl. 411-477.000.
- Hallstrom, Olof A., Jr. Combination internal combustion and steam engine. 4,433,548, Cl. 60-712.000.
- Halocarbon Products Corporation: See—
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- Hamabe, Takeshi; Wada, Hidekazu; Naruse, Mikio; and Nishimori, Toshiyuki, to Matsushita Electric Industrial Co., Ltd. Metallized film capacitor. 4,434,452, Cl. 361-304.000.
- Hamane, Tokuhito: See—
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- Harmer, Alan L., to Battelle Memorial Institute. Refractive index of a liquid referred to a predetermined temperature. 4,433,913, Cl. 356-13.000.
- Harnischfeger Corporation: See—
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- Harper Trucks, Inc.: See—
Rousseau, Kenneth E., 4,433,816, Cl. 242-129.620.
- Harrington, J. Vincent. Method of tunnel construction employing submerged caisson. 4,433,937, Cl. 405-137.000.
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- Harrison, David B., to Cook Stolowitz & Frame. Tethered submarine pressure transfer storage facility for liquified energy gases. 4,433,940, Cl. 405-210.000.
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- Hartman, Ludwig; Ruzek, Ivo; and Locher, Engelbert, to Carl Freudenberg, Firma. Spun-bonded fabric of partially drawn polypropylene with a low draping coefficient. 4,434,204, Cl. 428-198.000.
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Kozawa, Shigeyuki; Hasegawa, Noboru; and Kawahara, Hiroshi, 4,434,277, Cl. 525-507.000.
- Haselton, Halsey H.: See—
Dagenhart, William K.; Haselton, Halsey H.; Stirling, William L.; and Whealton, John H., 4,434,131, Cl. 376-130.000.
- Hashimoto, Nobuyuki; and Hattori, Takemi, to Aisin Seiki Kabushiki Kaisha. Air bag system. 4,433,708, Cl. 141-114.000.
- Hastings, Paul D.: See—
Bolding, Charles N.; and Hastings, Paul D., 4,433,821, Cl. 248-65.000.
- Hatcher, Stephen J.: See—
Gerwisch, Ben C., Jr.; and Hatcher, Stephen J., 4,433,941, Cl. 405-211.000.
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- Hauser, Herbert J., Jr., to Deere & Company. Piston assembly for an internal combustion engine. 4,433,616, Cl. 92-190.000.
- Hayn, John W.: See—
McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., 4,434,465, Cl. 364-200.000.
- Haynes, Gardner S.: See—
Baboian, Robert; and Haynes, Gardner S., 4,434,039, Cl. 204-196.000.
- Hazeltine Corporation: See—
Kenol, Claude J.; and DeGeorge, Richard M., 4,434,422, Cl. 343-5.05C.
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- Hebert, Francis A., to South Louisiana Contractors. Apparatus for reclaiming nailed boards from a board road. 4,433,464, Cl. 29-252.000.
- Heibel, Helmut: See—
Thomas, Alfred W.; and Heibel, Helmut, 4,433,543, Cl. 60-547.100.
- Heidemans, Rolf P.: See—
Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Ortwin, 4,433,662, Cl. 123-438.000.
- Heimberger, Werner: See—
Bach, Gerhard; Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Hillenbrand, Horst, 4,434,148, Cl. 423-379.000.
- Heinemann, Ulrich; Thomas, Rudolf; Lantzsch, Reinhard; Ditzgens, Klaus; and Weber, Erhard, to Bayer Aktiengesellschaft. Process for the preparation of pyrazole. 4,434,292, Cl. 548-373.000.
- Heinisch, Peter: See—
von der Eltz, Hans-Ulrich; Heinisch, Peter; and Ballmann, Hans J., 4,433,976, Cl. 8-555.000.
- Heiss, John F.: See—
Chandler, William S.; Wilkens, Walter F.; and Heiss, John F., 4,434,187, Cl. 426-652.000.
- Heitlinger, Paul: See—
Lemke, Norbert, 4,434,500, Cl. 378-99.000.
- Hemmat, Naim, to Electric Power Research Institute, Inc. Amorphous magnetic core and process for manufacturing to improve efficiency. 4,433,474, Cl. 29-605.000.
- Henges, J. Gordon, Jr.; and Schulte, Steve W., to J Henges Enterprises, Inc. Ceiling system for small buildings. 4,433,514, Cl. 52-94.000.
- Henke, Steven J.: See—
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- Henrion, Romain: See—
Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Henrion, Romain; Klein, Henri; and Liesch, Jean-Francois, 4,434,005, Cl. 75-60.000.
- Hensley, Albert L., Jr.; Nevitt, Thomas D.; and Tait, A. Martin, to Standard Oil Company (Indiana). Catalytic dewaxing-hydrotreating process. 4,434,047, Cl. 208-111.000.
- Herbert, William J.: See—
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- Hercules Incorporated: See—
Maslanka, William W.; and Spence, Gavin G., 4,434,267, Cl. 524-458.000.
- Herman Miller, Inc.: See—
Edwards, Thomas M.; Kelley, James O.; and Beard, Michael D., 4,433,884, Cl. 312-256.000.
- Herman, Richard J.: See—
Driver, Gary R.; and Herman, Richard J., 4,433,859, Cl. 285-34.000.
- Herve, Robert: See—
Michel, Ugon; and Herve, Robert, 4,434,473, Cl. 364-900.000.
- Herwig, Warren E.; Kaminski, Tony L.; and Shupert, Paul T., to Allis-Chalmers Corporation. Torsion spring coupled drive mechanism for reciprocating device having hazard warning means. 4,433,529, Cl. 56-10.200.
- Herz, Claus: See—
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, 4,434,035, Cl. 204-159.130.
- Hetterich, Hermann: See—
Brandenstein, Manfred; Hans, Ruiger; Horling, Peter; Hetterich, Hermann; Pape, Gebhard; and Gossmann, Willi, 4,433,932, Cl. 403-261.000.
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Horlbeck, Gernot; and Heuer, Horst, 4,434,276, Cl. 525-437.000.
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- Hideyuki, Noma: See—
Katumi, Horiko; and Hideyuki, Noma, 4,434,123, Cl. 264-225.000.
- Highfield, William, to Fuel Systems Management. Carburetor, control apparatus and method for internal combustion engines. 4,434,110, Cl. 261-36.00A.
- Higuchi, Masayuki, to Sharp Kabushiki Kaisha. Solar cell power supply circuit. 4,434,395, Cl. 320-1.000.
- Hildinger, Eugen, deceased (by Hildinger, Marianne, heir), to Siemens Aktiengesellschaft. Text processing device. 4,434,471, Cl. 364-900.000.
- Hildinger, Marianne, heir: See—
Hildinger, Eugen, deceased, 4,434,471, Cl. 364-900.000.
- Hill, Bernhard: See—
Sander, Ingolf; and Hill, Bernhard, 4,434,477, Cl. 365-120.000.
- Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., to International Flavors & Fragrances, Inc. Process for augmenting or enhancing the fresh air aroma of clothing. 4,434,086, Cl. 252-522.00R.
- Hill, Ronald L., to FMC Corporation. Wheel clamping nut with freely rotating insert. 4,433,578, Cl. 73-487.000.

- Hillenbrand, Horst: See—
Bach, Gerhard; Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Hillenbrand, Horst, 4,434,148, Cl. 423-379.000.
- Hillstrom, David U.: See—
Main, Keith A.; and Hillstrom, David U., 4,433,935, Cl. 403-385.000.
- Hinchliffe, Richard H. Helmet adapted for use by hay fever sufferers, 4,433,988, Cl. 55-357.000.
- Hingorani, Narain G., to Electric Power Research Institute, Inc. Method and means for damping subsynchronous oscillations and DC offset in an AC power system, 4,434,376, Cl. 307-102.000.
- Hirabayashi, Tsugio: See—
Ikemoto, Isao; Koiso, Junichi; Tamura, Akihiko; and Hirabayashi, Tsugio, 4,433,904, Cl. 355-3.0DD.
- Hiraga, Masaharu: See—
Fukushima, Eiji; Fukuhara, Seiichi; and Hiraga, Masaharu, 4,433,564, Cl. 72-146.000.
- Hiraoka, Yasunobu: See—
Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tetsuo, 4,433,618, Cl. 99-455.000.
- Hirata, Takahiro: See—
Gomi, Yoshiaki; Hirata, Takahiro; Takaoka, Michio; Mohtai, Tsuneaki; and Akashi, Kazuya, 4,434,319, Cl. 174-13.000.
- Hisaki, Tomoko: See—
Yoshikawa, Akira; Takeda, Akitsu; Ochi, Osamu; Hisaki, Tomoko; and Mizushima, Yoshihiko, 4,434,224, Cl. 430-323.000.
- Hitachi Cable Limited: See—
Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanezaki, Atsushi, 4,434,022, Cl. 156-274.000.
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Amano, Matsuo; Teranishi, Takao; Mouri, Yasunori; Abe, Osamu; and Sasayama, Takao, 4,433,650, Cl. 123-179.00G.
- Fujimura, Takashi; and Takahashi, Katsuyu, 4,433,994, Cl. 65-110.000.
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- Ishikawa, Isao; Kanda, Miroshi; and Kondo, Toshio, 4,433,461, Cl. 29-25.350.
- Natsui, Ken-ichi; and Koyanagi, Osamu, 4,434,335, Cl. 200-148.00E.
- Suzuki, Hitoshi; Takahashi, Shigekatsu; and Fujioka, Yoshiki, 4,434,464, Cl. 364-200.000.
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- Hobart Brothers Company: See—
Reid, Gary L., 4,434,348, Cl. 219-61.000.
- Hochstein, Peter A. Method and assembly for monitoring respiration and detecting apnea, 4,433,693, Cl. 128-721.000.
- Hochwitz, Lynn E.; Schaefer, Daniel W.; and Dawson, Michael L., to Simplicity Manufacturing, Inc. Cab for walk-behind tractor, 4,433,868, Cl. 296-190.000.
- Hodgson, Robert A.; and Martinez, Sam J., to Maloney-Crawford Corporation. Calcium chloride dehydration nozzle, 4,433,983, Cl. 55-171.000.
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von der Eltz, Hans-Ulrich; Heinisch, Peter; and Ballmann, Hans J., 4,433,976, Cl. 8-555.000.
- Hoelderich, Wolfgang; Moss, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Preparation of olefins from methanol/dimethyl ether, 4,434,314, Cl. 585-640.000.
- Hoeren, Gerd H.: See—
Palmquist, Steven R.; Chapman, David D.; and Hoeren, Gerd H., 4,434,488, Cl. 371-15.000.
- Hoerschelmann, Konstantin; Kausche, Helmut; and Spath, Werner, to Siemens Aktiengesellschaft. Method and apparatus for doping semiconductor material, 4,434,036, Cl. 204-164.000.
- Hoffman, Robert T.: See—
Caudy, Don W.; Hackman, Donald J.; Myers, John R.; and Hoffman, Robert T., 4,433,633, Cl. 114-54.000.
- Hoffman, Ronald R.: See—
Payne, Rex E., Jr.; and Hoffman, Ronald R., 4,433,869, Cl. 297-5.000.
- Hoffmann-La Roche Inc.: See—
Bohnen, Klaus, 4,434,165, Cl. 424-248.400.
- Cohen, Noal; and Weber, Giuseppe, 4,434,101, Cl. 260-410.90R.
- Hostettler, Hans U.; and Pauling, Horst, 4,434,178, Cl. 424-287.000.
- Hofmann, Karlheinz: See—
Pietzsch, Herbert; Lachner, Walter; Hofmann, Karlheinz; Potzsch, Erich; and Esser, Fred, 4,434,494, Cl. 373-18.000.
- Hogg, Hubert: See—
Parker, Donald L.; and Hogg, Hubert, 4,433,872, Cl. 303-22.00A.
- Holaday, John W.; and Faden, Alan I., to United States of America. Army. Narcotic antagonists in the therapy of shock, 4,434,168, Cl. 424-260.000.
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Blaas, Wolfgang; Bergl, Friedrich; and Wetmore, Judson D., 4,434,020, Cl. 156-216.000.
- Holland, Charles J.; Wallach, Steven; and Alsing, Carl J., to Data General Corporation. Data processing system having instruction responsive apparatus for both a basic and an extended instruction set, 4,434,459, Cl. 364-200.000.
- Hollaway, Gerald C., Jr., to Dayco Corporation. Method of making a polymeric strip and a power transmission belt, 4,434,019, Cl. 156-137.000.
- Hollowell, Barry S., to Mayfran, Inc. Pusher assembly for scrap metal conveyors, 4,433,775, Cl. 198-742.000.
- Holmes, Marvin: See—
Wells, Ivan D.; Koh, Jin L.; and Holmes, Marvin, 4,433,544, Cl. 60-641.120.
- Holtvoigt, Werner: See—
Beck, Heinz; Holtvoigt, Werner; and Mukerjee, Ambar, 4,434,260, Cl. 524-104.000.
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Hon, David T., 4,433,852, Cl. 280-278.000.
- Hon, David T., to Hon Corporation. Foldable and portable vehicle, 4,433,852, Cl. 280-278.000.
- Honda Giken Kogyo Kabushiki Kaisha: See—
Amano, Katsuhisa; Kumagai, Tadashi; Masaki, Akio; Shimada, Shinichi; Suzuki, Takeshi; and Ohtaka, Shoichi, 4,433,541, Cl. 60-293.000.
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- Honda, Mitsuo: See—
Katagiri, Kiyoo; and Honda, Mitsuo, 4,433,510, Cl. 51-165.00R.
- Honeywell Inc.: See—
Bickman, Bernard F., 4,433,691, Cl. 128-660.000.
- Coffel, Jerome F., 4,433,818, Cl. 244-3.130.
- Hanse, Joel G., 4,433,915, Cl. 356-350.000.
- Koepke, Barry G.; and McHenry, Kelly D., 4,433,980, Cl. 51-308.000.
- Quinn, Thomas G., III, 4,433,924, Cl. 374-2.000.
- Wilwerding, Dennis J., 4,434,362, Cl. 250-201.000.
- Honeywell Information Systems Italia: See—
Cavallari, Pier G., 4,433,927, Cl. 400-124.000.
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Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,434,107, Cl. 260-501.120.
- Honkanen, George P.: See—
Burke, Roger M.; DeSatnick, Allen H.; and Honkanen, George P., 4,433,687, Cl. 128-318.000.
- Hoobler, Mary A.: See—
Sikorski, James A.; and Hoobler, Mary A., 4,433,996, Cl. 71-087.000.
- Hooker, Donald E.; and Tojza, Roman A., to Bally Manufacturing Corporation. Drive mechanism for a variable speed gaming device, 4,433,844, Cl. 273-143.00R.
- Hoover, Stephen V.: See—
Kuhlmann, George E.; and Hoover, Stephen V., 4,434,244, Cl. 502-209.000.
- Hoppe, David R., to Motorola Inc. Differential time interpolator, 4,433,919, Cl. 368-120.000.
- Horigome, Shinkichi: See—
Terao, Motoyasu; Horigome, Shinkichi; Mitsuya, Munehisa; Ota, Sakae; and Shigematsu, Kazuo, 4,434,429, Cl. 346-135.100.
- Horiike, Masanori; and Ebi, Yutaka, to Ricoh Company, Ltd. Deflection detector for ink jet printing apparatus, 4,434,428, Cl. 346-75.000.
- Horlbeck, Gernot; and Heuer, Horst, to Chemische Werke Huels Aktiengesellschaft. Process for the condensation of poly(alkylene terephthalates), 4,434,276, Cl. 525-437.000.
- Horling, Peter: See—
Brandenstein, Manfred; Hans, Ruiger; Horling, Peter; Hetterich, Hermann; Pape, Gebhard; and Gossmann, Willi, 4,433,932, Cl. 403-261.000.
- Horn, Walter, to Fissler Gesellschaft mit beschränkter Haftung. Pressure indicator, 4,433,579, Cl. 73-715.000.
- Hornbuckle, John A.: See—
Thomas, Robert C.; Hornbuckle, John A.; and Fatka, Richard J., 4,434,470, Cl. 364-565.000.
- Hornyak, Gyula: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Horowitz, Harold S.: See—
Horowitz, Hugh H.; Horowitz, Harold S.; and Longo, John M., 4,434,031, Cl. 204-59.00R.
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- Horvath, Tibor; Udvardy, Agnes; David, Agoston; and Marmarosi nee Kellner, Katalin, to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara Rt. Time-release, 4,434,152, Cl. 424-19.000.
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Matsui, Kazuhiro, 4,433,605, Cl. 84-299.000.
- Hostettler, Hans U.; and Pauling, Horst, to Hoffmann-La Roche, Inc. Antiperspirants, 4,434,178, Cl. 424-287.000.
- Hu, Shih-Ming: See—
Bhattacharya, Somnath; Hu, Shih-Ming; Koopman, Nicholas G.; and Oldakowski, Chester C., 4,434,434, Cl. 357-71.000.

- Huang, Helen: See—
Oswald, Alexis A.; Huang, Helen; Huang, John; and Valint, Paul, Jr., 4,434,062, Cl. 252-8.55D.
- Huang, John: See—
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- Huang, Victor T.: See—
Desia, Nitin; Delaney, Rory A. M.; Brouwer, Peter; and Huang, Victor T., 4,434,186, Cl. 426-565.000.
- Huber, Paul G.: See—
Baker, Lewin T.; Bose, Sanjay K.; and Huber, Paul G., 4,434,421, Cl. 340-825.510.
- Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Stripping a solution containing molybdenum and vanadium values, 4,434,140, Cl. 423-54.000.
- Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Recovery of cobalt, molybdenum, nickel and vanadium from an aqueous ammonia and ammonium salt solution by coextracting molybdenum and vanadium and sequential extraction of nickel and cobalt, 4,434,141, Cl. 423-54.000.
- Huckabay, John A., to Imperial West Chemical Company. Method for treatment of aluminum dross oxides, 4,434,142, Cl. 423-111.000.
- Huffman, Charles E.; and Southerland, Stephen R., to Rockwell International Corporation. Drop and insert channel bank with reduced channel units, 4,434,485, Cl. 370-55.000.
- Hughes Aircraft Company: See—
Knauer, Wolfgang, 4,434,371, Cl. 250-396.00R.
- Hughes, Thomas R.: See—
Buss, Waldeen C.; and Hughes, Thomas R., 4,434,311, Cl. 585-444.000.
- Hughes Tool Company: See—
Regan, Albert M., 4,433,939, Cl. 405-195.000.
- Hulin, Jean-Pierre, to Schlumberger Technical Corporation. Method and apparatus for determining the flow characteristics of a fluid in a well, 4,433,573, Cl. 73-155.000.
- Hummel, Donald A. Compact dual bell section trombone case, 4,433,781, Cl. 206-314.000.
- Humphreys, Bryan E., to T.K.S. (Aircraft De-Icing) Limited. Porous panel, 4,434,201, Cl. 428-137.000.
- Hunter Investment Company: See—
Smith, Harris W., 4,433,645, Cl. 122-136.00R.
- Hurwitz, Marvin J.: See—
Fellman, Robert P.; Hurwitz, Marvin J.; Myers, Robert M.; and Slack, Gerald F., 4,433,958, Cl. 433-199.000.
- Huss, Christina L.: See—
Altmansberger, David C.; Huss, Christina L.; and Kroger, Haans H., 4,434,060, Cl. 210-724.000.
- Husson, Alan L.: See—
Caputo, William R.; and Husson, Alan L., 4,433,756, Cl. 187-29.00R.
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Pelletier, Jean-Marc; and Dion, Yvon, 4,434,413, Cl. 337-71.000.
- Hyzak, Daniel L., to Stauffer Chemical Company. Herbicide compositions containing soil life extenders and antidotes, 4,433,999, Cl. 71-100.000.
- Iacoviello, Steven A.: See—
Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., 4,434,033, Cl. 204-95.000.
- Icaro Olivieri & C. S.p.A.: See—
Olivieri, Icaro, 4,433,458, Cl. 24-191.000.
- Ichinose, Hisao, to Nissan Motor Co. Ltd. Gas spring, 4,433,759, Cl. 188-282.000.
- ICI Australia Limited: See—
Smith, Lindsay K.; and Yabsley, Michael A., 4,434,017, Cl. 149-2.000.
- Igashira, Toshihiko: See—
Abe, Seiko; Igashira, Toshihiko; Kawai, Hisasi; Ina, Toshikazu; and Tokoro, Masayoshi, 4,433,665, Cl. 123-552.000.
- Iijima, Takashi: See—
Nankai, Shiro; Nakamura, Ken-ichi; and Iijima, Takashi, 4,434,229, Cl. 435-174.000.
- Iizuka, Syogo: See—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,433,479, Cl. 29-825.000.
- Ikeda, Chihiro, to Takeda Machinery Works Company, Ltd. Work-piece locating device for a corner shear machine, 4,433,600, Cl. 83-468.000.
- Ikeda, Hiroki: See—
Arakawa, Takeshi; and Ikeda, Hiroki, 4,434,502, Cl. 382-41.000.
- Ikeda, Hisao: See—
Tsuchiya, Shuji; Ikeda, Hisao; and Suzuki, Kenji, 4,434,104, Cl. 260-456.00P.
- Ikeda, Tokuzo: See—
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,434,205, Cl. 428-218.000.
- Ikemoto, Isao; Koiso, Junichi; Tamura, Akihiko; and Hirabayashi, Tsugio, to Konishiroku Photo Industry Co., Ltd. Electrophotographic copying machine, 4,433,904, Cl. 355-3.0DD.
- Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, to Toyota Jidosha Kogyo Kabushiki Kaisha. Gear-teeth protector in change-speed gearing units, 4,433,593, Cl. 74-606.00R.
- Imahori, Seiichi; Kaneko, Masaharu; Ozawa, Tetsuo; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, to Mitsubishi Chemical Industries, Ltd.; and Hitachi Ltd. Liquid crystal composition, 4,434,072, Cl. 252-299.100.
- Imai, Iwao: See—
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,433,669, Cl. 123-620.000.
- Imazeki, Shuji: See—
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- Imbert, Thierry: See—
Dostert, Philippe; Imbert, Thierry; and Bucher, Bernard, 4,434,170, Cl. 424-265.000.
- Imperial Chemical Industries PLC: See—
Doroszowski, Andrew; and Pavey, Victor J., 4,434,268, Cl. 524-520.000.
- Imperial West Chemical Company: See—
Huckabay, John A., 4,434,142, Cl. 423-111.000.
- Ina, Toshikazu: See—
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- Inagaki, Sanji; Takiguchi, Shinji; and Tanaka, Susumu, to Minolta Camera Kabushiki Kaisha. Offset prevention layer for heat roller fixing device, 4,434,355, Cl. 219-216.000.
- Independent Systems Corporation: See—
Mellon, Timothy; and Carlson, Gustaf B., 4,433,712, Cl. 160-122.000.
- Index-Werke Komm.-Ges. Hahn & Tescny: See—
Baumgartner, Richard, 4,433,488, Cl. 33-185.00R.
- Inductive Control Systems B.V.: See—
Ruempol, Geurt J., 4,434,412, Cl. 336-134.000.
- Industria Macchine Automatiche: See—
Romagnoli, Andrea, 4,433,798, Cl. 222-255.000.
- Ing. C. Olivetti & C. S.p.A.: See—
Boggio, Giuseppe; and Lorenzi, Mario, 4,434,324, Cl. 178-69.00R.
- Ingemann, Ole, to A/S Hastrup Plastic. Container having frangible opening means, 4,433,793, Cl. 220-276.000.
- Inland Enterprises, Inc.: See—
Butts, Douglas E., 4,433,832, Cl. 266-87.000.
- Innovative Research: See—
Smith, Jerry R., 4,433,854, Cl. 280-511.000.
- Inoguchi, Kazuhiro; Nakanishi, Tomohiko; and Asano, Mitsuru, to Nippon Soken, Inc. Method for producing a cordierite body, 4,434,117, Cl. 264-56.000.
- Inoue, Takeo: See—
Nagano, Toshio; Kobayashi, Toshiyuki; Koshirakawa, Nobutaka; and Inoue, Takeo, 4,433,724, Cl. 166-60.000.
- Insituform International, Inc.: See—
Chick, Douglas K., 4,434,115, Cl. 264-36.000.
- Institut Francais du Pétrole: See—
Juguin, Bernard; and Miquel, Jean, 4,434,315, Cl. 585-671.000.
- Layette, Pierre-Claude; and Bozec, Laurent, 4,433,736, Cl. 173-94.000.
- Rojey, Alexandre; and Cheron, Jacques, 4,433,554, Cl. 62-112.000.
- Institute Organicheskogo Sintez: See—
Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., 4,434,095, Cl. 260-112.50R.
- Institute Po Fizykochemii: See—
Vitkova, Stefana D.; and Mircheva, Vera V., 4,434,030, Cl. 204-43.00T.
- International Business Machines Corporation: See—
Abbott, Jerry J.; Crossan, Stephen C.; Fuller, Sterritt R., Jr.; and Jachimiak, Paul D., 4,434,220, Cl. 430-108.000.
- Barner, Robert P., Jr.; Bensadon, Joseph M.; Besseyre, Jacques A.; and Markey, Harold G., 4,434,486, Cl. 370-110.100.
- Bhattacharya, Somnath; Hu, Shih-Ming; Koopman, Nicholas G.; and Oldakowski, Chester C., 4,434,434, Cl. 357-71.000.
- Cook, Herbert C.; and Troutman, Ronald R., 4,434,478, Cl. 365-185.000.
- Craig, Timothy P.; Pettit, John W.; and Timperman, Michael R., 4,434,356, Cl. 219-216.000.
- Dailey, Jack R.; Kuntzleman, Harry C.; Ng, Charles S.; and Pike, John W., 4,434,432, Cl. 346-154.000.
- Darrow, Russell E.; Funari, Joseph; Kotrch, George S.; and Phillips, George C., 4,434,134, Cl. 419-5.000.
- Drakenborn, Karl-Gunnar; Enser, Mats A.; Grebner, Kurt G. E.; and Wallmark, Erik I., 4,434,460, Cl. 364-200.000.
- Frane, Terence E., 4,434,207, Cl. 428-343.000.
- Goes In Center, Kate; and Schell, Francis J., 4,433,909, Cl. 355-75.000.
- McCaskill, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,434,475, Cl. 364-900.000.
- International Computers Limited: See—
Betts, Dennis J., 4,434,321, Cl. 174-68.500.
- International Flavors & Fragrances Inc.: See—
Evers, William J.; Mookherjee, Braja D.; Van Ouwkerk, Anton; and Van Loveren, Augustinus G., 4,434,085, Cl. 252-522.00R.
- Hall, John B.; Sanders, James M.; and Siano, James N., 4,433,695, Cl. 131-276.000.
- Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,434,086, Cl. 252-522.00R.
- International Harvester Co.: See—
Kesi, Elmer M.; Scarnato, Thomas J.; and Sammarco, Peter, 4,433,531, Cl. 56-106.000.
- Prokop, Josef F.; Coons, Robert R.; and Mylander, Richard H., 4,433,762, Cl. 192-4.00A.
- International Paper Company: See—
Gordon, Robert L.; and Smith, John G., 4,433,808, Cl. 229-43.000.

- Mendel, Jack M.; Bomgardner, Carl C.; Rack, Robert W.; Scott, Donald G.; and Stritmater, August W., 4,433,917, Cl. 366-132.000.
- International Precision Incorporated: See—
Yonezawa, Akira, 4,434,367, Cl. 250-311.000.
- International Shoe Machine Corporation: See—
Becka, Michael M.; and Bennett, George, 4,433,632, Cl. 112-262.300.
- International Standard Elektrik Corporation: See—
Kautz, Werner, 4,434,423, Cl. 343-406.000.
- International Telephone and Telegraph Corporation: See—
Caddick, Gary R.; and Guest, Philip Q., Jr., 4,434,468, Cl. 364-424.000.
- Interrante, Leonard V., to General Electric Company. Substituted silicon-oxygen-aluminum oligomers and preparation thereof. 4,434,103, Cl. 260-448.00B.
- Inventio AG: See—
Friedli, Paul; and Suss, Hans G., 4,434,466, Cl. 364-200.000.
- Irrsberger, Hermann, to Bergwerksverband GmbH. Method and apparatus for controlling a mine roof support. 4,433,945, Cl. 405-302.000.
- Ishida, Hiroshi: See—
Kobari, Katsuo; Ishida, Hiroshi; and Ota, Naoto, 4,434,393, Cl. 318-757.000.
- Ishikawa, Isao; Kanda, Miroshi; and Kondo, Toshio, to Hitachi, Ltd. Method of manufacturing an acoustic spherical lens. 4,433,461, Cl. 29-25.350.
- Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, to Nissan Motor Company, Limited. Plasma ignition system for an internal combustion engine. 4,433,669, Cl. 123-620.000.
- Ishikawajima-Harima Jukogyo Kabushiki Kaisha: See—
Tomizawa, Fumio; and Aoshika, Masayuki, 4,434,495, Cl. 373-76.000.
- Ishimoto, Akio: See—
Kanamori, Kozo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, 4,434,023, Cl. 156-307.300.
- Ishizaki, Hiroyuki; Tsujino, Yoshiaki; and Dohi, Masaji, to Fujitsu Limited. Method for driving a charge injection device. 4,434,441, Cl. 358-213.000.
- Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Printer head. 4,433,926, Cl. 400-124.000.
- Isolite Babcock Refractories Co., Ltd.: See—
Kato, Takeo, 4,433,480, Cl. 29-432.000.
- Isono, Tokio: See—
Miyakoshi, Shinichi; and Isono, Tokio, 4,433,850, Cl. 280-277.000.
- Isover Saint-Gobain: See—
Debouzie, Alain; Sainte-Foi, Daniel; and Blandin, Yannick, 4,433,992, Cl. 65-3.100.
- Itek Corporation: See—
Fay, Victor K., 4,434,404, Cl. 330-85.000.
- Ito, Keizo: See—
Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, 4,434,162, Cl. 424-200.000.
- Ito, Kenji: See—
Sugita, Hiroshi; Tsuda, Yasuo; Ito, Kenji; and Shimba, Satoru, 4,434,225, Cl. 430-544.000.
- Ito, Michiaki: See—
Tatsumi, Hisao; and Ito, Michiaki, 4,433,592, Cl. 74-573.00F.
- Ito, Takaaki: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
- Ivasyuk, Boris N.: See—
Spongr, Jerry J.; Tiebor, John E.; and Ivasyuk, Boris N., 4,434,366, Cl. 250-308.000.
- Iwakura, Ryoji: See—
Sekiya, Fukuo; Morokawa, Shigeru; and Iwakura, Ryoji, 4,433,920, Cl. 368-201.000.
- Iwama, Mitsuo: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.
- Iwata, Yoshihiko, to Kabushiki Kaisha Audio-Technica. Stabilizer for record discs. 4,434,484, Cl. 369-271.000.
- Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tetsuo, to Snow Brand Milk Products Co., Ltd. Apparatus for continuously manufacturing fibrous high protein foods. 4,433,618, Cl. 99-455.000.
- J Henges Enterprises, Inc.: See—
Henges, J. Gordon, Jr.; and Schulte, Steve W., 4,433,514, Cl. 52-94.000.
- Jablonski, Dane E., to B. F. Goodrich Company. The Vulcanizable compositions of halogen and carboxyl containing acrylate elastomers, 2,5-dimercapto-1,3,4-thiadiazole, a Group IVA metal oxide or salt and a tetraalkyl thiuram sulfide. 4,434,274, Cl. 525-349.000.
- Jachimiak, Paul D.: See—
Abbott, Jerry J.; Crossan, Stephen C.; Fuller, Sterritt R., Jr.; and Jachimiak, Paul D., 4,434,220, Cl. 430-108.000.
- Jacob, Eberhard: See—
Bacher, Walter; and Jacob, Eberhard, 4,434,139, Cl. 423-19.000.
- Jacobs, Fritz E.: See—
Vernon, Lonnie W.; and Jacobs, Fritz E., 4,434,045, Cl. 208-107.000.
- Jaeklin, Alexander P.: See—
Schmid, Alfred, Jr.; Muller, Hans; and Jaeklin, Alexander P., 4,433,779, Cl. 206-220.000.
- JAFF Investment Company: See—
Faunce, Frank R., 4,433,959, Cl. 433-201.000.
- Jaros, John M.; and Panas, William R., to S&C Electric Company. Electrical control module for a current-limiting fuse. 4,434,415, Cl. 337-186.000.
- Jatkar, Arun D.: See—
Joshi, Ashok V.; Jatkar, Arun D.; and Shollette, William P., 4,434,216, Cl. 429-191.000.
- Jede-Automat Magnusson AB: See—
Magnusson, Jan, 4,433,617, Cl. 99-305.000.
- Jeglinski, Werner: See—
Flisikowski, Peter; Jeglinski, Werner; and Jelmorini, Gerardus, 4,434,350, Cl. 219-121.0LC.
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Flisikowski, Peter; Jeglinski, Werner; and Jelmorini, Gerardus, 4,434,350, Cl. 219-121.0LC.
- Jendrusch, Paul, to E.C.H. Will (GmbH & Co.). Apparatus for manipulating stacks of paper sheets or the like. 4,433,773, Cl. 198-467.000.
- Jenkins, Henry H. Panel mounted vacuum control valve. 4,433,703, Cl. 137-541.000.
- Jenkins, Thomas A. Simulated log construction element. 4,433,519, Cl. 52-233.000.
- Jeretin, Stojan; Groke, Karl; and Musil, Horst E., to Leopold & Co. Chem. Pharm. Fabrik Gesellschaft m.b.H. Nutrient solution for complete parenteral feeding and for increased energy production. 4,434,160, Cl. 424-180.000.
- Johnson, Dennis P.: See—
Niles, Aaron F.; and Johnson, Dennis P., 4,434,213, Cl. 429-3.000.
- Johnson, Donald A.; and Nimry, Baker N. Polymers for prevention of fouling by iron oxides in cooling systems. 4,434,059, Cl. 210-701.000.
- Johnson & Johnson Products, Inc.: See—
Yoon, Hee K., 4,433,680, Cl. 128-90.000.
- Johnston, Richard P., to General Electric Company. Turbine arrangement. 4,433,955, Cl. 415-1.000.
- Jones, John L.; and Rubino, Andrew M., to Armour Pharmaceutical Company. Basic aluminum bromide compositions and methods useful as astringents or anti-perspirants. 4,434,155, Cl. 424-47.000.
- Jones, Keith: See—
Cox, Ian R.; and Jones, Keith, 4,434,091, Cl. 252-557.000.
- Jones, Larren F.; and Earll, Jeffrey P., to ESCO Corporation. Locking device for excavating equipment. 4,433,496, Cl. 37-141.00R.
- Jones, Peter D. Recyclable paper binding means. 4,433,929, Cl. 402-14.000.
- Jones, Richard E., III: See—
Mauldin, Donald M.; and Jones, Richard E., III, 4,433,679, Cl. 128-80.00F.
- Joosten, Michael W., to Conoco Inc. Damping device for use with acoustic information generation machines. 4,433,582, Cl. 73-788.000.
- Jordan, Wolfgang: See—
Hartel, Gunter; Schurfeld, Armin; and Jordan, Wolfgang, 4,433,661, Cl. 123-339.000.
- Joshi, Ashok V.; Jatkar, Arun D.; and Shollette, William P., to Rayovac Corporation. Solid state electrolyte. 4,434,216, Cl. 429-191.000.
- Joy Manufacturing Company: See—
Densmore, Neal W., 4,433,777, Cl. 198-834.000.
- Juguin, Bernard; and Miquel, Jean, to Institut Francais du Petrole. Process for isomerizing olefins. 4,434,315, Cl. 585-671.000.
- Jung, Gerard, to Rhone-Poulenc Industries. Means for embedding microorganisms in a polymer matrix. 4,434,231, Cl. 435-253.000.
- Justice, David D.: See—
Kelly, Pilar P.; and Justice, David D., 4,434,041, Cl. 204-296.000.
- Jwuc, Karl J., to Midland-Ross Corporation. Composite cushion pad. 4,433,834, Cl. 267-141.100.
- Kabushiki Kaisha Audio-Technica: See—
Iwata, Yoshihiko, 4,434,484, Cl. 369-271.000.
- Kabushiki Kaisha GEMV AC: See—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,434,331, Cl. 200-144.00B.
- Kabushiki Kaisha Komatsu Seisakusho: See—
Kiyosawa, Hiroshi, 4,433,620, Cl. 100-43.000.
- Kodama, Kazuo, 4,433,948, Cl. 407-42.000.
- Kabushiki Kaisha Meidensha: See—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,434,331, Cl. 200-144.00B.
- Kabushiki Kaisha Suwa Seikosha: See—
Fujiwara, Hitoshi; and Matsuzawa, Masanao, 4,433,925, Cl. 400-88.000.
- Koto, Haruhiko, 4,434,430, Cl. 346-140.00R.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—
Tsuchiya, Takaaki, 4,433,562, Cl. 70-186.000.
- Kabushiki Kaisha Wako: See—
Kondo, Kazuyoshi, 4,433,568, Cl. 72-356.000.
- Kachun, Lee, to Falco Data Products. General purpose data terminal system with display line refreshing and keyboard scanning using pulswidth modulation. 4,434,472, Cl. 364-900.000.
- Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., to Olin Corporation. Process for producing concentrated solutions containing alkali metal chlorates and alkali metal chlorides. 4,434,033, Cl. 204-95.000.
- Kageyama, Hachiro; Moriuchi, Tsutomu; and Oikawa, Yoshiaki, to Kyodo Yushi Co., Ltd. Lubricant compositions. 4,434,063, Cl. 252-25.000.

- Kai, Tomokazu: See—
Fujiwara, Ryuhei; Kai, Tomokazu; and Nakahara, Hidetoshi, 4,434,506, Cl. 455-53.000.
- Kaieda, Shozo: See—
Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.
- Kaji, Hisatsugu: See—
Fukuda, Hiroyuki; Kaji, Hisatsugu; and Fujimaki, Hiroto, 4,434,206, Cl. 428-288.000.
- Kajiya, Shigeo: See—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiya, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,433,479, Cl. 29-825.000.
- Kakiuchi, Tokuji: See—
Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.
- Kakizaki, Syozo: See—
Sasaki, Tohru; Ohta, Mitsuru; Terasaki, Syuuzi; and Kakizaki, Syozo, 4,434,209, Cl. 428-416.000.
- Kaldor, Shmuel: See—
Yarnitsky, Yashaya; and Kaldor, Shmuel, 4,433,794, Cl. 221-224.000.
- Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanezaki, Atsushi, to Hitachi Cable Limited. Process for manufacturing copper-clad laminate. 4,434,022, Cl. 156-274.600.
- Kameyama, Shuichi; Kanzaki, Koichi; and Sasaki, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device utilizing selective etching and diffusion. 4,433,470, Cl. 29-577.00C.
- Kaminski, Tony L.: See—
Hervig, Warren E.; Kaminski, Tony L.; and Shupert, Paul T., 4,433,529, Cl. 56-10.200.
- Kamo, Mutsukazu; Matsumoto, Seiichiro; Sato, Yoichiro; and Setaka, Nobuo, to National Institute for Researches in Inorganic Materials. Method for synthesizing diamond. 4,434,188, Cl. 427-39.000.
- Kampf, Wolfgang, to Chemische Werke Huels Aktiengesellschaft. Process for the isomerization of isolated double bonds to conjugated double bonds in optionally substituted cyclooctadienes. 4,434,310, Cl. 585-377.000.
- Kanamori, Kozo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, to ESCO Corporation. Locking device for producing plate heater. 4,434,023, Cl. 156-307.300.
- Kanda, Miroshi: See—
Ishikawa, Isao; Kanda, Miroshi; and Kondo, Toshio, 4,433,461, Cl. 29-25.350.
- Kanebo, Ltd.: See—
Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, 4,434,162, Cl. 424-200.000.
- Kaneko, Masaharu: See—
Imahori, Seiichi; Kaneko, Masaharu; Ozawa, Tetsuo; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,434,072, Cl. 252-299.100.
- Kaneko, Thomas M., to BASF Wyandotte Corporation. Liquefied normally solid polyoxalkylene copolymers. 4,434,077, Cl. 252-357.000.
- Kaneko, Thomas M., to BASF Wyandotte Corporation. Liquefied normally solid polyoxalkylene copolymers. 4,434,078, Cl. 252-357.000.
- Kanezaki, Atsushi: See—
Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanezaki, Atsushi, 4,434,022, Cl. 156-274.600.
- Kanno, Akira, to Aiwa Co., Ltd. Soldering method for electric and or electronic components. 4,433,805, Cl. 228-180.00R.
- Kanzaki, Koichi: See—
Kameyama, Shuichi; Kanzaki, Koichi; and Sasaki, Yoshitaka, 4,433,470, Cl. 29-577.00C.
- Kaplan, Paul M.: See—
Zolton, Raymond P.; Kaplan, Paul M.; and Padvelskis, John V., 4,434,093, Cl. 260-112.00B.
- Karga, James D.; and McCullough, Harold E., to Bell Telephone Laboratories, Incorporated. Keying block extracting tool. 4,433,477, Cl. 29-764.000.
- Karl Mengele & Sohne: See—
Frick, Georg; Reiff, Harro; and Kirsch, Alois, 4,433,467, Cl. 29-565.000.
- Karuhn, Richard F.: See—
Berg, Robert H.; and Karuhn, Richard F., 4,434,398, Cl. 324-71.400.
- Kasahara, Toshio: See—
Ohmori, Taiji; Kasahara, Toshio; and Uchida, Yoshiaki, 4,433,743, Cl. 180-41.000.
- Kasui, Toshikatsu: See—
Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; Niwa, Tatsuo; and Sukegawa, Tsuneo, 4,433,901, Cl. 350-357.000.
- Katagiri, Kiyo; and Honda, Mitsuo, to Shin-Etsu Engineering Co., Ltd.; and Naotsu Electronics Co., Ltd. Method for controlling thickness of wafer-like work pieces under lapping and a lapping machine therefor. 4,433,510, Cl. 51-165.00R.
- Katanaga, Kenji: See—
Nakano, Koji; and Katanaga, Kenji, 4,433,465, Cl. 29-415.000.
- Kataoka, Hiroyuki: See—
Ohkubo, Tetsuo; Arai, Yoshio; and Kataoka, Hiroyuki, 4,434,431, Cl. 346-154.000.
- Katayama, Nobuaki: See—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,433,593, Cl. 74-606.00R.
- Kates, James M., to Teledyne Industries, Inc. Tone arm pick up system. 4,434,482, Cl. 369-230.000.
- Kato, Takeo, to Isolite Babcock Refractories Co., Ltd. Method of installing ceramic fiber blocks. 4,433,480, Cl. 29-432.000.
- Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; Sekiya, Shigenobu; and Nakamura, Sadayuki, to Daido Tokushuko Kabushiki Kaisha. Free cutting steel containing controlled inclusions and the method of making the same. 4,434,006, Cl. 75-123.00R.
- Katou, Takashi: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Ito, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
- Katumi, Horiko; and Hideyuki, Noma, to Shin-Etsu Polymer Co., Ltd. Method for the preparation of an electric connector. 4,434,123, Cl. 264-225.000.
- Kausche, Helmold: See—
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- Kawahara, Hiroshi: See—
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- Kawano, Hideo: See—
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- Kazahaya, Masahiro, to Fischer & Porter Company. Auxiliary channel for direct digital control system. 4,434,458, Cl. 364-138.000.
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- Keefe, Bowie G. Multi-cylinder reverse osmosis apparatus and method. 4,434,056, Cl. 210-637.000.
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- Keith, Douglas L., to Leland Stanford Junior University. The Board of Trustees of the. Planar magnetron sputtering apparatus. 4,434,042, Cl. 204-298.000.
- Kelley, James O.: See—
Edwards, Thomas M.; Kelley, James O.; and Beard, Michael D., 4,433,884, Cl. 312-256.000.
- Kellogg, Walter J.; Scott, Arden L.; and Seneadza, Samuel K., to Westinghouse Electric Corp. Circuit for controlling multiple rated motors. 4,434,394, Cl. 318-771.000.
- Kelly, Larry L. Blind. 4,433,713, Cl. 160-166.00R.
- Kelly, Pilar P.; and Justice, David D., to Olin Corporation. Method for conditioning carboxylate/sulfonate composite membranes for producing KOH. 4,434,041, Cl. 204-296.000.
- Kemeny, George A., to Westinghouse Electric Corp. Switch for very large DC currents. 4,433,607, Cl. 89-8.000.
- Kenol, Claude J.; and DeGeorge, Richard M., to Hazeltine Corporation. Digital scan converter with randomized decay function. 4,434,422, Cl. 343-5.05C.
- Keogh, Michael J., to Union Carbide Corporation. Water-curable, silane modified alkyl acrylate copolymers and a process for the preparation thereof. 4,434,272, Cl. 525-100.000.
- Kern, Roger J. Contact detector. 4,434,346, Cl. 219-69.00C.
- Kernforschungszentrum Karlsruhe GmbH: See—
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- Kesl, Elmer M.; Scarnato, Thomas J.; and Sammarco, Peter, to International Harvester Co. Forage harvester corn snapping header. 4,433,531, Cl. 56-106.000.
- Kessler, Erich, to Akzo N.V. Porous tubing. 4,434,250, Cl. 521-64.000.
- Keszei, Jeno; Varga, Laszlo; and Donath, Jeno, to Bor, Mubor es Cipopari. Measurement of the dimensions of footwear lasts. 4,433,485, Cl. 33-3.00R.
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- Kharrazi, N. Michael. Yogurt spread resembling cream cheese. 4,434,184, Cl. 426-40.000.

- Khurgin, Boris; Rosinek, Shlomo; and Rinkewich, Isaac. Apparatus for metering liquid flow. 4,433,577, Cl. 73-290.00V.
- Kidde, Inc.: See—
Mentzer, William R.; and Bernabe, Vincent, Jr., 4,433,515, Cl. 52-115.000.
- Kikuchi, Hiroshi: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.
- Kim, Bill S.; and Ban, Jung J. Multiple choice tossing game. 4,433,841, Cl. 273-338.000.
- Kim, Sung-Soon: See—
Osmera, Miroslav S.; Brooks, Ralf M.; and Kim, Sung-Soon, 4,433,902, Cl. 354-10.000.
- Kim, Yung J.: See—
Preston, Dan C., Jr.; and Kim, Yung J., 4,433,726, Cl. 166-118.000.
- Kimura, Atsuyoshi: See—
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- Kinbara, Hiroji: See—
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,433,965, Cl. 474-201.000.
- King-Seely Thermos Co.: See—
Spinner, Joseph R., 4,433,559, Cl. 62-354.000.
- Kingsford, Ted L., to Plough, Inc. Adjustable cosmetic wiper. 4,433,928, Cl. 401-122.000.
- Kirchanski, Stefan J.: See—
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- Kirk, William H. Flow meter. 4,433,583, Cl. 73-861.330.
- Kirsch, Alois: See—
Frick, Georg; Reiff, Harro; and Kirsch, Alois, 4,433,467, Cl. 29-565.000.
- Kishi, Mitsuhiro. Digger with supporting base pivotable on transversible member. 4,433,495, Cl. 37-103.000.
- Kitamura, Sunao: See—
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- Kiyosawa, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Hydro-pneumatic control system for a wheeled, self-propelled bolster for the transportation of a die assembly into and out of a press. 4,433,620, Cl. 100-43.000.
- Kjelgaard, Tom, to Tetra Pak International AB. Arrangement on packing containers. 4,433,784, Cl. 206-617.000.
- Klein, Gary S.; and Herbert, William J., to Eaton Corporation. Contractible conduit sealing connector. 4,434,320, Cl. 174-23.00R.
- Klein, Henri: See—
Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Henrion, Romain; Klein, Henri; and Liesch, Jean-Francois, 4,434,005, Cl. 75-60.000.
- Klein, Schanzlin & Becker Aktiengesellschaft: See—
Dermedde, Robert; and Koch, Jurgen, 4,433,825, Cl. 248-672.000.
- Kratzer, Adolf; and Dunnebie, Horst, 4,433,947, Cl. 406-99.000.
- Kleinschmitt, Peter; Voll, Manfred; and Engel, Richard, to Degussa Aktiengesellschaft. Gas black burner. 4,434,135, Cl. 422-150.000.
- Kleykamp, Gayheart C.; Goldwater, Sam; and Salsbery, Charles L., to Merrill, Bruce. Addressable premium channel obscuration device for cable television systems. 4,434,436, Cl. 358-118.000.
- Kline, Sherman S.: See—
Witten, Franklyn H.; and Kline, Sherman S., 4,433,881, Cl. 312-107.500.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—
Lichtner, Emil; Ungerling, Gerd; and Giebel, Gerhard, 4,433,653, Cl. 123-193.00H.
- Klomp, Edward D.: See—
Cornelius, Walter; Kosek, Thomas P.; and Klomp, Edward D., 4,433,540, Cl. 60-39.511.
- Kloss, Henry E. Process for making envelope for projection television tube. 4,433,962, Cl. 445-6.000.
- Knauer, Wolfgang, to Hughes Aircraft Company. Electron beam blanking apparatus and method. 4,434,371, Cl. 250-396.00R.
- Ko, Wen-Chuang; and Berry, Robert L., to Fairchild Camera & Instrument Corporation. Method for the formation of high density memory cells using ion implantation techniques. 4,433,471, Cl. 29-578.000.
- Kobari, Katsuo; Ishida, Hiroshi; and Ota, Naoto, to Fujitsu Fanuc Limited. Induction motor control system. 4,434,393, Cl. 318-757.000.
- Kobayashi, Kozo; and Minamishima, Mamoru, to Nakamichi Corporation. Volume control for an audio apparatus. 4,434,325, Cl. 381-104.000.
- Kobayashi, Masahiro: See—
Suzuki, Yoshitsugu; Jizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,433,479, Cl. 29-825.000.
- Kobayashi, Shinsaku; and Ogiso, Akira, to Sankyo Company, Limited. Wound-healing promoters. 4,434,179, Cl. 424-308.000.
- Kobayashi, Toshiyuki: See—
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- Kobayashi, Toyohiko; and Tsuruta, Haruki, to Takasago Perfumery Co., Ltd. Perfume composition. 4,434,306, Cl. 568-820.000.
- Koch, George R.; and Petersen, Carl T., III, to Lam Research Corporation. Modular loadlock. 4,433,951, Cl. 414-217.000.
- Koch, Jurgen: See—
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- Kodama, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Cutter for a crankshaft milling machine. 4,433,948, Cl. 407-42.000.
- Kodama, Tadasi: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.
- Koeck, Klaus; Bambach, Wolfgang; Ruopp, Gerhard; and Mikley, Frank, to Licentia Patent-Verwaltungs-GmbH. Circuit arrangement for establishing and terminating a data connection. 4,434,326, Cl. 179-2.0DP.
- Koenig, Fredrick, to General Electric Company. Apparatus for making and using slot closure wedges at a coil injection station. 4,433,466, Cl. 29-564.600.
- Koepke, Barry G.; and McHenry, Kelly D., to Honeywell Inc. Method of polishing silica base ceramics. 4,433,980, Cl. 51-308.000.
- Koerner, Gotz: See—
Dumm, Heinz; Koerner, Gotz; Krakenberg, Manfred; Rott, Hans; and Schmidt, Gunter, 4,434,008, Cl. 106-271.000.
- Koh, Jin L.: See—
Wells, Ivan D.; Koh, Jin L.; and Holmes, Marvin, 4,433,544, Cl. 60-641.120.
- Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, to Toppan Printing Co., Ltd.; and Okamoto Chemical Industry Co., Ltd. Image-forming element having an aluminum layer on a transparent film base. 4,434,223, Cl. 430-273.000.
- Kohler Co.: See—
Grimstad, Ronald N., 4,433,446, Cl. 4-378.000.
- Kohno, Toshihiko: See—
Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, 4,434,162, Cl. 424-200.000.
- Koiso, Junichi: See—
Ikemoto, Isao; Koiso, Junichi; Tamura, Akihiko; and Hirabayashi, Tsugio, 4,433,904, Cl. 355-3.0DD.
- Kojima, Hiroaki: See—
Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.
- Kojima, Masaaki; Suzuki, Takayuki; and Abe, Hiromichi, to Nippon Kogaku K.K. Lens supporting assembly. 4,433,897, Cl. 350-252.000.
- Kojima, Shigezo: See—
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.
- Kokiso, Masakazu: See—
Tarumi, Noriyoshi; Tamura, Akihiko; and Kokiso, Masakazu, 4,434,218, Cl. 430-96.000.
- Kokoszka, Joseph M.; and Tommasini, Rocco M., to United Technologies Corp. Total pressure probe. 4,433,584, Cl. 73-861.660.
- Kolb, Gunter: See—
Probst, Joachim; Kolb, Gunter; Mummehoff, Peter; and Baumgen, Heinz, 4,434,269, Cl. 524-538.000.
- Koll, Eugene A., to Champion International Corporation. Round top rimming machine. 4,433,968, Cl. 425-392.000.
- Kollmorgen Technologies Corporation: See—
Langley, Lawrence W.; and Bross, Roger B., 4,434,389, Cl. 318-254.000.
- Kolts, John H., to Phillips Petroleum Company. Conversion and/or selectivity of a zinc titanate catalyst. 4,434,079, Cl. 252-412.000.
- Komatsu, Katsumi: See—
Kawasaki, Takao; Osaka, Yoshiaki; Komatsu, Katsumi; Yamaguchi, Yukihiro; and Ono, Saichi, 4,434,172, Cl. 424-270.000.
- Komenou, Kazunari: See—
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- Kommoss, Klaus; and Schutte, Heinz, to U.S. Philips Corporation. Automatic reverse system for tape recorder. 4,434,442, Cl. 360-74.200.
- Kondo, Kazuyoshi, to Kabushiki Kaisha Wako. Precision closed-die forging method. 4,433,568, Cl. 72-356.000.
- Kondo, Masao, to Nippon Gakki Seizo Kabushiki Kaisha. Switch operating mechanism. 4,434,340, Cl. 200-332.000.
- Kondo, Toshio: See—
Ishikawa, Isao; Kanda, Miroshi; and Kondo, Toshio, 4,433,461, Cl. 29-25.350.
- Kondou, Tomizou: See—
Narisawa, Shizuo; Taira, Yoshito; Yoshii, Yuuji; and Kondou, Tomizou, 4,434,257, Cl. 524-5.000.
- Koning, Richard W.: See—
Anstey, Henry D.; Meiers, Gerald F.; and Koning, Richard W., 4,433,619, Cl. 100-40.000.
- Konishi, Masaaki: See—
Kanamori, Kozo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, 4,434,023, Cl. 156-307.300.
- Konishiroku Photo Industry Co., Ltd.: See—
Ikemoto, Isao; Koiso, Junichi; Tamura, Akihiko; and Hirabayashi, Tsugio, 4,433,904, Cl. 355-3.0DD.
- Sugita, Hiroshi; Tsuda, Yasuo; Ito, Kenji; and Shimba, Satoru, 4,434,225, Cl. 430-544.000.
- Tarumi, Noriyoshi; Tamura, Akihiko; and Kokiso, Masakazu, 4,434,218, Cl. 430-96.000.
- Konoshima, Katunaga, to Olympus Optical Co. Ltd. Light supply apparatus for endoscope. 4,433,675, Cl. 128-6.000.
- Koopman, Donald E.: See—
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,433,637, Cl. 116-207.000.
- Koopman, Nicholas G.: See—
Bhattacharya, Somnath; Hu, Shih-Ming; Koopman, Nicholas G.; and Oldakowski, Chester C., 4,434,434, Cl. 357-71.000.

- Koor Metals Ltd.: See—
Yerushalmi, Yaakov, 4,433,522, Cl. 52-426.000.
- Koosha, Mansour, to Singer Company, The. Video projector adjustable support. 4,433,824, Cl. 248-662.000.
- Kortenbach & Rauh Kommanditgesellschaft: See—
Schultes, Tilmann; and Seidel, Joachim, 4,433,699, Cl. 135-20.00R.
- Kosek, Thomas P.: See—
Cornelius, Walter; Kosek, Thomas P.; and Klomp, Edward D., 4,433,540, Cl. 60-39.511.
- Koshirakawa, Nobutaka: See—
Nagano, Toshio; Kobayashi, Toshiyuki; Koshirakawa, Nobutaka; and Inoue, Takeo, 4,433,724, Cl. 166-60.000.
- Koto, Haruhiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet printer head. 4,434,430, Cl. 346-140.00R.
- Kotrch, George S.: See—
Darrow, Russell E.; Funari, Joseph; Kotrch, George S.; and Phillips, George C., 4,434,134, Cl. 419-5.000.
- Koutake, Masanobu: See—
Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tetsuo, 4,433,618, Cl. 99-455.000.
- Koyanagi, Osamu: See—
Natsui, Ken-ichi; and Koyanagi, Osamu, 4,434,335, Cl. 200-148.00E.
- Kozawa, Shigeyuki; Hasegawa, Noboru; and Kawahara, Hiroshi, to Asahi Glass Company, Ltd. Polyol for a polyurethane prepared by reacting an epoxide with the reaction product of a phenol, an aromatic amine, an aldehyde and a dialkanolamine. 4,434,277, Cl. 525-507.000.
- Krakenberg, Manfred: See—
Dumm, Heinz; Koerner, Gotz; Krakenberg, Manfred; Rott, Hans; and Schmidt, Gunter, 4,434,008, Cl. 106-271.000.
- Kranich, Klaus O.: See—
Oderheimer, Bernhard; Kremer, Johannes H.; and Kranich, Klaus O., 4,433,982, Cl. 55-158.000.
- Kratzer, Adolf; and Dunnebie, Horst, to Klein, Schanzlin & Becker Aktiengesellschaft. Slurry feed pump for coal liquefaction reactors. 4,433,947, Cl. 406-99.000.
- Kreczik, Stefan. Arrangement for connecting two pipe ends. 4,433,861, Cl. 285-305.000.
- Kremer, Johannes H.: See—
Oderheimer, Bernhard; Kremer, Johannes H.; and Kranich, Klaus O., 4,433,982, Cl. 55-158.000.
- Krimm, Heinrich: See—
Bueysch, Hans-Josef; Krimm, Heinrich; and Rudolph, Hans, 4,434,105, Cl. 260-463.000.
- Kroger, Haans H.: See—
Altmansberger, David C.; Huss, Christina L.; and Kroger, Haans H., 4,434,060, Cl. 210-724.000.
- Krogsrud, Harald. Holder assembly for an electrode in an electrothermal smelting furnace. 4,434,496, Cl. 373-96.000.
- Kroll, Hartmut: See—
Christ, Richard; and Kroll, Hartmut, 4,434,373, Cl. 250-506.100.
- Krumm, Klaus D., to Luk Lamellen und Kupplungsbau GmbH. Diaphragm pump. 4,433,966, Cl. 417-571.000.
- Kubota Ltd.: See—
Nakakita, Kiyomi; and Yamada, Keiichi, 4,433,651, Cl. 123-188.00M.
- Kubota, Tadashi; Hamane, Tokuhito; and Tasa, Masaaki, to Matsushita Electric Industrial Co., Ltd. Coil insertion apparatus. 4,433,475, Cl. 29-736.000.
- Kucera, Ladislav: See—
Berger, Conrad; Kucera, Ladislav; Schneider, Paul; and Spittaler, Gunther, 4,434,417, Cl. 338-53.000.
- Kuda, Vladimir: See—
Cech, Miloslav; Kuda, Vladimir; and Vasicek, Vladimir, 4,433,705, Cl. 139-435.000.
- Kudo, Tadato: See—
Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanazaki, Atsushi, 4,434,022, Cl. 156-274.600.
- Kuhlmann, George E.; and Hoover, Stephen V., to Standard Oil Company (Indiana). Maleic anhydride catalyst recycle. 4,434,244, Cl. 502-209.000.
- Kulpa, Walter J.; and Paulik, John R., to Pitney Bowes Inc. End of stack sensor. 4,433,836, Cl. 271-3.100.
- Kumagai, Tadashi: See—
Amano, Katsuhisa; Kumagai, Tadashi; Masaki, Akio; Shimada, Shinichi; Suzuki, Takeshi; and Ohtaka, Shoichi, 4,433,541, Cl. 60-293.000.
- Kume, Toyohiko: See—
Saito, Junichi; and Kume, Toyohiko, 4,434,303, Cl. 568-686.000.
- Kunevicius, Raymond A. Gun glove. 4,433,500, Cl. 42-1.00N.
- Kunkel, Heinrich: See—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,433,768, Cl. 192-98.000.
- Kuntzleman, Harry C.: See—
Dailey, Jack R.; Kuntzleman, Harry C.; Ng, Charles S.; and Pike, John W., 4,434,432, Cl. 346-154.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Fukuda, Hiroyuki; Kaji, Hisatsugu; and Fujimaki, Hiroto, 4,434,206, Cl. 428-288.000.
- Kawasaki, Takao; Osaka, Yoshiaki; Komatsu, Katsumi; Yamaguchi, Yukihiro; and Ono, Saichi, 4,434,172, Cl. 424-270.000.
- Sasaki, Tohru; Ohta, Mitsuru; Terasaki, Syuuzi; and Kakizaki, Syozo, 4,434,209, Cl. 428-416.000.
- Kurihara, Kazuhiko: See—
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.
- Kurihara, Shigeru; and Ohashi, Hiroyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing unsaturated nitrile. 4,434,029, Cl. 203-42.000.
- Kuroda, Mitsuru. Apparatus for spreading and guiding a web of textile fabric. 4,433,460, Cl. 26-75.000.
- Kuroda, Yasuo: See—
Omi, Kokichi; and Kuroda, Yasuo, 4,433,908, Cl. 355-68.000.
- Kuroki, Takeo: See—
Shima, Eiji; Den, Hiroshi; and Kuroki, Takeo, 4,434,377, Cl. 307-147.000.
- Kurosaka, Nobuo; Yasuda, Makoto; and Murakami, Tadateru, to Mitsui Petrochemicals Industry, Ltd. Process for production of hydroquinone. 4,434,305, Cl. 568-768.000.
- Kurosawa, Seiji: See—
Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tetsuo, 4,433,618, Cl. 99-455.000.
- Kurtz, John A.; and Cousins, Donald E., to Fairchild Camera and Instrument Corporation. Lead frame wire bonding by preheating. 4,434,347, Cl. 219-56.220.
- Kurtz, Leonard D.; and LiCausi, Joseph M., to BioResearch Inc. Reusable tube connector assembly. 4,433,973, Cl. 604-403.000.
- Kusebauch, Walter: See—
Emshoff, Horst W.; and Kusebauch, Walter, 4,434,058, Cl. 210-662.000.
- Kyodo Yushi Co., Ltd.: See—
Kageyama, Hachiro; Moriuchi, Tsutomu; and Oikawa, Yoshiaki, 4,434,063, Cl. 252-25.000.
- Kyuroku Corporation: See—
Takahashi, Soroku, 4,433,635, Cl. 114-301.000.
- Laborie, Robert. Desk and panel structures having bristle-covered access to the interiors thereof. 4,433,630, Cl. 108-50.000.
- Lachner, Walter: See—
Pietzsch, Herbert; Lachner, Walter; Hofmann, Karlheinz; Potzsch, Erich; and Esser, Fred, 4,434,494, Cl. 373-18.000.
- LaHue, Philip M.: See—
Ott, Paul W.; Engebretson, Harold J.; LaHue, Philip M.; and Van Steenwyk, Brett H., 4,433,491, Cl. 33-302.000.
- Lam, Hsiao-Ling: See—
Mahoney, Martin D.; Gaughan, Edmund J.; Pallos, Ferenc M.; and Lam, Hsiao-Ling, 4,434,000, Cl. 71-103.000.
- Lam Research Corporation: See—
Koch, George R.; and Petersen, Carl T., III, 4,433,951, Cl. 414-217.000.
- Laminations Corporation: See—
Bracco, Larry J., 4,433,843, Cl. 273-407.000.
- Landstrom, Sven. Underwater missile for use against submerged submarines. 4,433,626, Cl. 102-390.000.
- Lane, Michael J., to Smiths Industries Public Limited Company. Electrical equipment. 4,434,402, Cl. 324-393.000.
- Lang, William H.: See—
Chang, Clarence D.; and Lang, William H., 4,434,299, Cl. 564-396.000.
- Lange International S.A.: See—
Chalmers, Edward L., II; and Everest, David C., III, 4,433,457, Cl. 24-68.05K.
- Courvoisier, Guy; and Arie, Simon, 4,433,494, Cl. 36-119.000.
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Heinemann, Ulrich; Thomas, Rudolf; Lantzsch, Reinhard; Ditzgen, Klaus; and Weber, Erhard, 4,434,292, Cl. 548-373.000.
- LaPasso, Leonard J.: See—
Benoit, Harold P.; LaPasso, Leonard J.; and McBain, Ian, 4,433,590, Cl. 74-409.000.
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Robinson, Barry L.; Parenti, Mark A.; Lary, Richard F.; and Gardner, Edward A., 4,434,487, Cl. 371-10.000.
- Latimer, William A. Storage and shipping unit. 4,433,513, Cl. 52-36.000.
- Latone, Salvatore: See—
Romanowski, Robert F., 4,433,837, Cl. 271-293.000.
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Petriello, John V.; and La Torra, Michael N., 4,434,197, Cl. 427-407.100.
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FEBRUARY 28, 1984

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 Lazarus, Wayne P. Razor assembly. 4,433,483, Cl. 30-41.000.
 Lazerson, Max F.: See—
 Bohme, Rolf C.; and Lazerson, Max M., 4,434,365, Cl. 250-255.000.
 LeBlanc, James C. Control means for engine cooling systems. 4,433,648, Cl. 123-41.120.
 Leco Inc.: See—
 Bose, Ajit, 4,434,129, Cl. 264-557.000.
 Ledebriek, Wilhelm: See—
 Stoll, Wolfgang; and Ledebriek, Wilhelm, 4,434,137, Cl. 423-6.000.
 Lee, John F.: See—
 Maio, Patrick S.; and Lee, John F., 4,433,778, Cl. 206-45.250.
 Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Ion exchange resins for uranium recovery. 4,434,138, Cl. 423-7.000.
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 Leining, Lyndon R.; and Simonson, Kent L., to Geo. A. Hormel & Company. Shoulder skinning device. 4,433,453, Cl. 17-21.000.
 Leistner, Herbert E.: See—
 Figge, Siegfried E. O.; and Leistner, Herbert E., 4,433,782, Cl. 206-338.000.
 Leland Stanford Junior University, The. Board of Trustees of the: See—
 Keith, Douglas L., 4,434,042, Cl. 204-298.000.
 Lemelson, Jerome H. Communication system and method. 4,434,510, Cl. 455-603.000.
 Lemke, Norbert, to Heitlinger, Paul; and Rodder, Fritz. Process for stereoscopic picture reproduction, in particular in respect of X-ray pictures. 4,434,500, Cl. 378-99.000.
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 Lemstra, Pieter J.: See—
 Dorrestijn, Antoon; Lemstra, Pieter J.; and Van Unen, Lambert H. T., 4,434,252, Cl. 521-134.000.
 Lenox, Arthur. Air filtration device. 4,433,987, Cl. 55-319.000.
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 Leopold & Co. Chem. Pharm. Fabrik Gesellschaft m.b.H.: See—
 Jeretin, Stojan; Groke, Karl; and Musil, Horst E., 4,434,160, Cl. 424-180.000.
 Le Roy, Ernest. Drinking trough for poultry. 4,433,642, Cl. 119-78.000.
 Leslie Metal Arts Company: See—
 Baker, Clayton C., 4,433,885, Cl. 312-305.000.
 L'Etat Francais, represente par le Ministre des P.T.T. (Centre National d'Etudes des Telecommunications): See—
 Motsch, Roger; Roussel, Francoise; and Lolivier, Germain, 4,434,499, Cl. 375-122.000.
 Lever Brothers Company: See—
 Billington, Reginald; Edge, David J.; and Winterbotham, Peter, 4,434,088, Cl. 252-547.000.
 Billington, Reginald; Edge, David J.; and Winterbotham, Peter, 4,434,089, Cl. 252-547.000.
 Cox, Ian R.; and Jones, Keith, 4,434,091, Cl. 252-557.000.
 Delwel, Francois; and De Goede, Roland, 4,434,068, Cl. 252-135.000.
 Hampson, Jeffrey D.; and Billington, Reginald, 4,434,087, Cl. 252-545.000.
 Hampson, Jeffrey D.; Billington, Reginald; and Cox, Ian R., 4,434,090, Cl. 252-547.000.
 Levine, Joshua L., to North American Philips Corporation. Device for measurement of the torsional angular deviation of a loaded rotating or static shaft. 4,433,585, Cl. 73-862.340.
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 LGZ Landis & Gyr Zug AG: See—
 Halder, Mathis; Widmer, Jakob; and De Vries, Jacob, 4,434,400, Cl. 324-110.000.
 Liauw, Koei-Liang: See—
 Spiegelman, Gerald; and Liauw, Koei-Liang, 4,434,102, Cl. 260-429.700.
 Liberboim, Gidon. Tennis ball holder belt. 4,433,803, Cl. 224-251.000.
 LiCausi, Joseph M.: See—
 Kurtz, Leonard D.; and LiCausi, Joseph M., 4,433,973, Cl. 604-403.000.
 Licentia Patent-Verwaltungs-GmbH: See—
 Koeck, Klaus; Bambach, Wolfgang; Ruopp, Gerhard; and Mikley, Frank, 4,434,326, Cl. 179-2.0DP.
 Licht, Richard R.; Marlor, Alan J.; and Peisert, Joseph C., to Minnesota Mining and Manufacturing Company. Cable tray protection system. 4,433,732, Cl. 169-48.000.
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 Lidereau, Rosette: See—
 Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Clavier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruest, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
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 Liesch, Jean-Francois: See—
 Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Henrion, Romain; Klein, Henri; and Liesch, Jean-Francois, 4,434,005, Cl. 75-60.000.
 Lillie, Terrance L.: See—
 Couper, Robert A.; and Lillie, Terrance L., 4,434,419, Cl. 340-717.000.
 Lin, Jiang-Jen, to Texaco Inc. Process for preparing alkanols from synthesis gas. 4,434,248, Cl. 518-700.000.
 Lin, Ruey Y., to Stauffer Chemical Company. Compacting polycarbonate and copoly(carbonate/phosphonate) particles. 4,434,118, Cl. 264-109.000.
 Lincoln Laser Company: See—
 Hanson, Derald F.; and Sherman, Randy J., 4,433,894, Cl. 350-6.800.
 Lindahl, Bruce C., to FluiDyne Engineering Corporation. Method and apparatus for producing a useful stream of hot gas from a fluidized bed combustor while controlling the bed's temperature. 4,433,631, Cl. 110-245.000.
 Linde Aktiengesellschaft: See—
 Weber, Guenter, 4,434,143, Cl. 423-226.000.
 Weber, Guenter, 4,434,145, Cl. 423-226.000.
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 Linder, Wolfgang; Arend, Gunter; Barnikel, Carl-Dieter; and Frauenkon, Gunter, to Bayer Aktiengesellschaft. Granulate-form powder agglomerates of pulverulent rubber chemicals and a process for production. 4,434,070, Cl. 523-323.000.
 Lindquist, William W. Adjustable flanged fitting for roof openings. 4,433,860, Cl. 285-192.000.
 Lindsay, Erin J.; and Snyder, Jeffrey T., to Minnesota Mining and Manufacturing Company. Integrated cardioplegia delivery system. 4,433,971, Cl. 604-122.000.
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 Lisec, Peter. Device for assembling insulating glass panes. 4,434,024, Cl. 156-556.000.
 Lisi, John E.: See—
 Edwards, Ralston G., Jr.; Walkden, John R. B.; Carstensen, Walter H.; Murphy, Gregory E.; and Lisi, John E., 4,433,776, Cl. 198-779.000.
 Livesey, Declan B.; and Toma, Petre, to Texaco Canada Resources Ltd. Filter for separating discrete solid elements from a fluid stream. 4,434,054, Cl. 210-484.000.
 Lizzio, Vincent P. Solenoid operated service brake application unit. 4,433,763, Cl. 192-4.00A.
 Locher, Engelbert: See—
 Hartman, Ludwig; Ruzek, Ivo; and Locher, Engelbert, 4,434,204, Cl. 428-198.000.
 Loizeau, Pierre; and Carmillet, Roger, to Valeo. Torsional dampers. 4,433,770, Cl. 192-106.200.
 Lolivier, Germain: See—
 Motsch, Roger; Roussel, Francoise; and Lolivier, Germain, 4,434,499, Cl. 375-122.000.
 Lomas, David A.; and Thompson, Gregory J., to UOP Inc. Fluid particle cooling process and apparatus. 4,434,245, Cl. 502-2.000.
 Lombardino, Joseph G., to Pfizer Inc. Water-soluble benzothiazine dioxide salts. 4,434,163, Cl. 424-246.000.
 Lombardino, Joseph G., to Pfizer Inc. Crystalline benzothiazine dioxide salts. 4,434,164, Cl. 424-246.000.
 Longfield, James E., to American Cyanamid Company. Polyepichlorohydrin elastomers having improved resistance to sour gasoline. 4,434,275, Cl. 525-403.000.
 Longo, John M.: See—
 Horowitz, Hugh H.; Horowitz, Harold S.; and Longo, John M., 4,434,031, Cl. 204-59.00R.
 Lopes, Richard R., to Stone Container Corporation. Blank conveyor apparatus. 4,433,774, Cl. 198-689.000.
 Lorenzi, Donald E.: See—
 Clarke, Frederick; Lorenzi, Donald E.; and Schaefer, Edward F., 4,434,427, Cl. 346-33.00P.
 Lorenzi, Mario: See—
 Boggio, Giuseppe;

PI 21

Luca, Vincent A., Jr.: See—
Ratichord, Lloyd G.; Werth, Dee A.; Luca, Vincent A., Jr.; and Schildkraut, Alan L., 4,433,889, Cl. 339-94.00M.

Lucas Industries Limited: See—
Farr, Glyn P. R., 4,433,873, Cl. 303-24.00A.
Thomas, Alfred W.; and Heibel, Helmut, 4,433,543, Cl. 60-547.100.

Lucas, Thomas M.: See—
Bairen, Donald J.; and Lucas, Thomas M., 4,433,870, Cl. 297-16.000.

Luchinger, Paul, to Mettler Instrument AG. Weighing apparatus including a resiliently connected scale pan carrier. 4,433,740, Cl. 177-187.000.

Luk Lamellen und Kupplungsbau GmbH: See—
Krumm, Klaus D., 4,433,966, Cl. 417-571.000.

Lummus Company, The: See—
Schindler, Harvey D., 4,434,048, Cl. 208-112.000.

Lunden, Richard W.: See—
Swift, Harold E.; and Lunden, Richard W., 4,434,281, Cl. 526-119.000.

Lundgren, Roy L. Device for generating electricity by pedestrian and vehicular traffic. 4,434,374, Cl. 290-1.00R.

Lundquist, Joseph T., Jr.: See—
Wszolek, Walter R.; and Lundquist, Joseph T., Jr., 4,434,215, Cl. 429-144.000.

Macaster Controls, Inc.: See—
Boyce, William A., 4,433,489, Cl. 33-203.180.

MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. DC Isolated RF transition for cathode-driven crossed-field amplifier. 4,434,387, Cl. 315-39.300.

Mader, Karl-Heinz: See—
Cook, Lee M.; Mader, Karl-Heinz; and Schnabel, Roland, 4,434,191, Cl. 427-165.000.

Maes, Randell P.: See—
Cherry, Raymond L.; Pfeiffer, Gene F.; and Maes, Randell P., 4,433,719, Cl. 165-26.000.

Magnaflux Corporation: See—
Clarke, Frederick; Lorenzi, Donald E.; and Schaefer, Edward F., 4,434,427, Cl. 346-33.00P.

Magnusson, Jan, to Jede-Automater Magnusson AB. Apparatus for preparing and dispensing beverages. 4,433,617, Cl. 99-305.000.

Mahoney, Martin D.; Gaughan, Edmund J.; Pallos, Ferenc M.; and Lam, Hsiao-Ling, to Stauffer Chemical Company. N-(Benzenesulfonyl) carbamates herbicidal antidotes. 4,434,000, Cl. 71-103.000.

Maiefski, Romaine R.; and Puglisi, Albert J., to Maiefski, Romaine R. Liquid metering and dispensing system. 4,433,795, Cl. 222-14.000.

Maier, Karl: See—
Marino, Vincent E.; Nicola, Robert J.; Maier, Karl; and Stockinger, Richard W., 4,433,890, Cl. 339-97.00C.

Maier, Ludwig, to Ciba-Geigy Corporation. Herbicidally active 2-nitro-5-(2'-chloro-4'-trifluoromethylphenoxy)phenylphosphinic acid derivatives. 4,434,108, Cl. 260-951.000.

Main, Keith A.; and Hillstrom, David U., to Marketing Displays, Inc. Sign bracket. 4,433,935, Cl. 403-385.000.

Maio, Patrick S.; and Lee, John F., to Federal Paper Board Co., Inc. Automatic tilt display carton. 4,433,778, Cl. 206-45.250.

Maita, Hitoshi: See—
Kanamori, Kojo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, 4,434,023, Cl. 156-307.300.

Majik-Ironers, Inc.: See—
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,433,497, Cl. 38-107.000.

Makino, Yoshimi: See—
Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamano, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.

Malandra, Louis J.: See—
Spiegelman, Stanley R.; Salton, Robert B.; Beer, Robert W.; Malandra, Louis J.; and Cognevich, Michael L., 4,433,828, Cl. 254-29.00A.

Malfitano, Amanda. Sanitary napkin. 4,433,972, Cl. 604-385.000.

Malish, Terrance J.; and Somrack, Lawrence A. Adapter device for brooms or the like. 4,433,931, Cl. 403-194.000.

Malloy, Richard J., to United States of America, Navy. Water jet sediment probe. 4,433,737, Cl. 175-5.000.

Malone, Thomas J.; and Ragsdale, Mark E., to Milliken Research Corporation. Powdered cleaning composition. 4,434,067, Cl. 252-88.000.

Maloney-Crawford Corporation: See—
Hodgson, Robert A.; and Martinez, Sam J., 4,433,983, Cl. 55-171.000.

Malooey, Rudolph S.: See—
Sarnoff, Stanley J.; Malooey, Rudolph S.; Calkins, George B.; and Tarello, William R., 4,433,684, Cl. 128-203.210.

Mandel, George. Opening and stopper device. 4,433,792, Cl. 220-269.000.

Mangia, Alberto: See—
Giobbio, Vincenzo; Ornato, Giorgio; Buracchi, Livio; and Mangia, Alberto, 4,434,097, Cl. 260-112.50R.

Manizza, Guelfo A.: See—
Ganz, Robert H.; and Manizza, Guelfo A., 4,433,806, Cl. 229-40.000.

Mannesmann Demag AG: See—
Ratschat, Gunter, 4,434,004, Cl. 75-41.000.

Manning, Donald L., to Transpec, Inc. Combined vent and escape hatch. 4,433,506, Cl. 49-141.000.

Mantela, Ralph F., to General Motors Corporation. Method for making a resilient tie-down device. 4,434,124, Cl. 264-229.000.

Mar-Kay Plastics, Inc.: See—
Brown, Bobby L., 4,433,625, Cl. 102-331.000.

Marathon Oil Company: See—
Argabright, Perry A.; and Rhudy, John S., 4,433,727, Cl. 166-252.000.

Sydansk, Robert D.; and Gucwa, Paul R., 4,433,728, Cl. 166-270.000.

Sydansk, Robert D., 4,433,729, Cl. 166-270.000.

Maravelas, William S., Jr.; Bighley, Alexandria D.; and Calabrese, Marco A., to Deck the Halls, Inc. Free standing modular unit for storing, displaying, and selling merchandise. 4,433,880, Cl. 312-3.000.

Marconi Company Limited, The: See—
Old, Julian C., 4,434,424, Cl. 343-381.000.

Marconi Instruments Limited: See—
Blyth, Geoffrey C., 4,434,489, Cl. 371-29.000.

Mardis, Wilbur S.; and Finlayson, Claude M., to NL Industries, Inc. Anionically modified organophilic clays and their preparation. 4,434,075, Cl. 252-315.200.

Mardis, Wilbur S.; and Finlayson, Claude M., to NL Industries, Inc. Clay cation complexes and their use to increase viscosity of liquid organic systems. 4,434,076, Cl. 252-315.200.

Marino, Vincent E.; Nicola, Robert J.; Maier, Karl; and Stockinger, Richard W. Connectors for flexible printed circuits and method therefor. 4,433,890, Cl. 339-97.00C.

Markel, Morris L.: See—
Rascati, Richard J.; and Berglund, Larry G., 4,433,923, Cl. 374-112.000.

Marketing Displays, Inc.: See—
Main, Keith A.; and Hillstrom, David U., 4,433,935, Cl. 403-385.000.

Markey, Harold G.: See—
Barner, Robert P., Jr.; Bensadon, Joseph M.; Besseyre, Jacques A.; and Markey, Harold G., 4,434,486, Cl. 370-110.100.

Marks, George B., Sr.; and Fearing, D. Michael, to Fearing Manufacturing Co., Inc. Teat dip. 4,434,181, Cl. 424-326.000.

Marlor, Alan J.: See—
Licht, Richard R.; Marlor, Alan J.; and Peisert, Joseph C., 4,433,732, Cl. 169-48.000.

Marmarosi ne Kellner, Katalin: See—
Horvath, Tibor; Udvardy, Agnes; David, Agoston; and Marmarosi ne Kellner, Katalin, 4,434,152, Cl. 424-19.000.

Marquardt, Kurt, to Hager & Elsassner GmbH. Water purification utilizing plural semipermeable membrane stages. 4,434,057, Cl. 210-638.000.

Marquis, Edward T.: See—
Larkin, John M.; Watts, Lewis W., Jr.; and Marquis, Edward T., 4,434,308, Cl. 585-10.000.

Mars Alcatel: See—
Santinelii, Joseph, 4,433,569, Cl. 72-410.000.

Marsh, Dana G.; Shuey, David R.; and Webb, John L., to Xerox Corporation. Fusing system. 4,434,353, Cl. 219-216.000.

Martel, Jacques; Tessier, Jean; and Teche, Andre, to Roussel Uclaf. Preparation of α -cyano-phenoxy-benzyl esters. 4,434,294, Cl. 549-65.000.

Martel, Thomas J.: See—
Bowen, Robert F.; and Martel, Thomas J., 4,434,343, Cl. 219-10.55F.

Martin, Joel L., to Phillips Petroleum Company. Aqueous titration of catalyst support containing chromium with solubilized Ti(OR)₄. 4,434,243, Cl. 502-171.000.

Martinez, Sam J.: See—
Hodgson, Robert A.; and Martinez, Sam J., 4,433,983, Cl. 55-171.000.

Mary, Paul. Method for preparing radioactive control rods from nuclear reactors for storage or disposal. 4,434,092, Cl. 252-626.000.

Masaki, Akio: See—
Amano, Katsuhisa; Kumagai, Tadashi; Masaki, Akio; Shimada, Shinichi; Suzuki, Takeshi; and Ohtaka, Shoichi, 4,433,541, Cl. 60-293.000.

Masaki, Kenji; and Yasuhara, Seishi, to Nissan Motor Co., Limited. Exhaust gas recirculation system for diesel engine. 4,433,666, Cl. 123-569.000.

Maschhoff, Jack. Building wall construction. 4,433,520, Cl. 52-275.000.

Maschinenfabrik Augsburg-Nürnberg AG: See—
Bacher, Walter; and Jacob, Eberhard, 4,434,139, Cl. 423-19.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,434,267, Cl. 524-458.000.

Masten, Billy R.: See—
Woosley, Alan H.; and Masten, Billy R., 4,434,360, Cl. 235-472.000.

Masters, Joseph I.; and Goldberg, Gershon M., to GCA Corporation. Chalcogenide product. 4,434,217, Cl. 430-9.000.

Mathews, Lester R., to Mathews, Lester R.; Warner, Lucien; and Water Circulation Patents, part interest to each. Pool nozzle head removing and replacing tool. 4,433,863, Cl. 294-19.00R.

Mathieu, Michel, to Telediffusion de France. Process and apparatus for synchronization of digital signals. 4,434,498, Cl. 375-114.00

- Matsuga, Yoshiaki: See—
Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanazaki, Atsushi, 4,434,022, Cl. 156-274.600.
- Matsui, Kazuhiro, to Hoshino Gakki Co., Ltd. Fixture for string re-tainer of the strings. 4,433,605, Cl. 84-299.000.
- Matsui, Kazuma: See—
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,433,965, Cl. 474-201.000.
- Matsumoto, Seiichi: See—
Kamo, Mutsukazu; Matsumoto, Seiichi; Sato, Yoichiro; and Setaka, Nobuo, 4,434,188, Cl. 427-39.000.
- Matsumoto, Shohei: See—
Sakuma, Isamu; Nishida, Katsuhiko; Kawano, Hideo; Ueno, Masayasu; Matsumoto, Yoshishige; Matsumoto, Shohei; and Furuse, Takao, 4,434,491, Cl. 372-48.000.
- Matsumoto, Yoshishige: See—
Sakuma, Isamu; Nishida, Katsuhiko; Kawano, Hideo; Ueno, Masayasu; Matsumoto, Yoshishige; Matsumoto, Shohei; and Furuse, Takao, 4,434,491, Cl. 372-48.000.
- Matsushita Electric Industrial Co., Ltd.: See—
Fujimoto, Makoto, 4,434,435, Cl. 358-44.000.
- Hamabe, Takeshi; Wada, Hidekazu; Naruse, Mikio; and Nishimori, Toshiyuki, 4,434,452, Cl. 361-304.000.
- Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,433,475, Cl. 29-736.000.
- Miyake, Hideyuki; and Nakamura, Tosiaki, 4,434,410, Cl. 333-224.000.
- Nankai, Shiro; Nakamura, Ken-ichi; and Iijima, Takashi, 4,434,229, Cl. 435-174.000.
- Rzeszewski, Theodore S., 4,434,438, Cl. 358-167.000.
- Matsushita Electric Works, Ltd.: See—
Touho, Makoto; Wada, Shigeaki; and Yamamoto, Minoru, 4,434,385, Cl. 313-161.000.
- Yorifuji, Yuki; Uyama, Seiichi; Fukutake, Katsuhiko; and Miyazaki, Masaharu, 4,434,363, Cl. 250-214.00B.
- Matsuzawa, Masanao: See—
Fujiwara, Hitoshi; and Matsuzawa, Masanao, 4,433,925, Cl. 400-88.000.
- Mauldin, Donald M.; and Jones, Richard E., III. Knee and elbow brace. 4,433,679, Cl. 128-80.00F.
- Mauleon, Jean L.: See—
Dean, Robert R.; Mauleon, Jean L.; and Newman, Robert J., 4,434,049, Cl. 208-153.000.
- Maxwell, Gary G. Fishing lure retrieving device. 4,433,501, Cl. 43-17.200.
- Mayfran, Inc.: See—
Hollowell, Barry S., 4,433,775, Cl. 198-742.000.
- McAlister, Roy E. Multiple fluid medium system. 4,433,557, Cl. 62-324.100.
- McBain, Ian: See—
Benoit, Harold P.; LaPasso, Leonard J.; and McBain, Ian, 4,433,590, Cl. 74-409.000.
- McCaskill, Rex A.; McNroy, John W.; and Waldo, Paul D., to International Business Machines Corporation. Method of entering criteria for selecting records of spatially related data stored in an interactive text processing system. 4,434,475, Cl. 364-900.000.
- McCoy, Kenneth H.; and Romain, John, to Romain, John. Exercise-massaging device. 4,433,683, Cl. 128-57.000.
- McCullough, Harold E.: See—
Karga, James D.; and McCullough, Harold E., 4,433,477, Cl. 29-764.000.
- McCunn, Myron L., to Deere & Company. Lawn mower bagging system including air assist. 4,433,532, Cl. 56-320.200.
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- McGraw, Isaac R., to Pennwalt Corporation. Use of haloprogin to treat *Herpes labialis*. 4,434,183, Cl. 424-340.000.
- McHenry, Kelly D.: See—
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- Vickers, Stanley, 4,434,177, Cl. 424-280.000.
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- Sucrow, Wolfgang; Murawski, Hans-Rudiger; Minas, Hermann; and Stegemeyer, Horst, 4,434,073, Cl. 252-299.620.
- Merrill, Bruce: See—
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- Merritt, William H. Differential light emission translucent light bowl and cap. 4,434,455, Cl. 362-307.000.
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- Metal, Israel, to Raytheon Company. Radiographic camera. 4,434,369, Cl. 250-363.00S.
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- Mikley, Frank: See—
Koeck, Klaus; Bambach, Wolfgang; Ruopp, Gerhard; and Mikley, Frank, 4,434,326, Cl. 179-2.0DP.
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Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., 4,434,033, Cl. 204-95.000.
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Fox, Daniel W.; Miller, George P.; and Weech, Marx E., 4,434,074, Cl. 252-628.000.
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- Minnesota Mining and Manufacturing Company: See—
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- Lindsay, Erin J.; and Snyder, Jeffrey T., 4,433,971, Cl. 604-122.000.
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- Nakatani, Keiji; and Toriumi, Shiro, 4,433,906, Cl. 355-55.000.
- Oka, Tateki, 4,434,221, Cl. 430-122.000.
- Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.
- Miquel, Jean: See—
Juguin, Bernard; and Miquel, Jean, 4,434,315, Cl. 585-671.000.
- Mircheva, Vera V.: See—
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- Mistyurik, John D., to Monarch Marking Systems, Inc. Printing apparatus. 4,433,624, Cl. 101-314.000.
- Mitsubishi Chemical Industries, Ltd.: See—
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- Asayama, Yoshiaki, 4,433,663, Cl. 123-494.000.
- Nagano, Toshio; Kobayashi, Toshiyuki; Koshirakawa, Nobutaka; and Inoue, Takeo, 4,433,724, Cl. 166-60.000.
- Ohtomi, Sadayuki, 4,433,755, Cl. 187-20.000.
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Kurosaka, Nobuo; Yasuda, Makoto; and Murakami, Tadateru, 4,434,305, Cl. 568-768.000.
- Mitsuya, Munehisa: See—
Terao, Motoyasu; Horigome, Shinkichi; Mitsuya, Munehisa; Ota, Sakae; and Shigematsu, Kazuo, 4,434,429, Cl. 346-135.100.
- Miyagawa, Hiroshi: See—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,434,331, Cl. 200-144.00B.
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- Miyakoshi, Shinichi; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Front suspension system for motorcycles. 4,433,851, Cl. 280-277.000.
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- Miyazaki, Masaharu: See—
Yorifuji, Yuki; Uyama, Seiichi; Fukutake, Katsuhiko; and Miyazaki, Masaharu, 4,434,363, Cl. 250-214.000.
- Miyazaki, Yoshihisa: See—
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,433,614, Cl. 91-376.00R.
- Mizushima, Yoshihiko: See—
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- Mobil Oil Corporation: See—
Audeh, Costandi A.; and Shihabi, David S., 4,434,046, Cl. 208-111.000.
- Chang, Clarence D.; and Lang, William H., 4,434,299, Cl. 564-396.000.
- Feeney, Frank J., 4,434,271, Cl. 524-575.000.
- Gerwick, Ben C., Jr.; and Hatcher, Stephen J., 4,433,941, Cl. 405-211.000.
- Mogi, Kenji: See—
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- Monarch Marking Systems, Inc.: See—
Mistyurik, John D., 4,433,624, Cl. 101-314.000.
- Monsanto Company: See—
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- Trivette, Chester D., Jr., 4,434,266, Cl. 524-425.000.
- Montagnier, Luc: See—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Cuvier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Montague, Herbert R. Power line transient suppression circuit. 4,434,396, Cl. 323-230.000.
- Montres Rado S.A.: See—
Gogniat, Paul; and Loth, Eric, 4,433,921, Cl. 368-294.000.
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Evers, William J.; Mookherjee, Braja D.; Van Ouwkerk, Anton; and Van Loveren, Augustinus G., 4,434,085, Cl. 252-522.00R.
- Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,434,086, Cl. 252-522.00R.
- Moore, Franklin, Jr. Window assembly. 4,433,517, Cl. 52-204.000.
- Moore, Joseph L., to Proficient Systems, Inc. Method and apparatus for retrieving objects from the ground. 4,434,011, Cl. 134-6.000.
- Moreland, Ernest W. Method and apparatus for use when changing the direction of a well bore. 4,433,738, Cl. 175-61.000.
- Mori, Kazuyuki: See—
Suzuki, Kouichi; and Mori, Kazuyuki, 4,434,469, Cl. 364-426.000.
- Morita, Tomonori: See—
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- Moriuchi, Tsutomu: See—
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- Morokawa, Shigeru: See—
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- Morris, George R.; and Frient, John A. Dual flush toilet mechanism. 4,433,445, Cl. 4-325.000.
- Morris, James C. Adjustable extension-cam shim. 4,433,879, Cl. 308-244.000.
- Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. Sputtering method and apparatus utilizing improved ion source. 4,434,038, Cl. 204-192.00R.
- Morrison, Steven: See—
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- Moser, Andreas. Device for driving and positioning towels into concrete slabs. 4,433,936, Cl. 404-88.000.
- Motherwell, William B.: See—
Barton, Derek H. R.; and Motherwell, William B., 4,434,080, Cl. 502-152.000.
- Motion Control, Inc.: See—
Benoit, Harold P.; LaPasso, Leonard J.; and McBain, Ian, 4,433,590, Cl. 74-409.000.
- Motorola, Inc.: See—
Bujalski, Joseph, 4,434,420, Cl. 340-724.000.
- Cho, Frederick Y.; and Williams, Dylan F., 4,434,383, Cl. 310-313.00R.
- Hoppe, David R., 4,433,919, Cl. 368-120.000.
- Levine, Stephen N.; Dabbish, Ezzat A.; and Byrns, John P., 4,434,323, Cl. 178-22.170.
- Puhl, Larry C., 4,434,461, Cl. 364-200.000.
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- Mottate, Tatsuo, to Nippon Thompson Co., Ltd. Rolling bearing for linear motion. 4,433,876, Cl. 308-6.00C.
- Mouri, Yasunori: See—
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- Mourou, Gerard; Valdmans, Janis A.; and Williamson, Steven L., to University of Rochester, The. Electron-optical wide band signal measurement system. 4,434,399, Cl. 324-96.000.
- Mross, Wolf D.: See—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,434,314, Cl. 585-640.000.
- Muehlenbein, James A., to Novel Products, Inc. Measuring instrument for compressible objects. 4,433,486, Cl. 33-137.00R.
- Mueller, Janet M.: See—
Wilkinson, Randolph N., III; Sneed, Elmore C.; and Mueller, Janet M., 4,434,136, Cl. 422-263.000.
- Muench, Nils L., to General Motors Corporation. Industrial robot having a joint-free arm. 4,433,953, Cl. 414-735.000.
- Muhlbacher, Karl. Battery powered electric motor vehicle. 4,433,744, Cl. 180-65.00E.
- Mukerjee, Ambar: See—
Beck, Heinz; Holtvoigt, Werner; and Mukerjee, Ambar, 4,434,260, Cl. 524-104.000.
- Mukoh, Akio: See—
Imahori, Seiichi; Kaneko, Masaharu; Ozawa, Tetsuo; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,434,072, Cl. 252-299.100.

Mulawski, Walter J., to Sexton Can Company, Inc. Pressure relief device for internally pressurized fluid container. 4,433,791, Cl. 220-89.00A.

Mulhaupt, Bruno, to Escher Wyss Aktiengesellschaft. Centrifugal separator. 4,434,052, Cl. 210-376.000.

Muller, Hans: See—
Schmid, Alfred, Jr.; Muller, Hans; and Jaecklin, Alexander P., 4,433,779, Cl. 206-220.000.

Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heide-manns, Rolf P.; Habel, Georg; and Wittman, Ortwin, to Pierburg GmbH & Co., KG. Fuel supply system. 4,433,662, Cl. 123-438.000.

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Muller, Werner, to Sandoz Ltd. Dibenzazepine derivatives, pharmaceu-tical compositions containing them, and pharmaceutical methods using them. 4,434,171, Cl. 424-267.000.

Mummenhoff, Peter: See—
Probst, Joachim; Kolb, Gunter; Mummenhoff, Peter; and Baum-gen, Heinz, 4,434,269, Cl. 524-538.000.

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Murakami, Tadashi: See—
Suzuki, Yasuo; Nagata, Shuji; Nonaka, Takashiro; and Murakami, Tadashi, 4,433,717, Cl. 164-454.000.

Murakami, Tadateru: See—
Kurosaka, Nobuo; Yasuda, Makoto; and Murakami, Tadateru, 4,434,305, Cl. 568-768.000.

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Mima, Hiroshi, 4,433,534, Cl. 57-22.000.

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Sucrow, Wolfgang; Murawski, Hans-Rudiger; Minas, Hermann; and Stegemeyer, Horst, 4,434,073, Cl. 252-299.620.

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Edwards, Ralston G., Jr.; Walkden, John R. B.; Carstensen, Walter H.; Murphy, Gregory E.; and Lisi, John E., 4,433,776, Cl. 198-779.000.

Murray, Bruce J.: See—
Dettly, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,434,098, Cl. 260-239.00R.

Murray, Jack T., to United Centrifugal Pumps. Ring joint machining tool. 4,433,598, Cl. 82-2.00E.

Murtas, Eugenio: See—
Carletta, Giuseppe, 4,433,508, Cl. 49-348.000.

Murtha, Timothy P.; and Shioyama, Tad K., to Phillips Petroleum Company. Palladium/heteropolyacid/surfactant catalyst system. 4,434,082, Cl. 502-164.000.

Muscattell, Ralph P. Microwave system for frost protection of fruit trees. 4,434,345, Cl. 219-10.55R.

Musil, Horst E.: See—
Jeretin, Stojan; Groke, Karl; and Musil, Horst E., 4,434,160, Cl. 424-180.000.

Myers, John R.: See—
Caudy, Don W.; Hackman, Donald J.; Myers, John R.; and Hoff-man, Robert T., 4,433,633, Cl. 114-54.000.

Myers, Robert M.: See—
Fellman, Robert P.; Hurwitz, Marvin J.; Myers, Robert M.; and Slack, Gerald F., 4,433,958, Cl. 433-199.000.

Mylander, Richard H.: See—
Prokop, Josef F.; Coons, Robert R.; and Mylander, Richard H., 4,433,762, Cl. 192-4.00A.

N. F. Industries, Inc.: See—
Petriello, John V.; and La Torra, Michael N., 4,434,197, Cl. 427-407.100.

Nadkarni, Ramachandra A.: See—
Singhal, Gopal H.; and Nadkarni, Ramachandra A., 4,434,043, Cl. 208-10.000.

Nagai, Hiroshi: See—
Sasajima, Junnosuke; Nagai, Hiroshi; Mogi, Kenji; Nojiri, Akio; and Shiina, Naonori, 4,434,251, Cl. 521-75.000.

Nagano, Toshio; Kobayashi, Toshiyuki; Koshirakawa, Nobutaka; and Inoue, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Electrode device for electrically heating underground deposits of hydrocar-bons. 4,433,724, Cl. 166-60.000.

Nagata, Shuji: See—
Suzuki, Yasuo; Nagata, Shuji; Nonaka, Takashiro; and Murakami, Tadashi, 4,433,717, Cl. 164-454.000.

Nakagami, Hidekazu: See—
Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.

Nakahara, Hidetoshi: See—
Fujiwara, Ryuhei; Kai, Tomokazu; and Nakahara, Hidetoshi, 4,434,506, Cl. 455-53.000.

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Nakakita, Kiyomi; and Yamada, Keiichiro, to Kubota Ltd. Helical intake port type suction unit for horizontal single-cylinder direct injection type diesel engine. 4,433,651, Cl. 123-188.00M.

Nakamichi Corporation: See—
Kobayashi, Kozo; and Minamishima, Mamoru, 4,434,325, Cl. 381-104.000.

Nakamura, Ken-ichi: See—
Nankai, Shiro; Nakamura, Ken-ichi; and Iijima, Takashi, 4,434,229, Cl. 435-174.000.

Nakamura, Norihiko: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.

Nakamura, Sadayuki: See—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; Sekiya, Shigenobu; and Nakamura, Sadayuki, 4,434,006, Cl. 75-123.00R.

Nakamura, Tosiaki: See—
Miyake, Hideyuki; and Nakamura, Tosiaki, 4,434,410, Cl. 333-224.000.

Nakanishi Dental Mfg. Co., Ltd.: See—
Nakanishi, Toshimasa, 4,433,957, Cl. 433-105.000.

Nakanishi, Tomohiko: See—
Inoguchi, Kazuhiro; Nakanishi, Tomohiko; and Asano, Mitsuru, 4,434,117, Cl. 264-56.000.

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Nakano, Koji; and Katanaga, Kenji, to Aida Engineering, Ltd. Process for manufacturing universal joint. 4,433,465, Cl. 29-415.000.

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Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, to Nissan Motor Company, Limited. Method and system for determining weld quality in resistance welding. 4,434,351, Cl. 219-117.100.

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Nakayama, Shigeru: See—
Haramaki, Toshio; and Nakayama, Shigeru, 4,433,905, Cl. 355-30SH.

Nankai, Shiro; Nakamura, Ken-ichi; and Iijima, Takashi, to Matsushita Electric Industrial Co., Ltd. Enzyme immobilization with an immobi-lizing reagent in vapor phase. 4,434,229, Cl. 435-174.000.

Naotsu Electronics Co., Ltd.: See—
Katagiri, Kiyoo; and Honda, Mitsuo, 4,433,510, Cl. 51-165.00R.

Narisawa, Shizuo; Taira, Yoshito; Yoshii, Yuuji; and Kondou, Tomi-zou, to Sumitomo Chemical Company, Limited. Cement composi-tion. 4,434,257, Cl. 524-5.000.

Naruse, Mikio: See—
Hamabe, Takeshi; Wada, Hidekazu; Naruse, Mikio; and Nishimori, Toshiyuki, 4,434,452, Cl. 361-304.000.

Nasiri, Saeed, to National Semiconductor Corporation. Fiber optic assembly for coupling an optical fiber and a light source. 4,433,898, Cl. 350-96.170.

Naslund, Leif: See—
Ohnell, Hakan; and Naslund, Leif, 4,433,586, Cl. 73-862.480.

Nasu, Mitsuo, to Olympus Optical Company Limited. Microphone device built in a tape recorder. 4,434,329, Cl. 179-121.00R.

Nathenson, Richard D.: See—
Patel, Mukund R.; and Nathenson, Richard D., 4,434,382, Cl. 310-51.000.

National Institute for Researches in Inorganic Materials: See—
Kamo, Mutsukazu; Matsumoto, Seiichi; Sato, Yoichiro; and Setaka, Nobuo, 4,434,188, Cl. 427-39.000.

National Semiconductor Corporation: See—
Nasiri, Saeed, 4,433,898, Cl. 350-96.170.

National Starch and Chemical Corporation: See—
Gold, Samuel; Tracton, Arthur A.; and Rosenski, Josephine M., 4,434,259, Cl. 524-31.000.

Natsui, Ken-ichi; and Koyanagi, Osamu, to Hitachi, Ltd. Compressed-gas circuit interrupter with a heater. 4,434,335, Cl. 200-148.00E.

NCR Corporation: See—
Osmera, Miroslav S.; Brooks, Ralf M.; and Kim, Sung-Soon, 4,433,902, Cl. 354-10.000.

Neefe, Charles W. Spin casting lenses having reduced spherical aberration. 4,434,113, Cl. 264-2.100.

Neese, James A., to Sparton Corporation. Synthetic horn projector with metal insert. 4,433,750, Cl. 181-179.000.

Neisius, Karl-Heinz: See—
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, 4,434,035, Cl. 204-159.130.

Nelson, Conrad E., to General Electric Company. Remote load current sensor. 4,434,397, Cl. 324-58.00R.

Nelson, Paul M., to FMC Corporation. Method for preventing decay of fruit. 4,434,185, Cl. 426-308.000.

Neumann, Solomon, to Easy-Do Products Limited. Process for making water activatable tiles. 4,434,192, Cl. 427-282.000.

Nevitt, Thomas D.: See—
Hensley, Albert L., Jr.; Nevitt, Thomas D.; and Tait, A. Martin, 4,434,047, Cl. 208-111.000.

Newman, Robert J.: See—
Dean, Robert R.; Mauleon, Jean L.; and Newman, Robert J., 4,434,049, Cl. 208-153.000.

Ng, Charles S.: See—
Dailey, Jack R.; Kuntzleman, Harry C.; Ng, Charles S.; and Pike, John W., 4,434,432, Cl. 346-154.000.

NHK Spring Co., Ltd.: See—
Taba, Takayuki; and Shinbori, Takeyoshi, 4,433,833, Cl. 267-18.000.

Nichols, Lawrence J.: See—
MacMaster, George H.; and Nichols, Lawrence J., 4,434,387, Cl. 315-39.300.

Nicholson, Charles B., to Albany International Corp. Two piece screen filter. 4,434,055, Cl. 210-489.000.

Nickerson, Earl W.: See—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.

Nicola, Robert J.: See—
Marino, Vincent E.; Nicola, Robert J.; Maier, Karl; and Stockinger, Richard W., 4,433,890, Cl. 339-97.00C.

Nielsen, Arnold T.: See—
DeFusco, Albert A., Jr.; Nielsen, Arnold T.; and Atkins, Ronald L., 4,434,304, Cl. 568-710.000.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: See—
Ohashi, Shigeo, 4,434,339, Cl. 200-295.000.

Nihon Tokushu Noyaku Seizo K.K.: See—
Saito, Junichi; and Kume, Toyohiko, 4,434,303, Cl. 568-686.000.

Niles, Aaron F.; and Johnson, Dennis P., to Rayovac Corporation. Lithium anode. 4,434,213, Cl. 429-3.000.

Nimry, Baker N.: See—
Johnson, Donald A.; and Nimry, Baker N., 4,434,059, Cl. 210-701.000.

Ninomiya, Yoshinobu: See—
Nakajima, Kaoru; Ninomiya, Yoshinobu; and Somezawa, Masashi, 4,434,210, Cl. 428-447.000.

Nippon Electric Co., Ltd.: See—
Arakawa, Takeshi; and Ikeda, Hiroki, 4,434,502, Cl. 382-41.000.

Fujiwara, Ryuhei; Kai, Tomokazu; and Nakahara, Hidetoshi, 4,434,506, Cl. 455-53.000.

Kawamata, Ikuro, 4,433,468, Cl. 29-571.000.

Sakuma, Isamu; Nishida, Katsuhiko; Kawano, Hideo; Ueno, Masayasu; Matsumoto, Yoshishige; Matsumoto, Shohei; and Furuse, Takao, 4,434,491, Cl. 372-48.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Kondo, Masao, 4,434,340, Cl. 200-332.000.

Nippon Kogaku K.K.: See—
Kojima, Masaaki; Suzuki, Takayuki; and Abe, Hiromichi, 4,433,897, Cl. 350-252.000.

Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; Niwa, Tatsuo; and Sukegawa, Tsuneo, 4,433,901, Cl. 350-357.000.

Nippon Kokan Kabushiki Kaisha: See—
Nomura, Hirokazu; Sugitani, Yuji; and Suzuki, Yasuo, 4,434,352, Cl. 219-125.120.

Nippon Petrochemicals Co., Ltd.: See—
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.

Nippon Soken, Inc.: See—
Abe, Seiko; Igashira, Toshihiko; Kawai, Hisasi; Ina, Toshikazu; and Tokoro, Masayoshi, 4,433,665, Cl. 123-552.000.

Inoguchi, Kazuhiro; Nakanishi, Tomohiko; and Asano, Mitsuru, 4,434,117, Cl. 264-56.000.

Nippon Steel Corporation: See—
Suzuki, Yasuo; Nagata, Shuji; Nonaka, Takashiro; and Murakami, Tadashi, 4,433,717, Cl. 164-454.000.

Nippon Telegraph & Telephone Public Corporation: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.

Yoshikawa, Akira; Takeda, Akitsu; Ochi, Osamu; Hisaki, Tomoko; and Mizushima, Yoshihiko, 4,434,224, Cl. 430-323.000.

Nippon Thompson Co., Ltd.: See—
Mottate, Tatsuo, 4,433,876, Cl. 308-6.00C.

Nippendenso Co., Ltd.: See—
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,433,965, Cl. 474-201.000.

Nisenson, Jules: See—
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,433,765, Cl. 192-41.00S.

Nishida, Katsuhiko: See—
Sakuma, Isamu; Nishida, Katsuhiko; Kawano, Hideo; Ueno, Masayasu; Matsumoto, Yoshishige; Matsumoto, Shohei; and Furuse, Takao, 4,434,491, Cl. 372-48.000.

Nishimori, Toshiyuki: See—
Hamabe, Takeshi; Wada, Hidekazu; Naruse, Mikio; and Nishimori, Toshiyuki, 4,434,452, Cl. 361-304.000.

Nishimura, Akira: See—
Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,434,351, Cl. 219-117.100.

Nishimura, Katsuo; and Sekiya, Fukuo, to Citizen Watch Company Limited. Analog display electronic timepiece with multi-mode display capability. 4,433,918, Cl. 368-74.000.

Nishimura, Sanji: See—
Watanabe, Morio; and Nishimura, Sanji, 4,434,002, Cl. 75-0.5AA.

Nishioka, Nobuaki: See—
Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Enhancement mode JFET dynamic memory. 4,434,433, Cl. 357-22.000.

Nissan Chemical Industries, Ltd.: See—
Tsuchiya, Shuji; Ikeda, Hisao; and Suzuki, Kenji, 4,434,104, Cl. 260-456.00P.

Nissan Motor Company, Limited: See—
Chikaraishi, Takayo, 4,433,507, Cl. 49-213.000.

Hagiwara, Taro, 4,433,866, Cl. 296-76.000.

Ichinose, Hisao, 4,433,759, Cl. 188-282.000.

Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,433,669, Cl. 123-620.000.

Masaki, Kenji; and Yasuhara, Seishi, 4,433,666, Cl. 123-569.000.

Nakata, Shuji; Kawaguchi, Yoshio; and Nishimura, Akira, 4,434,351, Cl. 219-117.100.

Shimura, Atsuo, 4,433,542, Cl. 60-299.000.

Suzuki, Kouichi; and Mori, Kazuyuki, 4,434,469, Cl. 364-426.000.

Takahashi, Takao; Ohnishi, Kimimasa; and Wakai, Sinzi, 4,433,706, Cl. 139-435.000.

Nissin Kogyo Kabushiki Kaisha: See—
Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, 4,433,614, Cl. 91-376.00R.

Niwa, Tatsuo: See—
Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; Niwa, Tatsuo; and Sukegawa, Tsuneo, 4,433,901, Cl. 350-357.000.

NL Industries, Inc.: See—
Driver, Gary R.; and Herman, Richard J., 4,433,859, Cl. 285-34.000.

Mardis, Wilbur S.; and Finlayson, Claude M., 4,434,075, Cl. 252-315.200.

Mardis, Wilbur S.; and Finlayson, Claude M., 4,434,076, Cl. 252-315.200.

Noguchi, Masaru: See—
Yokota, Masaz; and Noguchi, Masaru, 4,433,893, Cl. 350-3.610.

Nojiri, Akio: See—
Sasajima, Junnosuke; Nagai, Hiroshi; Mogi, Kenji; Nojiri, Akio; and Shiina, Naonori, 4,434,251, Cl. 521-75.000.

Nomura, Hirokazu; Sugitani, Yuji; and Suzuki, Yasuo, to Nippon Kokan Kabushiki Kaisha. Arc welding method for automatically reversing a welding torch in the width direction of the groove at a set position. 4,434,352, Cl. 219-125.120.

Nonaka, Takashiro: See—
Suzuki, Yasuo; Nagata, Shuji; Nonaka, Takashiro; and Murakami, Tadashi, 4,433,717, Cl. 164-454.000.

Noonjen, Godefridus A. H.: See—
van de Leemput, Lambertus J. M. A.; and Noonjen, Godefridus A. H., 4,434,083, Cl. 502-154.000.

Nord, Keith W., to Ex-Cell-O Corporation. Packaging machine. 4,433,526, Cl. 53-244.000.

Nordica S.p.A.: See—
Baggio, Giorgio, 4,433,456, Cl. 24-68.0SK.

Nordstrom, Mark B.: See—
Winter, Roger D.; Workman, David E.; and Nordstrom, Mark B., 4,433,761, Cl. 190-109.000.

Norlin Industries, Inc.: See—
Hall, George R.; Hall, Robert J.; and Cookerly, Jack C., 4,433,601, Cl. 84-1.030.

Norris, James R.; and Picard, Harrison R., to United Technologies Corporation. Means for controlling air scavenge pressure in the bearing compartment of gas turbines. 4,433,539, Cl. 60-39.080.

North American Philips Corporation: See—
Levine, Joshua L., 4,433,585, Cl. 73-862.340.

North American Specialties Corp.: See—
Seidler, Jack, 4,433,892, Cl. 339-258.00P.

Norwood, Joseph E., Sr. Automotive oil filter precharging arrange-ment. 4,433,656, Cl. 123-196.00A.

Nose, Takashi: See—
Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, 4,434,162, Cl. 424-200.000.

Nostam, Inc.: See—
Matson, John S., 4,433,524, Cl. 52-665.000.

Novel Products, Inc.: See—
Muehlenbein, James A., 4,433,486, Cl. 33-137.00R.

NOVUM - Novita in Elettrodomestica Srl: See—
Parisi, Sebastiano, 4,433,451, Cl. 15-321.000.

Nyitrai, Jozsef: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.

Ochi, Osamu: See—
Yoshikawa, Akira; Takeda, Akitsu; Ochi, Osamu; Hisaki, Tomoko; and Mizushima, Yoshihiko, 4,434,224, Cl. 430-323.000.

Odenheimer, Bernhard; Kremer, Johannes H.; and Kranich, Klaus O., to Bruker-Franzen Analytik GmbH. Input head of a measuring or identification system for chemical agents. 4,433,982, Cl. 55-158.000.

Offenstadt, Eric, to Sercati S.A.R.L. Motorcycle with improved rear suspension. 4,433,747, Cl. 180-227.000.

Officine Savio S.p.A.: See—
D'Agnolo, Armando, 4,433,815, Cl. 242-118.000.

Ogata, Shoji: See—
Satoh, Tetsuo; Ohgami, Masaaki; and Ogata, Shoji, 4,433,748, Cl. 180-247.000.

Ogden Electronics Ltd.: See—
Steel, James, 4,433,746, Cl. 180-171.000.

Ogiso, Akira: See—
Kobayashi, Shinsaku; and Ogiso, Akira, 4,434,179, Cl. 424-308.000.

Ogura, Mitsugi: See—
Sawada, Shizuo; Ogura, Mitsugi; and Endo, Norio, 4,433,911, Cl. 355-125.000.

O'Hare, James A.: See—
Gaglione, Stanley; and O'Hare, James A., 4,434,426, Cl. 343-372.000.

Ohashi, Hiroyuki: See—
Kurihara, Shigeru; and Ohashi, Hiroyuki, 4,434,029, Cl. 203-42.000.

Ohashi, Makoto: See—
Matsuda, Kazuo; Ohashi, Makoto; Satoh, Yoshio; Miyashita, Tsutomu; and Komenou, Kazunari, 4,434,476, Cl. 365-12.000.

- Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Mounting frame equipped with decorative plate for mounting switch or the like. 4,434,339, Cl. 200-295.000.
- Ohgami, Masaaki: See—
Sato, Tetsuo; Ohgami, Masaaki; and Ogata, Shoji, 4,433,748, Cl. 180-247.000.
- Ohio State University Research Foundation, The: See—
Olsen, Richard G., 4,434,157, Cl. 424-89.000.
- Ohkubo, Tetsuo; Arai, Yoshio; and Kataoka, Hiroyuki, to Fuji Xerox Co., Ltd. Multilevel image printing device. 4,434,431, Cl. 346-154.000.
- Ohmori, Taiji; Kasahara, Toshio; and Uchida, Yoshiaki, to Honda Giken Kogyo Kabushiki Kaisha. Control circuit for vehicle level adjusting apparatus. 4,433,743, Cl. 180-41.000.
- Ohmori, Taiji, to Honda Giken Kogyo Kabushiki Kaisha. Control circuit for a vehicle leveling system. 4,433,849, Cl. 280-6.00R.
- Ohnishi, Kimimasa: See—
Takahashi, Takao; Ohnishi, Kimimasa; and Wakai, Sinzi, 4,433,706, Cl. 139-435.000.
- Ohnelli, Hakan; and Naslund, Leif, to Handelsbolaget Ohnelli-Teknik. Electronic cable load gauge. 4,433,586, Cl. 73-862.480.
- Ohta, Mitsuru: See—
Sasaki, Tohru; Ohta, Mitsuru; Terasaki, Syuuji; and Kakizaki, Syozo, 4,434,209, Cl. 428-416.000.
- Ohta, Takatoshi: See—
Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, 4,434,223, Cl. 430-273.000.
- Ohtaka, Shoichi: See—
Amano, Katsuhisa; Kumagai, Tadashi; Masaki, Akio; Shimada, Shinichi; Suzuki, Takeshi; and Ohtaka, Shoichi, 4,433,541, Cl. 60-293.000.
- Ohtomi, Sadayuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator apparatus. 4,433,755, Cl. 187-20.000.
- Oikawa, Yoshiaki: See—
Kageyama, Hachiro; Moriuchi, Tsutomu; and Oikawa, Yoshiaki, 4,434,063, Cl. 252-25.000.
- Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Toner concentration detection by measuring current created by transfer of carrier component to non-image areas of image support surface. 4,434,221, Cl. 430-122.000.
- Okada, Tokio; Kojima, Shigeo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, to Nippon Petrochemicals Co., Ltd. and Polymer Processing Research Institute, Ltd. Method and apparatus for stretching thermoplastic polymer films. 4,434,128, Cl. 264-560.000.
- Okamoto Chemical Industry Co., Ltd.: See—
Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, 4,434,223, Cl. 430-273.000.
- O'Kane, James C.: See—
Taylor, Edward F.; and O'Kane, James C., 4,433,858, Cl. 280-802.000.
- Okano, Shuji: See—
Fuji, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,434,205, Cl. 428-218.000.
- Oki Electric Industry Co., Ltd.: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.
- Old, Julian C., to Marconi Company Limited, The. Side lobe canceller for radar systems. 4,434,424, Cl. 343-381.000.
- Oldakowski, Chester C.: See—
Bhattacharya, Somnath; Hu, Shih-Ming; Koopman, Nicholas G.; and Oldakowski, Chester C., 4,434,434, Cl. 357-71.000.
- Olin Corporation: See—
Cline, Warren K.; and Owens, William F., 4,433,697, Cl. 131-365.000.
- Kaczur, Jerry J.; Iacoviello, Steven A.; and Miller, Edward G., 4,434,033, Cl. 204-95.000.
- Kelly, Pilar P.; and Justice, David D., 4,434,041, Cl. 204-296.000.
- Saleh, Yousef; Breedis, John F.; and Crane, Jacob, 4,434,016, Cl. 148-12.70C.
- Olivieri, Icaro, to Icaro Olivieri & C. S.p.A. Quick-fastener for roller skates. 4,433,458, Cl. 24-191.000.
- Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Clutch throw-out. 4,433,768, Cl. 192-98.000.
- Olschewski, Armin: See—
Walter, Lothar; Brandenstein, Manfred; Ernst, Horst M.; and Olschewski, Armin, 4,433,875, Cl. 308-6.00R.
- Olsen, Richard G., to Ohio State University Research Foundation, The. Method of recovering cell antigen and preparation of feline leukemia vaccine therefrom. 4,434,157, Cl. 424-89.000.
- Olszewski, Walter J., to Union Carbide Corporation. Process to recover argon from oxygen-only air separation plant. 4,433,990, Cl. 62-22.000.
- Olympus Optical Co., Ltd.: See—
Baba, Kazuo, 4,433,692, Cl. 128-660.000.
- Konoshima, Katunaga, 4,433,675, Cl. 128-6.000.
- Nasu, Mitsuo, 4,434,329, Cl. 179-121.00R.
- Osana, Akira, 4,434,447, Cl. 360-137.000.
- Sato, Masaaki, 4,434,444, Cl. 360-96.500.
- Tabara, Takashi, 4,434,232, Cl. 435-288.000.
- Omi, Kokichi; and Kuroda, Yasuo, to Canon Kabushiki Kaisha. Device for setting exposure quantity. 4,433,908, Cl. 355-68.000.
- O'Neil, John B., to Exxon Research & Engineering Co. Spiral wrapped synthetic twine and method of manufacturing same. 4,433,536, Cl. 57-233.000.
- Ono, Saichi: See—
Kawasaki, Takao; Osaka, Yoshiaki; Komatsu, Katsumi; Yamaguchi, Yukiharu; and Ono, Saichi, 4,434,172, Cl. 424-270.000.
- Optical Coating Laboratory, Inc.: See—
Ash, Gary S., 4,434,010, Cl. 106-291.000.
- Ornato, Giorgio: See—
Giobbio, Vincenzo; Ornato, Giorgio; Buracchi, Livio; and Mangia, Alberto, 4,434,097, Cl. 260-112.50R.
- Ortho Diagnostic Systems, Inc.: See—
Azad, A. R. M.; Kirchanski, Stefan J.; and Brown, Michael C., 4,434,150, Cl. 424-1.100.
- Zolton, Raymond P.; Kaplan, Paul M.; and Padvelskis, John V., 4,434,093, Cl. 260-112.00B.
- Osaka Taiyu Co., Ltd.: See—
Fujita, Hiromu, 4,433,954, Cl. 414-757.000.
- Osaka, Yoshiaki: See—
Kawasaki, Takao; Osaka, Yoshiaki; Komatsu, Katsumi; Yamaguchi, Yukiharu; and Ono, Saichi, 4,434,172, Cl. 424-270.000.
- Osana, Akira, to Olympus Optical Co., Ltd. Cassette tape recorder. 4,434,447, Cl. 360-137.000.
- Osmera, Miroslav S.; Brooks, Ralf M.; and Kim, Sung-Soon, to NCR Corporation. Projection printer. 4,433,902, Cl. 354-10.000.
- Osuna-Diaz, J. M. Two-stage filter for injection molding machine. 4,434,053, Cl. 210-446.000.
- Oswald, Alexis A.; Huang, Helen; Huang, John; and Valint, Paul, Jr., to Exxon Research and Engineering Co. Oil displacement enhanced by lyotropic liquid crystals in highly saline media. 4,434,062, Cl. 252-8.55D.
- Ota, Naoto: See—
Kobari, Katsuo; Ishida, Hiroshi; and Ota, Naoto, 4,434,393, Cl. 318-757.000.
- Ota, Sakae: See—
Terao, Motoyasu; Horigome, Shinkichi; Mitsuya, Munehisa; Ota, Sakae; and Shigematsu, Kazuo, 4,434,429, Cl. 346-135.100.
- Otis Engineering Corporation: See—
Raulins, George M.; and Grimmer, George G., 4,433,862, Cl. 285-350.000.
- Ott, Granville E., to Texas Instruments Incorporated. Frequency domain digital encoding technique for musical signals. 4,433,604, Cl. 84-1.190.
- Ott, Paul W.; Engebretson, Harold J.; LaHue, Philip M.; and Van Steenwyk, Brett H., to Applied Technologies Associates. Azimuth determination for vector sensor tools. 4,433,491, Cl. 33-302.000.
- Owens-Corning Fiberglass Corporation: See—
Charon, Clarence W.; and Reid, Kenneth E., 4,434,255, Cl. 523-209.000.
- Gilleland, Frank W., 4,433,674, Cl. 126-450.000.
- Owens, Edward W., to Top-Seal Corporation. Pouring fitment and closure assembly. 4,433,800, Cl. 222-547.000.
- Owens-Illinois, Inc.: See—
Edwards, Ralston G., Jr.; Walkden, John R. B.; Carstensen, Walter H.; Murphy, Gregory E.; and Lisi, John E., 4,433,776, Cl. 198-779.000.
- Riggs, Darius O.; and Sorbie, Thomas B., 4,433,785, Cl. 209-531.000.
- Owens, William F.: See—
Cline, Warren K.; and Owens, William F., 4,433,697, Cl. 131-365.000.
- Oyama, Yoshio, to Yoshida Kogyo K. K. Method of and apparatus for attaching bottom stops to a slide fastener chain. 4,433,478, Cl. 29-767.000.
- Ozawa, Tetsuo: See—
Imahori, Seiichi; Kaneko, Masaharu; Ozawa, Tetsuo; Imazeki, Shuji; Mukoh, Akio; and Sato, Miko, 4,434,072, Cl. 252-299.100.
- Padilla, Isaac F. Direct fired glycol regenerator with vertical flues. 4,434,034, Cl. 202-153.000.
- Padvelskis, John V.: See—
Zolton, Raymond P.; Kaplan, Paul M.; and Padvelskis, John V., 4,434,093, Cl. 260-112.00B.
- Pallos, Ferenc M., to Stauffer Chemical Company. N-Acylsulfonamide herbicidal antidotes. 4,433,997, Cl. 71-92.000.
- Pallos, Ferenc M.: See—
Mahoney, Martin D.; Gaughan, Edmund J.; Pallos, Ferenc M.; and Lam, Hsiao-Ling, 4,434,000, Cl. 71-103.000.
- Palmquist, Steven R.; Chapman, David D.; and Hoeren, Gerd H., to Tektronix, Inc. Logic analyzer for a multiplexed digital bus. 4,434,488, Cl. 371-15.000.
- Panas, William R.: See—
Jarosz, John M.; and Panas, William R., 4,434,415, Cl. 337-186.000.
- Pao Chen, Paul C. Method and apparatus for forming subterranean concrete piles. 4,433,943, Cl. 405-241.000.
- Papa, Anthony J., to Union Carbide Corporation. Production of low color refined isophorone. 4,434,301, Cl. 568-366.000.
- Pape, Gebhard: See—
Brandenstein, Manfred; Hans, Ruiger; Horling, Peter; Hetterich, Hermann; Pape, Gebhard; and Gossmann, Willi, 4,433,932, Cl. 403-261.000.
- Papuchon, Michel: See—
Puech, Claude; Papuchon, Michel; and Arditty, Herve, 4,433,895, Cl. 350-96.130.
- Paradyne Corporation: See—
Ballentine, Howard K., Jr., 4,434,378, Cl. 307-350.000.
- Parenti, Mark A.: See—
Robinson, Barry L.; Parenti, Mark A.; Lary, Richard F.; and Gardner, Edward A., 4,434,487, Cl. 371-10.000.

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- Parker, Donald L.: See—
Warwick, Edward H.; and Parker, Donald L., 4,433,757, Cl. 188-1.110.
- Parker, Kenneth O., to Garrett Corporation. The. Heat exchanger method and apparatus. 4,433,723, Cl. 165-166.000.
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Swartz, Harold L.; Atkeisson, Randal A.; Carter, Rodney A.; and Parker, Russell C., 4,434,391, Cl. 318-662.000.
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Berg, Robert H.; and Karuhn, Richard F., 4,434,398, Cl. 324-71.400.
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McGary, Charles W., Jr.; Pascarella, Vincent J.; Taller, Robert A.; Rhodes, Delmer R.; Anglin, Paul E.; and Daugherty, Charles W., 4,434,126, Cl. 264-303.000.
- Patel, Mukund R.; and Nathanson, Richard D., to Electric Power Research Institute, Inc. Viscoelastic support for dynamoelectric machines. 4,434,382, Cl. 310-51.000.
- Paulik, John R.: See—
Kulpa, Walter J.; and Paulik, John R., 4,433,836, Cl. 271-3.100.
- Pauling, Horst: See—
Hostettler, Hans U.; and Pauling, Horst, 4,434,178, Cl. 424-287.000.
- Pavey, Victor J.: See—
Doroszkowsky, Andrew; and Pavey, Victor J., 4,434,268, Cl. 524-520.000.
- Payne, Rex E., Jr.; and Hoffman, Ronald R., to Dawn Designs, Inc. Baby walker. 4,433,869, Cl. 297-5.000.
- PBS Associates: See—
Schrepel, William J., 4,434,509, Cl. 455-343.000.
- Pchelkin, Nicholas R.: See—
Benard, David J.; Pchelkin, Nicholas R.; McDermott, William E.; Ellis, David E.; and Miller, George W., 4,434,492, Cl. 372-59.000.
- Pearson, Mark. Drink coasters. 4,433,823, Cl. 248-346.100.
- Peisert, Joseph C.: See—
Licht, Richard R.; Marlor, Alan J.; and Peisert, Joseph C., 4,433,732, Cl. 169-48.000.
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- Pelletier, Jean-Marc; and Dion, Yvon, to Hydro-Quebec. Electrical circuit breaker module. 4,434,413, Cl. 337-71.000.
- Pennwalt Corporation: See—
McGraw, Isaac R., 4,434,183, Cl. 424-340.000.
- Sprout, Oliver S., Jr., 4,434,114, Cl. 264-22.000.
- Penrod, John K.: See—
Carver, LeRoy J.; and Penrod, John K., 4,434,388, Cl. 315-307.000.
- Penty, Robert A.: See—
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,433,979, Cl. 51-307.000.
- Perlstein, Jerome H.: See—
Detty, Michael R.; Murray, Bruce J.; and Perlstein, Jerome H., 4,434,098, Cl. 260-239.00R.
- Perry, William H.; Stewart, David C.; and Waterworth, Geoffrey, to General Motors Corporation. Roof rail molding member. 4,433,867, Cl. 296-146.000.
- Petersen, Carl T., III: See—
Koch, George R.; and Petersen, Carl T., III, 4,433,951, Cl. 414-217.000.
- Petriello, John V.; and La Torra, Michael N., to N. F. Industries, Inc. Non-stick energy-modifying cooking liner and method of making same. 4,434,197, Cl. 427-407.100.
- Pettit, John W.: See—
Craig, Timothy P.; Pettit, John W.; and Timperman, Michael R., 4,434,356, Cl. 219-216.000.
- Pfeiffer, Gene F.: See—
Cherry, Raymond L.; Pfeiffer, Gene F.; and Maes, Randell P., 4,433,719, Cl. 165-26.000.
- Pfeiffer, Wilfried, to U.S. Philips Corporation. X-Ray film cassette. 4,434,501, Cl. 378-187.000.
- Pfizer Inc.: See—
Lombardino, Joseph G., 4,434,163, Cl. 424-246.000.
- Lombardino, Joseph G., 4,434,164, Cl. 424-246.000.
- Welch, Willard M., Jr., 4,434,173, Cl. 424-271.000.
- Philip Morris Incorporated: See—
Adams, John M., 4,433,696, Cl. 131-336.000.
- Phillips, D. Colin: See—
Down, Michael G.; Phillips, D. Colin; and Emmerich, Werner S., 4,434,133, Cl. 376-323.000.
- Phillips, George C.: See—
Darrow, Russell E.; Funari, Joseph; Kotrch, George S.; and Phillips, George C., 4,434,134, Cl. 419-5.000.
- Phillips Petroleum Company: See—
Blackwell, Jennings P., 4,434,263, Cl. 524-322.000.
- Kolts, John H., 4,434,079, Cl. 252-412.000.
- Martin, Joel L., 4,434,243, Cl. 502-171.000.
- McDaniel, Max P.; and Welch, M. Bruce, 4,434,280, Cl. 526-106.000.
- Murtha, Timothy P.; and Shioyama, Tad K., 4,434,082, Cl. 502-164.000.
- Reed, Jerry O., 4,434,122, Cl. 264-211.000.
- Piaggio & C. S.p.A.: See—
Benedetti, Carlo, 4,433,473, Cl. 29-598.000.
- Picard, Harrison R.: See—
Norris, James R.; and Picard, Harrison R., 4,433,539, Cl. 60-39.080.
- Picard, Robert J.: See—
Antisdell, Gerald L.; and Picard, Robert J., 4,433,484, Cl. 30-90.400.
- Pierburg GmbH & Co., KG: See—
Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Oriwin, 4,433,662, Cl. 123-438.000.
- Pierrel S.p.A.: See—
Giobbio, Vincenzo; Ornato, Giorgio; Buracchi, Livio; and Mangia, Alberto, 4,434,097, Cl. 260-112.50R.
- Pietzsch, Herbert; Lachner, Walter; Hofmann, Karlheinz; Potzsch, Erich; and Esser, Fred. Contact electrode for melting and heating furnaces with DC plasma heating. 4,434,494, Cl. 373-18.000.
- Pike, John W.: See—
Dailey, Jack R.; Kuntzleman, Harry C.; Ng, Charles S.; and Pike, John W., 4,434,432, Cl. 364-154.000.
- Pillsbury Company, The: See—
Desia, Nitin; Delaney, Rory A. M.; Brouwer, Peter; and Huang, Victor T., 4,434,186, Cl. 426-565.000.
- Pioneer Electronic Corporation: See—
Yoshida, Kobun, 4,434,443, Cl. 360-74.400.
- Pitney Bowes Inc.: See—
Couper, Robert A.; and Lillie, Terrance L., 4,434,419, Cl. 340-717.000.
- Kulpa, Walter J.; and Paulik, John R., 4,433,836, Cl. 271-3.100.
- Plaisant, Jacques: See—
Darrichard, Louis D.; and Plaisant, Jacques, 4,433,535, Cl. 57-229.000.
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- Plough, Inc.: See—
Kingsford, Ted I., 4,433,928, Cl. 401-122.000.
- McShane, James E., 4,434,154, Cl. 34-116.000.
- Pochert, Kurt A.: See—
Shih, Kelvin; Pochert, Kurt A.; and Dunford, James M., 4,433,576, Cl. 73-204.000.
- Pocock, Robert E.: See—
Bohl, Thomas L.; Pocock, Robert E.; and Zimmerlin, Sharon L., 4,433,922, Cl. 374-36.000.
- Poisson, William H., to Albany International Corp. High temperature resistant fabrics. 4,433,493, Cl. 34-116.000.
- Pollock, John J., to Frick Company. Heat transfer surface with increased liquid to air evaporative heat exchange. 4,434,112, Cl. 261-153.000.
- Polymer Processing Research Institute, Ltd.: See—
Okada, Tokio; Kojima, Shigeo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.
- Pontes, Virgil M.; and Young, Lawrence C., to Double E Company Inc. Core-engager retainer for an expansible shaft. 4,433,814, Cl. 242-72.100.
- Porter, Lawrence W., to Vaughan & Bushnell Manufacturing Co. Drywall hatchet. 4,433,709, Cl. 145-2.00R.
- Poschel, Bruno P. H.; and Butler, Donald E., to Warner-Lambert Company. Pharmaceutical compositions and methods. 4,434,169, Cl. 424-263.000.
- Posta, Antonio D. Power planing tool. 4,433,710, Cl. 145-4.000.
- Potzsch, Erich: See—
Pietzsch, Herbert; Lachner, Walter; Hofmann, Karlheinz; Potzsch, Erich; and Esser, Fred, 4,434,494, Cl. 373-18.000.
- Powell, Justin C., to Texaco Inc. 1,3-Dibromo dialkylhydantoin and olefin oligomer reaction product as a catalyst for preparing alkenyl dicarboxylic acid anhydride. 4,434,071, Cl. 252-182.000.
- PPG Industries, Inc.: See—
Beckim, Kenneth A., 4,433,623, Cl. 101-123.000.
- Frank, Robert G., 4,433,993, Cl. 65-104.000.
- Girgis, Mikhail M., 4,434,208, Cl. 428-378.000.
- Rukavina, Thomas G.; and Coleman, Charles R., 4,434,284, Cl. 528-58.000.
- Pratt & Whitney Aircraft of Canada Limited: See—
Bonneau, Hilaire, 4,433,751, Cl. 181-213.000.
- Preller, Hans, to Theodor Wuppermann GmbH. Method of and apparatus for the manufacturing of metal profile members, especially steel profile members. 4,433,565, Cl. 72-177.000.
- Preston, Dan C., Jr.; and Kim, Yung J., to Baker Oil Tools, Inc. Energized packer anchor seal assembly. 4,433,726, Cl. 166-118.000.
- Probst, Joachim; Kolb, Gunter; Mummenhoff, Peter; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Cationic sizing agent for paper and a process for the preparation thereof. 4,434,269, Cl. 524-538.000.
- Proctor & Gamble Company, The: See—
Wilkinson, Randolph N., III; Sneed, Elmore C.; and Mueller, Janet M., 4,434,136, Cl. 422-263.000.
- Profficient Systems, Inc.: See—
Moore, Joseph L., 4,434,011, Cl. 134-6.000.
- Proios, Steve: See—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.
- Prokop, Josef F.; Coons, Robert R.; and Mylander, Richard H., to International Harvester Co. Opposed reaction transmission brake. 4,433,762, Cl. 192-4.00A.

- Pruett, Roy L.: See—
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,434,317, Cl. 585-845.000.
- Puech, Claude; Papuchon, Michel; and Arditty, Herve, to Thomson-CSF. Integrated optical structure with velocity matched directional coupling. 4,433,895, Cl. 350-96.130.
- Pugach, Joseph, to Halcon SD Group, Inc., The. Recovery of noble metal values from carbonylation residues. 4,434,240, Cl. 502-24.000.
- Puglisi, Albert J.: See—
Maiefski, Romaine R.; and Puglisi, Albert J., 4,433,795, Cl. 222-14.000.
- Puhl, Larry C., to Motorola, Inc. Microprocessor with duplicate registers for processing interrupts. 4,434,461, Cl. 364-200.000.
- Purex Corporation: See—
Fairchild, Meredith H., 4,434,069, Cl. 252-174.140.
- Putnam, Bruce M.: See—
Eppig, Christopher P.; Putnam, Bruce M.; and de Filippi, Richard P., 4,434,028, Cl. 196-14.520.
- Queensland Rubber Company Pty. Ltd.: See—
Russell, Graeme E.; and Smith, Brian S., 4,433,942, Cl. 405-215.000.
- Quinn, Thomas G., III, to Honeywell Inc. Thermal reference apparatus. 4,433,924, Cl. 374-2.000.
- Quinquis, Jean-Paul; and Devault, Michel A. Multiprocessor topology with plural bases for directly and indirectly coupling addresses and relay stations. 4,434,463, Cl. 364-200.000.
- Rabi, Tavassa; and Szekely, Eugen, to Ben Gurion University of the Negev Research and Development Authority. Method and apparatus for detecting nitrite ions in fluids. 4,434,235, Cl. 436-110.000.
- Racal Data Communications Inc.: See—
Ferrell, Philip J., 4,434,322, Cl. 178-22.130.
- Rack, Robert W.: See—
Mendel, Jack M.; Bomgardner, Carl C.; Rack, Robert W.; Scott, Donald G.; and Strimater, August W., 4,433,917, Cl. 366-132.000.
- Radiation Dynamics, Inc.: See—
Cleland, Marshall, 4,434,372, Cl. 250-400.000.
- Ragot, Claude. Toilet with mechanical drainage comprising a draining chamber accessible and dismountable from inside the toilet bowl. 4,433,444, Cl. 4-319.000.
- Ragsdale, Mark E.: See—
Malone, Thomas J.; and Ragsdale, Mark E., 4,434,067, Cl. 252-88.000.
- Rainey, Amos E. Chimney cleaner. 4,433,449, Cl. 15-243.000.
- Rajski, Pat A.: See—
Gebert, Kenneth W.; and Rajski, Pat A., 4,434,194, Cl. 427-356.000.
- Ramsey, Harold E.; and Fischer, Edward E., to Du Pont de Nemours, E. I., and Company. Heat sealing film cut-off device. 4,433,527, Cl. 53-548.000.
- Rasberger, Michael, to Ciba-Geigy Corporation. Phosphonous acid monoester-monoamides. 4,434,109, Cl. 260-958.000.
- Rascati, Richard J.; and Berglund, Larry G., to Markel, Morris L. Operative temperature sensing system. 4,433,923, Cl. 374-112.000.
- Ratchford, Lloyd G.; Werth, Dee A.; Luca, Vincent A., Jr.; and Schildkraut, Alan L., to Bendix Corporation, The. Electrical connector having a moisture seal. 4,433,889, Cl. 339-94.00M.
- Ratschat, Gunter, to Mannesmann Demag AG. Method for recovery and recycling of heat from hot gases in metallurgical processing. 4,434,004, Cl. 75-41.000.
- Raulins, George M.; and Grimmer, George G., to Otis Engineering Corporation. Pipe joint. 4,433,862, Cl. 285-350.000.
- Rayovac Corporation: See—
Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., 4,434,216, Cl. 429-191.000.
- Niles, Aaron F.; and Johnson, Dennis P., 4,434,213, Cl. 429-3.000.
- Raytheon Company: See—
Bowen, Robert F.; and Martel, Thomas J., 4,434,343, Cl. 219-10.55F.
- Dunnrowicz, Clarence J.; and Callera, Joseph, 4,434,384, Cl. 310-325.000.
- Green, Jerome J., 4,434,409, Cl. 333-24.100.
- MacMaster, George H.; and Nichols, Lawrence J., 4,434,387, Cl. 315-39.300.
- Metal, Israel, 4,434,369, Cl. 250-363.00S.
- RCA Corporation: See—
Goodman, Alvin M., 4,433,469, Cl. 29-571.000.
- Schiff, Leonard N., 4,434,440, Cl. 358-186.000.
- Steckler, Steven A.; and Balaban, Alvin R., 4,434,439, Cl. 358-174.000.
- Stewart, Roger G., 4,434,381, Cl. 307-530.000.
- Strolle, Christopher H.; and Smith, Terrence R., 4,434,437, Cl. 358-140.000.
- Toda, Minoru; and Shima, Eiji, 4,434,481, Cl. 369-132.000.
- Yarnitsky, Yashaya; and Kaldor, Shmuel, 4,433,794, Cl. 221-224.000.
- Redmon, Billy L.; and Forester, Buford G., to Custom Oilfield Products, Inc. High pressure shut-off valve. 4,433,827, Cl. 251-191.000.
- Reed, Jerry O., to Phillips Petroleum Company. Polymer stabilization. 4,434,122, Cl. 264-211.000.
- Reeves, William H.: See—
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,433,637, Cl. 116-207.000.
- Regan, Albert M., to Hughes Tool Company. Marine conductor-bending tool and method. 4,433,939, Cl. 405-195.000.
- Reid, Gary L., to Hobart Brothers Company. Cathodic cleaning of aluminum tube. 4,434,348, Cl. 219-61.000.
- Reid, Kenneth E.: See—
Charon, Clarence W.; and Reid, Kenneth E., 4,434,255, Cl. 523-209.000.
- Reiff, Harro: See—
Frick, Georg; Reiff, Harro; and Kirsch, Alois, 4,433,467, Cl. 29-565.000.
- Reiff, Nico: See—
Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schummer, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Reimen, Vlasta: See—
Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schummer, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Rempfler, Hermann; and Forj, Werner, to Ciba-Geigy Corporation. Pyridyloxy-phenoxyalkane-carboxylic acid derivatives and their herbicidal use. 4,433,998, Cl. 71-94.000.
- Research Corporation: See—
Ritts, Roy E., Jr., 4,434,230, Cl. 435-240.000.
- Rexnord Inc.: See—
Cosenza, Frank J., 4,433,930, Cl. 403-12.000.
- Rhoades, Thomas S.: See—
Scott, David R.; and Rhoades, Thomas S., 4,433,581, Cl. 73-786.000.
- Rhodes, Delmer R.: See—
McGary, Charles W., Jr.; Pascarella, Vincent J.; Taller, Robert A.; Rhodes, Delmer R.; Anglin, Paul E.; and Daugherty, Charles W., 4,434,126, Cl. 264-303.000.
- Rhone-Poulenc Industries: See—
Jung, Gerard, 4,434,231, Cl. 435-253.000.
- Rhudy, John S.: See—
Argabright, Perry A.; and Rhudy, John S., 4,433,727, Cl. 166-252.000.
- Rice, Steven G. Wall structure opening of masonry and pre-cast facade. 4,433,518, Cl. 52-211.000.
- Richard, Pierre, to Bouygues. Method and a device for extending the deck of a bridge or similar structures, with desk segments, using a cable stayed beam. 4,433,525, Cl. 52-741.000.
- Richter Gedeon Vegyeszeti Gyar Rt.: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Ricoh Company, Ltd.: See—
Horike, Masanori; and Ebi, Yutaka, 4,434,428, Cl. 346-75.000.
- Riggs, Darius O.; and Sorbie, Thomas B., to Owens-Illinois, Inc. Leaner gauge for narrow neck containers. 4,433,785, Cl. 209-531.000.
- Rinkewich, Isaac: See—
Khurgin, Boris; Rosinek, Shlomo; and Rinkewich, Isaac, 4,433,577, Cl. 73-290.00V.
- Ripper, Wolfgang, to Robert Bosch GmbH. Apparatus for regulating the exhaust gas recirculation rate in internal combustion engines having self-ignition. 4,433,667, Cl. 123-569.000.
- Risdal, Norton W., to Gustafson, Inc. Sampler for flowing pressurized dry material. 4,433,587, Cl. 73-863.540.
- Ritts, Roy E., Jr., to Research Corporation. Human nonsecretory plasmacytoid cell line. 4,434,230, Cl. 435-240.000.
- RIV-SKF Officine Di Villar Perosa SpA: See—
Colanzi, Franco, 4,433,877, Cl. 308-191.000.
- Rivale, Christian: See—
Bisagni, Emile; Ducrocq, Claire; Rivale, Christian; Tambourin, Pierre; Wendling, Francoise; Civier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Robert Bosch GmbH: See—
Fritz, Adolf R., 4,433,670, Cl. 123-644.000.
- Ripper, Wolfgang, 4,433,667, Cl. 123-569.000.
- Robertson, John M.; Breed, Dirk J.; and Voermans, Antonius B., to U.S. Philips Corporation. Device for propagating magnetic domains. 4,434,212, Cl. 428-693.000.
- Robillard, Jean J. Controlling crystallinity and thickness of monocrytalline layer by use of an elliptically polarized beam of light. 4,434,025, Cl. 156-601.000.
- Robinson, Keith D.; and Smitley, George P., to Goodyear Aerospace Corporation. Reverse building process for the manufacture of complex-shaped vehicle fuel tanks. 4,434,021, Cl. 156-242.000.
- Robinson, Tibor; and Voegtlin, Charles, to Sandoz Ltd. Method of accelerating the drying of wet hydrophilic substrates. 4,434,196, Cl. 427-389.000.
- Rockford Ball Screw Co.: See—
Benoit, Harold P.; LaPasso, Leonard J.; and McBain, Ian, 4,433,590, Cl. 74-409.000.
- Rockwell International Corporation: See—
Best, David W.; and Russell, Jeffrey D., 4,434,474, Cl. 364-900.000.
- Cleveland, Donald C., 4,433,934, Cl. 403-318.000.
- Fowks, William R., 4,434,406, Cl. 331-3.000.
- Huffman, Charles E.; and Southerland, Stephen R., 4,434,485, Cl. 370-55.000.
- Rodder, Fritz: See—
Lemke, Norbert, 4,434,500, Cl. 378-99.000.
- Rodrigues, John J. Fuel system for an internal combustion engine. 4,433,664, Cl. 123-527.000.
- Rohm and Haas Company: See—
Fellman, Robert P.; Hurwitz, Marvin J.; Myers, Robert M.; and Slack, Gerald F., 4,433,958, Cl. 433-199.000.

- Rojey, Alexandre; and Cheron, Jacques, to Institut Francais du Petrole. Process for producing cold and/or heat by use of an absorption cycle with carbon dioxide as working fluid. 4,433,554, Cl. 62-112.000.
- Roland, Manfred W., to All-Lock Electronics, Inc. Key reading system. 4,433,487, Cl. 33-174.00F.
- Rolfe, Robert M., to Bell Telephone Laboratories, Incorporated. Response time bidirectional circuitry. 4,434,497, Cl. 375-7.000.
- Roling, Paul V.; Veazey, Richard L.; and Aylward, David E., to Cities Service Co. Polymerization catalyst. 4,434,242, Cl. 502-107.000.
- Rollings, Robert W.: See—
Cassidy, James W.; Rollings, Robert W.; and Youngfleish, Frank C., 4,433,886, Cl. 339-14.00R.
- Rollins, Kay; Key, Anthony N.; and Arlotte, Thomas F., to British Hovercraft Corporation Ltd. Air cushion vehicle. 4,433,745, Cl. 180-118.000.
- Romagnoli, Andrea, to Industria Macchine Automatiche. Volumetric dosing apparatus for particulate matter. 4,433,798, Cl. 222-255.000.
- Romain, John: See—
McCoy, Kenneth H.; and Romain, John, 4,433,683, Cl. 128-57.000.
- Romanowski, Robert F., to Latone, Salvatore. Sheet sorter apparatus. 4,433,837, Cl. 271-293.000.
- Romero, Richard A.; and Schmidt, Michael J., to Chicago Rawhide Manufacturing Company. Readily removable shaft seal including venting tab. 4,433,846, Cl. 277-9.000.
- Roneo Alcatel Limited: See—
Clark, Leslie, 4,434,198, Cl. 428-43.000.
- Rood, Robert M. Coil spring switch. 4,434,338, Cl. 200-276.000.
- Rosa, Hugh E.; and Slaterpryce, Allen A., to General Electric Company. Precision rotor indexing device. 4,433,595, Cl. 74-813.00L.
- Rosenski, Josephine M.: See—
Gold, Samuel; Tracton, Arthur A.; and Rosenski, Josephine M., 4,434,259, Cl. 524-31.000.
- Rosenthal, Ben J., to Rosenthal Manufacturing Co., Inc. Self-aligning bearing assembly. 4,433,878, Cl. 308-203.000.
- Rosenthal Manufacturing Co., Inc.: See—
Rosenthal, Ben J., 4,433,878, Cl. 308-203.000.
- Rosinek, Shlomo: See—
Khurgin, Boris; Rosinek, Shlomo; and Rinkewich, Isaac, 4,433,577, Cl. 73-290.00V.
- Rosinski, Joseph: See—
Schenone, Carl E.; and Rosinski, Joseph, 4,433,978, Cl. 48-76.000.
- Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, to United States of America, National Aeronautics and Space Administration. Process for preparing perfluorotriazine elastomers and precursors thereof. 4,434,106, Cl. 260-465.50R.
- Rott, Hans: See—
Dumm, Heinz; Koerner, Gotz; Krakenberg, Manfred; Rott, Hans; and Schmidt, Gunter, 4,434,008, Cl. 106-271.000.
- Roush, Roy W., Jr., to General Motors Corporation. Railway truck bearing mounting assembly. 4,433,629, Cl. 105-222.000.
- Rousseau, Kenneth E., to Harper Trucks, Inc. Wire guide and retainer assembly. 4,433,816, Cl. 242-129.620.
- Roussel, Francoise: See—
Motsch, Roger; Roussel, Francoise; and Lolivier, Germain, 4,434,499, Cl. 375-122.000.
- Roussel Uclaf: See—
Barton, Derek H. R.; and Motherwell, William B., 4,434,080, Cl. 502-152.000.
- Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,434,294, Cl. 549-65.000.
- Rowland, David A. Combined bottle cap opener. 4,433,597, Cl. 81-3.10R.
- Rubino, Andrew M.: See—
Jones, John L.; and Rubino, Andrew M., 4,434,155, Cl. 424-47.000.
- Rubinson, Barry L.; Parenti, Mark A.; Lary, Richard F.; and Gardner, Edward A., to Digital Equipment Corporation. Disk format for secondary storage system. 4,434,487, Cl. 371-10.000.
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- Rudolph, Hans: See—
Buysch, Hans-Josef; Krimm, Heinrich; and Rudolph, Hans, 4,434,105, Cl. 260-463.000.
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Ballestrasse, Cindy L.; and Ruggeri, Robert T., 4,434,249, Cl. 521-27.000.
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- Russell, Graeme E.; and Smith, Brian S., to Queensland Rubber Company Pty. Ltd. Wharf fender. 4,433,942, Cl. 405-215.000.
- Russell, Jeffrey D.: See—
Best, David W.; and Russell, Jeffrey D., 4,434,474, Cl. 364-900.000.
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- Rutherford, Ralph E. Flow splitting device for fluid flow meter. 4,433,575, Cl. 73-202.000.
- Ruempol, Geurt J., to Inductive Control Systems B.V. Contactless, electric control-handle. 4,434,412, Cl. 336-134.000.
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Hartman, Ludwig; Ruzek, Ivo; and Locher, Engelbert, 4,434,204, Cl. 428-198.000.
- Ryckman, William D., Jr., to General Electric Company. Strain gage scale. 4,433,741, Cl. 177-199.000.
- Rys-Sikora, John, to Du Pont de Nemours, E. I., and Company; and Bata Shoe Company. Low density closed-cell foamed articles from ethylene copolymer/vinyl or vinylidene halide blends. 4,434,253, Cl. 521-134.000.
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- Salisbury, Winfield W., to Energy Profiles, Inc. Electron space charge channeling for focusing ion beams. 4,434,130, Cl. 376-107.000.
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Trowbridge, Ian S., 4,434,156, Cl. 424-85.000.
- Salmon, Joe E.; Strother, Fleetwood E.; and Crawford, James R., to Allied Products Corporation. Saw type gin stand with seed removal tube. 4,433,454, Cl. 19-55.00R.
- Salsbery, Charles L.: See—
Kleykamp, Gayheart C.; Goldwater, Sam; and Salsbery, Charles L., 4,434,436, Cl. 358-118.000.
- Salton, Robert B.: See—
Spiegelman, Stanley R.; Salton, Robert B.; Beer, Robert W.; Mandra, Louis J.; and Cognevich, Michael L., 4,433,828, Cl. 254-29.00A.
- Samanta, Shyam K.: See—
Ezis, Andre; Samanta, Shyam K.; and Subramanian, Krishnamoorthy, 4,434,238, Cl. 501-98.000.
- Sammarco, Peter: See—
Kesi, Elmer M.; Scarnato, Thomas J.; and Sammarco, Peter, 4,433,531, Cl. 56-106.000.
- Sammons, David W.: See—
Adams, Lonnie D.; and Sammons, David W., 4,434,234, Cl. 436-86.000.
- Samsonite Corporation: See—
Winter, Roger D.; Workman, David E.; and Nordstrom, Mark B., 4,433,761, Cl. 190-109.000.
- Sanchez, Robert A., to American Hoechst Corporation. Tetrahydrothiophene derivatives and methods of preparation. 4,434,293, Cl. 549-17.000.
- Sanden Corporation: See—
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- Sander, Ingolf; and Hill, Bernhard, to U.S. Philips Corporation. Mechanically addressed optical memory. 4,434,477, Cl. 365-120.000.
- Sanders, David: See—
Bresin, Elias H., 4,433,718, Cl. 165-12.000.
- Sanders, James M.: See—
Hall, John B.; Sanders, James M.; and Siano, James N., 4,433,695, Cl. 131-276.000.
- Sandoz, Inc.: See—
Barcza, Sandor, 4,434,161, Cl. 424-184.000.
- Sandoz Ltd.: See—
Muller, Werner, 4,434,171, Cl. 424-267.000.
- Robinson, Tibor; and Voegtlin, Charles, 4,434,196, Cl. 427-389.000.
- Troxler, Franz; and Seemann, Fritz, 4,434,176, Cl. 424-274.000.
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Kobayashi, Shinsaku; and Ogiso, Akira, 4,434,179, Cl. 424-308.000.
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Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,433,593, Cl. 74-606.00R.
- Sasaki, Tohru; Ohta, Mitsuru; Terasaki, Syuuzi; and Kakizaki, Syozo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Capacitor, 4,434,209, Cl. 428-416.000.
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Kameyama, Shuichi; Kanzaki, Koichi; and Sasaki, Yoshitaka, 4,433,470, Cl. 29-577.00C.
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Amano, Matsuo; Teranishi, Takao; Mouri, Yasunori; Abe, Osamu; and Sasayama, Takao, 4,433,650, Cl. 123-179.00G.
- Sato, Masaaki, to Olympus Optical Company Ltd. Tape cassette loading device for cassette tape recorder, 4,434,444, Cl. 360-96.500.
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Imahori, Seiichi; Kaneko, Masaharu; Ozawa, Tetsuo; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,434,072, Cl. 252-299.100.
- Sato, Yoichiro: See—
Kamo, Mutsukazu; Matsumoto, Seiichiro; Sato, Yoichiro; and Setaka, Nobuo, 4,434,188, Cl. 427-39.000.
- Satoh, Tetsuo; Ohgami, Masaaki; and Ogata, Shoji, to Fuji Jukogyo Kabushiki Kaisha. Instructing system for a four-wheel drive vehicle, 4,433,748, Cl. 180-247.000.
- Satoh, Tetsuo: See—
Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tetsuo, 4,433,618, Cl. 99-455.000.
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Matsuda, Kazuo; Ohashi, Makoto; Satoh, Yoshio; Miyashita, Tsutomu; and Komenou, Kazunari, 4,434,476, Cl. 365-12.000.
- Sattlegger, Hans; Schnurrbusch, Karl; Degen, Bruno; and Achtenberg, Theo, to Bayer Aktiengesellschaft. Polysiloxane molding compositions, 4,434,283, Cl. 528-34.000.
- Savage, David W.: See—
Doyle, Gerald; Pruett, Roy L.; and Savage, David W., 4,434,317, Cl. 585-845.000.
- Sawada, Shizuo; Ogura, Mitsugi; and Endo, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of evaluating measure precision of patterns and photomask therefor, 4,433,911, Cl. 355-125.000.
- Scalzo, Joseph. Wabblers plate engine mechanisms, 4,433,596, Cl. 74-839.000.
- Scarnato, Thomas J.: See—
Kesi, Elmer M.; Scarnato, Thomas J.; and Sammarco, Peter, 4,433,531, Cl. 56-106.000.
- Schaefer, Daniel W., to Simplicity Manufacturing, Inc. Interlock mechanism preventing engine starting when a mower is in power drive, 4,433,530, Cl. 56-11.800.
- Schaefer, Daniel W.: See—
Hochwitz, Lynn E.; Schaefer, Daniel W.; and Dawson, Michael L., 4,433,868, Cl. 296-190.000.
- Schaefer, Edward F.: See—
Clarke, Frederick; Lorenzi, Donald E.; and Schaefer, Edward F., 4,434,427, Cl. 346-33.00P.
- Schaevitz Engineering: See—
Snow, Ralph K., Jr., 4,433,571, Cl. 73-37.500.
- Schaffhausen, John G.: See—
Serres, Carl; and Schaffhausen, John G., 4,434,270, Cl. 524-570.000.
- Schaper, Siegfried, to Audi Nsu Auto Union Aktiengesellschaft. Method for production of a helical spring from a fiber-reinforced plastic, 4,434,121, Cl. 264-174.000.
- Schedler, Heinz: See—
Spielvogel, Harry; and Schedler, Heinz, 4,433,612, Cl. 91-514.000.
- Schell, Francis J.: See—
Goes In Center, Kate; and Schell, Francis J., 4,433,909, Cl. 355-75.000.
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- Schiff, Leonard N., to RCA Corporation. FM/TV Transmission system, 4,434,440, Cl. 358-186.000.
- Schildkraut, Alan L.: See—
Ratchford, Lloyd G.; Werth, Dee A.; Luca, Vincent A., Jr.; and Schildkraut, Alan L., 4,433,889, Cl. 339-94.00M.
- Schimmel, Vernon R., to Symons Corporation. Adjustable long bolt, 4,433,826, Cl. 249-38.000.
- Schindler, Harvey D., to Lummus Company, The. Hydrotreating catalyst and use thereof, 4,434,048, Cl. 208-112.000.
- Schleif, George H. Fish hook apparatus with covering body portion, 4,433,503, Cl. 43-42.100.
- Schleimer, Francois: See—
Metz, Paul; Schleimer, Francois; Goedert, Ferdinand; Henrion, Romain; Klein, Henri; and Liesch, Jean-Francois, 4,434,005, Cl. 75-60.000.
- Schlumberger Technical Corporation: See—
Hulin, Jean-Pierre, 4,433,573, Cl. 73-155.000.
- Schmid, Alfred, Jr.; Muller, Hans; and Jaeklin, Alexander P., to Coltene AG. Dentist's apparatus for storing and vibration mixing of amalgam components, 4,433,779, Cl. 206-220.000.
- Schmidt, Gunter: See—
Dumm, Heinz; Koerner, Gotz; Krakenberg, Manfred; Rott, Hans; and Schmidt, Gunter, 4,434,008, Cl. 106-271.000.
- Schmidt, Karl: See—
Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Ortwin, 4,433,662, Cl. 123-438.000.
- Schmidt, Michael J.: See—
Romero, Richard A.; and Schmidt, Michael J., 4,433,846, Cl. 277-9.000.
- Schmit, Romain: See—
Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schummer, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Schmoller, Karl: See—
Plica, Peter; Schmoller, Karl; and Dresch, Gerd, 4,433,944, Cl. 405-284.000.
- Schnabel, Roland: See—
Cook, Lee M.; Mader, Karl-Heinz; and Schnabel, Roland, 4,434,191, Cl. 427-165.000.
- Schneider, Paul: See—
Beriger, Conrad; Kucera, Ladislav; Schneider, Paul; and Spittaler, Gunther, 4,434,417, Cl. 338-53.000.
- Schnurrbusch, Karl: See—
Sattlegger, Hans; Schnurrbusch, Karl; Degen, Bruno; and Achtenberg, Theo, 4,434,283, Cl. 528-34.000.
- Schoener, Harry E. Reinforced gutter hanger supporting bar, 4,433,512, Cl. 52-11.000.
- Scholten, Joseph J. F.: See—
De Munck, Nicolaas A.; and Scholten, Joseph J. F., 4,434,302, Cl. 568-454.000.
- Schonberger, Milton. Thermistors, and a method of their fabrication, 4,434,416, Cl. 338-22.00R.
- Schott Glass Technologies, Inc.: See—
Cook, Lee M.; Mader, Karl-Heinz; and Schnabel, Roland, 4,434,191, Cl. 427-165.000.
- Schreppel, William J., to PBS Associates. Transistorized radio receiver combination with male power input and female power output connections, 4,434,509, Cl. 455-343.000.
- Schreyer, Gerd: See—
Bach, Gerhard; Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Hillenbrand, Horst, 4,434,148, Cl. 423-379.000.
- Schroeder, Warren C. Water closet-odor neutralizer, 4,433,441, Cl. 4-213.000.
- Schubring, Norman W., to General Motors Corporation. Microwave heating control and calorimetric analysis, 4,434,342, Cl. 219-10.55M.
- Schulte-Schlagbaum AG: See—
Eisemann, Armin; Eicken, Heinz T.; and Geiger, Diethard, 4,433,772, Cl. 194-59.000.
- Schulte, Steve W.: See—
Henges, J. Gordon, Jr.; and Schulte, Steve W., 4,433,514, Cl. 52-94.000.
- Schultes, Tilmann; and Seidel, Joachim, to Kortenbach & Rauh Kommanditgesellschaft. Sunshade, 4,433,699, Cl. 135-20.00R.
- Schulz, Daniel R. Controller for air conditioning or heating system, 4,433,809, Cl. 236-47.000.
- Schumacher, Frederick G.; and Yllo, Walter, to Du Pont de Nemours, E. I., and Company. Organic acid containing filled and plasticized thermoplastic compositions based on ethylene interpolymers, 4,434,258, Cl. 524-13.000.
- Schummer, Arthur: See—
Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schummer, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Schurfeld, Armin: See—
Hartel, Gunter; Schurfeld, Armin; and Jordan, Wolfgang, 4,433,661, Cl. 123-339.000.
- Schutte, Heinz: See—
Kommoss, Klaus; and Schutte, Heinz, 4,434,442, Cl. 360-74.200.
- Schwartz, Robert, to Dr. Ing. Rudolf Hell GmbH. Method and a circuit for determining a contour in an image, 4,433,912, Cl. 356-150.000.
- Schwarzmann, Matthias: See—
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, 4,434,314, Cl. 585-640.000.
- Scott, Arden L.: See—
Kellogg, Walter J.; Scott, Arden L.; and Seneadza, Samuel K., 4,434,394, Cl. 318-771.000.
- Scott, Dale. Hair coloring calculator, 4,434,467, Cl. 364-400.000.
- Scott, David R.; and Rhoades, Thomas S. Offshore platform structural assessment system, 4,433,581, Cl. 73-786.000.
- Scott, Donald G.: See—
Mendel, Jack M.; Bomgardner, Carl C.; Rack, Robert W.; Scott, Donald G.; and Stritmater, August W., 4,433,917, Cl. 366-132.000.
- Scuccato, Serge L.; and Shaver, Marvin B., to Dominion Engineering Works Limited. Grinding mill control system, 4,433,769, Cl. 192-0.098.
- Seemann, Fritz: See—
Troxler, Franz; and Seemann, Fritz, 4,434,176, Cl. 424-274.000.
- Seidel, Joachim: See—
Schultes, Tilmann; and Seidel, Joachim, 4,433,699, Cl. 135-20.00R.
- Seidel, William C.: See—
Hicks, William T.; and Seidel, William C., 4,434,084, Cl. 252-512.000.
- Seidler, Jack, to North American Specialties Corp. Terminal strip with auxiliary support, 4,433,892, Cl. 339-258.00P.
- Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Permanent display liquid crystal device via voltage application, 4,433,900, Cl. 350-331.00R.
- Sekine, Kunio; Suzuki, Yoshiki; Yamashita, Gentaro; and Yamaguchi, Hisao, to Teijin Limited. Pharmaceutical composition for intrarectal

- administration, and suppository prepared therefrom, 4,434,159, Cl. 424-178.000.
- Sekisui Kagaku Kogyo Kabushiki Kaisha: See—
Kanamori, Kozo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, 4,434,023, Cl. 156-307.300.
- Sekiya, Fukuo; Morokawa, Shigeru; and Iwakura, Ryoji, to Citizen Watch Company Limited. Electronic timepiece having improved primary frequency divider response characteristics, 4,433,920, Cl. 368-201.000.
- Sekiya, Fukuo: See—
Nishimura, Katsuo; and Sekiya, Fukuo, 4,433,918, Cl. 368-74.000.
- Sekiya, Shigenobu: See—
Kato, Tetsuo; Abeyama, Shozo; Kimura, Atsuyoshi; Sekiya, Shigenobu; and Nakamura, Sadayuki, 4,434,006, Cl. 75-123.00R.
- Selfixat, S.A.: See—
Dubois, Robert; and Dubois, Pierre-Yves, 4,434,190, Cl. 427-136.000.
- Sellet, Frederick; George, Guerino F.; and Abbondante, Thomas S. Rear view mirror for drop type bicycle handle bars, 4,433,899, Cl. 350-307.000.
- Selsted, Walter T., to Arneson Products, Inc. Pool cleaning device for rolling operation under pool cover, 4,434,050, Cl. 210-169.000.
- Seneadza, Samuel K.: See—
Kellogg, Walter J.; Scott, Arden L.; and Seneadza, Samuel K., 4,434,394, Cl. 318-771.000.
- Seppala, Earl E., to Du Pont de Nemours, E. I., and Company. Window regulator, 4,433,509, Cl. 49-352.000.
- Sera Solar Corporation: See—
Gibbons, James F., 4,434,318, Cl. 136-258.000.
- Seragnoli, Enzo, to G. D. Societa per Azioni. Device for applying filters to cigarettes, 4,433,694, Cl. 131-92.000.
- Sercati S.A.R.L.: See—
Offenstadt, Eric, 4,433,747, Cl. 180-227.000.
- Serres, Carl; and Schaffhausen, John G., to Standard Oil Company (Indiana). Ethylene/propylene/vinyl alkyl ketone polymers, 4,434,270, Cl. 524-570.000.
- Setaka, Nobuo: See—
Kamo, Mutsukazu; Matsumoto, Seiichiro; Sato, Yoichiro; and Setaka, Nobuo, 4,434,188, Cl. 427-39.000.
- Setra Systems, Inc.: See—
Briefer, Dennis K., 4,434,203, Cl. 428-152.000.
- Lee, Shih-Ying, 4,433,742, Cl. 177-229.000.
- Sexton Can Company, Inc.: See—
Mulawski, Walter J., 4,433,791, Cl. 220-89.00A.
- Seyedin, Saad; and Thomas, Thomas, to Collagen Corporation. Partially purified osteogenic factor and process for preparing same from demineralized bone, 4,434,094, Cl. 260-112.00R.
- Shaffer, Thomas C.: See—
Grover, Mark D.; and Shaffer, Thomas C., 4,433,829, Cl. 254-131.000.
- Shakespeare Company, The: See—
Parsons, James H., Jr.; Hardy-The McLain, Philippe; and Tringali, Dominick, 4,433,933, Cl. 403-268.000.
- Sharber, Jerry L.; and McNeal, Ronald E., to Sheller Globe. Copy holder with motor driven line guide, 4,433,499, Cl. 40-356.000.
- Sharp Kabushiki Kaisha: See—
Higuchi, Masayuki, 4,434,395, Cl. 320-1.000.
- Shaver, Marvin B.: See—
Scuccato, Serge L.; and Shaver, Marvin B., 4,433,769, Cl. 192-0.098.
- Shell Oil Company: See—
Slaugh, Lynn H.; and Willis, Carl L., 4,433,981, Cl. 55-59.000.
- Sheller Globe: See—
Sharber, Jerry L.; and McNeal, Ronald E., 4,433,499, Cl. 40-356.000.
- Sherman, Randy J.: See—
Hanson, Derald F.; and Sherman, Randy J., 4,433,894, Cl. 350-6.800.
- Shiembob, Lawrence T., to United Technologies Corporation. Insulated honeycomb seal, 4,433,845, Cl. 277-1.000.
- Shigematsu, Kazuo: See—
Terao, Motoyasu; Horigome, Shinkichi; Mitsuya, Munehisa; Ota, Sakae; and Shigematsu, Kazuo, 4,434,429, Cl. 346-135.100.
- Shih, Kelvin; Pochert, Kurt A.; and Dunford, James M., to General Motors Corporation. Mass airflow sensor, 4,433,576, Cl. 73-204.000.
- Shihabi, David S.: See—
Audeh, Costandi A.; and Shihabi, David S., 4,434,046, Cl. 208-111.000.
- Shiina, Naonori: See—
Sasajima, Junnosuke; Nagai, Hiroshi; Mogi, Kenji; Nojiri, Akio; and Shiina, Naonori, 4,434,251, Cl. 521-75.000.
- Shima, Eiji; Den, Hiroshi; and Kuroki, Takeo, to FEPS International, Ltd.; and Fujikura Cable Works, Ltd., The. Electric power-feeding structure, 4,434,377, Cl. 307-147.000.
- Shima, Eiji: See—
Toda, Minoru; and Shima, Eiji, 4,434,481, Cl. 369-132.000.
- Shimada, Shinichi: See—
Amano, Katsuhisa; Kumagai, Tadashi; Masaki, Akio; Shimada, Shinichi; Suzuki, Takeshi; and Ohtaka, Shoichi, 4,433,541, Cl. 60-293.000.
- Shimano Industrial Company Limited: See—
Shimano, Keizo, 4,433,963, Cl. 474-80.000.
- Shimano, Keizo, to Shimano Industrial Company Limited. Chain guide for a derailleur for a bicycle, 4,433,963, Cl. 474-80.000.
- Shimba, Satoru: See—
Sugita, Hiroshi; Tsuda, Yasuo; Ito, Kenji; and Shimba, Satoru, 4,434,225, Cl. 430-544.000.
- Shimizu, Hidetoshi: See—
Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.
- Shimoyama, Hiroshi: See—
Kanamori, Kozo; Ishimoto, Akio; Konishi, Masaaki; Maita, Hitoshi; and Shimoyama, Hiroshi, 4,434,023, Cl. 156-307.300.
- Shimura, Atsuo, to Nissan Motor Company, Limited. Heat-shielding structure, 4,433,542, Cl. 60-299.000.
- Shin-Etsu Engineering Co., Ltd.: See—
Katagiri, Kiyoo; and Honda, Mitsuo, 4,433,510, Cl. 51-165.00R.
- Shin-Etsu Polymer Co., Ltd.: See—
Katumi, Horiko; and Hideyuki, Noma, 4,434,123, Cl. 264-225.000.
- Sado, Ryoichi; and Tahara, Kazutoki, 4,433,887, Cl. 339-17.00R.
- Shin, Hi B. Engine, 4,433,649, Cl. 123-54.00R.
- Shinbori, Takeyoshi: See—
Taba, Takayuki; and Shinbori, Takeyoshi, 4,433,833, Cl. 267-18.000.
- Shioyama, Tad K.: See—
Murtha, Timothy P.; and Shioyama, Tad K., 4,434,082, Cl. 502-164.000.
- Shoher, Itzhak; and Whiteman, Aharon. Method for bonding ceramic to noble based metals and product, 4,434,211, Cl. 428-552.000.
- Sholette, William P.: See—
Joshi, Ashok V.; Jatkar, Arun D.; and Sholette, William P., 4,434,216, Cl. 429-191.000.
- Shuey, David R.: See—
Marsh, Dana G.; Shuey, David R.; and Webb, John L., 4,434,353, Cl. 219-216.000.
- Shupert, Paul T.: See—
Herwig, Warren E.; Kaminski, Tony L.; and Shupert, Paul T., 4,433,529, Cl. 56-10.200.
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Hall, John B.; Sanders, James M.; and Siano, James N., 4,433,695, Cl. 131-276.000.
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- Hoerschelmann, Konstantin; Kausche, Helmold; and Spath, Werner, 4,434,036, Cl. 204-164.000.
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- Sigma Tool & Machine Limited: See—
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- Simig, Gyula: See—
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- Siminoff, Roger. Component musical instrument, 4,433,603, Cl. 84-1.160.
- Simon, Jo: See—
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- Simons, Leslie H., to Texaco Inc. Process for preparing ethylene glycol and lower monohydric alcohols from syngas using a novel catalyst system, 4,434,246, Cl. 518-700.000.
- Simonseth, John. Basketball rim assembly, 4,433,839, Cl. 273-1.50R.
- Simonson, Kent L.: See—
Leining, Lyndon R.; and Simonson, Kent L., 4,433,453, Cl. 17-21.000.
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Hochwitz, Lynn E.; Schaefer, Daniel W.; and Dawson, Michael L., 4,433,868, Cl. 296-190.000.
- Simpson, David P.; and Stirling, Robert, to Electricity Council, The. Apparatus for heating electrically conductive flowable media, 4,434,357, Cl. 219-291.000.
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- Minalga, Philip F., 4,433,817, Cl. 242-134.000.
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- SKF Kugellagerfabriken GmbH: See—
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- Edstrom, John O.; and Gorling, Karl G., 4,434,001, Cl. 75-3.000.
- Skiscim, Ronald J., to Celanese Corporation. Phosphate esters of acrylated epoxides. 4,434,278, Cl. 525-531.000.
- Skostins, Olgerts, to Dow Corning Corporation. Bonding silicone rubber. 4,434,195, Cl. 427-387.000.
- Slack, Gerald F.: See—
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- Slaterpryce, Allen A.: See—
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- Slaugh, Lynn H.; and Willis, Carl L., to Shell Oil Company. CO₂ Removal from gaseous streams. 4,433,981, Cl. 55-59.000.
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- Smirl, Richard L., to Borg-Warner Corporation. Variable pulley transmission. 4,433,594, Cl. 74-689.000.
- Smith, Aubrey C., Jr.: See—
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- Smith, Brian S.: See—
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- Smith, David M., to Comalco Limited. High strength wear resistant aluminum alloys and process. 4,434,014, Cl. 148-3.000.
- Smith, Harris W., to Hunter Investment Company. Heat exchanger. 4,433,645, Cl. 122-136.00R.
- Smith International, Inc.: See—
- Lavender, Gerry R.; and Chance, James O., Jr., 4,434,125, Cl. 264-262.000.
- Smith, Jerry R., to Innovative Research. Interchangeable ball hitch. 4,433,854, Cl. 280-511.000.
- Smith, John G.: See—
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- Smith, Joseph L., Jr.: See—
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- Smith, Lindsay K.; and Yabsley, Michael A., to ICI Australia Limited. Explosive composition. 4,434,017, Cl. 149-2.000.
- Smith, Raymond H. Apparatus and method for recovering atmospheric moisture. 4,433,552, Cl. 62-93.000.
- Smith, Robert W., to Allied Corporation. Modular apparatus for casting metal strip. 4,433,715, Cl. 164-423.000.
- Smith, Terrence R.: See—
- Strolle, Christopher H.; and Smith, Terrence R., 4,434,437, Cl. 358-140.000.
- Smiths Industries Public Limited Company: See—
- Lane, Michael J., 4,434,402, Cl. 324-393.000.
- Smitley, George P.: See—
- Robinson, Keith D.; and Smitley, George P., 4,434,021, Cl. 156-242.000.
- SMS Schloemann-Siemag Aktiengesellschaft: See—
- Spielvogel, Harry; and Schedler, Heinz, 4,433,612, Cl. 91-514.000.
- Streubel, Hans, 4,433,716, Cl. 164-448.000.
- Sneed, Elmore C.: See—
- Wilkinson, Randolph N., III; Sneed, Elmore C.; and Mueller, Janet M., 4,434,136, Cl. 422-263.000.
- Snell, William W., Jr.: See—
- Gans, Michael J.; and Snell, William W., Jr., 4,434,405, Cl. 330-149.000.
- Snow Brand Milk Products Co., Ltd.: See—
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- Andrieux, Bernard, 4,433,546, Cl. 60-691.000.
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- Melan, Giuseppe; Verdet, Pierre; and Besenval, Christian, 4,433,991, Cl. 65-1.000.
- Solex Research Corporation of Japan: See—
- Watanabe, Morio; and Nishimura, Sanji, 4,434,002, Cl. 75-0.5AA.
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- Malish, Terrence J.; and Somrack, Lawrence A., 4,433,931, Cl. 403-194.000.
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- Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,433,669, Cl. 123-620.000.
- Sony Corporation: See—
- Baba, Yasuharu; and Takeda, Masashi, 4,434,408, Cl. 331-111.000.
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- Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.
- Sorbie, Thomas B.: See—
- Riggs, Darius O.; and Sorbie, Thomas B., 4,433,785, Cl. 209-531.000.
- South Louisiana Contractors: See—
- Hebert, Francis A., 4,433,464, Cl. 29-252.000.
- Southerland, Stephen R.: See—
- Huffman, Charles E.; and Southerland, Stephen R., 4,434,485, Cl. 370-55.000.
- Spainhour, Carroll D., to Western Electric Co., Inc. Method of heating a lightguide preform. 4,433,970, Cl. 431-8.000.
- Spahn, Donald C. Disposable orthopedic support. 4,433,678, Cl. 128-80.00A.
- Sparks, Moses, Jr.: See—
- Lenox, Ronald S.; and Sparks, Moses, Jr., 4,434,007, Cl. 106-26.000.
- Sparton Corporation: See—
- Neese, James A., 4,433,750, Cl. 181-179.000.
- Spath, Werner: See—
- Hoerschmann, Konstantin; Kausche, Helmut; and Spath, Werner, 4,434,036, Cl. 204-164.000.
- Spaulding, Lawrence D.: See—
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- Holtzberg, Matthew W.; Henke, Steven J.; and Spaulding, Lawrence D., 4,433,964, Cl. 474-152.000.
- Spence, Gavin G.: See—
- Maslanka, William W.; and Spence, Gavin G., 4,434,267, Cl. 524-458.000.
- Sperry Corporation: See—
- Bohman, Carl E., 4,433,528, Cl. 56-10.200.
- Swartz, Harold L.; Atkeisson, Randal A.; Carter, Rodney A.; and Parker, Russell C., 4,434,391, Cl. 318-662.000.
- Spiegelman, Gerald; and Liauw, Koei-Liang, to Witco Chemical Corporation. Preparation of mixtures of methyltin trichloride and dimethyltin dichloride from stannic chloride and dimethyltin dichloride without catalyst and conversion to mixed methyltin mercaptide stabilizers. 4,434,102, Cl. 260-429.700.
- Spiegelman, Stanley R.; Salton, Robert B.; Beer, Robert W.; Malandra, Louis J.; and Cognevich, Michael L., to Westinghouse Electric Corp. Reactor vessel stud closure system. 4,433,828, Cl. 254-29.00A.
- Spielvogel, Harry; and Schedler, Heinz, to SMS Schloemann-Siemag Aktiengesellschaft. Safety control device for protecting hydraulically held loads against uncontrolled pressure overloading. 4,433,612, Cl. 91-514.000.
- Spinner, Joseph R., to King-Seeley Thermos Co. Ice making apparatus. 4,433,559, Cl. 62-354.000.
- Spirk, Herbert: See—
- Miedaner, Horst; and Spirk, Herbert, 4,433,523, Cl. 52-592.000.
- Spittaler, Gunther: See—
- Beriger, Conrad; Kucera, Ladislav; Schneider, Paul; and Spittaler, Gunther, 4,434,417, Cl. 338-53.000.
- Spong, Jerry J.; Tiebor, John E.; and Ivasyuk, Boris N., to Twin City International, Inc. Apparatus for measuring coating thickness. 4,434,366, Cl. 250-308.000.
- Sprout, Oliver S., Jr., to Pennwalt Corporation. Production of wrinkle-free piezoelectric films by poling. 4,434,114, Cl. 264-22.000.
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- Burhans, Allison S.; and Spurr, Orson K., Jr., 4,434,286, Cl. 528-297.000.
- Stake, Dennis G.: See—
- Anderson, Gary W.; and Stake, Dennis G., 4,433,622, Cl. 101-40.000.
- Stamcarbon B.V.: See—
- De Munck, Nicolaas A.; and Scholten, Joseph J. F., 4,434,302, Cl. 568-454.000.
- Dorrestijn, Antoon; Lemstra, Pieter J.; and Van Unen, Lambert H. T., 4,434,252, Cl. 521-134.000.
- van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., 4,434,083, Cl. 502-154.000.
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- Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,433,652, Cl. 123-188.0AA.
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- Trushenski, Scott P., 4,433,730, Cl. 166-274.000.
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- Hensley, Albert L., Jr.; Nevitt, Thomas D.; and Tait, A. Martin, 4,434,047, Cl. 208-111.000.
- Kuhlmann, George E.; and Hoover, Stephen V., 4,434,244, Cl. 502-209.000.
- Serres, Carl; and Schaffhausen, John G., 4,434,270, Cl. 524-570.000.
- Staritzbichler, Werner: See—
- Dworak, Gert; and Staritzbichler, Werner, 4,434,256, Cl. 523-402.000.
- Stauffer Chemical Company: See—
- Hyzak, Daniel L., 4,433,999, Cl. 71-100.000.
- Lin, Ruey Y., 4,434,118, Cl. 264-109.000.
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- Pallos, Ferenc M., 4,433,997, Cl. 71-92.000.
- Steckler, Steven A.; and Balaban, Alvin R., to RCA Corporation. Digital television AGC arrangement. 4,434,439, Cl. 358-174.000.
- Steel, James, to Ogdens Electronics Ltd. Vehicle speed control. 4,433,746, Cl. 180-171.000.
- Steeve, Edward J. Geometric weedless fishhook assembly. 4,433,502, Cl. 43-43.200.

- Stegemeyer, Horst: See—
- Sucrow, Wolfgang; Murawski, Hans-Rudiger; Minas, Hermann; and Stegemeyer, Horst, 4,434,073, Cl. 252-299.620.
- Stenzel, Wolfgang, to Beiersdorf Aktiengesellschaft. Pyrimidyl thioureas useful for the treatment of hypertension and hyperlipidemia. 4,434,167, Cl. 424-251.000.
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- Cox, Bruce M.; and Stephenson, Stanley V., 4,433,701, Cl. 137-101.190.
- Stewart, David C.: See—
- Perry, William H.; Stewart, David C.; and Waterworth, Geoffrey, 4,433,867, Cl. 296-146.000.
- Stewart, Roger G., to RCA Corporation. Sense amplifiers. 4,434,381, Cl. 307-530.000.
- Stirling, Robert: See—
- Simpson, David P.; and Stirling, Robert, 4,434,357, Cl. 219-291.000.
- Stirling, William L.: See—
- Dagenhart, William K.; Haselton, Halsey H.; Stirling, William L.; and Wheaton, John H., 4,434,131, Cl. 376-130.000.
- Stockinger, Richard W.: See—
- Marino, Vincent E.; Nicola, Robert J.; Maier, Karl; and Stockinger, Richard W., 4,433,890, Cl. 339-97.00C.
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- Bienz, Hans, 4,433,498, Cl. 40-2.00R.
- Stojanowski, John S. Bi-annulus rotary engine. 4,433,658, Cl. 123-221.000.
- Stoll, Wolfgang; and Ledebink, Wilhelm, to Alkem GmbH. Method for dissolving hard-to-dissolve nuclear fuels. 4,434,137, Cl. 423-6.000.
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- Lopes, Richard R., 4,433,774, Cl. 198-689.000.
- Stone & Webster Engineering Corp.: See—
- Gartside, Robert J.; and Woebecke, Herman N., 4,433,984, Cl. 55-196.000.
- Stork Friesland B.V.: See—
- Eversdijk, Bastiaan P., 4,434,027, Cl. 159-47.100.
- Stratton, Thomas A. Apparatus for manipulating snap rings. 4,433,462, Cl. 29-229.000.
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- Streubel, Hans, to SMS Schloemann-Siemag Aktiengesellschaft. Roller apron for the withdrawal and/or straightening region of a continuous casting installation for strands. 4,433,716, Cl. 164-448.000.
- Stritmater, August W.: See—
- Mendel, Jack M.; Bomgardner, Carl C.; Rack, Robert W.; Scott, Donald G.; and Stritmater, August W., 4,433,917, Cl. 366-132.000.
- Strolle, Christopher H.; and Smith, Terrence R., to RCA Corporation. Generating angular coordinate of raster scan of polar-coordinate addressed memory. 4,434,437, Cl. 358-140.000.
- Strother, Fleetwood E.: See—
- Salmon, Joe E.; Strother, Fleetwood E.; and Crawford, James R., 4,433,454, Cl. 19-55.00R.
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- Ezis, Andre; Samanta, Shyam K.; and Subramanian, Krishnamoorthy, 4,434,238, Cl. 501-98.000.
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- Sugita, Hiroshi; Tsuda, Yasuo; Ito, Kenji; and Shimba, Satoru, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,434,225, Cl. 430-544.000.
- Sugitani, Yuji: See—
- Nomura, Hirokazu; Sugitani, Yuji; and Suzuki, Yasuo, 4,434,352, Cl. 219-125.120.
- Sugiura, Takeo: See—
- Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, 4,434,223, Cl. 430-273.000.
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- Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; Niwa, Tatsuo; and Sukegawa, Tsuneo, 4,433,901, Cl. 350-357.000.
- Sullivan, John L.: See—
- Giorgini, Eugene A.; and Sullivan, John L., 4,433,685, Cl. 128-204.260.
- Sulzer Brothers Limited: See—
- Biaggi, Armando, 4,433,721, Cl. 165-162.000.
- Sumino, Fumio, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member comprising photoconductive powder and a deionized binder resin. 4,434,219, Cl. 430-96.000.
- Sumitomo Chemical Company, Limited: See—
- Narisawa, Shizuo; Taira, Yoshito; Yoshii, Yuuji; and Kondou, Tomizou, 4,434,257, Cl. 524-5.000.
- Sunada, Yoichi: See—
- Takahashi, Yoshikazu; Sunada, Yoichi; Tokuhara, Toshiharu; and Takitani, Masaru, 4,434,081, Cl. 502-154.000.
- Sundeen, Arthur R., to General Motors Corporation. Engine operation related event timing system. 4,433,572, Cl. 73-116.000.
- Survival Technology, Inc.: See—
- Sarnoff, Stanley J.; Maloolley, Rudolph S.; Calkins, George B.; and Tarello, William R., 4,433,684, Cl. 128-203.210.
- Suss, Hans G.: See—
- Friedli, Paul; and Suss, Hans G., 4,434,466, Cl. 364-200.000.
- Suzuki, Hitoshi; Takahashi, Shigekatsu; and Fujioka, Yoshiki, to Hitachi, Ltd. Memory protection system for effecting alteration of protection information without intervention of control program. 4,434,464, Cl. 364-200.000.
- Suzuki, Kenji: See—
- Tsuchiya, Shuji; Ikeda, Hisao; and Suzuki, Kenji, 4,434,104, Cl. 260-456.00P.
- Suzuki, Kouichi; and Mori, Kazuyuki, to Nissan Motor Company, Limited. Automatic speed control system for an automotive vehicle. 4,434,469, Cl. 364-426.000.
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- Suzuki, Takayuki: See—
- Kojima, Masaaki; Suzuki, Takayuki; and Abe, Hiromichi, 4,433,897, Cl. 350-252.000.
- Suzuki, Takeshi: See—
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- Suzuki, Yasuo: See—
- Nomura, Hirokazu; Sugitani, Yuji; and Suzuki, Yasuo, 4,434,352, Cl. 219-125.120.
- Suzuki, Yoshiki: See—
- Sekine, Kunio; Suzuki, Yoshiki; Yamashita, Gentaro; and Yamaguchi, Hisao, 4,434,159, Cl. 424-178.000.
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- Swaim, Dennis L. Convertible trailer hitch. 4,433,853, Cl. 280-415.00R.
- Swain, Jon M. Mobile abrasive blasting surface treating apparatus. 4,433,511, Cl. 51-424.000.
- Swann, Wayne E., to Genex Corporation. Immobilization of biological materials in condensed polyalkyleneimine polymers. 4,434,228, Cl. 435-108.000.
- Swartz, Harold L.; Atkeisson, Randal A.; Carter, Rodney A.; and Parker, Russell C., to Sperry Corporation. Capacitive feedback transducer and closed loop instrument meter mechanism. 4,434,391, Cl. 318-662.000.
- Swift, Harold E.; and Lunden, Richard W., to Gulf Research & Development Company. Polymerizing olefins with a novel catalyst. 4,434,281, Cl. 526-119.000.
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- Sydansk, Robert D., to Marathon Oil Company. Process for selectively reducing the fluid injection rate or production rate of a well. 4,433,729, Cl. 166-270.000.
- Symons Corporation: See—
- Schimmel, Vernon R., 4,433,826, Cl. 249-38.000.
- Szalai nee Barta, Gizella: See—
- Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nee Visky, Zsuzsanna; and Szalai nee Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Szekely, Eugen: See—
- Rabi, Tavassa; and Szekely, Eugen, 4,434,235, Cl. 436-110.000.
- Szpur, Roman. Method of mounting medical electrode assembly. 4,433,481, Cl. 29-878.000.
- T.K.S. (Aircraft De-Icing) Limited: See—
- Humphreys, Bryan E., 4,434,201, Cl. 428-137.000.
- Tabara, Takashi, to Olympus Optical Company Limited. Measuring vessels analysis utilizing fixed enzyme. 4,434,232, Cl. 435-288.000.
- Taba, Takayuki; and Shinbori, Takeyoshi, to NHK Spring Co., Ltd. Apparatus for controlling the spring constant of a laminated leaf spring assembly. 4,433,833, Cl. 267-18.000.
- Tadauchi, Yukio: See—
- Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, 4,434,503, Cl. 382-48.000.
- Taenzer, Jon C.: See—
- Green, Philip S.; and Taenzer, Jon C., 4,433,690, Cl. 128-660.000.
- Taguchi, Hiromichi: See—
- Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.
- Taguchi, Takao: See—
- Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, 4,434,223, Cl. 430-273.000.
- Tahara, Kazutoki: See—
- Sado, Ryoichi; and Tahara, Kazutoki, 4,433,887, Cl. 339-17.00R.
- Taira, Yoshito: See—
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- Tait, A. Martin: See—
- Hensley, Albert L., Jr.; Nevitt, Thomas D.; and Tait, A. Martin, 4,434,047, Cl. 208-111.000.
- Takafuji, Shin-ichi: See—
- Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Tet-suo, 4,433,618, Cl. 99-455.000.
- Takagi, Shigeji: See—
- Andoh, Tetsuji; Takagi, Shigeji; and Sakamoto, Takeshi, 4,433,472, Cl. 29-596.000.

- Takahashi, Katsuyu: See—
Fujimura, Takashi; and Takahashi, Katsuyu, 4,433,994, Cl. 65-110.000.
- Takahashi, Shigekatsu: See—
Suzuki, Hitoshi; Takahashi, Shigekatsu; and Fujioka, Yoshiki, 4,434,464, Cl. 364-200.000.
- Takahashi, Soroku, to Kyuroku Corporation. Single fluke anchor. 4,433,635, Cl. 114-301.000.
- Takahashi, Takao; Ohnishi, Kimimasa; and Wakai, Sinzi, to Nissan Motor Co., Ltd. Weft inserting nozzle of an air jet type weaving loom. 4,433,706, Cl. 139-435.000.
- Takahashi, Yoshikazu; Sunada, Yoichi; Tokuhara, Toshiharu; and Takitani, Masaru, to Toyo Stauffer Chemical Co., Ltd. Titanium trichloride catalytic component and homo- or co-polymerization of α -olefin. 4,434,081, Cl. 502-154.000.
- Takahashi, Yosuke; Akasaka, Hideki; Kasui, Toshikatsu; Niwa, Tatsuo; and Sukegawa, Tsuneo, to Nippon Kogaku K.K. All solid type electrochromic display element. 4,433,901, Cl. 350-357.000.
- Takaoka, Michio: See—
Gomi, Yoshiaki; Hirata, Takahiro; Takaoka, Michio; Mohtai, Tsuneaki; and Akashi, Kazuya, 4,434,319, Cl. 174-13.000.
- Takara Co., Ltd.: See—
Terui, Masumi, 4,433,504, Cl. 46-11.000.
- Takasago Perfumery Co., Ltd.: See—
Kobayashi, Toyohiko; and Tsuruta, Haruki, 4,434,306, Cl. 568-820.000.
- Takeda, Akitsu: See—
Yoshikawa, Akira; Takeda, Akitsu; Ochi, Osamu; Hisaki, Tomoko; and Mizushima, Yoshihiko, 4,434,224, Cl. 430-323.000.
- Takeda Machinery Works Company, Ltd.: See—
Ikeda, Chihiro, 4,433,600, Cl. 83-468.000.
- Takeda, Masashi: See—
Baba, Yasuharu; and Takeda, Masashi, 4,434,408, Cl. 331-111.000.
- Takeuchi, Hiroo; Hachiro, Nobuaki; and Miyazaki, Yoshihisa, to Nissin Kogyo Kabushiki Kaisha. Vacuum booster device. 4,433,614, Cl. 91-376.00R.
- Takiguchi, Shinji: See—
Inagaki, Sanji; Takiguchi, Shinji; and Tanaka, Susumu, 4,434,355, Cl. 219-216.000.
- Takimoto, Masatami: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
- Takitani, Masaru: See—
Takahashi, Yoshikazu; Sunada, Yoichi; Tokuhara, Toshiharu; and Takitani, Masaru, 4,434,081, Cl. 502-154.000.
- Taller, Robert A.: See—
McGary, Charles W., Jr.; Pascarella, Vincent J.; Taller, Robert A.; Rhodes, Delmer R.; Anglin, Paul E.; and Daugherty, Charles W., 4,434,126, Cl. 264-303.000.
- Tamagawa, Tohoru: See—
Yanabu, Satoru; and Tamagawa, Tohoru, 4,434,332, Cl. 200-144.0AP.
- Tambourin, Pierre: See—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Civier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Tamura, Akihiko: See—
Ikemoto, Isao; Koiso, Junichi; Tamura, Akihiko; and Hirabayashi, Tsugio, 4,433,904, Cl. 355-3.0DD.
- Tarumi, Noriyoshi; Tamura, Akihiko; and Kokiso, Masakazu, 4,434,218, Cl. 430-96.000.
- Tamura, Hidemasa: See—
Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.
- Tanabe Seiyaku Co., Ltd.: See—
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,434,107, Cl. 260-501.120.
- Tanaka, Atsuyuki; Kojima, Hiroaki; Kaieda, Shozo; Kakiuchi, Tokuji; Nishioka, Nobuaki; Tadauchi, Yukio; and Nakagami, Hidekazu, to Minolta Camera Kabushiki Kaisha. Image information output apparatus. 4,434,503, Cl. 382-48.000.
- Tanaka, Ichiro; Arato, Hiroshi; and Wakabayashi, Takaaki, to Eisai Co., Ltd. Animal coccidiosis preventive. 4,434,166, Cl. 424-250.000.
- Tanaka, Susumu: See—
Inagaki, Sanji; Takiguchi, Shinji; and Tanaka, Susumu, 4,434,355, Cl. 219-216.000.
- Tanaka, Yoshio: See—
Watanabe, Tadaaki; and Tanaka, Yoshio, 4,433,588, Cl. 74-10.330.
- Tani, Haruhisa: See—
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.
- Tarello, William R.: See—
Sarnoff, Stanley J.; Malooley, Rudolph S.; Calkins, George B.; and Tarello, William R., 4,433,684, Cl. 128-203.210.
- Tarsia, Giuseppe, to Berkey Photo, Inc. Lens alignment structure. 4,433,907, Cl. 355-55.000.
- Tarsia, Giuseppe, to Berkey Photo, Inc. Transparency holder. 4,433,910, Cl. 355-76.000.
- Tarumi, Noriyoshi; Tamura, Akihiko; and Kokiso, Masakazu, to Konishiroku Photo Industry Co., Ltd. Photosensitive composition for electrophotography. 4,434,218, Cl. 430-96.000.
- TASA Products Limited: See—
Cherry, Raymond L.; Pfeiffer, Gene F.; and Maes, Randell P., 4,433,719, Cl. 165-26.000.
- Tasai, Masaaki: See—
Kubota, Tadashi; Hamane, Tokuhito; and Tasai, Masaaki, 4,433,475, Cl. 29-736.000.
- Tatro, Henry J., to Colt Industries Operating Corp. Open bolt firing mechanism for automatic firearm. 4,433,610, Cl. 89-148.000.
- Tatsumi, Hisao; and Ito, Michiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Balancer for use in centrifugal rotary machine. 4,433,592, Cl. 74-573.00F.
- Taylor, Carl D., to General Electric Company. Luminaire birdshield. 4,434,456, Cl. 362-374.000.
- Taylor, Edward F.; and O'Kane, James C., to General Motors Corporation. Passive belt responsive to seat occupancy. 4,433,858, Cl. 280-802.000.
- Taylor, Robert N. Wave energy converter. 4,434,375, Cl. 290-53.000.
- Teare, John W. Method for producing concrete panels. 4,434,119, Cl. 264-145.000.
- Teche, Andre: See—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,434,294, Cl. 549-65.000.
- Technar, Inc.: See—
Bell, Lon E.; and Gruber, William P., 4,434,414, Cl. 337-102.000.
- Teijin Limited: See—
Sekine, Kunio; Suzuki, Yoshiki; Yamashita, Gentaro; and Yamaguchi, Hisao, 4,434,159, Cl. 424-178.000.
- Tektronix, Inc.: See—
Palmquist, Steven R.; Chapman, David D.; and Hoeren, Gerd H., 4,434,488, Cl. 371-15.000.
- Telediffusion de France: See—
Mathieu, Michel, 4,434,498, Cl. 375-114.000.
- Teledyne Industries, Inc.: See—
Kates, James M., 4,434,482, Cl. 369-230.000.
- Temp-Control Corporation: See—
Brady, Welby D., 4,433,556, Cl. 62-293.000.
- Tencor Instruments: See—
Wheeler, William R., 4,433,835, Cl. 269-14.000.
- Terakura, Yukio: See—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,433,593, Cl. 74-606.00R.
- Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,434,111, Cl. 261-44.00C.
- Teranishi, Takao: See—
Amano, Matsuo; Teranishi, Takao; Mouri, Yasunori; Abe, Osamu; and Sasayama, Takao, 4,433,650, Cl. 123-179.00G.
- Terao, Motoyasu; Horigome, Shinkichi; Mitsuya, Munehisa; Ota, Sakae; and Shigematsu, Kazuo, to Hitachi, Ltd. Information recording member and method of fabricating the same. 4,434,429, Cl. 346-135.100.
- Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Bi-directional overrunning clutch. 4,433,766, Cl. 192-50.000.
- Terasaki, Syuuzi: See—
Sasaki, Tohru; Ohta, Mitsuru; Terasaki, Syuuzi; and Kakizaki, Syozo, 4,434,209, Cl. 428-416.000.
- Terui, Masumi, to Takara Co., Ltd. Container and start apparatus for toy cars. 4,433,504, Cl. 46-11.000.
- Teshima, Minoru: See—
Isobe, Minoru; Kikuchi, Hiroshi; Teshima, Minoru; Kodama, Tadasi; and Iwama, Mitsuo, 4,433,926, Cl. 400-124.000.
- Teshirogi, Takuma, to Dainippon Ink and Chemicals, Inc. Polyphenylene-type polymeric compound and process for production thereof. 4,434,285, Cl. 528-86.000.
- Tessier, Jean: See—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,434,294, Cl. 549-65.000.
- Tetra Pak International AB: See—
Kjelgaard, Tom, 4,433,784, Cl. 206-617.000.
- Texaco Canada Resources Ltd.: See—
Livesey, Declan B.; and Toma, Petre, 4,434,054, Cl. 210-484.000.
- Texaco Inc.: See—
Carrier, Robert C.; and Allen, Billy R., 4,433,977, Cl. 44-60.000.
- Larkin, John M.; Watts, Lewis W., Jr.; and Marquis, Edward T., 4,434,308, Cl. 585-10.000.
- Larkin, John M.; and Brader, Walter H., Jr., 4,434,309, Cl. 585-10.000.
- Lin, Jiang-Jen, 4,434,248, Cl. 518-700.000.
- Powell, Justin C., 4,434,071, Cl. 252-182.000.
- Simons, Leslie H., 4,434,246, Cl. 518-700.000.
- Texas Instruments Incorporated: See—
Baboian, Robert; and Haynes, Gardner S., 4,434,039, Cl. 204-196.000.
- Frazier, Gary A., 4,433,896, Cl. 350-96.210.
- Guttig, Karl M.; and Vanaken, Jerry R., 4,434,462, Cl. 364-200.000.
- McDonough, Kevin C.; Hayn, John W.; and Bellay, Jeffrey D., 4,434,465, Cl. 364-200.000.
- Ott, Granville E., 4,433,604, Cl. 84-1.190.
- Woosley, Alan H.; and Masten, Billy R., 4,434,360, Cl. 235-472.000.
- Th. Goldschmidt AG: See—
Dumm, Heinz; Koerner, Gotz; Krakenberg, Manfred; Rott, Hans; and Schmidt, Gunter, 4,434,008, Cl. 106-271.000.
- Theeuwes, Felix: See—
Urquhart, John; and Theeuwes, Felix, 4,434,153, Cl. 424-22.000.

- Theodor Wuppermann GmbH: See—
Preller, Hans, 4,433,565, Cl. 72-177.000.
- Thomas, Alfred W.; and Heibel, Helmut, to Lucas Industries Limited. Power-operated boosters. 4,433,543, Cl. 60-547.100.
- Thomas, Elmer L., to Chevron Research Company. Free standing transmitting microphone. 4,434,507, Cl. 455-95.000.
- Thomas, Robert C.; Hornbuckle, John A.; and Fatka, Richard J., to Bendix Corporation. The Speed measurement system with means for calculating the exact time period of a known quantity of speed pulses. 4,434,470, Cl. 364-565.000.
- Thomas, Rudolf: See—
Heinemann, Ulrich; Thomas, Rudolf; Lantzs, Reinhard; Diggins, Klaus; and Weber, Erhard, 4,434,292, Cl. 548-373.000.
- Thomas, Thomas: See—
Seyedin, Saied; and Thomas, Thomas, 4,434,094, Cl. 260-112.00R.
- Thompson, Gregory J.: See—
Lomas, David A.; and Thompson, Gregory J., 4,434,245, Cl. 502-2.000.
- Thomson-CSF: See—
Bert, Georges, 4,434,379, Cl. 307-448.000.
- Puech, Claude; Papuchon, Michel; and Arditty, Herve, 4,433,895, Cl. 350-96.130.
- Thor, Charles C. Power transmission mechanism. 4,433,767, Cl. 192-67.00P.
- Thorsen, Niels P., to Danfoss A/S. Defroster for a refrigerator. 4,433,555, Cl. 62-154.000.
- Tiebor, John E.: See—
Spongr, Jerry J.; Tiebor, John E.; and Ivasyuk, Boris N., 4,434,366, Cl. 250-308.000.
- Timperman, Michael R.: See—
Craig, Timothy P.; Pettit, John W.; and Timperman, Michael R., 4,434,356, Cl. 219-216.000.
- Tinsley, John M.: See—
Chatterji, Jiten; Brake, Bobby G.; and Tinsley, John M., 4,433,731, Cl. 166-293.000.
- Tippins, George W.; and Ginzburg, Vladimir B., to Tippins Machinery Company, Inc. Close coupled reversing rougher and finishing train and method of rolling. 4,433,566, Cl. 72-229.000.
- Tippins Machinery Company, Inc.: See—
Tippins, George W.; and Ginzburg, Vladimir B., 4,433,566, Cl. 72-229.000.
- Toa Nenryo Kogyo Kabushiki Kaisha: See—
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,434,205, Cl. 428-218.000.
- Tochigi-Fuji Sangyo Kabushiki Kaisha: See—
Teraoka, Masao, 4,433,766, Cl. 192-50.000.
- Toda, Minoru; and Shima, Eiji, to RCA Corporation. Traveling wave surface acoustic wave transducer. 4,434,481, Cl. 369-132.000.
- Todt, William H.: See—
Goldstein, Norman P.; and Todt, William H., 4,434,370, Cl. 250-370.000.
- Tojza, Roman A.: See—
Hooker, Donald E.; and Tojza, Roman A., 4,433,844, Cl. 273-143.00R.
- Tokoro, Masayoshi: See—
Abe, Seiko; Igashira, Toshihiko; Kawai, Hisasi; Ina, Toshikazu; and Tokoro, Masayoshi, 4,433,665, Cl. 123-552.000.
- Tokuhara, Toshiharu: See—
Takahashi, Yoshikazu; Sunada, Yoichi; Tokuhara, Toshiharu; and Takitani, Masaru, 4,434,081, Cl. 502-154.000.
- Tokuhata, Kazuo: See—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,434,331, Cl. 200-144.00B.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Fukumitsu, Akira, 4,434,480, Cl. 369-77.200.
- Haramaki, Toshio; and Nakayama, Shigeru, 4,433,905, Cl. 355-3.0SH.
- Kameyama, Shuichi; Kanzaki, Koichi; and Sasaki, Yoshitaka, 4,433,470, Cl. 29-577.00C.
- Kawasaki, Yutaka, 4,434,333, Cl. 200-144.0AP.
- Sawada, Shizuo; Ogura, Mitsugi; and Endo, Norio, 4,433,911, Cl. 355-125.000.
- Tatsumi, Hisao; and Ito, Michiaki, 4,433,592, Cl. 74-573.00F.
- Watanabe, Yoshihiro, 4,434,359, Cl. 235-379.000.
- Yanabu, Satoru; and Tamagawa, Tohoru, 4,434,332, Cl. 200-144.0AP.
- Tolman, Glen L.: See—
Byrne, Edmund F.; and Tolman, Glen L., 4,434,151, Cl. 424-1.100.
- Toma, Petre: See—
Livesey, Declan B.; and Toma, Petre, 4,434,054, Cl. 210-484.000.
- Tomizawa, Fumio; and Aoshika, Masayuki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Cooling pipe structure for arc furnace. 4,434,495, Cl. 373-76.000.
- Tommasini, Rocco M.: See—
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,433,584, Cl. 73-861.660.
- Tonteling, Paul: See—
Liesch, Jean; Reiff, Nico; Reimen, Vlasta; Schmit, Romain; Schummer, Arthur; Simon, Jo; and Tonteling, Paul, 4,434,368, Cl. 250-339.000.
- Top-Seal Corporation: See—
Owens, Edward W., 4,433,800, Cl. 222-547.000.
- Toppan Printing Co., Ltd.: See—
Kohira, Takeo; Taguchi, Takao; Sugiura, Takeo; and Ohta, Takatoshi, 4,434,223, Cl. 430-273.000.
- Toriumi, Shiro: See—
Nakatani, Keiji; and Toriumi, Shiro, 4,433,906, Cl. 355-55.000.
- Toshimitsu, Naohiko, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic head. 4,434,446, Cl. 360-125.000.
- Touho, Makoto; Wada, Shigeaki; and Yamamoto, Minoru, to Matsushita Electric Works, Ltd. Discharge lamp device. 4,434,385, Cl. 313-161.000.
- Toussaint, Francois, to Glaverbel. Glass manufacture. 4,433,995, Cl. 65-135.000.
- Toyo Aluminium Kabushiki Kaisha: See—
Banba, Toshiaki, 4,434,009, Cl. 106-290.000.
- Toyo Kogyo Co., Ltd.: See—
Yokooku, Katsuhiko, 4,433,654, Cl. 123-425.000.
- Toyo Stauffer Chemical Co., Ltd.: See—
Takahashi, Yoshikazu; Sunada, Yoichi; Tokuhara, Toshiharu; and Takitani, Masaru, 4,434,081, Cl. 502-154.000.
- Toyota Jidosha Kabushiki Kaisha: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Abe, Seiko; Igashira, Toshihiko; Kawai, Hisasi; Ina, Toshikazu; and Tokoro, Masayoshi, 4,433,665, Cl. 123-552.000.
- Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,433,593, Cl. 74-606.00R.
- Tracton, Arthur A.: See—
Gold, Samuel; Tracton, Arthur A.; and Rosenski, Josephine M., 4,434,259, Cl. 524-31.000.
- Tragesser, Charles W., to Westinghouse Electric Corp. Circuit interrupter. 4,434,334, Cl. 200-148.00R.
- Transpec, Inc.: See—
Manning, Donald L., 4,433,506, Cl. 49-141.000.
- Trenkle, Robert W.: See—
Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,434,086, Cl. 252-522.00R.
- Tri-tech, Inc.: See—
Geremia, Leo F., 4,434,330, Cl. 200-67.0DA.
- Trigent, Inc.: See—
Blaul, Ronald L., 4,433,698, Cl. 134-56.00R.
- Tringali, Dominick: See—
Parsons, James H., Jr.; Hardy-The McLain, Philippe; and Tringali, Dominick, 4,433,933, Cl. 403-268.000.
- Trivette, Chester D., Jr., to Monsanto Company. Method for rubber treatment and the rubber thus treated. 4,434,266, Cl. 524-425.000.
- Troutman, Ronald R.: See—
Cook, Herbert C.; and Troutman, Ronald R., 4,434,478, Cl. 365-185.000.
- Trowbridge, Ian S., to Salk Institute for Biological Studies. The Monoclonal antibodies specific for the human transferrin receptor glycoprotein. 4,434,156, Cl. 424-85.000.
- Troxler, Franz; and Seemann, Fritz, to Sandoz Ltd. Use of 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methyl-indole for inducing beta-adrenoceptor blockade. 4,434,176, Cl. 424-274.000.
- True, Martin E., to Weatherford/Lamb, Inc. Power pipe thread cleaner. 4,433,448, Cl. 15-88.000.
- Trushenski, Scott P., to Standard Oil Company. Optimum grading of chemical concentrations in a micellar flood. 4,433,730, Cl. 166-274.000.
- Tschirch, Richard P.: See—
Sidman, Kenneth R.; and Arons, Irving J., 4,433,439, Cl. 2-161.00R.
- Tsuchiya, Shuji; Ikeda, Hisao; and Suzuki, Kenji, to Nissan Chemical Industries, Ltd. Preparation of high purity di-lower alkyl naphthalenedisulfonates. 4,434,104, Cl. 260-456.00P.
- Tsuchiya, Takaaki, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Steering shaft locking device. 4,433,562, Cl. 70-186.000.
- Tsuda, Yasuo: See—
Sugita, Hiroshi; Tsuda, Yasuo; Ito, Kenji; and Shimba, Satoru, 4,434,225, Cl. 430-544.000.
- Tsujino, Yoshiki: See—
Ishizaki, Hiroyuki; Tsujino, Yoshiki; and Dohi, Masaji, 4,434,441, Cl. 358-213.000.
- Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, to Kanebo, Ltd. Phosphonic acid ester, pharmaceutical compositions containing the same and method of using the same. 4,434,162, Cl. 424-200.000.
- Tsuruta, Haruki: See—
Kobayashi, Toyohiko; and Tsuruta, Haruki, 4,434,306, Cl. 568-820.000.
- Tsutsumi, Akira, to Amada Engineering & Service Co. Laser beam cutting machines and the like. 4,434,349, Cl. 219-121.0LG.
- Turiot, Andre, to Messier-Hispano-Bugatti (S.A.). Aircraft undercarriage. 4,433,820, Cl. 244-102.00R.
- Tward, Emanuel, to Tward 2001 Limited. Pressure transducer. 4,433,580, Cl. 73-718.000.
- Tward 2001 Limited: See—
Tward, Emanuel, 4,433,580, Cl. 73-718.000.
- Twin City International, Inc.: See—
Spongr, Jerry J.; Tiebor, John E.; and Ivasyuk, Boris N., 4,434,366, Cl. 250-308.000.
- Uchida, Yoshiaki: See—
Ohmori, Taiji; Kasahara, Toshio; and Uchida, Yoshiaki, 4,433,743, Cl. 180-41.000.
- Udvardy, Agnes: See—
Horvath, Tibor; Udvardy, Agnes; David, Agoston; and Marmarosine Kellner, Katalin, 4,434,152, Cl. 424-19.000.

- Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, to Sony Corporation. Slide member. 4,434,202, Cl. 428-143.000.
- Ueno, Masayasu: See—
Sakuma, Isamu; Nishida, Katsuhiko; Kawano, Hideo; Ueno, Masayasu; Matsumoto, Yoshishige; Matsumoto, Shohei; and Furuse, Takao, 4,434,491, Cl. 372-48.000.
- Ulrich, Heinrich: See—
Ulrich, Max B.; and Ulrich, Heinrich, 4,433,677, Cl. 128-69.000.
- Ulrich, Max B.; and Ulrich, Heinrich, to Ulrich, Max Bernhard. Implantable splint for correcting lumbosacral spondylodesis. 4,433,677, Cl. 128-69.000.
- Ulrich, Max Bernhard: See—
Ulrich, Max B.; and Ulrich, Heinrich, 4,433,677, Cl. 128-69.000.
- Unger, John T., to Abbott Laboratories. Immunoassay for class specific immunoglobulin antibodies. 4,434,227, Cl. 435-7.000.
- Ungerling, Gerd: See—
Lichtner, Emil; Ungerling, Gerd; and Giebel, Gerhard, 4,433,653, Cl. 123-193.00H.
- Union Carbide Corporation: See—
Burhans, Allison S.; and Spurr, Orson K., Jr., 4,434,286, Cl. 528-297.000.
- Dombeck, Bernard D., 4,434,247, Cl. 518-700.000.
- Keogh, Michael J., 4,434,272, Cl. 525-100.000.
- Lewis, Walter E. F., 4,434,066, Cl. 252-77.000.
- Olzewski, Walter J., 4,433,990, Cl. 62-22.000.
- Papa, Anthony J., 4,434,301, Cl. 568-366.000.
- United Centrifugal Pumps: See—
Murray, Jack T., 4,433,598, Cl. 82-2.00E.
- United States of America
Air Force: See—
Benard, David J.; Pchelkin, Nicholas R.; McDermott, William E.; Ellis, David E.; and Miller, George W., 4,434,492, Cl. 372-59.000.
- Army: See—
Durenec, Peter, 4,433,550, Cl. 62-6.000.
- Gaglione, Stanley; and O'Hare, James A., 4,434,426, Cl. 343-372.000.
- Gutleber, Frank S., 4,434,505, Cl. 455-50.000.
- Holaday, John W.; and Faden, Alan I., 4,434,168, Cl. 424-260.000.
- Energy: See—
Dagenhart, William K.; Haselton, Halsey H.; Stirling, William L.; and Wheaton, John H., 4,434,131, Cl. 376-130.000.
- National Aeronautics and Space Administration: See—
Hale, Robert R.; and McDougal, Allan R., 4,433,672, Cl. 126-419.000.
- Kavaya, Michael J.; and Menzies, Robert T., 4,434,490, Cl. 372-20.000.
- Rosser, Robert W.; Chen, Timothy S.; and Cheng, Chung-Heng, 4,434,106, Cl. 260-465.50R.
- Sidman, Kenneth R.; and Arons, Irving J., 4,433,439, Cl. 2-161.00R.
- Wells, Ivan D.; Koh, Jin L.; and Holmes, Marvin, 4,433,544, Cl. 60-641.120.
- Zaplatynsky, Isidor, 4,434,189, Cl. 427-53.100.
- Navy: See—
Caudy, Don W.; Hackman, Donald J.; Myers, John R.; and Hoffman, Robert T., 4,433,633, Cl. 114-54.000.
- DeFusco, Albert A., Jr.; Nielsen, Arnold T.; and Atkins, Ronald L., 4,434,304, Cl. 568-710.000.
- Malloy, Richard J., 4,433,737, Cl. 175-5.000.
- U.S. Philips Corporation: See—
Flisikowski, Peter; Jeglinski, Werner; and Jelmorini, Gerardus, 4,434,350, Cl. 219-121.0LC.
- Kommos, Klaus; and Schutte, Heinz, 4,434,442, Cl. 360-74.200.
- Pfeiffer, Wilfried, 4,434,501, Cl. 378-187.000.
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- Sander, Ingolf; and Hill, Bernhard, 4,434,477, Cl. 365-120.000.
- Van Herk, Alfred, 4,434,445, Cl. 360-121.000.
- United States Steel Corporation: See—
Brendlinger, Edward C., 4,434,040, Cl. 204-206.000.
- United Technologies Corp.: See—
Kokoszka, Joseph M.; and Tommasini, Rocco M., 4,433,584, Cl. 73-861.660.
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- Universite De Montreal: See—
Aitcin, Pierre C., 4,434,239, Cl. 501-118.000.
- University of Rochester, The: See—
Mourou, Gerard; Valdmanis, Janis A.; and Williamson, Steven L., 4,434,399, Cl. 324-96.000.
- UOP Inc.: See—
Golem, Michael W., 4,434,051, Cl. 210-264.000.
- Lomas, David A.; and Thompson, Gregory J., 4,434,245, Cl. 502-2.000.
- Upjohn Company, The: See—
Adams, Lonnie D.; and Sammons, David W., 4,434,234, Cl. 436-86.000.
- Gammill, Ronald B., 4,434,295, Cl. 549-344.000.
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- Urish, Joseph M.: See—
Apfelbeck, Otto L.; and Urish, Joseph M., 4,434,358, Cl. 219-501.000.
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- Uschold, Ronald E., to Du Pont de Nemours, E. I., and Company. Perfluoroketovinyli ethers and copolymers therefrom. 4,434,273, Cl. 525-326.200.
- Usui, Kenji: See—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,433,479, Cl. 29-825.000.
- Uyama, Seiichi: See—
Yorifuji, Yuki; Uyama, Seiichi; Fukutake, Katsuhiko; and Miyazaki, Masaharu, 4,434,363, Cl. 250-214.00B.
- Vac-Tec Systems, Inc.: See—
Morrison, Charles F., Jr., 4,434,038, Cl. 204-192.00R.
- Valdmanis, Janis A.: See—
Mourou, Gerard; Valdmanis, Janis A.; and Williamson, Steven L., 4,434,399, Cl. 324-96.000.
- Valeo: See—
Darrichard, Louis D.; and Plaisant, Jacques, 4,433,535, Cl. 57-229.000.
- Loizeau, Pierre; and Carmillet, Roger, 4,433,770, Cl. 192-106.200.
- Valeo S.A.: See—
Caray, Andre, 4,433,771, Cl. 192-106.200.
- Valint, Paul, Jr.: See—
Oswald, Alexis A.; Huang, Helen; Huang, John; and Valint, Paul, Jr., 4,434,062, Cl. 252-8.55D.
- Vanaken, Jerry R.: See—
Guttat, Karl M.; and Vanaken, Jerry R., 4,434,462, Cl. 364-200.000.
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- van de Leemput, Lambertus J. M. A.; and Nooijen, Godefridus A. H., to Stamcarbon B.V. Process of preparing a catalyst component and polymerization of α -olefins with such a catalyst component. 4,434,083, Cl. 502-154.000.
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- Van Herk, Alfred, to U.S. Philips Corporation. Magnetic head for high track density. 4,434,445, Cl. 360-121.000.
- Van Leirsburg, Dean A.: See—
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,434,140, Cl. 423-54.000.
- Hubred, Gale L.; and Van Leirsburg, Dean A., 4,434,141, Cl. 423-54.000.
- Van Loveren, Augustinus G.: See—
Evers, William J.; Mookherjee, Braja D.; Van Ouwkerk, Anton; and Van Loveren, Augustinus G., 4,434,085, Cl. 252-522.00R.
- Van Ouwkerk, Anton: See—
Evers, William J.; Mookherjee, Braja D.; Van Ouwkerk, Anton; and Van Loveren, Augustinus G., 4,434,085, Cl. 252-522.00R.
- Van Steenwyk, Brett H.: See—
Ott, Paul W.; Engebretson, Harold J.; LaHue, Philip M.; and Van Steenwyk, Brett H., 4,433,491, Cl. 33-302.000.
- Van Unen, Lambert H. T.: See—
Dorrestijn, Antoon; Lemstra, Pieter J.; and Van Unen, Lambert H. T., 4,434,252, Cl. 521-134.000.
- Van Wyk, Richard; and Eisenberg, James, to Vienna Sausage Manufacturing Company. Apparatus for branding meat or meat products. 4,433,621, Cl. 101-11.000.
- Varga, Laszlo: See—
Keszei, Jenő; Varga, Laszlo; and Donath, Jenő, 4,433,485, Cl. 33-3.00R.
- Vasicek, Vladimir: See—
Cech, Miloslav; Kuda, Vladimir; and Vasicek, Vladimir, 4,433,705, Cl. 139-435.000.
- Vaughan & Bushnell Manufacturing Co.: See—
Porter, Lawrence W., 4,433,709, Cl. 145-2.00R.
- Veazey, Richard L.: See—
Roling, Paul V.; Veazey, Richard L.; and Aylward, David E., 4,434,242, Cl. 502-107.000.
- Vectra International Corporation: See—
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,433,637, Cl. 116-207.000.
- Verdet, Pierre: See—
Melan, Giuseppe; Verdet, Pierre; and Besenval, Christian, 4,433,991, Cl. 65-1.000.
- Verdol S.A.: See—
Decug, Guy, 4,433,704, Cl. 139-66.00R.
- Veretennikova, Nadezhda I.: See—
Chipens, Gunar I.; Veretennikova, Nadezhda I.; and Atare, Zeltite A., 4,434,095, Cl. 260-112.50R.
- Vernon, Lonnie W.; and Jacobs, Fritz E., to Exxon Research and Engineering Co. Process for converting petroleum residuals. 4,434,045, Cl. 208-107.000.
- Vianova Kunstharz, A.G.: See—
Dworak, Gert; and Staritzbichler, Werner, 4,434,256, Cl. 523-402.000.
- Vick, Ralph L., to Bendix Corporation. The. Blocking and thermal relief valve. 4,433,615, Cl. 91-420.000.
- Vickers, Stanley, to Merck & Co., Inc. α -Methyl-dopa-L-ascorbic acid compositions. 4,434,177, Cl. 424-280.000.
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Van Wyk, Richard; and Eisenberg, James, 4,433,621, Cl. 101-11.000.
- Vierling, Donald E. Method and apparatus for continuously supplying a load. 4,433,673, Cl. 126-435.000.

- Villella, Tony R. Internal combustion engine. 4,433,655, Cl. 123-196.00R.
- Viner, George C., to Westinghouse Brake and Signal Co., Ltd. Swinging plug door. 4,433,505, Cl. 49-110.000.
- Vinogradov, Vladimir F. Tone arm. 4,434,483, Cl. 369-255.000.
- Visscher, Saralee N. Insect control methods with abscisic acid. 4,434,180, Cl. 424-317.000.
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- Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., to Corah Limited. Gauge changing apparatus. 4,433,561, Cl. 66-148.000.
- Vivitar Corporation: See—
Curran, Kenneth J., 4,433,914, Cl. 356-223.000.
- Voeglin, Charles: See—
Robinson, Tibor; and Voegtlin, Charles, 4,434,196, Cl. 427-389.000.
- Voermans, Antonius B.: See—
Robertson, John M.; Breed, Dirk J.; and Voermans, Antonius B., 4,434,212, Cl. 428-693.000.
- Voll, Manfred: See—
Kleinschmit, Peter; Voll, Manfred; and Engel, Richard, 4,434,135, Cl. 422-150.000.
- von der Eltz, Hans-Ulrich; Heinisch, Peter; and Ballmann, Hans J., to Hoechst AG. Process for the semicontinuous dyeing of tubular knitted fabrics of cellulose fibers with azo developing dyestuffs. 4,433,976, Cl. 8-555.000.
- von Zeppelin, Dieter. Surgical clamp for vessels. 4,433,689, Cl. 128-346.000.
- Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: See—
Cech, Miloslav; Kuda, Vladimir; and Vasicek, Vladimir, 4,433,705, Cl. 139-435.000.
- W. Gunther GmbH: See—
Becker, Otto, 4,434,337, Cl. 200-220.000.
- W. R. Grace & Co.: See—
Wszolek, Walter R.; and Lundquist, Joseph T., Jr., 4,434,215, Cl. 429-144.000.
- Wada, Hidekazu: See—
Hamabe, Takeshi; Wada, Hidekazu; Naruse, Mikio; and Nishimori, Toshiyuki, 4,434,452, Cl. 361-304.000.
- Wada, Shigeaki: See—
Touho, Makoto; Wada, Shigeaki; and Yamamoto, Minoru, 4,434,385, Cl. 313-161.000.
- Wahl, Timothy T. Bicycle rack. 4,433,786, Cl. 211-5.000.
- Waine, Martin: See—
Rude, Edward T.; Nisenson, Jules; and Waine, Martin, 4,433,765, Cl. 192-41.00S.
- Waite, Dwaine C. Baby pig feeder. 4,433,641, Cl. 119-53.000.
- Wakabayashi, Takaaki: See—
Tanaka, Ichiro; Arato, Hiroshi; and Wakabayashi, Takaaki, 4,434,166, Cl. 424-250.000.
- Wakabayashi, Takao, to 501 Nakanishi Metals Works Co., Ltd. Apparatus for preventing runaway of carriers in power and free conveyor. 4,433,628, Cl. 104-172.00S.
- Wakai, Sinzi: See—
Takahashi, Takao; Ohnishi, Kimimasa; and Wakai, Sinzi, 4,433,706, Cl. 139-435.000.
- Waldo, Paul D.: See—
McCaskey, Rex A.; McInroy, John W.; and Waldo, Paul D., 4,434,475, Cl. 364-900.000.
- Waldron, Clifford R.: See—
Fairbairn, Leroy W.; and Waldron, Clifford R., 4,433,482, Cl. 29-882.000.
- Walkden, John R. B.: See—
Edwards, Ralston G., Jr.; Walkden, John R. B.; Carstensen, Walter H.; Murphy, Gregory E.; and Lisi, John E., 4,433,776, Cl. 198-779.000.
- Walker, Charles T.: See—
Hanger, James E.; and Walker, Charles T., 4,433,950, Cl. 414-9.000.
- Walker, Charles Tillman: See—
Hanger, James E.; and Walker, Charles T., 4,433,950, Cl. 414-9.000.
- Walkinshaw, Steven: See—
Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., 4,433,561, Cl. 66-148.000.
- Wallace, Robert L., Jr.: See—
Busch-Vishniac, Ilene J.; Wallace, Robert L., Jr.; and West, James E., 4,434,327, Cl. 179-111.00E.
- Wallach, Steven: See—
Holland, Charles J.; Wallach, Steven; and Alsing, Carl J., 4,434,459, Cl. 364-200.000.
- Wallmark, Erik I.: See—
Drakenborn, Karl-Gunnar; Enser, Mats A.; Grebner, Kurt G. E.; and Wallmark, Erik I., 4,434,460, Cl. 364-200.000.
- Wallpapers Galore, Inc.: See—
Boender, Carl H.; and Zigterman, Roger M., 4,433,883, Cl. 312-234.100.
- Walter, Lothar; Brandenstein, Manfred; Ernst, Horst M.; and Olschewski, Armin, to SKF Kugellagerfabriken GmbH. Torque transmitting bearing and method of assembly. 4,433,875, Cl. 308-6.00R.
- Walter, Lothar: See—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Kunkel, Heinrich, 4,433,768, Cl. 192-98.000.
- Walters, Paul W.: See—
Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,434,044, Cl. 208-91.000.
- Walther & Cie. Aktiengesellschaft: See—
Gunter, Franz-Josef, 4,433,752, Cl. 182-82.000.
- Warner-Lambert Company: See—
McGary, Charles W., Jr.; Pascarella, Vincent J.; Taller, Robert A.; Rhodes, Delmer R.; Anglin, Paul E.; and Daugherty, Charles W., 4,434,126, Cl. 264-303.000.
- Poschel, Bruno P. H.; and Butler, Donald E., 4,434,169, Cl. 424-263.000.
- Warner, Lucien: See—
Mathews, Lester R., 4,433,863, Cl. 294-19.00R.
- Warwick, Edward H.; and Parker, Donald L., to General Motors Corporation. Disc brake lining retainer and wear warning arrangement. 4,433,757, Cl. 188-1.110.
- Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation of Japan. Process for production of high-purity metallic iron. 4,434,002, Cl. 75-0.5AA.
- Watanabe, Tadaaki; and Tanaka, Yoshio, to Clarion Co., Ltd. Clutch mechanism. 4,433,588, Cl. 74-10.330.
- Watanabe, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic bank note transaction apparatus. 4,434,359, Cl. 235-379.000.
- Watase, Masami: See—
Kamada, Osao; Matsuga, Yoshiaki; Watase, Masami; Kudo, Tadato; Harada, Hiroyoshi; and Kanazaki, Atsushi, 4,434,022, Cl. 156-274.600.
- Water Circulation Patents: See—
Mathews, Lester R., 4,433,863, Cl. 294-19.00R.
- Waterworth, Geoffrey: See—
Perry, William H.; Stewart, David C.; and Waterworth, Geoffrey, 4,433,867, Cl. 296-146.000.
- Watkins, William D.: See—
Watkins, William H.; and Watkins, William D., 4,433,749, Cl. 181-151.000.
- Watkins, William H.; and Watkins, William D. Acoustic rear radiation absorption for loudspeaker systems. 4,433,749, Cl. 181-151.000.
- Watson, Marshall. Work supporting apparatus. 4,433,753, Cl. 182-151.000.
- Watts, Lewis W., Jr.: See—
Larkin, John M.; Watts, Lewis W., Jr.; and Marquis, Edward T., 4,434,308, Cl. 585-10.000.
- Weatherford/Lamb, Inc.: See—
True, Martin E., 4,433,448, Cl. 15-88.000.
- Webb, John L.: See—
Marsh, Dana G.; Shuey, David R.; and Webb, John L., 4,434,353, Cl. 219-216.000.
- Weber, Erhard: See—
Heinemann, Ulrich; Thomas, Rudolf; Lantzs, Reinhard; Ditzgens, Klaus; and Weber, Erhard, 4,434,292, Cl. 548-373.000.
- Weber, Giuseppe: See—
Cohen, Noal; and Weber, Giuseppe, 4,434,101, Cl. 260-410.90R.
- Weber, Guenter, to Linde Aktiengesellschaft. Carbonate ion control to prevent losses of vanadium in oxidation of hydrogen sulfide. 4,434,143, Cl. 423-226.000.
- Weber, Guenter, to Linde Aktiengesellschaft. Simultaneous scrubbing and oxidation of hydrogen sulfide using excess vanadate. 4,434,145, Cl. 423-226.000.
- Weber, Guenter, to Linde Aktiengesellschaft. Scrubbing of hydrogen sulphide using pH control to control thiosulfate formation. 4,434,146, Cl. 423-226.000.
- Weech, Marx E.: See—
Fox, Daniel W.; Miller, George P.; and Weech, Marx E., 4,434,074, Cl. 252-628.000.
- Wegener, Mary J.; and Feinleib, Morris, to Benson, Inc. Method of forming infrared-sensitive photoconductors of cadmium salt crystallites. 4,434,222, Cl. 430-135.000.
- Wehrly, John A.: See—
Coleman, Patrick L.; and Wehrly, John A., 4,434,096, Cl. 260-112.50R.
- Weinberg, Roger A., to Baker Oil Tools, Inc. Conduit sealing system. 4,433,847, Cl. 277-125.000.
- Welch, M. Bruce: See—
McDaniel, Max P.; and Welch, M. Bruce, 4,434,280, Cl. 526-106.000.
- Welch, Willard M., Jr., to Pfizer Inc. Bis-esters of 4,5-di(hydroxymethyl)-2-oxo-1,3-dioxole as antibacterial agents. 4,434,173, Cl. 424-271.000.
- Welland, David R., to dbx, Inc. Compensation for VCA OP amp errors. 4,434,380, Cl. 307-491.000.
- Wells, Ivan D.; Koh, Jin L.; and Holmes, Marvin, to United States of America, National Aeronautics and Space Administration. Wind and solar powered turbine. 4,433,544, Cl. 60-641.120.
- Wendling, Françoise: See—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Françoise; Cuvier, Alain; Montagnier, Luc; Chermann, Jean-Claude; Gruet, Jacqueline; and Lidereau, Rosette, 4,434,290, Cl. 546-70.000.
- Werth, Dee A.: See—
Ratchford, Lloyd G.; Werth, Dee A.; Luca, Vincent A., Jr.; and Schildkraut, Alan L., 4,433,889, Cl. 339-94.00M.
- West, James E.: See—
Busch-Vishniac, Ilene J.; Wallace, Robert L., Jr.; and West, James E., 4,434,327, Cl. 179-111.00E.
- Western Electric Co., Inc.: See—
Eckert, Robert J.; and Keene, Frederick R., Jr., 4,434,012, Cl. 134-25.400.
- Spainhour, Carroll D., 4,433,970, Cl. 431-8.000.

- Westinghouse Brake and Signal Co., Ltd.: See—
Viner, George C., 4,433,505, Cl. 49-110.000.
- Westinghouse Electric Corp.: See—
Apfelbeck, Otto L.; and Urish, Joseph M., 4,434,358, Cl. 219-501.000.
- Bell, Clifford J.; and Girgis, Ramsis S., 4,434,448, Cl. 361-23.000.
- Campbell, Ira J., 4,433,830, Cl. 254-264.000.
- Caputo, William R.; and Husson, Alan L., 4,433,756, Cl. 187-29.00R.
- Cook, Bruce M., 4,434,132, Cl. 376-259.000.
- Deis, Daniel W.; McNab, Ian R.; and Smith, Joseph L., Jr., 4,433,608, Cl. 89-8.000.
- Down, Michael G.; Phillips, D. Colin; and Emmerich, Werner S., 4,434,133, Cl. 376-323.000.
- Elms, Robert T., 4,434,390, Cl. 318-473.000.
- Goldstein, Norman P.; and Todt, William H., 4,434,370, Cl. 250-370.000.
- Healey, Daniel J., III; and Morrison, Steven, 4,434,407, Cl. 331-4.000.
- Kellogg, Walter J.; Scott, Arden L.; and Seneadza, Samuel K., 4,434,394, Cl. 318-771.000.
- Kemeny, George A., 4,433,607, Cl. 89-8.000.
- Schenone, Carl E.; and Rosinski, Joseph, 4,433,978, Cl. 48-76.000.
- Spiegelman, Stanley R.; Salton, Robert B.; Beer, Robert W.; Mandra, Louis J.; and Cognovich, Michael L., 4,433,828, Cl. 254-29.00A.
- Tragesser, Charles W., 4,434,334, Cl. 200-148.00R.
- Williams, W. Wayne, 4,433,848, Cl. 277-199.000.
- Wetmore, Judson D.: See—
Blas, Wolfgang; Bergl, Friedrich; and Wetmore, Judson D., 4,434,020, Cl. 156-216.000.
- Wharton, Rodney; and Gilder, Timothy W. Method for forming wood fibres, 4,433,813, Cl. 241-21.000.
- Wheaton, John H.: See—
Dagenhart, William K.; Haselton, Halsey H.; Stirling, William L.; and Wheaton, John H., 4,434,131, Cl. 376-130.000.
- Wheeler, William R., to Tencor Instruments. Wafer chuck with wafer cleaning feature, 4,433,835, Cl. 269-14.000.
- Whiteman, Aharon: See—
Shofer, Itzhak; and Whiteman, Aharon, 4,434,211, Cl. 428-552.000.
- Widmer, Jakob: See—
Halder, Mathis; Widmer, Jakob; and De Vries, Jacob, 4,434,400, Cl. 324-110.000.
- Wikel, James H., II, to Eli Lilly and Company. Preparation of substituted 1-thiazolyl or 1-thiazolyl-2-aminobenzimidazoles, 4,434,288, Cl. 544-54.000.
- Wilcockson, Brian: See—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,433,443, Cl. 4-317.000.
- Wilgus, Herbert S.; and Haefner, John A., to Eastman Kodak Company. High aspect ratio silver bromide emulsions and processes for their preparation, 4,434,226, Cl. 430-567.000.
- Wilkins, Walter F.: See—
Chandler, William S.; Wilkins, Walter F.; and Heiss, John F., 4,434,187, Cl. 426-652.000.
- Wilkinson, Randolph N., III; Sneed, Elmore C.; and Mueller, Janet M., to Proctor & Gamble Company. The Tapered-bottom bleach cake for sanitation dosing dispenser, 4,434,136, Cl. 422-263.000.
- Williams, Anthony P.; and Carter, Ralph G., to Brandhurst Company Limited. Flowmeter, 4,433,574, Cl. 73-200.000.
- Williams, Dylan F.: See—
Cho, Frederick Y.; and Williams, Dylan F., 4,434,383, Cl. 310-313.00R.
- Williams, W. Wayne, to Westinghouse Electric Corp. Large annular segmented seal with lock portions for missile launch tube, 4,433,848, Cl. 277-199.000.
- Williamson, Joanne M.: See—
Meister, Alton; and Williamson, Joanne M., 4,434,158, Cl. 424-94.000.
- Williamson, Steven L.: See—
Mourou, Gerard; Valdmanis, Janis A.; and Williamson, Steven L., 4,434,399, Cl. 324-96.000.
- Willis, Carl L.: See—
Slaugh, Lynn H.; and Willis, Carl L., 4,433,981, Cl. 55-59.000.
- Wilson, Glenn E. Lock decoder, 4,433,563, Cl. 70-446.000.
- Wilson, Joe C.: See—
Davis, Paul; and Wilson, Joe C., 4,434,065, Cl. 252-75.000.
- Witwerding, Dennis J., to Honeywell Inc. Displacement dependent low contrast default, 4,434,362, Cl. 250-201.000.
- Windmoller & Holscher: See—
Mundus, Friedhelm; and Achelpohl, Fritz, 4,433,599, Cl. 83-87.000.
- Winger, James L., to General Motors Corporation. Printed circuit edgeboard connector with multi-function lock, 4,433,888, Cl. 339-91.00R.
- Winter, Roger D.; Workman, David E.; and Nordstrom, Mark B., to Samsonite Corporation. Portfolio with frame and integral article retainers, 4,433,761, Cl. 190-109.000.
- Winterbotham, Peter: See—
Billington, Reginald; Edge, David J.; and Winterbotham, Peter, 4,434,088, Cl. 252-547.000.
- Billington, Reginald; Edge, David J.; and Winterbotham, Peter, 4,434,089, Cl. 252-547.000.
- Witco Chemical Corporation: See—
Spiegelman, Gerald; and Liauw, Koei-Liang, 4,434,102, Cl. 260-429.700.
- Withers, James C.; and Loutfy, Raouf O., to Atlantic Richfield Company. Acid melt treatment to activate carbon for use as reductant, 4,434,149, Cl. 423-496.000.
- Witten, Franklyn H.; and Kline, Sherman S., to Datapoint Corporation. Connecting mechanism for word processor - controlled printer output module cabinets, 4,433,881, Cl. 312-107.500.
- Wittman, Ortwin: See—
Muller, Hans-Jurgen; Schmidt, Karl; Chattopadhyay, Asoke; Heidemanns, Rolf P.; Habel, Georg; and Wittman, Ortwin, 4,433,662, Cl. 123-438.000.
- Witzig, John W. Orthopedic corrector and method of correction of Class II malocclusion, 4,433,956, Cl. 433-7.000.
- Woebecke, Herman N.: See—
Gartside, Robert J.; and Woebecke, Herman N., 4,433,984, Cl. 55-196.000.
- Wohl, Ronald A.: See—
Diamond, Julius; and Wohl, Ronald A., 4,434,174, Cl. 424-273.00B.
- Wolff, Robin K.: See—
Hill, Ira D.; Trenkle, Robert W.; Mookherjee, Braja D.; and Wolff, Robin K., 4,434,086, Cl. 252-522.00R.
- Woodward, Adrian M.: See—
Vitols, Reinhard; Walkinshaw, Steven; Baker, John E.; Davies, Hywel R.; and Woodward, Adrian M., 4,433,561, Cl. 66-148.000.
- Woodward, Robert B.; and Bickel, Hans, to Ciba-Geigy Corporation. Cephalosporin derivatives, 4,434,287, Cl. 544-16.000.
- Woolf, Robert M. Combination back pack and bicycle saddle pack, 4,433,802, Cl. 224-153.000.
- Woosley, Alan H.; and Masten, Billy R., to Texas Instruments Incorporated. Optical sensing device for reading bar code or the like, 4,434,360, Cl. 235-472.000.
- Workman, David E.: See—
Winter, Roger D.; Workman, David E.; and Nordstrom, Mark B., 4,433,761, Cl. 190-109.000.
- Wszolek, Walter R.; and Lundquist, Joseph T., Jr., to W. R. Grace & Co. Battery separator, 4,434,215, Cl. 429-144.000.
- Wyant, Robert E.: See—
Baldwin, Maynard M.; and Wyant, Robert E., 4,434,032, Cl. 204-72.000.
- Wyke, Paul R. Snow ski, 4,433,855, Cl. 280-609.000.
- Xerox Corporation: See—
Bol, Izya, 4,434,013, Cl. 148-1.500.
- Marsh, Dana G.; Shuey, David R.; and Webb, John L., 4,434,353, Cl. 219-216.000.
- Yabsley, Michael A.: See—
Smith, Lindsay K.; and Yabsley, Michael A., 4,434,017, Cl. 149-2.000.
- Yamada, Keiichiro: See—
Nakakita, Kiyomi; and Yamada, Keiichiro, 4,433,651, Cl. 123-188.00M.
- Yamada, Shigeki: See—
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,434,107, Cl. 260-501.120.
- Yamada, Tamotsu: See—
Izutsu, Tadashi; Koutake, Masanobu; Hiraoka, Yasunobu; Takafuji, Shin-ichi; Yamada, Tamotsu; Kurosawa, Seiji; and Satoh, Teisuo, 4,433,618, Cl. 99-455.000.
- Yamaguchi, Hisao: See—
Sekine, Kunio; Suzuki, Yoshiki; Yamashita, Gentaro; and Yamaguchi, Hisao, 4,434,159, Cl. 424-178.000.
- Yamaguchi, Yukiharu: See—
Kawasaki, Takao; Osaka, Yoshiaki; Komatsu, Katsumi; Yamaguchi, Yukiharu; and Ono, Saichi, 4,434,172, Cl. 424-270.000.
- Yamaha Hatsudoki Kabushiki Kaisha: See—
Yoshida, Keisuke, 4,433,856, Cl. 280-668.000.
- Yamamoto, Minoru: See—
Touho, Makoto; Wada, Shigeaki; and Yamamoto, Minoru, 4,434,385, Cl. 313-161.000.
- Yamanoi, Hiroshi: See—
Uedaira, Satoru; Shimizu, Hidetoshi; Tamura, Hidemasa; Taguchi, Hiromichi; Yamanoi, Hiroshi; and Makino, Yoshimi, 4,434,202, Cl. 428-143.000.
- Yamashita, Gentaro: See—
Sekine, Kunio; Suzuki, Yoshiki; Yamashita, Gentaro; and Yamaguchi, Hisao, 4,434,159, Cl. 424-178.000.
- Yanabu, Satoru; and Tamagawa, Tohoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Hybrid-type interrupting apparatus, 4,434,332, Cl. 200-144.0AP.
- Yanagisawa, Hifumi: See—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,434,331, Cl. 200-144.00B.
- Yarnitsky, Yashaya; and Kaldor, Shmuel, to RCA Corporation. Jig for machining stylus blanks, 4,433,794, Cl. 221-224.000.
- Yasuda, Makoto: See—
Kurosaka, Nobuo; Yasuda, Makoto; and Murakami, Tadateru, 4,434,305, Cl. 568-768.000.
- Yasuda, Takeru: See—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itou, Takaaki; Katou, Takashi; Yasuda, Takeru; and Kitamura, Sunao, 4,434,111, Cl. 261-44.00C.
- Yasuura, Seishi: See—
Masaki, Kenji; and Yasuhara, Seishi, 4,433,666, Cl. 123-569.000.
- Yazaki Corporation: See—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,433,479, Cl. 29-825.000.

- Yazawa, Hiroshi: See—
Okada, Tokio; Kojima, Shigezo; Tani, Haruhisa; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,434,128, Cl. 264-560.000.
- Yerushalmi, Yaakov, to Koor Metals Ltd. Blast and fragment-resistant protective wall structure, 4,433,522, Cl. 52-426.000.
- Yllo, Walter: See—
Brugel, Edward G.; and Yllo, Walter, 4,434,261, Cl. 524-109.000.
- Schumacher, Frederick G.; and Yllo, Walter, 4,434,258, Cl. 524-13.000.
- Yokoi, Fumiaki, to Yoshida Kogyo K. K. Method of manufacturing a row of continuous coupling elements for slide fasteners, 4,433,537, Cl. 57-264.000.
- Yokooku, Katsuhiko, to Toyo Kogyo Co., Ltd. Knock control device for internal combustion engine, 4,433,654, Cl. 123-425.000.
- Yokota, Masazi; and Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Process for producing holograms, 4,433,893, Cl. 350-3.610.
- Yonezawa, Akira, to International Precision Incorporated. Electron microscope, 4,434,367, Cl. 250-311.000.
- Yoon, Hee K., to Johnson & Johnson Products, Inc. Polyurethane casting material, 4,433,680, Cl. 128-90.000.
- Yorifuji, Yuki; Uyama, Seiichi; Fukutake, Katsuhiko; and Miyazaki, Masaharu, to Matsushita Electric Works, Ltd. Photoelectric switching apparatus, 4,434,363, Cl. 250-214.00B.
- York, Robert A., to Flight Systems, Inc. Apparatus for testing semiconductor devices and capacitors, 4,434,401, Cl. 324-158.05C.
- Yoshida, Keisuke, to Yamaha Hatsudoki Kabushiki Kaisha. Spring seat for snowmobile strut, 4,433,856, Cl. 280-668.000.
- Yoshida, Kobun, to Pioneer Electronic Corporation. Tape recorder, 4,434,443, Cl. 360-74.400.
- Yoshida Kogyo K. K.: See—
Oyama, Yoshio, 4,433,478, Cl. 29-767.000.
- Yokoi, Fumiaki, 4,433,537, Cl. 57-264.000.
- Yoshii, Yuuji: See—
Narisawa, Shizuo; Taira, Yoshito; Yoshii, Yuuji; and Kondou, Tomizou, 4,434,257, Cl. 524-5.000.
- Yoshikawa, Akira; Takeda, Akitsu; Ochi, Osamu; Hisaki, Tomoko; and Mizushima, Yoshihiko, to Nippon Telegraph & Telephone Public Corp. Method of pattern formation, 4,434,224, Cl. 430-323.000.
- Yoshino, Koichiro: See—
Tsukamoto, Goro; Kohno, Toshihiko; Yoshino, Koichiro; Morita, Tomonori; Ito, Keizo; and Nose, Takashi, 4,434,162, Cl. 424-200.000.
- Yoshioka, Ryuzo: See—
Chibata, Ichiro; Yamada, Shigeki; Hongo, Chikara; and Yoshioka, Ryuzo, 4,434,107, Cl. 260-501.120.
- Young, Lawrence C.: See—
Pontes, Virgil M.; and Young, Lawrence C., 4,433,814, Cl. 242-72.100.
- Youngfleish, Frank C.: See—
Cassarly, James W.; Rollings, Robert W.; and Youngfleish, Frank C., 4,433,886, Cl. 339-14.00R.
- Zadiraka, Allan J., to Babcock & Wilcox Company. The Boiler water trip system, 4,433,646, Cl. 122-504.200.
- Zaidan Hojin Handotai Kenkyu Shinkokai: See—
Nishizawa, Jun-ichi, 4,434,433, Cl. 357-22.000.
- Zandona, Oliver J.: See—
Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,434,044, Cl. 208-91.000.
- Zaplatynsky, Isidor, to United States of America, National Aeronautics and Space Administration. Method and apparatus for coating substrates using a laser, 4,434,189, Cl. 427-53.100.
- Zappia, Anthony T. Air fuel engine, 4,433,549, Cl. 60-712.000.
- Zauer, Karoly: See—
Lempert, Karoly; Harsanyi, Kalman; Doleschall, Gabor; Hornyak, Gyula; Nyitrai, Jozsef; Zauer, Karoly; Fetter, Jozsef; Simig, Gyula; Gombos nec Visky, Zsuzsanna; and Szalai nec Barta, Gizella, 4,434,099, Cl. 260-239.00A.
- Ziemann, Heinz: See—
Findeisen, Kurt; and Ziemann, Heinz, 4,434,289, Cl. 546-14.000.
- Zigterman, Roger M.: See—
Boender, Carl H.; and Zigterman, Roger M., 4,433,883, Cl. 312-234.100.
- Zimmerlin, Sharon L.: See—
Bohl, Thomas L.; Pocock, Robert E.; and Zimmerlin, Sharon L., 4,433,922, Cl. 374-36.000.
- Zolton, Raymond P.; Kaplan, Paul M.; and Padvelskis, John V., to Ortho Diagnostic Systems Inc. Methods for preparation of HB₂Ag free gamma globulins, 4,434,093, Cl. 260-112.00B.
- Zwolve, Albert. Vehicle with individually suspended wheels, 4,433,857, Cl. 280-690.000.
- 501 Nakanishi Metals Works Co., Ltd.: See—
Wakabayashi, Takao, 4,433,628, Cl. 104-172.00S.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF FEBRUARY, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Boyd, John H., Jr.; and Nelson, Don C., Jr., to General Electric Company. Adaptable resilient motor mounting. Re. 31,525, Cl. 248-581.000.
- General Electric Company: See—
Boyd, John H., Jr.; and Nelson, Don C., Jr., Re. 31,525, Cl. 248-581.000.
- Lindstrom, Jan N.: See—
Smith, Ulf K. H.; Lindstrom, Jan N.; and Mantle, Harold, Re. 31,526, Cl. 75-235.000.
- Mantle, Harold: See—
Smith, Ulf K. H.; Lindstrom, Jan N.; and Mantle, Harold, Re. 31,526, Cl. 75-235.000.
- Nelson, Don C., Jr.: See—
Boyd, John H., Jr.; and Nelson, Don C., Jr., Re. 31,525, Cl. 248-581.000.
- Santrade Ltd.: See—
Smith, Ulf K. H.; Lindstrom, Jan N.; and Mantle, Harold, Re. 31,526, Cl. 75-235.000.
- Smith, Ulf K. H.; Lindstrom, Jan N.; and Mantle, Harold, Ltd. Coated cemented carbide body and method of making such a body. Re. 31,526, Cl. 75-235.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Camco, Incorporated: See—
Pringle, Ronald E., B1 4,219,219, Cl. 166-324.000.
- Harris Research Inc.: See—
Harris, Robert D., B1 4,219,333, Cl. 8-137.000.
- Harris, Robert D., to Harris Research Inc. Carbonated cleaning solution. B1 4,219,333, 2-28-84, Cl. 8-137.000.
- Pringle, Ronald E., to Camco, Incorporated. Piston actuated well safety valve. B1 4,219,219, 2-28-84, Cl. 166-324.000.

LIST OF DESIGN PATENTEEES

- AAA Associates, Inc.: See—
McVicker, Robert J.; and Mann, Wilford R., 272,846, Cl. D23-139.000.
- AMP Incorporated: See—
Cosmos, Pete; and McCleerey, Earl W., 272,820, Cl. D13-24.000.
- Anthos S.A.: See—
Bulgari, Giovanni, 272,859, Cl. D27-42.000.
- Appel, Mel; and Kress, George, to Appel, Mel. Mug. 272,793, 2-28-84, Cl. D7-5.000.
- Appel, Mel; and Kress, George, to Appel, Mel. Ride-on toy. 272,837, 2-28-84, Cl. D21-71.000.
- Appel, Mel; and Kress, George, to Appel, Mel. Doll. 272,843, 2-28-84, Cl. D21-171.000.
- Atari, Inc.: See—
Lichac, Gerald J., 272,835, Cl. D21-48.000.
- B. F. Goodrich Company, The: See—
Birkel, Carl D.; and Wright, David A., 272,816, Cl. D12-147.000.
- Babcock & Wilcox Company, The: See—
Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 272,819, Cl. D13-12.000.
- Balaban, David B.: See—
Bienwald, Wolfgang F.; and Balaban, David B., 272,822, Cl. D13-32.000.
- Baxter Travenol Laboratories, Inc.: See—
Kulle, Lee K., 272,850, Cl. D24-24.000.
- Bayerische Motoren Werke Aktiengesellschaft: See—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,808, Cl. D10-111.000.
- Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., to Babcock & Wilcox Company, The. Control system module for mounting in a control panel. 272,819, 2-28-84, Cl. D13-12.000.
- Becton Dickinson and Company: See—
Percarpio, Edward P., 272,856, Cl. D24-99.000.
- Bel, Roger P.; and Hascoet, Martial E., to Metallisations et Traitements Optiques M.T.O. Endoscope and an accompanying eyepiece. 272,849, 2-28-84, Cl. D24-18.000.
- Bel, Roger P.; Hascoet, Martial E.; and Regnier, Michel M., to Metallisations et Traitements Optiques M.T.O. Biopsy forceps. 272,855, 2-28-84, Cl. D24-28.000.
- Bell Helms Inc.: See—
Sundahl, James G.; and Broersma, Lester V., 272,769, Cl. D2-231.000.
- Bent, Bruce C.: See—
Bent, James A.; and Bent, Bruce C., 272,809, Cl. D10-109.000.
- Bent, James A.; and Bent, Bruce C. Traffic control marker. 272,809, 2-28-84, Cl. D10-109.000.
- Berkley and Company, Inc.: See—
Rumbaugh, James T., 272,785, Cl. D6-114.000.
- Rumbaugh, James T., 272,787, Cl. D6-125.000.
- Bienwald, Wolfgang F.; and Balaban, David B., to Leviton Manufacturing Company, Inc. Switch. 272,822, 2-28-84, Cl. D13-32.000.
- Birgy, Claude: See—
van Assche, Daniel; Birgy, Claude; Kessler, Armin; and Gmelin, Gernot, 272,833, Cl. D19-62.000.
- Birkel, Carl D.; and Wright, David A., to B. F. Goodrich Company, The. Tire. 272,816, 2-28-84, Cl. D12-147.000.
- Braun, Hans: See—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,808, Cl. D10-111.000.
- Braun, Morris, to W. Braun Company. Jar, or similar article. 272,804, 2-28-84, Cl. D9-353.000.
- Brobakken, Jeanette D. Simulative picture frame. 272,791, 2-28-84, Cl. D6-234.000.
- Broersma, Lester V.: See—
Sundahl, James G.; and Broersma, Lester V., 272,769, Cl. D2-231.000.
- Sundahl, James G.; and Broersma, Lester V., 272,770, Cl. D2-232.000.
- Brother Kogyo Kabushiki Kaisha: See—
Iseki, Mitsuru, 272,831, Cl. D18-1.000.
- Buechel, Frederick F.; Pappas, Michael J.; and Witte, Paul A. Tibial resection guide. 272,853, 2-28-84, Cl. D24-26.000.
- Buechel, Frederick F.: See—
Witte, Paul A.; Buechel, Frederick F.; and Pappas, Michael J., 272,854, Cl. D24-26.000.
- Bulgari, Giovanni, to Anthos S.A. Lighter. 272,859, 2-28-84, Cl. D27-42.000.
- Bulgari, Marina, to Zoldia Anstalt. Ring. 272,811, 2-28-84, Cl. D11-34.000.

LIST OF DESIGN PATENTEEES

PI 41

- Burghard, Berj; and Schauer, Helmut. Engine washing and cleaning apparatus. 272,862, 2-28-84, Cl. D32-4.000.
- Buscom Systems, Inc.: See—
Fukunaga, Kenichi, 272,823, Cl. D14-66.000.
- California Cooperative: See—
Perethian, Charles M., 272,821, Cl. D13-12.000.
- Chase, David O.: See—
Handy, Binns; and Chase, David O., 272,806, Cl. D9-416.000.
- Churley, George. Support stand for works of art. 272,788, 2-28-84, Cl. D6-176.000.
- Clark Equipment Company: See—
Sapelak, Ronald, 272,827, Cl. D15-28.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, to J. I. Case Company. Skid steer loader. 272,825, 2-28-84, Cl. D15-25.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, to J. I. Case Company. Skid steer loader. 272,826, 2-28-84, Cl. D15-25.000.
- Cosmos, Pete; and McCleerey, Earl W., to AMP Incorporated. 90° Cable strain relief and electrical connector cover. 272,820, 2-28-84, Cl. D13-24.000.
- CPG Products Corp.: See—
Pelavin, Joseph Y.; and Stolarz, Edward M., 272,776, Cl. D3-76.000.
- Dall-Winther, Dennis P. Penlight holder. 272,802, 2-28-84, Cl. D8-396.000.
- Darling, Dwight L. Bicycle noise maker. 272,814, 2-28-84, Cl. D12-114.000.
- Dart Container Corporation: See—
Dart, Kenneth B., 272,794, Cl. D7-6.000.
- Dart Industries Inc.: See—
Wolff, Martin J., 272,796, Cl. D7-99.000.
- Dart, Kenneth B., to Dart Container Corporation. Beverage cup. 272,794, 2-28-84, Cl. D7-6.000.
- Dawson, James E.: See—
Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,825, Cl. D15-25.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,826, Cl. D15-25.000.
- Dells, Inc.: See—
Johnsen, Dell E., 272,805, Cl. D9-415.000.
- Dunlop Limited: See—
Hatakenaka, Kenji, 272,815, Cl. D12-146.000.
- Epoch Company, Ltd.: See—
Matsumoto, Teruo, 272,840, Cl. D21-104.000.
- Matsumoto, Teruo, 272,841, Cl. D21-104.000.
- Matsumoto, Teruo, 272,842, Cl. D21-104.000.
- F. Lli Guzzini S.p.A.: See—
Pozzi, Ambrogio, 272,795, Cl. D7-78.000.
- Four Star Corporation: See—
Mareydt, Ray G., 272,817, Cl. D12-155.000.
- Fukunaga, Kenichi, to Buscom Systems, Inc. Tone generator mouth-piece console. 272,823, 2-28-84, Cl. D14-66.000.
- Gelles, Daniel E. Garment display rack. 272,783, 2-28-84, Cl. D6-85.000.
- Giroflex Entwicklungs AG: See—
Ochsner, Koni, 272,781, Cl. D6-75.000.
- Gmelin, Gernot: See—
van Assche, Daniel; Birgy, Claude; Kessler, Armin; and Gmelin, Gernot, 272,833, Cl. D19-62.000.
- Government Innovators, Inc.: See—
Pickrell, John W., 272,813, Cl. D12-15.000.
- Green, David T.; Rawson, Paul O.; and Yagami, Richard, to United States Surgical Corporation. Linear anastomosis stapler. 272,851, 2-28-84, Cl. D24-26.000.
- Green, David T.; Rawson, Paul O.; and Yagami, Richard, to United States Surgical Corporation. Linear anastomosis stapler. 272,852, 2-28-84, Cl. D24-26.000.
- Handy, Binns; and Chase, David O., to Lenox Incorporated. Packaging container. 272,806, 2-28-84, Cl. D9-416.000.
- Hara, Kunio; and Yasutani, Shigeki, to Tokyo Shibaura Denki Kabushiki Kaisha. Original feeder for copying machine. 272,830, 2-28-84, Cl. D16-32.000.
- Hascoet, Martial E.: See—
Bel, Roger P.; and Hascoet, Martial E., 272,849, Cl. D24-18.000.
- Bel, Roger P.; Hascoet, Martial E.; and Regnier, Michel M., 272,855, Cl. D24-28.000.
- Hatakenaka, Kenji, to Dunlop Limited. Tire for a vehicle wheel. 272,815, 2-28-84, Cl. D12-146.000.
- Incando, Peter A. Clip for securing hairpiece to natural hair. 272,861, 2-28-84, Cl. D28-93.000.
- Irish, Sally G. Rug. 272,790, 2-28-84, Cl. D6-210.000.
- Iseki, Mitsuru, to Brother Kogyo Kabushiki Kaisha. Typewriter. 272,831, 2-28-84, Cl. D18-1.000.
- J. I. Case Company: See—
Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,825, Cl. D15-25.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,826, Cl. D15-25.000.
- Jennings, Joseph R.; and Minor, Michael, to Paramount Pictures Corporation. Toy spaceship. 272,839, 2-28-84, Cl. D21-87.000.
- Johnsen, Dell E., to Dells, Inc. Container for a pizza kit. 272,805, 2-28-84, Cl. D9-415.000.
- Kato, Takaharu, to Ricoh Company, Ltd. Camera. 272,829, 2-28-84, Cl. D16-8.000.
- Kelling, Gordon L., to Phillips Temro, Inc. Diesel fuel warmer. 272,844, 2-28-84, Cl. D23-77.000.
- Kessler, Armin: See—
van Assche, Daniel; Birgy, Claude; Kessler, Armin; and Gmelin, Gernot, 272,833, Cl. D19-62.000.
- Keystone Consolidated Industries, Inc.: See—
Pawlow, Valentin, 272,800, Cl. D8-318.000.
- Klee, Maurice: See—
Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,825, Cl. D15-25.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,826, Cl. D15-25.000.
- Kodaka, Tatsuya. Mosquito figure. 272,812, 2-28-84, Cl. D11-162.000.
- Kohno, Noboru, to Mizuno Corporation. Cleated shoe sole. 272,772, 2-28-84, Cl. D2-320.000.
- Koper, James G.: See—
Kumar, Shri A.; Ljung, Bo; and Koper, James G., 272,801, Cl. D8-325.000.
- Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,847, 2-28-84, Cl. D23-166.000.
- Koziol, Walter, to Modern Home Products Corp. Ceramic briquette for a cooking grill. 272,848, 2-28-84, Cl. D23-166.000.
- Kress, George: See—
Appel, Mel; and Kress, George, 272,793, Cl. D7-5.000.
- Appel, Mel; and Kress, George, 272,837, Cl. D21-71.000.
- Appel, Mel; and Kress, George, 272,843, Cl. D21-171.000.
- Kulle, Lee K., to Baxter Travenol Laboratories, Inc. Drip chamber spike. 272,850, 2-28-84, Cl. D24-24.000.
- Kumar, Shri A.; Ljung, Bo; and Koper, James G., to Singer Company, The. Flexure hinge for gyroscopes or the like. 272,801, 2-28-84, Cl. D8-325.000.
- Lanphere, Ralph C.: See—
Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,825, Cl. D15-25.000.
- Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,826, Cl. D15-25.000.
- Leach, Kant F. Safety clamp for ladders. 272,857, 2-28-84, Cl. D25-68.000.
- Lenk, Milton E. B. Magnetic disc spinning toy. 272,836, 2-28-84, Cl. D21-59.000.
- Lenox Incorporated: See—
Handy, Binns; and Chase, David O., 272,806, Cl. D9-416.000.
- Leviton Manufacturing Company, Inc.: See—
Bienwald, Wolfgang F.; and Balaban, David B., 272,822, Cl. D13-32.000.
- Lichac, Gerald J., to Atari, Inc. Lower housing for a control unit for a video game. 272,835, 2-28-84, Cl. D21-48.000.
- Lilaud Products: See—
Swatzell, Lillian, 272,860, Cl. D28-20.000.
- Ljung, Bo: See—
Kumar, Shri A.; Ljung, Bo; and Koper, James G., 272,801, Cl. D8-325.000.
- Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Side reflector for automobile. 272,808, 2-28-84, Cl. D10-111.000.
- Malamoud, Jean G., to S. T. DuPont. Fountain pen. 272,832, 2-28-84, Cl. D19-51.000.
- Mann, Wilford R.: See—
McVicker, Robert J.; and Mann, Wilford R., 272,846, Cl. D23-139.000.
- Mareydt, Ray G., to Four Star Corporation. Vehicle side rail. 272,817, 2-28-84, Cl. D12-155.000.
- Marx, Robert S. Combined garment form and hanger therefor. 272,792, 2-28-84, Cl. D6-248.000.
- Matcote Company, Inc.: See—
McMullen, Sam D., 272,863, Cl. D34-17.000.
- Matsumoto, Teruo, to Epoch Company, Ltd. Puzzle. 272,840, 2-28-84, Cl. D21-104.000.
- Matsumoto, Teruo, to Epoch Company, Ltd. Puzzle. 272,841, 2-28-84, Cl. D21-104.000.
- Matsumoto, Teruo, to Epoch Company, Ltd. Puzzle. 272,842, 2-28-84, Cl. D21-104.000.
- McCleerey, Earl W.: See—
Cosmos, Pete; and McCleerey, Earl W., 272,820, Cl. D13-24.000.
- McCuston, Paul R. Combined ski and pole rack. 272,786, 2-28-84, Cl. D6-125.000.
- McGourty, Michael J., to Pye (Electronic Products) Limited. Radio apparatus. 272,824, 2-28-84, Cl. D14-71.000.
- McMullen, Sam D., to Matcote Company, Inc. Mobile material delivery cart. 272,863, 2-28-84, Cl. D34-17.000.
- McVicker, Robert J.; and Mann, Wilford R., to AAA Associates, Inc. Fan housing for grain dryers. 272,846, 2-28-84, Cl. D23-139.000.
- Metallisations et Traitements Optiques M.T.O.: See—
Bel, Roger P.; and Hascoet, Martial E., 272,849, Cl. D24-18.000.
- Bel, Roger P.; Hascoet, Martial E.; and Regnier, Michel M., 272,855, Cl. D24-28.000.
- Minor, Michael: See—
Jennings, Joseph R.; and Minor, Michael, 272,839, Cl. D21-87.000.
- Mizuno Corporation: See—
Kohno, Noboru, 272,772, Cl. D2-320.000.
- Modern Home Products Corp.: See—
Koziol, Walter, 272,847, Cl. D23-166.000.
- Koziol, Walter, 272,848, Cl. D23-166.000.
- Moore, William H. Template organizer stand. 272,834, 2-28-84, Cl. D19-75.000.

LIST OF DESIGN PATENTEES

- Muller Feigelstock, Roberto, to Pony International, Inc. Low cut athletic shoe. 272,771, 2-28-84, Cl. D2-311.000.
 Negoro, Hisao, Chuck. 272,828, 2-28-84, Cl. D15-140.000.
 Ochsner, Koni, to Giroflex Entwicklungs AG. Chair or similar article. 272,781, 2-28-84, Cl. D6-75.000.
 O'Connell, Timothy A. Toy rocking horse. 272,838, 2-28-84, Cl. D21-75.000.
 Omni R & D, Inc. See—
 Williams, Robert E., Jr., 272,784, Cl. D6-85.000.
 Pace Industries Inc. See—
 Palka, James J., 272,858, Cl. D26-80.000.
 Palka, James J., to Pace Industries Inc. Light fixture. 272,858, 2-28-84, Cl. D26-80.000.
 Pappas, Michael J. See—
 Buechel, Frederick F.; Pappas, Michael J.; and Witte, Paul A., 272,853, Cl. D24-26.000.
 Witte, Paul A.; Buechel, Frederick F.; and Pappas, Michael J., 272,854, Cl. D24-26.000.
 Paramount Pictures Corporation. See—
 Jennings, Joseph R.; and Minor, Michael, 272,839, Cl. D21-87.000.
 Pawlow, Valentin, to Keystone Consolidated Industries, Inc. Pull. 272,800, 2-28-84, Cl. D8-318.000.
 Pelavin, Joseph Y.; and Stolarz, Edward M., to CPG Products Corp. Attache case. 272,776, 2-28-84, Cl. D3-76.000.
 Percarpio, Edward P., to Becton Dickinson and Company. Stopper for test tubes and the like. 272,856, 2-28-84, Cl. D24-99.000.
 Perethian, Charles M., to California Cooperage. Air switch. 272,821, 2-28-84, Cl. D13-12.000.
 Pettit, Donald C. Chair. 272,778, 2-28-84, Cl. D6-31.000.
 Phillips Temro, Inc. See—
 Kelling, Gordon L., 272,844, Cl. D23-77.000.
 Pickrell, John W., to Government Innovators, Inc. Refuse truck body. 272,813, 2-28-84, Cl. D12-15.000.
 Pluss, Paul D. Shovel blade. 272,799, 2-28-84, Cl. D8-10.000.
 Pony International, Inc. See—
 Muller Feigelstock, Roberto, 272,771, Cl. D2-311.000.
 Pozzi, Ambrogio, to F. Lli Guzzini S.p.A. Ice-bucket. 272,795, 2-28-84, Cl. D7-78.000.
 Pye (Electronic Products) Limited. See—
 McGourty, Michael J., 272,824, Cl. D14-71.000.
 Rawson, Paul O. See—
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,851, Cl. D24-26.000.
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,852, Cl. D24-26.000.
 Regnier, Michel M. See—
 Bel, Roger P.; Hascoet, Martial E.; and Regnier, Michel M., 272,855, Cl. D24-28.000.
 Rennen, Manfred. See—
 Luthe, Claus; Rennen, Manfred; and Braun, Hans, 272,808, Cl. D10-111.000.
 Replicap Products, Inc. See—
 Ruhl, Gerald F., 272,807, Cl. D9-449.000.
 Richards, Richard D., to Wilkinson Sword, Limited. Packaging container for razors. 272,803, 2-28-84, Cl. D9-342.000.
 Ricoh Company, Ltd. See—
 Kato, Takaharu, 272,829, Cl. D16-8.000.
 Ruhl, Gerald F., to Replicap Products, Inc. Dispensing closure plug. 272,807, 2-28-84, Cl. D9-449.000.
 Rumbaugh, James T., to Berkley and Company, Inc. Set of brackets for mounting on a wall for supporting horizontally oriented fishing rods. 272,785, 2-28-84, Cl. D6-114.000.
 Rumbaugh, James T., to Berkley and Company, Inc. Bracket for mounting on a wall for supporting the butt ends of vertically oriented fishing rods. 272,787, 2-28-84, Cl. D6-125.000.
 S. T. DuPont. See—
 Malamoud, Jean G., 272,832, Cl. D19-51.000.
 Sapelak, Ronald, to Clark Equipment Company. Detachable butt grill for grapple arch. 272,827, 2-28-84, Cl. D15-28.000.
 Schauer, Helmut. See—
 Burghard, Bero; and Schauer, Helmut, 272,862, Cl. D32-4.000.
 Schultz, M. Richard, to Stow/Davis Furniture Company. Chair. 272,777, 2-28-84, Cl. D6-30.000.
 Shelton, Robert N. Display fixture. 272,782, 2-28-84, Cl. D6-85.000.
 Silva, Priscilla D. Serving dispenser for honey or the like. 272,797, 2-28-84, Cl. D7-302.000.
 Simmons Universal Corporation. See—
 Solie, O. B.; and Sonnenleiter, G. Ronald, 272,779, Cl. D6-69.000.
 Solie, O. B.; and Sonnenleiter, G. Ronald, 272,780, Cl. D6-71.000.
 Singer Company, The. See—
 Kumar, Shri A.; Ljung, Bo; and Koper, James G., 272,801, Cl. D8-325.000.
 Solie, O. B.; and Sonnenleiter, G. Ronald, to Simmons Universal Corporation. Chair. 272,779, 2-28-84, Cl. D6-69.000.
 Solie, O. B.; and Sonnenleiter, G. Ronald, to Simmons Universal Corporation. Chair. 272,780, 2-28-84, Cl. D6-71.000.
 Sonnenleiter, G. Ronald. See—
 Solie, O. B.; and Sonnenleiter, G. Ronald, 272,779, Cl. D6-69.000.
 Solie, O. B.; and Sonnenleiter, G. Ronald, 272,780, Cl. D6-71.000.
 Stilson, Vern. Wind chime. 272,810, 2-28-84, Cl. D10-116.000.
 Stockmaster, Edward F. See—
 Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 272,819, Cl. D13-12.000.
 Stolarz, Edward M. See—
 Pelavin, Joseph Y.; and Stolarz, Edward M., 272,776, Cl. D3-76.000.
 Stoppino, Giotto. Tape rack. 272,789, 2-28-84, Cl. D6-189.000.
 Stow/Davis Furniture Company. See—
 Schultz, M. Richard, 272,777, Cl. D6-30.000.
 Stromberg, Gary D. See—
 Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,825, Cl. D15-25.000.
 Cochran, Gary L.; Stromberg, Gary D.; Dawson, James E.; Lanphere, Ralph C.; and Klee, Maurice, 272,826, Cl. D15-25.000.
 Sundahl, James G.; and Broersma, Lester V., to Bell Helms Inc. Cyclist's vented helmet. 272,769, 2-28-84, Cl. D2-231.000.
 Sundahl, James G.; and Broersma, Lester V., to Cyclist's vented helmet with visor. 272,770, 2-28-84, Cl. D2-232.000.
 Swartzell, Lillian, to Lilaud Products. Neck cushioning pad for sink edge. 272,860, 2-28-84, Cl. D28-20.000.
 Tokyo Shibaura Denki Kabushiki Kaisha. See—
 Hara, Kunio; and Yasutani, Shigeki, 272,830, Cl. D16-32.000.
 United States Surgical Corporation. See—
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,851, Cl. D24-26.000.
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,852, Cl. D24-26.000.
 van Assche, Daniel; Birgy, Claude; Kessler, Armin; and Gmelin, Gernot. Display surface of the drug effect on brain capillary blood flow and nerve impulse transmission demonstrator. 272,833, 2-28-84, Cl. D19-62.000.
 W. Braun Company. See—
 Braun, Morris, 272,804, Cl. D9-353.000.
 Weissenburger, Kenneth A. Belt-attached beverage holster for bottles and cans. 272,773, 2-28-84, Cl. D2-400.000.
 Weissenburger, Kenneth A. Belt-attached beverage holster for bottles and cans. 272,774, 2-28-84, Cl. D2-400.000.
 Weissenburger, Kenneth A. Belt-attached beverage holster for bottles and cans. 272,775, 2-28-84, Cl. D2-400.000.
 Whaley, George S. See—
 Bean, Thomas R.; Stockmaster, Edward F.; and Whaley, George S., 272,819, Cl. D13-12.000.
 Wilkinson Sword, Limited. See—
 Richards, Richard D., 272,803, Cl. D9-342.000.
 Williams, Robert E., Jr., to Omni R & D, Inc. Speaker stand. 272,784, 2-28-84, Cl. D6-85.000.
 Witte, Paul A.; Buechel, Frederick F.; and Pappas, Michael J. Distal femoral resection guide. 272,854, 2-28-84, Cl. D24-26.000.
 Witte, Paul A. See—
 Buechel, Frederick F.; Pappas, Michael J.; and Witte, Paul A., 272,853, Cl. D24-26.000.
 Wolfe, David. Solid fuel stove. 272,845, 2-28-84, Cl. D23-97.000.
 Wolff, Martin J., to Dart Industries Inc. Combined corn butterer and salt dispenser. 272,796, 2-28-84, Cl. D7-99.000.
 Worsham, Frank D. Voltage regulator housing for end mounting on a generator. 272,818, 2-28-84, Cl. D13-11.000.
 Wright, David A. See—
 Birkel, Carl D.; and Wright, David A., 272,816, Cl. D12-147.000.
 Yagami, Richard. See—
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,851, Cl. D24-26.000.
 Green, David T.; Rawson, Paul O.; and Yagami, Richard, 272,852, Cl. D24-26.000.
 Yasutani, Shigeki. See—
 Hara, Kunio; and Yasutani, Shigeki, 272,830, Cl. D16-32.000.
 York, Jerry L. Sliding hammer. 272,798, 2-28-84, Cl. D8-1.000.
 Zoldia Anstalt. See—
 Bulgari, Marina, 272,811, Cl. D11-34.000.

LIST OF PLANT PATENTEES

- Carrier, Leonard E. Carnation plant. 5,198, 2-28-84, Cl. 73.000.
 Conard-Pyle Company, The. See—
 Zebehazy, Alex J., 5,195, Cl. 54.000.
 Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Fresco. 5,196, 2-28-84, Cl. 68.000.
 Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Freedom. 5,197, 2-28-84, Cl. 68.000.
 Sun Valley Bulb Farms, Inc. See—
 Kirsch, Ted T., 5,196, Cl. 68.000.
 Kirsch, Ted T., 5,197, Cl. 68.000.
 Zebehazy, Alex J., to Conard-Pyle Company, The. Leucothoe plant-zelbid variety. 5,195, 2-28-84, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 28, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

161 R	CLASS 2	4,433,439	107	CLASS 38	4,433,497	4,433,549	468	CLASS 62	4,433,600	193 H	4,433,653	216	4,434,020
	CLASS 3	4,433,440		CLASS 40	4,433,498	4,433,550		CLASS 84	4,433,601	196 A	4,433,656	242	4,434,021
36	CLASS 4	4,433,441	2 R	4,433,499	4,433,500	4,433,551	1.03	4,433,602	4,433,603	198 F	4,433,657	274.6	4,434,022
	CLASS 5	4,433,442		CLASS 42	4,433,501	4,433,552	1.06	4,433,604	4,433,605	221	4,433,658	307.3	4,434,023
213	CLASS 6	4,433,443	356	4,433,502	4,433,503	4,433,553	1.16	4,433,606	4,433,607	256	4,433,659	556	4,434,024
251	CLASS 7	4,433,444		CLASS 43	4,433,504	4,433,554	1.19	4,433,608	4,433,609	263	4,433,660	601	4,434,025
317	CLASS 8	4,433,445	1 N	4,433,505	4,433,506	4,433,555	299	4,433,610	4,433,611	266	4,433,661		CLASS 159
319	CLASS 9	4,433,446		CLASS 44	4,433,507	4,433,556	1.812	4,433,612	4,433,613	325	4,433,662	1 S	4,434,026
325	CLASS 10	4,433,447	17.2	4,433,508	4,433,509	4,433,557	8	4,433,614	4,433,615	339	4,433,663	47.1	4,434,027
378	CLASS 11	4,433,448	42.1	4,433,510	4,433,511	4,433,558	34	4,433,616	4,433,617	428	4,433,664	120	4,433,711
	CLASS 12	4,433,449	43.2	4,433,512	4,433,513	4,433,559	148	4,433,618	4,433,619	494	4,433,665	122	4,433,712
93 R	CLASS 13	4,433,450		CLASS 45	4,433,514	4,433,560	193	4,433,620	4,433,621	552	4,433,666	166 R	4,433,713
837	CLASS 14	4,433,451	60	4,433,515	4,433,516	4,433,561		4,433,622	4,433,623	569	4,433,667	235	4,433,714
555	CLASS 15	4,433,452		CLASS 46	4,433,517	4,433,562	358 R	4,433,624	4,433,625	597	4,433,668		CLASS 164
648	CLASS 16	4,433,453	11	4,433,518	4,433,519	4,433,563	376 R	4,433,626	4,433,627	620	4,433,669	423	4,433,715
	CLASS 17	4,433,454		CLASS 47	4,433,520	4,433,564	420	4,433,628	4,433,629	644	4,433,670	448	4,433,716
88	CLASS 18	4,433,455		CLASS 48	4,433,521	4,433,565	514	4,433,630	4,433,631		4,433,671	454	4,433,717
243	CLASS 19	4,433,456	76	4,433,522	4,433,523	4,433,566		4,433,632	4,433,633	9 R	4,433,672		CLASS 165
316 R	CLASS 20	4,433,457		CLASS 49	4,433,524	4,433,567	190	4,433,634	4,433,635	419	4,433,673	12	4,433,718
321	CLASS 21	4,433,458		CLASS 50	4,433,525	4,433,568	305	4,433,636	4,433,637	435	4,433,674	26	4,433,719
	CLASS 22	4,433,459		CLASS 51	4,433,526	4,433,569	455	4,433,638	4,433,639	450	4,433,675	162	4,433,720
2	CLASS 23	4,433,460		CLASS 52	4,433,527	4,433,570		4,433,640	4,433,641	6	4,433,676	166	4,433,721
	CLASS 24	4,433,461		CLASS 53	4,433,528	4,433,571	40	4,433,642	4,433,643	57	4,433,677		CLASS 166
21	CLASS 25	4,433,462		CLASS 54	4,433,529	4,433,572	43	4,433,644	4,433,645	69	4,433,678	60	4,433,724
	CLASS 26	4,433,463		CLASS 55	4,433,530	4,433,573		4,433,646	4,433,647	80 A	4,433,679	65 R	4,433,725
55 R	CLASS 27	4,433,464		CLASS 56	4,433,531	4,433,574	11	4,433,648	4,433,649	80 F	4,433,680	118	4,433,726
107	CLASS 28	4,433,465		CLASS 57	4,433,532	4,433,575	40	4,433,650	4,433,651	90 E	4,433,681	252	4,433,727
	CLASS 29	4,433,466		CLASS 58	4,433,533	4,433,576	123	4,433,652	4,433,653	153	4,433,682	270	4,433,728
68 SK	CLASS 30	4,433,467		CLASS 59	4,433,534	4,433,577	314	4,433,654	4,433,655	203.21	4,433,683	274	4,433,729
191	CLASS 31	4,433,468		CLASS 60	4,433,535	4,433,578		4,433,656	4,433,657	204.26	4,433,684	293	4,433,730
613	CLASS 32	4,433,469		CLASS 61	4,433,536	4,433,579	331	4,433,658	4,433,659	303 R	4,433,685	324	BI 4,461,219
	CLASS 33	4,433,470		CLASS 62	4,433,537	4,433,580	390	4,433,660	4,433,661	318	4,433,686		CLASS 169
75	CLASS 34	4,433,471		CLASS 63	4,433,538	4,433,581	95	4,433,662	4,433,663	335.5	4,433,687	48	4,433,732
	CLASS 35	4,433,472		CLASS 64	4,433,539	4,433,582	172 S	4,433,664	4,433,665	346	4,433,688	49	4,433,733
25.35	CLASS 36	4,433,473		CLASS 65	4,433,540	4,433,583		4,433,666	4,433,667	660	4,433,689		CLASS 170
229	CLASS 37	4,433,474		CLASS 66	4,433,541	4,433,584	222	4,433,668	4,433,669	721	4,433,690	68	4,433,734
239	CLASS 38	4,433,475		CLASS 67	4,433,542	4,433,585		4,433,670	4,433,671		4,433,691	443	4,433,735
252	CLASS 39	4,433,476		CLASS 68	4,433,543	4,433,586	26	4,433,672	4,433,673	92	4,433,692		CLASS 171
415	CLASS 40	4,433,477		CLASS 69	4,433,544	4,433,587	271	4,433,674	4,433,675	92	4,433,693	94	4,433,736
432	CLASS 41	4,433,478		CLASS 70	4,433,545	4,433,588	290	4,433,676	4,433,677	276	4,433,694		CLASS 172
564.6	CLASS 42	4,433,479		CLASS 71	4,433,546	4,433,589	291	4,433,678	4,433,679	336	4,433,695		CLASS 173
565	CLASS 43	4,433,480		CLASS 72	4,433,547	4,433,590		4,433,680	4,433,681	365	4,433,696		CLASS 174
571	CLASS 44	4,433,481		CLASS 73	4,433,548	4,433,591	245	4,433,682	4,433,683		4,433,697	13	4,434,319
577 C	CLASS 45	4,433,482		CLASS 74	4,433,549	4,433,592		4,433,684	4,433,685	25.4	4,434,011	23 R	4,434,320
578	CLASS 46	4,433,483		CLASS 75	4,433,550	4,433,593	50	4,433,686	4,433,687	56 R	4,434,012	68.5	4,434,321
596	CLASS 47	4,433,484		CLASS 76	4,433,551	4,433,594		4,433,688	4,433,689		4,434,013		CLASS 175
598	CLASS 48	4,433,485		CLASS 77	4,433,552	4,433,595	245	4,433,690	4,433,691	20 R	4,434,014	5	4,433,737
605	CLASS 49	4,433,486		CLASS 78	4,433,553	4,433,596		4,433,692	4,433,693	97	4,434,015	61	4,433,738
736	CLASS 50	4,433,487		CLASS 79	4,433,554	4,433,597		4,433,694	4,433,695		4,434,016	410	4,433,739
752	CLASS 51	4,433,488		CLASS 80	4,433,555	4,433,598	262.3	4,433,696	4,433,697		4,434,017		CLASS 176
764	CLASS 52	4,433,489		CLASS 81	4,433,556	4,433,599		4,433,698	4,433,699	258	4,434,018	187	4,433,740
767	CLASS 53	4,433,490		CLASS 82	4,433,557	4,433,600		4,433,700	4,433,701		4,434,019	199	4,433,741
825	CLASS 54	4,433,491		CLASS 83	4,433,558	4,433,601		4,433,702	4,433,703		4,434,020	229	4,433,742
878	CLASS 55	4,433,492		CLASS 84	4,433,559	4,433,602		4,433,704	4,433,705	101.19	4,434,021		CLASS 177
882	CLASS 56	4,433,493		CLASS 85	4,433,560	4,433,603		4,433,706	4,433,707	527.6	4,434,022		CLASS 178
	CLASS 57	4,433,494		CLASS 86	4,433,561	4,433,604		4,433,708	4,433,709	541	4,434,023	22.13	4,434,322
41	CLASS 58	4,433,495		CLASS 87	4,433,562	4,433,605		4,433,710	4,433,711		4,434,024	22.17	4,434,323
90.4	CLASS 59	4,433,496		CLASS 88	4,433,563	4,433,606		4,433,712	4,433,713		4,434,025	69 R	4,434,324
	CLASS 60	4,433,497		CLASS 89	4,433,564	4,433,607		4,433,714	4,433,715		4,434,026		CLASS 179
3 R	CLASS 61	4,433,498		CLASS 90	4,433,565	4,433,608		4,433,716	4,433,717		4,434,027	2 DP	4,434,326
137 R	CLASS 62	4,433,499		CLASS 91	4,433,566	4,433,609		4,433,718	4,433,719		4,434,028	20	4,434,328
174 F	CLASS 63	4,433,500		CLASS 92	4,433,567	4,433,610		4,433,720	4,433,721		4,434,029	111 E	4,434,327
185 R	CLASS 64	4,433,501		CLASS 93	4,433,568	4,433,611		4,433,722	4,433,723		4,434,030	121 R	4,434,329
203.18	CLASS 65	4,433,502		CLASS 94	4,433,569	4,433,612		4,433,724	4,433,725		4,434,031		CLASS 180
293	CLASS 66	4,433,503		CLASS 95	4,433,570	4,433,613		4,433,726	4,433,727		4,434,032	41	4,433,743
302	CLASS 67	4,433,504		CLASS 96	4,433,571	4,433,614		4,433,728	4,433,729		4,434,033	65 E	4,433,744
	CLASS 68	4,433,505		CLASS 97	4,433,572	4,433,615		4,433,730	4,433,731		4,434,034	118	4,433,745
99	CLASS 69	4,433,506		CLASS 98	4,433,573	4,433,616		4,433,732	4,433,733		4,434,035	171	4,433,746
116	CLASS 70	4,433,507		CLASS 99	4,433,574	4,433,617		4,433,734	4,433,735		4,434,036	227	4,433,747
	CLASS 71	4,433,508		CLASS 100	4,433,575	4,433,618		4,433,736	4,433,737		4,434,037	247	4,433,748
119	CLASS 72	4,433,509		CLASS 101	4,433,576	4,433,619		4,433,738	4,433,739		4,434,038		CLASS 181
	CLASS 73	4,433,510		CLASS 102	4,433,577	4,433,620		4,433,740	4,433,741		4,434,039	151	4,433,749
103	CLASS 74	4,433,511		CLASS 103	4,433,578	4,433,621		4,433,742	4,433,743		4,434,040	179	4,433,750
141 R	CLASS 75	4,433,512		CLASS 104	4,433,579	4,433,622		4,433,744	4,433,745		4,434,041	213	4,433,751
	CLASS 76	4,433,513		CLASS 105	4,433,580	4,433,623		4,433,746	4,433,747		4,434,042		CLASS 182
	CLASS 77	4,433,514		CLASS 106	4,433,581	4,433,624		4,433,748	4,433,749		4,434,043	82	4,433,752
	CLASS 78	4,433,515		CLASS 107	4,433,582	4,433,625		4,433,750	4,433,751		4,434,044	151	4,433,753
	CLASS 79	4,433,516		CLASS 108	4,433,583	4,433,626		4,433,752	4,433,753		4,434,045	172	4,433,754
	CLASS 80	4,433,517		CLASS 109	4,433,584	4,433,627		4,433,754	4,433,755		4,434,046		4,433,755
	CLASS 81	4,433,518		CLASS 110	4,433,585	4,433,628		4,433,756	4,433,757		4,434,047		4,433,756
	CLASS 82	4,433,519		CLASS 111	4,433,586	4,433,629		4,433,758	4,433,759		4,434,048		4,433,757
	CLASS 83	4,433,520		CLASS 112	4,433,587	4,433,630		4,433,760	4,433,761		4,434,049		4,433,758
	CLASS 84	4,433,521		CLASS 113	4,433,588	4,433							

CLASSIFICATION OF PATENTS

CLASS 187	20	4,433,787	26	4,433,788	506.1	4,434,373	407	4,433,843	393	4,434,402	74.4	4,434,443
20 R	4,433,755		220	4,433,789	191	4,433,827	1	4,433,845	120	4,434,403	96.5	4,434,444
29 R	4,433,756		246	4,433,790	8.55 D	4,434,062	125	4,433,846	85	4,434,404	121	4,434,445
CLASS 188	1.11	4,433,757	10.55 A	4,434,341	25	4,434,063	199	4,433,847	149	4,434,405	122	4,434,446
196 R	4,433,758		10.55 E	4,434,344	29	4,434,064	6 R	4,433,848	23	4,434,448	123	4,434,447
282	4,433,759		10.55 F	4,434,343	75	4,434,065	277	4,433,849	124	4,434,449	124	4,433,925
CLASS 190	109	4,433,761	10.55 M	4,434,342	77	4,434,066	278	4,433,850	152	4,434,450	125	4,433,926
115	4,433,760		10.55 R	4,434,345	88	4,434,067	415 R	4,433,851	283	4,434,451	126	4,433,927
CLASS 192	56.22	4,433,769	61	4,434,347	135	4,434,068	511	4,433,852	304	4,434,452	127	4,433,928
0.098	4,433,769		69 C	4,434,348	174.14	4,434,069	609	4,433,853	33	4,434,453	128	4,433,929
4 A	4,433,762		117.1	4,434,351	182	4,434,071	668	4,433,854	238	4,434,454	129	4,433,930
18 R	4,433,763		121 LC	4,434,350	299.1	4,434,072	690	4,433,855	307	4,434,455	130	4,433,931
41 S	4,433,764		121 LG	4,434,349	299.62	4,434,073	802	4,433,856	374	4,434,456	131	4,433,932
50	4,433,765		125.12	4,434,352	315.2	4,434,075	34	4,433,857	138	4,434,457	132	4,433,933
67 P	4,433,766		216	4,434,353	357	4,434,076	192	4,433,858	200	4,434,458	133	4,433,934
98	4,433,767		291	4,434,354	545	4,434,077	186	4,433,859	137	4,434,459	134	4,433,935
106.2	4,433,770		501	4,434,355	547	4,434,078	71	4,433,860	166	4,434,460	135	4,433,936
CLASS 194	59	4,433,772	89 A	4,434,356	557	4,434,079	102	4,433,861	195	4,434,461	136	4,433,937
CLASS 196	14.52	4,434,028	269	4,434,357	626	4,434,080	186	4,433,862	210	4,434,462	137	4,433,938
CLASS 198	467	4,433,773	276	4,434,358	628	4,434,081	190	4,433,863	211	4,434,463	138	4,433,939
689	4,433,774		224	4,433,794	628	4,434,082	190	4,433,864	212	4,434,464	139	4,433,940
742	4,433,775		14	4,433,795	628	4,434,083	190	4,433,865	213	4,434,465	140	4,433,941
779	4,433,776		135	4,433,796	628	4,434,084	190	4,433,866	214	4,434,466	141	4,433,942
834	4,433,777		207	4,433,797	628	4,434,085	190	4,433,867	215	4,434,467	142	4,433,943
CLASS 200	67 DA	4,434,330	255	4,433,798	628	4,434,086	190	4,433,868	216	4,434,468	143	4,433,944
144 AP	4,434,332		309	4,433,799	628	4,434,087	190	4,433,869	217	4,434,469	144	4,433,945
144 B	4,434,333		547	4,433,800	628	4,434,088	190	4,433,870	218	4,434,470	145	4,433,946
148 E	4,434,335		148	4,433,801	628	4,434,089	190	4,433,871	219	4,434,471	146	4,433,947
148 R	4,434,336		153	4,433,802	628	4,434,090	190	4,433,872	220	4,434,472	147	4,433,948
150 G	4,434,337		251	4,433,803	628	4,434,091	190	4,433,873	221	4,434,473	148	4,433,949
220	4,434,338		321	4,433,804	628	4,434,092	190	4,433,874	222	4,434,474	149	4,433,950
276	4,434,339		180 R	4,433,805	628	4,434,093	190	4,433,875	223	4,434,475	150	4,433,951
295	4,434,340		40	4,433,806	628	4,434,094	190	4,433,876	224	4,434,476	151	4,433,952
332	4,434,341		43	4,433,807	628	4,434,095	190	4,433,877	225	4,434,477	152	4,433,953
CLASS 202	153	4,434,034	40	4,433,808	628	4,434,096	190	4,433,878	226	4,434,478	153	4,433,954
CLASS 203	42	4,434,029	43	4,433,809	628	4,434,097	190	4,433,879	227	4,434,479	154	4,433,955
CLASS 204	43 T	4,434,030	192	4,433,810	628	4,434,098	190	4,433,880	228	4,434,480	155	4,433,956
59 R	4,434,031		379	4,433,811	628	4,434,099	190	4,433,881	229	4,434,481	156	4,433,957
72	4,434,032		472	4,433,812	628	4,434,100	190	4,433,882	230	4,434,482	157	4,433,958
95	4,434,033		192	4,433,813	628	4,434,101	190	4,433,883	231	4,434,483	158	4,433,959
159.13	4,434,035		290	4,433,814	628	4,434,102	190	4,433,884	232	4,434,484	159	4,433,960
164	4,434,036		21	4,433,815	628	4,434,103	190	4,433,885	233	4,434,485	160	4,433,961
192 R	4,434,037		74	4,433,816	628	4,434,104	190	4,433,886	234	4,434,486	161	4,433,962
196	4,434,038		290	4,433,817	628	4,434,105	190	4,433,887	235	4,434,487	162	4,433,963
206	4,434,039		21	4,433,818	628	4,434,106	190	4,433,888	236	4,434,488	163	4,433,964
296	4,434,040		72.1	4,433,819	628	4,434,107	190	4,433,889	237	4,434,489	164	4,433,965
298	4,434,042		122	4,433,820	628	4,434,108	190	4,433,890	238	4,434,490	165	4,433,966
CLASS 206	45.25	4,433,778	21	4,433,821	628	4,434,109	190	4,433,891	239	4,434,491	166	4,433,967
220	4,433,779		21	4,433,822	628	4,434,110	190	4,433,892	240	4,434,492	167	4,433,968
232	4,433,780		21	4,433,823	628	4,434,111	190	4,433,893	241	4,434,493	168	4,433,969
314	4,433,781		21	4,433,824	628	4,434,112	190	4,433,894	242	4,434,494	169	4,433,970
338	4,433,782		21	4,433,825	628	4,434,113	190	4,433,895	243	4,434,495	170	4,433,971
484	4,433,783		21	4,433,826	628	4,434,114	190	4,433,896	244	4,434,496	171	4,433,972
617	4,433,784		21	4,433,827	628	4,434,115	190	4,433,897	245	4,434,497	172	4,433,973
CLASS 208	10	4,434,043	21	4,433,828	628	4,434,116	190	4,433,898	246	4,434,498	173	4,433,974
91	4,434,044		21	4,433,829	628	4,434,117	190	4,433,899	247	4,434,499	174	4,433,975
107	4,434,045		21	4,433,830	628	4,434,118	190	4,433,900	248	4,434,500	175	4,433,976
111	4,434,046		21	4,433,831	628	4,434,119	190	4,433,901	249	4,434,501	176	4,433,977
CLASS 209	112	4,434,047	21	4,433,832	628	4,434,120	190	4,433,902	250	4,434,502	177	4,433,978
153	4,434,048		21	4,433,833	628	4,434,121	190	4,433,903	251	4,434,503	178	4,433,979
CLASS 210	531	4,433,785	21	4,433,834	628	4,434,122	190	4,433,904	252	4,434,504	179	4,433,980
169	4,434,050		21	4,433,835	628	4,434,123	190	4,433,905	253	4,434,505	180	4,433,981
264	4,434,051		21	4,433,836	628	4,434,124	190	4,433,906	254	4,434,506	181	4,433,982
376	4,434,052		21	4,433,837	628	4,434,125	190	4,433,907	255	4,434,507	182	4,433,983
446	4,434,053		21	4,433,838	628	4,434,126	190	4,433,908	256	4,434,508	183	4,433,984
484	4,434,054		21	4,433,839	628	4,434,127	190	4,433,909	257	4,434,509	184	4,433,985
489	4,434,055		21	4,433,840	628	4,434,128	190	4,433,910	258	4,434,510	185	4,433,986
637	4,434,056		21	4,433,841	628	4,434,129	190	4,433,911	259	4,434,511	186	4,433,987
638	4,434,057		21	4,433,842	628	4,434,130	190	4,433,912	260	4,434,512	187	4,433,988
662	4,434,058		21	4,433,843	628	4,434,131	190	4,433,913	261	4,434,513	188	4,433,989
701	4,434,059		21	4,433,844	628	4,434,132	190	4,433,914	262	4,434,514	189	4,433,990
724	4,434,060		21	4,433,845	628	4,434,133	190	4,433,915	263	4,434,515	190	4,433,991
787	4,434,061		21	4,433,846	628	4,434,134	190	4,433,916	264	4,434,516	191	4,433,992
CLASS 211	5	4,433,786	21	4,433,847	628	4,434,135	190	4,433,917	265	4,434,517	192	4,433,993

CLASSIFICATION OF PATENTS

CLASS 382			CLASS 417			CLASS 425			CLASS 431			CLASS 518			CLASS 528		
41	4,434,502		571	4,433,966		287	4,434,178		135	4,434,222		107	4,434,242				
48	4,434,503					308	4,434,179		273	4,434,223		152	4,434,243		34	4,434,283	
CLASS 400			CLASS 418			CLASS 426			CLASS 433			CLASS 519			CLASS 544		
88	4,433,925		140	4,433,967		317	4,434,180		323	4,434,224		154	4,434,244		58	4,434,284	
124	4,433,926					326	4,434,181		544	4,434,225		164	4,434,245		86	4,434,285	
CLASS 401			CLASS 419			CLASS 427			CLASS 434			CLASS 520			CLASS 545		
122	4,433,928		5	4,434,134		327	4,434,182		567	4,434,226		171	4,434,246		297	4,434,286	
CLASS 402			CLASS 422			CLASS 428			CLASS 435			CLASS 521			CLASS 546		
14	4,433,929		150	4,434,135		340	4,434,183		8	4,433,970		209	4,434,247		16	4,434,287	
CLASS 403			CLASS 423			CLASS 429			CLASS 436			CLASS 522			CLASS 547		
12	4,433,930		263	4,434,136		392	4,433,968		7	4,433,956		700	4,434,248		54	4,434,288	
194	4,433,931					548	4,433,969		105	4,433,957			4,434,249				
261	4,433,932		6	4,434,137		40	4,434,184		199	4,433,958			4,434,250		14	4,434,289	
268	4,433,933		7	4,434,138		308	4,434,185		201	4,433,959			4,434,251		70	4,434,290	
318	4,433,934		19	4,434,139		565	4,434,186		215	4,433,960		27	4,434,252				
385	4,433,935		54	4,434,140		652	4,434,187		274	4,433,961		64	4,434,253		116	4,434,291	
CLASS 404			CLASS 424			CLASS 430			CLASS 437			CLASS 523			CLASS 548		
88	4,433,936		111	4,434,141		39	4,434,188		7	4,434,227		75	4,434,254		373	4,434,292	
CLASS 405			CLASS 425			CLASS 431			CLASS 438			CLASS 524			CLASS 549		
137	4,433,937		223	4,434,142		53.1	4,434,189		105	4,434,228		134	4,434,255		17	4,434,293	
166	4,433,938		226	4,434,143		136	4,434,190		199	4,434,229			4,434,256		65	4,434,294	
195	4,433,939					165	4,434,191		201	4,434,230		105	4,434,257		344	4,434,295	
210	4,433,940		235	4,434,144		282	4,434,192		288	4,434,231		209	4,434,258		471	4,434,296	
211	4,433,941		379	4,434,145		299	4,434,193		60	4,434,232		323	4,434,259				
215	4,433,942		496	4,434,146		356	4,434,194		60	4,434,233		402	4,434,260		236	4,434,297	
241	4,433,943					387	4,434,195		86	4,434,234			4,434,261				
284	4,433,944		1.1	4,434,147		407.1	4,434,196		110	4,434,235		5	4,434,262		599	4,434,298	
302	4,433,945						4,434,197		512	4,434,236		13	4,434,263				
CLASS 406			CLASS 426			CLASS 432			CLASS 439			CLASS 525			CLASS 550		
43	4,433,946		19	4,434,148		43	4,434,198		542	4,434,237		104	4,434,264		396	4,434,299	
99	4,433,947		22	4,434,149		134	4,434,199					109	4,434,265		479	4,434,300	
CLASS 407			CLASS 427			CLASS 433			CLASS 440			CLASS 526			CLASS 551		
42	4,433,948		47	4,434,150		137	4,434,200		6	4,433,962		237	4,434,266				
CLASS 411			CLASS 428			CLASS 434			CLASS 441			CLASS 527			CLASS 552		
477	4,433,949		60	4,434,151		152	4,434,201		32	4,434,504		322	4,434,267		377	4,434,301	
CLASS 414			CLASS 429			CLASS 435			CLASS 442			CLASS 528			CLASS 553		
9	4,433,950		85	4,434,152		158	4,434,202		50	4,434,505		323	4,434,268		444	4,434,302	
217	4,433,951		89	4,434,153		192	4,434,203		53	4,434,506		339	4,434,269		523	4,434,303	
460	4,433,952		94	4,434,154		218	4,434,204		50	4,434,507		339	4,434,270		527	4,434,304	
735	4,433,953		98	4,434,155		257	4,434,205		95	4,434,508		425	4,434,271		640	4,434,305	
757	4,433,954		178	4,434,156		288	4,434,206		306	4,434,509		458	4,434,272		671	4,434,306	
CLASS 415			CLASS 430			CLASS 436			CLASS 443			CLASS 529			CLASS 554		
1	4,433,955		180	4,434,157		343	4,434,207		343	4,434,510		520	4,434,273		828	4,434,307	
			CLASS 431			CLASS 437			CLASS 444			CLASS 530			CLASS 555		
			CLASS 432			CLASS 438			CLASS 445			CLASS 531			CLASS 556		
			CLASS 433			CLASS 439			CLASS 446			CLASS 532			CLASS 557		
			CLASS 434			CLASS 440			CLASS 447			CLASS 533			CLASS 558		
			CLASS 435			CLASS 441			CLASS 448			CLASS 534			CLASS 559		
			CLASS 436			CLASS 442			CLASS 449			CLASS 535			CLASS 560		
			CLASS 437			CLASS 443			CLASS 450			CLASS 536			CLASS 561		
			CLASS 438			CLASS 444			CLASS 451			CLASS 537			CLASS 562		
			CLASS 439			CLASS 445			CLASS 452			CLASS 538			CLASS 563		
			CLASS 440			CLASS 446			CLASS 453			CLASS 539			CLASS 564		
			CLASS 441			CLASS 447			CLASS 454			CLASS 540			CLASS 565		
			CLASS 442			CLASS 448			CLASS 455			CLASS 541			CLASS 566		
			CLASS 443			CLASS 449			CLASS 456			CLASS 542			CLASS 567		
			CLASS 444			CLASS 450			CLASS 457			CLASS 543			CLASS 568		
			CLASS 445			CLASS 451			CLASS 458			CLASS 544			CLASS 569		
			CLASS 446			CLASS 452			CLASS 459			CLASS 545			CLASS 570		
			CLASS 447			CLASS 453			CLASS 460			CLASS 546			CLASS 571		
			CLASS 448			CLASS 454			CLASS 461			CLASS 547			CLASS 572		
			CLASS 449			CLASS 455			CLASS 462			CLASS 548			CLASS 573		
			CLASS 450			CLASS 456			CLASS 463			CLASS 549			CLASS 574		
			CLASS 451			CLASS 457			CLASS 464			CLASS 550			CLASS 575		
			CLASS 452			CLASS 458			CLASS 465			CLASS 551			CLASS 576		
			CLASS 453			CLASS 459			CLASS 466			CLASS 552			CLASS 577		
			CLASS 454			CLASS 460			CLASS 467			CLASS 553			CLASS 578		
			CLASS 455			CLASS 461			CLASS 468			CLASS 554			CLASS 579		
			CLASS 456			CLASS 462			CLASS 469			CLASS 555			CLASS 580		
			CLASS 457			CLASS 463			CLASS 470			CLASS 556			CLASS 581		
			CLASS 458			CLASS 464			CLASS 471			CLASS 557			CLASS 582		
			CLASS 459			CLASS 465			CLASS 472			CLASS 558			CLASS 583		
			CLASS 460			CLASS 466			CLASS 473			CLASS 559			CLASS 584		
			CLASS 461			CLASS 467			CLASS 474			CLASS 560			CLASS 585		
			CLASS 462			CLASS 468			CLASS 475			CLASS 561			CLASS 586		
			CLASS 463			CLASS 469			CLASS 476			CLASS 562			CLASS 587		
			CLASS 464			CLASS 470			CLASS 477			CLASS 563			CLASS 588		
			CLASS 465			CLASS 471			CLASS 478			CLASS 564			CLASS 589		
			CLASS 466			CLASS 472			CLASS 479			CLASS 565			CLASS 590		
			CLASS 467			CLASS 473			CLASS 480			CLASS 566			CLASS 591		
			CLASS 468			CLASS 474			CLASS 481			CLASS 567			CLASS 592		
			CLASS 469			CLASS 475			CLASS 482			CLASS 568			CLASS 593		
			CLASS 470			CLASS 476			CLASS 483			CLASS 569			CLASS 594		
			CLASS 471			CLASS 477			CLASS 484			CLASS 570			CLASS 595		
			CLASS 472			CLASS 478			CLASS 485			CLASS 571			CLASS 596		
			CLASS 473			CLASS 479			CLASS 486			CLASS 572			CLASS 597		
			CLASS 474			CLASS 480			CLASS 487			CLASS 573			CLASS 598		
			CLASS 475			CLASS 481			CLASS 488			CLASS 574			CLASS 599		
			CLASS 476			CLASS 482			CLASS 489			CLASS 575			CLASS 600		
			CLASS 477			CLASS 483			CLASS 490			CLASS 576			CLASS 601		
			CLASS 478			CLASS 484			CLASS 491			CLASS 577			CLASS 602		
			CLASS 479			CLASS 485			CLASS 492			CLASS 578			CLASS 603		
			CLASS 480			CLASS 486			CLASS 493			CLASS 579			CLASS 604		
			CLASS 481			CLASS 487			CLASS 494			CLASS 580			CLASS 605		
			CLASS 482			CLASS 488			CLASS 495			CLASS 581			CLASS 606		
			CLASS 483			CLASS 489			CLASS 496			CLASS 582			CLASS 607		
			CLASS 484			CLASS 490			CLASS 497			CLASS 583			CLASS 608		
			CLASS 485			CLASS 491			CLASS 498			CLASS 584			CLASS 609		
			CLASS 486			CLASS 492			CLASS 499			CLASS 585			CLASS 610		
			CLASS 487			CLASS 493			CLASS 500			CLASS 586			CLASS 611		
			CLASS 488			CLASS 494			CLASS 501			CLASS 587			CLASS 612		
			CLASS 489			CLASS 495			CLASS 502			CLASS 588			CLASS 613		
			CLASS 490			CLASS 496			CLASS 503			CLASS 589			CLASS 614		
			CLASS 491			CLASS 497			CLASS 504			CLASS 590			CLASS 615		
			CLASS 492			CLASS 498			CLASS 505			CLASS 591			CLASS 616		
			CLASS 493			CLASS 499			CLASS 506			CLASS 592			CLASS 617		
			CLASS 494			CLASS 500			CLASS 507			CLASS 593			CLASS 618		
			CLASS 495			CLASS 501			CLASS 508			CLASS 594			CLASS 619		
			CLASS 496			CLASS 502			CLASS 509			CLASS 595			CLASS 620		
			CLASS 497			CLASS 503			CLASS 510			CLASS 596			CLASS 621		
			CLASS 498			CLASS 504			CLASS 511			CLASS 597			CLASS 622		
			CLASS 499			CLASS 505			CLASS 512			CLASS 598			CLASS 623		
			CLASS 500			CLASS 506			CLASS 513			CLASS 599			CLASS 624		
			CLASS 501			CLASS 507			CLASS 514			CLASS 600			CLASS 625		
			CLASS 502			CLASS 508			CLASS 515			CLASS 601			CLASS 626		
			CLASS 503			CLASS 509			CLASS 516			CLASS 602			CLASS 627		
			CLASS 504			CLASS 510			CLASS 517			CLASS 603			CLASS 628		
			CLASS 505			CLASS 511			CLASS 518			CLASS 604			CLASS 629		
			CLASS 506			CLASS 512			CLASS 519			CLASS 605			CLASS 630		
			CLASS 507			CLASS 513			CLASS 520			CLASS 606			CLASS 631		
			CLASS 508			CLASS 514			CLASS 521			CLASS 607			CLASS 632		
			CLASS 509			CLASS 515			CLASS 522			CLASS 608			CLASS 633		
			CLASS 510			CLASS 516			CLASS 523			CLASS 609			CLASS 634		
			CLASS 511			CLASS 517			CLASS 524			CLASS 610			CLASS 635		
			CLASS 512			CLASS 518			CLASS 525			CLASS 611			CLASS 636		
			CLASS 513			CLASS 519			CLASS 526			CLASS 612			CLASS 637		
			CLASS 514			CLASS 520			CLASS 527			CLASS 613			CLASS 638		
			CLASS 515			CLASS 521			CLASS 528			CLASS 614			CLASS 639		
			CLASS 516			CLASS 522			CLASS 529			CLASS 615			CLASS 640		
			CLASS 517			CLASS 523			CLASS 530			CLASS 616			CLASS 641		
			CLASS 518			CLASS 524			CLASS 531			CLASS 617			CLASS 642		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,433,454	4,434,507	4,433,941	17 : Re.31,525	4,433,552	4,434,343
4 : 4,433,781	4,433,951	4,433,951	4,433,452	4,433,625	4,434,380
4,433,961	4,433,457	4,433,457	4,433,486	4,433,753	4,434,386
4,434,130	4,433,711	4,434,013	4,433,502	4,433,816	4,434,387
4,434,149	4,433,729	4,434,037	4,433,531	4,434,504	4,434,409
4,434,383	4,433,854	4,434,094	4,433,532	4,433,490	4,434,459
4,434,391	4,434,038	4,434,140	4,433,590	4,433,518	4,434,479
4,433,471	4,434,049	4,434,141	4,433,594	4,434,044	4,434,482
4,433,484	4,434,193	4,434,147	4,433,621	4,434,207	4,433,450
4,433,487	4,434,220	4,434,151	4,433,629	4,434,278	4,433,506
4,433,489	4,433,539	4,434,153	4,433,698	4,434,344	4,433,520
4,433,491	4,433,584	4,434,156	4,433,709	4,434,356	4,433,540
4,433,503	4,433,712	4,434,222	4,433,750	4,433,464	4,433,572
4,433,544	4,433,765	4,434,293	4,433,754	4,433,553	4,433,576
4,433,575	4,433,845	4,434,311	4,433,762	4,433,583	4,433,583
4,433,580	4,433,923	4,434,328	4,433,780	4,433,638	4,433,627
4,433,598	4,434,066	4,434,371	4,433,787	4,433,738	4,433,648
4,433,603	4,434,163	4,434,414	4,433,826	4,434,015	4,433,693
4,433,609	4,434,164	4,434,425	4,433,844	4,434,282	4,433,763
4,433,672	4,434,173	4,434,454	4,433,846	4,434,347	4,433,764
4,433,682	4,434,330	4,434,467	4,433,878	4,433,441	4,433,785
4,433,683	4,434,346	4,434,472	4,433,883	4,433,589	4,433,804
4,433,713	04 : 4,433,557	08 : 4,433,727	4,433,919	4,433,684	4,433,812
4,433,723	4,433,723	4,433,728	4,433,952	4,433,796	4,433,819
4,433,737	4,433,800	4,433,761	4,434,020	4,433,989	4,433,858
4,433,792	4,433,831	4,433,909	4,434,051	4,434,168	4,433,867
4,433,829	4,433,863	4,434,362	4,434,059	4,434,215	4,433,884
4,433,835	4,433,894	4,434,487	4,434,064	4,434,228	4,433,885
4,433,838	4,434,436	09 : 4,433,741	4,434,227	4,434,253	4,433,934
4,433,841	4,433,578	4,433,836	4,434,244	4,434,407	4,433,935
4,433,856	4,434,026	4,433,842	4,434,245	4,434,486	4,433,953
4,433,898	06 : 4,433,459	4,433,937	4,434,270	4,433,439	4,433,971
4,433,914	4,433,492	4,434,016	4,434,323	4,433,476	4,434,000
4,433,939	4,433,570	4,434,092	4,434,398	4,433,493	4,434,053
4,433,985	4,433,581	4,433,509	4,434,415	4,433,610	4,434,065
4,433,997	4,433,597	4,433,527	4,434,420	4,433,643	4,434,077
4,433,999	4,433,601	4,434,236	4,434,438	4,433,687	4,434,078
4,434,042	4,433,606	4,434,258	4,434,461	4,433,739	4,434,096
4,434,050	4,433,615	4,434,261	4,433,466	4,433,742	4,434,124
4,434,069	4,433,649	4,433,660	4,433,501	4,433,791	4,434,127
4,434,106	4,433,664	4,433,720	4,433,549	4,433,814	4,434,169
4,434,110	4,433,690	4,433,809	4,433,996	4,433,924	4,434,187
4,434,184	4,433,703	4,433,840	4,434,047	4,433,962	4,434,195
4,434,185	4,433,707	4,433,949	4,434,288	4,433,979	4,434,234
4,434,304	4,433,726	4,433,950	4,434,448	4,433,984	4,434,238
4,434,318	4,433,733	4,434,060	4,434,470	4,434,025	4,434,295
4,434,376	4,433,795	4,434,345	4,434,028	4,434,074	4,434,296
4,434,384	4,433,799	4,434,374	4,433,619	4,434,150	4,434,342
4,434,404	4,433,848	4,434,378	4,433,641	4,434,203	4,434,375
4,434,406	4,433,852	4,433,864	4,433,853	4,434,217	4,434,468
4,434,418	4,433,882	4,434,021	4,434,018	4,434,237	4,433,453
4,434,419	4,433,930	4,434,067	4,434,474	4,433,526	
4,434,490	4,433,940	4,434,120	4,433,513	4,433,559	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

PI 47

4,433,631	4,434,182	4,433,973	4,434,119	4,434,133	4,434,113
4,433,691	4,434,200	4,433,990	4,434,126	4,434,177	4,434,125
4,433,767	4,434,240	4,434,003	4,434,136	4,434,183	4,434,138
4,433,818	4,434,254	4,434,055	4,434,157	4,434,191	4,434,242
4,433,880	4,434,259	4,434,084	4,434,189	4,434,208	4,434,246
4,433,915	4,434,262	4,434,098	4,434,255	4,434,267	4,434,248
4,433,929	4,434,264	4,434,103	4,434,265	4,434,273	4,434,307
4,433,946	4,434,271	4,434,118	4,434,266	4,434,279	4,434,308
4,433,956	4,434,272	4,434,134	4,434,274	4,434,281	4,434,309
4,433,968	4,434,275	4,434,158	4,434,298	4,434,284	4,434,316
4,433,980	4,434,297	4,434,197	4,434,320	4,434,300	4,434,360
4,434,186	4,434,299	4,434,216	4,434,348	4,434,334	4,434,427
4,434,199	4,434,312	4,434,226	4,434,358	4,434,336	4,434,451
4,434,230	4,434,313	4,434,233	4,434,388	4,434,370	4,434,462
4,434,338	4,434,317	4,434,253	4,434,353	4,433,582	4,434,465
28 : 4,433,959	4,434,327	4,434,366	4,434,369	4,433,701	4,434,475
29 : 4,433,514	4,434,381	4,434,372	4,434,401	4,433,731	4,434,485
4,433,735	4,434,405	4,434,396	4,434,407	4,433,983	4,434,485
4,434,019	4,434,411	4,434,397	4,434,416	4,434,079	4,433,730
30 : 4,434,180	4,434,439	4,434,421	4,434,439	4,434,082	4,434,493
33 : 4,433,632	4,434,440	4,434,422	4,434,458	4,434,122	4,434,478
4,433,640	4,434,443	4,434,422	4,434,263	4,433,891	4,433,440
34 : 4,433,443	4,434,481	4,434,426	4,434,280	4,433,903	4,433,550
4,433,469	4,434,497	4,434,432	4,434,364	4,434,039	4,433,681
4,433,474	4,434,510	4,434,434	4,434,449	4,433,536	4,433,696
4,433,571	4,433,652	4,434,456	4,434,496	4,433,611	4,433,700
4,433,680	4,433,680	4,434,456	4,434,548	4,433,811	4,433,801
4,433,695	4,433,695	4,434,519	4,433,556	4,433,933	4,433,801
4,433,715	4,433,715	4,434,492	4,434,142	4,433,749	4,434,389
4,433,756	4,433,756	4,434,477	4,434,286	4,433,928	4,434,450
4,433,760	4,433,760	4,434,512	4,434,488	4,434,033	4,434,508
4,433,776	4,433,776	4,434,481	4,434,515	4,434,041	4,434,509
4,433,778	4,433,778	4,433,545	4,433,515	4,433,547	4,433,547
4,433,783	4,433,783	4,433,563	4,433,500	4,433,528	4,433,719
4,433,790	4,433,790	4,433,567	4,433,517	4,433,566	4,433,786
4,433,806	4,433,806	4,433,585	4,433,591	4,433,607	4,433,839
4,433,807	4,433,807	4,433,595	4,433,624	4,433,608	4,433,855
4,433,817	4,433,817	4,433,602	4,433,633	4,433,622	4,433,916
4,433,964	4,433,964	4,433,657	4,433,636	4,433,644	4,433,916
4,433,970	4,433,970	4,433,658	4,433,637	4,433,777	4,434,322
4,433,987	4,433,987	4,433,685	4,433,645	4,433,789	4,434,455
4,434,031	4,433,710	4,433,710	4,433,646	4,433,822	4,433,656
4,434,046	4,433,718	4,433,718	4,433,674	4,433,828	4,434,247
4,434,048	4,433,808	4,433,808	4,433,757	4,433,830	4,434,301
4,434,062	4,433,810	4,433,810	4,433,758	4,433,865	4,433,446
4,434,075	4,433,824	4,433,824	4,433,775	4,433,869	4,433,463
4,434,076	4,433,837	4,433,837	4,433,802	4,433,870	4,433,524
4,434,085	4,433,889	4,433,889	4,433,832	4,433,886	4,433,529
4,434,086	4,433,890	4,433,890	4,433,834	4,433,886	4,433,530
4,434,093	4,433,892	4,433,892	4,433,847	4,433,978	4,433,530
4,434,100	4,433,899	4,433,899	4,433,872	4,433,988	4,433,668
4,434,101	4,433,907	4,433,907	4,433,879	4,434,007	4,433,732
4,434,102	4,433,910	4,433,910	4,433,888	4,434,007	4,433,774
4,434,155	4,433,912	4,433,912	4,433,896	4,434,012	4,433,843
4,434,161	4,433,917	4,433,917	4,433,922	4,434,040	4,433,977
4,434,174	4,433,960	4,433,960	4,433,931	4,434,061	4,433,981
4,434,175	4,433,967	4,433,967	4,433,955	4,434,112	4,434,181
	4,433,972	4,434,116	4,434,032	4,434,114	4,434,194
			4,434,132	4,434,045	4,434,213

DESIGN PATENTS

02 : 272,860	08 : 272,861	19 : 272,850	29 : 272,844	40 : 272,836
04 : 272,813	272,838	272,858	272,774	272,777
06 : 272,769	272,857	272,785	272,775	272,777
272,770	272,851	272,787	272,776	272,810
272,786	272,852	272,802	272,793	272,820
272,792	272,779	272,825	272,801	272,854
272,799	272,780	272,826	272,837	272,796
272,809	272,800	272,782	272,843	272,784
272,821	272,804	272,794	272,853	272,798
272,823	272,834	272,817	272,856	272,863
272,835	272,847	272,846	272,771	272,790
272,839	272,848	272,791	272,773	272,797

PLANT PATENTS

06 : 5,198	39 : 5,195	41 : 5,196	5,197	
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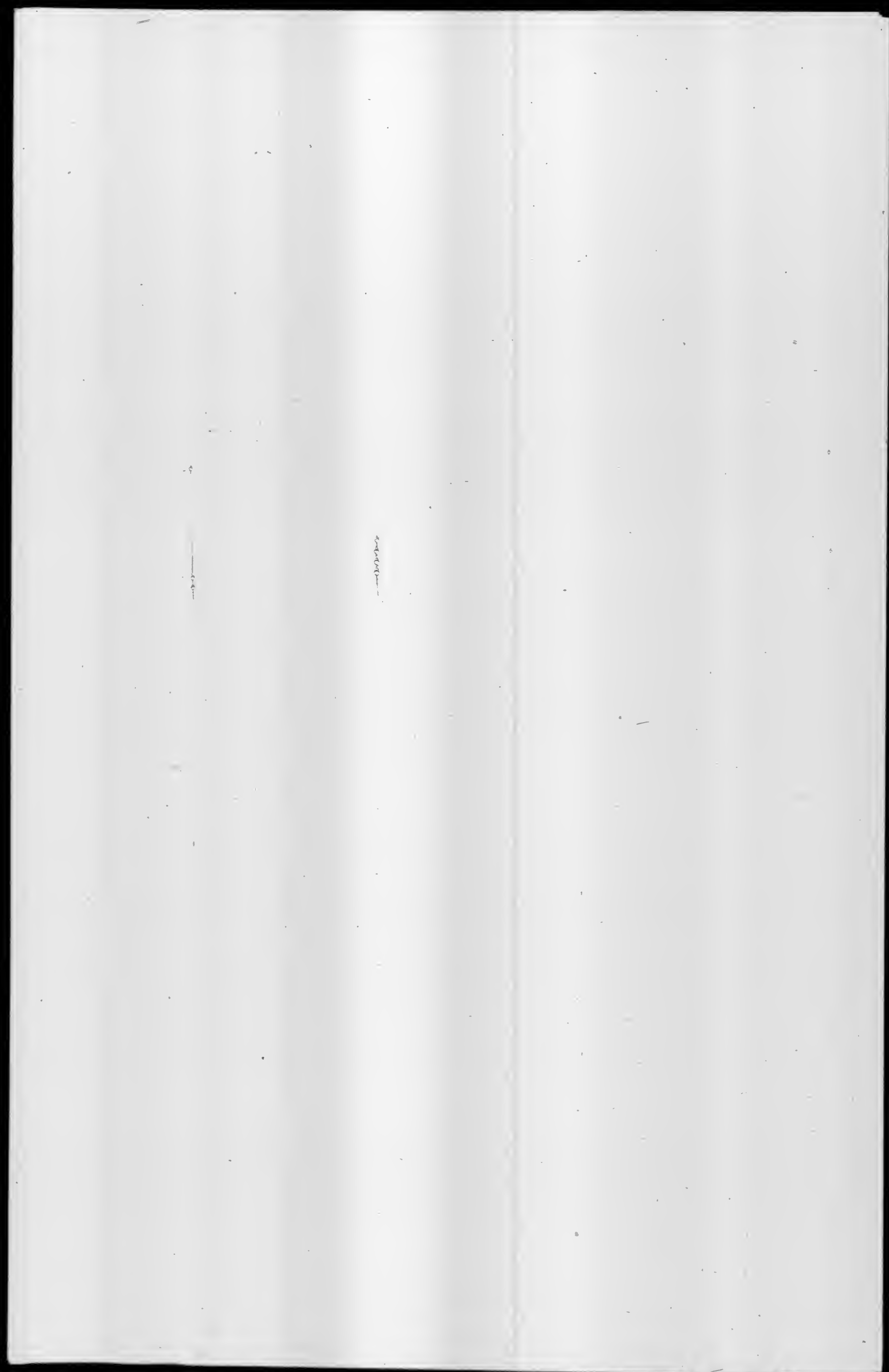
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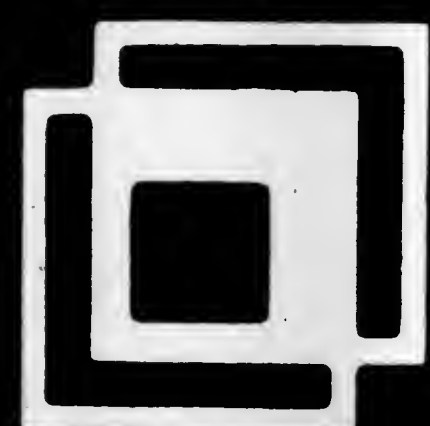
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